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REFERENCE: HB-0039

PROJECT: 50603

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN
-FLY-	10+00.00 - 41+49.52	5,12,13
-L-	121+68.38 - 177+23.75	5-9
-LILT-	300+00.00 - 318+62.99	9-11
-LIRT-	300+00.00 - 319+60.59	9-11
-LLT-	100+00.00 - 121+68.38	4-5
-LRT-	100+00.00 - 121+12.92	4-5
-YIRPA-	10+00.00 - 36+24.45	6-7,13
-YIRPB-	10+00.00 - 44+07.56	4-5,13
-YIRPC-	10+00.00 - 54+11.21	4-6,12-13
-Y2-	40+71.46 - 58+51.09	9,14
-Y2A-	10+00.00 - 12+29.34	9
-Y2LPA-	10+00.00 - 38+49.69	9-10
-Y2LPASPUR-	18+22.23 - 21+40.33	9
-Y2LPC_2-	10+00.00 - 38+47.58	9,14
-Y2LPCSPUR_2-	21+74.76 - 26+61.49	9
-Y3-	10+00.00 - 18+92.25	10
-Y4-	10+43.79 - 19+36.79	11

APPENDICES

APPENDIX	TITLE	SHEETS
A	BORE LOGS & CORE LOGS	15-140
B	CORE PHOTOGRAPHS	141-148
C	CPT LOGS & DISSIPATION TESTS	149-213
D	LABORATORY TESTING SUMMARY	214-232
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *NEW HANOVER & BRUNSWICK*

PROJECT DESCRIPTION *REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0039	1	682

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

B. SMITH, PG
M. STANBURY, PG
M. AKLAND, PG
C. STEPHENS, PG
CATLIN ENG.
SUBTERRA EXP.

INVESTIGATED BY *B. SMITH, PG*
DRAWN BY *B. SMITH, PG*
CHECKED BY *S. JOHNSON, PE, PG*
SUBMITTED BY *B. SMITH, PG*
DATE *SEPTEMBER, 2026*

PREPARED IN THE OFFICE OF:

INFRASTRUCTURE CONSULTING & ENGINEERING

NORTH CAROLINA LICENSED SEAL 2390 GEOLOGIST BRETT C. SMITH

Signed by: Brett Smith
D659DAEBB4F44BA...
SIGNATURE 9/15/2026 DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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PROJECT REFERENCE NO.	SHEET NO.
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
MATERIAL PASSING #40 LL	—		—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX		NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [X] CME-45C
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] DIEDRICH D-50
- [X] VERTEK CPT

ADVANCING TOOLS:
- [X] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [X] W/ ADVANCER
- [X] TRICONE 2 5/8 " STEEL TEETH
- [ ] TRICONE ____ " TUNG.-CARB.
- [X] CORE BIT
- [X] TYPE II PIEZO CONE

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B ____
- [ ] -H ____
- [X] -N Q2

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] ____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: CTRL01 (N:175056.582, E:2317171.097) - Elev. = 6.62 FT
CTRL03 (N:175373.875, E: 2316322.585) - Elev. = 8.23 FT
CTRL01 - RR Spike in Ground / CTRL03 - Nail in Retaining Wall

NOTES:

BENCHMARKS LISTED ABOVE WERE SET BY PROFESSIONAL LICENSED SURVEYOR (BATEMAN CIVIL SURVEY COMPANY). BENCHMARKS WERE SET ALONG THE BANKS OF THE CAPE FEAR RIVER AND USED IN LEVEL SURVEYS FOR THE BARGE BORINGS.

"AS DRILLED" COORDINATES AND ELEVATIONS WERE COLLECTED FOR ALL BRIDGE BORINGS BY BATEMAN CIVIL SURVEY COMPANY. CSV FILES CONTAINING THIS DATA HAVE BEEN SUBMITTED WITH THE ELECTRONIC SUBMITTAL TO NCDOT GEU.

ELEVATIONS OF ROADWAY BORINGS AND CPT SOUNDINGS WERE OBTAINED FROM THE EXISTING TERRAIN MODEL IN ORD (HB-0039_RDY_ETM.DGN)

FIAD = FILLED IMMEDIATELY AFTER COMPLETION

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HB–0039	2A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)

From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.

SURFACE CONDITIONS

VERY GOOD Very rough, fresh unweathered surfaces

GOOD Rough, slightly weathered, iron stained surfaces

FAIR Smooth, moderately weathered and altered surfaces

POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments

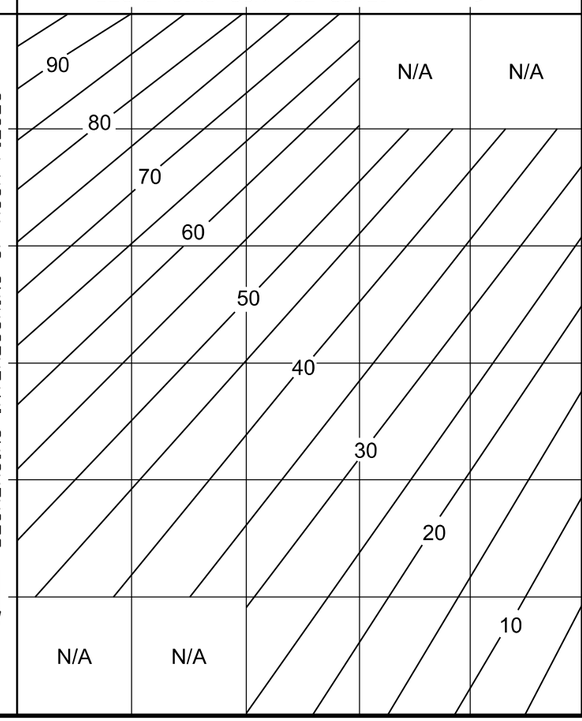
VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings

DECREASING SURFACE QUALITY ⇨

STRUCTURE

DECREASING INTERLOCKING OF ROCK PIECES ⇩

- INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities
- BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets
- VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets
- BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity
- DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces
- LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes



AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 2000)

From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.

SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)

VERY GOOD - Very Rough, fresh unweathered surfaces

GOOD - Rough, slightly weathered surfaces

FAIR - Smooth, moderately weathered and altered surfaces

POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments

VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings

COMPOSITION AND STRUCTURE

A. *Thick bedded, very blocky sandstone The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.*

B. *Sandstone with thin interlayers of siltstone*

C. *Sandstone and siltstone in similar amounts*

D. *Siltstone or silty shale with sandstone layers*

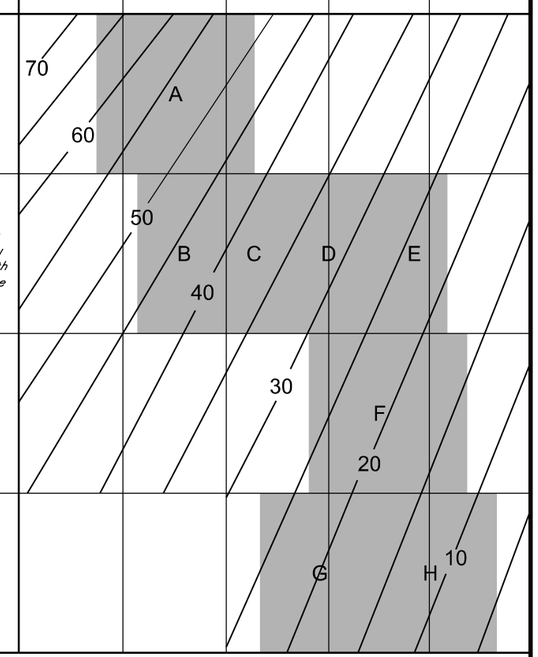
E. *Weak siltstone or clayey shale with sandstone layers*

C, D, E, and **G** - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to **F** and **H.**

F. *Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure*

G. *Undisturbed silty or clayey shale with or without a few very thin sandstone layers*

H. ***Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.***



——— Means deformation after tectonic disturbance

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HB–0039	3

REFERENCE: HB–0039

PROJECT: 50603

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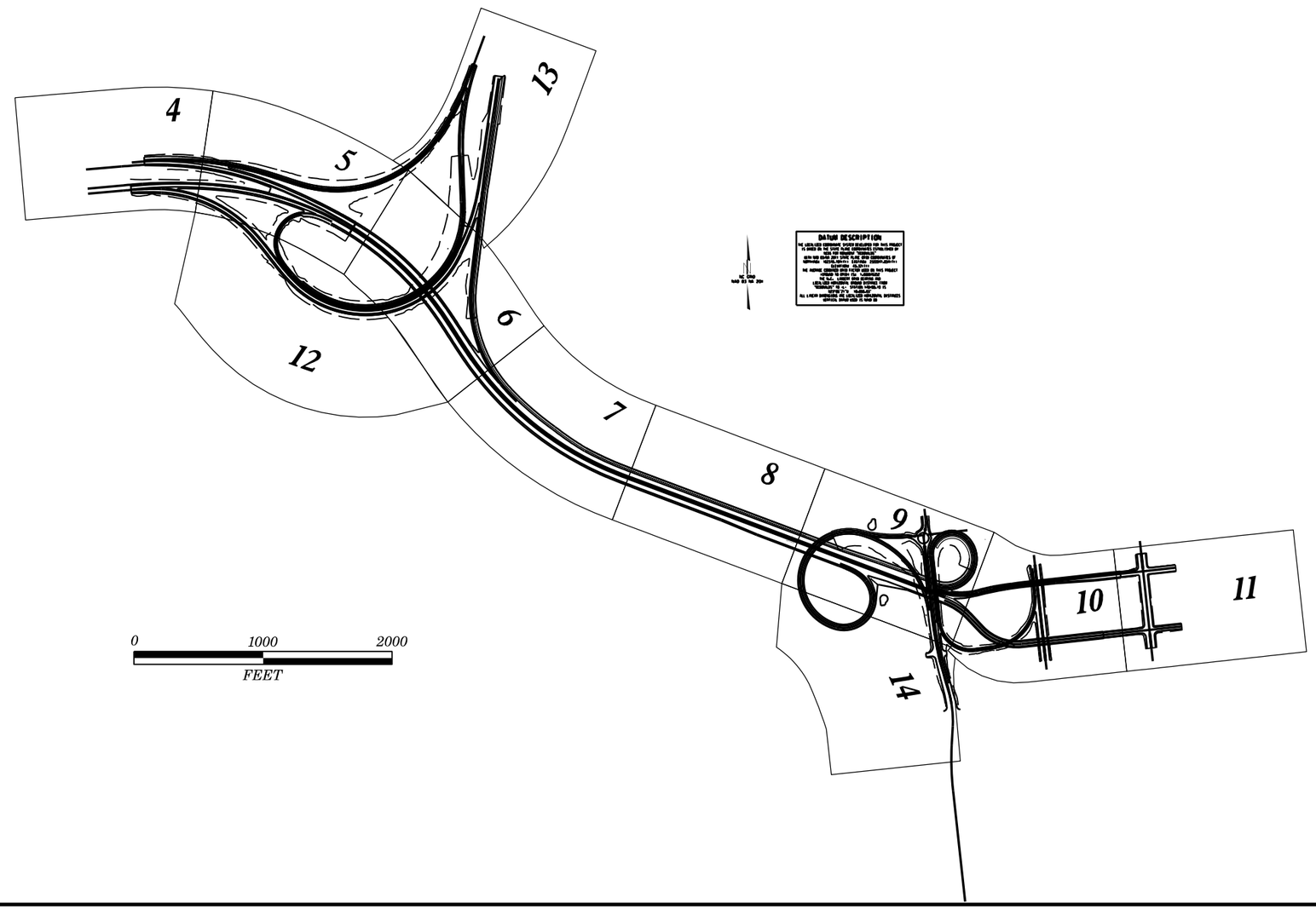
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

PLAN SHEET LAYOUT



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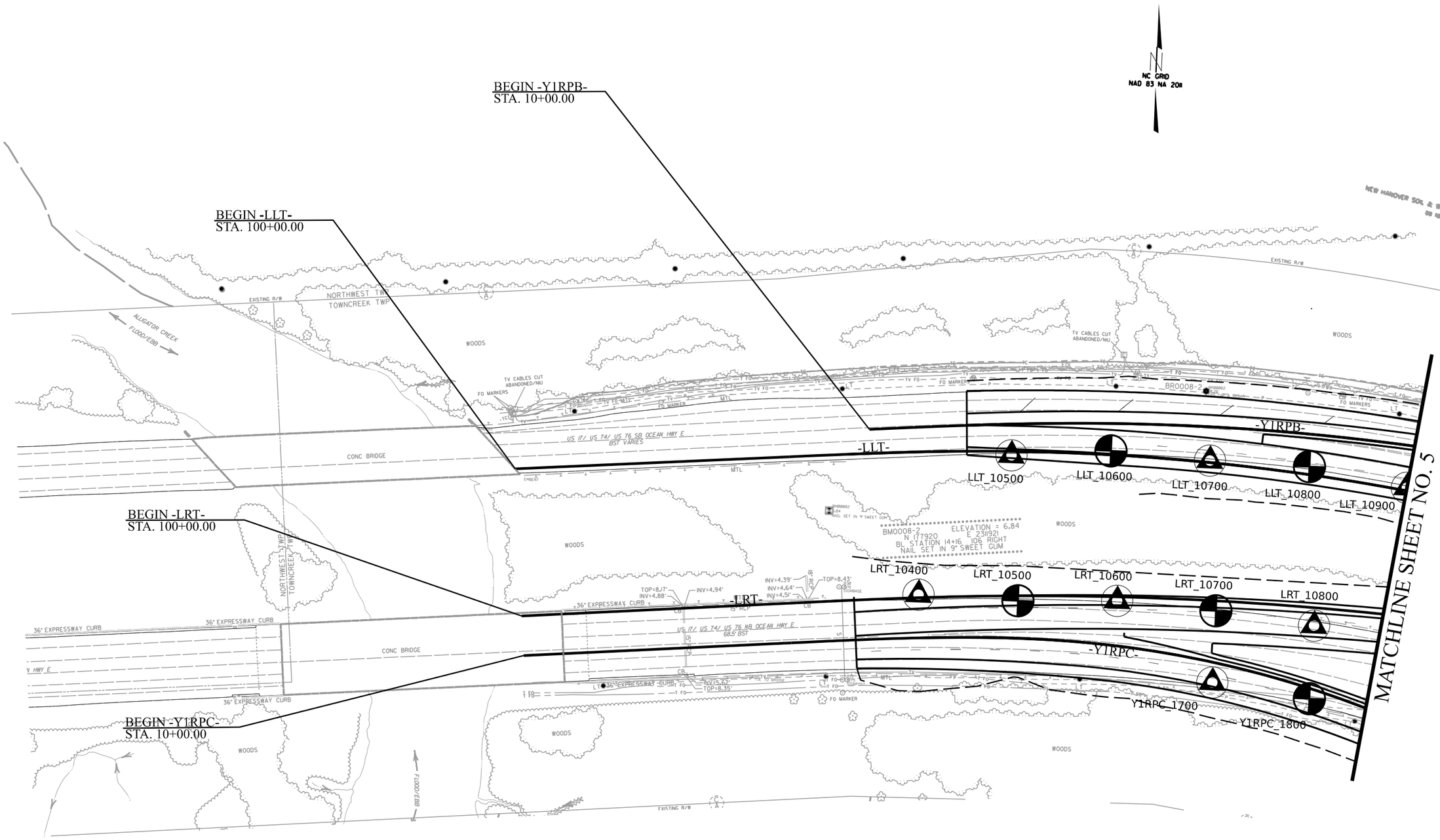

HB-0039

GEO	004

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TIP PROJECT: HB-0039
Replace Bridge # 13 over Cape Fear River on US 421

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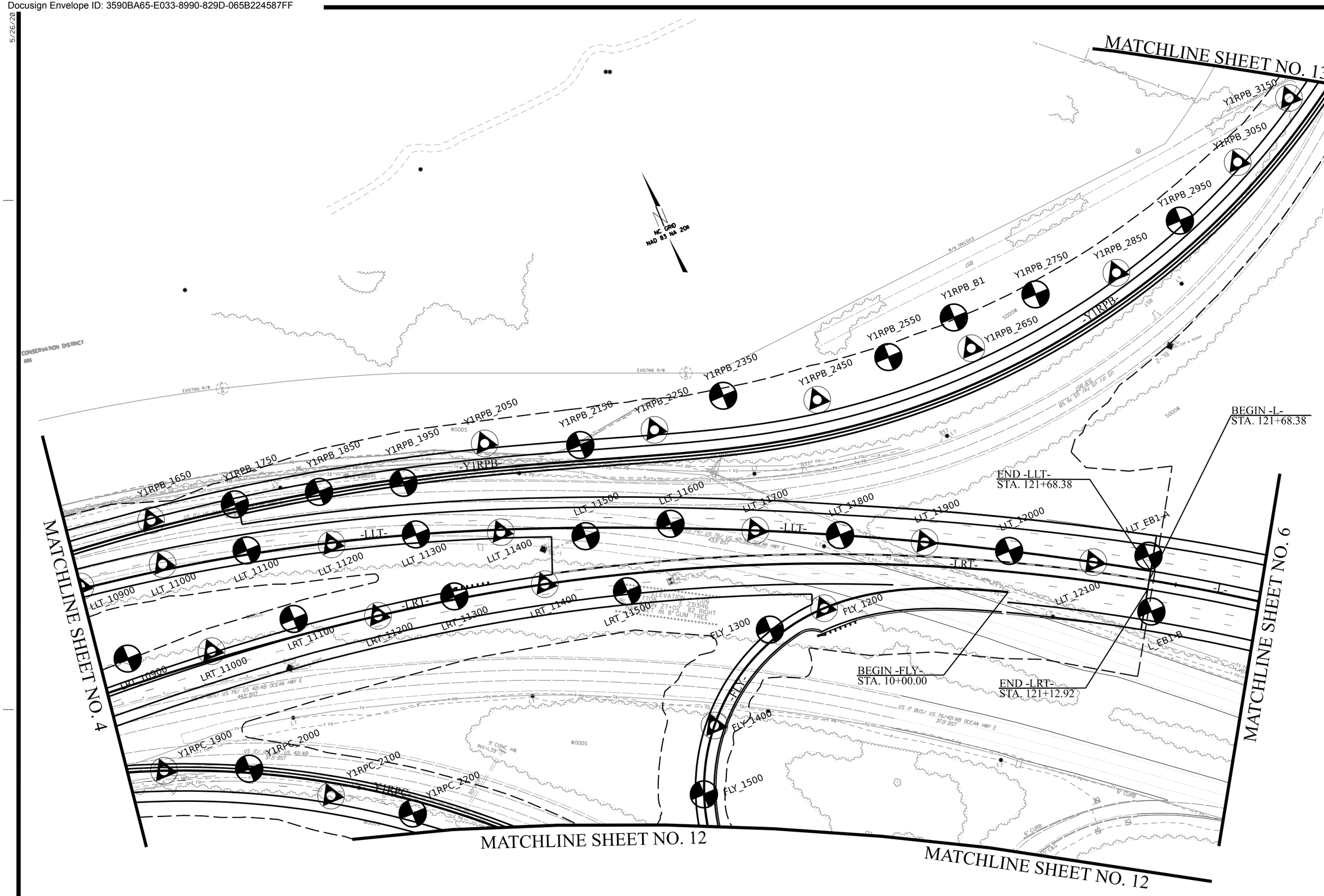

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GEO	005

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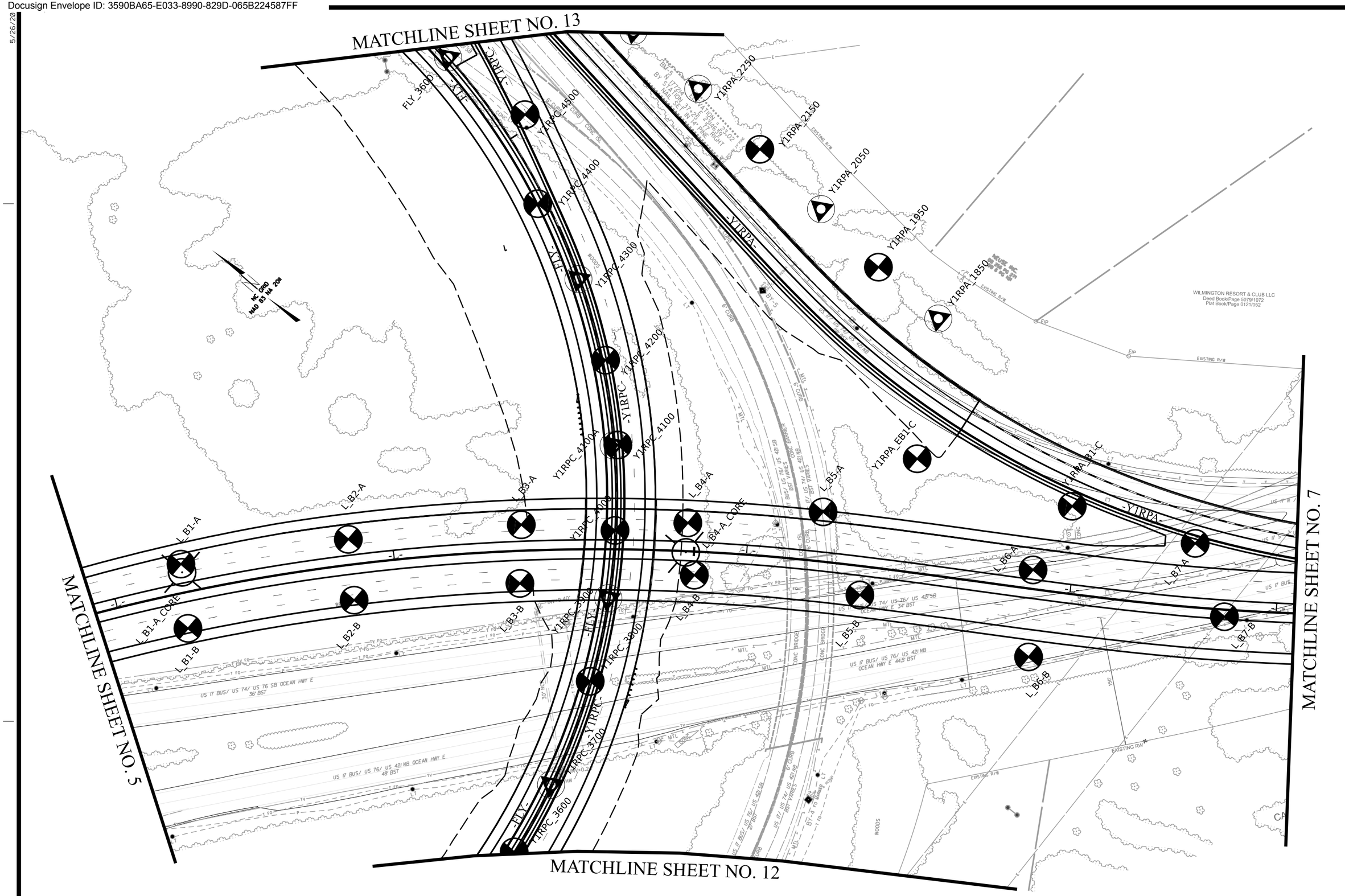

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GEO	006

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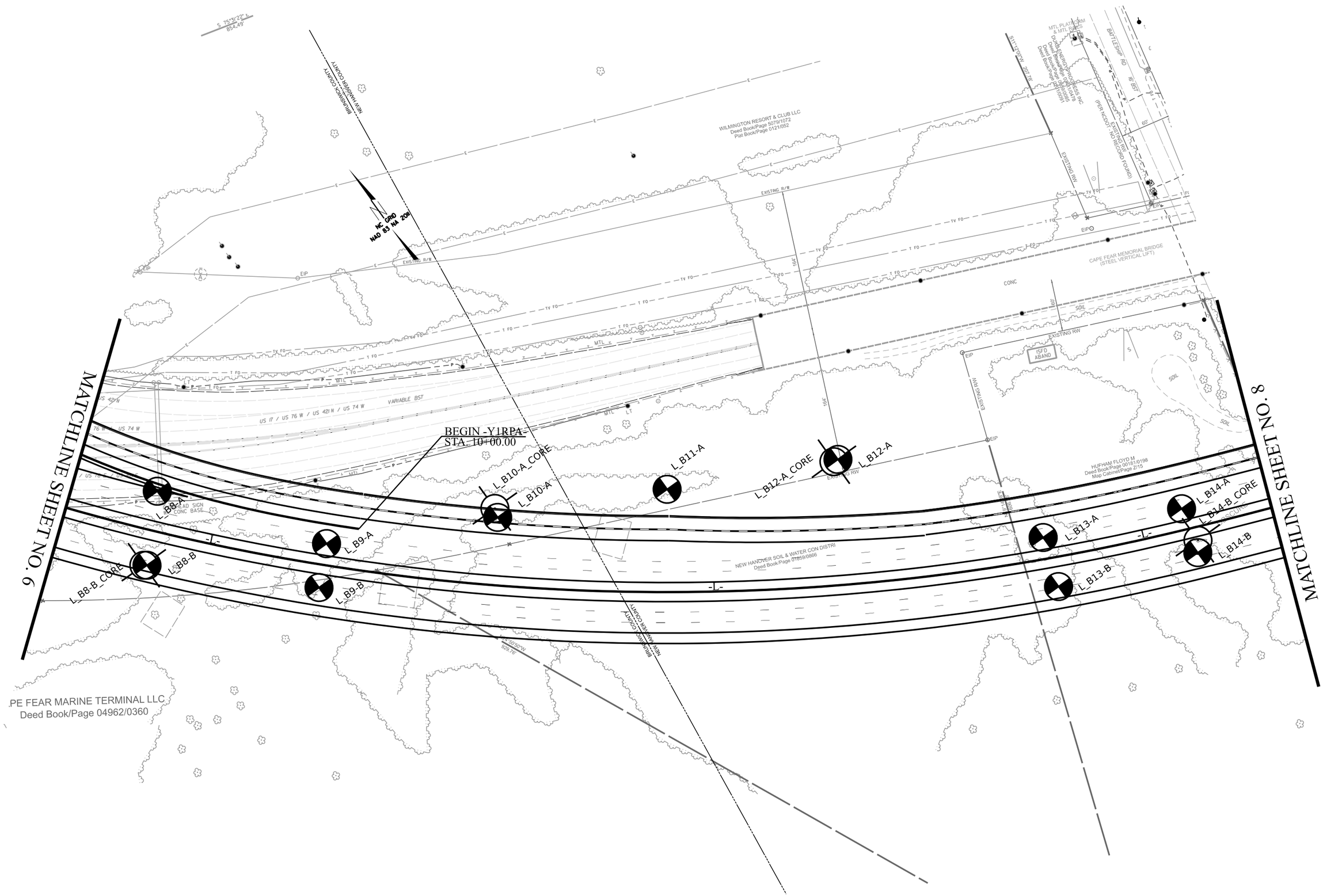

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GEO | 007

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GEO 008

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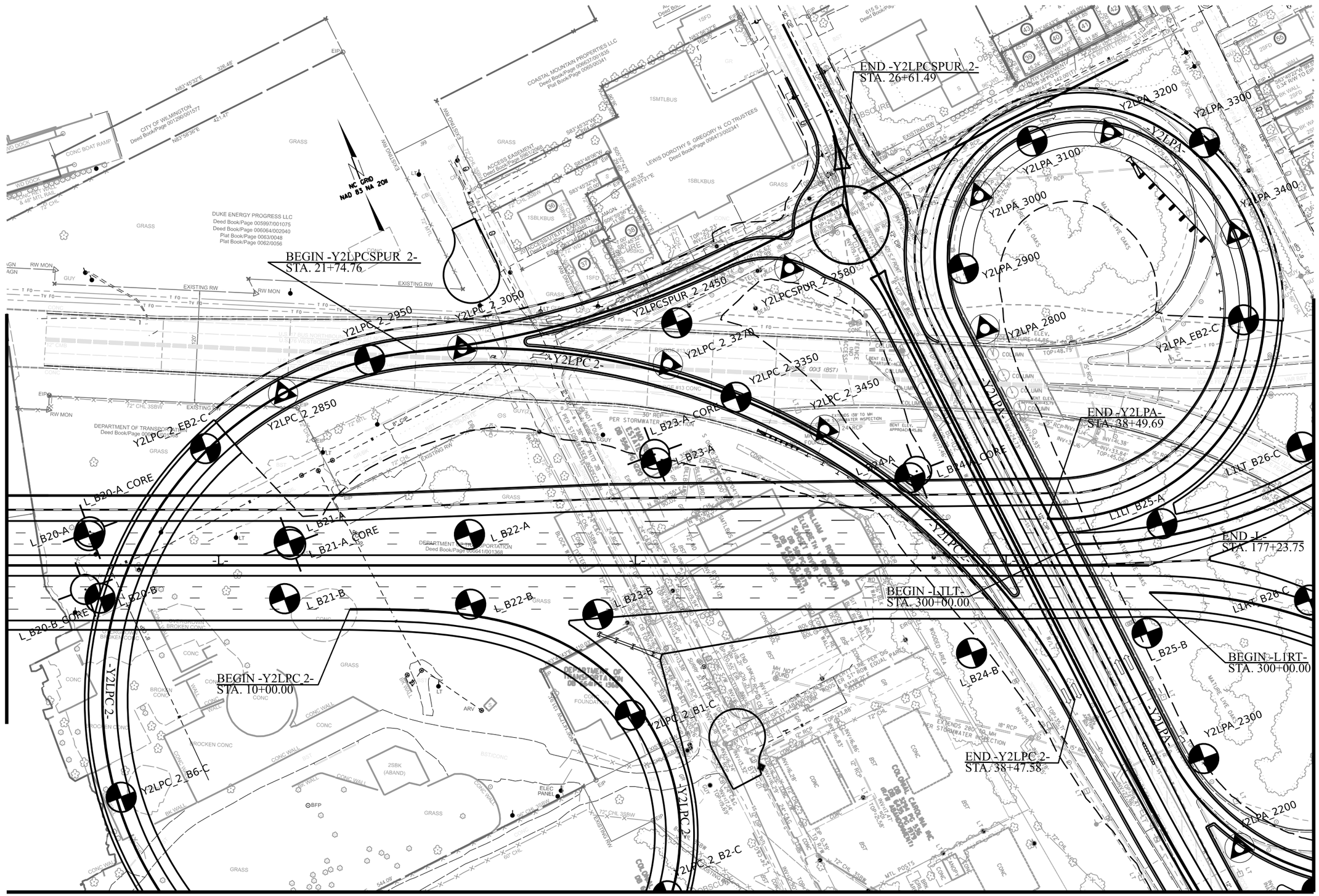

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GEO	009

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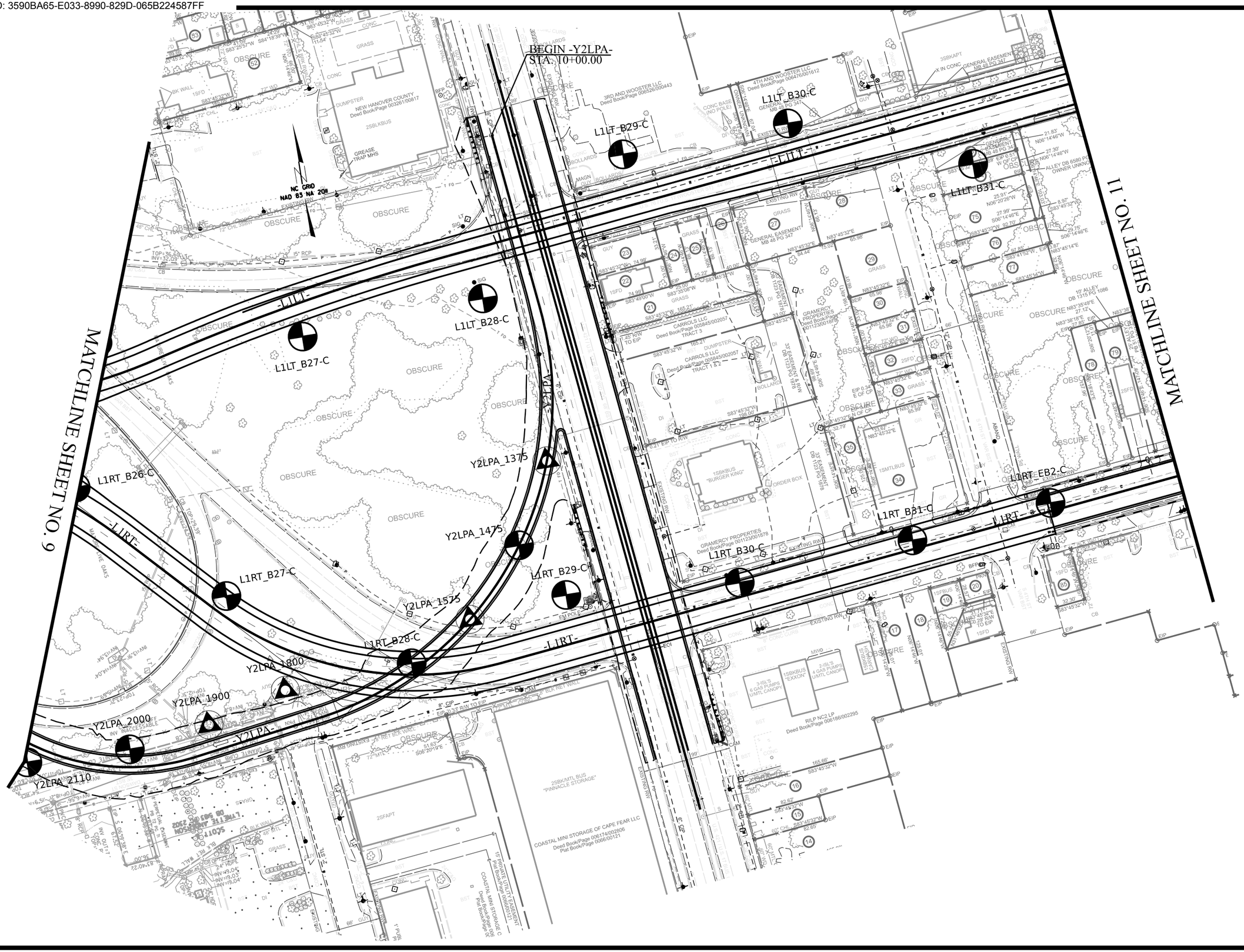
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L1LT_B29-C
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-L1RT-
-Y2LPA-
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3RD AND WOOSTER LLC
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4TH AND WOOSTER LLC
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GENERAL EASEMENT
MB 48 PG 347
CARROLS LLC
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TRACT 1 & 2
GRAMERCY PROPERTIES
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1SMTLBUS
1SBKBUS "EXXON"
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2-ISL'S 4 GAS PUMPS U/MTL CANOPY
RILP NC2 LP
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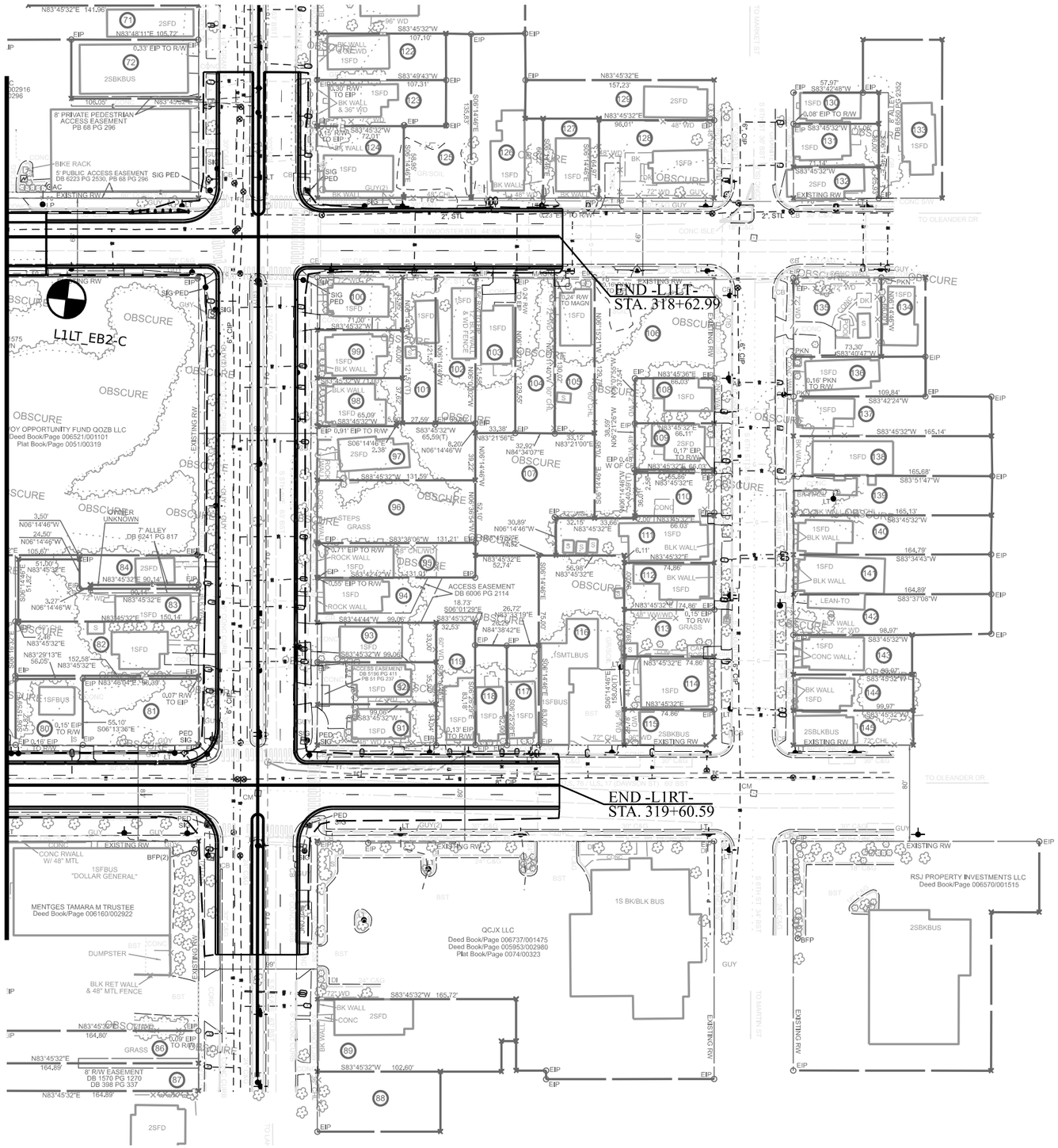

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GEO | 011

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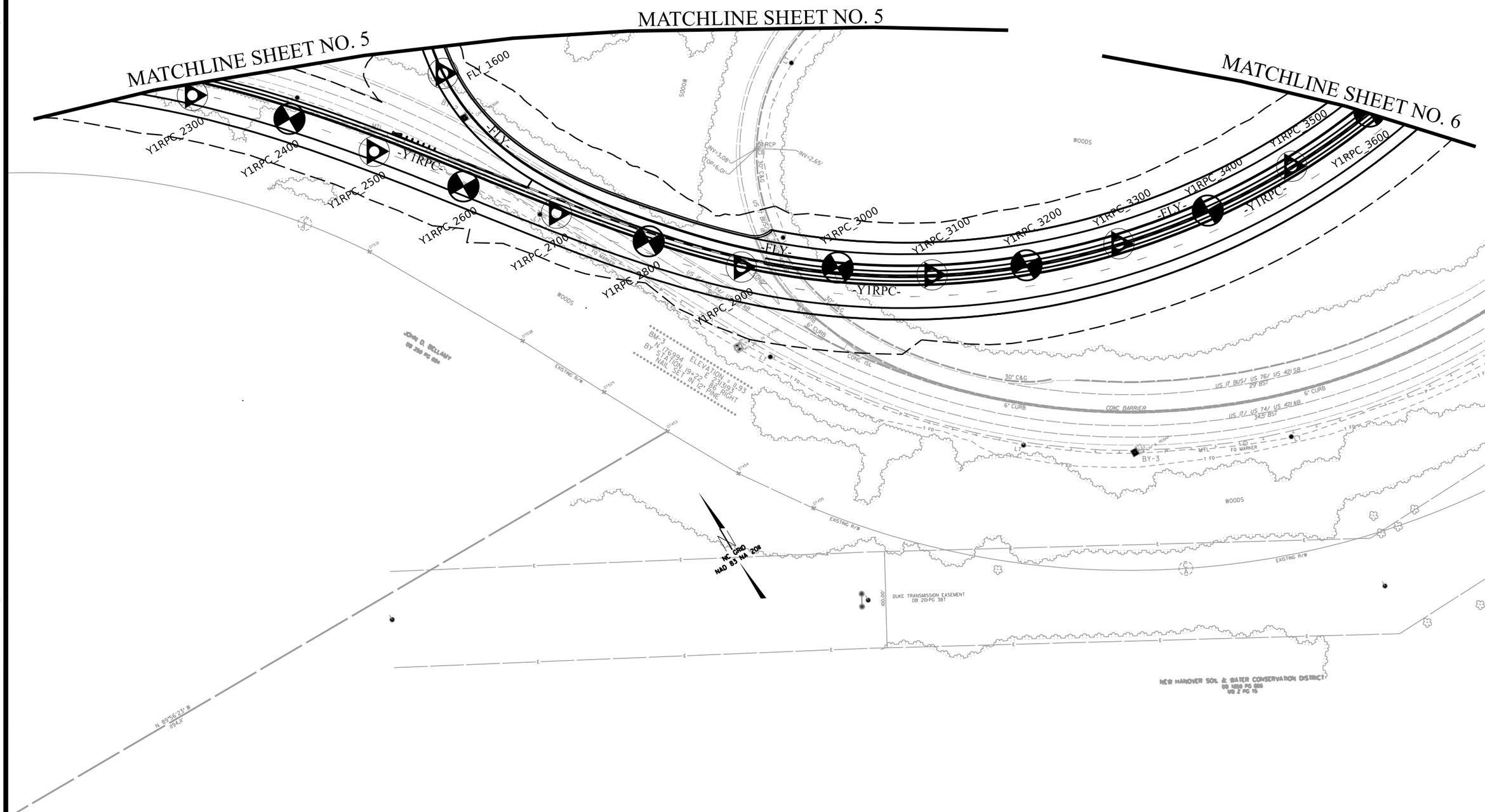

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GEO	012

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GEO	013

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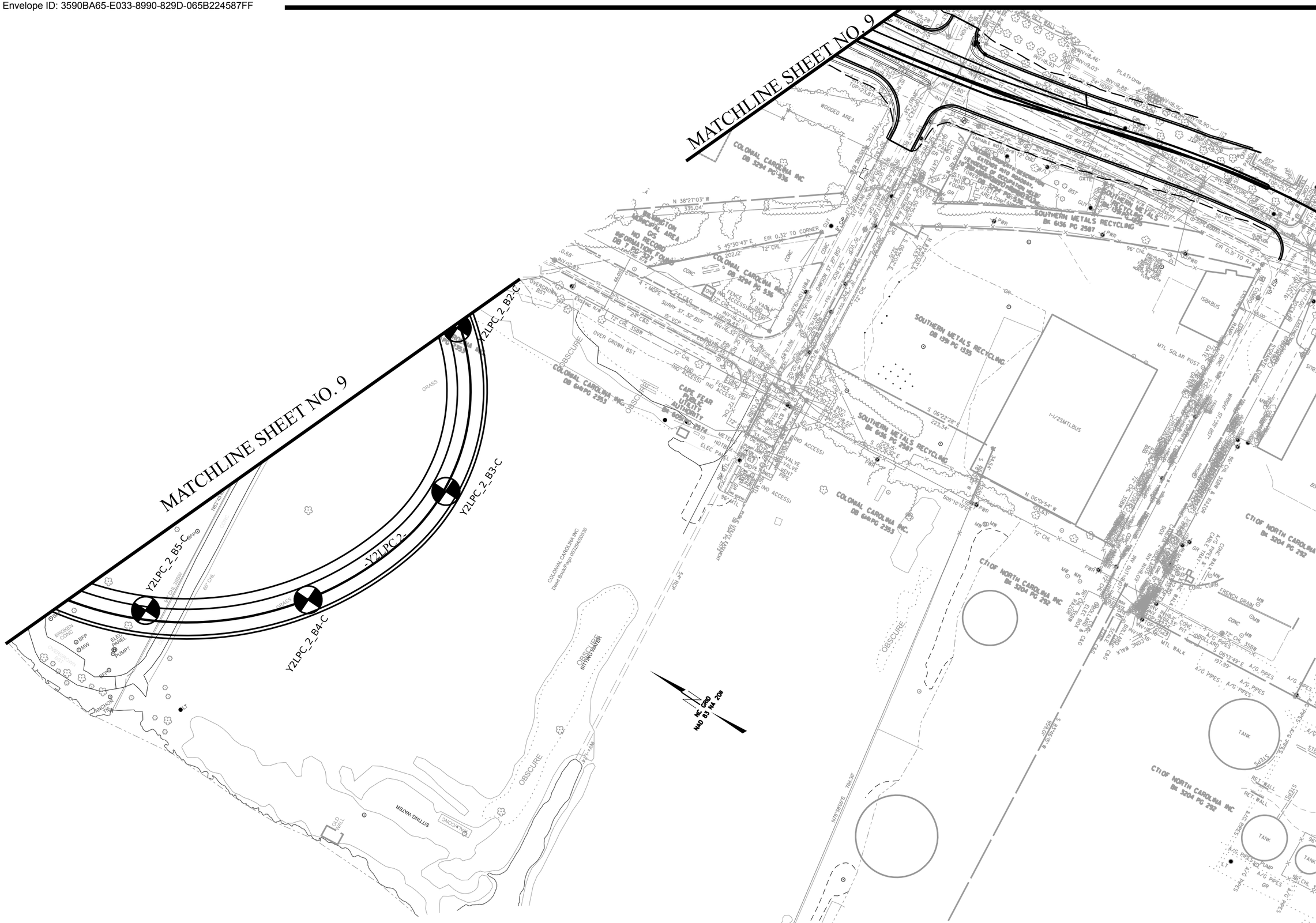

HB-0039

GEO	014

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Replace Bridge # 13 over Cape Fear River on US 421

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REFERENCE: HB–0039

PROJECT: 50603

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
BORE LOGS & CORE LOGS

CONTENTS

LINE	SHEETS
–FLY–	16–17
–L–	18–81
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–LLT–	97–101
–LRT–	102–104
–Y1RPA–	105–108
–Y1RPB–	109–116
–Y1RPC–	117–126
–Y2LPA–	127–131
–Y2LPC_2–	132–139
–Y2LPCSPUR_2–	140

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. FLY_1300	**STATION** 12+86	**OFFSET** 11 ft RT	**ALIGNMENT** -FLY-	**0 HR.** N/A
COLLAR ELEV. 2.7 ft	**TOTAL DEPTH** 34.6 ft	**NORTHING** 177,611	**EASTING** 2,313,232	**24 HR.** 0.9
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 06/11/26	**COMP. DATE** 06/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.7 GROUND SURFACE	0.0
0	-0.4	3.1	WOH	1	2	3		Sat. 412%		**ALLUVIAL** Dark Brown, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT)	
-5	-5.4	8.1	2	1	1	2		Sat. 853%			
-10	-10.4	13.1	WOH	WOH	6	6		Sat. 52%		-9.3 Light to Dark Brown, Loose, Fine to Coarse SAND (A-3) with Trace Rounded Gravel and Organic Matter	12.0
-15	-15.4	18.1	2	4	5	9		Sat.			
-20	-20.4	23.1	1	2	2	4		Sat.		-23.3 **UNDIVIDED COASTAL PLAIN** Brown and White, Very Loose, Silty SAND (A-2-4) with Trace Shell Fragments	26.0
-25	-25.4	28.1	WOH	WOH	WOH	0		Sat.		-26.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray and White, Soft to Medium Hard, SANDY LIMESTONE	29.3
-30	-30.4	33.1	24	37	5	42				-31.9 Boring Terminated at Elevation -31.9 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	34.6

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-57 (3.0 - 5.0)
ST-58 (8.0 - 10.0)
ST-59 (13.0 - 15.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. FLY_1500	**STATION** 14+97	**OFFSET** 0 ft RT	**ALIGNMENT** -FLY-	**0 HR.** N/A
COLLAR ELEV. 4.3 ft	**TOTAL DEPTH** 39.2 ft	**NORTHING** 177,461	**EASTING** 2,313,086	**24 HR.** 1.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/10/26	**COMP. DATE** 03/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										4.3 GROUND SURFACE 0.0
0	1.6	2.7	WOH	WOH	WOH	0	SS-2162	238%		**ALLUVIAL** Dark Brown, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT)
-5	-3.4	7.7	3	4	5	9	SS-2163	26%		-1.7 Light Brown to Dark Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter 6.0
-10	-8.4	12.7	4	5	5	10		20% Sat.		
-15	-13.4	17.7	WOH	WOH	WOH	0	SS-2165	19%		-13.5 Gray and Brown, Very Soft, Sandy SILT (A-4) with Some Clay and Trace Organic Matter 17.8
-20	-18.4	22.7	3	2	3	5		Sat.		-16.7 **UNDIVIDED COASTAL PLAIN** Light Gray and Brown, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Gravel and Shell Fragments 21.0
-25	-23.4	27.7	4	1	WOR	1	SS-2167	20%		
-30	-28.4	32.7	WOH	WOH	4	4		Sat.		-31.3 **COASTAL PLAIN PEEDEE FORMATION** Gray and White, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions 35.6
	-33.4	37.7	10	10	12	22		Sat.		-34.9 Boring Terminated at Elevation -34.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation 39.2

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-45 (12.0 - 14.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. FLY_3800	**STATION** 38+00	**OFFSET** 10 ft LT	**ALIGNMENT** -FLY-	**0 HR.** N/A
COLLAR ELEV. 10.3 ft	**TOTAL DEPTH** 40.6 ft	**NORTHING** 177,730	**EASTING** 2,314,517	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/09/26	**COMP. DATE** 03/09/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
10.3										GROUND SURFACE 0.0
9.5										**ROADWAY EMBANKMENT** 0.8
										Pavement (ASPHALT)
										Sandy GRAVEL (A-1-a)
										Brown, Tan, Black, and White, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter
	5.8	4.5	5	7	9	16		M		
	0.8	9.5	4	6	8	14	SS-2138	14%		
	-4.2	14.5	2	1	1	2		Sat.		
	-9.2	19.5	WOH	2	2	4	SS-2140	21%		
-12.2										**ALLUVIAL** 22.5
										Tan to Dark Brown, Loose, Highly Organic, Silty SAND (MUCK/PEAT)
	-14.2	24.5	2	3	2	5	SS-2141	111%		
-17.7										**UNDIVIDED COASTAL PLAIN** 28.0
										Light Tan, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter
	-19.2	29.5	5	7	9	16	SS-2142	21%		
-22.2										**COASTAL PLAIN SEDIMENTARY ROCK** 32.5
										PEEDEE FORMATION
										(Scotts Hill Member)
										Light Gray to Gray and White, Very Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
	-24.2	34.5	6	3	3	6				
	-29.2	39.5	42	57	43/0.1	100/0.6				
-30.3										40.6

Boring Terminated at Elevation -30.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. FLY_4000	**STATION** 40+00	**OFFSET** 10 ft LT	**ALIGNMENT** -FLY-	**0 HR.** N/A
COLLAR ELEV. 10.6 ft	**TOTAL DEPTH** 45.9 ft	**NORTHING** 177,930	**EASTING** 2,314,502	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/05/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
10.6										GROUND SURFACE 0.0
9.6										**ROADWAY EMBANKMENT** 1.0
										Pavement (ASPHALT)
										Sandy GRAVEL (A-1-a)
										Tan, Very Loose, Coarse SAND (A-1-b) with Trace Gravel
	6.2	4.4	1	1	2	3	SS-2128	18%		
3.6										7.0
										Tan and Gray, Loose, Fine to Coarse SAND (A-3)
	1.2	9.4	3	3	6	9		W		
	-3.8	14.4	2	2	2	4		W		
-6.4										17.0
										ALLUVIAL
										Light Tan, Very Loose, Silty SAND (A-2-4) with Trace Rounded to Sub-Rounded Gravel
	-8.8	19.4	1	1	2	3		Sat.		
-11.4										22.0
										Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
	-13.8	24.4	WOH	WOH	WOH	0	SS-2132	217%		
-16.4										27.0
										UNDIVIDED COASTAL PLAIN
										Gray to Light Gray and White, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Rounded Gravel and Organic Matter
	-18.8	29.4	5	8	12	20	SS-2133	20%		
	-23.8	34.4	4	5	4	9		Sat.		
	-28.8	39.4	WOH	1	9	10		Sat.		
-31.2										41.8
										COASTAL PLAIN
										PEEDEE FORMATION
										Light Gray to Gray and White, Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Trace Cemented Concretions
	-33.8	44.4	15	22	23	45		Sat.		
-35.3										45.9

Boring Terminated at Elevation -35.3 ft in Coastal Plain (Fine to Coarse SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_EB1-B	**STATION** 121+77	**OFFSET** 36 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 177,459	**EASTING** 2,313,656 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 02/19/26	**COMP. DATE** 02/20/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	3.1	0.0								3.1 GROUND SURFACE	0.0
			WOH	1	1	2	SS-468	41%		**ALLUVIAL** Gray and Brown, Very Loose, Silty SAND (A-2) with Little Organic Matter	
0	-0.3	3.4								0.1	3.0
			WOH	WOH	WOH	0	SS-469	564%		Brown to Dark Brown, Very Soft to Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
								864%			
-5	-5.3	8.4									
			WOH	WOH	WOH	0	SS-470	638%			
								651%			
-10	-10.3	13.4									
			3	1	2	3		348% Sat.			
-15	-15.3	18.4								-13.9	17.0
										Gray, Very Soft, Moderately Plastic, Silty CLAY (A-7) with Little Organic Matter	
			WOH	WOH	WOH	0	SS-472	156%			
								190%			
-20	-20.3	23.4									
			1	WOH	WOH	0		Sat.			
-25	-25.3	28.4								-22.4	25.5
			2	2	9	11	SS-473	18%		**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Very Soft to Medium Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	
-30	-30.3	33.4									
			14	19	20	39					
-35	-35.3	38.4									
			4	4	5	9	SS-475	16%			
-40	-40.3	43.4								-37.9	41.0
			24	19	55	74		Sat.		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
										-43.9	47.0
-45	-45.3	48.4									
			60/0.1			60/0.1		Sat.		-45.9	49.0
										-46.9	50.0
										-47.9	51.0
										-48.9	52.0
										-49.9	53.0
-50	-50.3	53.4									
			60	40/0.2		100/0.7		Sat.			
										-53.9	57.0
										-54.1	57.2
										-54.9	58.0
-55	-55.3	58.4									
			60	40/0.4		100/0.9		Sat.		-55.1	58.2
-60	-60.3	63.4									
			21	33	41	74		Sat.			
										-63.1	66.2
										-63.8	66.9
-65	-65.4	68.5									
			7	13	14	27		Sat.			
-70	-70.4	73.5									
			17	12	5	17	SS-481	12%			
-75										-75.0	78.1

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_EB1-B	**STATION** 121+77	**OFFSET** 36 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 177,459	**EASTING** 2,313,656 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 02/19/26	**COMP. DATE** 02/20/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.5	78.6	12	15	22	37		Sat.		**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-80.3	83.4								
			8	8	10	18	SS-483	24%		
-85	-85.4	88.5								
			7	8	15	23		Sat.		
-90	-90.4	93.5								
			10	9	10	19		24%		
-95	-95.5	98.6								
			6	8	11	19		Sat.		
-100	-100.5	103.6								
			6	7	9	16	SS-487	23%		
-105	-105.4	108.5								
			10	8	8	16		Sat.		
-110	-110.5	113.6								
			60/0.1			60/0.1		Sat.		
-115	-115.4	118.5								
			7	8	13	21		Sat.		
-120	-120.3	123.4								
			4	5	16	21	SS-490	25%		
-125	-125.4	128.5								
			4	6	8	14		Sat.		
										-127.9 / 131.0 Gray, Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-130	-130.5	133.6								
			4	5	8	13	SS-492	11%		
-135	-135.5	138.6								
			4	5	6	11		W		-137.0 / 140.1

Boring Terminated at Elevation -137.0 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-50 (5.0 - 7.0)
ST-51 (8.0 - 10.0)
ST-52 (13.0 - 15.0)
ST-53 (18.0 - 20.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C. & Smith, B.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B1-B	**STATION** 124+01	**OFFSET** 42 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 177,329	**EASTING** 2,313,834	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/02/26	**COMP. DATE** 03/03/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	2.8	0.0								2.8 / 0.0 GROUND SURFACE
			WOH	WOH	WOH	0	SS-546	42%		**ALLUVIAL** Gray to Dark Brown, Very Loose, Moderately Organic, Fine to Coarse SAND (A-3)
0	-0.8	3.6								0.3 / 2.5
			WOH	WOH	WOH	0	SS-547	786%		Gray to Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
-5	-5.7	8.5								
			WOH	WOH	WOH	0	SS-548	776%		
-10	-10.7	13.5								
			WOH	WOH	WOH	0	SS-549	240%		
-15	-15.7	18.5								
			WOH	WOH	WOH	0	SS-550	233%		
-20	-20.7	23.5								
			WOH	WOH	WOH	0		Sat.		-22.7 / 25.5 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-25	-25.7	28.5								
			9	11	12	23				
-30	-30.8	33.6								
			26	21	29	50				
-35	-35.7	38.5								
			19	23	62	85				
-40	-40.7	43.5								-38.2 / 41.0 **COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Little to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
			100/0.2			100/0.2		Sat.		
-45	-45.7	48.5								
			86	14/0.0		100/0.5		Sat.		
-50	-50.7	53.5								
			100/0.4			100/0.4		Sat.		
-55	-55.7	58.5								
			44	46	41	87		Sat.		
-60	-60.7	63.5								
			24	33	43	76		Sat.		
-65	-65.7	68.5								
			17	35	43	78	SS-559	22%		
-70	-70.7	73.5								
			8	19	15	34		Sat.		
-75										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C. & Smith, B.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B1-B	**STATION** 124+01	**OFFSET** 42 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 177,329	**EASTING** 2,313,834	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/02/26	**COMP. DATE** 03/03/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.7	78.5	21	31	44	75	SS-561	22%		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Little to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-80.7	83.5	13	19	20	39		Sat.		
-85	-85.7	88.5	5	7	12	19		Sat.		
-90	-90.7	93.5	6	9	12	21	SS-564	28%		
-95	-95.7	98.5	7	25	33	58		Sat.		
-100	-100.7	103.5	60/0.1			60/0.1		Sat.		-100.7 / 103.5; -101.3 / 104.1
-105	-105.7	108.5	30	62	21	83		Sat.		
-110	-110.7	113.5	5	8	20	28		Sat.		
-115	-115.7	118.5	5	7	50	57	SS-568	26%		
-120	-120.7	123.5	4	5	7	12		Sat.		
-125	-125.7	128.5	5	5	9	14		Sat.		-123.8 / 126.6; -124.8 / 127.6
-130	-130.7	133.5	4	5	6	11	SS-571	26%		
-135	-135.7	138.5	4	5	5	10		Sat.		-137.2 / 140.0

Boring Terminated at Elevation -137.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B1-A	**STATION** 124+08	**OFFSET** 33 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.4 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 177,384	**EASTING** 2,313,885	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 02/25/26	**COMP. DATE** 02/26/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	3.4	0.0								3.4 GROUND SURFACE	0.0
			WOH	WOH	WOH	0	SS-522	193%		**ALLUVIAL** Brown to Dark Brown, Very Soft to Very Stiff, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay	
0	-0.1	3.5									
			WOH	WOH	5	5	SS-523	377%			
-5	-5.2	8.6									
			5	12	13	Buried Tree 25		Sat.			
-10	-10.1	13.5									
			WOH	WOH	WOH	0		Sat.			
-15	-15.2	18.6									
			WOH	WOH	WOH	0	SS-526	450%			
-20	-20.0	23.4								-19.6	23.0
			2	2	1	3		Sat.		**UNDIVIDED COASTAL PLAIN** Brown and Gray, Very Loose to Loose, Fine to Coarse SAND (A-3)	
-25	-25.1	28.5									
			2	1	6	7		Sat.		-26.3	29.7
-30	-29.9	33.3								**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
			14	14	7	21					
-35	-35.1	38.5									
			37	37	61	98					
										-37.6	41.0
-40	-40.2	43.6								**COASTAL PLAIN** **PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
			41	59/0.4		100/0.9		Sat.		-39.1 / -39.6	42.5 / 43.0
-45	-45.1	48.5								-41.6 / -42.1 / -43.3 / -43.6 / -44.6	45.0 / 45.5 / 46.7 / 47.0 / 48.0
			100/0.3			100/0.3		Sat.		-45.6	49.0
-50	-50.1	53.5								-47.6 / -47.8 / -48.6 / -48.8	51.0 / 51.2 / 52.0 / 52.2
			60/0.1			60/0.1		Sat.		-49.6 / -50.6	53.0 / 54.0
-55	-55.1	58.5								-53.3 / -53.6	56.7 / 57.0
			73	27/0.1		100/0.6		Sat.		-57.3 / -57.6	60.7 / 61.0
-60	-60.2	63.6								-59.6	63.0
			60/0.1			60/0.1		Sat.		-59.8 / -60.3 / -60.6 / -62.4 / -62.6	63.2 / 63.7 / 64.0 / 65.8 / 66.0
-65	-65.1	68.5								-63.6	67.0
			100/0.2			100/0.2		Sat.		-63.9 / -65.2 / -65.6 / -67.6 / -67.9	67.3 / 68.6 / 69.0 / 71.0 / 71.3
-70	-70.1	73.5								-69.4	72.8
			10	18	18	36	SS-533	23%		-69.6	73.0
-75										-72.6 / -72.8 / -73.6	76.0 / 76.2 / 77.0

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.1	78.5	36	42	58/0.4			Sat.		-74.0 / -75.1 / -76.6 / -76.9 / -78.6 / -79.1 **PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions (77.4 / 78.5 / 80.0 / 80.3 / 82.0 / 82.5)
-80	-80.1	83.5								
			15	15	15	30	SS-535	24%		
-85	-85.2	88.6								-83.6 / -83.7 / -84.6 / -84.7 (87.0 / 87.1 / 88.0 / 88.1)
			7	32	15	47		Sat.		
-90	-90.1	93.5								-88.6 / -88.8 (92.0 / 92.2)
			10	11	18	29		Sat.		
-95	-95.1	98.5								
			9	9	18	27	SS-538	27%		
-100	-100.1	103.5								
			7	7	11	18		Sat.		
-105	-105.2	108.6								
			7	8	12	20		Sat.		
-110	-110.1	113.5								
			4	18	13	31		Sat.		
-115	-115.1	118.5								
			10	20	21	41		Sat.		
-120	-120.2	123.6								
			8	6	11	17	SS-542	26%		
-125	-125.1	128.5								
			4	5	100/0.2	100/0.2		Sat.		-125.3 / -125.6 (128.7 / 129.0)
-130	-130.2	133.6								-128.1 / -129.1 / -129.6 (131.5 / 132.5 / 133.0)
			5	5	8	13		Sat.		Gary to Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-135	-135.2	138.6								
			9	9	11	20	SS-545	33%		-136.7 (140.1)

Boring Terminated at Elevation -136.7 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/2/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B1-A_CORE	**STATION** 124+08	**OFFSET** 23 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.3 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 177,376	**EASTING** 2,313,878 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/30/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
3.3										GROUND SURFACE	0.0
										OVERBURDEN	
-31.8										**COASTAL PLAIN SEDIMENTARY ROCK** / **PEEDEE FORMATION** / (Scotts Hill Member) / SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE / SREC: 66% SRQD: 0% GSI: 50-60	35.1
-37.7										**COASTAL PLAIN** / **PEEDEE FORMATION** / Silty Fine SAND (A-2-4), Interbedded with CALCAREOUS SANDSTONE / SREC: 10% SRQD: 0% GSI: N/A	41.0
-67.7										Boring Terminated at Elevation -67.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	71.0

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B1-A_CORE	**STATION** 124+08	**OFFSET** 23 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.3 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 177,376	**EASTING** 2,313,878 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/30/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 35.9 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-31.8											Begin Coring @ 35.1 ft	
	-31.8 / -32.7	35.1 / 36.0	0.9	0:28/0.9	(0.6) 67%	(0.0) 0%		(3.9) 66%	(0.0) 0%		-31.8 **COASTAL PLAIN SEDIMENTARY ROCK** / **PEEDEE FORMATION** / (Scotts Hill Member) / Gray and Tan, Very Slight to Slightly Weathered, Medium Hard to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60	35.1
-35			5.0	0:46/1.0 0:23/1.0 0:27/1.0 0:22/1.0 0:38/1.0	(3.3) 66%	(0.0) 0%						
	-37.7	41.0									-37.7 **COASTAL PLAIN** / **PEEDEE FORMATION** / Gray, Silty Fine SAND (A-2-4) with Little to Trace Thinly Bedded, Gray, Very Slightly Weathered, Hard, Indurated, CALCAREOUS SANDSTONE	41.0
-40			5.0	0:22/1.0 0:28/1.0 0:19/1.0 0:22/1.0 0:29/1.0	(0.8) 16%	(0.0) 0%		(3.1) 10%	(0.0) 0%			
	-42.7	46.0										
-45			5.0	0:12/1.0 0:16/1.0 0:43/1.0 0:24/1.0 0:35/1.0	(0.8) 16%	(0.0) 0%						
	-47.7	51.0										
-50			5.0	0:19/1.0 0:27/1.0 0:32/1.0 0:37/1.0 0:49/1.0	(0.8) 16%	(0.0) 0%						
	-52.7	56.0										
-55			5.0	0:26/1.0 0:29/1.0 1:32/1.0 0:50/1.0 1:25/1.0	(0.7) 14%	(0.0) 0%						
	-57.7	61.0										
-60			5.0	0:31/1.0 0:46/1.0 0:37/1.0 0:37/1.0 0:50/1.0	(0.0) 0%	(0.0) 0%						
	-62.7	66.0										
-65			5.0	0:38/1.0 0:39/1.0 0:58/1.0 0:36/1.0 0:59/1.0	(0.0) 0%	(0.0) 0%						
	-67.7	71.0									-67.7 Boring Terminated at Elevation -67.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	71.0

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B2-B	**STATION** 126+00	**OFFSET** 41 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 140.9 ft	**NORTHING** 177,204	**EASTING** 2,313,984	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/16/26	**COMP. DATE** 02/17/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.1 GROUND SURFACE	0.0
0										**ALLUVIAL** Brown to Dark Brown, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay	
	-1.3	4.4	WOH	WOH	WOH	0	SS-4139	217%			
-5											
	-6.3	9.4	WOH	WOH	WOH	0		Sat.			
-10											
	-11.3	14.4	WOH	WOH	WOH	0		Sat.			
-15											
	-16.3	19.4	WOH	WOH	WOH	0	SS-4140	419%			
-20										-19.9	23.0
	-21.3	24.4	3	2	3	5		Sat.		**UNDIVIDED COASTAL PLAIN** Gray, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
-25										-24.9	28.0
	-26.3	29.4	15	23	24	47	SS-4142	13%		**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE	
-30											
	-31.3	34.4	30	58	39	97					
-35											
	-36.3	39.4	24	26	36	62					
-40										-38.9	42.0
	-41.3	44.4	34	52	48/0.3	100/0.8		Sat.		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-45											
	-46.3	49.4	90	10/0.1		100/0.6		Sat.			
-50											
	-51.3	54.4	50	50/0.3		100/0.8		Sat.			
-55											
	-56.3	59.4	43	40	34	74		Sat.			
-60											
	-61.3	64.4	30	32	53	85		Sat.			
-65											
	-66.3	69.4	9	31	33	64	SS-4150	23%			
-70											
	-71.3	74.4	1	15	13	28	SS-4151	22%			
-75											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B2-B	**STATION** 126+00	**OFFSET** 41 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 140.9 ft	**NORTHING** 177,204	**EASTING** 2,313,984	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/16/26	**COMP. DATE** 02/17/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-76.3	79.4	19	11	33	44		Sat.		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80										
	-81.3	84.4	14	18	23	41	SS-4153	21%		
-85										
	-86.3	89.4	9	23	48	71		Sat.		
-90										
	-91.3	94.4	9	13	17	30		Sat.		
-95										
	-96.3	99.4	9	12	19	31		Sat.		
-100										
	-101.3	104.4	8	11	11	22	SS-4157	28%		
-105										
	-106.3	109.4	8	11	13	24		Sat.		
-110										
	-111.3	114.4	10	10	12	22		Sat.		
-115										
	-116.3	119.4	26	17	22	39		Sat.		
-120										
	-121.3	124.4	8	10	15	25		Sat.		
-125										
	-126.3	129.4	24	26	19	45		Sat.		
-130										-129.9 133.0
	-131.3	134.4	6	8	13	21		Sat.		Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-135										
	-136.3	139.4	5	6	9	15	SS-4164	26%		-137.8 140.9
										Boring Terminated at Elevation -137.8 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B2-A	**STATION** 126+02	**OFFSET** 29 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 140.8 ft	**NORTHING** 177,255	**EASTING** 2,314,033	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/18/26	**COMP. DATE** 02/19/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.5 GROUND SURFACE	0.0
0										**ALLUVIAL** Brown to Dark Brown, Very Soft to Stiff, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay	
	-0.8	4.3	WOH	WOH	WOH	0	SS-4165	406%			
-5	-5.8	9.3	WOH	WOH	12	Buried Tree 12		Sat.			
-10	-10.8	14.3	WOH	WOH	WOH	0		Sat.			
-15	-15.8	19.3	WOH	WOH	WOH	0	SS-4167	213%			
-20	-20.8	24.3	3	3	5	8	SS-4168	21%		-19.5 **UNDIVIDED COASTAL PLAIN** Gray, Loose, Fine to Coarse SAND (A-3)	23.0
-25	-25.8	29.3	3	9	16	25	SS-4169	16%		-25.8 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	29.3
-30	-30.8	34.3	26	25	24	49					
-35	-35.8	39.3	60	27	39	66					
-40	-40.8	44.3	100/0.5			100/0.5		Sat.		-38.0 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	41.5
-45	-45.8	49.3	100/0.4			100/0.4		Sat.			
-50	-50.8	54.3	45	55/0.4		100/0.9		Sat.			
-55	-55.8	59.3	45	55/0.4		100/0.9		Sat.			
-60	-60.8	64.3	21	31	34	65		Sat.			
-65	-65.8	69.3	22	26	37	63	SS-4176	22%			
-70	-70.8	74.3	10	13	14	27		Sat.			
-75											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B2-A	**STATION** 126+02	**OFFSET** 29 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 140.8 ft	**NORTHING** 177,255	**EASTING** 2,314,033	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/18/26	**COMP. DATE** 02/19/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.8	79.3	27	40	25	65		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-80.8	84.3	42	58/0.2		100/0.7		Sat.		
-85	-85.8	89.3	12	88/0.2		100/0.7		Sat.		
-90	-90.8	94.3	100/0.2			100/0.2		Sat.		
-95	-95.8	99.3	9	20	80/0.1	100/0.6		Sat.		
-100	-100.8	104.3	11	16	18	34	SS-4182	23%		
-105	-105.8	109.3	10	11	17	28		Sat.		
-110	-110.8	114.3	10	90/0.4		100/0.9		Sat.		
-115	-115.8	119.3	8	92/0.4		100/0.9		Sat.		
-120	-120.8	124.3	100/0.3			100/0.3		Sat.		
-125	-125.8	129.3	7	9	15	24	SS-4187	30%		-129.5 Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay 133.0
-130	-130.8	134.3	6	10	15	25	SS-4188	26%		
-135	-135.8	139.3	6	6	6	12		Sat.		-137.3 Boring Terminated at Elevation -137.3 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation 140.8

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B3-B	**STATION** 127+97	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 139.1 ft	**NORTHING** 177,070	**EASTING** 2,314,123	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/09/26	**COMP. DATE** 02/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.6 GROUND SURFACE	0.0
0	-0.4	3.0	WOH	WOH	WOH	0		Sat.		**ALLUVIAL** Dark Brown, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT)	
-5	-5.4	8.0	1	WOR	WOR	0		Sat.			
-10	-10.4	13.0	WOR	WOR	WOR	0	SS-4114	44%			
										-13.4 **UNDIVIDED COASTAL PLAIN** Light Gray, Very Loose, Silty SAND (A-2-4) with Trace Clay and Organic Matter	16.0
-15	-15.4	18.0	1	WOR	1	1		Sat.			
-20	-20.4	23.0	WOH	WOH	3	3	SS-4116	20%			
-25	-25.4	28.0	WOH	WOH	8	8		Sat.		-26.4 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Gray, and White, Very Soft to Medium Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	29.0
-30	-30.4	33.0	WOH	WOH	11	11	SS-4118	23%			
-35	-35.4	38.0	18	21	16	37					
										-38.4 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	41.0
-40	-40.4	43.0	23	29	55	84		Sat.		-39.5 -40.0 -44.1 -44.3	42.1 42.6 46.7 46.9
-45	-45.4	48.0	65	35/0.2		100/0.7		Sat.		-45.0 -45.3 -47.0 -47.1	47.6 47.9 49.6 49.7
-50	-50.0	52.6	70	30/0.2		100/0.7		Sat.		-48.0 -48.2 -48.7 -48.9	50.6 50.8 51.3 51.5
-55	-55.0	57.6	48	52/0.3		100/0.8		Sat.		-56.5 -56.8 -57.4 -57.6	59.1 59.4 60.0 60.2
-60	-60.0	62.6	27	73/0.2		100/0.7		Sat.			
-65	-65.0	67.6	32	37	30	67		Sat.			
-70	-70.0	72.6	7	8	10	18	SS-4126	22%		-69.7 -69.9	72.3 72.5
-75	-75.0	77.6								-75.0	77.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B3-B	**STATION** 127+97	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 139.1 ft	**NORTHING** 177,070	**EASTING** 2,314,123	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 02/09/26	**COMP. DATE** 02/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			31	20	25	45		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-80.0	82.6	17	23	52	75	SS-4128	18%		
-85	-85.0	87.6	8	9	14	23		Sat.		
-90	-90.0	92.6	9	11	13	24	SS-4130	22%		
-95	-95.0	97.6	100/0.2			100/0.2		Sat.		
-100	-100.0	102.6	10	9	15	24		Sat.		
-105	-105.0	107.6	7	8	12	20	SS-4133	23%		
-110	-110.0	112.6	100/0.2			100/0.2		Sat.		
-115	-115.0	117.6	100/0.2			100/0.2		Sat.		
-120	-120.0	122.6	8	10	14	24		Sat.		
-125	-125.0	127.6	11	89/0.3		100/0.8		Sat.		
-130	-130.0	132.6	6	7	10	17	SS-4137	26%		
-135	-135.0	137.6	7	10	14	24		Sat.		

-77.1	79.7
-77.6	80.2
-87.7	90.3
-88.0	90.6
-95.0	97.6
-95.5	98.1
-98.3	100.9
-98.6	101.2
-109.7	112.3
-110.6	113.2
-115.0	117.6
-115.6	118.2
-125.5	128.1
-126.0	128.6
-128.0	130.6
Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay	
-133.0	135.6
Dark Gray, Medium Dense, Calcareous, Silty Fine SAND (A-2-4)	
-136.5	139.1
Boring Terminated at Elevation -136.5 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** B. Smith, M. Akland	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B3-A	**STATION** 128+01	**OFFSET** 30 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.5 ft	**TOTAL DEPTH** 144.0 ft	**NORTHING** 177,113	**EASTING** 2,314,176	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/30/26	**COMP. DATE** 02/05/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.5 GROUND SURFACE	0.0
0	-0.3	2.8	WOH	WOH	WOH	0		Sat.		**ALLUVIAL** Dark Brown, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT)	
-5	-5.3	7.8	WOH	WOH	WOH	0	SS-4087	1028%			
-10	-10.3	12.8	WOH	WOH	WOH	0	SS-4088	924%			
-15	-15.3	17.8	WOH	WOH	2	2		Sat.		-17.8 **UNDIVIDED COASTAL PLAIN** Light Gray to Green-Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter	20.3
-20	-20.3	22.8	4	4	5	9	SS-4089	26%			
-25	-25.3	27.8	WOH	2	12	14		Sat.		-26.3 **COASTAL PLAIN PEEDEE FORMATION** Gray, Very Loose, Calcareous, Silty SAND (A-2-4), Fossiliferous	28.8
-30	-30.3	32.8	9	2	WOR	2		Sat.		-32.5 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	35.0
-35	-35.3	37.8	25	29	29	58					
-40	-40.0	42.5	15	41	59/0.3	100/0.8				-41.5 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	44.0
-45	-45.0	47.5	24	36	47	83		Sat.		-42.2 -42.4 -42.9 -44.8	44.7 44.9 45.4 47.3
-50	-50.0	52.5	100/0.3			100/0.3		Sat.		-48.7 -49.6 -52.2	51.2 52.1 54.7
-55	-55.0	57.5	100/0.4			100/0.4		Sat.		-52.6 -54.9 -55.0 -56.1 -56.4 -57.2 -57.5	55.1 57.4 57.5 58.6 58.9 59.7 60.0
-60	-60.0	62.5	23	32	67	99		Sat.		-62.1 -62.4	64.6 64.9
-65	-65.0	67.5	20	28	35	63		Sat.		-68.1 -68.4	70.6 70.9
-70	-70.0	72.5	9	12	13	25	SS-4098	25%			
-75	-75.0	77.5								-75.0	77.5

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** B. Smith, M. Akland	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B3-A	**STATION** 128+01	**OFFSET** 30 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.5 ft	**TOTAL DEPTH** 144.0 ft	**NORTHING** 177,113	**EASTING** 2,314,176	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/30/26	**COMP. DATE** 02/05/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			28	24	59	83		Sat.		**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-80	-80.0	82.5	12	29	22	51		Sat.		-77.6 80.1 -77.8 80.3 -79.5 82.0 -79.7 82.2
-85	-85.0	87.5	8	11	11	22		Sat.		
-90	-90.0	92.5	9	11	13	24		Sat.		-92.6 95.1 -92.9 95.4
-95	-95.0	97.5	9	18	23	41		Sat.		-97.1 99.6 -97.4 99.9 -98.2 100.7 -98.5 101.0
-100	-100.0	102.5	8	14	15	29	SS-4104	28%		
-105	-105.0	107.5	8	11	89/0.3	100/0.8		Sat.		-106.5 109.0 -107.0 109.5
-110	-110.0	112.5	7	8	12	20		Sat.		
-115	-115.0	117.5	7	8	17	25		Sat.		-114.9 117.4 -115.0 117.5
-120	-120.0	122.5	7	8	12	20	SS-4108	28%		-118.7 121.2 -119.2 121.7
-125	-125.0	127.5	7	8	10	18		Sat.		-124.4 126.9 -124.8 127.3
-130	-130.0	132.5	6	6	12	18		Sat.		-128.0 130.5 Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Some Clay
-135	-135.0	137.5	6	6	9	15	SS-4111	26%		
-140	-140.0	142.5	6	8	11	19		W		-141.5 144.0 Boring Terminated at Elevation -141.5 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation Notes: - Driller lost 40 feet of Casing in the Boring.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/2/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B4-A	**STATION** 129+91	**OFFSET** 33 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.9 ft	**TOTAL DEPTH** 138.8 ft	**NORTHING** 176,968	**EASTING** 2,314,303 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 01/12/26	**COMP. DATE** 01/15/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.9 GROUND SURFACE	0.0
	1.4	2.5								**ALLUVIAL** Gray, Loose, Coarse SAND (A-1-b) with Trace Organic Matter	
0			3	3	3	6	SS-4031	26%			
	-3.6	7.5								-1.1 Dark Brown to Black, Very Loose to Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt and Clay	5.0
-5			5	2	2	4		Sat.			
	-8.6	12.5									
-10			3	2	2	4		Sat.			
	-13.6	17.5									
-15			WOH	WOH	WOH	0		Sat.		-16.1 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Medium Dense, Fine SAND (A-3)	20.0
	-18.6	22.5									
-20			8	10	13	23		Sat.			
	-23.6	27.5									
-25			1	2	1	3		Sat.		-26.1 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE	30.0
	-28.6	32.5									
-30			17	19	24	43	SS-4035	15%			
	-33.7	37.6									
-35			25	33	29	62		Sat.			
	-38.7	42.6								-38.7 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	42.6
-40			45	55/0.4		100/0.9		Sat.			
	-43.7	47.6									
-45			100/0.5			100/0.5		Sat.		-47.1	51.0
	-48.7	52.6								-47.6	51.5
-50			97	3/0.1		100/0.6		Sat.			
	-53.7	57.6									
-55			42	58/0.4		100/0.9		Sat.			
	-58.7	62.6									
-60			40	60/0.5		100/1.0		Sat.			
	-63.7	67.6									
-65			30	41	53	94		Sat.			
	-68.7	72.6									
-70			15	27	37	64	SS-4043	24%			
	-73.7	77.6									
-75			28	27	26	53		Sat.		-75.1	79.0

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B4-A	**STATION** 129+91	**OFFSET** 33 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.9 ft	**TOTAL DEPTH** 138.8 ft	**NORTHING** 176,968	**EASTING** 2,314,303 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 01/12/26	**COMP. DATE** 01/15/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
-80	-78.7	82.6	38	22	26	48		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-85	-83.7	87.6	21	33	32	65		Sat.		
-90	-88.7	92.6	10	11	20	31		Sat.		
-95	-93.7	97.6	9	10	15	25	SS-4048	26%		
-100	-98.7	102.6	7	11	12	23		Sat.		
-105	-103.7	107.6	11	12	10	22		Sat.		
-110	-108.7	112.6	9	10	11	21		Sat.		
-115	-113.7	117.6	16	10	12	22		Sat.		
-120	-118.7	122.6	37	20	17	37		Sat.		
-125	-123.7	127.6	7	7	8	15	SS-4054	26%		
-130	-128.7	132.6	11	14	15	29		Sat.		
	-133.7	137.6	5	5	95/0.2	100/0.7		Sat.		-134.9 Boring Terminated at Elevation -134.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

-77.6 / -78.1 — 81.5 / 82.0
-83.1 / -83.6 — 87.0 / 87.5
-85.6 / -86.1 — 89.5 / 90.0
-90.1 / -91.1 — 94.0 / 95.0
-96.6 / -97.1 — 100.5 / 101.0
-105.6 / -106.1 — 109.5 / 110.0
-111.1 / -111.6 — 115.0 / 115.5
-113.1 / -113.6 — 117.0 / 117.5
-121.1 / -123.1 — 125.0 / 127.0

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B4-A_CORE	**STATION** 129+91	**OFFSET** 1 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.0 ft	**TOTAL DEPTH** 65.2 ft	**NORTHING** 176,948	**EASTING** 2,314,276 / **24 HR.** 0.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/31/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.0 GROUND SURFACE	0.0
										OVERBURDEN	
0											
-5											
-10											
-15											
-20											
-25											
-30							RS-1 RS-2			-27.1 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 58% SRQD: 15% GSI: 50-60	30.1
-35											
-40											
-45										-42.2 **COASTAL PLAIN** **PEEDEE FORMATION** Silty Fine SAND (A-2-4), Interbedded with CALCAREOUS SANDSTONE SREC: 2% SRQD: 0% GSI: N/A	45.2
-50											
-55											
-60										-62.2 Boring Terminated at Elevation -62.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	65.2

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B4-A_CORE	**STATION** 129+91	**OFFSET** 1 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.0 ft	**TOTAL DEPTH** 65.2 ft	**NORTHING** 176,948	**EASTING** 2,314,276 / **24 HR.** 0.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/31/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 35.1 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-27.1											Begin Coring @ 30.1 ft	
	-27.1	30.1	5.1	0:26/1.0 0:29/1.0 0:29/1.0 0:28/1.0 0:24/1.1	(4.2) 82%	(1.7) 33%		(8.7) 58%	(2.2) 15%		-27.1 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray and Tan, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60	30.1
-30												
	-32.2	35.2					RS-1 RS-2					
			5.0	0:29/1.0 0:29/1.0 0:27/1.0 0:14/1.0 0:29/1.0	(2.6) 52%	(0.0) 0%						
-35												
	-37.2	40.2										
			5.0	0:16/1.0 0:21/1.0 0:12/1.0 0:14/1.0 0:45/1.0	(1.9) 38%	(0.5) 10%						
-40												
	-42.2	45.2									-42.2 **COASTAL PLAIN** **PEEDEE FORMATION** Gray, Silty Fine SAND (A-2-4) with Trace Thinly Bedded, Gray, Very Slightly Weathered, Hard, Indurated, CALCAREOUS SANDSTONE	45.2
			5.0	0:05/1.0 0:08/1.0 0:10/1.0 0:09/1.0 0:15/1.0	(0.0) 0%	(0.0) 0%		(0.4) 2%	(0.0) 0%			
-45												
	-47.2	50.2										
			5.0	0:08/1.0 0:19/1.0 0:22/1.0 0:12/1.0 0:12/1.0	(0.4) 8%	(0.0) 0%						
-50												
	-52.2	55.2										
			5.0	0:06/1.0 0:08/1.0 0:07/1.0 0:05/1.0 0:06/1.0	(0.0) 0%	(0.0) 0%						
-55												
	-57.2	60.2										
			5.0	0:09/1.0 0:14/1.0 0:11/1.0 0:06/1.0 0:16/1.0	(0.0) 0%	(0.0) 0%						
-60												
	-62.2	65.2									-62.2 Boring Terminated at Elevation -62.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	65.2

NCDOT CORE SINGLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B4-B	**STATION** 130+02	**OFFSET** 27 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 5.1 ft	**TOTAL DEPTH** 139.9 ft	**NORTHING** 176,923	**EASTING** 2,314,262	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/27/26	**COMP. DATE** 01/29/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
5										5.1 GROUND SURFACE	0.0
	1.7	3.4	3	3	3	6		W		**ALLUVIAL** Gray, Loose, Coarse SAND (A-1-b) with Trace Organic Matter	
0										-0.9	6.0
	-3.3	8.4	2	1	1	2		Sat.		Brown, Gray, and Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt and Clay	
-5											
	-8.3	13.4	WOH	WOH	WOH	0		Sat.			
-10											
	-13.3	18.4	2	1	1	2		Sat.			
-15										-15.9	21.0
	-18.3	23.4	WOH	WOH	3	3		Sat.		**UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Loose, Fine SAND (A-3)	
-20											
	-23.3	28.4	2	2	3	5		Sat.			
-25										-26.9	32.0
	-28.3	33.4	46	41	22	63	SS-4064	16%		**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard to Hard, SANDY LIMESTONE (A-1-a/A-2-4), Interbedded with CALCAREOUS SANDSTONE	
-30											
	-33.3	38.4	29	37	42	79	SS-4065	25%			
-35											
	-38.3	43.4	68	32/0.4		100/0.9					
-40										-39.9	45.0
	-43.3	48.4	43	57/0.4		100/0.9		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-45											
	-48.3	53.4	100/0.3			100/0.3		Sat.			
-50											
	-53.3	58.4	64	36/0.2		100/0.7		Sat.			
-55											
	-58.3	63.4	100/0.5			100/0.5		Sat.			
-60											
	-63.3	68.4	23	37	59	96		Sat.			
-65											
	-68.3	73.4	25	43	57/0.3	100/0.8		Sat.			
-70											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B4-B	**STATION** 130+02	**OFFSET** 27 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 5.1 ft	**TOTAL DEPTH** 139.9 ft	**NORTHING** 176,923	**EASTING** 2,314,262	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/27/26	**COMP. DATE** 01/29/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
-75	-73.3	78.4	11	11	15	26	SS-4073	26%		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-78.3	83.4	19	38	56	94		Sat.		
-85	-83.3	88.4	16	21	47	68	SS-4075	23%		
-90	-88.3	93.4	10	9	11	20		Sat.		
-95	-93.3	98.4	28	21	22	43	SS-4077	21%		
-100	-98.3	103.4	10	10	17	27		Sat.		
-105	-103.3	108.4	7	9	15	24		Sat.		
-110	-108.3	113.4	7	9	13	22		Sat.		
-115	-113.3	118.4	7	7	18	25	SS-4081	27%		
-120	-118.3	123.4	6	8	65	73		Sat.		
-125	-123.3	128.4	8	34	24	58	SS-4083	24%		
-130	-128.3	133.4	100/0.4			100/0.4		Sat.		
	-133.3	138.4	5	7	10	17		Sat.		-134.8 / 139.9 Boring Terminated at Elevation -134.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B5-A	**STATION** 131+44	**OFFSET** 57 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 32.5 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 176,857	**EASTING** 2,314,415 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/19/26	**COMP. DATE** 05/19/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
35										
	32.2	0.3	20	16	12	28		D		GROUND SURFACE (32.5 / 0.0); **ROADWAY EMBANKMENT** Pavement (ASPHALT) (32.2 / 0.3); Sandy GRAVEL (A-1-a) (31.3 / 1.2); Tan-Brown and Gray, Very Loose to Very Dense, Fine to Coarse SAND (A-3) with Trace Rounded Gravel
30	27.7	4.8	6	6	7	13	SS-7088	15%		
25	24.5	8.0	1	1	2	3		W		
20	19.5	13.0	13	22	29	51		W		
15	14.5	18.0	11	17	20	37		W		
10	9.5	23.0	8	11	15	26	SS-7092	21%		
5	4.5	28.0	8	9	10	19		W		
0	-0.5	33.0	6	6	7	13		Sat.		
-5	-5.5	38.0	3	2	3	5		Sat.		
-10	-10.5	43.0	1	2	1	3	SS-7096	40%		-8.5 (41.0): **ALLUVIAL** Dark Brown, Very Loose, Moderately Organic, Silty SAND (A-2-4) with Little to Trace Clay and Trace Gravel
-15	-15.5	48.0	WOH	1	1	2	SS-7097	45%		
-20	-20.5	53.0	15	20	21	41		Sat.		-18.5 (51.0): **UNDIVIDED COASTAL PLAIN** Light Gray, Medium Dense to Dense, Fine to Coarse SAND (A-3)
-25	-25.5	58.0	5	7	9	16		Sat.		
-30	-30.5	63.0	38	62/0.3		100/0.8				-29.0 (61.5): **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-35	-35.5	68.0	50	50/0.5		100/1.0				
-40	-40.5	73.0	78	22/0.0		100/0.5		Sat.		-38.5 (71.0): **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Thinly Bedded, Hard, Sandstone Ledges
-45										-42.5 (75.0); -42.9 (75.4); -43.5 (76.0); -45.0 (77.5)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B5-A	**STATION** 131+44	**OFFSET** 57 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 32.5 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 176,857	**EASTING** 2,314,415 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/19/26	**COMP. DATE** 05/19/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-45						Match Line				
	-45.5	78.0	100/0.4			100/0.4		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions (-48.5 / 81.0; -49.5 / 82.0; -50.0 / 82.5; -50.5 / 83.0; -51.5 / 84.0; -51.8 / 84.3; -52.5 / 85.0; -53.5 / 86.0; -54.5 / 87.0; -54.7 / 87.2; -58.3 / 90.8; -58.5 / 91.0; -59.5 / 92.0; -59.7 / 92.2)
-50	-50.5	83.0	100/0.4			100/0.4		Sat.		
-55	-55.5	88.0	50	50/0.3		100/0.8		Sat.		
-60	-60.5	93.0	62	38/0.3		100/0.8		Sat.		
-65	-65.5	98.0	40	60/0.5		100/1.0		Sat.		
-70	-70.5	103.0	12	18	47	65		Sat.		
-75	-75.5	108.0	14	33	26	59	SS-7108	20%		
-80	-80.5	113.0	40	36	26	62		Sat.		
-85	-85.5	118.0	22	27	23	50		Sat.		
-90	-90.5	123.0	7	6	10	16		Sat.		
-95	-95.5	128.0	6	10	10	20		Sat.		
-100	-100.5	133.0	5	11	15	26	SS-7113	25%		
-105	-105.5	138.0	4	8	9	17		Sat.		-107.0 (139.5): Boring Terminated at Elevation -107.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B5-B	**STATION** 131+97	**OFFSET** 34 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 10.4 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 176,762	**EASTING** 2,314,369	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 05/18/26	**COMP. DATE** 05/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
10										10.4 GROUND SURFACE	0.0
										10.1 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.3
										9.2 Sandy GRAVEL (A-1-a) Tan-Brown and Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	1.2
5	5.6	4.8	8	10	12	22		M			
0	2.4	8.0	4	7	9	16		W			
-5	-2.6	13.0	4	3	3	6		Sat.			
-10	-7.6	18.0	2	1	2	3		Sat.			
-15	-12.6	23.0	2	2	2	4		Sat.		-15.6 **ALLUVIAL** Gray, Very Loose, Silty SAND (A-2-4) with Some Clay	26.0
-20	-17.6	28.0	WOH	WOH	WOH	0	SS-7066	28%		-20.6 **UNDIVIDED COASTAL PLAIN** Light Gray, Medium Dense, Fine to Coarse SAND (A-3)	31.0
-25	-22.6	33.0	8	6	5	11		Sat.		-26.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	37.0
-30	-27.6	38.0	11	11	8	19					
-35	-32.6	43.0	23	25	21	46					
-40	-37.6	48.0	28	32	68/0.4	100/0.9				-39.6	50.0
										-40.6 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	51.0
-45	-42.6	53.0	60/0.1			60/0.1		Sat.		-42.0 / -42.6 / -43.9 / -44.8 / -45.6	52.4 / 53.0 / 54.3 / 55.2 / 56.0
-50	-47.6	58.0	61	39/0.3		100/0.8		Sat.		-50.1	60.5
										-50.6 / -50.9 / -52.1	61.0 / 61.3 / 62.5
-55	-52.6	63.0	75	25/0.1		100/0.6		Sat.			
-60	-57.6	68.0	31	69/0.4		100/0.9		Sat.			
-65	-62.6	73.0	60/0.0			60/0.0		Sat.		-65.0	75.4

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B5-B	**STATION** 131+97	**OFFSET** 34 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 10.4 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 176,762	**EASTING** 2,314,369	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 05/18/26	**COMP. DATE** 05/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
-70	-67.6	78.0	13	16	19	35		Sat.		**PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-75	-72.6	83.0	12	14	10	24		Sat.		
-80	-77.6	88.0	6	14	10	24		Sat.		
-85	-82.6	93.0	13	32	19	51		Sat.		
-90	-87.6	98.0	10	19	19	38	SS-7078	21%		
-95	-92.6	103.0	5	6	7	13		Sat.		
-100	-97.6	108.0	7	8	11	19		Sat.		
-105	-102.6	113.0	8	11	89/0.2	100/0.7		Sat.		
-110	-107.6	118.0	8	8	8	16	SS-7082	26%		
-115	-112.6	123.0	5	5	9	14		Sat.		
-120	-117.6	128.0	9	5	8	13		Sat.		
-125	-122.6	133.0	50	50/0.1		100/0.6		Sat.		-125.6 136.0 Dark Gray, Stiff, Calcareous, Fine Sandy SILT (A-4) with Some Clay
	-127.6	138.0	5	6	7	13	SS-7086	24%		-129.1 139.5 Boring Terminated at Elevation -129.1 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B6-A	**STATION** 133+93	**OFFSET** 22 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 10.5 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,629	**EASTING** 2,314,522 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/13/26	**COMP. DATE** 05/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
10	10.5	0.0	33	15	12	27		D		GROUND SURFACE	0.0
										10.3 / 9.3 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.2 / 1.2
										Sandy GRAVEL (A-1-a) Tan-Brown and Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	
5	5.7	4.8	6	8	9	17		M			
0	2.4	8.1	5	5	7	12		Sat.			
-5	-2.6	13.1	4	3	3	6		Sat.			
-10	-7.6	18.1	2	1	2	3		Sat.		-9.0 **ALLUVIAL** Gray to Dark Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) Interbedded with Clay Seams, Trace Organic Matter	19.5
-15	-12.6	23.1	1	2	1	3	SS-7041	30%			
-20	-17.6	28.1	2	4	7	11		Sat.		-20.5 **UNDIVIDED COASTAL PLAIN** Light Gray and Tan, Medium Dense, Fine to Coarse SAND (A-3)	31.0
-25	-22.6	33.1	10	16	12	28		Sat.		-26.5 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	37.0
-30	-27.6	38.1	16	24	24	48					
-35	-32.6	43.1	33	38	20	58					
-40	-37.6	48.1	51	49/0.5		100/1.0				-40.5 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Loose to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	51.0
-45	-42.6	53.1	38	62/0.5		100/1.0		Sat.			
-50	-47.6	58.1	100/0.4			100/0.4		Sat.		-46.2 / -46.6 / -50.5	56.7 / 57.1 / 61.0
-55	-52.6	63.1	100/0.3			100/0.3		Sat.		-52.5 / -55.4 / -56.3	63.0 / 65.9 / 66.8
-60	-57.6	68.1	73	27/0.1		100/0.6		Sat.		-60.5 / -60.7	71.0 / 71.2
-65	-62.6	73.1	55	45/0.3		100/0.8		Sat.		-64.6	75.1

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B6-A	**STATION** 133+93	**OFFSET** 22 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 10.5 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,629	**EASTING** 2,314,522 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/13/26	**COMP. DATE** 05/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
-70	-67.6	78.1	26	24	40	64		Sat.		**PEEDEE FORMATION** Light Gray to Gray, Loose to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-75	-72.6	83.1	23	32	30	62		Sat.		
-80	-77.6	88.1	14	10	14	24	SS-7053	25%		
-85	-82.6	93.1	32	60	27	87		Sat.		
-90	-87.6	98.1	10	12	22	34		Sat.		
-95	-92.6	103.1	8	27	15	42		Sat.		-96.0 / -96.7
-100	-97.6	108.1	100/0.4			100/0.4		Sat.		-100.5 / -100.9
-105	-102.6	113.1	6	60/0.1		60/0.1		Sat.		
-110	-107.6	118.1	9	8	100/0.3	100/0.3		Sat.		
-115	-112.6	123.1	60/0.1			60/0.1		Sat.		
-120	-117.6	128.1	7	4	4	8		Sat.		
-125	-122.6	133.1	5	6	6	12	SS-7061	26%		
	-127.6	138.1	6	6	7	13		Sat.		-129.1

ELEV (ft)	DEPTH (ft)
-96.0	106.5
-96.7	107.2
-100.5	111.0
-100.9	111.4
-129.1	139.6

Boring Terminated at Elevation -129.1 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B6-B	**STATION** 134+01	**OFFSET** 79 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 12.0 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 176,567	**EASTING** 2,314,442	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 04/20/26	**COMP. DATE** 04/21/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
12.0										GROUND SURFACE	0.0
11.3										**ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.7
10	8.5	3.5	10	7	8	15		M		Sandy GRAVEL (A-1-a) Tan, Medium Dense, Coarse SAND (A-1-b)	
5	3.5	8.5	5	6	6	12	SS-2363	16%			
0	-1.5	13.5	6	8	10	18	SS-2364	20%		-1.0 Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter	13.0
-5	-6.5	18.5	2	2	2	4		W			
-10	-11.5	23.5	2	2	3	5	SS-2366	26%		-13.0 **ALLUVIAL** Dark Gray and Black, Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay	25.0
-15	-16.5	28.5	WOH	WOH	3	3	SS-2367	156%			
-20	-21.5	33.5	2	1	1	2		Sat.			
-25	-26.5	38.5	3	4	10	14	SS-2368	23%		-25.0 **COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions, Fossiliferous	37.0
-30	-31.5	43.5	34	66/0.2		100/0.7				-29.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	41.0
-35	-36.5	48.5	23	35	36	71					
-40	-41.5	53.5	50	50/0.3		100/0.8		Sat.		-39.0 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	51.0
-45	-46.5	58.5	100/0.5			100/0.5		Sat.			
-50	-51.5	63.5	54	46/0.2		100/0.7		Sat.			
-55	-56.5	68.5	34	66/0.4		100/0.9		Sat.			
-60	-61.5	73.5	100/0.5			100/0.5		Sat.			
-65											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B6-B	**STATION** 134+01	**OFFSET** 79 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 12.0 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 176,567	**EASTING** 2,314,442	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 04/20/26	**COMP. DATE** 04/21/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
-66.5		78.5	28	51	40/0.3	100/0.8		Sat.		
-70	-71.5	83.5	43	40	37	77		W		-70.0 **PEEDEE FORMATION** Gray to Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions — 82.0
-75	-76.5	88.5	16	28	31	59	SS-2378	22%		
-80	-81.5	93.5	60/0.1			60/0.1		W		
-85	-86.5	98.5	12	18	42	60		W		
-90	-91.5	103.5	12	13	20	33	SS-2380	26%		-89.0 Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions — 101.0
-95	-96.5	108.5	13	14	86/0.3	100/0.8		Sat.		
-100	-101.5	113.5	9	11	14	25		Sat.		
-105	-106.5	118.5	10	11	13	24	SS-2383	25%		
-110	-111.5	123.5	10	90/0.2		100/0.2		Sat.		
-115	-116.5	128.5	10	10	14	24		W		-115.0 Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT(A-4) with Little Clay — 127.0
-120	-121.5	133.5	7	8	12	20		W		
-125	-126.5	138.5	37	17	12	29	SS-2387	22%		-128.0 Boring Terminated at Elevation -128.0 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation — 140.0

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M./Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B7-A	**STATION** 135+79	**OFFSET** 74 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 10.7 ft	**TOTAL DEPTH** 94.5 ft	**NORTHING** 176,506	**EASTING** 2,314,667 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/28/26	**COMP. DATE** 04/30/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
10										10.7 GROUND SURFACE	0.0
										9.5 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	1.2
	7.7	3.0	7	10	12	22		M		Gray and Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
5											
	2.7	8.0	4	6	9	15	SS-2431	19%			
0											
	-2.3	13.0	3	3	3	6		W			
-5											
	-7.3	18.0	3	3	2	5		Sat.			
-10										-10.3 **ALLUVIAL** Black and Gray, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay	21.0
	-12.3	23.0	WOH	WOH	WOH	0		Sat.			
-15										-15.3 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	26.0
	-17.3	28.0	6	9	11	20		Sat.			
-20											
	-22.3	33.0	4	2	0	2		Sat.			
-25										-24.3 **COASTAL PLAIN PEEDEE FORMATION** Gray, Very Dense, Calcareous, Silty SAND (A-2-4) with Trace Cemented Concretions	35.0
	-27.3	38.0	17	26	30	56	SS-2432	15%			
-30										-30.3 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	41.0
	-32.3	43.0	100/0.3			100/0.3					
-35											
	-37.3	48.0	38	58	29	87					
-40										-40.3 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	51.0
	-42.3	53.0	100/0.3			100/0.3		Sat.			
-45											
	-47.3	58.0	60/0.1			60/0.1		Sat.			
-50											
	-52.3	63.0	60/0.1			60/0.1		Sat.			
-55											
	-57.3	68.0	48	52/0.4		100/0.9		Sat.			
-60											
	-62.3	73.0	24	52	48/0.3	100/0.8		Sat.			
-65											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M./Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B7-A	**STATION** 135+79	**OFFSET** 74 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 10.7 ft	**TOTAL DEPTH** 94.5 ft	**NORTHING** 176,506	**EASTING** 2,314,667 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/28/26	**COMP. DATE** 04/30/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
-70	-67.3	78.0	100/0.3			100/0.3		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-75	-72.3	83.0	16	20	23	43		Sat.		
-80	-77.3	88.0	18	18	16	34	SS-2440	24%		
	-82.3	93.0	13	8	48	56		Sat.		-83.8 94.5

Boring Terminated at Elevation -83.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

- 50 foot of BWJ rod was dropped down the boring and the driller was unable to retrieve it. Boring terminated early at 94.5 feet as a result.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B7-B	**STATION** 136+19	**OFFSET** 8 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 13.7 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 176,425	**EASTING** 2,314,625 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/22/26	**COMP. DATE** 04/23/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
15										
										13.7 / 0.0 — GROUND SURFACE
										13.3 / 0.4 — **ROADWAY EMBANKMENT** Pavement (ASPHALT)
10	10.5	3.2	6	6	7	13	SS-2388	16%		Tan, Medium Dense, Fine to Coarse SAND (A-1-b)
5	5.5	8.2	5	6	8	14		M		
										0.7 / 13.0 — Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
0	0.5	13.2	8	7	7	14		W		
-5	-4.5	18.2	4	3	2	5		Sat.		
-10	-9.5	23.2	4	4	6	10		Sat.		
										-12.3 / 26.0 — **ALLUVIAL** Black and Gray, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay
-15	-14.5	28.2	WOH	WOH	WOH	0	SS-2389	175%		
										-18.3 / 32.0 — **UNDIVIDED COASTAL PLAIN** Gray, Very Soft, Sandy SILT (A-4) with Some Clay
-20	-19.5	33.2	WOH	WOH	WOH	0	SS-2390	30%		
										-23.3 / 37.0 — Gray, Medium Dense, Fine to Coarse SAND (A-3)
-25	-24.5	38.2	3	4	7	11	SS-2391	23%		
										-28.3 / 42.0 — **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-30	-29.5	43.2	23	27	22	49				
-35	-34.5	48.2	38	62/0.4		100/0.9				
-40	-39.5	53.2	57	43/0.3		100/0.8				
										-42.3 / 56.0 — **COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-45	-44.5	58.2	100/0.3			100/0.3		Sat.		
-50	-49.5	63.2	77	23/0.1		100/0.6		Sat.		
-55	-54.5	68.2	66	34/0.1		100/0.6		Sat.		
-60	-59.5	73.2	56	44/0.2		100/0.2		Sat.		
-65	-64.5	78.2								

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B7-B	**STATION** 136+19	**OFFSET** 8 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 13.7 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 176,425	**EASTING** 2,314,625 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/22/26	**COMP. DATE** 04/23/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
			23	43	40	83	SS-2398	15%		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-70	-69.5	83.2	33	32	35	67		Sat.		
-75	-74.5	88.2	23	43	57/0.1	100/0.6		Sat.		
-80	-79.5	93.2	14	15	18	33		Sat.		
-85	-84.5	98.2	23	57	43/0.2	100/0.7		Sat.		
-90	-89.5	103.2	14	17	25	42		Sat.		
-95	-94.5	108.2	17	83/0.3		100/0.8		Sat.		
-100	-99.5	113.2	10	11	20	31	SS-2405	23%		
-105	-104.5	118.2	10	12	14	26		Sat.		
-110	-109.5	123.2	12	88/0.4		100/0.9		Sat.		
-115	-114.5	128.2	60/0.1			60/0.1		Sat.		
-120	-119.5	133.2	8	11	89/0.2	100/0.7		Sat.		
										-123.3 / 137.0 — Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4)
-125	-124.5	138.2	7	7	12	19	SS-2409	25%		-126.0 / 139.7 — Boring Terminated at Elevation -126.0 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

- 50 foot of BWJ rod was dropped down the boring and the driller was unable to retrieve it. Boring terminated early at 94.5 feet as a result.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B8-A	**STATION** 137+97	**OFFSET** 45 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 16.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 176,320	**EASTING** 2,314,777	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 04/23/26	**COMP. DATE** 04/28/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
										16.3 GROUND SURFACE	0.0
15										15.4 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.9
	13.1	3.2	6	7	5	12		M		Sandy GRAVEL (A-1-a) Tan, Loose to Medium Dense, Coarse SAND (A-1-b)	
10											
	8.1	8.2	4	5	6	11	SS-2411	18%			
5											
	3.1	13.2	7	4	4	8		W			
0											
	-1.9	18.2	5	4	4	8		Sat.		-3.7 Gray, Very Loose to Loose, Fine to Coarse SAND (A-3)	20.0
-5											
	-6.9	23.2	WOH	1	1	2		Sat.			
-10											
	-11.9	28.2	4	4	3	7		Sat.		-14.7 **ALLUVIAL** Brown and Gray, Stiff, Moderately Organic, Sandy CLAY (A-6)	31.0
-15											
	-16.9	33.2	1	2	12	14	SS-2412	85%			
-20										-19.7 **UNDIVIDED COASTAL PLAIN** Light Brown to Light Gray, Medium Dense, Fine to Coarse SAND (A-3)	36.0
	-21.9	38.2	11	14	6	20		Sat.			
-25										-24.7 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Dense, Calcareous, Silty SAND (A-2-4), Fossiliferous	41.0
	-26.9	43.2	10	15	17	32	SS-2413	22%			
-30										-29.7 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	46.0
	-31.9	48.2	19	25	25	50					
-35											
	-36.9	53.2	28	22	44	66					
-40										-40.7 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	57.0
	-41.9	58.2	38	48	52/0.3	100/0.8		Sat.			
-45											
	-46.9	63.2	100/0.2			100/0.2		Sat.			
-50											
	-51.9	68.2	60/0.0			60/0.0		Sat.			
-55											
	-56.9	73.2	100/0.2			100/0.2		Sat.			
-60											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B8-A	**STATION** 137+97	**OFFSET** 45 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 16.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 176,320	**EASTING** 2,314,777	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 04/23/26	**COMP. DATE** 04/28/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-60						Match Line				
	-61.9	78.2	100/0.2			100/0.2		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-65										
	-66.9	83.2	37	54	46/0.4	100/0.9		Sat.		
-70										
	-71.9	88.2	28	72/0.4		100/0.9		Sat.		
-75										
	-76.9	93.2	20	42	48	90	SS-2420	23%		
-80										
	-81.9	98.2	22	24	32	56	SS-2421	22%		
-85										
	-86.9	103.2	46	24	73	97		Sat.		
-90										
	-91.9	108.2	23	34	36	70		Sat.		
-95										
	-96.9	113.2	18	27	26	53		Sat.		
-100										
	-101.9	118.2	10	10	15	25	SS-2425	29%		
-105										
	-106.9	123.2	10	10	12	22		Sat.		
-110										
	-111.9	128.2	100/0.5			100/0.5		Sat.		
-115										
	-116.9	133.2	8	37	40	77		Sat.		
-120										
	-121.9	138.2	7	7	9	16	SS-2429	27%		-123.4 Boring Terminated at Elevation -123.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation 139.7

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B8-B_CORE	**STATION** 138+02	**OFFSET** 41 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 50.3 ft	**NORTHING** 176,260	**EASTING** 2,314,715 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/30/26	**COMP. DATE** 04/30/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.9 GROUND SURFACE	0.0
										OVERBURDEN	
0											
-5											
-10											
-15											
-20											
-25											
-30										-27.6 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 44% SRQD: 0% GSI: 40-50	30.5
-35							RS-3				
-40											
-45										-42.4 **COASTAL PLAIN** **PEEDEE FORMATION** Silty Fine SAND (A-2-4), Interbedded with CALCAREOUS SANDSTONE SREC: 14% SRQD: 0% GSI: N/A	45.3
										-47.4 Boring Terminated at Elevation -47.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	50.3

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B8-B_CORE	**STATION** 138+02	**OFFSET** 41 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 50.3 ft	**NORTHING** 176,260	**EASTING** 2,314,715 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/30/26	**COMP. DATE** 04/30/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 19.8 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-27.6											Begin Coring @ 30.5 ft	
-30	-27.6	30.5	4.8	0:05/1.0 0:15/1.0 0:16/1.0 0:27/1.0 0:11/0.8	(2.0) 42%	(0.0) 0%		(6.5) 44%	(0.0) 0%		-27.6 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 40-50	30.5
-35	-32.4	35.3	5.0	0:16/1.0 0:17/1.0 0:10/1.0 0:29/1.0 0:14/1.0	(3.0) 60%	(0.0) 0%	RS-3					
-40	-37.4	40.3	5.0	0:14/1.0 0:22/1.0 0:17/1.0 0:11/1.0 0:14/1.0	(1.5) 30%	(0.0) 0%						
-45	-42.4	45.3	5.0	0:15/1.0 0:13/1.0 0:32/1.0 0:19/1.0 0:11/1.0	(0.7) 14%	(0.0) 0%		(0.7) 14%	(0.0) 0%		-42.4 **COASTAL PLAIN** **PEEDEE FORMATION** Gray, Silty Fine SAND (A-2-4) with Little Very Thinly to Thinly Bedded, Gray, Very Slightly Weathered, Hard, Indurated, CALCAREOUS SANDSTONE	45.3
	-47.4	50.3									-47.4 Boring Terminated at Elevation -47.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	50.3

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B8-B	**STATION** 138+06	**OFFSET** 40 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 176,258	**EASTING** 2,314,718 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/13/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	2.9	0.0	WOH	WOH	WOH	0		Sat.		2.9 / 0.0 GROUND SURFACE
0										**ALLUVIAL** 0.9 / 2.0 Brown, Very Loose, Moderately Organic, Fine to Coarse SAND (A-3)
	-1.9	4.8	WOH	WOH	1	1	SS-697	513%		Dark Brown to Black, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT) with Little Clay
-5	-4.9	7.8	WOH	WOH	WOH	0		Sat.		
-10	-9.9	12.8	WOH	WOH	WOH	0	SS-699	632%		
-15	-14.9	17.8	WOR	WOR	WOR	0		Sat.		
-20	-20.0	22.9	3	2	2	4	SS-701	23%		-18.1 / 21.0 **UNDIVIDED COASTAL PLAIN** Light Brown to Tan, Loose, Silty SAND (A-2-4)
-25	-24.9	27.8	WOH	1	1	2		Sat.		-23.1 / 26.0 Light Brown to Gray, Very Loose, Fine to Coarse SAND (A-3)
-30	-29.9	32.8	8	17	11	28				-29.1 / 32.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-35	-35.0	37.9	27	19	16	35				
-40	-39.9	42.8	54	46/0.4		100/0.9				
-45	-44.9	47.8	28	43	57/0.4	100/0.9		Sat.		-44.1 / 47.0 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-50	-49.8	52.7	76	24/0.1		100/0.6		Sat.		-47.1 / 50.0; -47.4 / 50.3; -48.1 / 51.0; -48.4 / 51.3; -49.3 / 52.2; -49.7 / 52.6
-55	-54.9	57.8	67	23/0.2		100/0.7		Sat.		
-60	-59.8	62.7	51	49/0.2		100/0.7		Sat.		
-65	-64.9	67.8	37	63/0.4		100/0.9		Sat.		
-70	-70.0	72.9	67	33/0.4		100/0.9		Sat.		
-75	-75.0	77.9								-75.0 / 77.9

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B8-B	**STATION** 138+06	**OFFSET** 40 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 176,258	**EASTING** 2,314,718 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/13/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			12	13	13	26	SS-712	23%		**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-79.9	82.8	11	16	17	33	SS-713	23%		
-85	-84.9	87.8	10	12	17	29		Sat.		
-90	-89.8	92.7	12	23	32	55		Sat.		
-95	-94.8	97.7	9	24	20	44		Sat.		
-100	-99.9	102.8	7	8	26	34	SS-717	21%		
-105	-104.9	107.8	8	10	13	23		Sat.		
-110	-109.8	112.7	22	9	14	23		Sat.		
-115	-114.9	117.8	7	9	16	25		Sat.		
-120	-119.8	122.7	11	8	12	20		Sat.		
-125	-124.8	127.7	6	8	47	55		Sat.		
-130	-129.9	132.8	9	32	20	52	SS-723	23%		
-135	-134.9	137.8	13	19	13	32		Sat.		-136.4 / 139.3 Boring Terminated at Elevation -136.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B9-A	**STATION** 140+02	**OFFSET** 25 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 176,158	**EASTING** 2,314,900	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/11/26	**COMP. DATE** 03/12/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	2.9	0.0	WOH	WOH	1	1		Sat.		2.9 GROUND SURFACE	0.0
0										**ALLUVIAL** Light to Dark Brown, Very Loose, Moderately Organic, Fine to Coarse SAND (A-3)	
	-1.6	4.5	WOH	WOH	WOH	0	SS-669	335%		-0.1 Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	3.0
-5	-5.3	8.2	WOH	1	1	2		Sat.			
-10	-10.3	13.2	WOH	WOH	WOH	0	SS-671	374%			
-15	-15.4	18.3	WOH	WOR	WOR	0	SS-672	531%		-18.1 **UNDIVIDED COASTAL PLAIN** Light Gray to Gray, Loose, Silty SAND (A-2-4)	21.0
-20	-20.3	23.2	1	2	2	4	SS-673	20%			
-25	-25.2	28.1	WOH	2	2	4		Sat.		-26.3 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Loose, Calcareous, Fine to Coarse SAND (A-3) with Trace Cemented Concretions	29.2
-30	-30.3	33.2	13	26	27	53				-29.1 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	32.0
-35	-35.3	38.2	40	60/0.3		100/0.8					
-40	-40.3	43.2	33	34	52	86				-43.1 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	46.0
-45	-45.2	48.1	40	31	43	74		Sat.			
-50	-50.3	53.2	100/0.4			100/0.4		Sat.		-48.3 -48.5 -49.2 -49.4 -49.9 -50.3 -53.6 -53.7 -54.6 -54.7 -55.1 -55.3 -56.1 -56.3 -58.1 -58.4 -59.1 -59.4 -60.1 -60.3	51.2 51.4 52.1 52.3 52.8 53.2 56.5 56.6 57.5 57.6 58.0 58.2 59.0 59.2 61.0 61.3 62.0 62.3 63.0 63.2
-55	-55.2	58.1	100/0.3			100/0.3		Sat.			
-60	-60.3	63.2	60/0.1			60/0.1		Sat.			
-65	-65.2	68.1	100/0.4			100/0.4		Sat.			
-70	-70.2	73.1	23	61	39/0.0	100/0.5		Sat.			
-75										-75.0	77.9

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B9-A	**STATION** 140+02	**OFFSET** 25 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 176,158	**EASTING** 2,314,900	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/11/26	**COMP. DATE** 03/12/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.2	78.1	40	29	24	53	SS-684	24%		**PEEDEE FORMATION** Light Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-80.3	83.2	24	62	38/0.3	100/0.8		Sat.		-77.8 80.7 -78.1 81.0 -79.2 82.1 -79.4 82.3
-85	-85.2	88.1	9	11	14	25		Sat.		-83.8 86.7 -84.1 87.0
-90	-90.3	93.2	24	12	6	18	SS-687	15%		
-95	-95.2	98.1	18	15	85/0.3	100/0.8		Sat.		-93.1 96.0 -93.3 96.2 -93.9 96.8 -94.1 97.0
-100	-100.3	103.2	12	13	41	54		Sat.		-98.3 101.2 -98.5 101.4 -99.8 102.7 -99.9 102.8
-105	-105.2	108.1	5	7	10	17	SS-690	22%		
-110	-110.2	113.1	6	8	13	21		Sat.		-110.3 113.2 -110.5 113.4
-115	-115.3	118.2	8	8	10	18		Sat.		
-120	-120.3	123.2	9	60/0.0		60/0.0		Sat.		
-125	-125.2	128.1	5	6	9	15	SS-694	25%		
-130	-130.2	133.1	60/0.0			60/0.0		Sat.		
-135	-135.3	138.2	5	17	83/0.2	100/0.7		Sat.		-136.5 139.4 Boring Terminated at Elevation -136.5 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B9-B	**STATION** 140+02	**OFFSET** 26 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 176,122	**EASTING** 2,314,863	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/18/26	**COMP. DATE** 03/19/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	3.1	0.0	WOH	WOH	WOH	0	SS-725	41%		3.1 GROUND SURFACE	0.0
0										**ALLUVIAL** Dark Brown, Very Loose, Fine to Coarse SAND (A-3) with Little Organic Matter	
	-1.7	4.8	WOH	WOH	WOH	0	SS-726	224%		0.1 Gray to Dark Brown and Black, Very Soft, Highly Organic, Silty CLAY (MUCK/PEAT) with Some Sand	3.0
-5	-4.7	7.8	WOH	WOH	WOH	0		Sat.			
-10	-9.7	12.8	WOH	WOH	WOH	0	SS-728	528%			
-15	-14.6	17.7	WOH	WOH	WOH	0	SS-729	499%			
-20	-19.6	22.7	WOH	WOH	WOH	0		Sat.			
-25	-24.7	27.8	2	WOH	WOH	0	SS-731	19%		-23.9 **UNDIVIDED COASTAL PLAIN** Light Gray to Light Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	27.0
										-28.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	31.7
-30	-29.6	32.7	15	32	43	75					
-35	-34.6	37.7	25	49	25	74					
-40	-39.6	42.7	23	30	35	65					
-45	-44.7	47.8	39	61/0.4		100/0.9		Sat.		-43.9 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	47.0
-50	-49.6	52.7	100/0.4			100/0.4		Sat.			
-55	-54.6	57.7	100/0.3			100/0.3		Sat.			
-60	-59.7	62.8	100/0.2			100/0.2		Sat.			
-65	-64.7	67.8	100/0.5			100/0.5		Sat.			
-70	-69.7	72.8	35	65/0.3		100/0.8		Sat.			
-75	-74.7	77.8								-75.0	78.1

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B9-B	**STATION** 140+02	**OFFSET** 26 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 176,122	**EASTING** 2,314,863	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/18/26	**COMP. DATE** 03/19/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			35	42	46	88	SS-741	22%		**PEEDEE FORMATION** Light to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-79.7	82.8	14	20	39	59		Sat.		
-85	-84.8	87.9	13	23	30	53	SS-743	24%		
-90	-89.7	92.8	6	39	18	57		Sat.		
-95	-94.7	97.8	16	35	31	66		Sat.		
-100	-99.7	102.8	11	20	57	77		Sat.		
-105	-104.7	107.8	60/0.1			60/0.1		Sat.		
-110	-109.6	112.7	6	10	12	22	SS-748	24%		
-115	-114.6	117.7	4	8	13	21		Sat.		
-120	-119.7	122.8	7	100/0.4		100/0.4		Sat.		
-125	-124.7	127.8	6	23	67/0.0	100/0.5		Sat.		
-130	-129.7	132.8	6	8	14	22	SS-752	25%		
-135	-134.7	137.8	5	12	25	37		Sat.		

SOIL AND ROCK DESCRIPTION	
-77.3	80.4
-77.5	80.6
-79.0	82.1
-79.1	82.2
-82.9	86.0
-83.0	86.1
-87.1	90.2
-87.2	90.3
-88.7	91.8
-88.8	91.9
-91.6	94.7
-91.8	94.9
-92.9	96.0
-93.1	96.2
-93.9	97.0
-94.4	97.5
-95.9	99.0
-96.0	99.1
-97.6	100.7
-97.7	100.8
-98.1	101.2
-98.2	101.3
-98.9	102.0
-99.3	102.4
-102.4	105.5
-102.9	106.0
-127.9	131.0
Gray to Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Little Clay	
-136.2	139.3
Boring Terminated at Elevation -136.2 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation	

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B10-A_CORE	**STATION** 141+93	**OFFSET** 88 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.5 ft	**TOTAL DEPTH** 45.0 ft	**NORTHING** 176,079	**EASTING** 2,315,080 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/01/26	**COMP. DATE** 05/01/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.5 GROUND SURFACE	0.0
0										**OVERBURDEN**	
-5											
-10											
-15											
-20											
-25											
										-27.5	30.0
-30										**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE SREC: 48% SRQD: 5% GSI: 40-50	
-35											
-40							RS-4				
										-42.5	45.0
										Boring Terminated at Elevation -42.5 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B10-A_CORE	**STATION** 141+93	**OFFSET** 88 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.5 ft	**TOTAL DEPTH** 45.0 ft	**NORTHING** 176,079	**EASTING** 2,315,080 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/01/26	**COMP. DATE** 05/01/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 15.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-27.5											Begin Coring @ 30.0 ft	
	-27.5	30.0	5.0	0:12/1.0 0:11/1.0 0:13/1.0 0:13/1.0 0:10/1.0	(1.2) 24%	(0.0) 0%		(7.2) 48%	(0.7) 5%		-27.5 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Gray, and White, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Geological Strength Index (GSI) = 40-50	30.0
-30												
	-32.5	35.0	5.0	0:10/1.0 0:22/1.0 0:15/1.0 0:12/1.0 0:19/1.0	(3.0) 60%	(0.7) 14%						
-35												
	-37.5	40.0	5.0	0:08/1.0 0:18/1.0 0:12/1.0 0:15/1.0 0:11/1.0	(3.0) 60%	(0.0) 0%	RS-4					
-40												
	-42.5	45.0									-42.5	45.0
											Boring Terminated at Elevation -42.5 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B10-A	**STATION** 141+98	**OFFSET** 78 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,069	**EASTING** 2,315,077 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/09/26	**COMP. DATE** 03/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	2.6	0.0								2.6 GROUND SURFACE	0.0
			WOH	WOH	WOH	0	SS-640	156%		**ALLUVIAL** Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
0										-0.4	3.0
	-1.8	4.4	WOR	WOR	WOH	0	SS-641	131%		Brown to Dark Brown, Very Soft, Moderately Organic, Sandy SILT (A-4), Highly Clayey to Some Clay	
-5	-5.4	8.0									
			WOH	WOH	WOH	0	SS-642	194%			
-10	-10.4	13.0									
			WOH	WOH	WOH	0		Sat.			
										-13.4	16.0
-15	-15.5	18.1								Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
			WOH	WOH	1	1	SS-644	215%			
										-18.4	21.0
-20	-20.5	23.1								Light Gray to Gray, Very Soft, Sandy SILT (A-4) with Some Clay and Trace Organic Matter	
			WOH	WOH	WOR	0	SS-645	21%			
										-23.4	26.0
-25	-25.3	27.9								**UNDIVIDED COASTAL PLAIN** Light Brown, Very Loose, Fine to Coarse SAND (A-3)	
			1	WOH	1	1		Sat.			
										-29.4	32.0
-30	-30.4	33.0								**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
			12	15	16	31					
-35	-35.4	38.0									
			33	17	5	22					
-40	-40.4	43.0									
			24	39	30	69					
-45	-45.4	48.0									
			39	30	33	63					
										-48.4	51.0
										-49.4	52.0
-50	-50.5	53.1								-49.6	52.2
			47	53/0.4		100/0.9		Sat.		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
										-52.9	55.5
										-53.1	55.7
-55	-55.4	58.0								-54.1	56.7
			52	48/0.5		100/1.0		Sat.		-54.2	56.8
										-58.2	60.8
										-58.3	60.9
-60	-60.4	63.0								-58.9	61.5
			100/0.5			100/0.5		Sat.		-59.0	61.6
										-59.8	62.4
										-60.0	62.6
										-62.5	65.1
										-62.7	65.3
-65	-65.5	68.1								-65.2	67.8
			63	37/0.4		100/0.9		Sat.		-65.4	68.0
										-69.7	72.3
-70	-70.4	73.0								-69.9	72.5
			67	33/0.2		100/0.7		Sat.			
-75										-75.0	77.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B10-A	**STATION** 141+98	**OFFSET** 78 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,069	**EASTING** 2,315,077 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/09/26	**COMP. DATE** 03/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.5	78.1	17	10	27	37	SS-656	26%		**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-80.4	83.0	12	23	23	46		Sat.		
-85	-85.3	87.9	10	13	46	59		Sat.		-83.9 86.5 -84.1 86.7
-90	-90.3	92.9	7	11	11	22	SS-659	23%		
-95	-95.4	98.0	11	40	34	74		Sat.		-92.9 95.5 -93.4 96.0 -94.9 97.5 -95.4 98.0
-100	-100.5	103.1	15	23	48	71		Sat.		-98.1 100.7 -98.2 100.8 -99.2 101.8 -99.3 101.9 -99.7 102.3 -100.1 102.7 -103.0 105.6
-105	-105.4	108.0	7	11	17	28	SS-662	20%		-103.1 105.7 -103.9 106.5 -104.0 106.6 -105.4 108.0 -105.8 108.4 -107.6 110.2 -107.7 110.3 -109.1 111.7
-110	-111.3	113.9	60/0.1			60/0.1		Sat.		-109.2 111.8 -110.4 113.0 -110.7 113.3 -113.4 116.0 -113.6 116.2
-115	-115.4	118.0	38	16	18	34		Sat.		-114.9 117.5 -115.0 117.6
-120	-120.5	123.1	5	6	100/0.4	100/0.4		Sat.		-118.5 121.1 -118.8 121.4 -120.1 122.7 -120.2 122.8 -123.2 125.8 -123.4 126.0
-125	-125.4	128.0	5	7	14	21		Sat.		-128.9 131.5 -129.1 131.7
-130	-130.4	133.0	5	6	9	15	SS-666	26%		
-135	-135.5	138.1	5	6	7	13		Sat.		-137.0 139.6

Boring Terminated at Elevation -137.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B11-A	**STATION** 143+98	**OFFSET** 118 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 175,982	**EASTING** 2,315,253 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/06/26	**COMP. DATE** 03/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	2.8	0.0								2.8 GROUND SURFACE	0.0
			WOH	WOH	WOH	0	SS-611	64%		**ALLUVIAL** Dark Brown, Very Soft, Clayey SILT (A-5) with Little Organic Matter	
0										-0.2	3.0
	-1.5	4.3	3	1	WOH	1		Sat.		Gray, Very Loose, Fine to Coarse SAND (A-3)	
										-3.2	6.0
-5	-5.0	7.8								Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
			WOH	WOH	WOH	0	SS-613	274%			
-10	-10.0	12.8									
			WOH	WOH	WOH	0		Sat.			
										-13.2	16.0
-15	-15.0	17.8								Dark Brown, Very Soft, Sandy SILT (A-4) with Some Clay, Trace Organic Matter	
			WOH	WOH	WOH	0	SS-615	56%			
										-18.2	21.0
-20	-19.9	22.7								**UNDIVIDED COASTAL PLAIN** Light Brown to Gray, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
			2	2	1	3		Sat.			
-25	-25.0	27.8									
			WOH	WOH	WOH	0	SS-617	24%			
										-28.2	31.0
-30	-30.0	32.8								**COASTAL PLAIN PEEDEE FORMATION** Light Gray, Dense, Calcareous, Fine to Coarse SAND (A-3) with Trace Cemented Concretions	
			13	20	24	44		Sat.			
										-33.2	36.0
-35	-35.1	37.9								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Medium Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
			32	37	19	56					
-40	-39.9	42.7									
			44	34	32	66					
-45	-44.9	47.7									
			37	33	67/0.4	100/0.9					
-50	-51.0	53.8									
			100/0.2			100/0.2					
-55	-56.0	58.8								-53.2	56.0
			72	28/0.1		100/0.6		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-60	-60.7	63.5									
			100/0.3			100/0.3		Sat.			
-65	-65.7	68.5									
			60/0.1			60/0.1		Sat.			
-70	-70.7	73.5									
			35	65/0.4		100/0.9		Sat.			
-75										-73.7 / -73.8	76.5 / 76.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B11-A	**STATION** 143+98	**OFFSET** 118 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 140.0 ft	**NORTHING** 175,982	**EASTING** 2,315,253 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/06/26	**COMP. DATE** 03/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.7	78.5	11	26	33	59	SS-627	20%		**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-80.7	83.5	21	27	33	60		Sat.		
-85	-85.7	88.5	34	27	27	54	SS-629	21%		
-90	-90.6	93.4	13	16	17	33		Sat.		
-95	-95.7	98.5	74	26/0.1		100/0.6		Sat.		
-100	-100.7	103.5	50	42	27	69		Sat.		
-105	-105.7	108.5	8	9	13	22	SS-633	21%		
-110	-110.7	113.5	21	49	51/0.1	100/0.6		Sat.		
-115	-115.7	118.5	7	8	12	20		Sat.		
-120	-120.6	123.4	4	5	100/0.3	100/0.3		Sat.		
-125	-125.7	128.5	5	8	10	18	SS-637	23%		
-130	-130.7	133.5	5	7	11	18		Sat.		
-135	-135.7	138.5	13	11	15	26		Sat.		-137.2 / 140.0

Boring Terminated at Elevation -137.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B12-A_CORE	**STATION** 146+01	**OFFSET** 142 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.4 ft	**TOTAL DEPTH** 50.5 ft	**NORTHING** 175,896	**EASTING** 2,315,427 / **24 HR.** 0.4
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/04/26	**COMP. DATE** 05/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.4 GROUND SURFACE	0.0
										OVERBURDEN	
0											
-5											
-10											
-15											
-20											
-25											
-30											
-35										-33.1	35.5
-40										**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE SREC: 47% SRQD: 3% GSI: 40-50	
-45							RS-5			-48.1	50.5
										Boring Terminated at Elevation -48.1 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B12-A_CORE	**STATION** 146+01	**OFFSET** 142 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.4 ft	**TOTAL DEPTH** 50.5 ft	**NORTHING** 175,896	**EASTING** 2,315,427 / **24 HR.** 0.4
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/04/26	**COMP. DATE** 05/04/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 15.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-33.1											Begin Coring @ 35.5 ft	
-35	-33.1	35.5	5.0	0:13/1.0 0:36/1.0 0:22/1.0 0:33/1.0 0:31/1.0	(2.0) 40%	(0.0) 0%		(7.1) 47%	(0.4) 3%		-33.1 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Tan-Brown, Gray, and White, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Geological Strength Index (GSI) = 40-50	35.5
-40	-38.1	40.5	5.0	0:29/1.0 0:25/1.0 0:21/1.0 0:19/1.0 0:24/1.0	(3.4) 68%	(0.0) 0%						
-45	-43.1	45.5	5.0	0:28/1.0 0:23/1.0 0:19/1.0 0:09/1.0 0:08/1.0	(1.7) 34%	(0.4) 8%	RS-5				-48.1	50.5
	-48.1	50.5									Boring Terminated at Elevation -48.1 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	

NCDOT CORE SINGLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/27/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B12-A	**STATION** 146+06	**OFFSET** 144 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.2 ft	**TOTAL DEPTH** 139.2 ft	**NORTHING** 175,896	**EASTING** 2,315,433 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/04/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	2.2	0.0	WOH	1	2	3		Sat.		2.2 / 0.0 GROUND SURFACE
0										1.2 / 1.0 **ALLUVIAL** Dark Brown, Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
	-2.3	4.5	WOH	WOH	WOH	0	SS-584	113%		Gray, Very Loose, Fine to Coarse SAND (A-3) / -2.8 / 5.0
-5										Gray, Very Soft, Moderately Organic, Silty CLAY (A-7) / -5.8 / 8.0
	-6.5	8.7	WOH	2	1	3	SS-585	44%		Gray, Soft, Sandy CLAY (A-6) with Trace Organic Matter / -8.8 / 11.0
-10										Brown to Dark Brown and Black, Very Soft to Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
	-11.5	13.7	WOH	WOH	WOH	0		Sat.		
-15										
	-16.5	18.7	WOH	WOH	1	1	SS-587	436%		
-20										
	-21.5	23.7	WOH	WOH	2	2		Sat.		-23.8 / 26.0 **UNDIVIDED COASTAL PLAIN** Light Gray, Very Loose, Fine to Coarse SAND (A-3)
-25										
	-26.5	28.7	3	1	1	2		Sat.		
-30										
	-31.3	33.5	2	6	12	18		Sat.		-31.8 / 34.0 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Medium Dense, Calcareous, Fine to Coarse SAND (A-3) / -35.8 / 38.0
-35										
	-36.2	38.4	9	24	26	50				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Medium Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-40										
	-41.2	43.4	22	16	24	40				
-45										
	-46.3	48.5	100/0.2			100/0.2				
-50										-50.8 / 53.0
	-51.2	53.4	65	35/0.3		100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-55										
	-56.3	58.5	55	45/0.4		100/0.9		Sat.		
-60										
	-61.3	63.5	64	36/0.2		100/0.7		Sat.		
-65										
	-66.3	68.5	54	46/0.4		100/0.9		Sat.		
-70										
	-71.2	73.4	35	65/0.4		100/0.9		Sat.		
-75										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B12-A	**STATION** 146+06	**OFFSET** 144 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.2 ft	**TOTAL DEPTH** 139.2 ft	**NORTHING** 175,896	**EASTING** 2,315,433 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/04/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-76.2	78.4	16	23	35	58	SS-599	22%		-65.0 / 67.2 **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80										-65.8 / 68.0; -65.9 / 68.1; -73.8 / 76.0; -74.1 / 76.3; -75.4 / 77.6; -79.1 / 81.3; -79.2 / 81.4; -80.3 / 82.5; -80.7 / 82.9; -84.5 / 86.7; -84.8 / 87.0; -85.8 / 88.0; -86.0 / 88.2; -86.9 / 89.1; -87.4 / 89.6
	-81.3	83.5	24	29	39	68		Sat.		
-85										
	-86.2	88.4	14	14	60/0.0	60/0.0		Sat.		
-90										
	-91.3	93.5	11	11	12	23		Sat.		-93.6 / 95.8; -93.8 / 96.0; -94.8 / 97.0; -94.9 / 97.1
-95										
	-96.4	98.6	13	27	73/0.3	100/0.8		Sat.		
-100										
	-101.3	103.5	19	16	14	30	SS-604	25%		
-105										-104.8 / 107.0; -105.1 / 107.3
	-106.2	108.4	11	17	12	29		Sat.		
-110										-109.3 / 111.5; -109.5 / 111.7; -110.3 / 112.5; -111.0 / 113.2
	-111.3	113.5	6	6	12	18		Sat.		
-115										
	-116.3	118.5	7	7	10	17		Sat.		-119.3 / 121.5; -120.7 / 122.9
-120										
	-121.4	123.6	60/0.1			60/0.1		Sat.		
-125										
	-126.2	128.4	13	15	18	33		Sat.		
-130										
	-131.3	133.5	6	7	15	22	SS-609	25%		
-135										
	-136.4	138.6	64	36/0.1		100/0.6		Sat.		-137.0 / 139.2 Boring Terminated at Elevation -137.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B13-A	**STATION** 148+36	**OFFSET** 25 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 175,686	**EASTING** 2,315,572 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/27/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	2.6	0.0								2.6 GROUND SURFACE 0.0
			WOH	WOH	WOH	0	SS-842	86%		**ALLUVIAL** Dark Brown, Very Soft, Silty CLAY (A-7) with Little Organic Matter
0										-0.4 / 3.0
	-1.8	4.4	1	0	1	1		Sat.		Dark Gray, Very Loose, Silty Fine SAND (A-2-4)
-5	-4.8	7.4	1	0	1	1		Sat.		-7.4 / 10.0
-10	-9.8	12.4	WOH	WOH	WOH	0	SS-845	206%		Dark Brown, Very Soft to Soft, Highly Organic, Silty CLAY (MUCK/PEAT)
-15	-14.8	17.4	1	1	1	2		Sat.		
-20	-19.8	22.4	WOH	WOH	WOH	0	SS-847	544%		-22.4 / 25.0
-25	-24.8	27.4	3	5	17	22		Sat.		**UNDIVIDED COASTAL PLAIN** Light Gray to Gray, Loose to Medium Dense, Fine SAND (A-3) with Trace Organic Matter
-30	-29.8	32.4	1	2	8	10		Sat.		-32.4 / 35.0
-35	-34.8	37.4	13	22	16	38	SS-850	17%		**COASTAL PLAIN PEEDEE FORMATION** Light Gray, Dense, Calcareous, Silty SAND (A-2-4)
-40	-39.8	42.4	15	17	13	30				-37.4 / 40.0
-45	-44.8	47.4	32	50	50/0.2	100/0.7				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-50	-49.8	52.4	60/0.1			60/0.1		Sat.		-48.4 / 51.0
-55	-54.8	57.4	54	46/0.2		100/0.7		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray and Green-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-59.8	62.4	50	50/0.2		100/0.7		Sat.		-53.3 / 55.9; -53.5 / 56.1
-65	-64.8	67.4	81	19/0.1		100/0.6		Sat.		
-70	-69.8	72.4	42	58/0.2		100/0.7		Sat.		
-75	-74.8	77.4								-75.0 / 77.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B13-A	**STATION** 148+36	**OFFSET** 25 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 175,686	**EASTING** 2,315,572 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 03/27/26	**COMP. DATE** 03/31/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			28	40	42	82		Sat.		**PEEDEE FORMATION** Light to Dark Gray and Green-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-80	-79.8	82.4	38	35	34	69		Sat.		
-85	-84.8	87.4	5	18	17	35	SS-860	24%		
-90	-89.8	92.4	13	14	22	36		Sat.		-91.7 / 94.3; -92.2 / 94.8
-95	-94.8	97.4	7	6	14	20		Sat.		
-100	-99.8	102.4	19	24	23	47		Sat.		
-105	-104.8	107.4	9	22	29	51		Sat.		
-110	-109.8	112.4	5	6	29	35	SS-865	22%		-108.9 / 111.5; -109.2 / 111.8
-115	-114.8	117.4	6	5	13	18		Sat.		
-120	-119.8	122.4	10	63	37	100/1.0		Sat.		
-125	-124.8	127.4	6	6	11	17	SS-868	25%		
-130	-129.8	132.4	4	5	10	15		Sat.		
-135	-134.8	137.4	5	6	100/0.2	100/0.2		Sat.		
-140	-139.8	142.4	19	13	11	24		Sat.		-138.4 / 141.0 Dark Green-Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
										-141.3 / 143.9 Boring Terminated at Elevation -141.3 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Smith, B.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B13-B	**STATION** 148+43	**OFFSET** 34 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.3 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 175,630	**EASTING** 2,315,553	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/25/26	**COMP. DATE** 03/27/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										2.3 GROUND SURFACE	0.0
	2.3	0.0	WOH	WOH	3	3	SS-813	72%		**ALLUVIAL** Dark Brown to Dark Gray, Very Loose, Moderately Organic, Silty SAND (A-2) with Trace Gravel	0.3 / 2.0
	-2.1	4.4	4	7	7	14		Sat.		Gray to Dark Gray and Black, Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Rounded to Sub-Rounded Gravel and Organic Matter	
	-5.1	7.4	4	5	4	9		Sat.			-7.7 / 10.0
	-10.1	12.4	WOH	WOH	WOH	0	SS-816	208%		Dark Brown to Black, Very Soft, Highly Organic, Silty CLAY (MUCK/PEAT)	
	-15.1	17.4	WOR	WOH	WOH	0	SS-817	383%			-17.7 / 20.0
	-20.1	22.4	WOR	WOH	WOH	0	SS-818	126%		Dark Brown, Very Soft, Moderately Organic, Silty CLAY (A-7)	
	-25.1	27.4	4	9	4	13		Sat.		**UNDIVIDED COASTAL PLAIN** Light Brown to Light Gray, Medium Dense, Fine SAND (A-3) with Trace Organic Matter	-22.7 / 25.0
	-30.1	32.4	2	4	13	17	SS-820	20%		**COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense, Calcareous, Silty SAND (A-2-4) with Trace Limestone Fragments, Fossiliferous	-27.7 / 30.0
	-35.1	37.4	14	40	35	75				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	-32.7 / 35.0
	-40.1	42.4	21	22	28	50					
	-45.1	47.4	80	20/0.1		100/0.6					-47.7 / 50.0
	-50.1	52.4	55	45/0.2		100/0.7		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Green-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Glauconitic	-51.5 / 53.8; -52.1 / 54.4; -53.2 / 55.5; -53.7 / 56.0
	-55.1	57.4	100/0.4			100/0.4		Sat.			-55.5 / 57.8; -55.8 / 58.1; -56.5 / 58.8; -56.8 / 59.1; -58.4 / 60.7; -58.6 / 60.9
	-60.1	62.4	87	13/0.0		100/0.5		Sat.			
	-65.1	67.4	59	41/0.4		100/0.9		Sat.			-64.3 / 66.6; -64.6 / 66.9
	-70.1	72.4	100/0.2			100/0.2		Sat.			-69.0 / 71.3; -69.3 / 71.6; -70.1 / 72.4; -70.6 / 72.9
											-75.0 / 77.3

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Smith, B.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B13-B	**STATION** 148+43	**OFFSET** 34 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.3 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 175,630	**EASTING** 2,315,553	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/25/26	**COMP. DATE** 03/27/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.1	77.4	33	33	33	66	SS-828	17%		**PEEDEE FORMATION** Gray to Green-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Glauconitic
-80	-80.1	82.4	13	15	100/0.4	100/0.4		Sat.		
-85	-85.1	87.4	13	15	22	37	SS-830	23%		-83.7 / 86.0; -84.1 / 86.4
-90	-90.1	92.4	15	19	17	36		Sat.		-88.7 / 91.0; -89.1 / 91.4
-95	-95.1	97.4	5	5	9	14		Sat.		
-100	-100.1	102.4	6	11	13	24		Sat.		
-105	-105.1	107.4	10	17	26	43	SS-834	23%		
-110	-110.1	112.4	5	5	9	14		Sat.		
-115	-115.1	117.4	5	6	38	44		Sat.		
-120	-120.1	122.4	4	5	6	11	SS-837	26%		-123.1 / 125.4; -123.4 / 125.7
-125	-125.1	127.4	5	7	40	47		Sat.		
-130	-130.1	132.4	81	19/0.1		100/0.6		Sat.		-133.7 / 136.0
-135	-135.1	137.4	5	7	12	19	SS-840	24%		Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-140	-140.1	142.4	4	19	10	29		Sat.		-141.6 / 143.9
										Boring Terminated at Elevation -141.6 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B14-A	**STATION** 149+99	**OFFSET** 24 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.7 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 175,621	**EASTING** 2,315,720	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/20/26	**COMP. DATE** 03/23/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	3.7	0.0	WOH	WOH	WOH	0	SS-754	47%		3.7 GROUND SURFACE 0.0 **ALLUVIAL** Gray and Brown, Very Soft, Silty CLAY (A-7) with Some Fine Sand and Little Organic Matter
0	-1.1	4.8	4	4	7	11		Sat.		-1.2 4.9 Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)
-5	-4.1	7.8	3	2	2	4		Sat.		
-10	-9.1	12.8	WOH	WOH	WOH	0	SS-757	237%		-8.3 12.0 Dark Brown to Gray, Very Soft, Highly Organic, Silty CLAY (MUCK/PEAT)
-15	-14.1	17.8	WOH	WOH	WOH	0		Sat.		
-20	-19.1	22.8	WOH	WOH	WOH	0	SS-759	535%		-22.3 26.0 **UNDIVIDED COASTAL PLAIN** Light Brown to Gray, Loose, Silty SAND (A-2-4) with Little Clay and Trace Organic Matter
-25	-24.1	27.8	WOH	WOH	4	4	SS-760	22%		-27.3 31.0 Light Brown, Very Loose, Fine to Coarse SAND (A-3)
-30	-29.1	32.8	WOH	1	1	2		Sat.		-32.3 36.0 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-35	-34.1	37.8	15	19	21	40				
-40	-39.0	42.7	18	18	20	38				
-45	-44.0	47.7	33	40	60	100/1.0				
-50	-49.1	52.8	35	24	31	55		Sat.		-48.3 52.0 **COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions -52.3 56.0 -52.5 56.2
-55	-54.1	57.8	22	31	37	68	SS-766	20%		-57.3 61.0 -57.4 61.1 -58.3 62.0
-60	-59.1	62.8	79	21/0.2		100/0.7		Sat.		-58.4 62.1 -62.3 66.0 -62.4 66.1
-65	-64.0	67.7	58	42/0.2		100/0.7		Sat.		-67.3 71.0 -67.5 71.2 -68.5 72.2
-70	-69.0	72.7	68	32/0.3		100/0.8		Sat.		-68.6 72.3 -71.8 75.5 -72.1 75.8
-75	-74.0	77.7	62	38/0.2		100/0.7		Sat.		-72.7 76.4 -73.0 76.7

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B14-A	**STATION** 149+99	**OFFSET** 24 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.7 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 175,621	**EASTING** 2,315,720	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/20/26	**COMP. DATE** 03/23/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
-80	-79.1	82.8	13	20	27	47	SS-770	21%		-75.0 78.7 -77.0 80.7 -77.3 81.0 **PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions -81.4 85.1 -81.8 85.5
-85	-84.1	87.8	13	87/0.3		100/0.8		Sat.		-82.5 86.2 -83.1 86.8 -83.5 87.2 -83.6 87.3 -85.8 89.5 -86.0 89.7
-90	-89.1	92.8	11	23	39	62		Sat.		-90.6 94.3 -91.3 95.0
-95	-94.1	97.8	7	9	12	21		Sat.		
-100	-99.1	102.8	6	6	100/0.4	100/0.4		Sat.		-100.8 104.5 -101.8 105.5
-105	-104.1	107.8	13	20	26	46		Sat.		
-110	-109.1	112.8	18	27	34	61	SS-776	23%		
-115	-114.1	117.8	5	6	8	14		Sat.		
-120	-119.1	122.8	6	7	10	17	SS-778	27%		
-125	-124.1	127.8	100/0.2			100/0.2		Sat.		-124.8 128.5 -125.3 129.0
-130	-129.1	132.8	5	7	11	18	SS-780	28%		-131.3 135.0 Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay, Trace Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-135	-134.1	137.8	6	5	11	16		Sat.		-136.1 139.8 -136.6 140.3
-140	-139.1	142.8	6	6	10	16	SS-782	26%		-140.6 144.3 Boring Terminated at Elevation -140.6 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B14-B	**STATION** 150+06	**OFFSET** 29 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.3 ft	**TOTAL DEPTH** 144.1 ft	**NORTHING** 175,569	**EASTING** 2,315,706	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/23/26	**COMP. DATE** 03/25/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	2.3	0.0								2.3 GROUND SURFACE	0.0
			WOH	WOH	1	1	SS-783	141%		**ALLUVIAL**	
0	-0.3	2.6								0.3 Dark Brown, Very Soft, Moderately Organic, Sandy SILT (A-4) with Trace Clay	2.0
			1	1	2	3		Sat.		Gray and Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
-5	-5.3	7.6									
			WOH	WOH	1	1	SS-785	24%		-7.7 Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	10.0
-10	-10.3	12.6									
			WOH	WOH	WOH	0		Sat.			
-15	-15.3	17.6									
			WOH	WOH	WOH	0	SS-787	444%			
-20	-20.3	22.6									
			WOH	WOH	WOH	0	SS-788	202%		-22.7 **UNDIVIDED COASTAL PLAIN** Gray and Brown, Loose, Fine SAND (A-3)	25.0
-25	-25.3	27.6									
			WOH	3	2	5		Sat.		-27.7 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Loose, Calcareous, Silty SAND (A-2-4), Fossiliferous	30.0
-30	-30.3	32.6									
			1	1	7	8	SS-790	21%		-32.7 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE	35.0
-35	-35.3	37.6									
			18	20	33	53					
-40	-40.3	42.6									
			22	21	31	52					
-45	-45.3	47.6									
			100/0.5			100/0.5				-47.7 **COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	50.0
-50	-50.3	52.6									
			25	46	49	95		Sat.		-53.3	55.6
										-53.5	55.8
										-53.8	56.1
-55	-55.3	57.6									
			100/0.5			100/0.5		Sat.		-53.9	56.2
										-56.3	58.6
										-56.7	59.0
										-57.3	59.6
										-57.7	60.0
-60	-60.3	62.6								-59.9	62.2
			100/0.4			100/0.4		Sat.		-60.0	62.3
-65	-65.3	67.6								-63.5	65.8
										-63.6	65.9
			100/0.2			100/0.2		Sat.			
-70	-70.3	72.6								-67.8	70.1
										-68.0	70.3
										-68.7	71.0
										-69.0	71.3
			52	48/0.1		100/0.6		Sat.		-69.5	71.8
										-69.6	71.9
										-71.5	73.8
										-71.7	74.0
-75										-72.2	74.5

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B14-B	**STATION** 150+06	**OFFSET** 29 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2.3 ft	**TOTAL DEPTH** 144.1 ft	**NORTHING** 175,569	**EASTING** 2,315,706	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/23/26	**COMP. DATE** 03/25/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-75.3	77.6	34	54	37	91		Sat.		**PEEDEE FORMATION** Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-80.3	82.6								
			11	10	14	24		Sat.		
-85	-85.3	87.6								
			6	11	14	25	SS-801	27%		
-90	-90.3	92.6								
			36	22	21	43		Sat.		
-95	-95.3	97.6								
			4	6	13	19		Sat.		
-100	-100.3	102.6								
			11	20	17	37		Sat.		
-105	-105.3	107.6								
			11	15	15	30		Sat.		
-110	-110.3	112.6								
			8	8	12	20	SS-806	30%		
-115	-115.3	117.6								
			5	5	12	17		Sat.		
-120	-120.3	122.6								
			5	6	11	17	SS-808	30%		
-125	-125.3	127.6								
			6	7	100/0.2	100/0.2		Sat.		
-130	-130.3	132.6								
			5	6	23	29		Sat.		
-135	-135.3	137.6								
			5	6	11	17	SS-811	24%		
-140	-140.3	142.6								
			5	6	20	26		Sat.		

ELEV (ft)	DEPTH (ft)
-72.7	75.0
-73.5	75.8
-73.7	76.0
-84.7	87.0
-85.1	87.4
-112.9	115.2
-113.7	116.0
-117.7	120.0
-118.1	120.4
-122.3	124.6
-122.8	125.1
-124.3	126.6
-125.0	127.3
-126.3	128.6
-126.5	128.8
-132.0	134.3
-132.3	134.6
-133.7	136.0
-141.8	144.1

Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay

Boring Terminated at Elevation -141.8 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B14-B_CORE	**STATION** 150+09	**OFFSET** 15 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.7 ft	**TOTAL DEPTH** 55.7 ft	**NORTHING** 175,580	**EASTING** 2,315,714 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/05/26	**COMP. DATE** 05/05/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.7 GROUND SURFACE	0.0
										OVERBURDEN	
0											
-5											
-10											
-15											
-20											
-25											
-30											
-35										-35.4	38.1
										COASTAL PLAIN SEDIMENTARY ROCK **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE SREC: 75% SRQD: 6% GSI: 40-50	
-40											
-45							RS-6				
-50										-48.0	50.7
										COASTAL PLAIN **PEEDEE FORMATION** Silty Fine SAND (A-2-4), Interbedded with CALCAREOUS SANDSTONE SREC: 22% SRQD: 0% GSI: N/A	
										-53.0	55.7
										Boring Terminated at Elevation -53.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	

GEOTECHNICAL BORING REPORT
CORE LOG

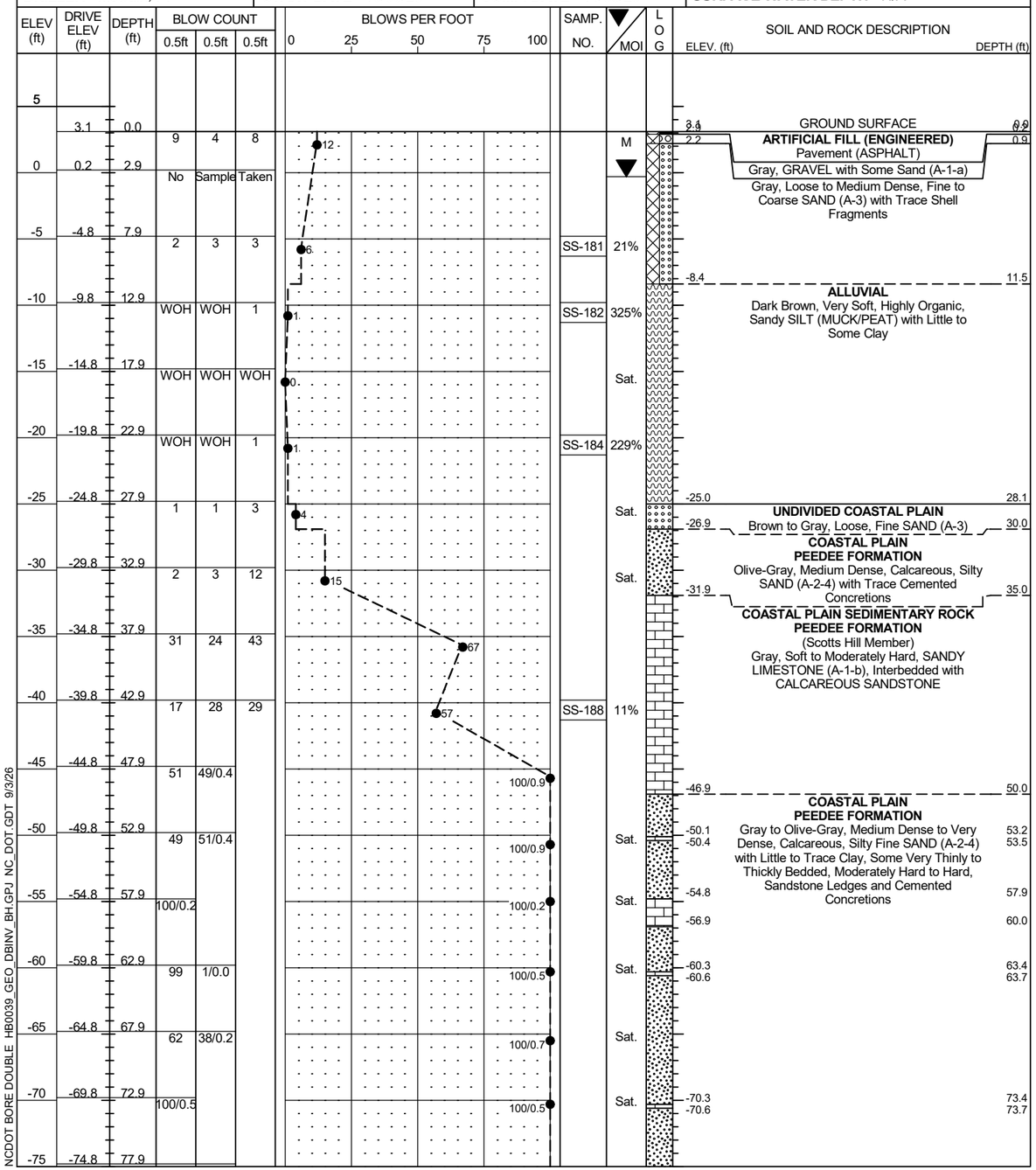
WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B14-B_CORE	**STATION** 150+09	**OFFSET** 15 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 2.7 ft	**TOTAL DEPTH** 55.7 ft	**NORTHING** 175,580	**EASTING** 2,315,714 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/05/26	**COMP. DATE** 05/05/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 17.6 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-35.4											Begin Coring @ 38.1 ft	
	-35.4	38.1	2.6	0:41/1.0 0:24/1.0 0:26/0.6	(1.8) 69%	(0.3) 12%		(9.5) 75%	(0.8) 6%		-35.4 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Geological Strength Index (GSI) = 40-50	38.1
	-38.0	40.7										
-40			5.0	0:15/1.0 0:23/1.0 0:19/1.0 0:15/1.0 0:35/1.0	(3.4) 68%	(0.0) 0%						
	-43.0	45.7										
-45			5.0	0:13/1.0 0:18/1.0 0:20/1.0 0:19/1.0 0:21/1.0	(3.2) 64%	(0.5) 10%	RS-6					
	-48.0	50.7									-48.0	50.7
-50			5.0	0:15/1.0 0:21/1.0 0:24/1.0 0:23/1.0 0:18/1.0	(1.1) 22%	(0.0) 0%		(1.1) 22%	(0.0) 0%		**COASTAL PLAIN** **PEEDEE FORMATION** Gray, Silty Fine SAND (A-2-4) with Little Very Thinly to Thinly Bedded, Gray, Very Slightly Weathered, Hard, Indurated, CALCAREOUS SANDSTONE	
	-53.0	55.7									-53.0	55.7
											Boring Terminated at Elevation -53.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	

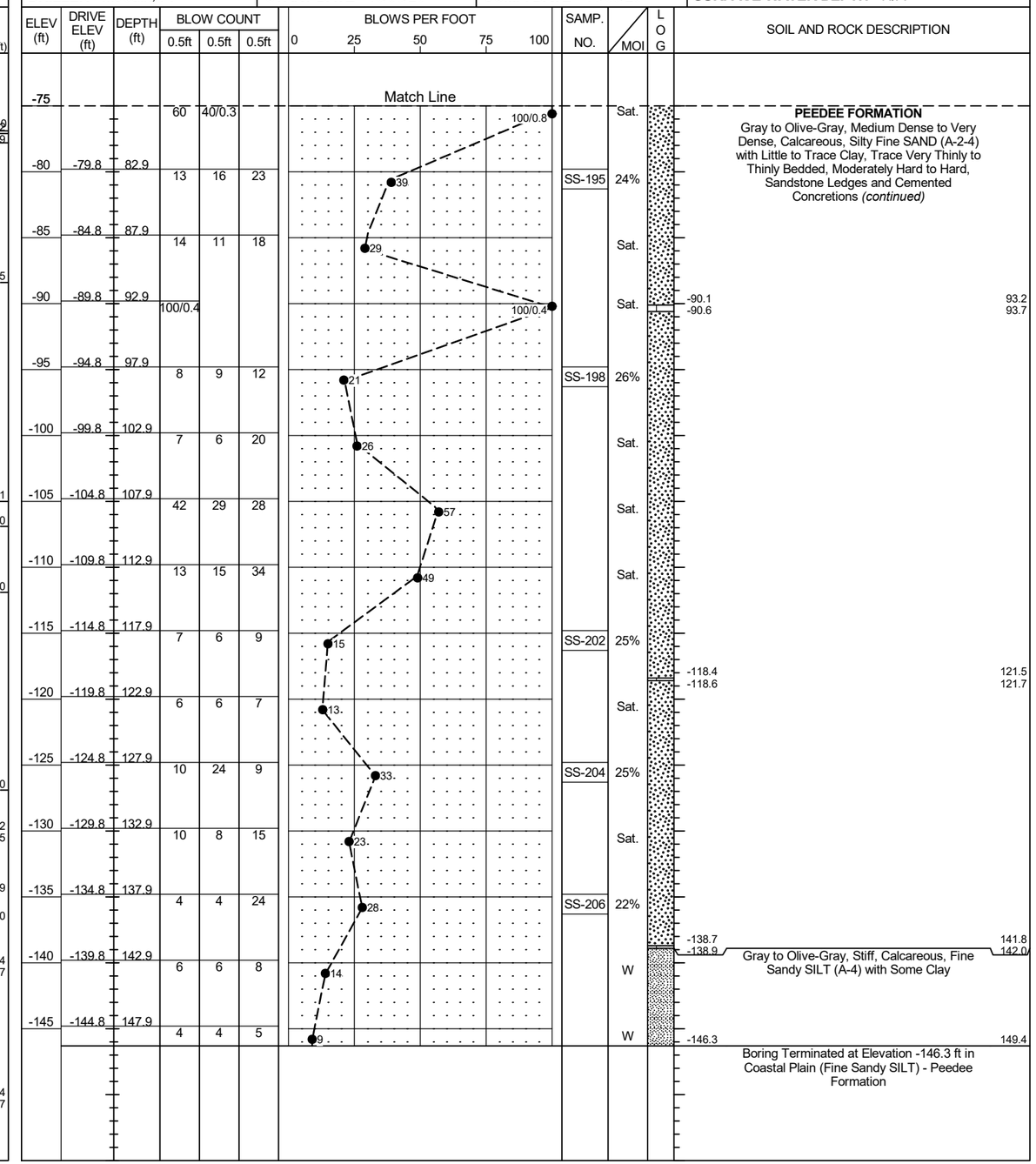
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B15-A	**STATION** 151+98	**OFFSET** 31 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 149.4 ft	**NORTHING** 175,556	**EASTING** 2,315,907 / **24 HR.** 3.4
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/30/25	**COMP. DATE** 11/03/25	**SURFACE WATER DEPTH** N/A



WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B15-A	**STATION** 151+98	**OFFSET** 31 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 149.4 ft	**NORTHING** 175,556	**EASTING** 2,315,907 / **24 HR.** 3.4
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/30/25	**COMP. DATE** 11/03/25	**SURFACE WATER DEPTH** N/A



NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B16-A	**STATION** 154+14	**OFFSET** 88 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.2 ft	**TOTAL DEPTH** 138.6 ft	**NORTHING** 175,534	**EASTING** 2,316,130	**24 HR.** 0.7
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 11/04/25	**COMP. DATE** 11/07/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	3.2	0.0	22	12	5	17		D		3.2 GROUND SURFACE	0.0
0	-0.3	3.5	No	Sample	Taken			Sat.		**ARTIFICIAL FILL (ENGINEERED)** Gray to Tan-Brown, Medium Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Little Gravel and Trace Shell Fragments	
-5	-5.3	8.5	No	Sample	Taken			Sat.		-5.3 **ALLUVIAL** Dark Brown to Black, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	8.5
-10	-9.8	13.0	WOH	WOH	WOH	0		Sat.		-12.3 Gray, Very Soft, Moderately Organic, Silty CLAY (A-7) with Some Fine Sand	15.5
-15	-14.8	18.0	WOH	WOH	WOH	0	SS-210	150%			
-20	-19.8	23.0	WOH	WOH	WOH	0		Sat.		-22.3 Gray, Very Soft, Sandy SILT (A-4) with Some Clay and Trace Organic Matter	25.5
-25	-24.8	28.0	WOH	WOH	WOH	0	SS-212	30%		-27.3 **UNDIVIDED COASTAL PLAIN** Light Gray to Tan-Brown, Loose, Fine to Coarse SAND (A-3)	30.5
-30	-29.8	33.0	4	2	2	4		Sat.		-31.1 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Dense, Calcareous, Silty SAND (A-2-4) with Trace Cemented Concretions	34.3
-35	-34.8	38.0	15	16	16	32		Sat.		-37.3 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE	40.5
-40	-39.8	43.0	15	26	28	54	SS-215	12%			
-45	-44.8	48.0	30	34	51	85				-47.3 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray to Gray, Very Dense, Calcareous, Silty SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	50.5
-50	-49.8	53.0	27	40	43	83	SS-217	17%			
-55	-54.8	58.0	25	75/0.2		100/0.7		Sat.		-53.0 56.2; -53.3 56.5; -54.0 57.2; -54.2 57.4; -55.1 58.3; -55.7 58.9; -56.8 60.0; -57.2 60.4; -59.3 62.5; -59.5 62.7; -60.1 63.3; -60.4 63.6	
-60	-59.8	63.0	100/0.4			100/0.4		Sat.			
-65	-64.8	68.0	57	43/0.2		100/0.7		Sat.			
-70	-69.8	73.0	63	37/0.2		100/0.7		Sat.		-71.8 75.0; -72.0 75.2; -74.0 77.2; -74.3 77.5	
-75	-74.8	78.0									

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B16-A	**STATION** 154+14	**OFFSET** 88 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.2 ft	**TOTAL DEPTH** 138.6 ft	**NORTHING** 175,534	**EASTING** 2,316,130	**24 HR.** 0.7
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 11/04/25	**COMP. DATE** 11/07/25	**SURFACE WATER DEPTH** N/A	

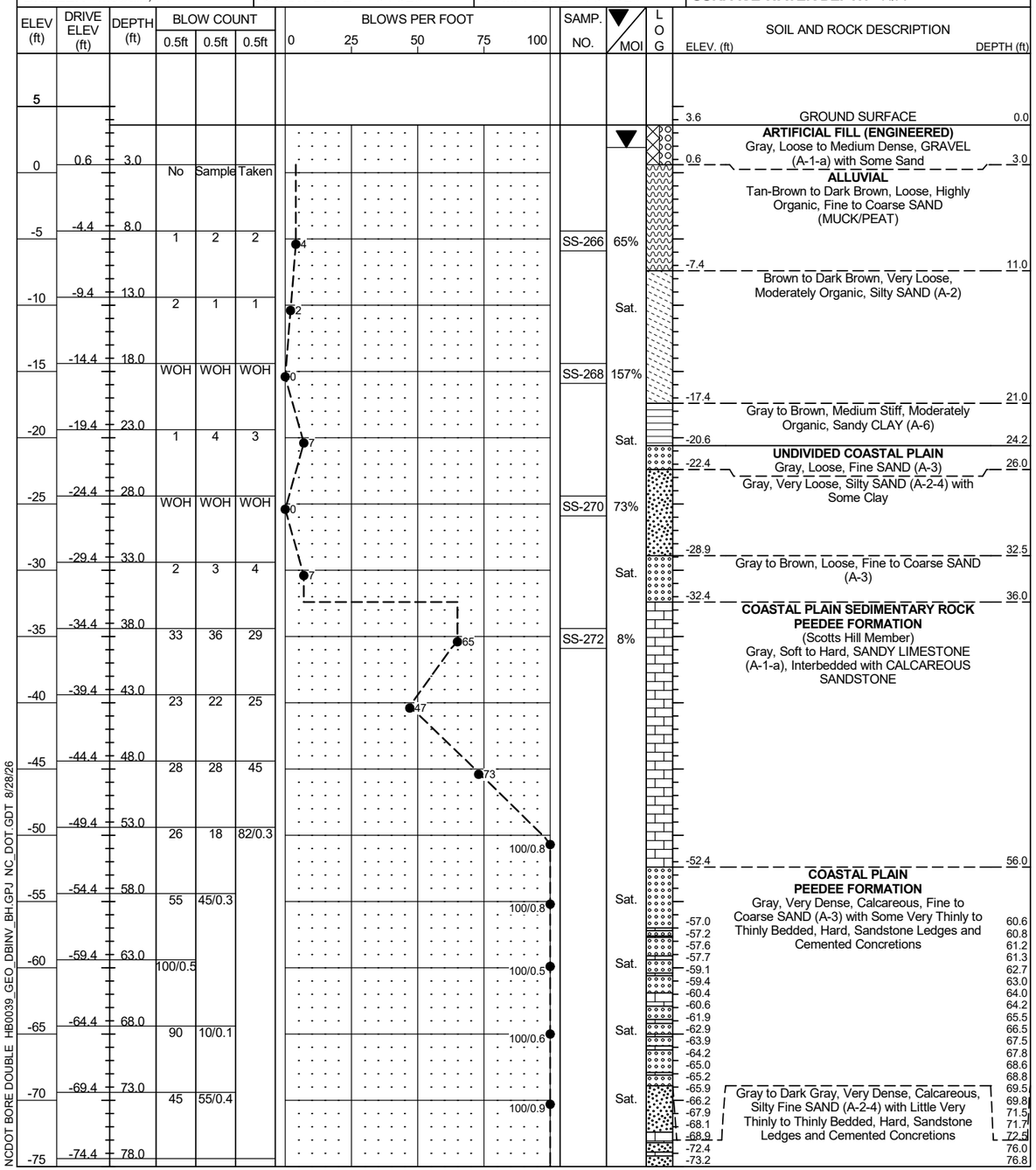
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			51	49/0.3		100/0.8		Sat.		**PEEDEE FORMATION** Olive-Gray to Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-79.8	83.0	38	62/0.5		100/1.0		Sat.		
-85	-84.8	88.0	100/0.4			100/0.4		Sat.		-85.1 88.3; -85.4 88.6
-90	-89.8	93.0	6	11	12	23		Sat.		
-95	-94.8	98.0	7	8	9	17		Sat.		
-100	-99.8	103.0	6	8	9	17	SS-227	22%		-102.8 106.0; -103.0 106.2
-105	-104.8	108.0	11	24	76/0.3	100/0.8		Sat.		-105.8 109.0; -106.1 109.3; -107.6 110.8; -107.8 111.0
-110	-109.8	113.0	26	23	27	50	SS-229	25%		
-115	-114.8	118.0	7	8	11	19		Sat.		
-120	-119.8	123.0	17	9	14	23		Sat.		
-125	-124.8	128.0	6	8	13	21	SS-232	25%		
-130	-129.8	133.0	47	27	30	57		Sat.		
-135	-134.8	138.0	50	50/0.1		100/0.6		Sat.		-135.4 138.6 Boring Terminated at Elevation -135.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

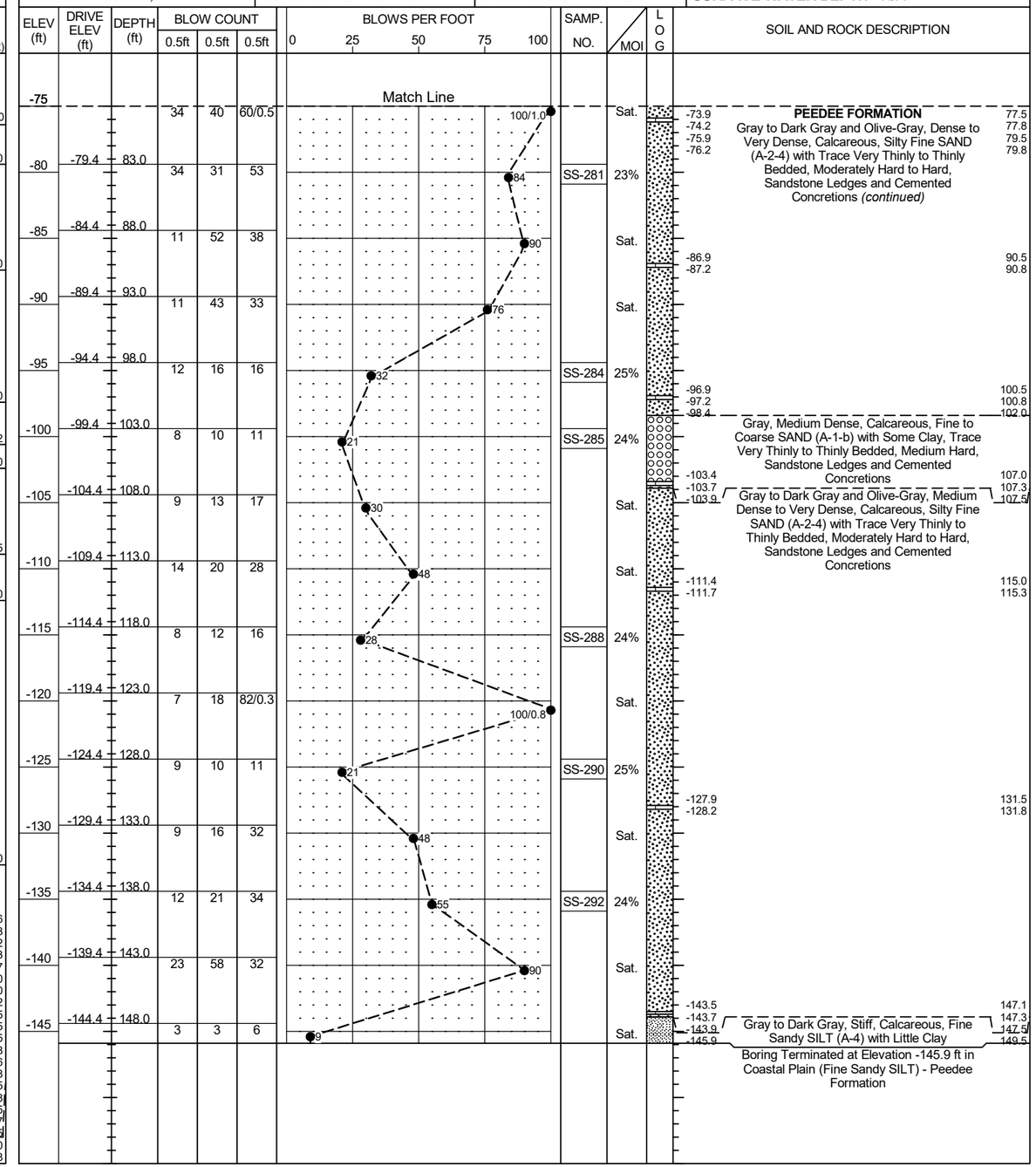
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B16-B	**STATION** 154+41	**OFFSET** 69 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.6 ft	**TOTAL DEPTH** 149.5 ft	**NORTHING** 175,377	**EASTING** 2,316,099	**24 HR.** 1.7
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 11/14/25	**COMP. DATE** 11/17/25	**SURFACE WATER DEPTH** N/A	



WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B16-B	**STATION** 154+41	**OFFSET** 69 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 3.6 ft	**TOTAL DEPTH** 149.5 ft	**NORTHING** 175,377	**EASTING** 2,316,099	**24 HR.** 1.7
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 11/14/25	**COMP. DATE** 11/17/25	**SURFACE WATER DEPTH** N/A	



NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B17-A	**STATION** 155+97	**OFFSET** 51 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 4.1 ft	**TOTAL DEPTH** 149.2 ft	**NORTHING** 175,435	**EASTING** 2,316,288 / **24 HR.** 3.1
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 11/12/25	**COMP. DATE** 11/13/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
5										4.1 GROUND SURFACE	0.0
	1.4	2.7	No	Sample	Taken					**ARTIFICIAL FILL (ENGINEERED)** Gray to Tan-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Little Gravel	
0										-1.4	5.5
	-3.6	7.7	No	Sample	Taken			Sat.		**ALLUVIAL** Dark Brown to Black, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
-5										-6.9	11.0
	-8.6	12.7	2	1	2	3	SS-238	23%		Tan-Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
-10										-11.4	15.5
	-13.6	17.7	WOH	WOH	WOH	0	SS-239	59%		Gray, Very Soft, Clayey SILT (A-5) with Little Organic Matter	
-15										-18.8	22.9
	-18.6	22.7	3	3	5	8		Sat.		**UNDIVIDED COASTAL PLAIN** Gray to Brown, Loose to Medium Dense, Silty Fine SAND (A-2-4) with Trace Organic Matter	
-20											
	-23.6	27.7	5	6	7	13	SS-241	26%			
-25											
	-28.6	32.7	3	5	3	8		Sat.			
-30										-32.4	36.5
	-33.6	37.7	18	17	21	38		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray, Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Trace Cemented Concretions	
-35										-36.4	40.5
	-38.6	42.7	39	22	32	54	SS-244	13%		**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE	
-40											
	-43.6	47.7	31	31	26	57					
-45											
	-48.6	52.7	35	28	18	46					
-50										-51.0	55.1
	-53.6	57.7	32	41	56	97	SS-247	22%		**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Very Dense, Calcareous, Fine to Coarse SAND (A-3) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-55										-56.1 / -56.6 / -57.9 / -58.4	60.2 / 60.7 / 62.0 / 62.5
	-58.6	62.7	80	20/0.1		100/0.6		Sat.			
-60											
	-63.6	67.7	61	39/0.2		100/0.7		Sat.		-64.4 / -64.9	68.5 / 69.0
-65										-67.7 / -67.9	71.8 / 72.0
	-68.6	72.7	40	60/0.4		100/0.9		Sat.			
-70											
	-73.6	77.7	39	61/0.4		100/0.9		Sat.			
-75											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B17-A	**STATION** 155+97	**OFFSET** 51 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 4.1 ft	**TOTAL DEPTH** 149.2 ft	**NORTHING** 175,435	**EASTING** 2,316,288 / **24 HR.** 3.1
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 11/12/25	**COMP. DATE** 11/13/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
	-78.6	82.7	23	17	40	57		Sat.		
-80										
	-83.6	87.7	14	11	26	37	SS-253	24%		
-85										
	-88.6	92.7	20	15	26	41		Sat.		
-90										
	-93.6	97.7	15	34	24	58		Sat.		
-95										
	-98.6	102.7	8	9	10	19	SS-256	22%		
-100										
	-103.6	107.7	6	8	12	20		Sat.		
-105										
	-108.6	112.7	18	15	23	38	SS-258	23%		
-110										
	-113.6	117.7	12	12	16	28		Sat.		
-115										
	-118.6	122.7	8	9	10	19	SS-260	26%		
-120										
	-123.6	127.7	23	12	15	27	SS-261	23%		
-125										
	-128.6	132.7	7	8	18	26		Sat.		
-130										
	-133.6	137.7	6	11	19	30	SS-263	25%		
-135										
	-138.6	142.7	8	12	46	58		Sat.		
-140										
	-143.6	147.7	6	6	13	19		Sat.		
-145										

SOIL AND ROCK DESCRIPTION	
-76.4	80.5
PEEDEE FORMATION Light Gray to Dark Gray, and Olive-Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Trace Very Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	
-96.4	100.5
Gray to Dark Gray, Medium Dense, Calcareous, Fine SAND (A-3)	
-106.4	110.5
Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	-110.9 / -111.3 / 115.0 / 115.4
-141.4	145.5
Gray to Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay	
-145.1	149.2
Boring Terminated at Elevation -145.1 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation	

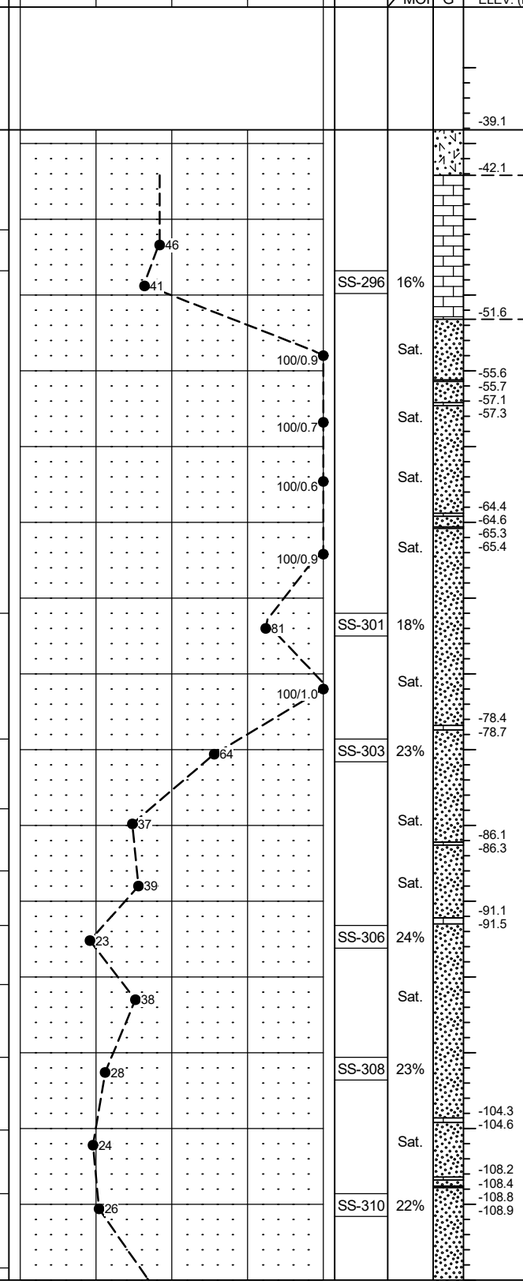
NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B18-A	**STATION** 158+95	**OFFSET** 51 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -39.1 ft	**TOTAL DEPTH** 226.9 ft	**NORTHING** 175,330	**EASTING** 2,316,567 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 12/08/25	**COMP. DATE** 12/15/25	**SURFACE WATER DEPTH** 40.0ft

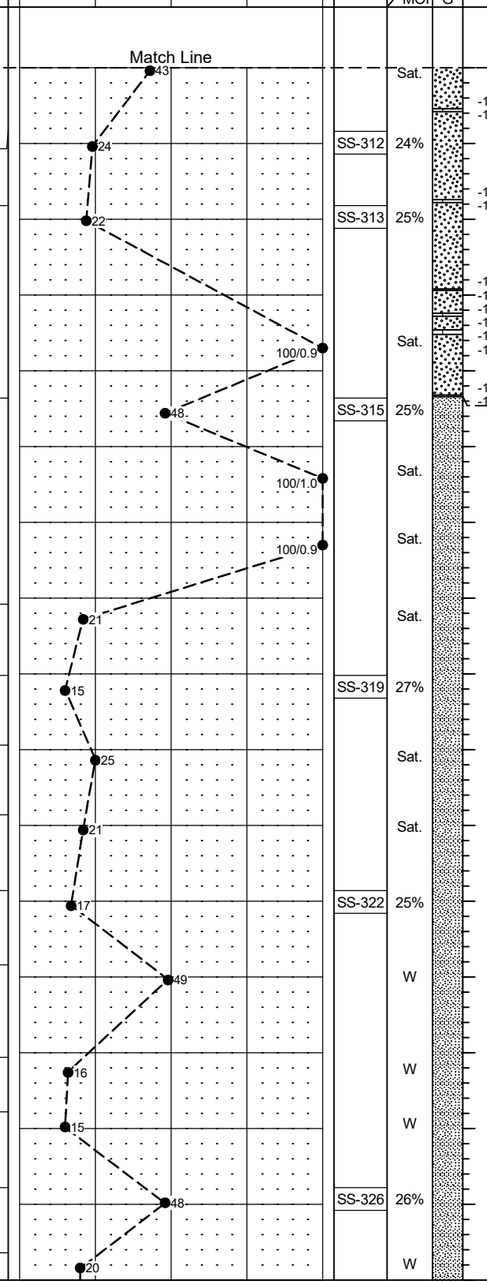
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI
-45.7		6.6	11	15	31		
-48.4		9.3	18	17	24	SS-296	16%
-53.1		14.0	46	54/0.4			Sat.
-57.7		18.6	60	40/0.2			Sat.
-61.7		22.6	74	36/0.1			Sat.
-66.2		27.1	27	73/0.4			Sat.
-71.0		31.9	11	37	44	SS-301	18%
-75.0		35.9	27	73/0.5			Sat.
-79.3		40.2	16	22	42	SS-303	23%
-83.9		44.8	12	12	25		Sat.
-88.0		48.9	38	18	21		Sat.
-91.6		52.5	8	8	15	SS-306	24%
-95.5		56.4	14	17	21		Sat.
-100.3		61.2	8	12	16	SS-308	23%
-105.1		66.0	8	9	15		Sat.
-109.3		70.2	9	10	16	SS-310	22%
-114.2		75.1	11	18	25		



ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
-39.1	GROUND SURFACE	0.0
	ALLUVIAL Brown, Very Soft, Clayey SILT (A-5)	
-42.1		3.0
	COASTAL PLAIN SEDIMENTARY ROCK **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	
-51.6		12.5
	COASTAL PLAIN **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some to Little Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-55.6		16.5
-55.7		16.6
-57.1		18.0
-57.3		18.2
-64.4		25.3
-64.6		25.5
-65.3		26.2
-65.4		26.3
-78.4		39.3
-78.7		39.6
-86.1		47.0
-86.3		47.2
-91.1		52.0
-91.5		52.4
-104.3		65.2
-104.6		65.5
-108.2		69.1
-108.4		69.3
-108.8		69.7
-108.9		69.8

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B18-A	**STATION** 158+95	**OFFSET** 51 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -39.1 ft	**TOTAL DEPTH** 226.9 ft	**NORTHING** 175,330	**EASTING** 2,316,567 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 12/08/25	**COMP. DATE** 12/15/25	**SURFACE WATER DEPTH** 40.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI
-119.2		80.1	8	10	14	SS-312	24%
-124.1		85.0	7	9	13	SS-313	25%
-132.6		93.5	27	73/0.4			Sat.
-136.8		97.7	8	14	34	SS-315	25%
-141.1		102.0	10	90/0.5			Sat.
-145.6		106.5	47	53/0.4			Sat.
-150.4		111.3	12	11	10		Sat.
-155.1		116.0	5	5	10	SS-319	27%
-159.7		120.6	17	12	13		Sat.
-164.3		125.2	4	7	14		Sat.
-169.3		130.2	6	7	10	SS-322	25%
-174.2		135.1	6	15	34		W
-180.3		141.2	6	6	10		W
-183.9		144.8	8	7	8		W
-188.9		149.8	17	22	26	SS-326	26%
-193.2		154.1	10	10	10		W



ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
	PEEDEE FORMATION Gray to Dark Gray and Olive-Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Little to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*	
-117.7		78.6
-117.9		78.8
-123.7		84.6
-123.9		84.8
-129.6		90.5
-129.7		90.6
-131.2		92.1
-131.4		92.3
-132.3		93.2
-132.6		93.5
-136.6		97.5
-136.7	Gray to Dark Gray and Olive-Gray, Medium Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	97.6

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B18-A	**STATION** 158+95	**OFFSET** 51 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -39.1 ft	**TOTAL DEPTH** 226.9 ft	**NORTHING** 175,330	**EASTING** 2,316,567 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 12/08/25	**COMP. DATE** 12/15/25	**SURFACE WATER DEPTH** 40.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
-195						Match Line				
	-197.4	158.3	10	9	11	20		W		Gray to Dark Gray and Olive-Gray, Medium Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-200										
	-202.0	162.9	12	15	12	27		W		
-205										
	-206.3	167.2	6	7	8	15	SS-330	23%		
-210										
	-210.7	171.6	4	6	23	29		W		
-215										
	-215.5	176.4	6	27	19	46		W		
-220										
	-221.3	182.2	WOH	2	3	5		W		
-225										-225.9 / 186.8
	-226.2	187.1	60/0.0			60/0.0				-226.2 / 187.1 **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Dense to Very Dense, Calcareous, Silty SAND (A-2-4) with Little to Trace Very Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-230										
	-233.4	194.3	15	20	25	45		Sat.		
-235										
	-238.9	199.8	36	64/0.3		100/0.8	SS-334	18%		
-240										
	-244.4	205.3	21	36	51	87		Sat.		
-245										
	-249.8	210.7	36	64/0.5		100/1.0		Sat.		
-250										-252.1 / 213.0
	-255.2	216.1	3	6	9	15		Sat.		Olive-Gray, Stiff to Very Stiff, Calcareous, Sandy SILT (A-4) with Some Clay
-255										
	-260.2	221.1	WOH	WOH	14	14		W		
-260										
	-264.5	225.4	6	8	22	30	SS-339	18%		-266.0 / 226.9
										Boring Terminated at Elevation -266.0 ft in Coastal Plain (Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B18-B	**STATION** 159+03	**OFFSET** 51 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. -37.7 ft	**TOTAL DEPTH** 224.4 ft	**NORTHING** 175,231	**EASTING** 2,316,539	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 01/05/26	**COMP. DATE** 01/13/26	**SURFACE WATER DEPTH** 40.0ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
								GROUND SURFACE	-37.7	0.0
								ALLUVIAL Brown, Very Soft, Clayey SILT (A-5)	-39.7	2.0
								COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION (Scotts Hill Member) Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE		
	-54.0	16.3	100/0.3						-54.7	17.0
								COASTAL PLAIN PEEDEE FORMATION Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions		
	-59.6	21.9	100/0.4				Sat.		-60.5	22.8
									-60.7	23.0
									-61.2	23.5
									-61.7	24.0
									-62.2	24.5
									-62.7	25.0
	-64.9	27.2	43	57/0.4			Sat.		-63.7	26.0
									-63.9	26.2
									-64.5	26.8
									-64.7	27.0
									-66.7	29.0
									-67.0	29.3
	-70.2	32.5	16	54	46/0.3		Sat.		-68.7	31.0
									-69.1	31.4
									-69.8	32.1
									-70.0	32.3
									-72.7	35.0
	-75.4	37.7	20	47	53/0.3		Sat.		-72.9	35.2
									-74.7	37.0
									-74.9	37.2
	-82.8	45.1	14	20	29	SS-346	22%			
	-87.2	49.5	7	10	73		Sat.		-88.7	51.0
									-89.0	51.3
									-89.7	52.0
	-91.7	54.0	8	9	11		Sat.		-89.9	52.2
									-91.2	53.5
									-91.4	53.7
									-91.9	54.2
									-92.3	54.6
	-96.2	58.5	7	9	13	SS-349	23%			
	-100.9	63.2	15	7	10	SS-350	23%			
	-105.4	67.7	23	16	84/0.4		Sat.			
	-109.2	71.5	16	62	28		Sat.			
	-114.6	76.9							-114.9	77.2

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B18-B	**STATION** 159+03	**OFFSET** 51 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. -37.7 ft	**TOTAL DEPTH** 224.4 ft	**NORTHING** 175,231	**EASTING** 2,316,539	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 01/05/26	**COMP. DATE** 01/13/26	**SURFACE WATER DEPTH** 40.0ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
								Match Line		
			16	18	10	SS-353	27%	**PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*		
	-119.2	81.5	8	7	20	SS-354	26%			
	-124.0	86.3	100/0.4				Sat.		-123.7	86.0
									-124.2	86.5
	-128.8	91.1	13	11	16		Sat.			
	-133.6	95.9	10	9	13	SS-357	26%			
	-138.5	100.8	18	31	30		Sat.			
	-143.2	105.5	5	4	5		Sat.		-140.7	103.0
								Gray to Dark Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions		
	-148.1	110.4	4	4	6	SS-360	27%			
	-153.2	115.5	4	4	6		Sat.			
	-158.1	120.4	20	11	12		Sat.		-157.2	119.5
									-157.7	120.0
	-164.0	126.3	6	20	19	SS-363	25%			
	-169.5	131.8	13	14	15		W			
	-174.8	137.1	4	6	8		W			
	-182.0	144.3	5	7	8	SS-366	27%			
	-187.1	149.4	7	12	10		W			
	-191.6	153.9	6	7	17		W			
									-195.0	157.3

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B18-B	**STATION** 159+03	**OFFSET** 51 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -37.7 ft	**TOTAL DEPTH** 224.4 ft	**NORTHING** 175,231	**EASTING** 2,316,539 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/05/26	**COMP. DATE** 01/13/26	**SURFACE WATER DEPTH** 40.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
-195						Match Line				
	-195.7	158.0	7	6	12	18		W		Gray to Dark Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-200	-200.0	162.3	15	17	29	46		W		-201.4 / 163.7; -201.7 / 164.0
-205	-204.3	166.6	6	6	9	15		W		
-210	-208.8	171.1	22	26	18	44		W		
-215	-213.0	175.3	8	5	7	12		Sat.		-214.7 / 177.0; -214.9 / 177.2
-220	-218.1	180.4	1	WOH	8	8		Sat.		-220.7 / 183.0
-225	-222.2	184.5	100/0.2			100/0.2		Sat.		**PEEDEE FORMATION** Gray, Medium Dense to Very Dense, Calcareous, Silty SAND (A-2-4) with Some to Little Clay, Little to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions; -225.7 / 188.0; -226.0 / 188.3
-230	-227.3	189.6	6	12	16	28	SS-376	20%		
-235	-232.1	194.4	45	55/0.4		100/0.9		Sat.		
-240	-236.5	198.8	38	44	33	77		Sat.		
	-240.7	203.0	29	71/0.4		100/0.9		Sat.		
-245	-245.2	207.5	45	65/0.4		100/0.9		Sat.		
-250	-249.6	211.9	17	14	14	28	SS-381	21%		-252.7 / 215.0
-255	-254.1	216.4	3	3	6	9		Sat.		Dark Gray to Olive-Gray, Stiff, Calcareous, Sandy SILT (A-4) with Some Clay
-260	-260.1	222.4	4	5	5	10		W		-262.1 / 224.4

Boring Terminated at Elevation -262.1 ft in Coastal Plain (Sandy SILT) - Peedee Formation

Notes:
- 170 Feet of BWJ Drill Rods Lost after last SPT Drive and Grouted in Boring.

NCDOT BORE DOUBLE_HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C. & Jesson, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-A	**STATION** 163+83	**OFFSET** 42 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -45.8 ft	**TOTAL DEPTH** 200.2 ft	**NORTHING** 175,150	**EASTING** 2,317,021 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/20/26	**COMP. DATE** 01/23/26	**SURFACE WATER DEPTH** 45.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
-45										-45.8 GROUND SURFACE	0.0
										ALLUVIAL Brown, Very Soft, Clayey SILT (A-5) -47.8	2.0
-50										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Moderately Hard to Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE	
-55	-57.3	11.5	19	22	47	69	SS-383	9%			
-60	-61.0	15.2	40	60/0.1		100/0.6				-62.8	17.0
-65	-66.4	20.6	100/0.4			100/0.4				**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Little Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-70	-71.8	26.0	30	64	36/0.1	100/0.6				-70.1 / -70.7	24.3 / 24.9
-75	-77.9	32.1	14	21	60	81		Sat.			
-80	-80.4	34.6	37	27	34	61	SS-388	20%			
-85	-85.0	39.2	5	6	19	25		Sat.			
-90	-89.7	43.9	9	21	41	62		Sat.			
-95	-94.5	48.7	8	10	14	24		Sat.			
-100	-99.4	53.6	8	10	13	23		Sat.			
-105	-104.4	58.6	6	7	13	20	SS-393	23%			
-110	-109.3	63.5	13	8	13	21		Sat.			
-115	-114.3	68.5	60/0.0			60/0.0				-111.8 / -112.1 / -113.8 / -114.0	66.0 / 66.3 / 68.0 / 68.2
-120	-119.5	73.7	5	8	11	19		Sat.		-116.5 / -116.8 / -117.8 / -118.1 / -119.4 / -119.8	70.7 / 71.0 / 72.0 / 72.3 / 73.6 / 74.0
-125	-124.7	78.9									

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C. & Jesson, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-A	**STATION** 163+83	**OFFSET** 42 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -45.8 ft	**TOTAL DEPTH** 200.2 ft	**NORTHING** 175,150	**EASTING** 2,317,021 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/20/26	**COMP. DATE** 01/23/26	**SURFACE WATER DEPTH** 45.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-125						Match Line				
			5	10	100/0.3	100/0.3		Sat.		-125.3 / -125.8 / -126.3 **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Little Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions (79.5 / 80.0 / 80.5)
-130	-130.3	84.5	20	13	18	31	SS-397	24%		
-135	-135.8	90.0	6	7	8	15		Sat.		
-140	-141.2	95.4	14	24	40	64		Sat.		-139.8 (94.0) Gray to Dark Gray, Medium Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly Bedded Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-145	-146.7	100.9	7	7	8	15		Sat.		
-150	-152.0	106.2	3	3	5	8	SS-401	30%		
-155	-157.6	111.8	18	12	20	32		Sat.		
-160	-161.9	116.1	3	5	8	13		W		
-165	-165.8	120.0	11	17	19	36		W		
-170	-170.2	124.4	4	4	7	11		W		
-175	-174.9	129.1	4	20	30	50		W		
-180	-179.5	133.7	5	6	13	19	SS-407	26%		
-185	-184.2	138.4	5	13	28	41		W		
-190	-189.2	143.4	3	9	9	18		W		
-195	-194.6	148.8	13	9	9	18		W		
-200	-200.1	154.3	8	8	3	11		W		
-205										

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C. & Jesson, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-A	**STATION** 163+83	**OFFSET** 42 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. -45.8 ft	**TOTAL DEPTH** 200.2 ft	**NORTHING** 175,150	**EASTING** 2,317,021	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/20/26	**COMP. DATE** 01/23/26	**SURFACE WATER DEPTH** 45.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
-205						Match Line					
	-205.8	160.0	11	14	13	27	SS-412	23%		Gray to Dark Gray, Medium Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly Bedded Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*	
-210											
	-211.3	165.5	6	12	15	27		W			
-215											
	-217.6	171.8	3	4	9	13		W			
-220										-220.8	175.0
	-221.2	175.4	15	22	45	67		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Dense to Very Dense, Calcareous, Silty SAND (A-2-4) with Little to Trace Very Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	
-225											
	-225.6	179.8	60/0.1			60/0.1		Sat.			
-230											
	-229.9	184.1	11	20	23	43		Sat.			
-235											
	-234.3	188.5	55	45/0.2		100/0.7		Sat.			
-240											
	-239.3	193.5	32	40	60	100/1.0	SS-418	21%			
-245											
	-244.5	198.7	30	53	44	97		Sat.		-246.0	200.2

Boring Terminated at Elevation -246.0 ft in Coastal Plain (Silty SAND) - Peedee Formation

Notes:
- Boring terminated early due to lost BWJ rods down the hole after the SPT drive at 198.7 feet was retrieved.

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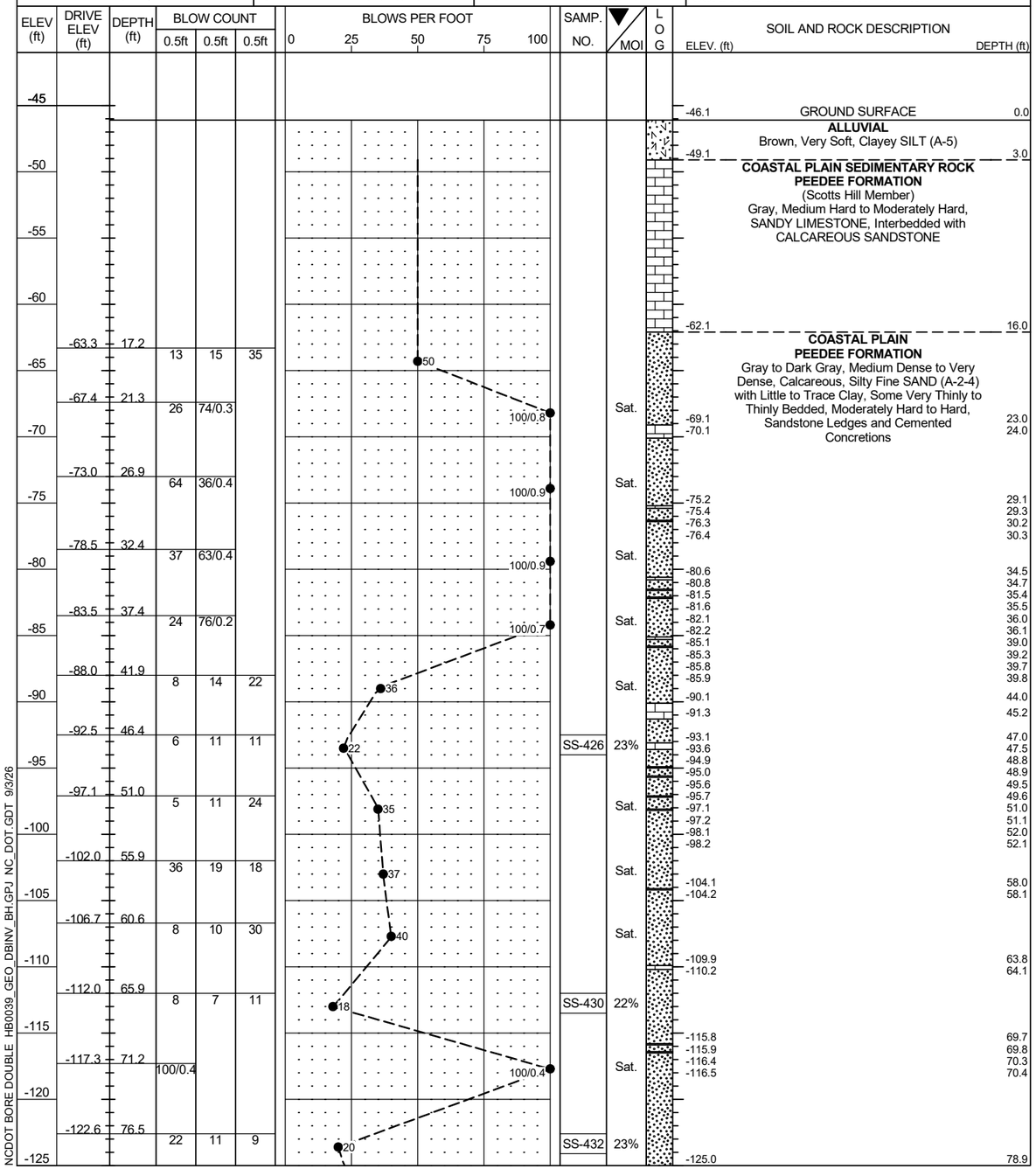
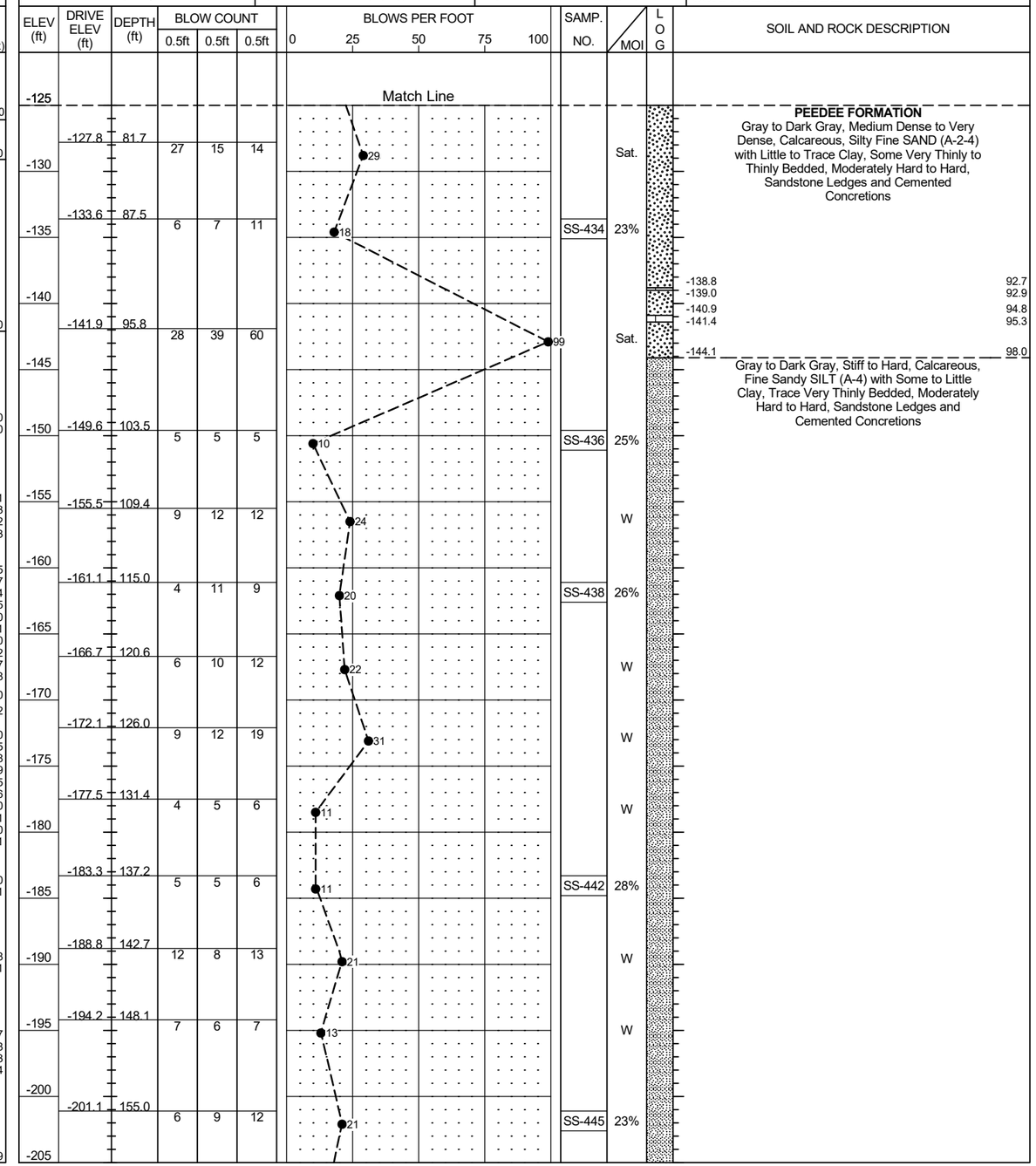
GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-B	**STATION** 163+87	**OFFSET** 46 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -46.1 ft	**TOTAL DEPTH** 227.1 ft	**NORTHING** 175,066	**EASTING** 2,316,993 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/28/26	**COMP. DATE** 02/06/26	**SURFACE WATER DEPTH** 45.0ft



WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-B	**STATION** 163+87	**OFFSET** 46 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -46.1 ft	**TOTAL DEPTH** 227.1 ft	**NORTHING** 175,066	**EASTING** 2,316,993 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/28/26	**COMP. DATE** 02/06/26	**SURFACE WATER DEPTH** 45.0ft



NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B19-B	**STATION** 163+87	**OFFSET** 46 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. -46.1 ft	**TOTAL DEPTH** 227.1 ft	**NORTHING** 175,066	**EASTING** 2,316,993 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 01/28/26	**COMP. DATE** 02/06/26	**SURFACE WATER DEPTH** 45.0ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
-205						Match Line				
	-206.7	160.6	7	7	8	15		W		Gray to Dark Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-210										
	-212.2	166.1	7	6	6	12		W		
-215										
	-218.0	171.9	4	4	5	9	SS-448	21%		
-220										
	-221.2	175.1	2	10	16	26		W		-223.1 / 177.0
-225										**PEEDEE FORMATION**
	-226.6	180.5	43	57/0.3		100/0.8		Sat.		-225.4 / 179.3; -225.6 / 179.5; Gray, Dense to Very Dense, Calcareous, Silty SAND (A-2-4) with Little Clay, Some Very Thinly To Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions; -228.1 / 182.0; -228.2 / 182.1
-230										
	-231.0	184.9	11	16	20	36	SS-450	17%		-234.1 / 188.0; -234.4 / 188.3
-235										
	-235.4	189.3	33	49	51/0.3	100/0.8		Sat.		-236.9 / 190.8; -237.1 / 191.0
-240										
	-239.7	193.6	23	40	41	81		Sat.		-241.9 / 195.8; -242.2 / 196.1; -242.9 / 196.8; -243.0 / 196.9
-245										
	-244.6	198.5	27	44	55	99		Sat.		-245.6 / 199.5; -246.2 / 200.1; -247.1 / 201.0; -247.2 / 201.1; -249.1 / 203.0; -249.9 / 203.8
-250										
	-249.8	203.7	65	45/0.2		100/0.7		Sat.		-250.9 / 204.8; -251.2 / 205.1; -253.1 / 207.0
-255										Dark Gray, Medium Dense, Calcareous, Clayey SAND (A-2-6)
	-255.7	209.6	6	10	11	21	SS-455	20%		
-260										-261.1 / 215.0
	-262.7	216.6	5	8	11	19	SS-456	20%		Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty SAND (A-2-4) with Some Clay and Trace Cemented Concretions
-265										
	-267.6	221.5	14	28	28	56		Sat.		
-270										
	-271.7	225.6	10	14	14	28		Sat.		-273.2 / 227.1
										Boring Terminated at Elevation -273.2 ft in Coastal Plain (Silty SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-B_CORE	**STATION** 165+84	**OFFSET** 26 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 8.2 ft	**TOTAL DEPTH** 65.4 ft	**NORTHING** 175,016	**EASTING** 2,317,185 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/19/26	**COMP. DATE** 06/19/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
8.2										GROUND SURFACE	0.0
										OVERBURDEN	
-34.5							RS-9			**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 99% SRQD: 86% GSI: 50-60	42.7
-52.2							RS-10			**COASTAL PLAIN** **PEEDEE FORMATION** Silty Fine SAND (A-2-4) SREC: 0% SRQD: 0% GSI: N/A	60.4
-57.2										Boring Terminated at Elevation -57.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	65.4

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-B_CORE	**STATION** 165+84	**OFFSET** 26 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 8.2 ft	**TOTAL DEPTH** 65.4 ft	**NORTHING** 175,016	**EASTING** 2,317,185 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/19/26	**COMP. DATE** 06/19/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 22.7 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-34.5											Begin Coring @ 42.7 ft	
-35	-34.5	42.7	2.7	1:01/1.0 1:26/1.0 1:53/0.7	(2.7) 100%	(2.5) 93%	RS-9	(17.5) 99%	(15.2) 86%		-34.5 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray and Tan-Brown, Very Slight to Moderate Weathering, Moderately Hard to Hard, Close to Moderately Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded, Hard, Indurated, CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60.	42.7
	-37.2	45.4										
-40			5.0	1:27/1.0 1:19/1.0 1:24/1.0 1:21/1.0 1:21/1.0	(5.0) 100%	(4.6) 92%						
	-42.2	50.4										
-45			5.0	1:21/1.0 1:20/1.0 1:23/1.0 1:23/1.0 1:28/1.0	(4.8) 96%	(3.9) 78%						
	-47.2	55.4										
-50			5.0	1:24/1.0 1:26/1.0 1:22/1.0 1:21/1.0 1:22/1.0	(5.0) 100%	(4.2) 84%	RS-10					
	-52.2	60.4									-52.2	60.4
-55			5.0	1:24/1.0 1:19/1.0 1:22/1.0 1:21/1.0 1:20/1.0	(0.0) 0%	(0.0) 0%		(0.0) 0%	(0.0) 0%		**COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray, Calcareous, Silty Fine SAND (A-2-4)	
	-57.2	65.4									-57.2	65.4
											Boring Terminated at Elevation -57.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	

NCDOT CORE SINGLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-A	**STATION** 165+88	**OFFSET** 32 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 7.7 ft	**TOTAL DEPTH** 159.6 ft	**NORTHING** 175,068	**EASTING** 2,317,209 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/04/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
	7.7	0.0								7.7 GROUND SURFACE	0.0
			2	4	7	11		D		**ARTIFICIAL FILL** Brown, Medium Dense, Silty SAND (A-2-4) with Trace Gravel	
5										4.7	3.0
	2.9	4.8								**ALLUVIAL** Brown, Very Loose, Silty SAND (A-2-4)	
			5	WOH	1	1		M		1.7	6.0
0										Dark Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
	-0.4	8.1									
			WOH	1	WOH	1	SS-6077	22%			
										-3.3	11.0
-5										**COASTAL PLAIN PEEDEE FORMATION** Tan-Brown to Gray, Medium Dense, Calcareous, Clayey SAND (A-2-6)	
	-5.3	13.0									
			4	7	11	18		Sat.			
-10										-8.3	16.0
	-10.3	18.0								Light Gray to Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	
			9	5	20	25		Sat.			
-15											
	-15.3	23.0									
			7	15	17	32		Sat.			
-20											
	-20.3	28.0									
			22	14	13	27		Sat.			
-25										-23.3	31.0
	-25.3	33.0								Light Gray to Dark Gray, Very Stiff to Hard, Calcareous, Sandy CLAY (A-6) with Some Silt	
			11	7	10	17		Sat.			
-30											
	-30.3	38.0									
			48	35	21	56	SS-6083	17%			
-35										-33.3	41.0
	-35.3	43.0								Light Gray to Dark Gray, Very Dense, Calcareous, Silty SAND (A-2-4)	
			29	36	24	60		Sat.			
-40										-38.3	46.0
	-40.3	48.0								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
			70	30/0.4		100/0.9					
-45											
	-45.3	53.0									
			20	17	14	31					
-50											
	-50.3	58.0									
			40	60/0.2		100/0.7					
-55											
	-55.3	63.0									
			100/0.4			100/0.4					
-60											
	-60.3	68.0									
			60/0.1			60/0.1					
										-63.3	71.0
-65											
	-65.3	73.0									
			73	27/0.1		100/0.6		Sat.			
-70											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-A	**STATION** 165+88	**OFFSET** 32 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 7.7 ft	**TOTAL DEPTH** 159.6 ft	**NORTHING** 175,068	**EASTING** 2,317,209 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/04/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
	-70.3	78.0	43	57/0.3		100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Loose to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-75										
	-75.4	83.1	35	65/0.5		100/1.0		Sat.		
-80										
	-80.4	88.1	41	59/0.4		100/0.9		Sat.		
-85										
	-85.4	93.1	25	35	36	71		Sat.		
-90										
	-90.4	98.1	100/0.4			100/0.4		Sat.		
-95										
	-95.4	103.1	7	9	14	23	SS-6096	22%		
-100										
	-100.4	108.1	15	19	20	39		Sat.		
-105										
	-105.4	113.1	6	6	11	17		Sat.		
-110										
	-110.4	118.1	3	5	6	11		Sat.		
-115										
	-115.4	123.1	100/0.5			100/0.5		Sat.		
-120										
	-120.4	128.1	6	5	6	11	SS-7001	19%		
-125										
	-125.4	133.1	5	5	6	11		Sat.		
-130										
	-130.4	138.1	4	8	5	13		Sat.		
-135										
	-135.4	143.1	13	16	21	37		Sat.		
-140										
	-140.4	148.1	14	10	19	29	SS-7003	22%		
-145										
	-145.4	153.1	23	14	22	36		Sat.		
-150										

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-A	**STATION** 165+88	**OFFSET** 32 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 7.7 ft	**TOTAL DEPTH** 159.6 ft	**NORTHING** 175,068	**EASTING** 2,317,209	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/04/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
-150						Match Line					
	-150.4	158.1	4	3	5	8		Sat.		-151.9	159.6
										Boring Terminated at Elevation -151.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-A_CORE	**STATION** 165+89	**OFFSET** 36 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 7.9 ft	**TOTAL DEPTH** 70.4 ft	**NORTHING** 175,072	**EASTING** 2,317,212 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/17/26	**COMP. DATE** 06/18/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
7.9										GROUND SURFACE	0.0
										OVERBURDEN	
-38.9							RS-7			**COASTAL PLAIN SEDIMENTARY ROCK**	46.8
										PEEDEE FORMATION (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
										SREC: 78% SRQD: 51% GSI: 50-60	
							RS-8				
-62.5										Boring Terminated at Elevation -62.5 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation	70.4

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-A_CORE	**STATION** 165+89	**OFFSET** 36 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 7.9 ft	**TOTAL DEPTH** 70.4 ft	**NORTHING** 175,072	**EASTING** 2,317,212 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/17/26	**COMP. DATE** 06/18/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 23.6 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-38.9											Begin Coring @ 46.8 ft	
-40	-38.9	46.8	3.6	2:19/1.0 3:45/1.0 2:16/1.0 2:30/0.6	(3.6) 100%	(3.4) 94%	RS-7	(18.5) 78%	(12.0) 51%		-38.9 **COASTAL PLAIN SEDIMENTARY ROCK**	46.8
	-42.5	50.4	5.0	1:16/1.0 2:15/1.0 3:00/1.0 1:03/1.0 1:39/1.0	(3.5) 70%	(2.2) 44%					**PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray and Tan-Brown, Very Slight to Moderate Weathering, Moderately Hard to Hard, Close to Moderately Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded, Hard, Indurated, CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60.	
-45	-47.5	55.4	5.0	2:04/1.0 1:29/1.0 1:45/1.0 1:26/1.0 1:43/1.0	(5.0) 100%	(4.3) 86%	RS-8					
-50	-52.5	60.4	5.0	1:39/1.0 1:32/1.0 1:28/1.0 1:16/1.0 1:21/1.0	(5.0) 100%	(2.1) 42%						
-55	-57.5	65.4	5.0	1:21/1.0 1:16/1.0 1:22/1.0 1:34/1.0 1:39/1.0	(1.4) 28%	(0.0) 0%						
-60	-62.5	70.4									-62.5 Boring Terminated at Elevation -62.5 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation	70.4

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C./ Stephens C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B20-B	**STATION** 166+00	**OFFSET** 35 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 8.8 ft	**TOTAL DEPTH** 159.5 ft	**NORTHING** 175,001	**EASTING** 2,317,197	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 05/06/26	**COMP. DATE** 05/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
	8.8	0.0								8.8 GROUND SURFACE	0.0
			13	19	6	25		D		7.4 **ARTIFICIAL FILL** Tan, Medium Dense, Fine to Coarse SAND (A-1-a) with Some Gravel-Sized Construction Debris	1.4
5	4.0	4.8	1	WOH	1	1	SS-7006	20%		2.3 **ALLUVIAL** Dark Brown, Very Soft, Sandy CLAY (A-6) with Some Silt and Trace Organic Matter	6.5
0	0.8	8.0	3	3	1	4		Sat.		Dark Brown, Loose, Fine to Coarse SAND (A-3) with Little Silt	
										-2.2 Dark Brown, Very Loose, Moderately Organic, Silty Fine SAND (A-2)	11.0
-5	-4.2	13.0	WOH	WOR	WOR	0	SS-7008	60%			
										-7.2 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Very Dense, Calcareous, Silty SAND (A-2-4) with Some Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	16.0
-10	-9.2	18.0	6	5	100/0.3	100/0.3		Sat.		-10.2 -10.5 -11.2 -11.5 -12.2 -12.5	19.0 19.3 20.0 20.3 21.0 21.3
-15	-14.2	23.0	18	11	9	20		Sat.		-13.2 -13.4 -14.2 Light to Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Trace Very Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	22.0 22.2 23.0
-20	-19.2	28.0	11	6	7	13		Sat.			
-25	-24.2	33.0	6	8	10	18	SS-7012	23%			
-30	-29.2	38.0	22	10	15	25		Sat.		-31.2 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	40.0
-35	-34.2	43.0	22	24	30	54					
-40	-39.2	48.0	43	30	47	77					
-45	-44.2	53.0	18	18	38	56					
-50	-49.2	58.0	23	16	21	37				-51.2 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Loose to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	60.0
-55	-54.2	63.0	32	32	45	77		Sat.			
-60	-59.2	68.0	90	10/0.0		100/0.5		Sat.			
-65	-64.2	73.0	68	32/0.2		100/0.7		Sat.			
-70	-69.2	78.0	63	37/0.3		100/0.8		Sat.			

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C./ Stephens C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B20-B	**STATION** 166+00	**OFFSET** 35 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 8.8 ft	**TOTAL DEPTH** 159.5 ft	**NORTHING** 175,001	**EASTING** 2,317,197	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 05/06/26	**COMP. DATE** 05/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
-75	-74.2	83.0	56	44/0.3		100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Loose to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-79.2	88.0	48	52/0.4		100/0.9		Sat.		
-85	-84.2	93.0	10	19	22	41		Sat.		
-90	-89.2	98.0	11	17	26	43		Sat.		
-95	-94.2	103.0	8	14	22	36		Sat.		
-100	-99.2	108.0	11	20	26	46		Sat.		
-105	-104.2	113.0	5	5	7	12		Sat.		
-110	-109.2	118.0	4	3	6	9		Sat.		
-115	-114.2	123.0	9	23	40	63	SS-7030	21%		
-120	-119.2	128.0	27	24	21	45		Sat.		
-125	-124.2	133.0	60/0.1			60/0.1		Sat.		
-130	-129.2	138.0	4	5	5	10		Sat.		
-135	-134.2	143.0	10	25	13	38	SS-7032	23%		
-140	-139.2	148.0	8	14	18	32		Sat.		
-145	-144.2	153.0	18	41	59/0.3	100/0.8		Sat.		-147.2 Dark Gray, Medium Stiff to Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay 156.0
-150	-149.2	158.0	4	4	4					

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C./ Stephens C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B20-B	**STATION** 166+00	**OFFSET** 35 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 8.8 ft	**TOTAL DEPTH** 159.5 ft	**NORTHING** 175,001	**EASTING** 2,317,197	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/06/26	**COMP. DATE** 05/11/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
-150						Match Line					
						8	SS-7035	25%		-150.7	159.5
										Boring Terminated at Elevation -150.7 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation	

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-B	**STATION** 167+98	**OFFSET** 36 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 18.7 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 174,931	**EASTING** 2,317,382 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/29/26	**COMP. DATE** 05/01/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
20										
	18.7	0.0								18.7 GROUND SURFACE 0.0
			3	3	4	7		D		**ARTIFICIAL FILL** Dark Brown, Loose, Silty SAND (A-2-4) with Trace Gravel-Sized Brick Fragments 15.7 3.0
15	13.8	4.9	5	2	1	3		W		**UNDIVIDED COASTAL PLAIN** Tan to Light Gray, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Gravel
10	10.7	8.0	4	4	5	9	SS-6051	17%		
5	5.7	13.0	WOH	WOH	WOH	0		Sat.		2.7 16.0
0	0.7	18.0	15	11	17	28		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Olive-Gray to Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-5	-4.3	23.0	42	19	20	39	SS-6053	21%		-2.3 21.0; -2.6 21.3; -3.4 22.1; -3.6 22.3; -7.1 25.8; -7.3 26.0
-10	-9.3	28.0	10	12	23	35		Sat.		
-15	-14.3	33.0	7	9	16	25		W		-12.3 31.0 Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay
-20	-19.3	38.0	7	7	9	16		W		
-25	-24.3	43.0	23	9	13	22	SS-6057	23%		
-30	-29.3	48.0	7	31	18	49		W		-32.3 51.0
-35	-34.3	53.0	13	18	17	35				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE
-40	-39.3	58.0	24	30	20	50				
-45	-44.3	63.0	27	37	18	55	SS-6061	10%		
-50	-49.3	68.0	49	51/0.5		100/1.0				
-55	-54.3	73.0	26	22	25	47				
-60	-59.3	78.0								-57.3 76.0; -58.3 77.0; -58.4 77.1; -58.8 77.5

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-B	**STATION** 167+98	**OFFSET** 36 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 18.7 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 174,931	**EASTING** 2,317,382 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/29/26	**COMP. DATE** 05/01/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-60						Match Line				
			17	27	60/0.1	60/0.1		Sat.		-58.9 77.6; -61.3 80.0; -61.5 80.2; -62.6 81.3; -62.7 81.4; -63.3 82.0; -64.3 83.0; -65.8 84.5; -66.3 85.0; -68.3 87.0; -69.0 87.7; -72.0 90.7; -74.2 92.9; -78.3 97.0; -78.8 97.5; -84.0 102.7; -84.2 102.9; -92.3 111.0; -92.4 111.1; -93.3 112.0; -93.4 112.1; -94.3 113.0; -94.4 113.1; -96.3 115.0; -96.4 115.1
-65	-64.3	83.0	100/0.2			100/0.2		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-70	-69.3	88.0	100/0.5			100/0.5		Sat.		
-75	-74.3	93.0	100/0.5			100/0.5		Sat.		
-80	-79.3	98.0	32	58	42/0.3	100/0.8		Sat.		
-85	-84.3	103.0	10	21	52	73	SS-6068	19%		
-90	-89.3	108.0	14	20	24	44		Sat.		
-95	-94.3	113.0	11	60/0.0		100/0.5		Sat.		
-100	-99.3	118.0	8	13	16	29	SS-6071	21%		
-105	-104.3	123.0	7	11	14	25	SS-6072	21%		
-110	-109.3	128.0	60/0.1			60/0.1		Sat.		
-115	-114.3	133.0	60/0.0			60/0.0		Sat.		
-120	-119.3	138.0	10	16	27	43		Sat.		
-125	-124.3	143.0	5	8	31	39		Sat.		-125.8 144.5 Boring Terminated at Elevation -125.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-A	**STATION** 168+03	**OFFSET** 26 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 19.3 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 174,987	**EASTING** 2,317,408 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/27/26	**COMP. DATE** 04/28/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
20										
	19.3	0.0	2	6	8	14		D		19.3 / 0.0 GROUND SURFACE
15	14.5	4.8	5	6	8	14		W		**ARTIFICIAL FILL** Dark Brown, Medium Dense, Silty SAND (A-2-4) with Little Gravel-Sized Brick Fragments; 16.3 / 3.0 **UNDIVIDED COASTAL PLAIN** Tan-Brown to Light Gray, Loose to Medium Dense, Silty SAND (A-2-4)
10	11.5	7.8	4	4	5	9	SS-6012	17%		
5	6.5	12.8	1	2	3	5		Sat.		8.3 / 11.0 **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Tan-Brown to Orange-Brown, Loose, Calcareous, Fine to Coarse SAND (A-1-b) with Little Clay, Highly Fossiliferous; 3.3 / 16.0 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Gray, Green, and Brown, Hard, Calcareous, Fine Sandy CLAY (A-6), Fossiliferous and Glauconitic
0	1.5	17.8	12	19	26	45		W		
-5	-3.5	22.8	9	16	17	33	SS-6016	18%		-1.7 / 21.0 Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Little Clay
-10	-8.5	27.8	8	9	8	17		Sat.		
-15	-13.5	32.8	6	10	19	29		Sat.		-11.7 / 31.0 Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Some Clay
-20	-18.5	37.8	6	5	14	19		Sat.		
-25	-23.5	42.8	4	7	10	17	SS-6020	29%		
-30	-28.5	47.8	11	11	11	22		W		-31.7 / 51.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE
-35	-33.5	52.8	17	44	36	80				
-40	-38.5	57.8	27	43	46	89				
-45	-43.5	62.8	25	24	18	42	SS-6034	10%		
-50	-48.5	67.8	44	35	33	68				
-55	-53.5	72.8	33	19	34	53				-56.7 / 76.0
-60	-58.5	77.8	38	42	37	79		Sat.		

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-A	**STATION** 168+03	**OFFSET** 26 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 19.3 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 174,987	**EASTING** 2,317,408 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/27/26	**COMP. DATE** 04/28/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-60						Match Line				
-65	-63.5	82.8	60/0.1			60/0.1		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-70	-68.5	87.8	60/0.1			60/0.1		Sat.		
-75	-73.5	92.8	33	77/0.4		100/0.9		Sat.		
-80	-78.5	97.8	37	44	56/0.3	100/0.8		Sat.		
-85	-83.5	102.8	77	33/0.0		100/0.5		Sat.		
-90	-88.5	107.8	12	25	18	43	SS-6041	20%		
-95	-93.5	112.8	100/0.5			100/0.5		Sat.		
-100	-98.5	117.8	9	12	22	34	SS-6043	20%		
-105	-103.5	122.8	10	12	15	27		Sat.		
-110	-108.5	127.8	6	6	9	15		Sat.		
-115	-113.5	132.8	8	7	10	17		Sat.		
-120	-118.5	137.8	11	15	23	38	SS-6047	25%		
-125	-123.5	142.8	5	6	8	14		Sat.		-125.0 / 144.3 Boring Terminated at Elevation -125.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-A_CORE	**STATION** 168+04	**OFFSET** 23 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 19.4 ft	**TOTAL DEPTH** 75.3 ft	**NORTHING** 174,984	**EASTING** 2,317,408 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/22/26	**COMP. DATE** 06/23/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
19.4										GROUND SURFACE	0.0
										OVERBURDEN	
-32.3										**COASTAL PLAIN PEEDEE FORMATION** Sandy SILT (A-4) SREC: 45% SRQD: 0% GSI: N/A	51.7
-33.4										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE SREC: 93% SRQD: 77% GSI: 50-60	52.8
-55.9										Boring Terminated at Elevation -55.9 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	75.3

RS-11 (-33.4 to -40.9)

RS-12 (-50.9 to -55.9)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B21-A_CORE	**STATION** 168+04	**OFFSET** 23 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 19.4 ft	**TOTAL DEPTH** 75.3 ft	**NORTHING** 174,984	**EASTING** 2,317,408 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/22/26	**COMP. DATE** 06/23/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 23.6 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
-32.3											Begin Coring @ 51.7 ft	
	-32.3	51.7	3.6	1:11/1.0 1:15/1.0 1:28/1.0 1:10/0.6	(3.0) 83%	(1.9) 53%		(0.5) 45%	(0.0) 0%		-32.3 **COASTAL PLAIN PEEDEE FORMATION** Dark Gray to Olive-Gray, Calcareous, Sandy SILT (A-4) with Some Clay	51.7
-35	-35.9	55.3	5.0	1:19/1.0 1:13/1.0 1:10/1.0 1:09/1.0 1:10/1.0	(5.0) 100%	(5.0) 100%	RS-11	(21.0) 93%	(17.3) 77%		-33.4 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Very Slight to Slight Weathering, Moderately Hard to Hard, Close to Moderately Close Fracture Spacing, Very Thickly Bedded, Moderately Indurated, Moldic, SANDY LIMESTONE, Geological Strength Index (GSI) = 50-60.	52.8
-40	-40.9	60.3	5.0	1:17/1.0 1:09/1.0 1:10/1.0 1:09/1.0 1:09/1.0	(5.0) 100%	(4.4) 88%						
-45	-45.9	65.3	5.0	1:44/1.0 1:13/1.0 1:04/1.0 1:06/1.0 1:17/1.0	(4.5) 90%	(3.2) 64%						
-50	-50.9	70.3	5.0	1:15/1.0 1:10/1.0 1:09/1.0 1:10/1.0 1:08/1.0	(4.0) 80%	(2.8) 56%	RS-12					
-55	-55.9	75.3									-55.9 Boring Terminated at Elevation -55.9 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	75.3

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B22-A	**STATION** 169+96	**OFFSET** 33 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 22.0 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,926	**EASTING** 2,317,591	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER White, J.	**START DATE** 04/20/26	**COMP. DATE** 04/21/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
25											
	22.0	0.0								22.0 GROUND SURFACE	0.0
20			1	2	4	6	SS-960	1%		**UNDIVIDED COASTAL PLAIN** Tan, Brown, and Orange-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
	17.5	4.5	2	2	4	6		M			
15	14.5	7.5	4	5	6	11	SS-962	16%			
10	9.5	12.5	2	3	3	6		Sat.			
										6.5	15.5
5	4.5	17.5	3	2	3	5	SS-964	29%		**COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Orange-Brown, Loose, Fine to Coarse SAND (A-1-b) with Little Clay, Fossiliferous	
										1.5	20.5
0	-0.5	22.5	23	45	34	79		W		**COASTAL PLAIN PEEDEE FORMATION** Green-Gray to Gray, Very Stiff to Hard, Calcareous, Sandy SILT (A-4) with Some to Little Clay, Little Cemented Concretions, Fossiliferous and Phosphatic, Glauconitic	
-5	-5.5	27.5	15	30	7	37	SS-966	14%			
-10	-10.5	32.5	23	16	18	34		W			
-15	-15.5	37.5	9	9	14	23		W			
-20	-20.5	42.5	11	11	10	21		W			
-25	-25.5	47.5	9	7	9	16	SS-970	23%			
-30	-30.5	52.5	29	17	13	30		W			
										-33.5	55.5
-35	-35.5	57.5	31	67	33/0.3	100/0.8				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE	
-40	-40.5	62.5	36	39	32	71					
-45	-45.5	67.5	17	22	18	40					
-50	-50.5	72.5	55	32	27	59	SS-975	11%			
-55											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B22-A	**STATION** 169+96	**OFFSET** 33 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 22.0 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,926	**EASTING** 2,317,591	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER White, J.	**START DATE** 04/20/26	**COMP. DATE** 04/21/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
	-55.5	77.5	26	32	36	68				
-60	-60.5	82.5	27	39	48	87		Sat.		-59.0 / 81.0 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-65	-65.5	87.5	60/0.1			60/0.1		Sat.		
-70	-70.5	92.5	60/0.1			60/0.1		Sat.		
-75	-75.5	97.5	45	50	50/0.2	100/0.7		Sat.		
-80	-80.5	102.5	46	54/0.4		100/0.9		Sat.		
-85	-85.5	107.5	39	48	52/0.1	100/0.6		Sat.		
-90	-90.5	112.5	14	33	21	54	SS-981	22%		
-95	-95.5	117.5	13	29	33	62		Sat.		
-100	-100.5	122.5	11	18	35	53		Sat.		
-105	-105.5	127.5	11	15	16	31		Sat.		
-110	-110.5	132.5	50	27	23	50	SS-985	22%		
-115	-115.5	137.5	19	23	25	48		Sat.		-117.0 / 139.0 Boring Terminated at Elevation -117.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B22-B	**STATION** 169+97	**OFFSET** 41 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 21.2 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,856	**EASTING** 2,317,566 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/21/26	**COMP. DATE** 04/23/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
25										
	21.2	0.0								21.2 / 0.0 GROUND SURFACE
20			1	3	2	5		D		**UNDIVIDED COASTAL PLAIN** Tan, Brown, and Orange-Brown, Loose to Medium Dense, Silty SAND (A-2-4)
	16.7	4.5								
15			3	3	4	7	SS-988	17%		
	13.7	7.5								
			4	5	6	11		W		
10										10.7 / 10.5 Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)
	8.7	12.5								
			5	6	4	10	SS-990	20%		
5										5.7 / 15.5 **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Orange-Brown and Red-Brown, Loose, Calcareous, Fine to Coarse SAND (A-1-b) with Little Clay, Fossiliferous
	3.7	17.5								
			4	4	3	7		Sat.		
0										0.7 / 20.5 **COASTAL PLAIN PEEDEE FORMATION** Blue-Gray to Green-Gray, Very Stiff, Calcareous, Sandy CLAY (A-6), Fossiliferous
	-1.3	22.5								
			5	7	13	20		W		
-5										-4.3 / 25.5 Gray, Medium Dense, Calcareous, Silty SAND (A-2-4) with Little Clay and Cemented Concretions
	-6.3	27.5								
			7	10	11	21	SS-993	22%		
-10										-9.3 / 30.5 Gray, Stiff to Hard, Calcareous, Sandy SILT (A-4) with Little Clay and Cemented Concretions
	-11.3	32.5								
			30	19	14	33		W		
-15										
	-16.3	37.5								
			5	13	19	32		W		
-20										
	-21.3	42.5								
			6	6	6	12		W		
-25										-24.3 / 45.5 Dark Gray, Stiff to Very Stiff, Calcareous, Fine Sandy CLAY (A-6)
	-26.3	47.5								
			5	8	11	19	SS-997	25%		
-30										
	-31.3	52.5								
			5	5	7	12		W		
-35										-34.3 / 55.5 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Medium Hard to Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE
	-36.3	57.5								
			38	62/0.4		100/0.9				
-40										
	-41.3	62.5								
			20	32	38	70				
-45										
	-46.3	67.5								
			28	34	36	70				
-50										
	-51.3	72.5								
			27	32	23	55				
-55										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B22-B	**STATION** 169+97	**OFFSET** 41 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 21.2 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,856	**EASTING** 2,317,566 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/21/26	**COMP. DATE** 04/23/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
	-56.3	77.5								
			55	39	31	70	SS-1003	18%		
-60										-59.3 / 80.5 **COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-61.3	82.5								
			100/0.4			100/0.4		Sat.		
-65										
	-66.3	87.5								
			67	33/0.1		100/0.6		Sat.		
-70										
	-71.3	92.5								
			60	40/0.3		100/0.8		Sat.		
-75										
	-76.3	97.5								
			49	51/0.3		100/0.8		Sat.		
-80										
	-81.3	102.5								
			20	32	50	82		Sat.		
-85										
	-86.3	107.5								
			18	31	36	67		Sat.		
-90										
	-91.3	112.5								
			10	18	12	30	SS-1010	24%		
-95										
	-96.3	117.5								
			13	14	24	38		Sat.		
-100										
	-101.3	122.5								
			60/0.0			60/0.0		Sat.		
-105										
	-106.3	127.5								
			9	11	14	25	SS-1012	23%		
-110										
	-111.3	132.5								
			100/0.2			100/0.2		Sat.		
-115										
	-116.3	137.5								
			28	34	30	64		Sat.		-117.8 / 139.0 Boring Terminated at Elevation -117.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-B	**STATION** 171+33	**OFFSET** 52 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 24.4 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 174,798	**EASTING** 2,317,690 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/12/26	**COMP. DATE** 06/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
25	24.4	0.0	2	3	4	7		D		24.4 GROUND SURFACE	0.0
										ARTIFICIAL FILL Dark Brown, Loose, Silty SAND (A-2-4)	
20	19.6	4.8	2	2	2	4		W		21.4 **UNDIVIDED COASTAL PLAIN** Tan to Gray, Loose, Fine to Coarse SAND (A-3)	3.0
15	16.4	8.0	1	2	2	4		Sat.			
10	11.4	13.0	2	4	4	8		Sat.			
5	6.4	18.0	WOH	WOH	WOH	0	SS-24B	22%		8.4 Orange, Very Loose, Moderately Plastic, Clayey SAND (A-2-6)	16.0
0	1.4	23.0	8	7	7	14		Sat.		3.4 **COASTAL PLAIN PEEDEE FORMATION** Gray-Green, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Little Clay, Trace Cemented Concretions, Fossiliferous and Glauconitic	21.0
-5	-3.6	28.0	18	18	18	36		Sat.			
-10	-8.6	33.0	7	11	8	19	SS-27B	21%			
-15	-13.6	38.0	15	16	15	31		Sat.			
-20	-18.6	43.0	7	10	25	35		Sat.			
-25	-23.6	48.0	6	7	11	18		Sat.			
-30	-28.6	53.0	5	8	12	20		Sat.			
-35	-33.6	58.0	5	6	7	13		Sat.			
-40	-38.6	63.0	100/0.2			100/0.2				-36.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	61.0
-45	-43.6	68.0	26	74/0.3		100/0.8					
-50	-48.6	73.0	18	82/0.3		100/0.8					
-55	-53.6	78.0	23	31	36	67					

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-B	**STATION** 171+33	**OFFSET** 52 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 24.4 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 174,798	**EASTING** 2,317,690 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/12/26	**COMP. DATE** 06/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
-60	-58.6	83.0	31	69/0.4		100/0.9		Sat.		-56.6 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions — 81.0
-65	-63.6	88.0	100/0.2			100/0.2		Sat.		
-70	-68.6	93.0	60/0.0			60/0.0		Sat.		
-75	-73.6	98.0	60/0.0			60/0.0		Sat.		
-80	-78.6	103.0	55	45/0.2		100/0.7		Sat.		
-85	-83.6	108.0	51	49/0.3		100/0.8		Sat.		
-90	-88.6	113.0	3	26	44	70		Sat.		
-95	-93.6	118.0	18	18	35	53		Sat.		
-100	-98.6	123.0	16	24	25	49		Sat.		
-105	-103.6	128.0	24	40	58	98		Sat.		
-110	-108.6	133.0	8	10	14	24	SS-43B	25%		
	-113.6	138.0	15	24	76/0.3	100/0.8		Sat.		-114.9 Boring Terminated at Elevation -114.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation — 139.3

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-A_CORE	**STATION** 171+94	**OFFSET** 119 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 20.4 ft	**TOTAL DEPTH** 80.2 ft	**NORTHING** 174,937	**EASTING** 2,317,807 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/16/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
25											
20										20.4 GROUND SURFACE	0.0
										OVERBURDEN	
15											
10											
5											
0											
-5											
-10											
-15											
-20											
-25											
-30										-27.3	47.7
										COASTAL PLAIN **PEEDEE FORMATION** Sandy CLAY (A-6) SREC: 39% SRQD: 17% GSI: N/A	
-35										-34.8	55.2
-40							RS-13			**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 76% SRQD: 8% GSI: 50-60	
-45							RS-14				
-50											
-55											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-A_CORE	**STATION** 171+94	**OFFSET** 119 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 20.4 ft	**TOTAL DEPTH** 80.2 ft	**NORTHING** 174,937	**EASTING** 2,317,807 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/16/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
										-59.8 80.2
										Boring Terminated at Elevation -59.8 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation

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GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-A_CORE	**STATION** 171+94	**OFFSET** 119 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 20.4 ft	**TOTAL DEPTH** 80.2 ft	**NORTHING** 174,937	**EASTING** 2,317,807 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/16/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ-2	**TOTAL RUN** 32.5 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
-27.3											Begin Coring @ 47.7 ft
	-27.3	47.7	2.5	0:22/1.0 0:24/1.0 0:12/0.5	(0.7) 28%	(0.0) 0%		(2.9) 39%	(1.3) 17%		-27.3 / 47.7 **COASTAL PLAIN** **PEEDEE FORMATION** Dark Gray to Olive-Gray, Calcareous, Sandy CLAY (A-6) with Trace Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions
-30	-29.8	50.2	5.0	0:38/1.0 0:39/1.0 0:28/1.0 0:23/1.0 0:24/1.0	(2.2) 44%	(1.3) 26%					
-35	-34.8	55.2	5.0	0:16/1.0 0:20/1.0 0:30/1.0 0:25/1.0 0:27/1.0	(4.7) 94%	(1.2) 24%	RS-13	(19.0) 76%	(1.9) 8%		-34.8 / 55.2 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Very Slight to Moderate Weathering, Medium Hard to Moderately Hard, Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded, Hard, CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60.
-40	-39.8	60.2	5.0	0:23/1.0 0:27/1.0 0:24/1.0 0:28/1.0 0:20/1.0	(4.8) 96%	(0.7) 14%	RS-14				
-45	-44.8	65.2	5.0	0:21/1.0 0:21/1.0 0:20/1.0 0:24/1.0 0:28/1.0	(3.9) 78%	(0.0) 0%					
-50	-49.8	70.2	5.0	0:23/1.0 0:22/1.0 0:17/1.0 0:18/1.0 0:20/1.0	(3.7) 74%	(0.0) 0%					
-55	-54.8	75.2	5.0	0:27/1.0 0:22/1.0 0:18/1.0 0:12/1.0 0:21/1.0	(1.9) 38%	(0.0) 0%					
	-59.8	80.2									-59.8 / 80.2 Boring Terminated at Elevation -59.8 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation

NCDOT CORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M./Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-A	**STATION** 171+96	**OFFSET** 110 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 20.6 ft	**TOTAL DEPTH** 140.3 ft	**NORTHING** 174,928	**EASTING** 2,317,805 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/07/26	**COMP. DATE** 04/14/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
25										
20										20.6 GROUND SURFACE 0.0
										ARTIFICIAL FILL Gray to Black, Loose, Silty SAND (A-2-4) with Little Gravel-Sized Brick Fragments and Trace Organic Matter
15	16.2	4.4	1	2	2	4		M		14.6 6.0
										UNDIVIDED COASTAL PLAIN Gray and Brown, Loose, Fine SAND (A-3) with Trace Organic Matter
10	11.2	9.4	2	3	5	8		W		8.6 12.0
										Dark Brown, Very Loose, Fine to Coarse SAND (A-3) with Little Organic Matter
5	6.2	14.4	WOH	WOH	WOH	0	SS-2312	105%		3.6 17.0
										Gray and Tan, Loose, Fine to Coarse SAND (A-3)
0	1.2	19.4	7	4	1	5		Sat.		0.0 20.6
										COASTAL PLAIN PEEDEE FORMATION Gray, Very Stiff to Hard, Calcareous, Sandy SILT (A-4) with Little Clay and Trace Cemented Concretions, Fossiliferous, Glauconitic
-5	-3.8	24.4	5	8	9	17		Sat.		
-10	-8.8	29.4	16	20	21	41	SS-2315	23%		
-15	-13.8	34.4	7	16	15	31		W		
-20	-18.8	39.4	12	12	11	23		W		-20.4 41.0
										Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay and Cemented Concretions
-25	-23.8	44.4	5	10	15	25	SS-2318	26%		
-30	-28.8	49.4	11	61	38	99		W		-31.4 52.0
										Gray, Very Stiff, Calcareous, Sandy CLAY (A-6) with Little Silt
-35	-33.8	54.4	6	8	9	17	SS-2320	21%		
-40	-38.8	59.4	53	47/0.2		100/0.7				-38.8 59.4
										COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE
-45	-43.8	64.4	62	29	17	46	SS-2322	12%		
-50	-48.8	69.4	23	32	26	58				
-55	-53.8	74.4	29	39	61/0.4					

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M./Stephens, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B23-A	**STATION** 171+96	**OFFSET** 110 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 20.6 ft	**TOTAL DEPTH** 140.3 ft	**NORTHING** 174,928	**EASTING** 2,317,805 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/07/26	**COMP. DATE** 04/14/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
						100/0.9				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE *(continued)*
-60	-58.8	79.4	60/0.0			60/0.0				-62.4 83.0
-65	-63.8	84.4	40	44	56/0.4			Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
						100/0.9				
-70	-68.8	89.4	63	37/0.1		100/0.6		Sat.		
-75	-73.8	94.4	52	48/0.2		100/0.7		Sat.		
-80	-78.8	99.4	61	39/0.1		100/0.6		Sat.		
-85	-83.8	104.4	40	60/0.4		100/0.9		Sat.		
-90	-88.8	109.4	17	32	48	80		Sat.		
-95	-93.8	114.4	100/0.3			100/0.3		Sat.		
-100	-98.8	119.4	10	15	26	41	SS-2332	24%		
-105	-103.8	124.4	17	83/0.3		100/0.8		Sat.		
-110	-108.8	129.4	8	9	13	22		Sat.		
-115	-113.8	134.4	10	9	12	21	SS-2335	25%		
	-118.8	139.4	14	86/0.4		100/0.9		Sat.		-119.7 140.3
										Boring Terminated at Elevation -119.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B24-A	**STATION** 174+67	**OFFSET** 94 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 35.1 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,817	**EASTING** 2,318,054 / **24 HR.** 19.0
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/09/26	**COMP. DATE** 04/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
35.1		0.0								GROUND SURFACE	0.0
35.0										**TOPSOIL**	0.1
			1	2	3	5		M		**UNDIVIDED COASTAL PLAIN** Tan, Loose, Fine SAND (A-3)	
32.1											3.0
30.2		4.9								Tan, Stiff, Moderately Plastic, Sandy CLAY (A-6) with Some Silt	
			1	3	7	10	SS-932	25%			
28.1											7.0
27.2		7.9								Tan, Orange-Brown, Light Gray, and White, Loose to Medium Dense, Fine SAND (A-3)	
			4	5	7	12		M			
22.2		12.9									
			3	4	6	10	SS-934	21%			
17.2		17.9									
			4	4	6	10		W			
12.2		22.9									
			4	4	4	8		Sat.			
9.1											26.0
										COASTAL PLAIN SEDIMENTARY ROCK **CASTLE HAYNE FORMATION** (New Hanover Member) Gray, Moderately Hard to Hard, CONGLOMERATIC LIMESTONE	
7.2		27.9									
			60/0.1			60/0.1					
4.1											31.0
										COASTAL PLAIN **PEEDEE FORMATION** Green Gray to Blue-Gray, Hard, Calcareous, Sandy CLAY (A-6) with Some Silt, Fossiliferous and Phosphatic, Glauconitic	
2.2		32.9									
			6	25	61	86					
-2.8		37.9									
			5	12	23	35	SS-939	21%			
-5.9											41.0
										Gray to Green-Gray and Olive-Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Very Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	
-7.8		42.9									
			58	16	24	40	SS-940	21%			
-12.8		47.9									
			12	15	10	25		W			
-17.8		52.9									
			4	11	14	25		W			
-22.8		57.9									
			15	15	16	31		W			
-25.9											61.0
										Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy CLAY (A-6) with Some Silt, Trace Cemented Concretions	
-27.8		62.9									
			8	26	21	47	SS-944	21%			
-32.8		67.9									
			9	9	10	19		W			
-35.9											71.0
-37.8		72.9									
			29	46	21	67					

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B24-A	**STATION** 174+67	**OFFSET** 94 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 35.1 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,817	**EASTING** 2,318,054 / **24 HR.** 19.0
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/09/26	**COMP. DATE** 04/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-40						Match Line				
	-42.8	77.9	23	63	29	92				**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE *(continued)*
	-47.8	82.9	39	38	28	66				
	-52.8	87.9	19	41	44	85				
	-57.8	92.9	28	30	46	76	SS-950	15%		
-60.9										96.0
	-62.8	97.9	27	41	59/0.2	100/0.7		Sat.		**COASTAL PLAIN** **PEEDEE FORMATION** Light Gray to Dark Gray and Olive-Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-67.8	102.9	60/0.0			60/0.0		Sat.		
	-72.8	107.9	97	3/0.1		100/0.6		Sat.		
	-77.8	112.9	42	49	50	99		Sat.		
	-82.8	117.9	100/0.5			100/0.5		Sat.		
	-87.8	122.9	20	26	25	51		Sat.		
	-92.8	127.9	16	28	28	56	SS-957	21%		
	-97.8	132.9	24	21	27	48		Sat.		
	-102.8	137.9	21	25	23	48		Sat.		
-104.3										139.4
										Boring Terminated at Elevation -104.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B24-A_CORE	**STATION** 174+75	**OFFSET** 101 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 34.8 ft	**TOTAL DEPTH** 96.1 ft	**NORTHING** 174,821	**EASTING** 2,318,063	**24 HR.** 19.7
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 05/06/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
35										34.8 GROUND SURFACE	0.0
										OVERBURDEN	
30											
25											
20											
15								▼			
10											
5							RS-15			7.0	27.8
										COASTAL PLAIN SEDIMENTARY ROCK **CASTLE HAYNE FORMATION** (New Hanover Member) CONGLOMERATIC LIMESTONE SREC: 37% SRQD: 13% GSI: 40-50	
0										-0.5	35.3
-5										**COASTAL PLAIN** **PEEDEE FORMATION** (Advance Casing Through Soil)	
-10											
-15											
-20											
-25											
-30										-29.1	63.9
										COASTAL PLAIN **PEEDEE FORMATION** Sandy CLAY (A-6) with Trace, Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions SREC: 72% SRQD: 0% GSI: N/A	
-35										-36.3	71.1
							RS-16			**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 82% SRQD: 36% GSI: 50-60	
-40											
-45											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B24-A_CORE	**STATION** 174+75	**OFFSET** 101 ft LT	**ALIGNMENT** -L- **0 HR.** N/A
COLLAR ELEV. 34.8 ft	**TOTAL DEPTH** 96.1 ft	**NORTHING** 174,821	**EASTING** 2,318,063 **24 HR.** 19.7
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/06/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-45						Match Line				
-50							RS-17			**COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE SREC: 82% SRQD: 36% GSI: 50-60 *(continued)*
-55							RS-18			
-60										-61.3 96.1
										Boring Terminated at Elevation -61.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation Notes: - Attempted to continue coring beyond 96.1 feet, but core barrel became sand locked. Lost 40 foot of core rod in the boring.

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GEOTECHNICAL BORING REPORT
CORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B24-A_CORE	**STATION** 174+75	**OFFSET** 101 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 34.8 ft	**TOTAL DEPTH** 96.1 ft	**NORTHING** 174,821	**EASTING** 2,318,063 / **24 HR.** 19.7
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/06/26	**COMP. DATE** 05/06/26	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ-2	**TOTAL RUN** 39.7 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
7											Begin Coring @ 27.8 ft
	7.0	27.8	2.5	0:49/1.0 1:12/1.0 1:17/0.5	(2.1) 84%	(1.0) 40%	RS-15	(2.8) 37%	(1.0) 13%		7.0 / 27.8 **COASTAL PLAIN SEDIMENTARY ROCK** **CASTLE HAYNE FORMATION** (New Hanover Member) Gray, White, and Green, Very Slight to Moderate Weathering, Very Soft to Moderately Hard, Close Fracture Spacing, Thickly Bedded, Friable to Indurated, CONGLOMERATIC LIMESTONE, Geological Strength Index (GSI) = 40-50
5	4.5	30.3	5.0	0:48/1.0 0:17/1.0 0:08/1.0 0:27/1.0 0:23/1.0	(0.7) 14%	(0.0) 0%					
0	-0.5	35.3									-0.5 / 35.3 **COASTAL PLAIN** **PEEDEE FORMATION** (Advance Casing Through Soil)
-5											
-10											
-15											
-20											
-25											
	-29.1	63.9									-29.1 / 63.9 **COASTAL PLAIN** **PEEDEE FORMATION** Dark Gray to Olive-Gray, Calcareous, Sandy CLAY (A-6) with Trace, Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions
-30	-31.3	66.1	2.2	1:01/1.0 0:31/1.0	(2.2) 100%	(0.0) 0%		(5.2) 72%	(0.0) 0%		
			5.0	0:12/0.2 0:29/1.0 0:45/1.0 0:24/1.0 0:20/1.0	(3.0) 60%	(0.0) 0%					
-35	-36.3	71.1		0:24/1.0							-36.3 / 71.1 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, White, and Tan, Slight to Moderate Weathering, Soft to Moderately Hard, Close to Very Close Fracture Spacing, Very Thickly Bedded, Friable to Moderately Indurated, Moldic, SANDY LIMESTONE, Interbedded with Thinly Bedded CALCAREOUS SANDSTONE, Geological Strength Index (GSI) = 50-60
			5.0	0:15/1.0 0:16/1.0 0:15/1.0 0:15/1.0 0:21/1.0	(5.0) 100%	(3.3) 66%	RS-16	(20.4) 82%	(9.1) 36%		
-40	-41.3	76.1									
			5.0	0:19/1.0 0:13/1.0 0:17/1.0 0:17/1.0 0:27/1.0	(4.1) 82%	(2.6) 52%					
-45	-46.3	81.1					RS-17				
			5.0	0:21/1.0 0:25/1.0 0:18/1.0 0:22/1.0 0:24/1.0	(3.6) 72%	(1.0) 20%					
-50	-51.3	86.1									
			5.0	0:18/1.0 0:34/1.0 0:20/1.0 0:33/1.0 0:31/1.0	(3.9) 78%	(1.8) 36%	RS-18				
-55	-56.3	91.1									
			5.0	0:28/1.0 0:14/1.0 0:24/1.0 0:13/1.0 0:15/1.0	(3.8) 76%	(0.4) 8%					
-60	-61.3	96.1									-61.3 / 96.1 Boring Terminated at Elevation -61.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation Notes: - Attempted to continue coring beyond 96.1 feet, but core barrel became sand locked. Lost 40 foot of core rod in the boring.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B24-B	**STATION** 175+34	**OFFSET** 94 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 34.8 ft	**TOTAL DEPTH** 139.1 ft	**NORTHING** 174,618	**EASTING** 2,318,050	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER White, J.	**START DATE** 04/13/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
35											
	34.8	0.0	1	2	4	6	SS-960A	1%		34.8 GROUND SURFACE	0.0
30	30.2	4.6	3	3	6	9		M		**UNDIVIDED COASTAL PLAIN** Light Gray to Gray, Light Brown, and Orange-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
25	27.2	7.6	5	6	5	11		M			
20	22.2	12.6	7	9	11	20		W			
15	17.2	17.6	6	9	9	18		W			
10	12.2	22.6	4	4	4	8	SS-965	19%		8.8	26.0
5	7.2	27.6	5	5	6	11		W		**COASTAL PLAIN PEEDEE FORMATION** Green-Gray to Blue-Gray, Stiff, Calcareous, Sandy CLAY (A-6) with Some Silt, Fossiliferous, Glauconitic	
0	2.2	32.6	5	6	8	14	SS-967	21%			
-5	-2.8	37.6	9	12	16	28	SS-968	22%		-1.2 Light Gray to Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Little Very Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	36.0
-10	-7.8	42.6	11	15	27	42		W			
-15	-12.8	47.6	8	20	28	48		W			
-20	-17.8	52.6	16	13	21	34	SS-971	21%			
-25	-22.8	57.6	12	15	9	24		W			
-30	-27.8	62.6	23	18	21	39	SS-973	21%		-26.2 Dark Gray, Hard, Calcareous, Fine Sandy CLAY (A-6) with Some Silt	61.0
-35	-32.8	67.6	4	14	86/0.1	100/0.6	SS-974	23%		-30.2 Dark Gray, Very Dense, Calcareous, Clayey SAND (A-2-6) with Little Very Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions	65.0
-40	-37.8	72.6	27	32	25	57				-36.2 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	71.0
-45	-42.8	77.6	29	22	17	39					

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L_B24-B	**STATION** 175+34	**OFFSET** 94 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 34.8 ft	**TOTAL DEPTH** 139.1 ft	**NORTHING** 174,618	**EASTING** 2,318,050	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER White, J.	**START DATE** 04/13/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-45						Match Line				
-50	-47.8	82.6	49	32	34	66				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE *(continued)*
-55	-52.8	87.6	29	47	52	99	SS-978	19%		
-60	-57.8	92.6	53	47/0.3		100/0.8				-61.2 96.0
-65	-62.8	97.6	100/0.4			100/0.4		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-70	-67.8	102.6	100/0.4			100/0.4		Sat.		
-75	-72.8	107.6	65	35/0.1		100/0.6		Sat.		
-80	-77.8	112.6	66	34/0.1		100/0.6		Sat.		
-85	-82.8	117.6	32	24	28	52		Sat.		
-90	-87.8	122.6	7	14	27	41	SS-985A	25%		
-95	-92.8	127.6	13	19	20	39		Sat.		
-100	-97.8	132.6	7	8	16	24		Sat.		
	-102.8	137.6	10	10	16	26		Sat.		-104.3 139.1 Boring Terminated at Elevation -104.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B25-B	**STATION** 177+22	**OFFSET** 72 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 30.5 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,572	**EASTING** 2,318,233 / **24 HR.** 27.2
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/06/26	**COMP. DATE** 04/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
35										
30	30.5	0.0								30.5 / 0.0 GROUND SURFACE
			1	2	3	5		M		**UNDIVIDED COASTAL PLAIN** Orange-Brown and White, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)
25	25.5	5.0	WOR	WOR	3	3		M		
	22.5	8.0	5	6	8	14		M		
20										
	17.5	13.0	6	9	12	21	SS-904	19%		
15										
	12.5	18.0	4	3	4	7		W		
10										9.5 / 21.0 **COASTAL PLAIN SEDIMENTARY ROCK CASTLE HAYNE FORMATION** (New Hanover Member) Red-Brown and White, Moderately Hard to Hard, CONGLOMERATIC LIMESTONE
	7.5	23.0	60/0.1			60/0.1		W		
5										4.5 / 26.0 **COASTAL PLAIN PEEDEE FORMATION** Blue-Gray to Tan, Hard, Calcareous, Sandy SILT (A-4) with Little Clay, Phosphatic
	2.5	28.0	28	37	42	79	SS-907	14%		
0										-0.5 / 31.0 Green-Gray, Dense, Calcareous, Silty SAND (A-2-4)
	-2.5	33.0	14	14	19	33	SS-908	24%		
-5										-5.5 / 36.0 Green-Gray to Dark Gray, Very Stiff, Calcareous, Fine Sandy CLAY (A-6) with Some Silt, Fossiliferous
	-7.5	38.0	16	14	15	29	SS-909	19%		
-10										
	-12.5	43.0	6	10	14	24		M		
-15										
	-17.5	48.0	7	10	16	26		W		
-20										-20.5 / 51.0 Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Fossiliferous
	-22.5	53.0	17	15	13	28		W		
-25										
	-27.5	58.0	7	11	12	23	SS-913	23%		
-30										
	-32.5	63.0	22	13	18	31		W		
-35										-35.5 / 66.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE
	-37.5	68.0	32	37	38	75				
-40										
	-42.5	73.0	21	33	33	66				
-45										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L_B25-B	**STATION** 177+22	**OFFSET** 72 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 30.5 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,572	**EASTING** 2,318,233 / **24 HR.** 27.2
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/06/26	**COMP. DATE** 04/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-45						Match Line				
	-47.5	78.0	39	61/0.1		100/0.6				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE *(continued)*
-50										
	-52.5	83.0	35	33	47	80	SS-918	16%		
-55										
	-57.5	88.0	41	51	40	91				
-60										-60.5 / 91.0 **COASTAL PLAIN PEEDEE FORMATION** Dark Gray and Olive-Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-62.5	93.0	9	36	64/0.2			Sat.		
-65						100/0.7				
	-67.5	98.0	100/0.5			100/0.5		Sat.		
-70										
	-72.5	103.0	100/0.3			100/0.3		Sat.		
-75										
	-77.5	108.0	60/0.1			60/0.1		Sat.		
-80										
	-82.5	113.0	100/0.2			100/0.2		Sat.		
-85										
	-87.5	118.0	21	35	35	70		Sat.		
-90										
	-92.5	123.0	20	42	31	73	SS-926	21%		
-95										
	-97.5	128.0	14	20	26	46		Sat.		
-100										
	-102.5	133.0	16	41	59/0.1	100/0.6		Sat.		
-105										
	-107.5	138.0	14	25	35	60		Sat.		-109.0 / 139.5 Boring Terminated at Elevation -109.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B25-A	**STATION** 300+95	**OFFSET** 14 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 37.7 ft	**TOTAL DEPTH** 141.3 ft	**NORTHING** 174,676	**EASTING** 2,318,290 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/02/26	**COMP. DATE** 04/03/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
40										
	37.7	0.0								37.7 GROUND SURFACE 0.0
			2	2	4	6		M		**ROADWAY EMBANKMENT** Dark Brown, Tan, and Orange, Loose, Silty SAND (A-2-4) with Trace Organic Matter
35										34.7 3.0
	32.9	4.8								Tan, Gray, and Orange, Stiff, Sandy SILT (A-4) with Little Clay
			5	7	7	14	SS-2282	11%		
30										29.7 8.0
	27.9	9.8								**UNDIVIDED COASTAL PLAIN** Light Gray, White, and Tan, Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter and Rounded Gravel
			5	7	9	16		M		
25										
	22.9	14.8								
			6	7	9	16		W		
20										
	17.9	19.8								
			5	7	8	15	SS-2285	21%		
15										
	12.9	24.8								
			5	7	9	16	SS-2286	20%		
10										
	7.9	29.8								
			6	7	4	11		W		6.7 31.0
5										**COASTAL PLAIN PEEDEE FORMATION** Dark Green to Dark Gray, Hard, Calcareous, Sandy CLAY (A-6) with Trace Cemented Concretions, Fossiliferous and Glauconitic
	2.9	34.8								
			25	56	30	86		W		
0										
	-2.1	39.8								
			16	31	69/0.1	100/0.6		W		
-5										-5.3 43.0
	-7.1	44.8								Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
			13	16	25	41		Sat.		
-10										
	-12.1	49.8								
			5	7	13	20	SS-2291	30%		
-15										
	-17.1	54.8								
			5	13	17	30		Sat.		
-20										-20.3 58.0
										-20.7 58.4
	-22.1	59.8								-21.1 58.8
			6	18	27	45		Sat.		-21.3 59.0
-25										-25.5 63.2
	-27.1	64.8								-25.9 63.6
			9	16	19	35	SS-2294	24%		-26.4 64.1
-30										-26.7 64.4
	-32.1	69.8								
			5	14	24	38	SS-2295	18%		
-35										
	-37.1	74.8								
			100/0.4			100/0.4		Sat.		-38.3 76.0
-40										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B25-A	**STATION** 300+95	**OFFSET** 14 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 37.7 ft	**TOTAL DEPTH** 141.3 ft	**NORTHING** 174,676	**EASTING** 2,318,290 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/02/26	**COMP. DATE** 04/03/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-40						Match Line				
	-42.1	79.8								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray and White, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
			38	57	42	99				
-45										
	-47.1	84.8								
			15	14	18	32				
-50										
	-52.1	89.8								
			37	29	35	64				
-55										
	-57.1	94.8								
			39	55	45	100/1.0				-58.3 96.0
-60										**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Thinly to Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-62.1	99.8								
			37	37	52	89		Sat.		-64.0 101.7
-65										-64.4 102.1
	-67.1	104.8								
			100/0.5			100/0.5		Sat.		
-70										
	-72.1	109.8								
			92	8/0.1		100/0.6		Sat.		-73.8 111.5
-75										-74.3 112.0
										-74.8 112.5
										-75.1 112.8
	-77.1	114.8								-76.2 113.9
			100/0.4			100/0.4		Sat.		-76.4 114.1
-80										-76.8 114.5
										-76.9 114.6
										-77.8 115.5
	-82.1	119.8								-78.1 115.8
			39	41	45	86		Sat.		-79.7 117.4
-85										-80.0 117.7
										-81.1 118.8
										-81.3 119.0
	-87.1	124.8								-86.8 124.5
			13	33	40	73		Sat.		-87.0 124.7
-90										
	-92.1	129.8								
			16	19	25	44	SS-2307	22%		
-95										-95.2 132.9
										-95.5 133.2
										-96.0 133.7
	-97.1	134.8								-96.3 134.0
			35	22	24	46		Sat.		-96.8 134.5
-100										-97.0 134.7
	-102.1	139.8								
			19	25	30	55		Sat.		-103.6 141.3
										Boring Terminated at Elevation -103.6 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B26-C	**STATION** 302+74	**OFFSET** 41 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 41.0 ft	**TOTAL DEPTH** 148.9 ft	**NORTHING** 174,700	**EASTING** 2,318,459 / **24 HR.** 16.0
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/15/25	**COMP. DATE** 10/17/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
45										
40	41.0	0.0	WOH	2	4	6		M		41.0 / 0.0 GROUND SURFACE
	38.3	2.7	2	2	4	6		W		40.5 / 0.5 **TOPSOIL**
35	33.3	7.7	3	2	3	5	SS-122	29%		38.5 / 2.5 **UNDIVIDED COASTAL PLAIN** Tan, Loose, Fine SAND (A-3) with Trace Organic Matter
30	28.3	12.7	5	8	11	19		W		Tan to Dark Gray, Loose, Silty SAND (A-2) with Little Organic Matter
25	23.3	17.7	5	9	12	21		Sat.		33.5 / 7.5 Light Gray, Medium Stiff, Sandy SILT (A-4) with Some Clay
20	18.3	22.7	2	4	4	8		Sat.		28.5 / 12.5 White, Light Gray, and Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3)
15	13.3	27.7	6	8	10	18	SS-126	19%		
10	8.3	32.7	60/0.1			60/0.1				8.5 / 32.5 **COASTAL PLAIN SEDIMENTARY ROCK CASTLE HAYNE FORMATION** (New Hanover Member) Brown, Moderately Hard to Hard, CONGLOMERATIC LIMESTONE
5	3.3	37.7	4	5	6	11	SS-128	25%		4.0 / 37.0 **COASTAL PLAIN PEEDEE FORMATION** Dark Green-Gray, Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
0	-1.7	42.7	10	13	16	29	SS-129	20%		-1.0 / 42.0 Dark Gray, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay
-5	-6.7	47.7	5	6	10	16		W		-6.0 / 47.0 Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4)
-10	-11.7	52.7	11	20	13	33	SS-131	19%		-11.0 / 52.0 Dark Green-Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Clay and Trace Cemented Concretions
-15	-16.4	57.4	14	12	18	30		Sat.		
-20	-21.4	62.4	6	11	23	34		Sat.		
-25	-26.4	67.4	7	13	65	78		W		-26.0 / 67.0 Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Fossiliferous Zones
-30	-31.4	72.4	12	12	41	53		W		
-35										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B26-C	**STATION** 302+74	**OFFSET** 41 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 41.0 ft	**TOTAL DEPTH** 148.9 ft	**NORTHING** 174,700	**EASTING** 2,318,459 / **24 HR.** 16.0
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/15/25	**COMP. DATE** 10/17/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				
-40	-36.4	77.4	50	50/0.4		100/0.9				-36.0 / 77.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE
-45	-41.4	82.4	31	30	23	53	SS-137	13%		
-50	-46.4	87.4	23	32	35	67				
-55	-51.4	92.4	31	30	54	84				
-60	-56.4	97.4	34	29	33	62		Sat.		-56.0 / 97.0 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Very Dense, Calcareous, Fine to Coarse SAND (A-3) with Trace Very Thinly to Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions
-65	-61.4	102.4	100/0.3			100/0.3		Sat.		-61.4 / 102.4; -62.4 / 103.4
-70	-66.4	107.4	100/0.4			100/0.4		Sat.		-66.8 / 107.8; -67.3 / 108.3
-75	-71.4	112.4	36	49	57/0.3	100/0.8	SS-143	20%		-71.0 / 112.0 Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions; -72.7 / 113.7; -73.1 / 114.1
-80	-76.4	117.4	39	61/0.4		100/0.9		Sat.		-77.3 / 118.3; -78.3 / 119.3
-85	-81.4	122.4	40	40	60/0.4	100/0.9		Sat.		-82.8 / 123.8; -83.1 / 124.1
-90	-86.4	127.4	11	21	27	48		Sat.		
-95	-91.4	132.4	23	29	27	56		Sat.		
-100	-96.4	137.4	5	9	16	25		Sat.		
-105	-101.4	142.4	4	9	14	23	SS-149	25%		
	-106.4	147.4	5	7	14	21		Sat.		-107.9 / 148.9 Boring Terminated at Elevation -107.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B27-C	**STATION** 304+94	**OFFSET** 37 ft RT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 42.4 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,670	**EASTING** 2,318,687 / **24 HR.** 23.2
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/22/25	**COMP. DATE** 10/23/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
42.4		0.0								GROUND SURFACE (42.4 / 0.0)
			2	3	6	9		M		**UNDIVIDED COASTAL PLAIN** Light Brown to Dark Brown and Light Gray, Very Loose to Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
38.8		3.6	1	1	WOH	1	SS-152	19%		
34.7		7.7	WOH	1	WOH	1		M		
29.7		12.7	11	14	12	26		M		
24.7		17.7	12	17	21	38		M		
19.7		22.7	8	10	16	26		Sat.		
14.7		27.7	9	11	15	26	SS-157	20%		
9.7		32.7	6	7	8	15		Sat.		
4.7		37.7	6	7	7	14		Sat.		
-0.3		42.7	6	7	8	15		Sat.		
-5.3		47.7	13	10	11	21	SS-161	25%		
-10.3		52.7	10	21	23	44		W		
-15.3		57.7	11	26	32	58		Sat.		
-20.3		62.7	8	12	32	44	SS-164	23%		
-25.3		67.7	8	12	21	33		Sat.		
-30.3		72.7	8	100/0.4		100/0.4		Sat.		
										-1.4 / 43.8: **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Brown to Orange-Brown, Medium Dense, Silty SAND (A-2-4) with Little Clay (-3.6 / 46.0)
										-8.6 / 51.0: **COASTAL PLAIN PEEDEE FORMATION** Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Some Clay
										Dark Gray, Hard, Calcareous, Fine Sandy CLAY (A-6) (-13.6 / 56.0)
										Gray to Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay and Trace Cemented Concretions (-18.6 / 61.0)
										Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay and Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions (-30.8 / 73.2; -31.3 / 73.7; -33.6 / 76.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B27-C	**STATION** 304+94	**OFFSET** 37 ft RT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 42.4 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,670	**EASTING** 2,318,687 / **24 HR.** 23.2
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/22/25	**COMP. DATE** 10/23/25	**SURFACE WATER DEPTH** N/A

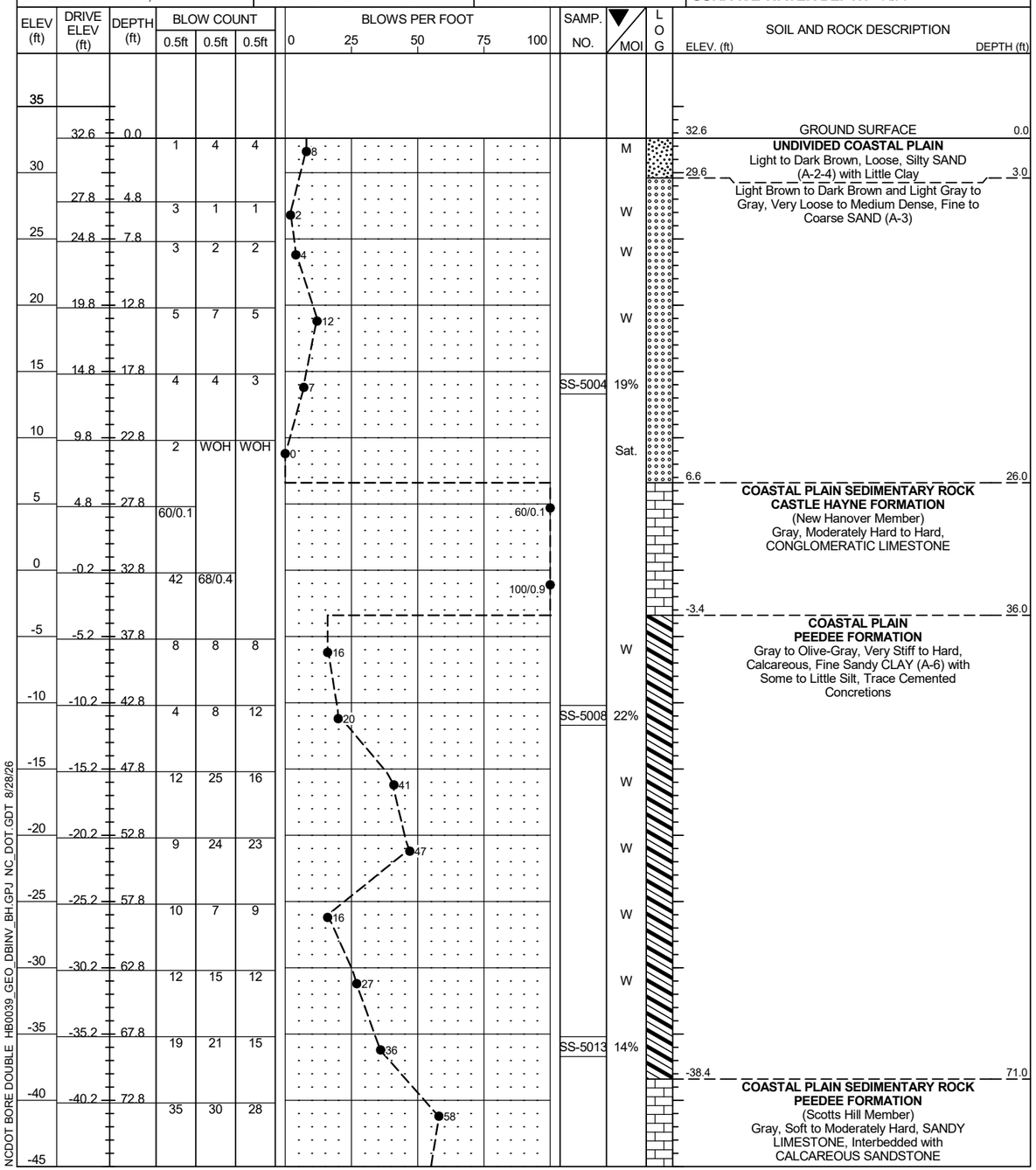
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				
	-35.3	77.7	6	100/0.4		100/0.4		W		-35.8 / 78.2: Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay and Trace Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions *(continued)* (-36.2 / 78.6; -38.1 / 80.5)
-40	-40.3	82.7	50	36	64/0.4	100/0.9				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-45	-45.3	87.7	30	16	20	36				
-50	-50.3	92.7	40	46	47	93				
-55	-55.3	97.7	46	50	36	86	SS-171	19%		-54.0 / 96.4: **COASTAL PLAIN PEEDEE FORMATION** Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-60.3	102.7	23	33	50	83		Sat.		
-65	-65.3	107.7	19	81/0.4		100/0.9		Sat.		-65.8 / 108.2; -66.2 / 108.6
-70	-70.3	112.7	100/0.2			100/0.2		Sat.		-69.3 / 111.7; -70.6 / 113.0
-75	-75.3	117.7	60/0.1			60/0.1		Sat.		-72.7 / 115.1; -73.6 / 116.0; -75.3 / 117.7; -75.7 / 118.1; -77.1 / 119.5; -77.6 / 120.0; -79.2 / 121.6; -79.5 / 121.9
-80	-80.3	122.7	27	60/0.0		60/0.0		Sat.		-80.8 / 123.2; -81.3 / 123.7; -82.6 / 125.0; -82.8 / 125.2; -83.9 / 126.3
-85	-85.3	127.7	60	40/0.0		100/0.5		Sat.		-84.2 / 126.6; -84.9 / 127.3; -85.1 / 127.5; -85.8 / 128.2; -86.3 / 128.7
-90	-90.3	132.7	22	20	20	40	SS-177	25%		
-95	-95.3	137.7	21	34	35	69	SS-178	24%		-94.2 / 136.6; -95.1 / 137.5
-100	-100.3	142.7	23	31	34	65		Sat.		-98.7 / 141.1; -98.9 / 141.3; -99.5 / 141.9; -99.9 / 142.3; -101.8 / 144.2
										Boring Terminated at Elevation -101.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

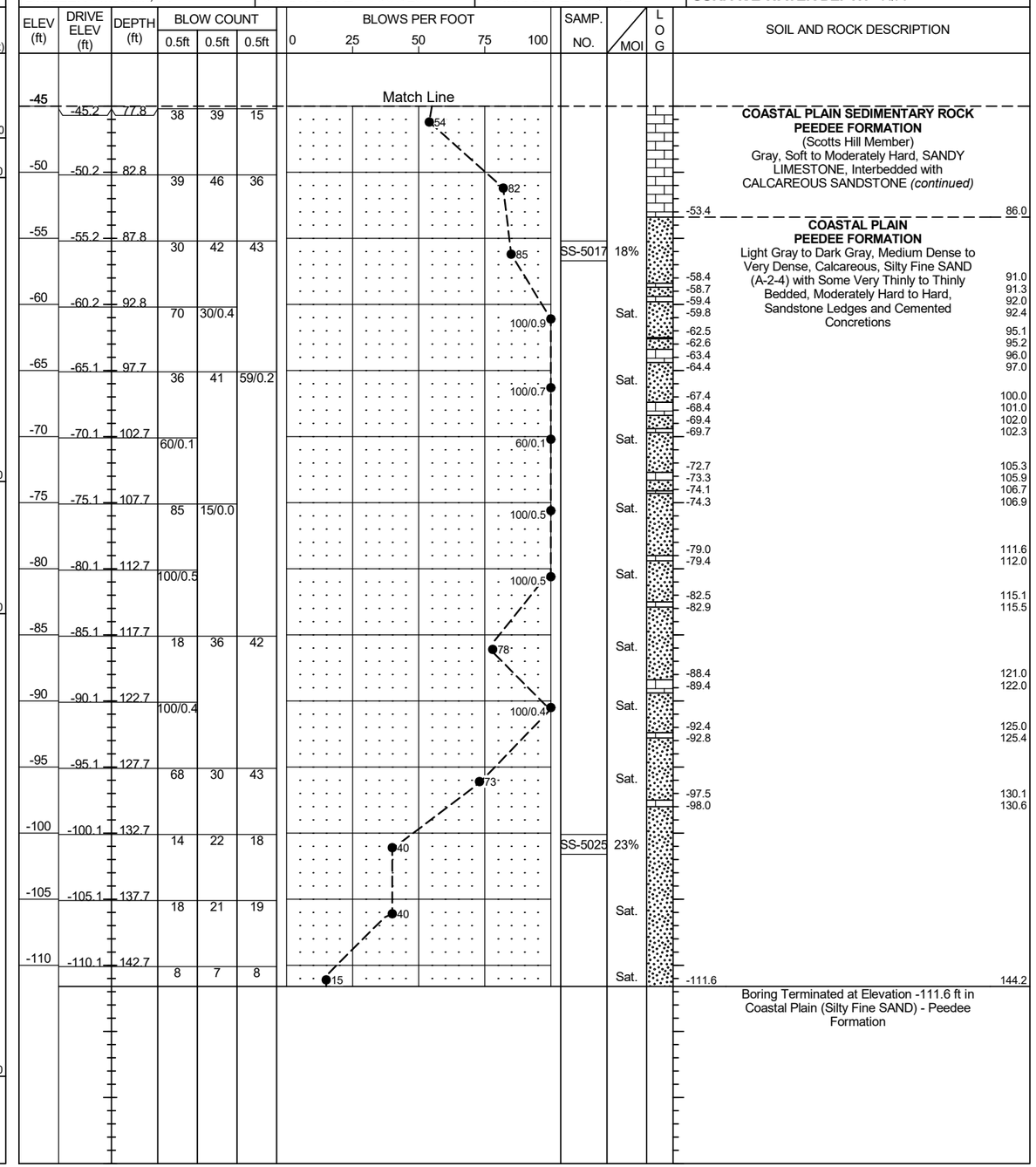
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1LT_B28-C	**STATION** 307+03	**OFFSET** 56 ft RT	**ALIGNMENT** -L1LT-	**0 HR.** N/A
COLLAR ELEV. 32.6 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,680	**EASTING** 2,318,894	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 04/06/26	**COMP. DATE** 04/07/26	**SURFACE WATER DEPTH** N/A	



WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1LT_B28-C	**STATION** 307+03	**OFFSET** 56 ft RT	**ALIGNMENT** -L1LT-	**0 HR.** N/A
COLLAR ELEV. 32.6 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,680	**EASTING** 2,318,894	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 04/06/26	**COMP. DATE** 04/07/26	**SURFACE WATER DEPTH** N/A	



NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B29-C	**STATION** 308+98	**OFFSET** 58 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 29.9 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 174,815	**EASTING** 2,319,075 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/08/26	**COMP. DATE** 04/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
30										29.9 GROUND SURFACE 0.0
	29.1	0.8	10	5	4	9		M		29.6 **ARTIFICIAL FILL (ENGINEERED)** 0.3; 29.1 Pavement (ASPHALT) 0.8; ABC GRAVEL
25	25.6	4.3	4	5	5	10	SS-5029	9%		**UNDIVIDED COASTAL PLAIN** Brown, Tan, Orange-Brown, and Light Gray, Loose to Medium Dense, Silty SAND (A-2-4)
20	22.2	7.7	2	2	2	4		W		19.9 10.0 Light Gray, Loose, Fine to Coarse SAND (A-3)
15	17.2	12.7	2	2	2	4		Sat.		
10	12.2	17.7	1	2	2	4		Sat.		9.9 20.0 Light Gray to Orange-Brown, Very Loose to Loose, Fine to Coarse SAND (A-1-b)
5	7.2	22.7	1	2	2	4	SS-5033	16%		
0	2.2	27.7	2	1	WOH	1		Sat.		0.7 29.2 **COASTAL PLAIN SEDIMENTARY ROCK CASTLE HAYNE FORMATION** (New Hanover Member) Orange-Brown and Light Gray, Soft to Medium Hard, CONGLOMERATIC LIMESTONE
-5	-2.8	32.7	WOR	23	47	70				-6.1 36.0; -7.1 37.0; -8.1 38.0 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Stiff to Hard, Calcareous, Fine Sandy CLAY (A-6) with Some Silt, Little to Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
-10	-7.8	37.7	48	52/0.3		100/0.8				
-15	-12.8	42.7	6	6	7	13	SS-5037	22%		
-20	-17.8	47.7	9	9	19	28		W		
-25	-22.8	52.7	19	9	24	33		W		
-30	-27.8	57.7	8	6	27	33		W		
-35	-32.8	62.7	21	16	17	33	SS-5041	21%		
-40	-37.8	67.7	6	6	9	15		W		
-45	-42.8	72.7	22	21	29	50				-41.1 71.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-50	-47.8	77.7	18	23	25	48				

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B29-C	**STATION** 308+98	**OFFSET** 58 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 29.9 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 174,815	**EASTING** 2,319,075 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/08/26	**COMP. DATE** 04/09/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
-55	-52.8	82.7	34	30	39	69				-56.1 86.0 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-57.8	87.7	100/0.3			100/0.3		Sat.		-60.2 90.1
-65	-62.8	92.7	41	48	52	100/1.0		Sat.		-63.1 93.0
-70	-67.8	97.7	100/0.4			100/0.4		Sat.		-68.6 98.5; -69.4 99.3
-75	-72.8	102.7	77	23/0.0		100/0.5		Sat.		
-80	-77.8	107.7	71	29/0.1		100/0.6		Sat.		
-85	-82.8	112.7	54	46/0.2		100/0.7		Sat.		
-90	-87.8	117.7	24	76/0.2		100/0.7		Sat.		
-95	-92.8	122.7	20	27	30	57	SS-5052	21%		
-100	-97.8	127.7	15	23	25	48		Sat.		
-105	-102.8	132.7	10	11	23	34	SS-5054	22%		
-110	-107.8	137.7	9	10	11	21	SS-5055	25%		
	-112.8	142.7	10	7	100/0.2	100/0.2		Sat.		-114.0 143.9 Boring Terminated at Elevation -114.0 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B30-C	**STATION** 310+85	**OFFSET** 42 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 26.0 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,819	**EASTING** 2,319,263 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/09/26	**COMP. DATE** 04/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
30										
25	26.0	0.0	1	2	3	5		D		26.0 / 0.0 GROUND SURFACE **UNDIVIDED COASTAL PLAIN** Light Brown to Dark Brown, Tan, and Gray, Loose, Fine to Coarse SAND (A-3)
20	21.7	4.3	5	3	3	6	SS-5058	11%		
15	18.3	7.7	2	4	4	8		W		
10	13.3	12.7	2	2	3	5	SS-5060	19%		
5	8.3	17.7	1	2	2	4		Sat.		4.7 / 21.3
0	3.3	22.7	60/0.0			60/0.0				**COASTAL PLAIN SEDIMENTARY ROCK** **CASTLE HAYNE FORMATION** (New Hanover Member) Gray to Tan-Brown, Soft to Hard, CONGLOMERATIC LIMESTONE 2.8 / 23.2
-5	-1.7	27.7	6	10	55	65				-1.0 / 27.0 -2.0 / 28.0 **COASTAL PLAIN** **PEEDEE FORMATION** Olive-Gray and Green, Very Dense, Calcareous, Silty SAND (A-2-4) with Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions -5.0 / 31.0
-10	-6.7	32.7	12	11	10	21		Sat.		Dark Gray to Olive-Gray, Very Stiff to Hard, Moderately Plastic, Calcareous, Fine Sandy CLAY (A-6) with Little Silt
-15	-11.7	37.7	7	27	15	42	SS-5064	19%		
-20	-16.7	42.7	15	14	14	28		W		
-25	-21.7	47.7	7	26	14	40		W		-25.0 / 51.0 Olive-Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Trace Cemented Concretions
-30	-26.7	52.7	6	22	13	35		Sat.		
-35	-31.7	57.7	18	36	26	62		Sat.		
-40	-36.7	62.7	12	88/0.4		100/0.9		Sat.		-40.0 / 66.0 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-45	-41.7	67.7	44	56/0.4		100/0.9				
-50	-46.7	72.7	35	38	27	65				

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B30-C	**STATION** 310+85	**OFFSET** 42 ft LT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 26.0 ft	**TOTAL DEPTH** 144.2 ft	**NORTHING** 174,819	**EASTING** 2,319,263 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/09/26	**COMP. DATE** 04/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
-55	-51.7	77.7	21	36	21	57				-55.0 / 81.0 **COASTAL PLAIN** **PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-56.7	82.7	67	33/0.3		100/0.8		Sat.		
-65	-61.7	87.7	51	49/0.3		100/0.8		Sat.		
-70	-66.7	92.7	60/0.1			60/0.1		Sat.		
-75	-71.7	97.7	100/0.4			100/0.4		Sat.		
-80	-76.7	102.7	51	49/0.2		100/0.7		Sat.		
-85	-81.7	107.7	100/0.3			100/0.3		Sat.		
-90	-86.7	112.7	29	50	50/0.3	100/0.8		Sat.		
-95	-91.7	117.7	18	28	24	52	SS-5079	21%		
-100	-96.7	122.7	13	87/0.2		100/0.7		Sat.		
-105	-101.7	127.7	10	10	12	22		Sat.		
-110	-106.7	132.7	100/0.4			100/0.4		Sat.		
-115	-111.7	137.7	7	7	10	17	SS-5083	22%		
	-116.7	142.7	4	8	6	14		Sat.		-118.2 / 144.2 Boring Terminated at Elevation -118.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B31-C	**STATION** 312+74	**OFFSET** 58 ft RT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 27.2 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 174,741	**EASTING** 2,319,461 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/08/26	**COMP. DATE** 05/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
30											
										27.2 GROUND SURFACE	0.0
25										**UNDIVIDED COASTAL PLAIN** Tan-Brown and White, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
	24.3	2.9	5	5	5	10		M			
20	19.3	7.9	3	4	3	7		W			
15	14.2	13.0	2	2	2	4		Sat.			
10	9.2	18.0	2	1	3	4		Sat.			
										6.2	21.0
5	4.2	23.0	WOH	1	2	3	SS-2445	41%		Dark Brown and Black, Very Loose, Silty SAND (A-2) with Little Clay and Organic Matter	
										2.2 / 1.9 / 1.7	25.0 / 25.3 / 25.5
0	-0.8	28.0	12	28	35	63		W		**COASTAL PLAIN PEEDEE FORMATION** Gray-Green, Hard, Calcareous, Sandy CLAY (A-6) with Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	
										-3.8	31.0
-5	-5.8	33.0	13	14	15	29	SS-2447	28%		Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay, Trace Cemented Concretions	
										-8.8	36.0
-10	-10.8	38.0	7	14	19	33		W		Gray, Hard, Calcareous, Sandy CLAY (A-6)	
										-13.8	41.0
-15	-15.8	43.0	11	15	11	26		Sat.		Gray to Dark Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Trace Cemented Concretions, Fossiliferous	
-20	-20.8	48.0	10	17	28	45	SS-2450	25%			
-25	-25.8	53.0	6	12	11	23		Sat.			
										-28.8	56.0
-30	-30.9	58.1	23	22	15	37	SS-2452	24%		Dark Gray to Green-Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	
-35	-35.9	63.1	20	80/0.3		100/0.8		W		-36.7 / -37.5	63.9 / 64.7
										-38.8	66.0
-40	-40.9	68.1	30	40	29	69				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray and White, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
-45	-45.9	73.1	52	48/0.2		100/0.7					
-50											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_B31-C	**STATION** 312+74	**OFFSET** 58 ft RT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 27.2 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 174,741	**EASTING** 2,319,461 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/08/26	**COMP. DATE** 05/13/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-50.9	78.1	32	28	27	55				
-55	-55.9	83.1	27	30	53	83		Sat.		
-60	-60.9	88.1	56	44/0.1		100/0.6		Sat.		
-65	-65.9	93.1	88	12/0.1		100/0.6		Sat.		
-70	-70.9	98.1	100/0.4			100/0.4		Sat.		
-75	-75.9	103.1	100/0.5			100/0.5		Sat.		
-80	-80.9	108.1	64	36/0.2		100/0.7		Sat.		
-85	-85.9	113.1	20	28	29	57		Sat.		
-90	-90.9	118.1	27	22	31	53		Sat.		
-95	-95.9	123.1	7	14	56	70		Sat.		
-100	-100.9	128.1	11	11	12	23		Sat.		
-105	-105.9	133.1	9	10	13	23		Sat.		
-110	-110.9	138.1	9	14	35	49		Sat.		

	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
-53.8		81.0
	COASTAL PLAIN PEEDEE FORMATION Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	
-59.5		86.7
-59.7		86.9
-60.1		87.3
-60.3		87.5
-62.3		89.5
-62.7		89.9
-63.4		90.6
-63.9		91.1
-64.6		91.8
-65.1		92.3
-68.3		95.5
-68.9		96.1
-69.5		96.7
-70.0		97.2
-70.4		97.6
-70.7		97.9
-74.5		101.7
-74.9		102.1
-75.5		102.7
-75.7		102.9
-79.4		106.6
-79.7		106.9
-83.0		110.2
-83.5		110.7
-84.2		111.4
-84.4		111.6
-97.7		124.9
-98.3		125.5
-102.8		130.0
-103.5		130.7
-112.4	Boring Terminated at Elevation -112.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	139.6

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1LT_EB2-C	**STATION** 314+52	**OFFSET** 52 ft RT	**ALIGNMENT** -L1LT-	**0 HR.** N/A
COLLAR ELEV. 36.7 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,767	**EASTING** 2,319,638	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 05/14/26	**COMP. DATE** 05/15/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
40											
										36.7 GROUND SURFACE	0.0
35										**UNDIVIDED COASTAL PLAIN** Light Gray, Tan-Brown, and White, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter	
	33.3	3.4	6	7	6	13		M			
30											
	28.3	8.4	4	4	4	8		M			
25											
	23.3	13.4	2	3	2	5		W			
20											
	18.3	18.4	WOH	1	3	4		W			
15											
	13.8	22.9	3	3	2	5		Sat.			
10											
	8.8	27.9	3	2	1	3	SS-2474	21%		7.7	29.0
5										**COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Green, and White, Very Stiff, Calcareous, Sandy CLAY (A-6) with Little Thinly to Thickly Bedded, Medium to Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous and Glauconitic	7.0 / 29.7
	3.8	32.9	6	8	11	19		W			5.2 / 31.5
0											1.2 / 35.5
	-1.2	37.9	100/0.3			100/0.3		Sat.			0.7 / 36.0
-5										Dark Gray-Green, Very Dense, Calcareous, Silty SAND (A-2-4) with Trace Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	-1.5 / 38.2; -3.0 / 39.7; -4.3 / 41.0
	-6.2	42.9	7	10	11	21		W		Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Thickly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	-5.8 / 42.5; -9.2 / 45.9
-10											
	-11.2	47.9	6	19	20	39	SS-2478	34%			
-15											-14.3 / 51.0
	-16.2	52.9	8	9	17	26		Sat.		Dark Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Trace Cemented Concretions	
-20											
	-21.2	57.9	15	17	9	26	SS-2480	22%			
-25											
	-26.2	62.9	14	11	21	32		Sat.			
-30											-29.3 / 66.0
	-31.2	67.9	14	19	36	55	SS-2482	22%		Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	-33.5 / 70.2; -34.1 / 70.8
-35											
	-36.2	72.9	11	47	20	67		W			-38.6 / 75.3
-40											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1LT_EB2-C	**STATION** 314+52	**OFFSET** 52 ft RT	**ALIGNMENT** -L1LT- / **0 HR.** N/A
COLLAR ELEV. 36.7 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,767	**EASTING** 2,319,638 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/14/26	**COMP. DATE** 05/15/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-40						Match Line				
	-41.2	77.9	33	24	36	60				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray and White, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
-45										
	-46.2	82.9	35	31	26	57				
-50										
	-51.2	87.9	36	64/0.5		100/1.0				
-55										-54.3 / 91.0
	-56.2	92.9	40	46	48	94		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60										-58.6 / 95.3; -59.4 / 96.1
	-61.2	97.9	26	71	29/0.2	100/0.7		Sat.		
-65										-64.1 / 100.8; -64.3 / 101.0; -65.4 / 102.1; -65.6 / 102.3; -66.1 / 102.8; -66.2 / 102.9; -68.0 / 104.7; -68.4 / 105.1; -69.4 / 106.1; -69.6 / 106.3; -70.6 / 107.3; -70.8 / 107.5; -72.3 / 109.0; -72.7 / 109.4
	-66.2	102.9	100/0.4			100/0.4		Sat.		
-70										
	-71.2	107.9	100/0.3			100/0.3		Sat.		
-75										
	-76.2	112.9	100/0.4			100/0.4		Sat.		
-80										-79.4 / 116.1; -79.6 / 116.3
	-81.2	117.9	29	45	53	98		Sat.		
-85										
	-86.2	122.9	13	34	37	71		Sat.		
-90										
	-91.2	127.9	31	35	35	70		Sat.		
-95										-96.0 / 132.7; -96.2 / 132.9; -96.8 / 133.5; -97.5 / 134.2; -98.9 / 135.6; -99.2 / 135.9
	-96.2	132.9	80	20/0.1		100/0.6		Sat.		
-100										
	-101.2	137.9	22	28	34	62		Sat.		-102.7 / 139.4
										Boring Terminated at Elevation -102.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B26-C	**STATION** 301+69	**OFFSET** 19 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 32.0 ft	**TOTAL DEPTH** 139.2 ft	**NORTHING** 174,544	**EASTING** 2,318,409 / **24 HR.** 16.5
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/01/26	**COMP. DATE** 04/02/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
35								
	32.0	0.0	4	6	7		M	32.0 / 0.0 GROUND SURFACE
30								**ROADWAY EMBANKMENT** Brown, Medium Dense, Clayey SAND (A-2-6) with Trace Gravel and Organic Matter 29.0 / 3.0
	28.2	3.8	18	12	11	SS-2254A	15%	**UNDIVIDED COASTAL PLAIN** Tan-Brown to Dark Brown, Medium Dense, Silty SAND (A-2-4) with Little Clay
25								
	23.2	8.8	7	11	11		W	
20								20.0 / 12.0 Light Gray and Tan, Medium Dense, Fine to Coarse SAND (A-3)
	18.2	13.8	6	8	10		W	
15								
	13.2	18.8	7	8	10		Sat.	
10								
	8.2	23.8	5	7	7		Sat.	
5								
	3.2	28.8	5	6	6		Sat.	
0								0.0 / 32.0 Brown, Orange, and Gray, Loose, Silty SAND (A-2-4) with Little Clay
	-1.8	33.8	1	1	3	SS-2260	26%	
-5								-5.0 / 37.0
	-6.8	38.8	6	12	14	SS-2261	25%	-5.9 / 37.9 -6.3 / 38.3 **COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Very Stiff, Calcareous, Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-10								
	-11.8	43.8	5	11	18	SS-2262	23%	
-15								-13.6 / 45.6 -13.9 / 45.9 -15.0 / 47.0
	-16.8	48.8	8	14	20		Sat.	Gray to Dark Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-20								-20.8 / 52.8 -21.2 / 53.2
	-21.8	53.8	14	24	18	SS-2264A	20%	-22.5 / 54.5 -22.7 / 54.7
-25								
	-26.8	58.8	9	14	15		W	-26.4 / 58.4 -26.7 / 58.7 -28.3 / 60.3 -28.9 / 60.9 -30.0 / 62.0
-30								
	-31.8	63.8	30	27	23	SS-2266A	23%	-30.5 / 62.5 -31.1 / 63.1 Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretion, Fossiliferous
-35								-35.2 / 67.2 -35.4 / 67.4
	-36.8	68.8	74	26/0.1			W	-38.0 / 70.0
-40								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
	-41.8	73.8	49	25	41			
-45								

BLOWS PER FOOT: 0 25 50 75 100

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B26-C	**STATION** 301+69	**OFFSET** 19 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 32.0 ft	**TOTAL DEPTH** 139.2 ft	**NORTHING** 174,544	**EASTING** 2,318,409 / **24 HR.** 16.5
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER White, J.	**START DATE** 04/01/26	**COMP. DATE** 04/02/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION
-45								Match Line
	-46.8	78.8	20	16	24			**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
-50								
	-51.8	83.8	20	20	20			
-55								
	-56.8	88.8	21	21	13			
-60								-59.0 / 91.0 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-61.8	93.8	29	52	48/0.1		Sat.	
-65								-65.1 / 97.1 -65.3 / 97.3
	-66.8	98.8	71	29/0.1			Sat.	-67.4 / 99.4 -67.7 / 99.7 -68.5 / 100.5 -68.8 / 100.8
-70								-69.9 / 101.9
	-71.8	103.8	60/0.1				Sat.	-70.1 / 102.1 -71.1 / 103.1 -71.3 / 103.3 -71.9 / 103.9
-75								-72.1 / 104.1
	-76.8	108.8	81	19/0.1			Sat.	-74.5 / 106.5 -75.3 / 107.3 -76.7 / 108.7 -77.5 / 109.5
-80								
	-81.8	113.8	38	49	51/0.4		Sat.	
-85								-86.4 / 118.4 -86.6 / 118.6
	-86.8	118.8	32	40	29	SS-2276	19%	-87.6 / 119.6 -87.8 / 119.8
-90								
	-91.8	123.8	9	20	80/0.4		Sat.	-93.5 / 125.5 -94.9 / 126.9
-95								
	-96.8	128.8	9	13	30	SS-2278	23%	
-100								-99.9 / 131.9 -100.2 / 132.2
	-101.8	133.8	8	14	23		Sat.	-101.1 / 133.1 -101.7 / 133.7
-105								
	-106.8	138.8	100/0.4				Sat.	-107.2 / 139.2 Boring Terminated at Elevation -107.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

BLOWS PER FOOT: 0 25 50 75 100

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B27-C	**STATION** 303+75	**OFFSET** 20 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 26.3 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,397	**EASTING** 2,318,556 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/15/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
30										
	26.3	0.0								GROUND SURFACE
										ROADWAY EMBANKMENT Brown, Medium Dense, Fine SAND (A-3) with Trace Gravel
25	23.4	2.9	5	12	14	26		M		
	21.3	5.0								**UNDIVIDED COASTAL PLAIN** Light to Dark Gray, Brown, and Orange, Very Loose to Loose, Silty SAND (A-2-4)
20	18.4	7.9	3	1	2	3	SS-2338	15%		
15	13.4	12.9	2	2	2	4		M		
	10.3	16.0								Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)
10	8.4	17.9	4	5	6	11		Sat.		
5	3.4	22.9	3	3	4	7		Sat.		
0	-1.6	27.9	4	5	7	12	SS-2341	20%		
	-4.7	31.0								**COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Brown, Gray, Orange, and Black, Loose to Medium Dense, Clayey SAND (A-2-6) with Trace Gravel (Phosphate Nodules)
-5	-6.6	32.9	3	4	4	8	SS-2342	30%		
-10	-11.6	37.9	3	8	13	21		W		
	-12.7	39.0								**COASTAL PLAIN PEEDEE FORMATION** Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-15	-16.6	42.9	7	25	18	43	SS-2344	24%		
	-19.7	46.0								Gray to Dark Gray, Hard, Calcareous, Fine Sandy CLAY (A-6) with Some Silt, Trace Cemented Concretions, Glauconitic
-20	-21.6	47.9	8	22	28	50		W		
-25	-26.6	52.9	12	21	30	51		W		
-30	-31.6	57.9	20	23	20	43	SS-2347	21%		
-35	-36.6	62.9	14	29	32	61				
	-37.2	63.5								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE
-40	-41.6	67.9	40	15	43	58				
-45	-46.6	72.9	20	17	36	53	SS-2350	11%		
-50										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B27-C	**STATION** 303+75	**OFFSET** 20 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 26.3 ft	**TOTAL DEPTH** 139.4 ft	**NORTHING** 174,397	**EASTING** 2,318,556 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 04/15/26	**COMP. DATE** 04/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-52.9	79.2								**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-55	-51.6	77.9	30	20	43	63				
-60	-56.6	82.9	32	31	31	62		Sat.		
-65	-61.6	87.9	60/0.0			60/0.0		Sat.		
-70	-66.6	92.9	60/0.1			60/0.1		Sat.		
-75	-71.6	97.9	100/0.5			100/0.5		Sat.		
-80	-76.6	102.9	100/0.5			100/0.5		Sat.		
-85	-81.6	107.9	60	40/0.2		100/0.7		Sat.		
-90	-86.6	112.9	30	63	37/0.2	100/0.7		Sat.		
-95	-91.6	117.9	16	22	78/0.4	100/0.9		Sat.		
-100	-96.6	122.9	20	23	30	53	SS-2358	19%		
-105	-101.6	127.9	14	86/0.1		100/0.6		Sat.		
-110	-106.6	132.9	18	30	22	52		Sat.		
	-111.6	137.9	9	11	17	28		Sat.		
	-113.1	139.4								Boring Terminated at Elevation -113.1 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B28-C	**STATION** 306+10	**OFFSET** 13 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 22.8 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,289	**EASTING** 2,318,749 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/20/26	**COMP. DATE** 05/20/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
25											
	22.8	0.0								22.8 GROUND SURFACE	0.0
			16	12	15	27		M		**ROADWAY EMBANKMENT** Brown, Medium Dense, Fine to Coarse SAND (A-3)	
20											
	18.0	4.8	4	9	8	17		M			
15	14.8	8.0								15.8	7.0
			2	1	WOH	1		W		**UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Fine to Coarse SAND (A-3)	
										11.8	11.0
10	9.8	13.0								Dark Brown, Very Loose, Fine to Coarse SAND (A-3) with Little Organic Matter	
			1	1	1	2	SS-7123	34%			
5	4.8	18.0									
			1	1	1	2		Sat.		3.3	19.5
										2.8	20.0
										COASTAL PLAIN CASTLE HAYNE FORMATION (New Hanover Member)	
										1.6	21.2
										0.8	22.0
0	-0.2	23.0								-0.5	23.3
			18	13	87/0.4	100/0.9		Sat.		Orange-Brown, Very Loose, Calcareous, Fine to Coarse SAND (A-1-b), Highly Fossiliferous, Interbedded with Thinly Bedded, Soft, Limestone	
										-4.2	27.0
-5	-5.2	28.0								**COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay	
			10	8	13	21		Sat.			
										-9.0	31.8
-10	-10.2	33.0								-9.2 Light Gray, Medium Dense, Calcareous, Silty SAND (A-2-4) with Little Clay	32.0
			5	6	100/0.4	100/0.4		W			
										-13.2 Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	36.0
										-13.3	36.1
-15	-15.2	38.0									
			5	9	6	15	SS-7127	22%			
										-18.2	41.0
										-18.3	41.1
-20	-20.2	43.0									
			11	13	26	39		W			
										-24.0	46.8
-25	-25.2	48.0								-24.2 Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	47.0
			23	11	14	25	SS-7129	23%			
										-28.3	51.1
										-28.5	51.3
										-29.2	52.0
-30	-30.2	53.0									
			21	43	41	84		Sat.		-29.3	52.1
										-32.4	55.2
										-32.6	55.4
										-33.6	56.4
-35	-35.2	58.0								-33.7	56.5
			24	60/0.1		60/0.1		Sat.		-34.5	57.3
										-34.6	57.4
										-37.4	60.2
										-37.5	60.3
										-38.2	61.0
-40	-40.2	63.0									
			100/0.4			100/0.4		Sat.		-38.4	61.2
										-39.0	61.8
										-39.1	61.9
										-39.5	62.3
										-39.8	62.6
										COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION (Scotts Hill Member)	
-45	-45.2	68.0								-42.7	65.5
										-42.8	65.6
			25	31	39	70				-43.2 Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	66.0
-50	-50.2	73.0									
			26	32	68/0.4	100/0.9					
-55											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B28-C	**STATION** 306+10	**OFFSET** 13 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 22.8 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,289	**EASTING** 2,318,749 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/20/26	**COMP. DATE** 05/20/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-55						Match Line				
	-55.2	78.0	39	61/0.4		100/0.9				
-60	-60.2	83.0	60/0.1			60/0.1		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-65	-65.2	88.0	60/0.1			60/0.1		Sat.		
-70	-70.2	93.0	60/0.1			60/0.1		Sat.		
-75	-75.2	98.0	50	50/0.2		100/0.7		Sat.		
-80	-80.2	103.0	48	52/0.1		100/0.6		Sat.		
-85	-85.2	108.0	22	78/0.4		100/0.9		Sat.		
-90	-90.2	113.0	47	27	33	60		Sat.		
-95	-95.2	118.0	8	11	22	33		Sat.		
-100	-100.2	123.0	10	20	21	41		Sat.		
-105	-105.2	128.0	6	8	12	20		Sat.		
-110	-110.2	133.0	10	12	17	29		Sat.		
-115	-115.2	138.0	5	7	4	11		Sat.		

-58.2	81.0
-59.2	82.0
-59.7	82.5
-60.7	83.5
-61.0	83.8
-62.4	85.2
-64.7	87.5
-67.4	90.2
-68.7	91.5
-69.3	92.1
-69.5	92.3
-70.7	93.5
-71.2	94.0
-72.4	95.2
-73.8	96.6
-74.3	97.1
-74.5	97.3
-77.3	100.1
-79.7	102.5
-80.2	103.0
-80.5	103.3
-116.7	139.5

Boring Terminated at Elevation -116.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1RT_B29-C	**STATION** 308+02	**OFFSET** 54 ft LT	**ALIGNMENT** -L1RT-	**0 HR.** N/A
COLLAR ELEV. 26.4 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 174,337	**EASTING** 2,318,933	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 04/01/26	**COMP. DATE** 04/03/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
30											
	26.4	0.0								26.4 GROUND SURFACE	0.0
25			2	3	7	10		D		**UNDIVIDED COASTAL PLAIN** Tan, White, and Yellow-Brown, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	
	22.2	4.2	WOR	WOR	WOR	0					
20								M			
	18.7	7.7	2	1	3	4		M			
15											
	13.7	12.7	3	4	5	9	SS-874	21%			
10											
	9.0	17.4	2	4	6	10		Sat.			
5										6.4	20.0
	4.0	22.4	1	3	83	86		Sat.		**COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Red-Brown, Hard, Fine Sandy CLAY (A-6) with Trace Thinly Bedded Limestone	
0										1.4	25.0
	-1.0	27.4	9	12	13	25		W		**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions	
-5										-3.6	30.0
	-6.0	32.4	5	17	18	35		W		Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Cemented Concretions	
-10											
	-11.0	37.4	55	45/0.5		100/1.0		W			
-15											
	-16.0	42.4	9	11	21	32	SS-880	21%			
-20											
	-21.0	47.4	7	10	12	22		W			
-25										-23.6	50.0
	-26.0	52.4	5	15	43	58		W		Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4)	
-30										-28.6	55.0
	-31.0	57.4	9	22	15	37	SS-883	24%		Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Cemented Concretions	
-35											
	-36.0	62.4	100/0.3			100/0.3		W			
-40										-38.6	65.0
	-41.0	67.4	36	48	31	79				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
-45											
	-46.0	72.4	30	19	41	60					
-50											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Jessen, A.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1RT_B29-C	**STATION** 308+02	**OFFSET** 54 ft LT	**ALIGNMENT** -L1RT-	**0 HR.** N/A
COLLAR ELEV. 26.4 ft	**TOTAL DEPTH** 143.9 ft	**NORTHING** 174,337	**EASTING** 2,318,933	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 04/01/26	**COMP. DATE** 04/03/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-50						Match Line				
	-51.0	77.4	32	55	38	93				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
-55										
	-56.0	82.4	34	41	39	80				
-60										-58.6 85.0
	-61.0	87.4	24	42	58/0.2	100/0.7		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-65										
	-66.0	92.4	52	48/0.3		100/0.8		Sat.		
-70										
	-71.0	97.4	100/0.3			100/0.3		Sat.		
-75										
	-76.0	102.4	93	7/0.1		100/0.6		Sat.		
-80										
	-81.0	107.4	54	46/0.4		100/0.9		Sat.		
-85										
	-86.0	112.4	60/0.0			60/0.0		Sat.		
-90										
	-91.0	117.4	15	23	31	54		Sat.		
-95										
	-96.0	122.4	25	42	20	62		Sat.		
-100										
	-101.0	127.4	13	18	20	38	SS-897	24%		
-105										
	-106.0	132.4	100/0.2			100/0.2		Sat.		
-110										
	-111.0	137.4	10	60/0.1		60/0.1		Sat.		
-115										
	-116.0	142.4	4	6	23	29		Sat.		-117.5 143.9

Boring Terminated at Elevation -117.5 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- 20 feet of Casing Lost in Boring.

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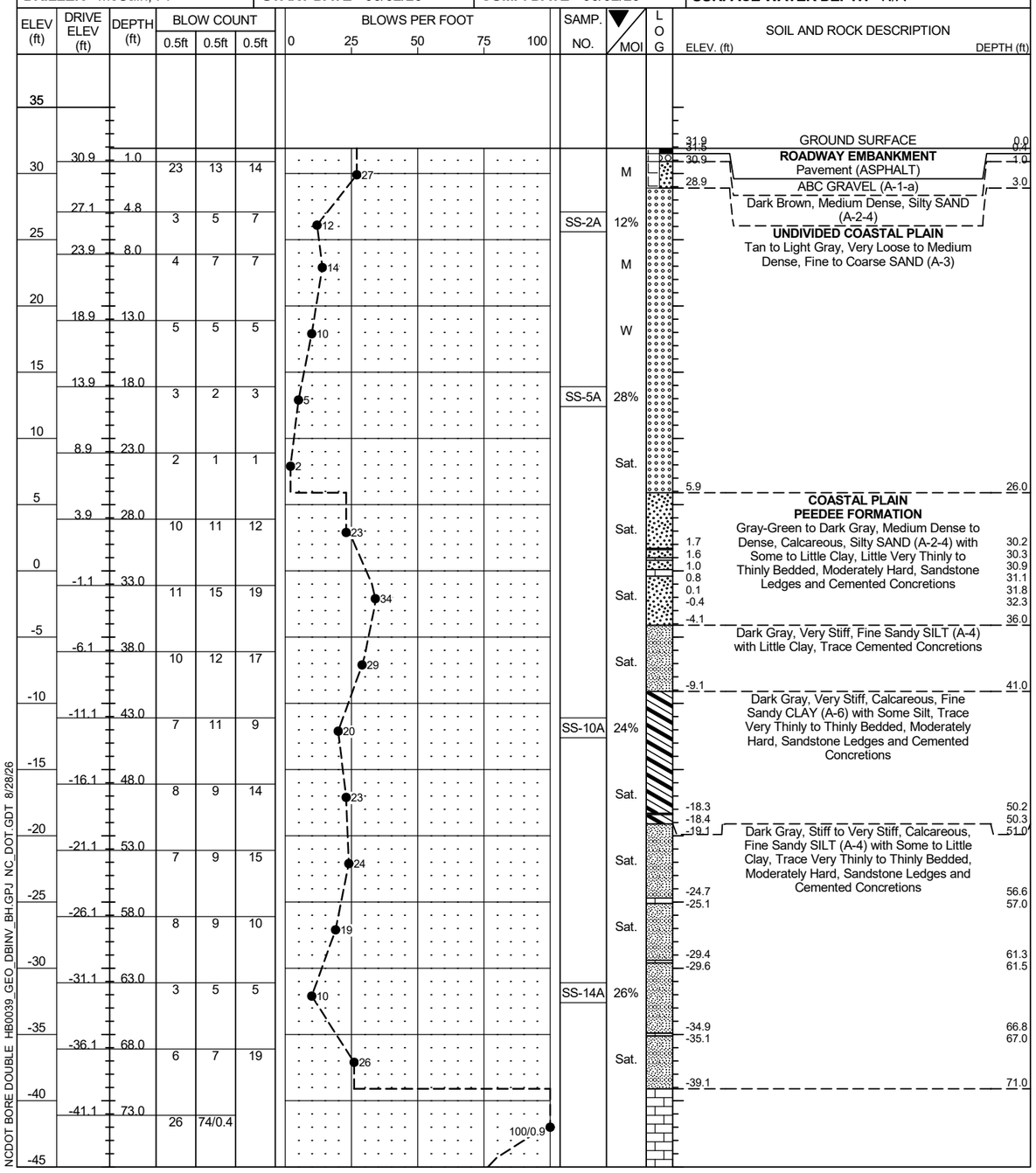
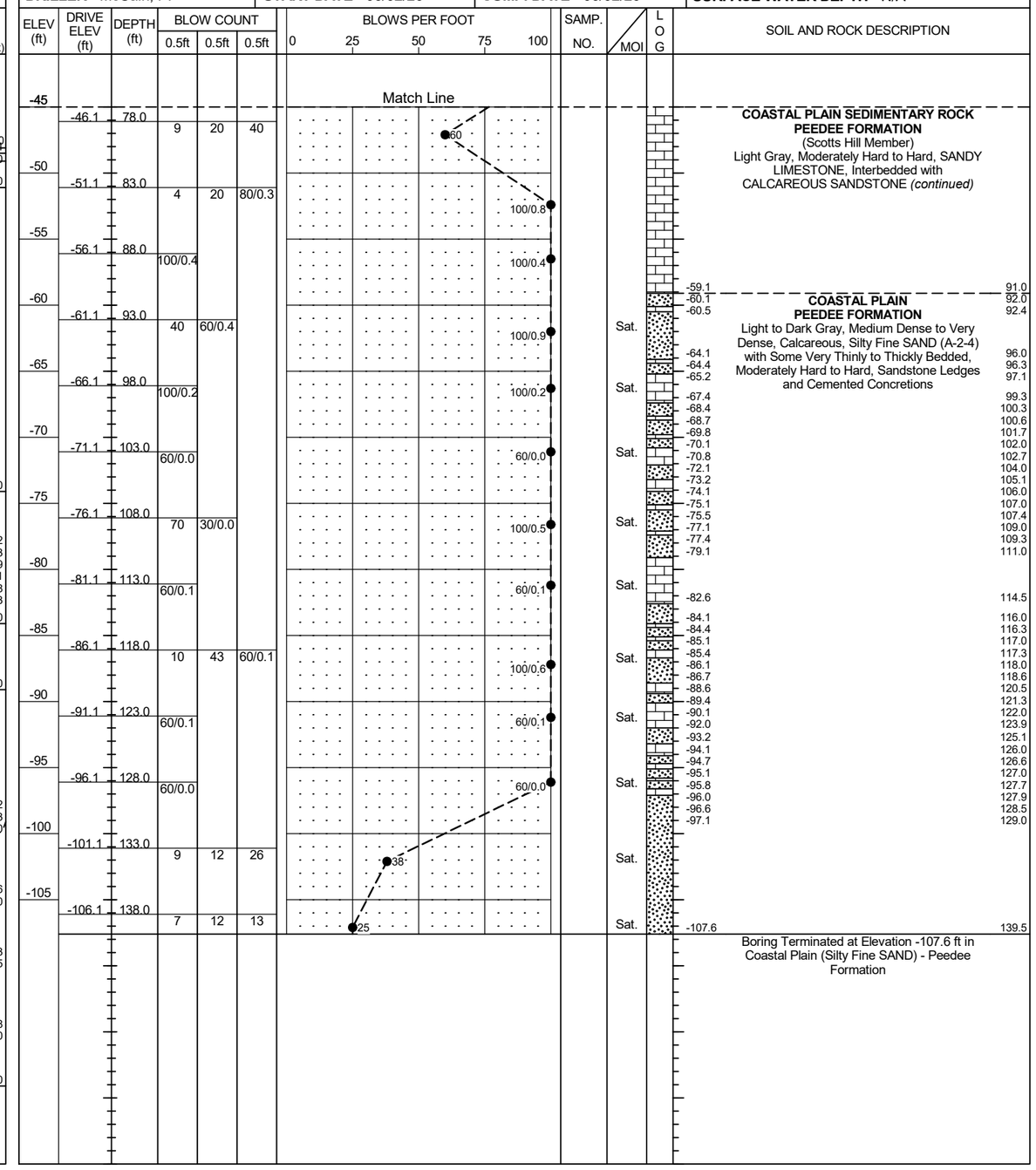
GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1RT_B30-C	**STATION** 309+94	**OFFSET** 16 ft LT	**ALIGNMENT** -L1RT-	**0 HR.** N/A
COLLAR ELEV. 31.9 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,320	**EASTING** 2,319,127	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 06/02/26	**COMP. DATE** 06/02/26	**SURFACE WATER DEPTH** N/A	



WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1RT_B30-C	**STATION** 309+94	**OFFSET** 16 ft LT	**ALIGNMENT** -L1RT-	**0 HR.** N/A
COLLAR ELEV. 31.9 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,320	**EASTING** 2,319,127	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 06/02/26	**COMP. DATE** 06/02/26	**SURFACE WATER DEPTH** N/A	



Boring Terminated at Elevation -107.6 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B31-C	**STATION** 311+93	**OFFSET** 10 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 32.2 ft	**TOTAL DEPTH** 138.0 ft	**NORTHING** 174,335	**EASTING** 2,319,326 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/03/26	**COMP. DATE** 06/03/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
35											
										32.2 GROUND SURFACE	0.0
										31.8	0.4
30										31.2 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	1.0
										29.2 ABC GRAVEL (A-1-a)	3.0
	27.4	4.8	3	5	6	11		M		Brown, Medium Dense, Silty SAND (A-2-4) **UNDIVIDED COASTAL PLAIN** Tan-Orange, Tan-Brown, and Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
25	24.2	8.0	6	7	7	14		M			
20	19.2	13.0	7	7	8	15		W			
15	14.2	18.0	3	4	5	9		Sat.			
10	9.2	23.0	1	1	2	3		Sat.		8.9 Gray, Tan, and Orange, Very Loose, Clayey SAND (A-2-6) with Some Rounded to Sub-Rounded Gravel	23.3
5	4.2	28.0	13	9	10	19		W		7.2 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray to Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	25.0
0	-0.8	33.0	60/0.0			60/0.0		W		4.9	27.3
-5	-5.8	38.0	5	21	79/0.4	100/0.9		W		4.6	27.6
-10	-10.8	43.0	6	7	9	16	SS-32A	26%		1.2	31.0
-15	-15.8	48.0	23	15	13	28		W		1.0	31.2
-20	-20.8	53.0	12	8	7	15		W		-0.4	32.6
-25	-25.8	58.0	4	9	7	16		W		-1.0	33.2
-30	-30.8	63.0	9	12	5	17		W			
-35	-35.8	68.0	6	7	7	14	SS-37A	22%			
-40	-40.8	73.0	60/0.0			60/0.0				-23.8 Dark Gray, Stiff to Very Stiff, Calcareous, Sandy CLAY (A-6) with Little Silt	56.0
-45										-38.8 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	71.0

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. L1RT_B31-C	**STATION** 311+93	**OFFSET** 10 ft LT	**ALIGNMENT** -L1RT- / **0 HR.** N/A
COLLAR ELEV. 32.2 ft	**TOTAL DEPTH** 138.0 ft	**NORTHING** 174,335	**EASTING** 2,319,326 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/03/26	**COMP. DATE** 06/03/26	**SURFACE WATER DEPTH** N/A

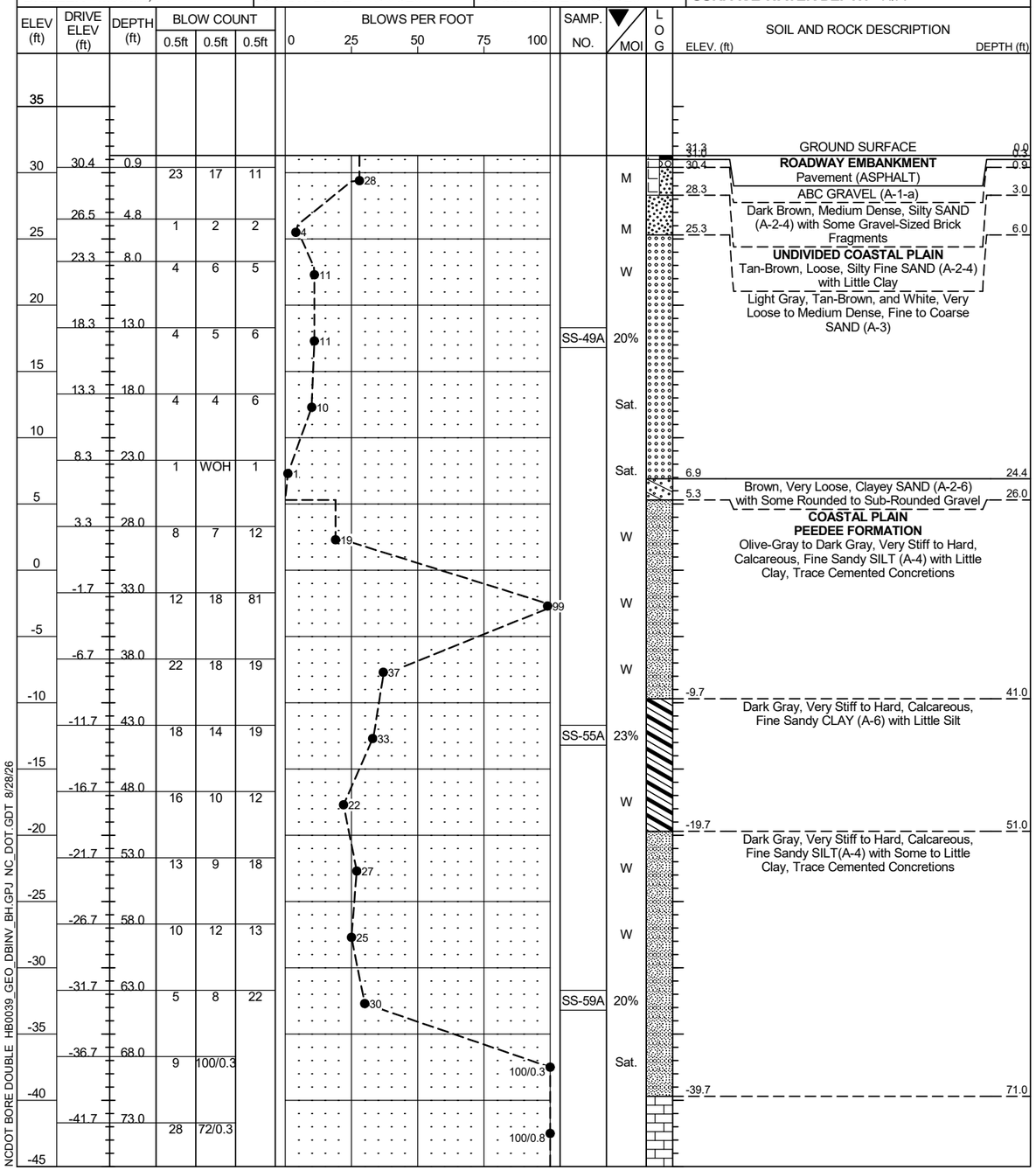
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-45						Match Line				
	-45.8	78.0	12	7	26	33				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
-50	-50.8	83.0	19	16	20	36				-53.8 86.0
-55	-55.8	88.0	33	34	66/0.3	100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-60.8	93.0	60/0.1			60/0.1		Sat.		-59.3 91.5; -59.8 92.0; -60.6 92.8
-65	-65.8	98.0	60/0.0			60/0.0		Sat.		-63.1 95.3; -63.8 96.0; -64.0 96.2; -64.8 97.0; -65.3 97.5; -65.8 98.0; -66.8 99.0; -68.1 100.3; -68.3 100.5; -69.1 101.3; -69.8 102.0; -70.8 103.0; -74.3 106.5
-70	-70.8	103.0	60/0.1			60/0.1		Sat.		
-75	-75.8	108.0	100/0.4			100/0.4		Sat.		
-80	-80.8	113.0	100/0.3			100/0.3		Sat.		
-85	-85.8	118.0	32	68/0.4		100/0.9		Sat.		
-90	-90.8	123.0	60/0.0			60/0.0		Sat.		
-95	-95.8	128.0	15	25	31	56		Sat.		
-100	-100.8	133.0	9	13	23	36	SS-45A	23%		
-105	-105.8	138.0	60/0.0			60/0.0		Sat.		-105.8 138.0 Boring Terminated at Elevation -105.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

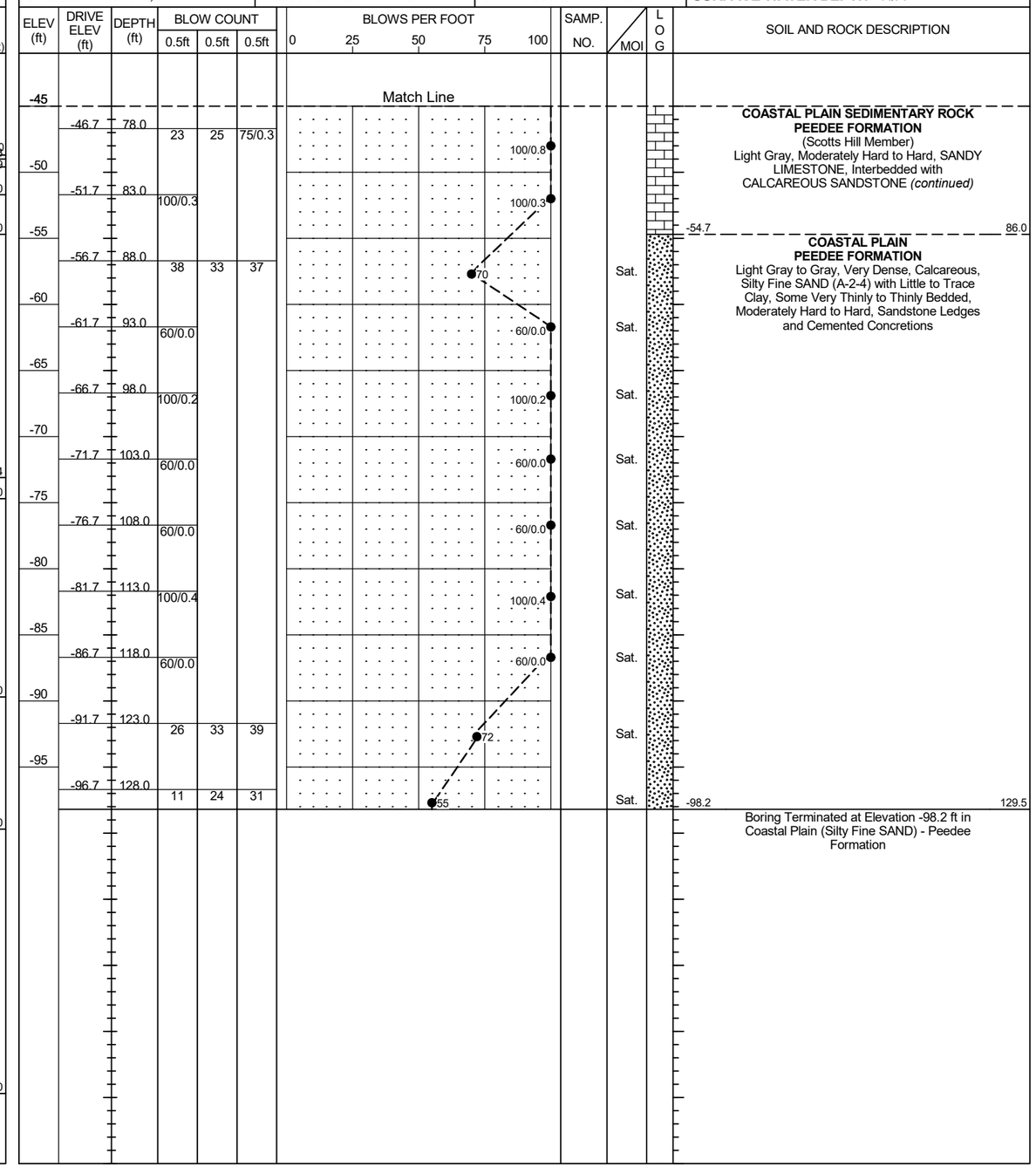
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. L1RT_EB2-C	**STATION** 313+54	**OFFSET** 9 ft LT	**ALIGNMENT** -L1RT-	**0 HR.** N/A
COLLAR ELEV. 31.3 ft	**TOTAL DEPTH** 129.5 ft	**NORTHING** 174,352	**EASTING** 2,319,486	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 06/04/26	**COMP. DATE** 06/04/26	**SURFACE WATER DEPTH** N/A	



WBS 50603.1.1	TIP HB-0039	COUNTY NEW HANOVER	GEOLOGIST Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				GROUND WTR (ft)
BORING NO. L1RT_EB2-C	STATION 313+54	OFFSET 9 ft LT	ALIGNMENT -L1RT-	0 HR. N/A
COLLAR ELEV. 31.3 ft	TOTAL DEPTH 129.5 ft	NORTHING 174,352	EASTING 2,319,486	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER McCain, P.	START DATE 06/04/26	COMP. DATE 06/04/26	SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_10600	**STATION** 106+00	**OFFSET** 4 ft LT	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 5.7 ft	**TOTAL DEPTH** 34.8 ft	**NORTHING** 177,992	**EASTING** 2,312,202	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/24/26	**COMP. DATE** 03/24/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5.7										GROUND SURFACE	0.0
5.0										**ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.7
4.6										Sandy GRAVEL (A-1-a)	1.1
	2.4	3.3	5	5	5	10	SS-2248	21%		Tan, Medium Dense, Fine to Coarse SAND (A-3)	
	-2.6	8.3	5	5	5	10		Sat.			
-7.6		13.3									13.3
	-7.6	13.3	1	1	1	2	SS-2249	213%		**ALLUVIAL** Brown, Soft, Moderately Organic, Silty CLAY (A-7)	
-10.3										Brown, Very Soft, Highly Organic, Silty CLAY (MUCK/PEAT)	16.0
	-12.6	18.3	WOH	WOH	WOH	0	SS-2250	328%			
-15.3										**UNDIVIDED COASTAL PLAIN** Gray, Loose, Silty SAND (A-2-4) with Trace Organic Matter	21.0
	-17.6	23.3	2	2	4	6	SS-2251	18%			
	-22.6	28.3	9	3	2	5		Sat.			
-27.3											33.0
	-27.6	33.3	WOH	10	17	27		Sat.			
-29.1										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft, SANDY LIMESTONE	34.8

Boring Terminated at Elevation -29.1 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_10800	**STATION** 108+00	**OFFSET** 8 ft LT	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 6.6 ft	**TOTAL DEPTH** 34.7 ft	**NORTHING** 177,985	**EASTING** 2,312,402	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/24/26	**COMP. DATE** 03/24/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
6.6										GROUND SURFACE 0.0
5.9										**ROADWAY EMBANKMENT** Pavement (ASPHALT) 0.7
5.5										Sandy GRAVEL (A-1-a) 1.1
	3.4	3.2	4	4	5	9		W		Tan, Very Loose to Loose, Fine to Coarse SAND (A-3)
	-1.6	8.2	3	1	2	3		Sat.		
	-6.6	13.2	WOH	WOH	1	1	SS-2244	27%		
-8.4										**ALLUVIAL** Brown, Very Loose, Silty SAND (A-2-4) with Trace Organic Matter 15.0
	-11.6	18.2	2	1	1	2	SS-2245	25%		
	-16.6	23.2	1	0	3	3		Sat.		
-16.4										**UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Medium Dense, Fine SAND (A-3) 23.0
	-21.6	28.2	6	8	7	15		Sat.		
-26.4										33.0
	-26.6	33.2	12	13	15	28		Sat.		
-28.1										**COASTAL PLAIN PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft, SANDY LIMESTONE 34.7

Boring Terminated at Elevation -28.1 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_11100	**STATION** 111+00	**OFFSET** 5 ft LT	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 7.5 ft	**TOTAL DEPTH** 34.7 ft	**NORTHING** 177,932	**EASTING** 2,312,698	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/23/26	**COMP. DATE** 03/24/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
7.5										GROUND SURFACE	0.0
6.3										**ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.6
										Sandy GRAVEL (A-1-a) Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)	1.2
	4.3	3.2	7	6	8	14	SS-2237	22%			
	-0.7	8.2	3	3	4	7		Sat.			
	-5.7	13.2	3	2	4	6		Sat.			
-9.5										**ALLUVIAL** Tan, Loose, Moderately Organic, Silty SAND (A-2)	17.0
	-10.7	18.2	4	5	3	8	SS-2239	192%			
-14.5										**UNDIVIDED COASTAL PLAIN** Gray, Very Soft, Sandy SILT (A-4) with Little Clay	22.0
	-15.7	23.2	WOH	WOH	WOH	0	SS-2240	18%			
-18.5										Gray, Loose, Fine to Coarse SAND (A-3)	26.0
	-20.7	28.2	2	2	2	4		Sat.			
-23.5										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member)	31.0
	-25.7	33.2	30	19	7	26					
-27.2										Light Gray, Soft, SANDY LIMESTONE	34.7

Boring Terminated at Elevation -27.2 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_11300	**STATION** 113+00	**OFFSET** CL	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 7.9 ft	**TOTAL DEPTH** 49.7 ft	**NORTHING** 177,873	**EASTING** 2,312,890	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/23/26	**COMP. DATE** 03/23/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
7.9										GROUND SURFACE 0.0
7.3										**ROADWAY EMBANKMENT** Pavement (ASPHALT) 0.6
6.7										Sandy GRAVEL (A-1-a) Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) 1.2
	4.7	3.2	10	12	13	25	SS-2230	14%		
	-0.3	8.2	6	9	10	19		Sat.		
	-5.3	13.2	3	3	4	7		Sat.		
	-10.3	18.2	4	5	6	11	SS-2233	22%		
-14.1										**ALLUVIAL** Tan, Dark Brown, and Black, Medium Dense to Dense, Fine to Coarse SAND (A-3) with Little to Trace Organic Matter 22.0
	-15.3	23.2	8	10	20	30		Sat.		
	-20.3	28.2	9	9	9	18		Sat.		
-24.1										**UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Very Dense, Fine SAND (A-3) 32.0
	-25.3	33.2	7	6	7	13		Sat.		
	-30.3	38.2	5	8	7	15		Sat.		
	-35.3	43.2	14	30	33	63		Sat.		
	-40.3	48.2	2	0	0	0		Sat.		
-41.8										Boring Terminated at Elevation -41.8 ft in Undivided Coastal Plain (Fine SAND) 49.7

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_11500	**STATION** 115+00	**OFFSET** 10 ft RT	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 8.5 ft	**TOTAL DEPTH** 44.1 ft	**NORTHING** 177,795	**EASTING** 2,313,074	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/23/26	**COMP. DATE** 03/23/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
8.5										GROUND SURFACE	0.0
7.6										**ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.9
7.4										Sandy GRAVEL (A-1-a)	1.1
										Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter	
5	5.3	3.2	5	6	7	13		M			
0	0.3	8.2	3	3	3	6		Sat.			
-5	-4.7	13.2	WOH	2	7	9	SS-2225	24%			
-9.5										**ALLUVIAL** Brown, Loose, Silty SAND (A-2-4) with Trace Organic Matter	18.0
-10	-9.7	18.2	2	4	5	9		Sat.			
-14.5										Gray, Very Soft, Sandy SILT (A-4) with Some Clay, Trace Organic Matter	23.0
-15	-14.7	23.2	WOH	WOH	WOH	0	SS-2226	21%			
-19.5										**UNDIVIDED COASTAL PLAIN** Tan and Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	28.0
-20	-19.7	28.2	3	6	9	15		Sat.			
-25	-24.7	33.2	2	2	1	3		Sat.			
-30	-29.7	38.2	2	4	9	13	SS-2228	23%			
-34.7		43.2									
-35.6		44.1	56	44/0.4		100/0.9				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard, SANDY LIMESTONE	

Boring Terminated at Elevation -35.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_11600	**STATION** 116+00	**OFFSET** 5 ft LT	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 10.3 ft	**TOTAL DEPTH** 44.8 ft	**NORTHING** 177,771	**EASTING** 2,313,172	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/18/26	**COMP. DATE** 03/19/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10.3										GROUND SURFACE 0.0
9.3										**ROADWAY EMBANKMENT** Pavement (ASPHALT) 1.0
										Sandy GRAVEL (A-1-a)
										Gray and Brown, Loose to Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
10	7.0	3.3	7	14	13	27		M		
5	2.0	8.3	7	15	18	33	SS-2209	22%		
0	-3.0	13.3	6	13	17	30		Sat.		
-5	-8.0	18.3	3	3	3	6	SS-2210	26%		
-10.7										**ALLUVIAL** Gray, Very Loose, Moderately Organic, Fine SAND (A-3) 21.0
-10	-13.0	23.3	2	2	1	3	SS-2211	74%		
-15.7										Gray to Dark Gray, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter 26.0
-15	-18.0	28.3	5	1	1	2	SS-2212	30%		
-20.7										**UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Medium Dense, Fine SAND (A-3) 31.0
-20	-23.0	33.3	8	7	7	14		Sat.		
-25	-28.0	38.3	WOR	WOR	WOR	0		Sat.		
-31.7										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft, SANDY LIMESTONE 42.0
-30	-33.0	43.3	7	16	18	34				
-34.5										44.8

Boring Terminated at Elevation -34.5 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_11800	**STATION** 118+00	**OFFSET** CL	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 6.5 ft	**TOTAL DEPTH** 44.9 ft	**NORTHING** 177,682	**EASTING** 2,313,351	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
	6.5	0.0								6.5 GROUND SURFACE	0.0
5			2	1	2	3		M		**ROADWAY EMBANKMENT** Brown to Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	
	1.7	4.8	3	11	11	22	SS-574	19%			
0	-1.9	8.4	3	5	6	11		M			
-5										-5.0 **ALLUVIAL** Brown to Gray, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	11.5
	-7.0	13.5	1	WOH	1	1	SS-576	28%			
-10	-12.0	18.5	2	2	2	4		Sat.			
-15										-15.0 **UNDIVIDED COASTAL PLAIN** Light Gray, Loose, Fine to Coarse SAND (A-3)	21.5
	-17.0	23.5	2	4	6	10	SS-578	21%			
-20	-22.0	28.5	2	1	4	5		Sat.		-22.5 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Loose, Calcareous, Fine to Coarse SAND (A-3) with Trace Limestone Fragments	29.0
-25										-24.5	31.0
	-27.1	33.6	21	14	25	39		Sat.		**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
-30	-32.1	38.6	18	27	24	51		Sat.		-31.5	38.0
-35										**COASTAL PLAIN PEEDEE FORMATION** Light Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly To Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
	-37.1	43.6	18	41	59/0.3	100/0.8		Sat.		-38.4	44.9

Boring Terminated at Elevation -38.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LLT_12000	**STATION** 120+00	**OFFSET** CL	**ALIGNMENT** -LLT-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 54.4 ft	**NORTHING** 177,589	**EASTING** 2,313,528	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 02/18/26	**COMP. DATE** 02/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
	3.1	0.0								3.1 GROUND SURFACE 0.0
			1	1	1	2		Sat. 129%		**ALLUVIAL** Dark Brown to Black, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
0	-0.5	3.6	WOR	WOR	WOH	0	SS-460	631%		
-5	-5.5	8.6	WOH	WOH	WOH	0	SS-461	650%		
-10	-10.5	13.6	WOH	WOH	WOH	0		Sat.		
-15	-15.5	18.6	WOR	WOR	WOH	0		498% Sat.		
-20	-20.5	23.6	3	3	3	6	SS-462	22%		-19.9 **UNDIVIDED COASTAL PLAIN** Brown to Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter 23.0
-25	-25.5	28.6	WOR	WOH	1	1		Sat.		
-30	-30.5	33.6	3	5	12	17		Sat.		-31.9 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Medium Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE 35.0
-35	-35.5	38.6	31	13	4	17				
-40	-40.5	43.6	61	39/0.1		100/0.6		Sat.		-39.4 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions 42.5
-45	-45.5	48.6	77	23/0.2		100/0.7		Sat.		-42.2 -42.4 -42.9 -43.0 -43.6 -43.8 -44.9 -45.1 -47.7 -47.9 -48.4 -48.5 -51.3 45.3 45.5 46.0 46.1 46.7 46.9 48.0 48.2 50.8 51.0 51.5 51.6 54.4
-50	-50.5	53.6	58	43/0.3		100/0.8		Sat.		

Boring Terminated at Elevation -51.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Other Samples:
ST-43 (1.0 - 3.0)
ST-44 (17.1 - 19.6)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. LLT_EB1-A	**STATION** 121+63	**OFFSET** 17 ft LT	**ALIGNMENT** -LLT- / **0 HR.** N/A
COLLAR ELEV. 3.7 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 177,521	**EASTING** 2,313,678 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 02/23/26	**COMP. DATE** 02/24/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	3.7	0.0	WOH	WOH	WOH	0	SS-494	100%		3.7 GROUND SURFACE 0.0
0	0.1	3.6	WOH	WOH	WOH	0	SS-495	27%		**ALLUVIAL** Dark Brown, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay 0.7 / 3.0; Gray, Very Soft, Fine Sandy SILT (A-4) with Some Clay and Trace Organic Matter
-5	-4.7	8.4	WOH	WOH	WOH	0	SS-496	41%		-4.3 / 8.0 Gray to Dark Brown, Very Soft, Moderately Organic, Fine Sandy SILT (A-4) with Some Clay
-10	-9.8	13.5	WOH	WOH	WOH	0		Sat.		
-15	-14.9	18.6	WOH	WOH	WOH	0	SS-498	178%		-14.3 / 18.0 Dark Brown, Very Soft, Highly Organic, Fine Sandy SILT (MUCK/PEAT) with Some Clay
-20	-19.8	23.5	WOH	1	WOH	1		Sat.		
-25	-24.7	28.4	2	3	1	4	SS-500	26%		-23.3 / 27.0 **UNDIVIDED COASTAL PLAIN** Light Gray, Loose, Silty SAND (A-2-4) with Little Clay and Trace Organic Matter; -27.3 / 31.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-30	-29.8	33.5	21	25	21	46				
-35	-34.9	38.6	60	40/0.2		100/0.7				-37.3 / 41.0 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-40	-39.8	43.5	25	68	32/0.2	100/0.7		Sat.		
-45	-44.8	48.5	48	52/0.3		100/0.8		Sat.		
-50	-49.9	53.6	65	35/0.2		100/0.7		Sat.		
-55	-54.8	58.5	24	40	60/0.4	100/0.9		Sat.		
-60	-59.9	63.6	28	29	71/0.3	100/0.8		Sat.		
-65	-64.8	68.5	27	26	20	46	SS-508	21%		
-70	-69.8	73.5	5	9	5	14		Sat.		
-75	-74.8	78.5								

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. LLT_EB1-A	**STATION** 121+63	**OFFSET** 17 ft LT	**ALIGNMENT** -LLT- / **0 HR.** N/A
COLLAR ELEV. 3.7 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 177,521	**EASTING** 2,313,678 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 02/23/26	**COMP. DATE** 02/24/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOW COUNT 0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			11	21	22	43		Sat.		-75.0 / 78.7 **PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions; -78.3 / 82.0; -78.6 / 82.3
-80	-79.9	83.6	7	6	9	15	SS-511	21%		
-85	-84.8	88.5	8	9	9	18		Sat.		
-90	-89.8	93.5	9	10	11	21		Sat.		
-95	-94.9	98.6	10	8	10	18	SS-514	23%		
-100	-99.8	103.5	5	9	9	18		Sat.		
-105	-104.8	108.5	5	5	12	17	SS-516	25%		-108.3 / 112.0; -108.6 / 112.3
-110	-109.9	113.6	100/0.2			100/0.2		Sat.		-110.9 / 114.6; -111.3 / 115.0
-115	-114.8	118.5	7	11	7	18		Sat.		
-120	-119.7	123.4	5	5	11	16	SS-519	27%		-121.3 / 125.0; -121.6 / 125.3
-125	-124.8	128.5	6	6	7	13		Sat.		-127.3 / 131.0 Gray to Dark Gray, Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay
-130	-129.8	133.5	5	5	6	11	SS-521	26%		
-135	-134.9	138.6	4	4	5	9		Sat.		-136.4 / 140.1 Boring Terminated at Elevation -136.4 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. LRT_10500	**STATION** 105+00	**OFFSET** 5 ft RT	**ALIGNMENT** -LRT- / **0 HR.** N/A
COLLAR ELEV. 5.7 ft	**TOTAL DEPTH** 39.7 ft	**NORTHING** 177,838	**EASTING** 2,312,114 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/19/26	**COMP. DATE** 03/19/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
5										5.7 GROUND SURFACE	0.0
										5.1 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.6
										4.7 Sandy GRAVEL (A-1-a)	1.0
	2.5	3.2	8	13	14	27		M		Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
0											
	-2.5	8.2	5	7	9	16	SS-2216	19%			
-5											
	-7.5	13.2	5	5	5	10		Sat.			
-10										-10.3 **ALLUVIAL** Black, Soft, Highly Organic, Sandy CLAY (MUCK/PEAT)	16.0
	-12.5	18.2	6	3	1	4		Sat.			
-15											
	-17.5	23.2	WOH	2	2	4		Sat.			
-20										-20.3 **UNDIVIDED COASTAL PLAIN** Gray, Loose, Silty SAND (A-2-4) with Little Clay and Trace Organic Matter	26.0
	-22.5	28.2	WOH	WOH	5	5	SS-2217	20%			
-25											
	-27.5	33.2	4	3	1	4		Sat.			
-30											
	-32.5	38.2	60	23	34	57				-32.3	38.0
										-34.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE	39.7

Boring Terminated at Elevation -34.0 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. LRT_10700	**STATION** 107+00	**OFFSET** 10 ft RT	**ALIGNMENT** -LRT- / **0 HR.** N/A
COLLAR ELEV. 8.1 ft	**TOTAL DEPTH** 39.7 ft	**NORTHING** 177,836	**EASTING** 2,312,314 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/19/26	**COMP. DATE** 03/19/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10										
										8.1 GROUND SURFACE 0.0
										7.5 **ROADWAY EMBANKMENT** Pavement (ASPHALT) 0.6
										7.1 Sandy GRAVEL (A-1-a) 1.0
5	4.9	3.2	8	8	10	18	SS-2219	13%		Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3)
0	-0.1	8.2	4	2	2	4		W		
-5	-5.1	13.2	3	4	4	8		Sat.		-7.9 **ALLUVIAL** Black, Very Soft to Medium Stiff, Highly Organic, Sandy CLAY (MUCK/PEAT) 16.0
-10	-10.1	18.2	3	2	3	5		Sat.		
-15	-15.1	23.2	WOH	WOH	WOH	0	SS-2220	182%		-17.9 **UNDIVIDED COASTAL PLAIN** Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) 26.0
-20	-20.1	28.2	4	3	1	4		Sat.		
-25	-25.1	33.2	7	9	10	19		Sat.		
-30	-30.1	38.2	19	26	55	81				-29.9 38.0
										-31.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Moderately Hard, SANDY LIMESTONE 39.7

Boring Terminated at Elevation -31.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LRT_10900	**STATION** 109+04	**OFFSET** 31 ft LT	**ALIGNMENT** -LRT-	**0 HR.** N/A
COLLAR ELEV. 3.4 ft	**TOTAL DEPTH** 29.0 ft	**NORTHING** 177,868	**EASTING** 2,312,520	**24 HR.** 1.2
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 06/09/26	**COMP. DATE** 06/09/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.4 GROUND SURFACE	0.0
0	0.9	2.5	2	3	4	7		Sat. 37%		**ALLUVIAL** Brown, Loose, Silty SAND (A-2) with Little Organic Matter	
-5	-4.1	7.5	2	1	1	2		Sat. 208%		-3.6 Dark Brown, Very Soft to Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	7.0
-10	-9.1	12.5	WOH	WOH	WOH	0		Sat. 22%		-10.6 **UNDIVIDED COASTAL PLAIN** Tan-Brown, Very Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Organic Matter	14.0
-15	-14.1	17.5	2	WOR	1	1		Sat.			
-20	-19.1	22.5	5	6	9	15		Sat.		-22.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Tan, Soft, SANDY LIMESTONE	26.0
-25	-24.1	27.5	3	15	14	29				-25.6 Boring Terminated at Elevation -25.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	29.0

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-50A (4.0 - 6.0)
ST-51A (9.0 - 11.0)
ST-52A (14.0 - 16.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LRT_11100	**STATION** 111+03	**OFFSET** 20 ft LT	**ALIGNMENT** -LRT-	**0 HR.** N/A
COLLAR ELEV. 3.8 ft	**TOTAL DEPTH** 34.2 ft	**NORTHING** 177,836	**EASTING** 2,312,719	**24 HR.** 1.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 06/10/26	**COMP. DATE** 06/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										3.8 GROUND SURFACE 0.0
0	1.1	2.7	3	5	4	9		Sat. 15%		**ALLUVIAL** Light Brown to Brown and Gray, Loose, Silty SAND (A-2-4) with Trace Organic Matter
-5	-3.9	7.7	2	1	2	3		Sat. 321%		-3.2 Dark Brown, Soft, Highly Organic, Clayey SILT (MUCK/PEAT) 7.0
-10	-8.9	12.7	17	13	12	25		Sat. 12%		-8.2 Brown, Medium Dense, Coarse SAND (A-1-b) with Trace Organic Matter 12.0
-15	-13.9	17.7	WOH	WOH	WOH	0	SS-2637	16%		-13.2 Light Brown, Very Loose, Silty SAND (A-2-4) with Little Clay, Trace Organic Matter 17.0
-20	-18.9	22.7	2	3	2	5		Sat.		-17.2 **UNDIVIDED COASTAL PLAIN** Tan, Loose, Fine to Coarse SAND (A-3) with Trace Shell Fragments 21.0
-25	-23.9	27.7	11	2	4	6				-22.2 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to White, Very Soft to Medium Hard, SANDY LIMESTONE 26.0
-30	-28.9	32.7	15	31	25	56				-30.4 Boring Terminated at Elevation -30.4 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 34.2

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-53A (5.0 - 7.0)
ST-54 (10.0 - 12.0)
ST-55 (15.0 - 17.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LRT_11300	**STATION** 112+93	**OFFSET** 4 ft LT	**ALIGNMENT** -LRT-	**0 HR.** N/A
COLLAR ELEV. 3.6 ft	**TOTAL DEPTH** 39.4 ft	**NORTHING** 177,789	**EASTING** 2,312,904	**24 HR.** 1.5
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 06/10/26	**COMP. DATE** 06/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.6 GROUND SURFACE	0.0
										ALLUVIAL Brown to Dark Brown, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT)	
0	0.7	2.9	WOH	WOH	WOH	0		Sat.			
-5	-4.3	7.9	1	1	2	3		Sat.			
										-7.4 Brown, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	11.0
-10	-9.3	12.9	4	4	4	8	SS-2642	32%			
-15	-14.3	17.9	2	3	4	7		Sat.			
										-16.4 **UNDIVIDED COASTAL PLAIN** Tan and Gray, Loose to Dense, Fine to Coarse SAND (A-3) with Trace Rounded Gravel	20.0
-20	-19.3	22.9	2	3	5	8		Sat.			
-25	-24.3	27.9	3	4	4	8		Sat.			
-30	-29.3	32.9	4	5	2	7		Sat.			
-35	-34.3	37.9	8	19	31	50		Sat.		-35.8 Boring Terminated at Elevation -35.8 ft in Undivided Coastal Plain (Fine to Coarse SAND)	39.4

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. LRT_11500	**STATION** 114+96	**OFFSET** 20 ft RT	**ALIGNMENT** -LRT-	**0 HR.** N/A
COLLAR ELEV. 4.0 ft	**TOTAL DEPTH** 28.8 ft	**NORTHING** 177,717	**EASTING** 2,313,094	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 06/11/26	**COMP. DATE** 06/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										4.0 GROUND SURFACE 0.0
										ALLUVIAL Dark Brown to Black, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
0	1.0	3.0	2	2	1	3	SS-2647	39%		
-5	-4.0	8.0	2	3	6	9	SS-2648	20%		
-10	-9.0	13.0	3	4	6	10	SS-2649	26%		
-15	-14.0	18.0	3	4	3	7		Sat.		
										-17.0 **UNDIVIDED COASTAL PLAIN** Tan-Brown and Gray, Loose, Silty SAND (A-2-4) with Trace Clay 21.0
-20	-19.0	23.0	2	3	3	6		Sat.		
										-22.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray and White, Moderately Hard, SANDY LIMESTONE 26.0
	-24.0	28.0	22	78/0.3		100/0.8				-24.8 Boring Terminated at Elevation -24.8 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 28.8

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/31/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPA_B1-C	**STATION** 15+95	**OFFSET** 17 ft LT	**ALIGNMENT** -Y1RPA-	**0 HR.** N/A
COLLAR ELEV. 9.7 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 176,642	**EASTING** 2,314,607	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 05/18/26	**COMP. DATE** 05/20/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10										9.7 GROUND SURFACE	0.0
	6.1	3.6	6	6	6	12		M		**ROADWAY EMBANKMENT** Tan, Loose to Medium Dense, Fine to Coarse SAND (A-1-b)	
5											
	1.1	8.6	6	5	6	11		M			
0											
	-3.9	13.6	5	4	4	8		W			
-5											
	-8.9	18.6	4	4	4	8		Sat.			
-10											
	-13.9	23.6	2	2	2	4	SS-2499	93%		-12.3 **ALLUVIAL** Brown, Loose, Highly Organic, Silty SAND (MUCK/PEAT) with Little Clay	22.0
-15											
	-18.9	28.6	15	23	34	57		Sat.		-17.3 **UNDIVIDED COASTAL PLAIN** Light Gray, Very Dense, Fine SAND (A-3)	27.0
-20											
	-23.9	33.6	1	10	10	20		Sat.		-22.3 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	32.0
-25											
	-28.9	38.6	15	19	16	35		Sat.			
-30											
	-33.9	43.6	37	63/0.3		100/0.8		Sat.			
-35											
	-38.9	48.6	32	6	22	28		Sat.			
-40											
	-43.9	53.6	23	33	34	67		Sat.		-42.3 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	52.0
-45											
	-48.9	58.6	49	51/0.3		100/0.8		Sat.			
-50											
	-53.9	63.6	75	25/0.1		100/0.6		Sat.			
-55											
	-58.9	68.6	78	22/0.1		100/0.6		Sat.			
-60											
	-63.9	73.6	100/0.5			100/0.5		Sat.			
-65											
	-68.9	78.6	25	48	52/0.4			Sat.			
-70											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPA_B1-C	**STATION** 15+95	**OFFSET** 17 ft LT	**ALIGNMENT** -Y1RPA-	**0 HR.** N/A
COLLAR ELEV. 9.7 ft	**TOTAL DEPTH** 140.1 ft	**NORTHING** 176,642	**EASTING** 2,314,607	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 05/18/26	**COMP. DATE** 05/20/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
	-73.9	83.6	23	18	25	100/0.9 43	SS-2510	23%		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-75										
	-78.9	88.6	14	19	29	48		Sat.		
-80										
	-83.9	93.6	11	51	33	84		Sat.		
-85										
	-88.9	98.6	25	42	30	72		Sat.		
-90										
	-93.9	103.6	10	12	14	26	SS-2514	23%		
-95										
	-98.9	108.6	10	60/0.1		60/0.1		Sat.		
-100										
	-103.9	113.6	100/0.3			100/0.3		Sat.		
-105										
	-108.9	118.6	7	10	11	21	SS-2516	28%		
-110										
	-113.9	123.6	34	16	16	32		Sat.		
-115										
	-118.9	128.6	6	7	13	20		Sat.		
-120										
	-123.9	133.6	61	22	21	43		Sat.		-127.3 Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay 137.0
-125										
	-128.9	138.6	7	8	14	22	SS-2520	26%		-130.4 Boring Terminated at Elevation -130.4 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation 140.1
-130										

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPA_EB1-C	**STATION** 17+73	**OFFSET** 56 ft LT	**ALIGNMENT** -Y1RPA- / **0 HR.** N/A
COLLAR ELEV. 10.3 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,814	**EASTING** 2,314,532 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/20/26	**COMP. DATE** 05/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
10										10.3 GROUND SURFACE	0.0
										ROADWAY EMBANKMENT Gray and Tan, Loose to Medium Dense, Fine to Coarse SAND (A-1-b)	
	6.7	3.6	3	3	2	5		M			
5											
	1.7	8.6	6	12	14	26		W			
0										-1.7	12.0
										ALLUVIAL Gray, Loose, Fine to Coarse SAND (A-3) with Little to Trace Organic Matter	
	-3.3	13.6	2	2	3	5	SS-2522	35%			
-5											
	-8.3	18.6	3	2	3	5		Sat.			
-10											
	-13.3	23.6	3	2	2	4		Sat.			
-15											
	-18.3	28.6	WOH	WOH	6	6	SS-2523	20%			
-20											
	-23.3	33.6	WOH	WOH	1	1		Sat.		-21.7	32.0
-25										**UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2-4)	
	-28.3	38.6	18	26	26	52				-26.7	37.0
-30										**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
	-33.3	43.6	100/0.3			100/0.3					
-35											
	-38.3	48.6	15	23	35	58					
-40										-41.7	52.0
	-43.3	53.6	60/0.1			60/0.1		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-45											
	-48.3	58.6	100/0.5			100/0.5		Sat.			
-50											
	-53.3	63.6	67	33/0.1		100/0.6		Sat.			
-55											
	-58.3	68.6	29	50	50/0.4	100/0.9		Sat.			
-60											
	-63.3	73.6	25	48	44	92		Sat.			
-65											

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPA_EB1-C	**STATION** 17+73	**OFFSET** 56 ft LT	**ALIGNMENT** -Y1RPA- / **0 HR.** N/A
COLLAR ELEV. 10.3 ft	**TOTAL DEPTH** 139.6 ft	**NORTHING** 176,814	**EASTING** 2,314,532 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/20/26	**COMP. DATE** 05/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
	-68.3	78.6	12	16	21	37	SS-2532	23%		**COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-70										
	-73.3	83.6	14	12	18	30		Sat.		
-75										
	-78.3	88.6	11	18	21	39		Sat.		
-80										
	-83.3	93.6	16	14	16	30		Sat.		
-85										
	-88.3	98.6	32	38	36	74		Sat.		
-90										
	-93.3	103.6	8	9	12	21	SS-2537	24%		
-95										
	-98.3	108.6	9	11	11	22		Sat.		
-100										
	-103.3	113.6	100/0.3			100/0.3		Sat.		
-105										
	-108.3	118.6	7	9	13	22		Sat.		
-110										
	-113.3	123.6	7	10	15	25	SS-2540	27%		
-115										
	-118.3	128.6	5	8	20	28		Sat.		
-120										
	-123.3	133.6	7	10	17	27	SS-2542	27%		
-125										
	-128.3	138.6	7	20	80/0.0	100/0.5		Sat.		-129.3 139.6
										Boring Terminated at Elevation -129.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPA_1950	**STATION** 19+50	**OFFSET** 90 ft RT	**ALIGNMENT** -Y1RPA-	**0 HR.** N/A
COLLAR ELEV. 2.4 ft	**TOTAL DEPTH** 65.3 ft	**NORTHING** 176,993	**EASTING** 2,314,672	**24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 12/09/25	**COMP. DATE** 12/10/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.4 GROUND SURFACE	0.0
0										**ALLUVIAL** Brown to Dark Brown, Very Loose, Fine to Coarse SAND (A-1-b) with Trace Organic Matter	
	-1.9	4.3	2	1	0	1		17% Sat.			
-5										-4.6 Dark Brown to Black, Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt	7.0
	-6.9	9.3	WOH	5	3 Buried Tree	8		714% Sat.			
-10										-9.6 Dark Brown to Black, Very Soft, Highly Organic, Highly Clayey, Sandy SILT (MUCK/PEAT)	12.0
	-11.9	14.3	WOH	WOH	WOH	0	SS-4000	255%			
-15											
	-16.9	19.3	WOH	WOH	WOH	0		Sat.			
-20										-20.6 **UNDIVIDED COASTAL PLAIN** Gray, Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Organic Matter	23.0
	-21.9	24.3	6	6	8	14	SS-4001	24%			
-25										-25.6 **COASTAL PLAIN PEEDEE FORMATION** Gray, Dense, Calcareous, Silty Fine SAND (A-2-4)	28.0
	-26.9	29.3	6	14	26	40	SS-4002	21%			
-30										-30.6 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE	33.0
	-31.6	34.0	38	40	47	87					
-35											
	-36.6	39.0	38	36	28	64	SS-4004	20%			
-40											
	-41.6	44.0	35	29	28	57					
-45										-44.6 **COASTAL PLAIN PEEDEE FORMATION** Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	47.0
	-46.6	49.0	27	67	33/0.1	100/0.6		Sat.			
-50										-51.6	54.0
	-51.6	54.0	100/0.5			100/0.5		Sat.		-52.1	54.5
-55											
	-56.6	59.0	29	45	55/0.3	100/0.8		Sat.			
-60											
	-61.6	64.0	36	64	36/0.3	100/0.8		Sat.		-62.9 Boring Terminated at Elevation -62.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	65.3

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-10 (4.0 - 6.0)
ST-11 (9.0 - 11.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPA_2150	**STATION** 21+50	**OFFSET** 85 ft RT	**ALIGNMENT** -Y1RPA-	**0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 53.5 ft	**NORTHING** 177,186	**EASTING** 2,314,686	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 12/11/25	**COMP. DATE** 12/11/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										2.9 GROUND SURFACE 0.0
0	0.7	2.2	4	3	5	8	SS-4009	19%		**ALLUVIAL** Dark Brown to Black, Gray, and Tan, Very Loose to Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt and Clay
-5	-4.3	7.2	WOH	1	1	2		Sat. 435%		
-10	-9.3	12.2	WOH	WOH	WOH	0		Sat. 788%		
-15	-14.3	17.2	WOH	WOH	WOH	0		Sat. 627%		-17.1 20.0
-20	-19.3	22.2	8	12	11	23		Sat.		**UNDIVIDED COASTAL PLAIN** Gray and Tan, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
-25	-24.3	27.2	WOH	2	1	3	SS-4012	24%		
-30	-29.3	32.2	15	100/0.2		100/0.2				-29.8 32.7 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Hard, SANDY LIMESTONE (A-2-4), Interbedded with CALCAREOUS SANDSTONE
-35	-34.9	37.8	22	24	28	52	SS-4014	17%		
-40	-39.9	42.8	100/0.4			100/0.4				-42.1 45.0 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-45	-44.9	47.8	100/0.5			100/0.5		Sat.		
-50	-49.9	52.8	69	31/0.1		100/0.6		Sat.		-50.6 53.5 Boring Terminated at Elevation -50.6 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-12 (7.0 - 9.0)
ST-13 (12.0 - 14.0)
ST-14 (17.0 - 19.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPA_2450	**STATION** 24+52	**OFFSET** 65 ft RT	**ALIGNMENT** -Y1RPA- / **0 HR.** N/A
COLLAR ELEV. 2.3 ft	**TOTAL DEPTH** 44.5 ft	**NORTHING** 177,488	**EASTING** 2,314,702 / **24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 12/16/25	**COMP. DATE** 12/16/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										2.3 GROUND SURFACE	0.0
										ALLUVIAL Brown and Tan, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
	-0.8	3.1	3	4	4	8	SS-4018	19%			
	-3.7	6.0								Dark Brown to Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT)	
	-5.8	8.1	WOH	WOH	WOH	0		Sat.			
	-8.7	11.0								Dark Gray and Brown, Very Soft, Moderately Organic, Clayey SILT (A-5)	
	-10.8	13.1	WOH	WOH	WOH	0	SS-4019	210%			
	-13.7	16.0								Dark Brown to Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT)	
	-15.8	18.1	WOH	WOH	WOH	0		Sat. 862%			
	-18.7	21.0								**UNDIVIDED COASTAL PLAIN** Gray and Brown, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter	
	-20.8	23.1	5	6	9	15	SS-4021	38%			
	-25.8	28.1	WOH	WOH	3	3	SS-4022	24%			
	-28.7	31.0								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Formation) Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
	-30.8	33.1	32	54	46/0.4	100/0.9					
	-35.8	38.1	33	23	77	100/1.0					
	-38.7	41.0								**COASTAL PLAIN PEEDEE FORMATION** Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
	-40.8	43.1	27	48	52/0.4	100/0.9		Sat.			
										-42.2 Boring Terminated at Elevation -42.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	44.5

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-15 (18.0 - 20.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPA_2550	**STATION** 25+60	**OFFSET** 60 ft RT	**ALIGNMENT** -Y1RPA- / **0 HR.** N/A
COLLAR ELEV. 2.1 ft	**TOTAL DEPTH** 39.2 ft	**NORTHING** 177,596	**EASTING** 2,314,710 / **24 HR.** 0.2
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 11/11/25	**COMP. DATE** 11/11/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										2.1 GROUND SURFACE 0.0
										ALLUVIAL Tan-Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
	2.1	0.0	1	2	1	3		Sat.		
	0.1	2.0	5	2	WOH	2		Sat. 18%		
	-6.0	8.1	WOH	WOH	WOH	0		Sat. 16%		
	-9.9	12.0								Brown to Dark Brown, Gray, and Black, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay
	-11.0	13.1	WOH	WOH	WOH	0		Sat. 154%		
	-14.9	17.0								Brown to Dark Brown, Gray, and Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt
	-15.3	17.4	WOR	WOR	WOR	0		Sat. 275%		
	-20.3	22.4	WOH	WOH	WOH	0		Sat.		
	-22.9	25.0								**UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2) with Some Clay and Little Organic Matter
	-25.6	27.7	WOH	WOH	1	1	SS-235	37%		
	-28.9	31.0								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Moderately Hard, SANDY LIMESTONE (A-1-a), Interbedded with CALCAREOUS SANDSTONE
	-30.6	32.7	23	31	50	81	SS-236	8%		
	-35.6	37.7	5	15	19	34				
										-37.1 Boring Terminated at Elevation -37.1 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation 39.2

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-26 (4.0 - 6.0)
ST-27 (8.0 - 10.0)
ST-28 (14.0 - 16.0)
ST-29 (20.0 - 22.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_1750	**STATION** 17+50	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 11.5 ft	**TOTAL DEPTH** 41.0 ft	**NORTHING** 177,988	**EASTING** 2,312,706	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/05/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
										11.5 GROUND SURFACE	0.0
10										10.8 **ROADWAY EMBANKMENT**	0.7
										9.7 Pavement (ASPHALT)	1.8
										Sandy GRAVEL (A-1-a) Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
	7.0	4.5	4	5	6	11		M			
5											
	2.0	9.5	2	2	3	5	SS-2121	24%			
0											
	-3.0	14.5	3	3	3	6		Sat.			
-5											
	-8.0	19.5	WOH	2	3	5		Sat.			
-10										-10.5 **ALLUVIAL**	22.0
	-13.0	24.5	2	2	9	11	SS-2124	54%		Brown to Dark Brown, Medium Dense, Moderately Organic, Silty SAND (A-2)	
-15										-15.5 **UNDIVIDED COASTAL PLAIN**	27.0
	-18.0	29.5	3	5	6	11	SS-2125	18%		Light Gray, Medium Dense, Silty SAND (A-2-4) with Trace Organic Matter	
-20										-20.5	32.0
	-23.0	34.5	1	3	5	8	SS-2126	27%		Light Gray to Light Tan, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
-25										-25.5 **COASTAL PLAIN PEEDEE FORMATION**	37.0
	-28.0	39.5	4	19	20	39		Sat.		-29.5 Light Gray to Gray, Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions	41.0

Boring Terminated at Elevation -29.5 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_1850	**STATION** 18+50	**OFFSET** CL	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 12.1 ft	**TOTAL DEPTH** 36.0 ft	**NORTHING** 177,963	**EASTING** 2,312,803	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/05/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										
										12.1 GROUND SURFACE 0.0
10										11.2 **ROADWAY EMBANKMENT** 0.9
										10.3 Pavement (ASPHALT) 1.8
										Sandy GRAVEL (A-1-a) Tan, Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Gravel and Shell Fragments
	7.6	4.5	6	10	11	21		M		
5										
	2.6	9.5	3	6	7	13		W		
0										
	-2.4	14.5	5	3	5	8	SS-2115	11%		
-5										-4.9 17.0
										Tan, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
	-7.4	19.5	1	WOR	1	1	SS-2116	22%		
-10										-9.9 22.0
										ALLUVIAL Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
	-12.4	24.5	WOR	WOH	WOH	0	SS-2117	216%		
-15										-14.9 27.0
										UNDIVIDED COASTAL PLAIN Light Gray, Very Loose to Medium Dense, Silty SAND (A-2-4) with Little Clay and Trace Organic Matter
	-17.4	29.5	WOR	WOR	WOR	0	SS-2118	15%		
-20										
	-22.4	34.5	5	5	5	10		Sat.		-23.9 36.0

Boring Terminated at Elevation -23.9 ft in Undivided Coastal Plain (Silty SAND)

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_1950	**STATION** 19+50	**OFFSET** 5 ft RT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 12.5 ft	**TOTAL DEPTH** 50.9 ft	**NORTHING** 177,935	**EASTING** 2,312,899 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/05/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
12.5										GROUND SURFACE	0.0
11.4										**ROADWAY EMBANKMENT**	1.1
10.7										Pavement (ASPHALT)	1.8
										Sandy GRAVEL (A-1-a)	
										Tan-Brown and White, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter	
	8.1	4.4	7	8	8	16		M			
	3.1	9.4	4	6	9	15	SS-2105	14%			
	-1.9	14.4	6	5	7	12		Sat.			
	-6.9	19.4	2	2	3	5		Sat.			
-9.5										**ALLUVIAL**	22.0
										Tan, Dark Brown, and Black, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Little to Trace Organic Matter	
	-11.9	24.4	WOH	3	3	6	SS-2108	31%			
	-16.9	29.4	2	5	9	14	SS-2109	18%			
-19.5										**UNDIVIDED COASTAL PLAIN**	32.0
										Tan and Light Gray, Loose to Medium Dense, Silty SAND (A-2-4)	
	-21.9	34.4	7	8	14	22		Sat.			
	-26.9	39.4	5	7	8	15		Sat.			
	-31.9	44.4	3	4	5	9		Sat.			
-34.5										**COASTAL PLAIN PEEDEE FORMATION**	47.0
										Gray, Very Dense, Calcareous, Silty Fine SAND (A-2-4)	
	-36.9	49.4	13	23	34	57		Sat.			
-38.4											50.9

Boring Terminated at Elevation -38.4 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_2150	**STATION** 21+61	**OFFSET** 19 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 6.6 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 177,897	**EASTING** 2,313,109 / **24 HR.** 5.5
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/08/25	**COMP. DATE** 10/08/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
6.6										GROUND SURFACE 0.0
	6.6	0.0	3	10	8	18		D		**ROADWAY EMBANKMENT**
										Brown, Medium Dense, Silty SAND (A-2-4) with Little Gravel 2.5 (4.1)
										Brown to Dark Brown, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
	3.1	3.5	No	Sample	Taken					
	-1.8	8.4	2	3	5	8	SS-86	33%		
	-6.9	13.5	1	2	3	5		Sat.		
	-11.9	18.5	2	4	4	8	SS-88	Sat.		
-16.4										**UNDIVIDED COASTAL PLAIN** 23.0
										Light Tan-Brown, Very Loose, Silty SAND (A-2-4) with Little Clay
	-16.9	23.5	WOR	WOR	1	1	SS-89	18%		
-20.9										27.5
										Light Brown to Brown, Medium Dense, Fine to Coarse SAND (A-1-b)
	-21.9	28.5	4	5	8	13		Sat.		
	-26.9	33.5	8	11	8	19		Sat.		
-28.4										35.0

Boring Terminated at Elevation -28.4 ft in Undivided Coastal Plain (Fine to Coarse SAND)

Notes:
- Spoon was reported "stuck" at the 3.5 foot drive. Boring was advanced to the next sample interval.

- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_2350	**STATION** 23+36	**OFFSET** 63 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 4.9 ft	**TOTAL DEPTH** 44.4 ft	**NORTHING** 177,886	**EASTING** 2,313,286 / **24 HR.** 3.4
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/07/25	**COMP. DATE** 10/07/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5										4.9 GROUND SURFACE	0.0
										4.2 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.7
	1.4	3.5								1.9 Old Asphalt & Construction Debris (A-1-a)	3.0
0			1	WOH	1	1	SS-76	17%		**ALLUVIAL** Gray to Light Brown, Very Loose, Silty SAND (A-2-4) with Little Clay, Trace Gravel and Organic Matter	
	-3.7	8.6									
-5			WOH	WOR	WOH	0		Sat.			
	-8.6	13.5								-7.6 Dark Brown, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	12.5
-10			WOH	WOH	WOH	0	SS-78	504%			
	-13.6	18.5								-13.1 **UNDIVIDED COASTAL PLAIN** Light Gray to Light Brown, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	18.0
-15			1	2	3	5		Sat.			
	-18.6	23.5									
-20			1	2	3	5	SS-80	26%			
	-23.6	28.5									
-25			2	1	2	3		Sat.			
	-28.6	33.5								-26.6 **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Brown to Orange-Brown, Very Loose, Calcareous, Fine to Coarse SAND (A-1-b) with Little Limestone Fragments and Trace Subrounded to Rounded Gravel	31.5
-30			4	1	WOR	1		Sat.			
	-33.6	38.5									
-35			2	1	1	2		Sat.			
	-38.6	43.5								-38.1	43.0
			22	78/0.4		100/0.9				-39.5 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Very Dense, Calcareous, Fine SAND (A-3) with Some Cemented Concretions	44.4

Boring Terminated at Elevation -39.5 ft in Coastal Plain (Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment associated with an old and abandoned roadway.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_2550	**STATION** 25+50	**OFFSET** 66 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 40.0 ft	**NORTHING** 177,854	**EASTING** 2,313,484 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/07/25	**COMP. DATE** 10/07/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
	2.8	0.0								2.8 GROUND SURFACE 0.0
			WOR	WOR	WOR	0	SS-70	158%		**ALLUVIAL** Brown to Dark Brown, and Black, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
0										
	-0.7	3.5						591%		
			1	WOH	1	1	SS-71	894%		
-5										
	-5.8	8.6						628% Sat.		
			WOH	WOH	WOH	0				
-10										
	-10.7	13.5						523% Sat.		
			WOH	1	WOR	1				
-15										
	-15.6	18.4								
			WOH	WOR	WOR	0		Sat.		
-20										-19.7 22.5
	-20.7	23.5								**UNDIVIDED COASTAL PLAIN** Brown and Gray, Very Loose to Loose, Silty SAND (A-2-4)
			WOH	3	4	7	SS-72	21%		
-25										
	-25.7	28.5								
			WOH	1	1	2		Sat.		
-30										
	-30.7	33.5								
			WOH	1	WOR	1		Sat.		
-35										-33.7 36.5
	-35.7	38.5								**COASTAL PLAIN PEEDEE FORMATION** Gray and Brown, Medium Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Trace Cemented Concretions
			10	12	12	24		Sat.		-37.2 40.0

Boring Terminated at Elevation -37.2 ft in Coastal Plain (Fine to Coarse SAND) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-1 (2.1 - 3.9)
ST-2 (7.3 - 9.1)
ST-3 (12.3 - 14.3)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_B1	**STATION** 26+46	**OFFSET** 81 ft LT	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 144.0 ft	**NORTHING** 177,868	**EASTING** 2,313,573	**24 HR.** 5.1
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Morgan, M.	**START DATE** 12/09/25	**COMP. DATE** 12/11/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										2.8 GROUND SURFACE	0.0
0										**ALLUVIAL** Gray, Brown, Dark Brown, and Black, Very Soft to Soft, Highly Organic, Clayey SILT (MUCK/PEAT)	
	-1.6	4.4	2	1	1	2		W			
-5											
	-6.6	9.4	2	0	1	1		Sat.			
-10											
	-11.6	14.4	WOH	WOH	WOH	0		Sat.			
-15											
	-16.6	19.4	WOR	WOR	WOH	0		Sat.			
-20										-19.2	22.0
										UNDIVIDED COASTAL PLAIN Gray, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
	-21.6	24.4	3	3	4	7		Sat.			
-25										-24.2	27.0
										COASTAL PLAIN PEEDEE FORMATION Gray, Dense, Calcareous, Silty SAND (A-2-4), Highly Fossiliferous	
	-26.6	29.4	15	27	18	45	SS-2004	13%			
-30										-28.2	31.0
										Gray, Medium Dense, Calcareous, Fine to Coarse SAND (A-1-b)	
	-31.6	34.4	4	7	15	22	SS-2005	20%			
-35										-34.2	37.0
										COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION (Scotts Hill Member) Gray, Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
	-36.6	39.4	29	50	50/0.3	100/0.8		Sat.			
-40											
	-41.6	44.4	61	39/0.3		100/0.8		Sat.			
-45	-44.7	47.5	74	26/0.2		100/0.7		Sat.			
-50	-49.7	52.5								-49.2	52.0
			14	71	29/0.2	100/0.7		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-55	-54.7	57.5	17	22	28	50		Sat.			
-60	-59.7	62.5	10	10	27	37	SS-2011	23%			
-65	-64.7	67.5	6	39	45	84		Sat.			
-70	-69.7	72.5	15	26	71	97		Sat.			
-75	-74.7	77.5									

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_B1	**STATION** 26+46	**OFFSET** 81 ft LT	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 144.0 ft	**NORTHING** 177,868	**EASTING** 2,313,573	**24 HR.** 5.1
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER Morgan, M.	**START DATE** 12/09/25	**COMP. DATE** 12/11/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-75						Match Line				
			10	22	18	40		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray and Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Some to Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-80	-79.7	82.5	10	10	16	26		Sat.		
-85	-84.7	87.5	8	11	17	28	SS-2015	28%		
-90	-89.7	92.5	15	18	22	40		Sat.		
-95	-94.7	97.5	11	10	18	28		Sat.		
-100	-99.7	102.5	8	9	16	25		Sat.		
-105	-104.7	107.5	100/0.4			100/0.4		Sat.		
-110	-109.7	112.5	6	6	11	17		Sat.		
-115	-114.7	117.5	92	8/0.3		100/0.8		Sat.		
-120	-119.7	122.5	5	6	7	13	SS-2022	25%		-118.2 121.0 Dark Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Little to Some Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
-125	-124.7	127.5	7	10	12	22		W		
-130	-129.7	132.5	72	27	38	65		W		
-135	-134.7	137.5	6	5	8	13	SS-2024	26%		
-140	-139.7	142.5	5	6	9	15		W		-141.2 144.0 Boring Terminated at Elevation -141.2 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

NCDOT BORE DOUBLE_HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 8/28/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_2750	**STATION** 27+52	**OFFSET** 61 ft LT	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 2.8 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 177,856	**EASTING** 2,313,672	**24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 10/02/25	**COMP. DATE** 10/02/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	2.8	0.0								2.8 GROUND SURFACE	0.0
			WOH	WOH	WOR	0		Sat. 210% 293%		**ALLUVIAL** Brown to Dark Brown and Black, Very Loose, Highly Organic, Fine to Coarse SAND and Silty SAND (MUCK/PEAT)	
0	-0.7	3.5	WOH	WOH	WOH	0		Sat.			
-5	-5.7	8.5	WOH	WOR	WOR	0		597% Sat.			
-10	-10.7	13.5	WOH	WOH	WOH	0		Sat.			
-15	-15.7	18.5	WOH	WOH	WOH	0		Sat.			
-20	-20.7	23.5	WOH	WOH	1	1		Sat.		-21.9 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2-4) with Little Clay	24.7
-25	-25.7	28.5	5	WOH	6	6	SS-68	19%		-25.9 **COASTAL PLAIN PEEDEE FORMATION** Gray, Loose to Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Some Silt and Little Cemented Concretions	28.7
-30	-30.7	33.5	25	19	25	44		Sat.		-32.2	35.0

Boring Terminated at Elevation -32.2 ft in Coastal Plain (Fine to Coarse SAND) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-4 (0.0 - 1.6)
ST-5 (2.0 - 3.7)
ST-6 (7.0 - 7.6)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPB_2950	**STATION** 29+50	**OFFSET** 30 ft LT	**ALIGNMENT** -Y1RPB-	**0 HR.** N/A
COLLAR ELEV. 2.7 ft	**TOTAL DEPTH** 30.0 ft	**NORTHING** 177,872	**EASTING** 2,313,862	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 10/02/25	**COMP. DATE** 10/02/25	**SURFACE WATER DEPTH** 0.3ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
5											
	2.7	0.0								2.7 GROUND SURFACE	0.0
			WOH	WOR	WOH	0		Sat. 152%		**ALLUVIAL** Dark Brown to Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT)	
0	-0.8	3.5	3	3	1	4		Sat.			
-5	-5.9	8.6	WOH	WOH	WOR	0		660% Sat.			
-10	-10.8	13.5	WOR	WOH	WOH	0		349% Sat.			
-15	-15.7	18.4	1	5	6	11	SS-64	25%		-14.8 **UNDIVIDED COASTAL PLAIN** Light Gray to Brown, Very Loose to Medium Dense, Silty Fine SAND (A-2-4)	17.5
-20	-20.8	23.5	2	3	WOR	3		Sat.		-23.3 **COASTAL PLAIN PEEDEE FORMATION** Gray to Light Brown, Very Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Some Cemented Concretions	26.0
-25	-25.8	28.5	10	47	45	92	SS-66	20%		-27.3	30.0

Boring Terminated at Elevation -27.3 ft in Coastal Plain (Fine to Coarse SAND) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-7 (0.2 - 1.9)
ST-8 (7.0 - 9.0)
ST-9 (12.2 - 14.3)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_3350	**STATION** 33+50	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 11.5 ft	**TOTAL DEPTH** 40.8 ft	**NORTHING** 178,057	**EASTING** 2,314,206 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/05/26	**COMP. DATE** 03/05/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
11.5										GROUND SURFACE	0.0
10.4										**ROADWAY EMBANKMENT**	1.1
9.7										Pavement (ASPHALT)	1.8
										Sandy GRAVEL (A-1-a) Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel	
	7.2	4.3	5	6	8	14		M			
	2.2	9.3	5	5	5	10		W			
-0.5										Light Gray, Very Loose, Fine to Coarse SAND (A-1-b) with Trace Rounded Gravel and Organic Matter	12.0
	-2.8	14.3	2	2	1	3	SS-2098	14%			
-5.5										**ALLUVIAL** Dark Brown, Very Soft to Soft, Highly Organic, Sandy SILT (MUCK/PEAT)	17.0
	-7.8	19.3	WOH	WOH	WOH	0		Sat.			
	-12.8	24.3	WOH	1	1	2	SS-2100	181%			
-15.5										**UNDIVIDED COASTAL PLAIN** Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Shell Fragments	27.0
	-17.8	29.3	3	3	3	6		Sat.			
	-22.8	34.3	7	7	7	14		Sat.			
-25.5										**COASTAL PLAIN PEEDEE FORMATION** Light Gray, Dense, Calcareous, Silty Fine SAND (A-2-4), Fossiliferous	37.0
	-27.8	39.3	12	16	22	38		Sat.			
-29.3										Boring Terminated at Elevation -29.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	40.8

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_3450	**STATION** 34+50	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 12.0 ft	**TOTAL DEPTH** 40.8 ft	**NORTHING** 178,130	**EASTING** 2,314,274 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
12.0										GROUND SURFACE 0.0
11.2										**ROADWAY EMBANKMENT** 0.8
10.7										Pavement (ASPHALT) 1.3
										Sandy GRAVEL (A-1-a) Tan-Brown, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel
	7.7	4.3	11	11	10	21		M		
	2.7	9.3	3	5	9	14	SS-2089	15%		
	-2.3	14.3	3	2	3	5		Sat.		
	-7.3	19.3	WOH	WOH	WOH	0		Sat.		
-10.0										**ALLUVIAL** Gray and Brown, Medium Dense, Silty Fine SAND (A-2) with Little Organic Matter 22.0
	-12.3	24.3	5	6	7	13		Sat.		
	-17.3	29.3	3	5	8	13	SS-2093	51%		
-20.0										**UNDIVIDED COASTAL PLAIN** Gray, Medium Dense, Silty SAND (A-2-4) 32.0
	-22.3	34.3	5	5	7	12		Sat.		
-25.0										**COASTAL PLAIN PEEDEE FORMATION** Gray and White, Dense, Calcareous, Silty Fine SAND (A-2-4), Fossiliferous 37.0
	-27.3	39.3	16	20	22	42		Sat.		
-28.8										Boring Terminated at Elevation -28.8 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation 40.8

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_3550	**STATION** 35+50	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 11.3 ft	**TOTAL DEPTH** 40.8 ft	**NORTHING** 178,211	**EASTING** 2,314,332 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
10										11.3 GROUND SURFACE	0.0
										10.4 **ROADWAY EMBANKMENT**	0.9
										9.9 Pavement (ASPHALT)	1.4
										Sandy GRAVEL (A-1-a) Tan-Brown and Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)	
5	7.0	4.3	3	7	9	16		M			
0	2.0	9.3	5	6	8	14		W			
-5	-3.0	14.3	6	9	9	18	SS-2082	18%			
-10	-8.0	19.3	2	2	2	4		Sat.		-10.7 **ALLUVIAL** Tan, Light Gray, and Brown, Loose, Fine to Coarse SAND (A-3) with Little Organic Matter	22.0
-15	-13.0	24.3	3	3	4	7	SS-2084	43%		-15.7 Gray and Brown, Very Soft, Sandy SILT (A-4) with Some Clay and Trace Organic Matter	27.0
-20	-18.0	29.3	WOH	WOH	WOH	0	SS-2085	18%		-20.7 **UNDIVIDED COASTAL PLAIN** Tan, Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Gravel	32.0
-25	-23.0	34.3	8	6	12	18		Sat.		-25.7 **COASTAL PLAIN PEEDEE FORMATION** Gray and Brown, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions	37.0
	-28.0	39.3	6	8	14	22		Sat.		-29.5 Boring Terminated at Elevation -29.5 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	40.8

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_3750	**STATION** 37+50	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 10.7 ft	**TOTAL DEPTH** 40.9 ft	**NORTHING** 178,379	**EASTING** 2,314,437 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										
10										10.7 GROUND SURFACE 0.0
										9.6 **ROADWAY EMBANKMENT** 1.1
										8.9 Pavement (ASPHALT) 1.8
										Sandy GRAVEL (A-1-a) Tan-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3)
5	6.3	4.4	4	6	9	15	SS-2072	13%		
0	1.3	9.4	5	6	7	13		W		
-5	-3.7	14.4	3	3	5	8		Sat.		-6.3 **ALLUVIAL** Tan-Brown to Dark Brown, Very Loose to Loose, Fine to Coarse SAND (A-3) with Little to Trace Organic Matter 17.0
-10	-8.7	19.4	WOR	1	2	3	SS-2075	20%		
-15	-13.7	24.4	2	4	4	8	SS-2076	63%		-16.3 **UNDIVIDED COASTAL PLAIN** Brown and Tan, Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter 27.0
-20	-18.7	29.4	2	5	6	11	SS-2077	24%		-21.3 **COASTAL PLAIN PEEDEE FORMATION** Gray and Brown, Loose, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions 32.0
-25	-23.7	34.4	12	2	5	7		Sat.		-26.3 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE 37.0
-30	-28.7	39.4	15	18	20	38				-30.2 Boring Terminated at Elevation -30.2 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 40.9

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_3950	**STATION** 39+50	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 10.2 ft	**TOTAL DEPTH** 40.9 ft	**NORTHING** 178,559	**EASTING** 2,314,521 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
10.2										GROUND SURFACE 0.0
9.1										**ROADWAY EMBANKMENT** 1.1
8.3										Pavement (ASPHALT) 1.9
										Sandy GRAVEL (A-1-a)
										Tan, Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Trace Gravel
	5.8	4.4	7	8	10	18	SS-2064	13%		
	0.8	9.4	3	3	5	8		W		
	-4.2	14.4	4	3	4	7		Sat.		
-7.2										**ALLUVIAL** 17.4
										Tan, Brown, and Black, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
	-9.2	19.4	1	1	2	3	SS-2067	18%		
	-14.2	24.4	2	2	2	4	SS-2068	29%		
-17.9										**UNDIVIDED COASTAL PLAIN** 28.1
										Gray and Brown, Very Loose to Medium Dense, Silty Fine SAND (A-2-4) with Little Clay and Trace Organic Matter
	-19.2	29.4	WOH	10	13	23	SS-2069	20%		
	-24.2	34.4	WOR	WOR	WOR	0		Sat.		
-26.5										**COASTAL PLAIN SEDIMENTARY ROCK** 36.7
										PEEDEE FORMATION
										(Scotts Hill Member)
	-29.2	39.4	18	36	27	63				
-30.7										Light Gray to Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE 40.9

Boring Terminated at Elevation -30.7 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPB_4150	**STATION** 41+50	**OFFSET** 15 ft LT	**ALIGNMENT** -Y1RPB- / **0 HR.** N/A
COLLAR ELEV. 10.2 ft	**TOTAL DEPTH** 35.9 ft	**NORTHING** 178,748	**EASTING** 2,314,586 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ Advancer	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/04/26	**COMP. DATE** 03/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10.2										GROUND SURFACE 0.0
9.7										**ROADWAY EMBANKMENT** 0.5
9.4										Pavement (ASPHALT) 0.8
										Sandy GRAVEL (A-1-a)
										Tan-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter
	5.8	4.4	5	7	9	16		M		
	0.8	9.4	6	10	10	20		W		
	-4.2	14.4	4	4	5	9	SS-2059	20%		
-7.2										**ALLUVIAL** 17.4
										Tan, Dark Brown, and Black, Loose, Fine to Coarse SAND (A-3) with Little Organic Matter
	-9.2	19.4	2	2	2	4	SS-2060	44%		
-12.2										Dark Gray, Brown, and Black, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT) 22.4
	-14.2	24.4	1	1	1	2	SS-2061	110%		
-17.4										**UNDIVIDED COASTAL PLAIN** 27.6
										Gray and Brown, Medium Dense, Fine to Coarse SAND (A-3)
	-19.2	29.4	4	5	6	11		Sat.		
-21.8										**COASTAL PLAIN** 32.0
										PEEDEE FORMATION
	-24.2	34.4	WOH	4	13	17		Sat.		
-25.7										Gray and Brown, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions, Fossiliferous 35.9

Boring Terminated at Elevation -25.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_1800	**STATION** 18+00	**OFFSET** 10 ft RT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 7.0 ft	**TOTAL DEPTH** 29.5 ft	**NORTHING** 177,751	**EASTING** 2,312,412 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/17/26	**COMP. DATE** 03/17/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
										7.0 GROUND SURFACE	0.0
										6.9 **ROADWAY EMBANKMENT** Pavement (ASPHALT)	0.1
5	4.0	3.0	6	6	8	14		M		5.9 Sandy GRAVEL (A-1-a) Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-1-b)	1.1
0	-1.0	8.0	4	2	3	5		W		-4.0 Gray, Very Loose, Fine SAND (A-3) with Trace Organic Matter	11.0
-5	-6.0	13.0	8	2	1	3		Sat.		-9.0 **ALLUVIAL** Gray, Very Loose, Silty SAND (A-2-4) with Trace Organic Matter	16.0
-10	-11.0	18.0	WOH	WOH	WOH	0		Sat.			
-15	-16.0	23.0	WOH	1	1	2	SS-2173	18%		-19.0 **UNDIVIDED COASTAL PLAIN** Tan, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	26.0
-20	-21.0	28.0	2	3	4	7	SS-2174	24%		-22.5 Boring Terminated at Elevation -22.5 ft in Undivided Coastal Plain (Fine to Coarse SAND)	29.5

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

- 25 feet of Casing Lost in Boring.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_2000	**STATION** 20+00	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 7.4 ft	**TOTAL DEPTH** 34.7 ft	**NORTHING** 177,693	**EASTING** 2,312,603 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/17/26	**COMP. DATE** 03/17/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10										
										7.4 GROUND SURFACE 0.0
										7.1 **ROADWAY EMBANKMENT** Pavement (ASPHALT) 0.3
5	4.2	3.2	6	7	7	14	SS-2175	16%		Tan and Gray, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel
0	-0.8	8.2	4	6	5	11		W		
-5	-5.8	13.2	WOH	1	1	2	SS-2177	62%		-5.6 **ALLUVIAL** Gray and Brown, Very Loose, Moderately Organic, Fine to Coarse SAND (A-3) 13.0
-10	-10.8	18.2	WOH	WOH	WOH	0	SS-2178	76%		-9.6 Dark Gray and Brown, Very Soft, Sandy SILT (A-4) with Little Organic Matter 17.0
-15	-15.8	23.2	4	4	7	11		Sat.		-13.6 **UNDIVIDED COASTAL PLAIN** Tan and Gray, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) 21.0
-20	-20.8	28.2	1	1	2	3		Sat.		
-25	-25.8	33.2	17	7	5	12				-24.6 32.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft, SANDY LIMESTONE 34.7
										-27.3 Boring Terminated at Elevation -27.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_2200	**STATION** 22+00	**OFFSET** 15 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 39.5 ft	**NORTHING** 177,571	**EASTING** 2,312,761	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 82% 09/23/2024		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/25/26	**COMP. DATE** 03/25/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.5 GROUND SURFACE	0.0
										ALLUVIAL Brown, Very Loose, Moderately Organic, Silty SAND (A-2) with Some Clay	
0	0.5	3.0	WOH	WOH	WOH	0		154%		0.5	3.0
								Sat.		Brown, Very Soft, Highly Organic, Sandy CLAY (MUCK/PEAT)	
-5	-4.5	8.0	WOH	WOH	WOH	0	SS-2253	373% 478%			
										-7.5	11.0
-10	-9.5	13.0	1	2	2	4	SS-2254	28%		Tan, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
										-12.5	16.0
-15	-14.5	18.0	3	4	7	11	SS-2255	20%		**UNDIVIDED COASTAL PLAIN** Gray, Medium Dense, Silty SAND (A-2-4)	
-20	-19.5	23.0	3	5	6	11		Sat.			
-25	-24.5	28.0	4	6	8	14		Sat.			
-30	-29.5	33.0	3	6	6	12		Sat.			
										-33.5	37.0
-35	-34.5	38.0	9	18	22	40		Sat.		Gray, Dense, Fine SAND (A-3)	
										-36.0	39.5

Boring Terminated at Elevation -36.0 ft in Undivided Coastal Plain (Fine SAND)

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

- 15 feet of Casing lost in Boring.

Other Samples:
ST-47 (1.0 - 3.0)
ST-48 (6.0 - 8.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_2400	**STATION** 24+05	**OFFSET** 12 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 39.3 ft	**NORTHING** 177,435	**EASTING** 2,312,911	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 82% 09/23/2024		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/26/26	**COMP. DATE** 03/26/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										2.6 GROUND SURFACE 0.0
										ALLUVIAL Gray, Very Soft, Moderately Organic, Silty CLAY (A-7)
0	-0.4	3.0	WOH	WOH	WOH	0	SS-2257	153%		
-5	-5.4	8.0	2	3	4	7	SS-2258	24%		-3.4 6.0 Brown and Gray, Loose, Coarse SAND (A-1-b) with Trace Organic Matter
-10	-10.4	13.0	2	3	4	7		Sat.		
-15	-15.4	18.0	WOH	WOH	WOH	0	SS-2259	21%		-14.4 17.0 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Medium Dense, Silty SAND (A-2-4) with Little Clay
-20	-20.4	23.0	7	5	5	10		Sat.		
-25	-25.4	28.0	4	0	0	0		Sat.		-24.4 27.0 Gray, Very Loose, Fine to Coarse SAND (A-3)
-30	-30.4	33.0	3	3	3	6		Sat.		-29.4 32.0 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Loose to Very Dense, Calcareous, Silty SAND (A-2-4) with Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
-35	-35.4	38.0	14	55	45/0.3	100/0.8		Sat.		-36.7 39.3

Boring Terminated at Elevation -36.7 ft in Coastal Plain (Silty SAND) - Peedee Formation

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_2600	**STATION** 26+00	**OFFSET** 15 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 4.2 ft	**TOTAL DEPTH** 44.6 ft	**NORTHING** 177,283	**EASTING** 2,313,031	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 82% 09/23/2024		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/26/26	**COMP. DATE** 03/26/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
5										4.2 GROUND SURFACE	0.0
0	0.9	3.3	1	0	1	1	SS-2263	172%		**ALLUVIAL** Gray, Very Soft, Moderately Organic, Silty CLAY (A-7)	
-5	-4.1	8.3	4	2	4	6	SS-2264	26%		-1.8 Gray and Brown, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	6.0
-10	-9.1	13.3	2	2	2	4	SS-2265	19% 22%			
-15	-14.1	18.3	WOH	WOH	WOH	0	SS-2266	19%		-12.8 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2-4) with Little Clay	17.0
-20	-19.1	23.3	3	4	7	11		Sat.		-17.8 Gray, Loose to Medium Dense, Fine SAND (A-3)	22.0
-25	-24.1	28.3	WOH	WOH	4	4		Sat.		-25.2 **COASTAL PLAIN PEEDEE FORMATION** Gray to Olive-Gray, Very Loose to Very Dense, Calcareous, Silty SAND (A-2-4) with Trace Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous	29.4
-30	-29.1	33.3	2	1	1	2		Sat.			
-35	-34.1	38.3	7	9	25	34		Sat.			
-40	-39.1	43.3	22	50	50/0.3	100/0.8		Sat.		-40.4 Boring Terminated at Elevation -40.4 ft in Coastal Plain (Silty SAND) - Peedee Formation	44.6

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-49 (13.0 - 15.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_2800	**STATION** 28+00	**OFFSET** CL	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 10.2 ft	**TOTAL DEPTH** 34.8 ft	**NORTHING** 177,136	**EASTING** 2,313,168	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 82% 09/23/2024		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/17/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										10.2 GROUND SURFACE 0.0
10	6.9	3.3	5	7	9	16		M		9.9 **ROADWAY EMBANKMENT** Pavement (ASPHALT) 0.3; 8.9 Sandy GRAVEL (A-1-a) 1.3; Tan, Loose to Medium Dense, Fine to Coarse SAND (A-3)
5	1.9	8.3	10	11	11	22	SS-2183	19%		
0	-3.1	13.3	3	2	2	4		Sat.		-5.8 **ALLUVIAL** Gray to Dark Gray, Very Loose, Coarse SAND (A-1-b) with Trace Organic Matter 16.0
-5	-8.1	18.3	WOH	1	1	2	SS-2184	27%		-10.8 Dark Gray, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter 21.0
-10	-13.1	23.3	3	1	1	2	SS-2185	31%		-15.8 **UNDIVIDED COASTAL PLAIN** Gray, Medium Dense, Silty SAND (A-2-4) 26.0
-15	-18.1	28.3	5	7	8	15		Sat.		-20.8 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE 31.0
-20	-23.1	33.3	2	12	31	43				-24.6 Boring Terminated at Elevation -24.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 34.8

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_3000	**STATION** 30+00	**OFFSET** 15 ft LT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 35.3 ft	**NORTHING** 177,013	**EASTING** 2,313,324 / **24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** NW Casing w/ Advancer	**HAMMER TYPE** Automatic
DRILLER Morgan, M.	**START DATE** 12/16/25	**COMP. DATE** 12/16/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	3.5	0.0						W		3.5 GROUND SURFACE	0.0
0	-0.3	3.8	1	0	0	0		184% Sat.		**ALLUVIAL** Gray, Brown, Dark Brown, and Black, Very Loose to Loose, Highly Organic, Silty, Fine to Coarse SAND (MUCK/PEAT)	
-5	-5.3	8.8	2	2	4	6		602% Sat.			
-10	-10.3	13.8	2	0	0	0		302% Sat.			
-15	-15.3	18.8	1	1	1	2		Sat.		-17.5 **UNDIVIDED COASTAL PLAIN** Light Gray, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	21.0
-20	-20.3	23.8	2	0	2	2					
-25	-25.3	28.8	3	2	3	5	SS-2028	23%		-23.5 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Very Loose, Calcareous, Silty SAND (A-2-4), Fossiliferous	27.0
-30	-30.3	33.8	WOH	1	2	3		Sat.		-27.5 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE	31.0
			23	23	33	56				-31.8	35.3

Boring Terminated at Elevation -31.8 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-23 (3.0 - 5.0)
ST-24 (8.0 - 10.0)
ST-25 (13.0 - 15.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_3200	**STATION** 32+00	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 3.3 ft	**TOTAL DEPTH** 29.8 ft	**NORTHING** 176,916	**EASTING** 2,313,494 / **24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Morgan, M.	**START DATE** 12/17/25	**COMP. DATE** 12/17/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
5											
	3.3	0.0								3.3 GROUND SURFACE	0.0
0	0.0	3.3	1	0	0	0	SS-2031	170%		**ALLUVIAL** Gray, Brown, Dark Brown, and Black, Very Loose to Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Little Clay and Silt	
-5	-5.0	8.3	1	0	0	0		330% Sat.			
-10	-10.0	13.3	1	0	0	0		581% Sat.			
-15	-15.0	18.3	WOH	WOH	4	4	SS-2032	279%		-13.7 **UNDIVIDED COASTAL PLAIN** Light Gray to Gray and Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	17.0
-20	-20.0	23.3	1	1	2	3		Sat.			
-25	-25.0	28.3	2	1	2	3		Sat.		-22.7 **COASTAL PLAIN PEEDEE FORMATION** Light Gray, Very Dense, Calcareous, Fine to Coarse SAND (A-1-b), Fossiliferous	26.0
			30	42	15	57	SS-2035	11%		-26.5	29.8

Boring Terminated at Elevation -26.5 ft in Coastal Plain (Fine to Coarse SAND) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-21 (3.0 - 5.0)
ST-22 (8.0 - 10.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_3400	**STATION** 34+00	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 30.8 ft	**NORTHING** 176,870	**EASTING** 2,313,686 / **24 HR.** 0.3
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Morgan, M.	**START DATE** 12/17/25	**COMP. DATE** 12/17/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
5										
	3.5	0.0								3.5 GROUND SURFACE 0.0
			1	0	0	0	SS-2036	318%		**ALLUVIAL** Brown to Dark Brown and Black, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) with Some Clay
0	-0.8	4.3	WOH	WOH	WOH	0	SS-2037	367%		
										-3.5 7.0 Brown to Dark Brown and Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt
-5	-5.8	9.3	WOH	WOH	1	1	SS-2038	1065% 506%		
-10	-10.8	14.3	WOH	WOH	WOH	0		330% Sat.		
										-14.5 18.0 Gray, Very Soft, Sandy SILT (A-4) with Some Clay, Trace Organic Matter
-15	-15.8	19.3	WOR	WOR	WOR	0	SS-2039	33%		-17.5 21.0 **UNDIVIDED COASTAL PLAIN** Gray, Loose, Fine to Coarse SAND (A-1-b) with Trace Organic Matter
-20	-20.8	24.3	4	4	3	7	SS-2040	18%		
										-23.5 27.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft, SANDY LIMESTONE
-25	-25.8	29.3	2	1	14	15				-27.3 30.8 Boring Terminated at Elevation -27.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-19 (10.0 - 12.0)
ST-20 (14.0 - 16.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_3600	**STATION** 36+00	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 2.9 ft	**TOTAL DEPTH** 30.5 ft	**NORTHING** 176,873	**EASTING** 2,313,882 / **24 HR.** 0.9
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Morgan, M.	**START DATE** 12/17/25	**COMP. DATE** 12/17/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
	2.9	0.0								2.9 GROUND SURFACE 0.0
			1	0	0	0	SS-2042	146%		**ALLUVIAL** Brown to Dark Brown and Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt and Clay
0	-1.1	4.0	WOH	WOH	WOH	0		Sat. 792%		
-5	-6.1	9.0	WOH	WOH	WOH	0	SS-2043	811%		
-10	-11.1	14.0	WOH	WOH	WOH	0		Sat. 357%		
-15	-16.1	19.0	WOH	WOH	WOH	0		24% Sat.		-16.1 19.0 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2-4) with Trace Organic Matter
-20	-21.1	24.0	1	0	2	2	SS-2045	32%		-20.1 23.0 Light Gray, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
-25	-26.1	29.0	14	20	78	98				-24.1 27.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard to Hard, SANDY LIMESTONE
										-27.6 30.5 Boring Terminated at Elevation -27.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-16 (4.0 - 6.0)
ST-17 (14.0 - 16.0)
ST-18 (18.0 - 20.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_3800	**STATION** 38+20	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 7.9 ft	**TOTAL DEPTH** 39.7 ft	**NORTHING** 176,935	**EASTING** 2,314,090	**24 HR.** 5.0
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/10/26	**COMP. DATE** 03/10/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
										7.9 GROUND SURFACE	0.0
5	4.7	3.2								**ROADWAY EMBANKMENT** Tan, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel	
			6	8	8	16	SS-2154	18%			
0	-0.3	8.2								1.9 Gray and Tan, Loose, Fine to Coarse SAND (A-1-b) with Trace Organic Matter	6.0
			2	2	3	5	SS-2155	18%			
-5	-5.3	13.2								-3.1 Gray and Tan, Very Loose, Silty SAND (A-2-4) with Trace Organic Matter	11.0
			WOH	WOH	WOH	0	SS-2156	41%			
-10	-10.3	18.2								-8.1 **ALLUVIAL** Dark Gray, Very Soft, Sandy SILT (A-4) with Little Clay and Organic Matter	16.0
			WOH	WOH	WOH	0	SS-2157	74%			
-15	-15.3	23.2								-13.1 Dark Brown to Black, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT)	21.0
			WOH	WOH	WOH	0	SS-2158	171%			
-20	-20.3	28.2								-19.2 **UNDIVIDED COASTAL PLAIN** Light Gray, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel	27.1
			3	5	6	11		Sat.			
-25	-25.3	33.2								-23.1 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Soft to Medium Hard, SANDY LIMESTONE	31.0
			14	12	13	25					
-30	-30.3	38.2									
			15	24	38	62				-31.8	39.7

Boring Terminated at Elevation -31.8 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4000	**STATION** 40+00	**OFFSET** 10 ft LT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 3.5 ft	**TOTAL DEPTH** 29.9 ft	**NORTHING** 177,027	**EASTING** 2,314,242	**24 HR.** 0.8
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/22/26	**COMP. DATE** 01/22/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										3.5 GROUND SURFACE 0.0
0	0.1	3.4								**ALLUVIAL** Brown to Dark Brown and Black, Very Soft, Highly Organic, Sandy SILT (A-4) (MUCK/PEAT) with Some Clay
			3	1	0	1		206% Sat.		
-5	-4.9	8.4								-2.5 Brown to Dark Brown and Black, Very Loose to Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt 6.0
			WOH	WOH	WOH	0		327% Sat.		
-10	-9.9	13.4								
			2	2	2	4		569% Sat.		
-15	-14.9	18.4								-13.5 Brown, Very Loose, Moderately Organic, Silty SAND (A-2) 17.0
			1	1	0	1		47% Sat.		
-20	-19.9	23.4								-18.5 **UNDIVIDED COASTAL PLAIN** Gray, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter 22.0
			3	4	5	9		Sat.		
-25	-24.9	28.4								
			2	3	2	5		Sat.		-26.4 29.9

Boring Terminated at Elevation -26.4 ft in Undivided Coastal Plain (Fine to Coarse SAND)

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-39 (3.0 - 5.0)
ST-40 (8.0 - 10.0)
ST-41 (13.0 - 15.0)
ST-42 (18.0 - 20.0)

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4100	**STATION** 41+00	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 3.3 ft	**TOTAL DEPTH** 34.6 ft	**NORTHING** 177,088	**EASTING** 2,314,319	**24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/08/26	**COMP. DATE** 01/08/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
										3.3 GROUND SURFACE	0.0
0	0.1	3.2	WOH	WOH	WOH	0		Sat. 302%		**ALLUVIAL** Dark Brown to Black, Very Loose to Medium Dense, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt	
-5	-4.9	8.2	WOH	2	1	3		Sat. 456%			
-10	-9.9	13.2	WOH	WOH	WOH	0		Sat. 496%			
-15	-14.9	18.2	7	3	9	12		Sat. 646%			
-20	-19.9	23.2	4	4	5	9		Sat. 147%			
-25	-24.9	28.2	9	7	4	11		Sat.		-23.7 **UNDIVIDED COASTAL PLAIN** Gray, Medium Dense, Fine SAND (A-3)	27.0
-30	-29.9	33.2	25	43	57/0.4	100/0.9				-28.7 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard, SANDY LIMESTONE	32.0
										-31.3 Boring Terminated at Elevation -31.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation	34.6

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-34 (3.0 - 5.0)
ST-35 (8.0 - 10.0)
ST-36 (13.0 - 15.0)
ST-37 (18.0 - 20.0)
ST-38 (23.0 - 25.0)

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stephens, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4200	**STATION** 42+00	**OFFSET** 5 ft LT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 3.1 ft	**TOTAL DEPTH** 40.0 ft	**NORTHING** 177,163	**EASTING** 2,314,384	**24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 01/08/26	**COMP. DATE** 01/08/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
5										
										3.1 GROUND SURFACE 0.0
0	0.0	3.1	WOR	WOR	WOR	0		427% Sat.		**ALLUVIAL** Dark Brown to Black, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Some Silt
-5	-5.4	8.5	14	17	22	Buried Tree 39		Sat.		
-10	-10.4	13.5	WOH	WOH	WOH	0		397% Sat.		
-15	-15.4	18.5	1	2	1	3		783% Sat.		-18.9 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Silty SAND (A-2-4) 22.0
-20	-20.4	23.5	WOH	WOH	WOH	0		Sat.		-23.9 Gray, Loose, Fine SAND (A-3) 27.0
-25	-25.4	28.5	4	1	4	5		Sat.		-28.9 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE 32.0
-30	-30.4	33.5	24	29	46	75				
-35	-35.4	38.5	34	33	51	84				-36.9 Boring Terminated at Elevation -36.9 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 40.0

Notes:
- Shelby Tubes obtained from offset boring (within 5 feet of boring location).

Other Samples:
ST-30 (2.0 - 4.0)
ST-31 (13.0 - 15.0)
ST-32 (18.0 - 20.0)

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/2/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4400	**STATION** 44+00	**OFFSET** 20 ft LT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 2.6 ft	**TOTAL DEPTH** 49.9 ft	**NORTHING** 177,341	**EASTING** 2,314,471	**24 HR.** 0.0
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Morgan, M.	**START DATE** 12/18/25	**COMP. DATE** 12/18/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
	2.6	0.0	WOH	WOH	3	3	SS-2047	29%		GROUND SURFACE	0.0
										ROADWAY EMBANKMENT Gray, Very Loose to Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	
	-1.4	4.0	4	4	4	8	SS-2048	19%			
	-6.4	9.0	WOH	1	1	2	SS-2049	51%		-7.9	10.5
										ALLUVIAL Brown to Dark Brown, Very Loose, Highly Organic, Fine to Coarse SAND (MUCK/PEAT) with Little Silt and Clay	
	-11.4	14.0	WOH	WOH	WOH	0	SS-2050	653%			
	-16.4	19.0	3	0	1	1		Sat.		-20.4	23.0
										UNDIVIDED COASTAL PLAIN Gray, Loose, Fine to Coarse SAND (A-3)	
	-21.4	24.0	3	3	3	6	SS-2051	17%			
	-26.4	29.0	WOH	1	7	8					
	-30.4	33.0								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
	-31.4	34.0	30	37	63/0.2	100/0.7					
	-36.4	39.0	27	73/0.1		100/0.6					
	-41.4	44.0	26	74/0.1		100/0.6					
	-46.4	49.0	50	50/0.4		100/0.9					
	-47.3	49.9								Boring Terminated at Elevation -47.3 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation	

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4500	**STATION** 45+00	**OFFSET** 10 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 13.4 ft	**TOTAL DEPTH** 45.0 ft	**NORTHING** 177,419	**EASTING** 2,314,540	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/09/26	**COMP. DATE** 03/09/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
	13.4	0.0								GROUND SURFACE
	12.0	1.4								**ROADWAY EMBANKMENT** Pavement (ASPHALT) Sandy GRAVEL (A-1-a) Tan, Very Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel
	9.1	4.3	6	8	12	20		M		
	4.1	9.3	7	9	11	20	SS-2146	17%		
	-0.9	14.3	4	5	6	11		Sat.		
	-5.9	19.3	WOH	WOH	WOH	0		Sat.		
	-8.6	22.0								**ALLUVIAL** Tan, Brown, and Dark Brown, Loose, Silty SAND (A-2) with Little Organic Matter
	-10.9	24.3	2	3	5	8	SS-2149	100%		
	-13.6	27.0								Gray to Dark Brown, Very Soft, Sandy CLAY (A-6) with Trace Organic Matter
	-15.9	29.3	WOH	WOH	WOH	0	SS-2150	23%		
	-18.6	32.0								**UNDIVIDED COASTAL PLAIN** Tan and Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter
	-20.9	34.3	5	7	8	15		Sat.		
	-25.9	39.3	5	3	4	7	SS-2152	22%		
	-28.6	42.0								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray and White, Hard, SANDY LIMESTONE
	-30.9	44.3	52	48/0.2		100/0.7				
	-31.6	45.0								Boring Terminated at Elevation -31.6 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_4900	**STATION** 49+00	**OFFSET** 5 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 6.7 ft	**TOTAL DEPTH** 34.8 ft	**NORTHING** 177,804	**EASTING** 2,314,651	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/18/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
										6.7 GROUND SURFACE	0.0
5										5.5 **ROADWAY EMBANKMENT**	1.2
										5.0 Pavement (ASPHALT)	1.7
	3.4	3.3	6	12	16	28		M		Sandy GRAVEL (A-1-a) Tan, Very Loose to Medium Dense, Fine to Coarse SAND (A-3)	
0											
	-1.6	8.3	3	4	5	9		W			
-5											
	-6.6	13.3	1	2	1	3		Sat.			
-10										-9.3 **ALLUVIAL** Tan and Brown, Very Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter	16.0
	-11.6	18.3	1	1	2	3	SS-2190	27%			
-15										-14.3 Gray, Very Loose, Silty SAND (A-2-4) with Trace Organic Matter	21.0
	-16.6	23.3	WOR	WOR	WOH	0	SS-2191	27%			
-20										-20.3 **UNDIVIDED COASTAL PLAIN** Gray, Loose, Fine to Coarse SAND (A-3)	27.0
	-21.6	28.3	7	3	3	6		Sat.			
-25											
	-26.6	33.3	5	11	9	20		Sat.		-26.3 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Medium Dense, Calcareous, Silty Fine SAND (A-2-4) with Trace Cemented Concretions	33.0
										-28.1 Boring Terminated at Elevation -28.1 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation	34.8

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y1RPC_5100	**STATION** 51+00	**OFFSET** 5 ft RT	**ALIGNMENT** -Y1RPC-	**0 HR.** N/A
COLLAR ELEV. 5.5 ft	**TOTAL DEPTH** 34.7 ft	**NORTHING** 178,002	**EASTING** 2,314,681	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic	
DRILLER Brown, M.	**START DATE** 03/18/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10										
										5.5 GROUND SURFACE 0.0
5										4.2 **ROADWAY EMBANKMENT** 1.3
										3.5 Pavement (ASPHALT) 2.0
	2.3	3.2	7	14	9	23	SS-2194	12%		Sandy GRAVEL (A-1-a) Tan and Gray, Loose to Medium Dense, Coarse SAND (A-1-b) with Trace Gravel
0										
	-2.7	8.2	3	3	5	8		W		
-5										
	-7.7	13.2	2	0	1	1	SS-2196	63%		-8.6 **ALLUVIAL** 14.1
-10										-10.5 Black, Very Loose, Moderately Organic, Silty SAND (A-2) 16.0
	-12.7	18.2	WOH	WOH	WOH	0	SS-2197	99%		Black, Very Loose, Highly Organic, Silty SAND (MUCK/PEAT)
-15										
	-17.7	23.2	WOH	2	3	5	SS-2198	73%		-16.5 Gray, Loose, Moderately Organic, Fine SAND (A-3) 22.0
-20										
	-22.7	28.2	WOH	WOH	WOH	0		Sat.		-21.5 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Fine to Coarse SAND (A-3) 27.0
-25										
	-27.7	33.2	14	27	23	50				-26.5 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE 32.0
										-29.2 Boring Terminated at Elevation -29.2 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation 34.7

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y1RPC_5300	**STATION** 53+00	**OFFSET** 5 ft RT	**ALIGNMENT** -Y1RPC- / **0 HR.** N/A
COLLAR ELEV. 4.5 ft	**TOTAL DEPTH** 39.7 ft	**NORTHING** 178,200	**EASTING** 2,314,711 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** NW Casing w/ SPT	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 03/18/26	**COMP. DATE** 03/18/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
5										4.5 GROUND SURFACE	0.0
	1.3	3.2								3.3 **ROADWAY EMBANKMENT**	1.2
										2.5 Pavement (ASPHALT)	2.0
0			6	11	9	20	SS-2200	17%		Sandy GRAVEL (A-1-a)	
										Tan and Gray, Loose to Medium Dense, Coarse SAND (A-1-b)	
	-3.7	8.2									
-5			5	5	6	11		Sat.			
	-8.7	13.2									
-10			2	2	2	4		Sat.			
										-12.5	17.0
	-13.7	18.2								**ALLUVIAL**	
-15			WOH	WOH	WOH	0	SS-2203	68%		Gray and Black, Very Loose, Moderately Organic, Silty SAND (A-2)	
										-17.5	22.0
	-18.7	23.2								**UNDIVIDED COASTAL PLAIN**	
-20			2	5	7	12		Sat.		Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel	
	-23.7	28.2									
-25			2	3	1	4		Sat.			
	-28.7	33.2									
-30			2	2	5	7		Sat.			
										-32.5	37.0
	-33.7	38.2								**COASTAL PLAIN SEDIMENTARY ROCK**	
-35			11	23	15	38				**PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray, Soft to Medium Hard, SANDY LIMESTONE	
										-35.2	39.7

Boring Terminated at Elevation -35.2 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

Notes:
- Roadway Embankment shown below existing grade is believed to be undercut backfill from the construction of US 74/76/17/421 & HWY 133.

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/2/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_1475	**STATION** 14+75	**OFFSET** CL	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 24.7 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 174,400	**EASTING** 2,318,890	**24 HR.** 8.8
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/17/25	**COMP. DATE** 09/17/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
25										24.7 GROUND SURFACE	0.0
	24.7	0.0	4	4	4	8		D		**UNDIVIDED COASTAL PLAIN** Brown, Loose, Fine SAND (A-3) with Trace Organic Matter	
	22.2	2.5								Gray, Loose, Silty SAND (A-2-4)	
20	21.2	3.5	1	2	2	4	SS-2	25%			
	18.7	6.0								Dark Brown to Gray, Very Loose to Loose, Silty SAND (A-2), Moderately Organic to Little Organic Matter, Trace Gravel	
15	16.2	8.5	WOH	1	1	2		Sat.			
10	11.2	13.5	1	1	1	2		Sat.			
5	6.2	18.5	5	3	5	8		Sat.			
	4.7	20.0								Boring Terminated at Elevation 4.7 ft in Undivided Coastal Plain (Silty SAND)	

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_2000	**STATION** 20+00	**OFFSET** 20 ft RT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 14.6 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 174,244	**EASTING** 2,318,422	**24 HR.** 3.2
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/17/25	**COMP. DATE** 09/17/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										14.6 GROUND SURFACE 0.0
	14.6	0.0	2	2	4	6	SS-6	6%		**UNDIVIDED COASTAL PLAIN** Brown to Dark Brown, Loose, Fine to Coarse SAND (A-3), Moderately Organic to Little Organic Matter, Trace Gravel
10	11.1	3.5	2	3	5	8		Sat.		
	7.1	7.5								Light Tan-Brown to Light Gray, Very Loose to Loose, Fine SAND (A-3)
5	6.1	8.5	2	3	3	6		Sat.		
0	1.1	13.5	1	1	2	3		Sat.		
-5	-3.9	18.5	2	3	3	6		Sat.		
	-5.4	20.0								Boring Terminated at Elevation -5.4 ft in Undivided Coastal Plain (Fine SAND)

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/3/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_2110	**STATION** 21+10	**OFFSET** 20 ft LT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 19.1 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 174,248	**EASTING** 2,318,306	**24 HR.** 8.1
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/17/25	**COMP. DATE** 09/17/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	19.1	0.0								19.1 GROUND SURFACE	0.0
			1	2	2	4		D		**UNDIVIDED COASTAL PLAIN** Dark Brown, Loose, Fine SAND (A-3) with Little Organic Matter	
15	15.6	3.5	1	1	1	2	SS-12	12%		16.6 Light Tan-Brown to Light Gray, Very Loose to Loose, Fine to Coarse SAND (A-1-b)	2.5
10	10.6	8.5	2	3	4	7		Sat.			
5	5.6	13.5	2	3	3	6		Sat.			
0	0.6	18.5	2	2	2	4		Sat.		-0.9 Boring Terminated at Elevation -0.9 ft in Undivided Coastal Plain (Fine to Coarse SAND)	20.0

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_2300	**STATION** 23+00	**OFFSET** 30 ft RT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 27.6 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 174,425	**EASTING** 2,318,243	**24 HR.** 12.1
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/17/25	**COMP. DATE** 09/17/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
30										
	27.6	0.0								27.6 GROUND SURFACE 0.0
			2	3	4	7		D		**UNDIVIDED COASTAL PLAIN** Light Tan-Brown, Light Tan-Orange, and Light Gray, Loose to Medium Dense, Fine to Coarse SAND (A-3)
25	24.1	3.5	6	5	5	10	SS-17	10%		
20	19.1	8.5	3	5	6	11		W		
15	14.1	13.5	4	5	5	10		Sat.		
10	9.1	18.5	4	7	7	14		Sat.		7.6 Boring Terminated at Elevation 7.6 ft in Undivided Coastal Plain (Fine SAND) 20.0

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_2900	**STATION** 29+00	**OFFSET** 30 ft RT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 28.1 ft	**TOTAL DEPTH** 50.0 ft	**NORTHING** 175,007	**EASTING** 2,318,186	**24 HR.** 10.2
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/15/25	**COMP. DATE** 09/15/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
30											
	28.1	0.0	2	3	4	7		D		28.1 GROUND SURFACE	0.0
25	24.6	3.5	4	2	4	6		D		**UNDIVIDED COASTAL PLAIN** Light Gray to Gray and Tan-Brown, Loose to Medium Dense, Fine to Coarse SAND (A-3) with Trace Organic Matter	
20	19.6	8.5	4	5	6	11		W			
15	14.6	13.5	6	8	11	19		Sat.			
10	9.6	18.5	3	3	3	6	SS-25	24%			
5	4.6	23.5	2	4	4	8		Sat.		5.6 **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Gray to Brown, Loose, Calcareous, Fine to Coarse SAND (A-1-b) with Trace Gravel-Sized Limestone Fragments, Fossiliferous	22.5
0	-0.4	28.5	2	50	24	74		Sat.		-0.9 **COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Very Stiff to Hard, Calcareous, Sandy SILT (A-4) with Some to Little Clay and Trace Thinly Bedded, Hard, Sandstone Ledges and Cemented Concretions	29.0
-5	-5.4	33.5	7	12	15	27	SS-28	24%			
-10	-10.4	38.5	4	19	25	44		Sat.			
-15	-15.4	43.5	7	16	17	33		Sat.			
-20	-20.4	48.5	5	16	15	31		Sat.		-19.4 -19.7 -21.9 Boring Terminated at Elevation -21.9 ft in Coastal Plain (Sandy SILT) - Peedee Formation	47.5 47.8 50.0

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_3100	**STATION** 31+00	**OFFSET** 25 ft RT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 26.5 ft	**TOTAL DEPTH** 64.4 ft	**NORTHING** 175,109	**EASTING** 2,318,303	**24 HR.** 5.1
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/15/25	**COMP. DATE** 09/15/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
30										
	26.5	0.0	2	5	7	12		D		26.5 GROUND SURFACE 0.0
25	23.0	3.5	4	3	3	6		W		**ROADWAY EMBANKMENT** Dark Brown, Medium Dense, Silty Fine SAND (A-2-4) with Trace Gravel and Organic Matter 24.0 2.5
20	18.0	8.5	WOH	1	1	2	SS-34	107%		**UNDIVIDED COASTAL PLAIN** Dark Brown, Very Loose to Loose, Moderately Organic, Silty SAND (A-2)
15	13.0	13.5	WOH	WOH	1	1	SS-35	312%		14.0 12.5 Dark Brown to Black, Very Soft, Highly Organic, Clayey SILT (MUCK/PEAT)
10	8.0	18.5	WOH	3	4	7		Sat.		7.0 19.5 Brown to Dark Gray, Loose, Fine SAND (A-3) with Little Organic Matter
5	3.0	23.5	8	12	15	27		Sat.		2.8 23.7 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Olive-Gray, and Dark Green, Very Stiff to Hard, Calcareous, Sandy CLAY (A-6) with Some Silt, Glauconitic, Fossiliferous Zones
0	-2.0	28.5	4	7	10	17	SS-38	23%		
-5	-7.0	33.5	7	7	13	20		Sat.		
-10	-12.0	38.5	14	14	22	36		Sat.		
-15	-17.0	43.5	14	15	19	34		W		-21.0 47.5 Gray to Dark Gray and Olive-Gray, Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some to Little Clay
-20	-22.0	48.5	3	4	6	10		W		
-25	-27.0	53.5	7	16	18	34	SS-43	23%		
-30	-32.0	58.5	7	60/0.1		60/0.1				-32.5 59.0 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Moderately Hard to Hard, SANDY LIMESTONE
-35	-37.0	63.5	31	69/0.4		100/0.9				-37.9 64.4 Boring Terminated at Elevation -37.9 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE) - Peedee Formation

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_3300	**STATION** 33+00	**OFFSET** 15 ft LT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 35.8 ft	**TOTAL DEPTH** 85.0 ft	**NORTHING** 175,042	**EASTING** 2,318,476	**24 HR.** 14.4
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/16/25	**COMP. DATE** 09/16/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
40											
35	35.8	0.0	2	2	4	6				35.8 GROUND SURFACE	0.0
30	32.3	3.5	2	2	2	4	SS-48	M 15%		**ROADWAY EMBANKMENT** Brown to Dark Brown, Loose, Fine SAND (A-3) with Trace Gravel	
25	27.3	8.5	5	8	10	18		W		33.3 **UNDIVIDED COASTAL PLAIN** Tan-Brown to Tan-Gray, Loose to Medium Dense, Silty SAND (A-2-4) with Trace Clay and Organic Matter	2.5
20	22.3	13.5	3	5	6	11		Sat.			
15	17.3	18.5	7	5	9	14		Sat.			
10	12.3	23.5	5	6	7	13		Sat.			
5	7.3	28.5	4	3	4	7		Sat.		8.3 **COASTAL PLAIN CASTLE HAYNE FORMATION** (New Hanover Member) Brown, Loose, Calcareous, Silty SAND (A-2-4) with Trace Limestone Fragments, Fossiliferous	27.5
0	2.3	33.5	16	10	12	22	SS-54	21%		5.9 **COASTAL PLAIN PEEDEE FORMATION** Light to Dark Gray and Olive-Gray, Very Stiff to Hard, Calcareous, Sandy CLAY (A-6) with Some Silt and Trace Thinly Bedded, Hard, Sandstone Ledges, Fossiliferous Zones	29.9
-5	-2.7	38.5	6	9	12	21		W			
-10	-7.7	43.5	25	29	71/0.2	100/0.7		W		-8.2 / -9.2	44.0 / 45.0
-15	-12.7	48.5	6	9	12	21		Sat.			
-20	-17.7	53.5	7	12	16	28		Sat.		-16.7 Dark Gray, Medium Dense, Calcareous, Silty SAND (A-2-4)	52.5
-25	-22.7	58.5	9	9	9	18	SS-59	28%			
-30	-27.7	63.5	18	16	18	34		W		-26.7 Olive-Gray, Hard, Calcareous, Sandy CLAY (A-6) with Some Silt	62.5
-35	-32.7	68.5	80	20/0.1		100/0.6				-32.7 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	68.5
-40	-37.7	73.5	100/0.2			100/0.2					

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPA_3300	**STATION** 33+00	**OFFSET** 15 ft LT	**ALIGNMENT** -Y2LPA-	**0 HR.** N/A
COLLAR ELEV. 35.8 ft	**TOTAL DEPTH** 85.0 ft	**NORTHING** 175,042	**EASTING** 2,318,476	**24 HR.** 14.4
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 09/16/25	**COMP. DATE** 09/16/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-40						Match Line				
-45	-42.7	78.5	100/0.2			100/0.2				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE *(continued)*
	-47.7	83.5	21	24	40	64				-49.2 / 85.0
										Boring Terminated at Elevation -49.2 ft in Coastal Plain Sedimentary Rock (SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE) - Peedee Formation

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPA_EB2-C	**STATION** 35+01	**OFFSET** 22 ft RT	**ALIGNMENT** -Y2LPA- / **0 HR.** N/A
COLLAR ELEV. 43.9 ft	**TOTAL DEPTH** 137.8 ft	**NORTHING** 174,850	**EASTING** 2,318,448 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/09/25	**COMP. DATE** 10/10/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
45										
	43.9	0.0	1	2	2	4		D		43.9 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT
										41.9 Light Tan-Brown, Loose, Fine SAND (A-3) 2.0
40	40.7	3.2	3	5	4	9		Sat.		Orange-Brown, Loose, Fine to Coarse SAND (A-1-b)
	36.1	7.8	1	1	3	4	SS-94	18%		36.9 7.0 **UNDIVIDED COASTAL PLAIN** Light Gray, Soft to Medium Stiff, Sandy SILT (A-4) with Some Clay
35										
30	31.1	12.8	7	14	16	30		Sat.		30.8 13.1 Light Gray to White, Medium Dense to Dense, Fine SAND (A-3) with Trace Organic Matter
25	26.1	17.8	9	10	13	23		Sat.		
20	21.1	22.8	7	10	12	22		Sat.		
15	16.1	27.8	7	9	11	20		Sat.		12.9 31.0 Light Gray, Medium Dense to Dense, Fine to Coarse SAND (A-1-b)
10	11.1	32.8	7	13	17	30	SS-99	17%		8.9 35.0 **COASTAL PLAIN SEDIMENTARY ROCK**
										CASTLE HAYNE FORMATION (New Hanover Member)
5	6.1	37.8	4	1	4	5		Sat.		6.1 37.8 Brown, Very Soft to Soft, CONGLOMERATIC LIMESTONE
										2.9 41.0 **COASTAL PLAIN PEEDEE FORMATION**
0	1.1	42.8	4	6	8	14	SS-101	23%		Olive-Gray to Dark Gray, Loose, Calcareous, Silty SAND (A-2-4) with Trace Sandstone Fragments, Fossiliferous
										-1.1 45.0 Gray to Dark Gray and Olive Gray, Stiff to Very Stiff, Calcareous, Sandy SILT (A-4) with Little Clay and Some Thinly to Thickly Bedded, Soft to Medium Hard, Sandstone Ledges and Cemented Concretions
-5	-3.9	47.8	26	11	13	24		Sat.		-3.9 47.8
										-7.1 51.0 Gray to Dark Gray, Very Stiff, Calcareous, Sandy CLAY (A-6) with Some Silt
-10	-8.9	52.8	4	6	15	21		W		
										-12.1 56.0 Gray to Dark Gray, Very Stiff, Calcareous, Fine Sandy SILT (A-4) with Little Clay and Some Thinly to Thickly Bedded, Soft to Medium Hard, Sandstone Ledges and Cemented Concretions
-15	-13.9	57.8	6	11	9	20	SS-104	25%		
-20	-18.9	62.8	13	9	8	17		Sat.		-20.4 64.3
										-23.9 67.8
-25	-23.9	67.8	11	9	10	19		Sat.		-26.1 70.0
										-28.6 72.5
-30	-28.9	72.8	5	8	10	18	SS-107	26%		Gray, Stiff to Very Stiff, Calcareous, Fine Sandy CLAY (A-6) with Some Silt and Trace Thinly Bedded, Soft to Medium Hard, Sandstone Ledges and Cemented Concretions
										-32.9 76.8
-35	-33.9	77.8	7	6	7	13		W		-33.9 77.8

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPA_EB2-C	**STATION** 35+01	**OFFSET** 22 ft RT	**ALIGNMENT** -Y2LPA- / **0 HR.** N/A
COLLAR ELEV. 43.9 ft	**TOTAL DEPTH** 137.8 ft	**NORTHING** 174,850	**EASTING** 2,318,448 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT5465 CME-55 90% 05/29/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 10/09/25	**COMP. DATE** 10/10/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-35						Match Line				
-40	-38.9	82.8	38	36	36	72				
-45	-43.9	87.8	21	23	33	56				
-50	-48.9	92.8	NR	33	47	80	SS-111	15%		-36.1 80.0 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-55	-53.9	97.8	38	48	35	83		Sat.		-47.1 91.0 **COASTAL PLAIN PEEDEE FORMATION** Gray, Very Dense, Calcareous, Fine to Coarse SAND (A-1-b) with Some Silt and Some Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-60	-58.9	102.8	34	66/0.4		100/0.9		Sat.		-51.1 95.0 -52.6 96.5 -56.6 100.5 -56.9 100.8
-65	-63.9	107.8	100/0.4			100/0.4		Sat.		-60.8 104.7 -61.1 105.0 -61.6 105.5 -62.8 106.7 -63.7 107.6 -63.9 107.8 -65.4 109.3 -65.7 109.6 -68.1 112.0 -68.4 112.3
-70	-68.9	112.8	80	20/0.1		100/0.6		Sat.		-71.1 115.0 -71.4 115.3
-75	-73.9	117.8	60	40/0.3		100/0.8		Sat.		
-80	-78.9	122.8	51	49/0.3		100/0.8		Sat.		-83.6 127.5
-85	-83.9	127.8	12	33	37	70		Sat.		Gray, Dense to Very Dense, Calcareous, Fine SAND (A-3) with Some Silt
-90	-88.9	132.8	15	21	28	49		Sat.		
	-93.9	137.8	60/0.0			60/0.0				-93.1 137.0 -93.9 137.8 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** Gray, Hard, CALCAREOUS SANDSTONE Boring Terminated with Standard Penetration Test Refusal at Elevation -93.9 ft in Coastal Plain Sedimentary Rock (CALCAREOUS SANDSTONE) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B1-C	**STATION** 13+42	**OFFSET** 12 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 19.8 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,684	**EASTING** 2,317,684 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/09/26	**COMP. DATE** 06/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
20										
	19.8	0.0	2	2	1	3		M		19.8 GROUND SURFACE 0.0 **ARTIFICIAL FILL** Tan-Brown, Very Loose, Fine to Coarse SAND (A-1-b) with Some Gravel-Sized Brick Fragments
15	15.0	4.8	WOH	1	1	2		W		16.8 3.0 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose to Loose, Fine to Coarse SAND (A-3)
	11.8	8.0	2	2	1	3		Sat.		
10										
	6.8	13.0	2	2	4	6		Sat.		
5										
	1.8	18.0	WOH	1	1	2	SS-71A	141%		1.7 18.1 Dark Brown, Very Loose, Fine to Coarse SAND (A-3) with Little Organic Matter
0										-1.2 21.0 Gray, Loose, Fine to Coarse SAND (A-3)
	-3.2	23.0	2	3	3	6		Sat.		
-5										-6.2 26.0 **COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Little Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
	-8.2	28.0	5	7	15	22		Sat.		
-10										
	-13.2	33.0	18	19	25	44		Sat.		-11.9 31.7 -12.0 31.8
-15										
	-18.2	38.0	14	14	29	43		Sat.		-16.4 36.2 -16.5 36.3
-20										
	-23.2	43.0	6	5	10	15	SS-76A	26%		-20.2 40.0 -20.3 40.1 -22.2 42.0 -22.3 42.1
-25										
	-28.2	48.0	8	9	11	20		Sat.		-26.9 46.7 -27.0 46.8
-30										
	-33.2	53.0	6	7	8	15		Sat.		-31.2 51.0 -31.4 51.2 -32.2 52.0 -32.4 52.2
-35										
	-38.2	58.0	17	12	30	42		Sat.		-37.2 57.0 -37.4 57.2 -38.6 58.4 **COASTAL PLAIN SEDIMENTARY ROCK** **PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-40										
	-43.2	63.0	23	27	42	69				
-45										
	-48.2	68.0	31	69/0.3		100/0.8				
-50										
	-53.2	73.0	41	59/0.1		100/0.6				
-55										
	-58.2	78.0	60/0.1			60/0.1		Sat.		-56.2 76.0
-60										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B1-C	**STATION** 13+42	**OFFSET** 12 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 19.8 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,684	**EASTING** 2,317,684 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/09/26	**COMP. DATE** 06/10/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-60						Match Line				
	-63.2	83.0	55	45/0.3		100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)* -67.7 87.5
-65										
	-68.2	88.0	60/0.1			60/0.1		Sat.		-69.2 89.0 -70.2 90.0 -70.3 90.1 -71.4 91.2 -71.6 91.4
-70										
	-73.2	93.0	60/0.1			60/0.1		Sat.		-72.4 92.2 -74.2 94.0 -75.2 95.0 -75.5 95.3 -76.5 96.3 -77.7 97.5
-75										
	-78.2	98.0	30	70/0.3		100/0.8		Sat.		-79.2 99.0 -79.4 99.2 -80.9 100.7 -81.0 100.8 -81.9 101.7
-80										
	-83.2	103.0	20	60/0.0		60/0.0		Sat.		-82.0 101.8 -82.7 102.5 -83.3 103.1 -85.8 105.6 -86.2 106.0
-85										
	-88.2	108.0	7	11	18	29		Sat.		-87.7 107.5 -87.8 107.6
-90										
	-93.2	113.0	11	12	20	32	SS-87A	22%		-91.3 111.1 -91.4 111.2
-95										
	-98.2	118.0	5	8	14	22		Sat.		-96.2 116.0 -96.3 116.1 -97.2 117.0 -97.3 117.1
-100										
	-103.2	123.0	9	13	10	23		Sat.		-101.2 121.0 -101.3 121.1
-105										
	-108.2	128.0	6	4	19	23		Sat.		-106.2 126.0 -106.3 126.1 -107.2 127.0 -107.3 127.1
-110										
	-113.2	133.0	60/0.0			60/0.0		Sat.		-111.1 130.9 -111.4 131.2 -112.7 132.5 -113.2 133.0
-115										
	-118.2	138.0	6	11	13	24	SS-91A	23%		-119.7 139.5 Boring Terminated at Elevation -119.7 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B2-C	**STATION** 15+54	**OFFSET** 4 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 13.0 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 174,489	**EASTING** 2,317,653 / **24 HR.** 11.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 06/01/26	**COMP. DATE** 06/02/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
15										
										13.0 GROUND SURFACE 0.0
										ARTIFICIAL FILL Dark Brown to Dark Gray, Loose to Medium Dense, Silty SAND (A-2-4) with Trace Gravel and Organic Matter
10	10.1	2.9	5	5	5	10		M		8.0 5.0
										UNDIVIDED COASTAL PLAIN Dark Brown to Tan-Brown, Loose, Fine to Coarse SAND (A-3) with Trace Organic Matter
5	5.1	7.9	2	4	5	9	SS-2573	20%		
0	0.1	12.9	WOH	1	3	4		Sat.		-3.0 16.0
										COASTAL PLAIN PEEDEE FORMATION Gray to Dark Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Some to Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
-5	-4.9	17.9	13	11	12	23		Sat.		
-10	-9.9	22.9	9	7	41	48		Sat.		-12.1 25.1
										-12.5 25.5
-15	-14.9	27.9	9	6	20	26	SS-2577	27%		
-20	-19.8	32.8	13	10	17	27		Sat.		
-25	-24.8	37.8	10	11	15	26		Sat.		-26.1 39.1
										Dark Gray to Green-Gray, Very Stiff to Hard, Calcareous, Sandy CLAY (A-6) with Some Silt, Trace Very Thinly to Thinly Beddded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
-30	-29.8	42.8	8	12	14	26	SS-2580	19%		
-35	-34.8	47.8	100/0.4			100/0.4		W		-35.2 48.2
										-35.6 48.6
										-38.0 51.0
										COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION (Scotts Hill Member) Light Gray to White, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-40	-39.8	52.8	23	23	45	68				
-45	-44.8	57.8	22	19	25	44				
-50	-49.8	62.8	69	31/0.5		100/1.0				
										-53.0 66.0
										COASTAL PLAIN PEEDEE FORMATION Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-55	-54.8	67.8	31	22	23	45		Sat.		
-60	-59.8	72.8	38	62/0.4		100/0.9		Sat.		-58.9 71.9
										-59.2 72.2
										-62.5 75.5
										-62.8 75.8
										-63.2 76.2
-65	-64.8	77.8								-64.0 77.0

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B2-C	**STATION** 15+54	**OFFSET** 4 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 13.0 ft	**TOTAL DEPTH** 139.3 ft	**NORTHING** 174,489	**EASTING** 2,317,653 / **24 HR.** 11.6
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 06/01/26	**COMP. DATE** 06/02/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
			100/0.2			100/0.2		Sat.		-65.0 78.0
										-65.4 78.4
										-66.2 79.2
										-66.4 79.4
										-67.7 80.7
-70	-69.8	82.8	50	50/0.2		100/0.7		Sat.		-67.9 80.9
										-68.1 81.1
										-68.3 81.3
										-69.3 82.3
										-69.4 82.4
										-70.5 83.5
-75	-74.8	87.8	100/0.4			100/0.4		Sat.		-70.7 83.7
										-72.0 85.0
										-72.3 85.3
										-72.8 85.8
										-73.1 86.1
-80	-79.8	92.8	39	61/0.4		100/0.9		Sat.		-73.3 86.3
										-73.5 86.5
										-73.9 86.9
										-74.0 87.0
										-74.6 87.6
										-74.8 87.8
-85	-84.8	97.8	21	24	26	50		Sat.		-75.2 88.2
										-75.5 88.5
										-84.6 97.6
										-85.0 98.0
-90	-89.8	102.8	12	11	17	28	SS-2592	27%		
-95	-94.8	107.8	11	12	16	28		Sat.		
-100	-99.8	112.8	11	13	100/0.2	100/0.2		Sat.		-99.2 112.2
										-99.4 112.4
-105	-104.8	117.8	11	100/0.2		100/0.2		Sat.		-105.5 118.5
										-105.8 118.8
-110	-109.8	122.8	8	10	12	22		Sat.		
-115	-114.8	127.8	7	7	15	22	SS-2597	24%		
-120	-119.8	132.8	20	14	17	31		Sat.		
-125	-124.8	137.8	10	12	17	29		Sat.		-126.3 139.3

PEEDEE FORMATION Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions

Boring Terminated at Elevation -126.3 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B3-C	**STATION** 17+48	**OFFSET** 2 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 11.6 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,395	**EASTING** 2,317,491 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 06/03/26	**COMP. DATE** 06/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
11.6										GROUND SURFACE 0.0
	8.8	2.8	4	10	9	19	SS-2600	20%		**ARTIFICIAL FILL** Gray to Dark Gray and Dark Brown, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel and Organic Matter — 5.6 / 6.0
	3.8	7.8	3	2	3	5		Sat.		**ALLUVIAL** Brown, Loose, Silty SAND (A-2) with Little Organic Matter — 0.6 / 11.0
	-1.2	12.8	WOH	WOH	WOH	0	SS-2602	464%		Dark Brown, Very Soft, Highly Organic, Sandy SILT (MUCK/PEAT) — -4.4 / 16.0
	-6.2	17.8	2	1	3	4	SS-2603	38%		Light to Dark Brown, Tan, and Black, Loose, Fine to Coarse SAND (A-3) with Little to Trace Organic Matter, Trace Gravel
	-11.2	22.8	5	2	3	5		Sat.		-12.6 / 24.2
	-16.2	27.8	6	10	25	35		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Trace Cemented Concretions, Fossiliferous
	-20.9	32.5	8	7	14	21	SS-2606	24%		
	-25.9	37.5	6	9	11	20	SS-2607	24%		-24.4 / 36.0; -24.8 / 36.4; -25.0 / 36.6 — Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy CLAY (A-6) with Some Silt, Trace Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
	-30.9	42.5	100/0.4			100/0.4		W		
	-35.9	47.5	20	79	21/0.1	100/0.6				-34.8 / 46.4; -35.0 / 46.6; -36.0 / 47.6 — **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray to Gray and White, Moderately Hard to Hard, SANDY LIMESTONE (A-1-b), Interbedded with CALCAREOUS SANDSTONE
	-40.9	52.5	20	40	56	96				
	-45.9	57.5	28	72/0.5		100/1.0				
	-50.9	62.5	62	27	28	55	SS-2612	11%		-54.4 / 66.0 — **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous
	-55.9	67.5	29	27	35	62		Sat.		
	-60.9	72.5	25	34	38	72		Sat.		-59.1 / 70.7; -59.3 / 70.9; -59.5 / 71.1; -59.8 / 71.4; -60.1 / 71.7; -60.2 / 71.8; -63.5 / 75.1

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Akland, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B3-C	**STATION** 17+48	**OFFSET** 2 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 11.6 ft	**TOTAL DEPTH** 139.0 ft	**NORTHING** 174,395	**EASTING** 2,317,491 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 06/03/26	**COMP. DATE** 06/04/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-65						Match Line				
	-65.9	77.5	100/0.5			100/0.5		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions, Fossiliferous *(continued)* — -63.7 / 75.3; -63.9 / 75.5; -64.3 / 75.9; -64.5 / 76.1; -64.6 / 76.2; -66.4 / 78.0; -67.0 / 78.6; -67.6 / 79.2; -67.7 / 79.3; -68.9 / 80.5; -69.1 / 80.7; -72.7 / 84.3; -72.8 / 84.4; -73.3 / 84.9; -73.4 / 85.0
	-70.9	82.5	67	33/0.2		100/0.7		Sat.		
	-75.9	87.5	59	41/0.1		100/0.6		Sat.		
	-80.9	92.5	25	47	53/0.5	100/1.0		Sat.		-83.2 / 94.8; -83.4 / 95.0
	-85.9	97.5	16	25	31	56		Sat.		
	-90.9	102.5	13	15	26	41		Sat.		-90.6 / 102.2; -90.8 / 102.4
	-95.9	107.5	10	14	21	35	SS-2621	26%		
	-100.9	112.5	8	13	17	30	SS-2622	27%		
	-105.9	117.5	18	82/0.2		100/0.7		Sat.		-106.7 / 118.3; -107.1 / 118.7; -107.9 / 119.5; -108.4 / 120.0
	-110.9	122.5	10	13	18	31		Sat.		
	-115.9	127.5	100/0.3			100/0.3		Sat.		-116.2 / 127.8; -116.4 / 128.0
	-120.9	132.5	13	14	19	33		Sat.		-120.1 / 131.7; -120.4 / 132.0
	-125.9	137.5	40	22	25	47	SS-2627	17%		-124.4 / 136.0 — Dark Gray, Hard, Calcareous, Fine Sandy SILT (A-4) with Little Clay, Trace Cemented Concretions, Fossiliferous — -127.4 / 139.0

Boring Terminated at Elevation -127.4 ft in Coastal Plain (Fine Sandy SILT) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B4-C	**STATION** 19+51	**OFFSET** 1 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 9.3 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,456	**EASTING** 2,317,300 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/27/26	**COMP. DATE** 05/29/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
10										9.3 GROUND SURFACE 0.0
	6.3	3.0	11	14	23	37		M		**ARTIFICIAL FILL** Light Gray and Black, Loose to Dense, Silty SAND (A-2-4) with Some Gravel-Sized Construction Debris
5										
	1.3	8.0	6	2	2	4		W		
0										-2.7 12.0
	-3.7	13.0	WOH	2	6	8	SS-2546	31%		**ALLUVIAL** Gray and Brown, Medium Stiff to Stiff, Sandy SILT (A-4) with Little Clay and Organic Matter
-5										-7.7 17.0
	-8.7	18.0	5	12	10	22		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Dense, Calcareous, Silty SAND (A-2-4) with Little Clay, Trace Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
-10										
	-13.7	23.0	23	20	21	41		Sat.		
-15										-17.7 27.0
	-18.7	28.0	5	10	14	24		W		Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Trace Cemented Concretions
-20										
	-23.7	33.0	17	12	12	24	SS-2550	28%		
-25										
	-28.7	38.0	8	12	28	40		W		
-30										-32.7 42.0
	-33.7	43.0	56	44/0.3		100/0.8				**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-35										
	-38.7	48.0	25	22	21	43				
-40										
	-43.7	53.0	50	48	27	75				
-45										
	-48.7	58.0	30	27	24	51				
-50										-52.7 62.0
	-53.7	63.0	37	61	39/0.3	100/0.8		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
-55										
	-58.7	68.0	100/0.4			100/0.4		Sat.		
-60										
	-63.7	73.0	100/0.3			100/0.3		Sat.		
-65										
	-68.7	78.0	55	45/0.3		100/0.8		Sat.		
-70										

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stanbury, M.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B4-C	**STATION** 19+51	**OFFSET** 1 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 9.3 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,456	**EASTING** 2,317,300 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SEL0522 DIEDRICH D-50 89% 08/26/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Brown, M.	**START DATE** 05/27/26	**COMP. DATE** 05/29/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
	-73.7	83.0	34	66/0.4		100/0.9		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-75										
	-78.7	88.0	38	61	39/0.2	100/0.7		Sat.		
-80										
	-83.7	93.0	100/0.4			100/0.4		Sat.		
-85										
	-88.7	98.0	10	12	16	28		Sat.		
-90										
	-93.7	103.0	14	11	14	25	SS-2564	27%		
-95										
	-98.7	108.0	11	12	23	35		Sat.		
-100										
	-103.7	113.0	12	12	13	25		Sat.		
-105										
	-108.7	118.0	18	7	12	19		Sat.		
-110										
	-113.7	123.0	7	9	84	93		Sat.		
-115										
	-118.7	128.0	9	8	11	19	SS-2569	25%		
-120										
	-123.7	133.0	14	13	14	27		Sat.		
-125										
	-128.7	138.0	8	11	18	29		Sat.		-130.2 139.5
-130										Boring Terminated at Elevation -130.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B5-C	**STATION** 21+41	**OFFSET** 11 ft RT	**ALIGNMENT** -Y2LPC_2-	**0 HR.** N/A
COLLAR ELEV. 6.6 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,603	**EASTING** 2,317,186	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 06/10/26	**COMP. DATE** 06/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
10										
	6.6	0.0								6.6 / 0.0 GROUND SURFACE
5			2	5	6	11		D		**ALLUVIAL** Dark Brown, Loose to Medium Dense, Silty SAND (A-2-4)
	1.8	4.8								
0			5	5	5	10		W		
	-1.4	8.0								
			5	6	8	14		Sat.		
-5										
	-6.4	13.0								
			5	4	3	7		Sat.		
-10										-9.4 / 16.0
	-11.4	18.0								**COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions
			9	12	9	21		Sat.		
-15										
	-16.4	23.0								
			5	13	12	25		Sat.		
-20										-20.4 / 27.0; -20.6 / 27.2
	-21.4	28.0								
			4	5	6	11	SS-98A	28%		
-25										-23.8 / 30.4; -23.9 / 30.5; -25.1 / 31.7; -25.2 / 31.8
	-26.4	33.0								
			10	30	23	53		Sat.		
-30										-29.9 / 36.5; -30.0 / 36.6; -30.6 / 37.2; -30.8 / 37.4
	-31.4	38.0								
			8	28	72/0.4	100/0.9		Sat.		-32.7 / 39.3 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Moderately Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE
-35										
	-36.4	43.0								
			60/0.1			60/0.1				
-40										
	-41.4	48.0								
			21	79/0.3		100/0.8				
-45										
	-46.4	53.0								
			28	72/0.4		100/0.9				
-50										-49.4 / 56.0; -50.4 / 57.0 **COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-51.4	58.0								-51.3 / 57.9; -52.4 / 59.0; -52.8 / 59.4
			49	51/0.3		100/0.8		Sat.		
-55										
	-56.4	63.0								
			31	32	68/0.3	100/0.8		Sat.		
-60										
	-61.4	68.0								
			27	66/0.2		100/0.7		Sat.		
-65										
	-66.4	73.0								
			79	21/0.1		100/0.6		Sat.		
-70										-70.0 / 76.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.	
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B5-C	**STATION** 21+41	**OFFSET** 11 ft RT	**ALIGNMENT** -Y2LPC_2-	**0 HR.** N/A
COLLAR ELEV. 6.6 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,603	**EASTING** 2,317,186	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER McCain, P.	**START DATE** 06/10/26	**COMP. DATE** 06/11/26	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
	-71.4	78.0								**PEEDEE FORMATION** Light Gray to Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
			78	22/0.1		100/0.6		Sat.		
-75										
	-76.4	83.0								
			47	53/0.3		100/0.8		Sat.		
-80										
	-81.4	88.0								
			100/0.4			100/0.4		Sat.		
-85										
	-86.4	93.0								
			15	15	19	34	SS-10B	25%		
-90										
	-91.4	98.0								
			10	21	27	48		Sat.		
-95										
	-96.4	103.0								
			25	75/0.3		100/0.8		Sat.		
-100										
	-101.4	108.0								
			13	17	13	30	SS-13B	26%		
-105										
	-106.4	113.0								
			16	16	19	35		Sat.		
-110										
	-111.4	118.0								
			5	7	7	14		Sat.		
-115										
	-116.4	123.0								
			10	17	28	45		Sat.		
-120										
	-121.4	128.0								
			9	13	20	33	SS-17B	25%		
-125										
	-126.4	133.0								
			15	30	60/0.1	60/0.1		Sat.		
-130										
	-131.4	138.0								
			23	23	14	37		Sat.		-132.9 / 139.5

Boring Terminated at Elevation -132.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Notes:
- Petroleum Contamination Observed From Approximately 4 - 16 Feet Below the Ground Surface. NCDOT GEU was notified and Borehole was Grouted Immediately After Drilling.

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B6-C	**STATION** 23+43	**OFFSET** 5 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 5.6 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,794	**EASTING** 2,317,143 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/26/26	**COMP. DATE** 05/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
5	5.6	0.0	2	3	3	6		M		5.6 GROUND SURFACE	0.0
										ARTIFICIAL FILL Dark Brown, Loose, Silty SAND (A-2-4)	
										2.6 **ALLUVIAL** Dark Brown, Loose, Fine to Coarse SAND (A-3)	3.0
0	0.8	4.8	4	2	3	5	SS-7146	22%			
	-2.4	8.0	1	1	2	3		Sat.		-1.4 **UNDIVIDED COASTAL PLAIN** Gray, Very Loose, Fine to Coarse SAND (A-3)	7.0
-5										-5.4 **COASTAL PLAIN PEEDEE FORMATION** Gray, Medium Dense to Dense, Calcareous, Silty Fine SAND (A-2-4) with Some to Little Clay, Trace Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	11.0
	-7.4	13.0	8	12	16	28		Sat.			
-10											
	-12.4	18.0	9	11	17	28		Sat.			
-15											
	-17.4	23.0	11	24	11	35	SS-7150	18%			
-20											
	-22.4	28.0	13	8	13	21		Sat.			
-25											
	-27.4	33.0	8	9	12	21		Sat.			
-30										-30.4 **COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Soft to Moderately Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	36.0
	-32.4	38.0	27	37	48	85					
-35											
	-37.4	43.0	29	34	27	61					
-40											
	-42.4	48.0	46	23	27	50					
-45											
	-47.4	53.0	29	71/0.5		100/1.0					
-50										-50.4 **COASTAL PLAIN PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	56.0
	-52.4	58.0	60/0.0			60/0.0		Sat.			
-55											
	-57.4	63.0	36	64/0.4		100/0.9		Sat.			
-60											
	-62.4	68.0	32	68/0.5		100/1.0		Sat.			
-65											
	-67.4	73.0	100/0.4			100/0.4		Sat.			
-70										-70.0	75.6

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_B6-C	**STATION** 23+43	**OFFSET** 5 ft RT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 5.6 ft	**TOTAL DEPTH** 139.5 ft	**NORTHING** 174,794	**EASTING** 2,317,143 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 05/26/26	**COMP. DATE** 05/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-70						Match Line				
-75	-72.4	78.0	68	32/0.1		100/0.6		Sat.		**PEEDEE FORMATION** Gray to Dark Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Little to Trace Clay, Some Very Thinly to Thinly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions
	-77.4	83.0	40	60/0.4		100/0.9		Sat.		
-80	-82.4	88.0	100/0.4			100/0.4		Sat.		
-85	-87.4	93.0	17	83/0.3		100/0.8		Sat.		
-90	-92.4	98.0	8	9	11	20	SS-7164	26%		
-95	-97.4	103.0	7	8	21	29		Sat.		
-100	-102.4	108.0	10	100/0.5		100/0.5		Sat.		
-105	-107.4	113.0	6	7	12	19		Sat.		
-110	-112.4	118.0	18	10	10	20	SS-7168	22%		
-115	-117.4	123.0	10	17	30	47		Sat.		
-120	-122.4	128.0	60/0.1			60/0.1		Sat.		
-125	-127.4	133.0	6	7	38	45		Sat.		
-130	-132.4	138.0	4	5	8	13	SS-7171	24%		

ELEV (ft)	DEPTH (ft)
-75.4	81.0
-75.8	81.4
-76.6	82.2
-77.1	82.7
-80.4	86.0
-80.6	86.2
-81.4	87.0
-82.4	88.0
-83.4	89.0
-84.0	89.6
-85.1	90.7
-85.4	91.0
-86.4	92.0
-86.8	92.4
-89.8	95.4
-90.1	95.7
-91.4	97.0
-92.4	98.0
-133.9	139.5

Boring Terminated at Elevation -133.9 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_EB2-C	**STATION** 27+48	**OFFSET** 2 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 19.1 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 175,112	**EASTING** 2,317,359 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/24/26	**COMP. DATE** 04/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
20											
	19.1	0.0	4	5	6	11		D		19.1 GROUND SURFACE	0.0
15	14.3	4.8	3	3	3	6		W		**ARTIFICIAL FILL** Dark Brown, Medium Dense, Silty SAND (A-2-4) with Some Gravel-Sized Brick Fragments	3.0
	11.3	7.8								16.1 **UNDIVIDED COASTAL PLAIN** Light Gray, Loose, Fine to Coarse SAND (A-3)	
10			3	4	4	8	SS-5087	15%			
	6.3	12.8								8.1 **COASTAL PLAIN CASTLE HAYNE FORMATION** Orange-Brown, Very Loose, Fine to Coarse SAND (A-1-b) with Little Clay, Trace Rounded Gravel	11.0
5			WOH	WOH	3	3		Sat.		5.1	14.0
	1.3	17.8								0.3 **COASTAL PLAIN PEEDEE FORMATION** Brown to Light Gray, Hard, Calcareous, Sandy SILT (A-4) with Trace Hinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions, Highly Fossiliferous	18.8
0			11	25	30	55		Sat.		-0.7	19.8
										-1.7	20.8
										-1.9	21.0
										-2.9	22.0
	-3.7	22.8								-3.6	22.7
-5			10	8	12	20		Sat.		Light to Dark Gray, Medium Dense, Calcareous, Silty SAND (A-2-4) with Little Clay, Some Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	
	-8.7	27.8								-7.7	26.8
										-7.9	27.0
-10			6	8	8	16	SS-5091	23%			
										-12.4	31.5
										-12.5	31.6
	-13.7	32.8								-13.5	32.6
-15			4	12	13	25		Sat.		-13.9	33.0
										-16.7	35.8
										-16.9	36.0
	-18.7	37.8									
-20			13	10	15	25		Sat.			
										-21.4	40.5
										-21.5	40.6
										-21.9	41.0
	-23.7	42.8								Dark Gray, Very Stiff to Hard, Calcareous, Fine Sandy SILT (A-4) with Some Clay, Little Very Thinly to Thinly Bedded, Moderately Hard, Sandstone Ledges and Cemented Concretions	
-25			18	12	16	28		Sat.		-24.9	44.0
										-25.0	44.1
										-25.9	45.0
										-26.0	45.1
	-28.7	47.8									
-30			7	10	25	35	SS-5095	3%			
										-30.9	50.0
										-31.0	50.1
										-31.9	51.0
	-33.7	52.8								**COASTAL PLAIN SEDIMENTARY ROCK PEEDEE FORMATION** (Scotts Hill Member) Light Gray, Medium Hard to Hard, SANDY LIMESTONE, Interbedded with CALCAREOUS SANDSTONE	
-35			42	58/0.5		100/1.0					
	-38.7	57.8									
-40			27	73/0.3		100/0.8					
	-43.7	62.8									
-45			34	27	24	51					
	-48.7	67.8									
-50			20	46	41	87					
										-51.9	71.0
	-53.7	72.8								**COASTAL PLAIN PEEDEE FORMATION** Light Gray to Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions	
-55			27	29	36	65	SS-5099	17%			
										-55.9	75.0
										-57.9	77.0
	-58.7	77.8									
-60			60/0.1			60/0.1		Sat.		-59.4	78.5

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_EB2-C	**STATION** 27+48	**OFFSET** 2 ft LT	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 19.1 ft	**TOTAL DEPTH** 144.3 ft	**NORTHING** 175,112	**EASTING** 2,317,359 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 04/24/26	**COMP. DATE** 04/27/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-60						Match Line				
	-63.7	82.8	60/0.1			60/0.1		Sat.		
-65										
	-68.7	87.8	91	9/0.0		100/0.5		Sat.		
-70										
	-73.7	92.8	66	34/0.0		100/0.5		Sat.		
-75										
	-78.7	97.8	15	28	33	61	SS-6002	22%		
-80										
	-83.7	102.8	22	41	59/0.3	100/0.8		Sat.		
-85										
	-88.7	107.8	7	8	14	22		Sat.		
-90										
	-93.7	112.8	9	12	20	32	SS-6005	25%		
-95										
	-98.7	117.8	6	20	60/0.1	60/0.1		Sat.		
-100										
	-103.7	122.8	8	13	12	25		Sat.		
-105										
	-108.7	127.8	4	5	9	14		Sat.		
-110										
	-113.7	132.8	8	14	22	36	SS-6008	19%		
-115										
	-118.7	137.8	11	17	22	39		Sat.		
-120										
	-123.7	142.8	7	5	17	22		Sat.		
-125										

ELEV (ft)	DEPTH (ft)	SOIL AND ROCK DESCRIPTION
-61.4	80.5	**PEEDEE FORMATION** Light Gray to Gray, Medium Dense to Very Dense, Calcareous, Silty Fine SAND (A-2-4) with Some Very Thinly to Thickly Bedded, Moderately Hard to Hard, Sandstone Ledges and Cemented Concretions *(continued)*
-61.9	81.0	
-63.1	82.2	
-63.9	83.0	
-65.4	84.5	
-65.9	85.0	
-68.4	87.5	
-69.4	88.5	
-70.0	89.1	
-70.7	89.8	
-70.9	90.0	
-71.6	90.7	
-71.9	91.0	
-72.7	91.8	
-73.7	92.8	
-74.5	93.6	
-74.9	94.0	
-91.2	110.3	
-91.4	110.5	
-96.4	115.5	
-96.9	116.0	
-101.9	121.0	
-102.7	121.8	
-125.2	144.3	Boring Terminated at Elevation -125.2 ft in Coastal Plain (Silty Fine SAND) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_2950	**STATION** 29+50	**OFFSET** CL	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 21.7 ft	**TOTAL DEPTH** 24.5 ft	**NORTHING** 175,139	**EASTING** 2,317,557 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/17/26	**COMP. DATE** 06/17/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
21.7		0.0								GROUND SURFACE
			12	13	9	22		M		**ARTIFICIAL FILL** Dark Brown, Tan, Gray, and Red, Medium Dense, Fine to Coarse SAND (A-3) with Some Gravel-Sized Construction Debris
16.8		4.9	21	21	7	28		W		
11.7		10.0								**UNDIVIDED COASTAL PLAIN** Tan, Very Loose, Fine to Coarse SAND (A-3)
8.7		13.0	3	1	WOH	1		Sat.		
5.7		16.0								**COASTAL PLAIN PEEDEE FORMATION** Olive-Gray, Very Stiff to Hard, Calcareous, Sandy SILT (A-4) with Some Clay
3.7		18.0	20	75	25/0.4	100/0.9		Sat.		
-1.3		23.0	15	10	15	25	SS-63B	17%		
-2.8		24.5								Boring Terminated at Elevation -2.8 ft in Coastal Plain (Sandy SILT) - Peedee Formation

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPC_2_3350	**STATION** 33+50	**OFFSET** CL	**ALIGNMENT** -Y2LPC_2- / **0 HR.** N/A
COLLAR ELEV. 21.6 ft	**TOTAL DEPTH** 29.3 ft	**NORTHING** 174,963	**EASTING** 2,317,910 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/17/26	**COMP. DATE** 06/17/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
21.6		0.0								GROUND SURFACE
			9	10	12	22		M		**ARTIFICIAL FILL** Tan, Medium Dense, Fine to Coarse SAND (A-3) with Trace Gravel
19.6		2.0								**UNDIVIDED COASTAL PLAIN** Dark Brown, Very Loose, Silty SAND (A-2-4)
16.8		4.8	1	1	1	2		W		
14.6		7.0								Gray, Loose, Fine to Coarse SAND (A-3)
13.8		7.8	4	4	4	8		W		
8.8		12.8	3	3	4	7		Sat.		
5.6		16.0								**COASTAL PLAIN PEEDEE FORMATION** Olive-Gray to Brown, Loose, Calcareous, Clayey SAND (A-2-6)
3.8		17.8	WOH	1	3	4	SS-56B	28%		
0.6		21.0								Olive-Gray, Medium Dense to Very Dense, Calcareous, Silty SAND (A-2-4)
-1.2		22.8	6	8	10	18		Sat.		
-6.2		27.8	12	15	40	55		Sat.		
-7.7		29.3								Boring Terminated at Elevation -7.7 ft in Coastal Plain (Silty SAND) - Peedee Formation

NCDOT BORE DOUBLE HB0039_GEO_DBINV_BH.GPJ NC_DOT.GDT 9/1/26

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50603.1.1	**TIP** HB-0039	**COUNTY** NEW HANOVER	**GEOLOGIST** Stratton, C.
SITE DESCRIPTION Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO. Y2LPCSPUR_2_245	**STATION** 24+49	**OFFSET** 37 ft RT	**ALIGNMENT** -Y2LPCSPUR_2- **0 HR.** N/A
COLLAR ELEV. 23.8 ft	**TOTAL DEPTH** 28.7 ft	**NORTHING** 175,060	**EASTING** 2,317,879 **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT7744 CME-45C 90% 03/11/2025		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER McCain, P.	**START DATE** 06/16/26	**COMP. DATE** 06/16/26	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
25	23.8	0.0								23.8 GROUND SURFACE 0.0
			4	18	13	31		D		**ARTIFICIAL FILL** Dark Brown, Dense, Fine to Coarse SAND (A-3) with Little Gravel-Sized Construction Debris
20	19.0	4.8								20.8 3.0
			4	5	6	11		W		**UNDIVIDED COASTAL PLAIN** Tan-Brown and Gray, Medium Dense, Fine to Coarse SAND (A-3)
	16.6	7.2								
15			4	6	8	14		W		
	11.6	12.2								12.8 11.0
			5	2	1	3		Sat.		Tan, Very Loose, Clayey SAND (A-2-6) with Little Rounded Gravel
10										
	6.6	17.2								7.8 16.0
5			WOH	WOH	1	1		Sat.		**COASTAL PLAIN PEEDEE FORMATION** Dark Gray, Very Loose, Calcareous, Silty SAND (A-2-4), Highly Fossiliferous
	1.6	22.2								2.8 21.0
0			3	3	1	4	SS-50B	23%		Dark Gray, Soft to Hard, Calcareous, Sandy SILT (A-4) with Little Clay
	-3.4	27.2								
			8	15	36	51		Sat.		-4.9 28.7
										Boring Terminated at Elevation -4.9 ft in Coastal Plain (Sandy SILT) - Peedee Formation

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

REFERENCE: HB–0039

PROJECT: 50603

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
CORE PHOTOGRAPHS

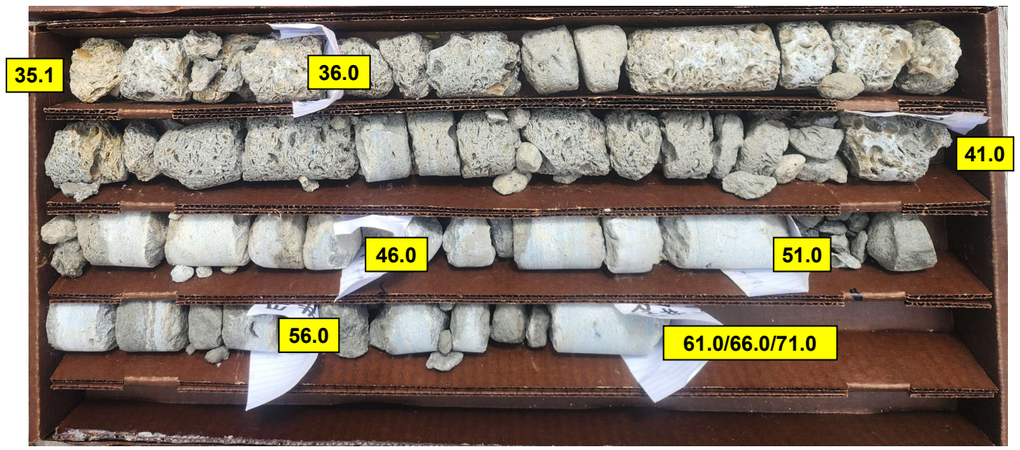
INFRASTRUCTURE
CONSULTING & ENGINEERING

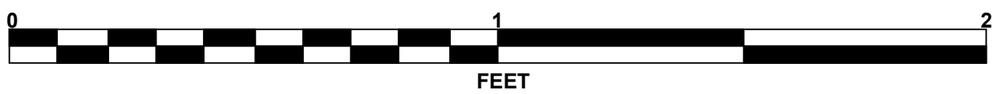
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

L_B1-A_CORE

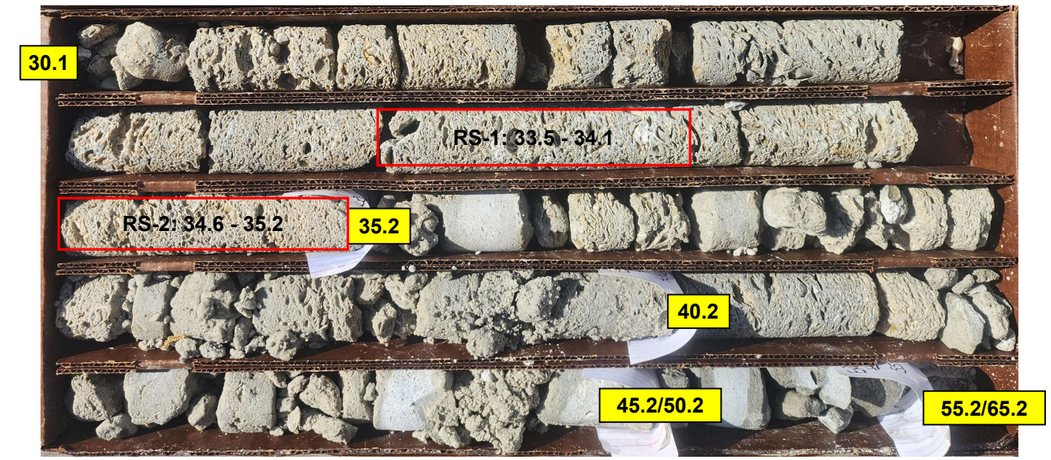
BOX 1: 35.1 - 71.0 FEET

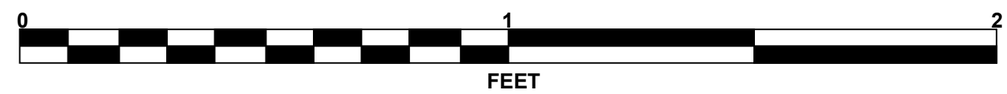




L_B4-A_CORE

BOX 1: 30.1 - 65.2 FEET



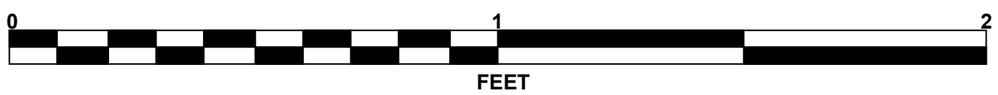


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

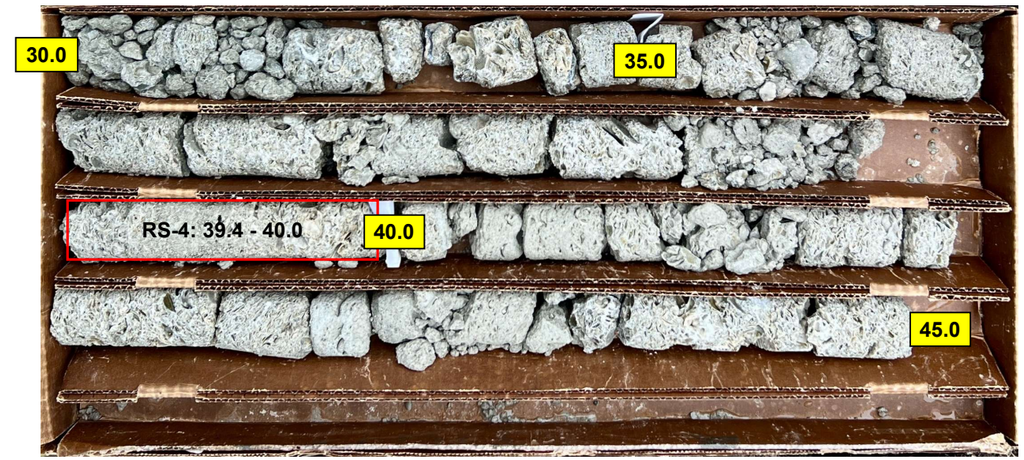
L_B8-B_CORE

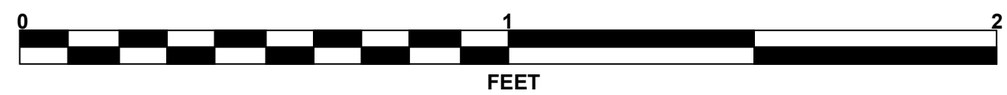
BOX 1: 30.5 - 50.3 FEET



L_B10-A_CORE

BOX 1: 30.0 - 45.0 FEET





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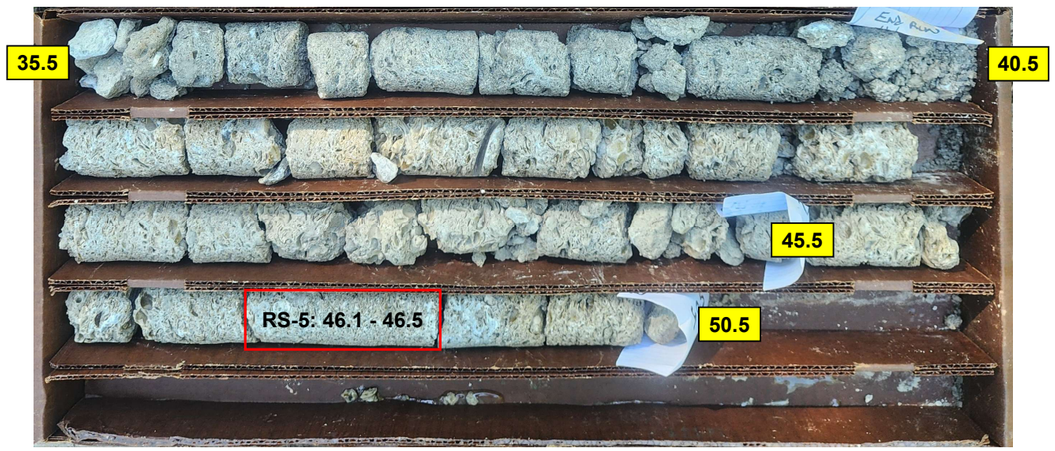
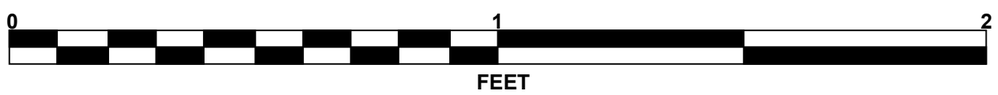
CORE PHOTOGRAPHS

L_B12-A_CORE

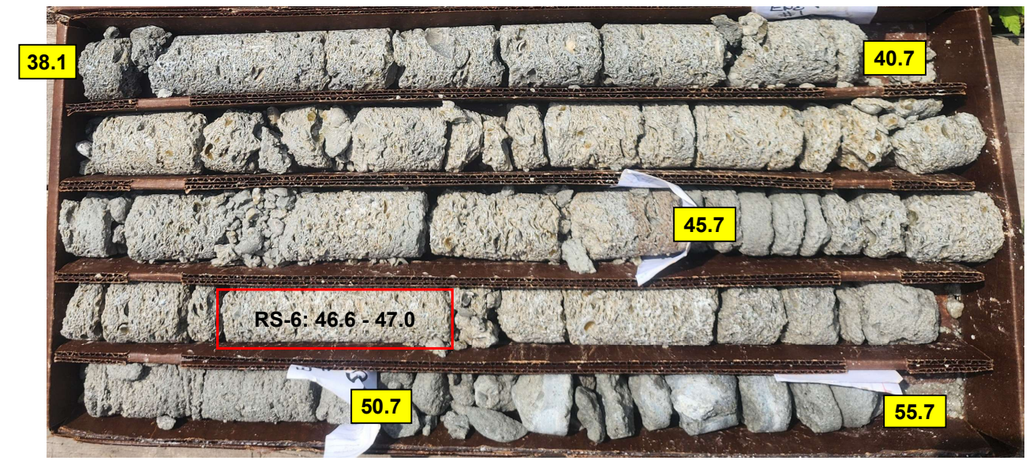
BOX 1: 35.5 - 50.5 FEET

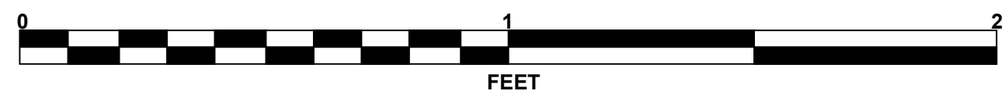




L_B14-B_CORE

BOX 1: 38.1 - 55.7 FEET



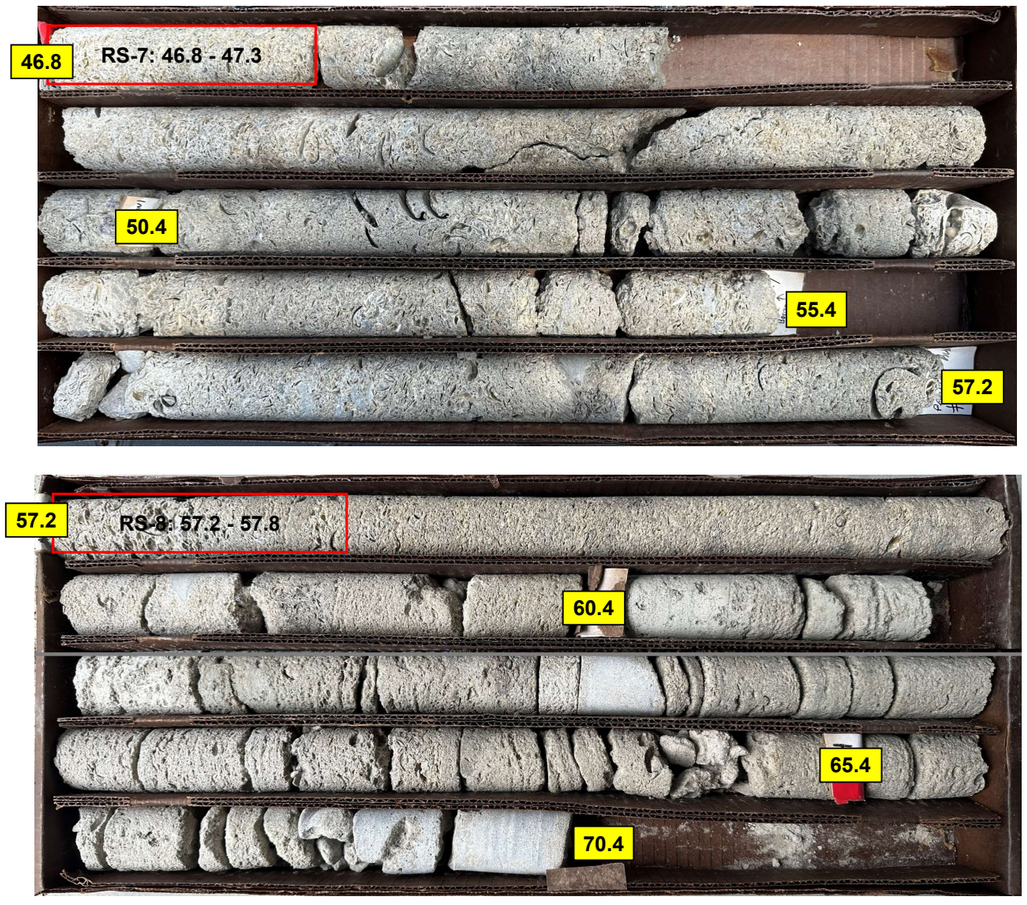


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

L_B20-A_CORE

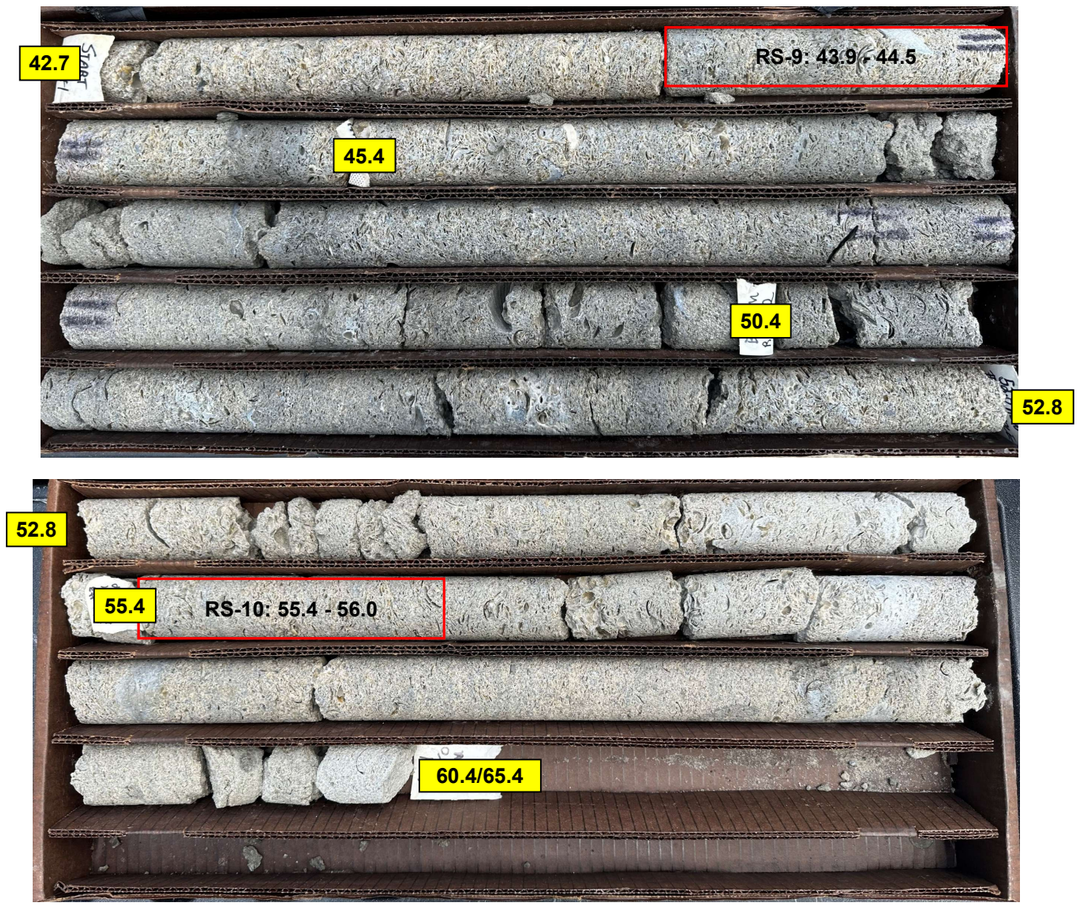
BOXES 1 & 2: 46.8 - 70.4 FEET



0 1 2
FEET

L_B20-B_CORE

BOXES 1 & 2: 42.7 - 65.4 FEET



0 1 2
FEET

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

L_B21-A_CORE

BOXES 1 & 2: 51.7 - 72.3 FEET

0 1 2
FEET

L_B21-A_CORE

BOX 3: 72.3 - 75.3 FEET

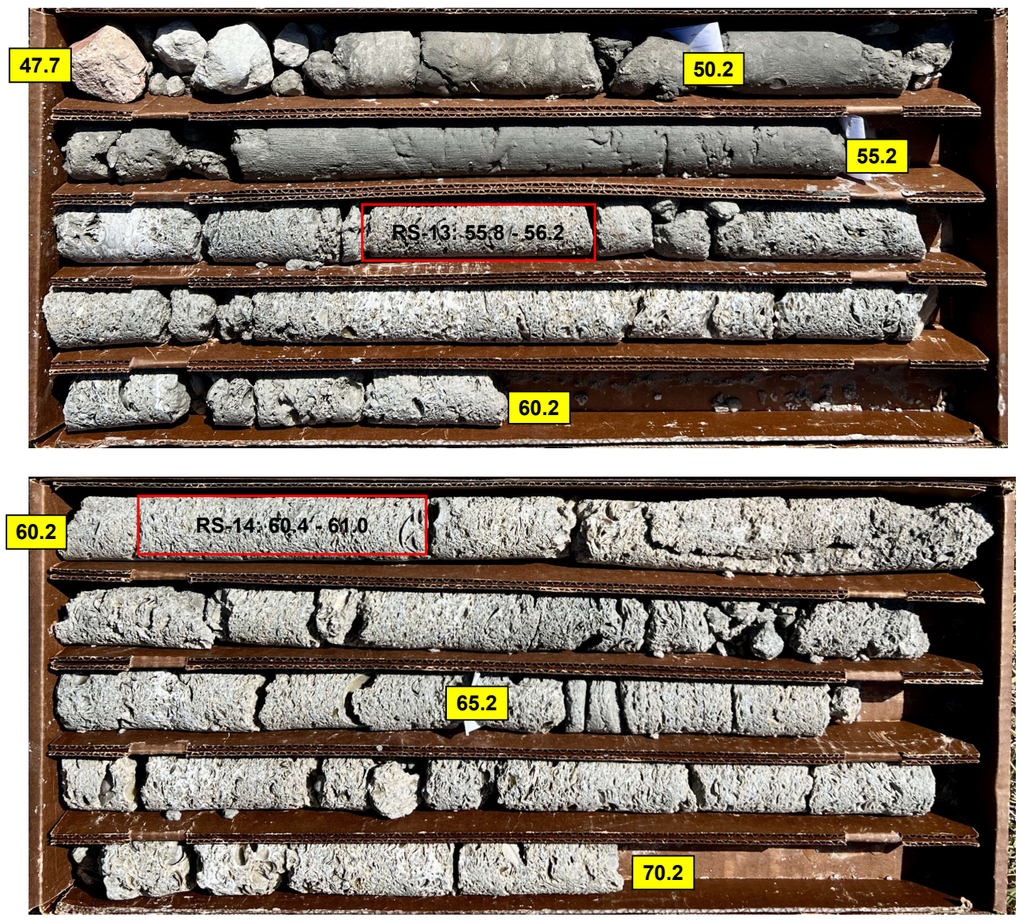
0 1 2
FEET

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

L_B23-A_CORE

BOXES 1 & 2: 47.7 - 70.2 FEET



0 1 2
FEET

L_B23-A_CORE

BOX 3: 70.2 - 80.2 FEET

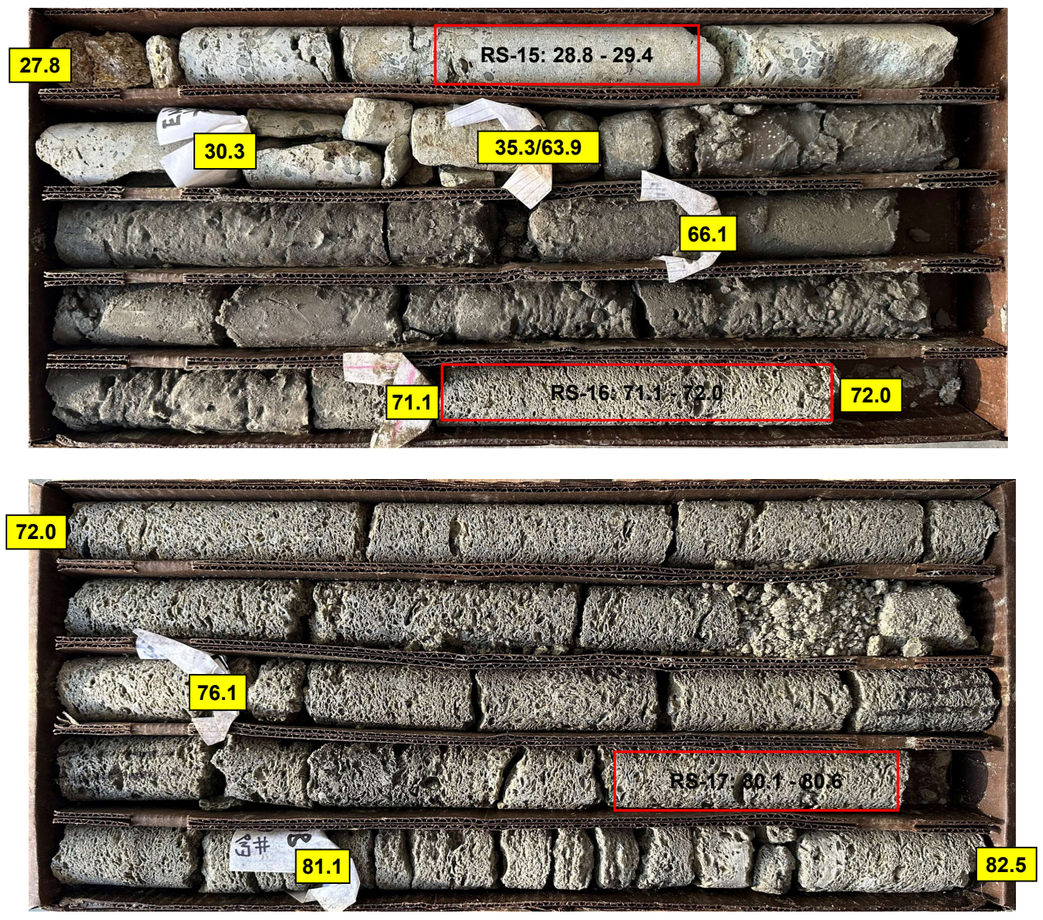
0 1 2
FEET

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CORE PHOTOGRAPHS

L_B24-A_CORE

BOXES 1 & 2: 27.8 - 82.5 FEET



0 1 2
FEET

L_B24-A_CORE

BOX 3: 82.5 - 96.1 FEET

0 1 2
FEET

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

REFERENCE: HB–0039

PROJECT: 50603

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX C
CPT LOGS & DISSIPATION TESTS

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–LLT–	154–159
–LRT–	160–162
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–Y1RPB–	166–171
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–Y2LPC_2–	186–187
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DISSIPATION TESTS	189–213

INFRASTRUCTURE
CONSULTING & ENGINEERING

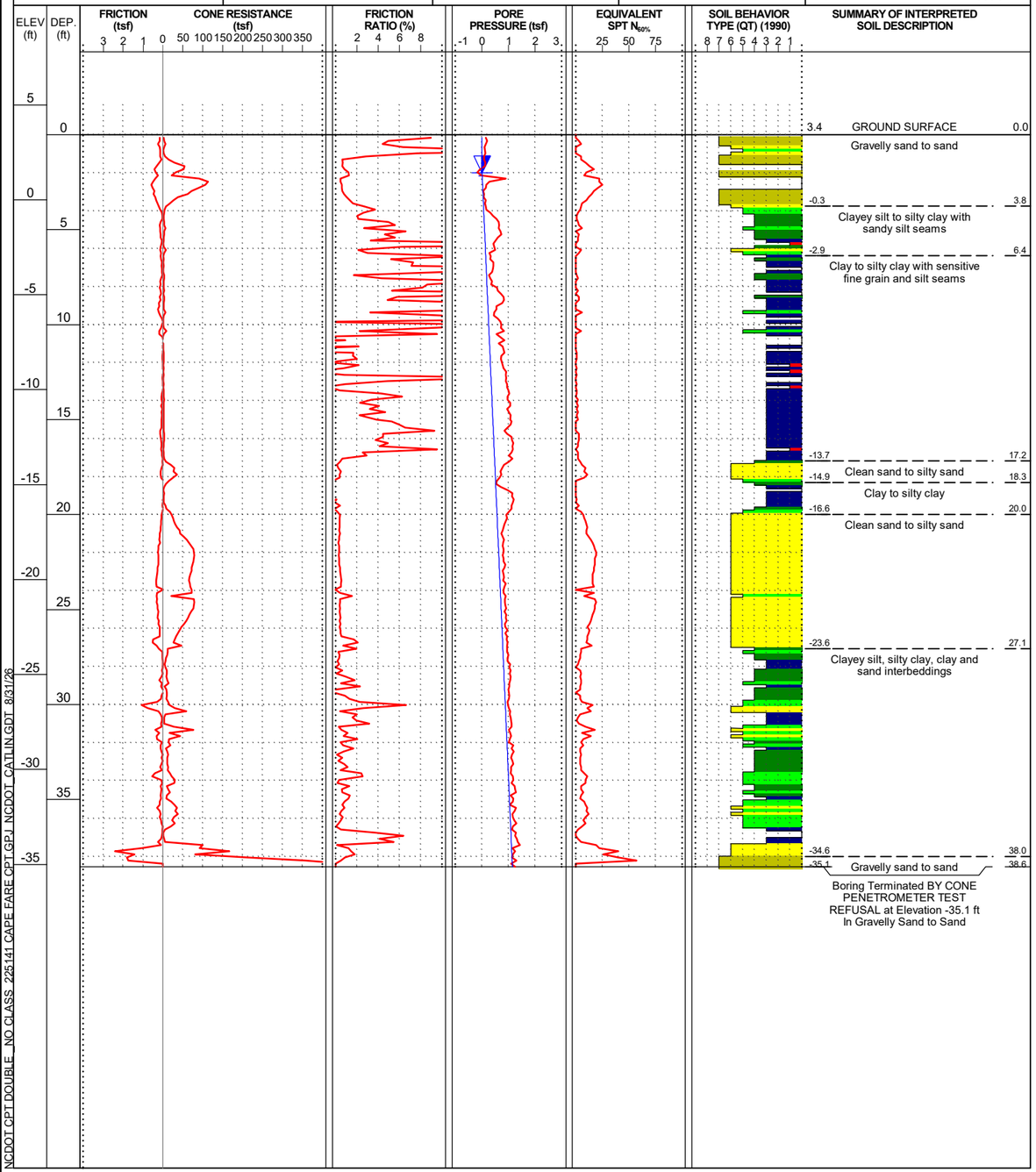
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CONE PENETRATION TEST BORING REPORT

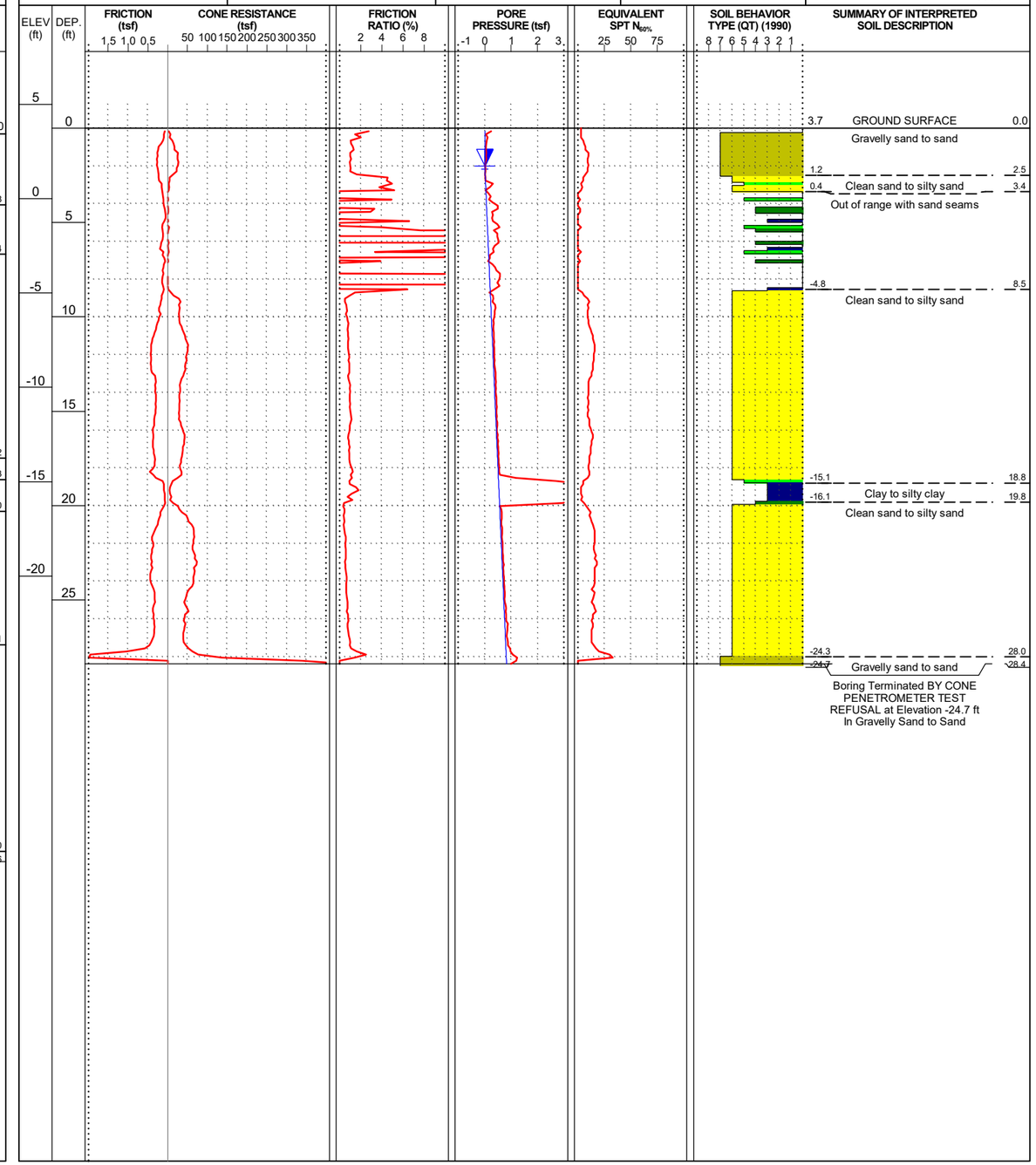
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	150

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: FLY_1200	**STATION:** 12+20	**OFFSET:** CL	**ALIGNMENT:** -FLY- / **EST. 0 HR.** 2.0
COLLAR ELEV.: 3.4 ft	**TOTAL DEPTH:** 38.6 ft	**NORTHING:** 177,610	**EASTING:** 2,313,301 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /	**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563 TYPE II PIEZO	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 06/04/26	**COMP. DATE:** 06/04/26 / **SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: FLY_1400	**STATION:** 14+15	**OFFSET:** CL	**ALIGNMENT:** -FLY- / **EST. 0 HR.** 2.0
COLLAR ELEV.: 3.7 ft	**TOTAL DEPTH:** 28.4 ft	**NORTHING:** 177,531	**EASTING:** 2,313,129 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /	**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/03/26	**COMP. DATE:** 04/03/26 / **SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE_NO CLASS_225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

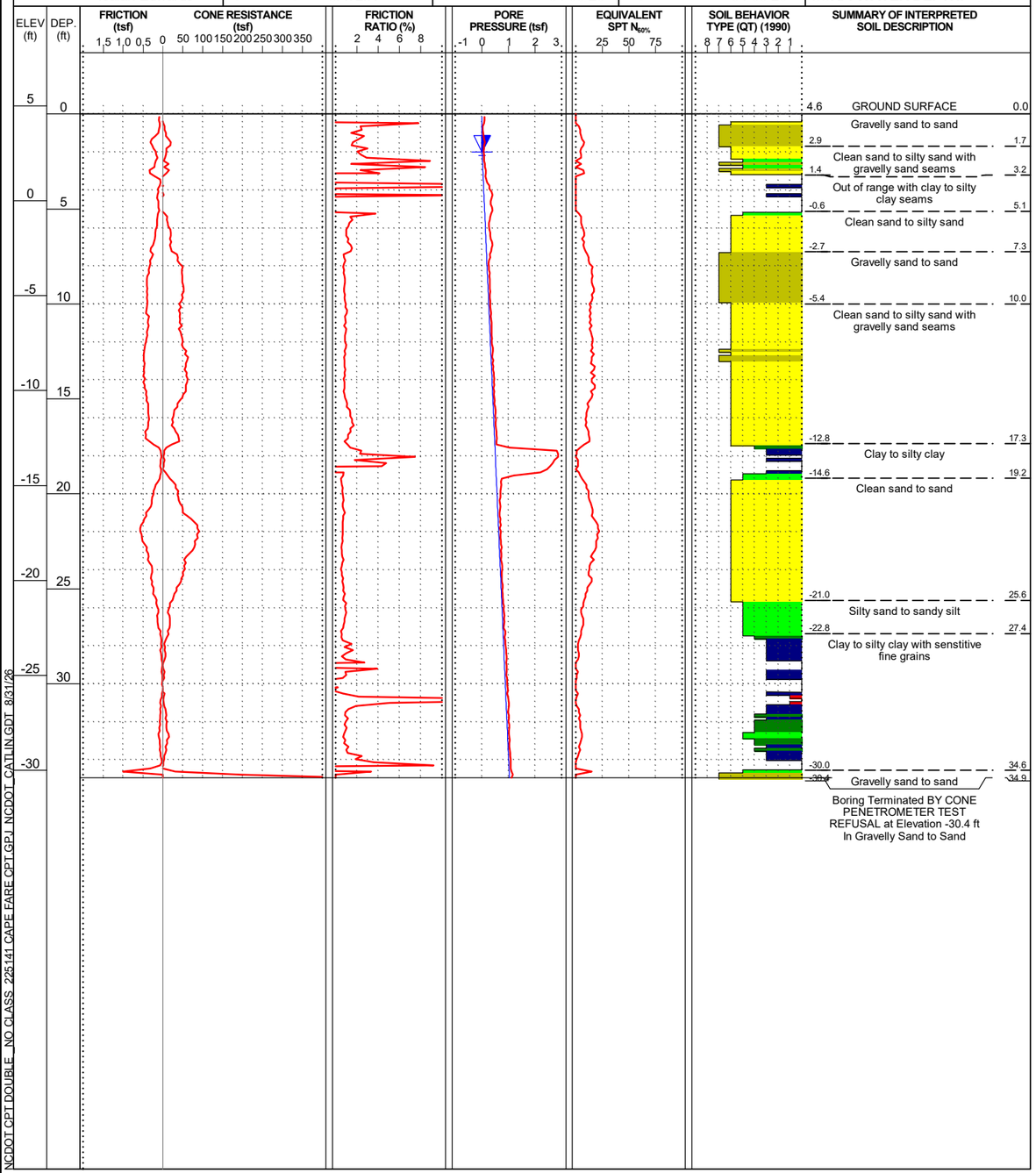
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CONE PENETRATION TEST BORING REPORT

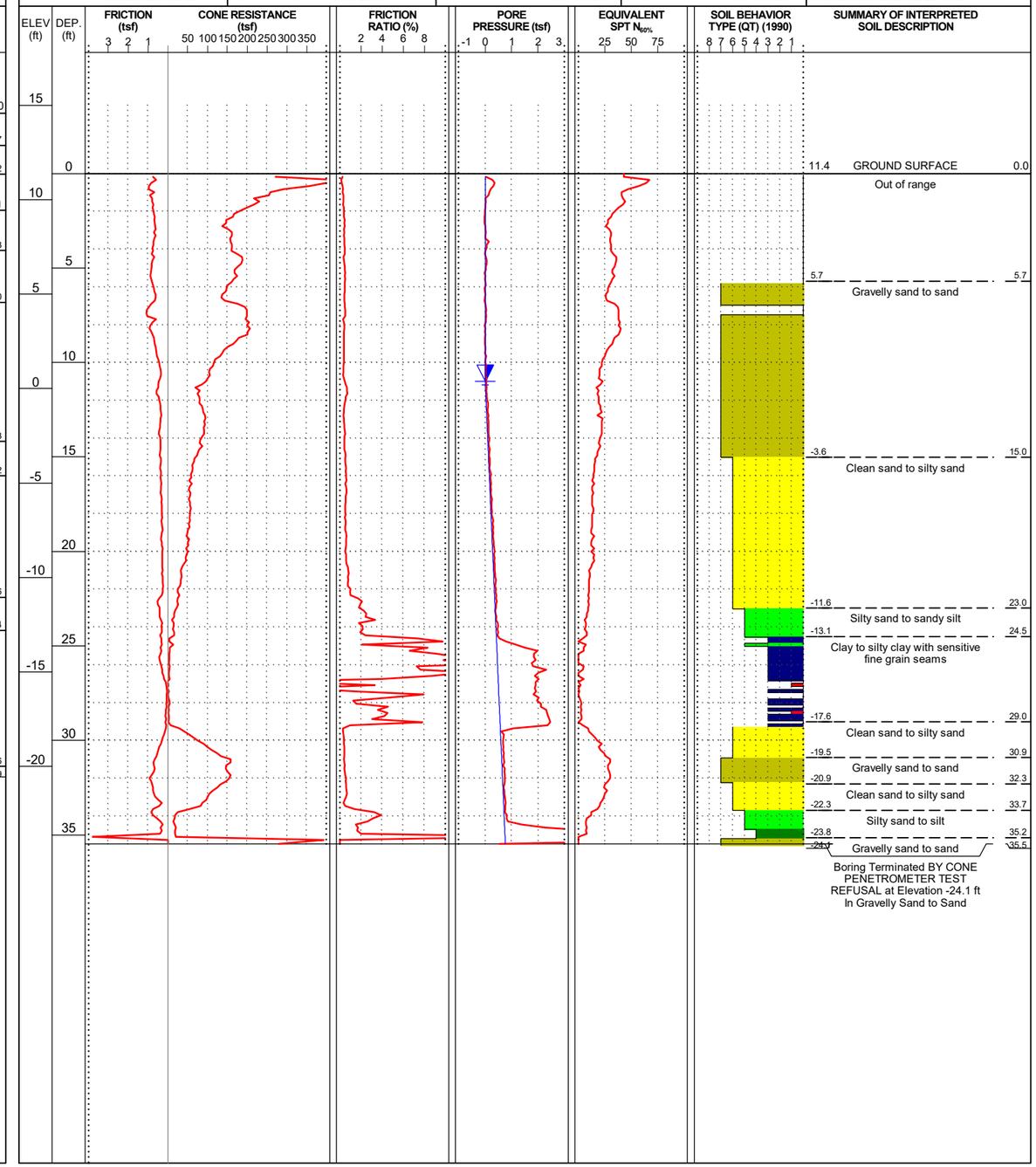
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	151

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: FLY_1600	**STATION:** 15+65	**OFFSET:** CL	**ALIGNMENT:** -FLY-	**EST. 0 HR.** 2.0
COLLAR ELEV.: 4.6 ft	**TOTAL DEPTH:** 34.9 ft	**NORTHING:** 177,395	**EASTING:** 2,313,072	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/03/26	**COMP. DATE:** 04/03/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: FLY_3600	**STATION:** 36+00	**OFFSET:** 10 ft RT	**ALIGNMENT:** -FLY-	**EST. 0 HR.** 11.0
COLLAR ELEV.: 11.4 ft	**TOTAL DEPTH:** 35.5 ft	**NORTHING:** 177,530	**EASTING:** 2,314,532	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/31/26	**COMP. DATE:** 03/31/26	**SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE_NO CLASS 225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

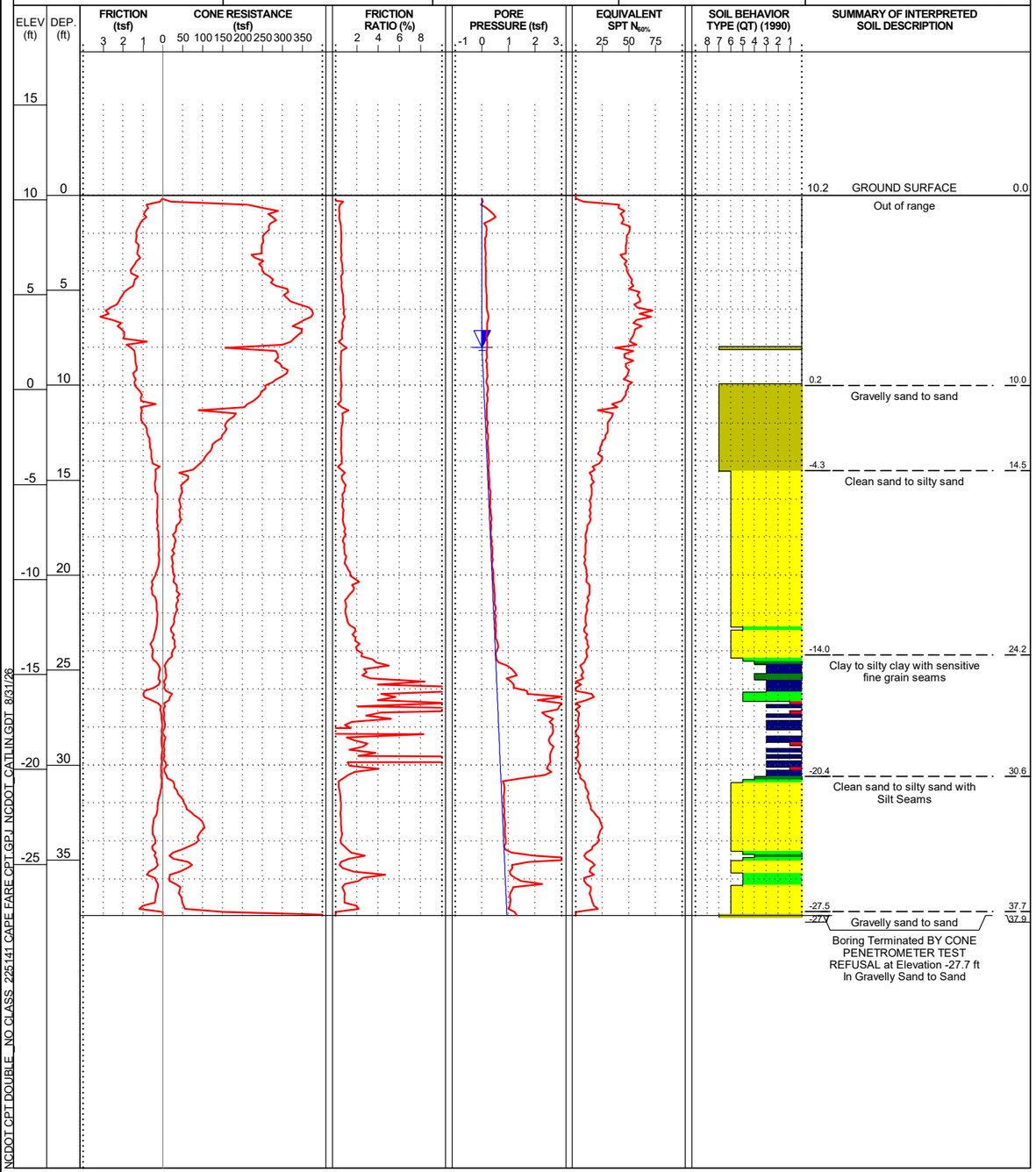
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CONE PENETRATION TEST BORING REPORT

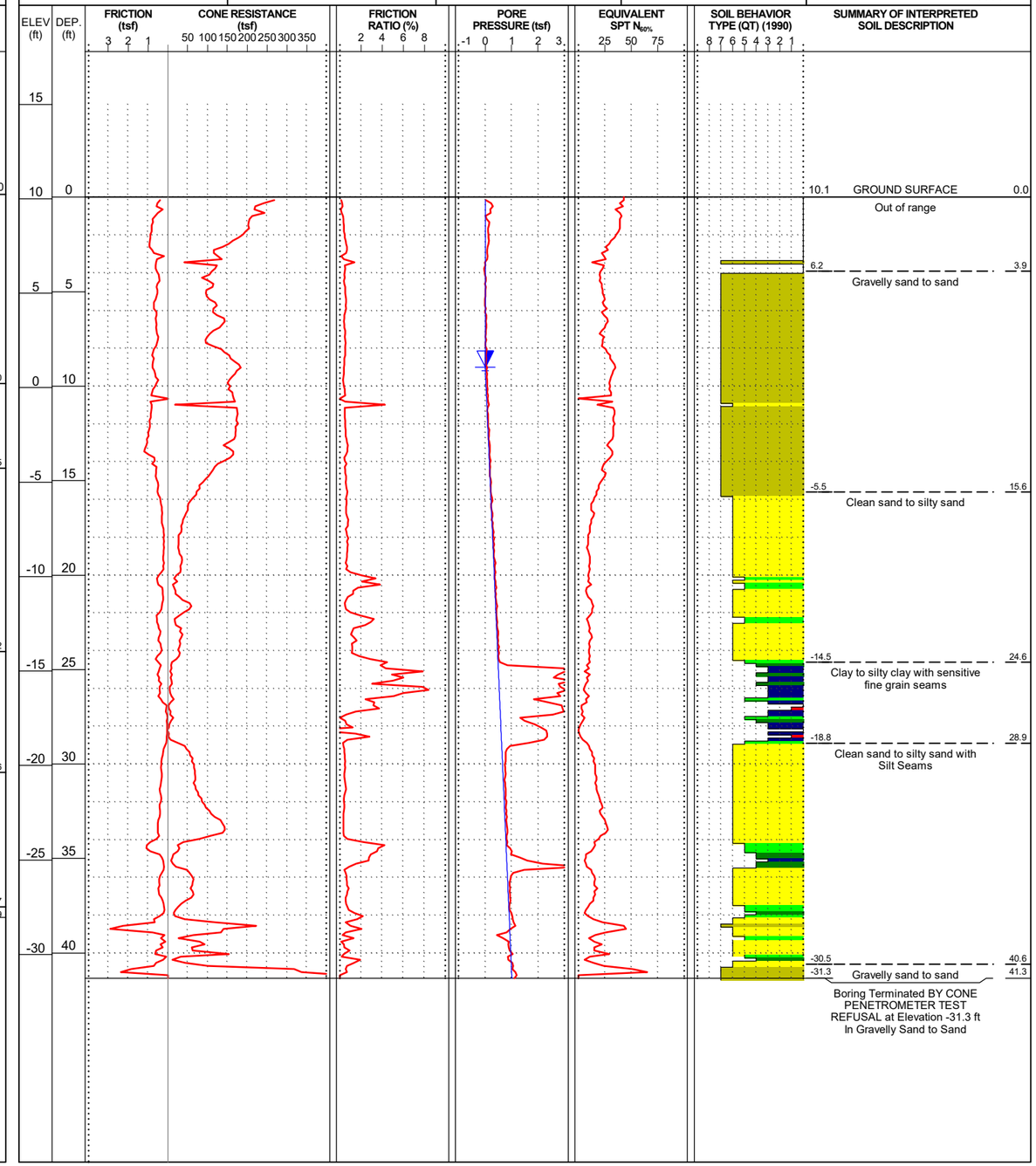
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	152

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: FLY_3700	**STATION:** 37+00	**OFFSET:** 5 ft LT	**ALIGNMENT:** -FLY-	**EST. 0 HR.** 8.0
COLLAR ELEV.: 10.2 ft	**TOTAL DEPTH:** 37.9 ft	**NORTHING:** 177,631	**EASTING:** 2,314,525	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/31/26	**COMP. DATE:** 03/31/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: FLY_3900	**STATION:** 39+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -FLY-	**EST. 0 HR.** 9.0
COLLAR ELEV.: 10.1 ft	**TOTAL DEPTH:** 41.3 ft	**NORTHING:** 177,830	**EASTING:** 2,314,510	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/31/26	**COMP. DATE:** 03/31/26	**SURF. WATER DEPTH:** N/A



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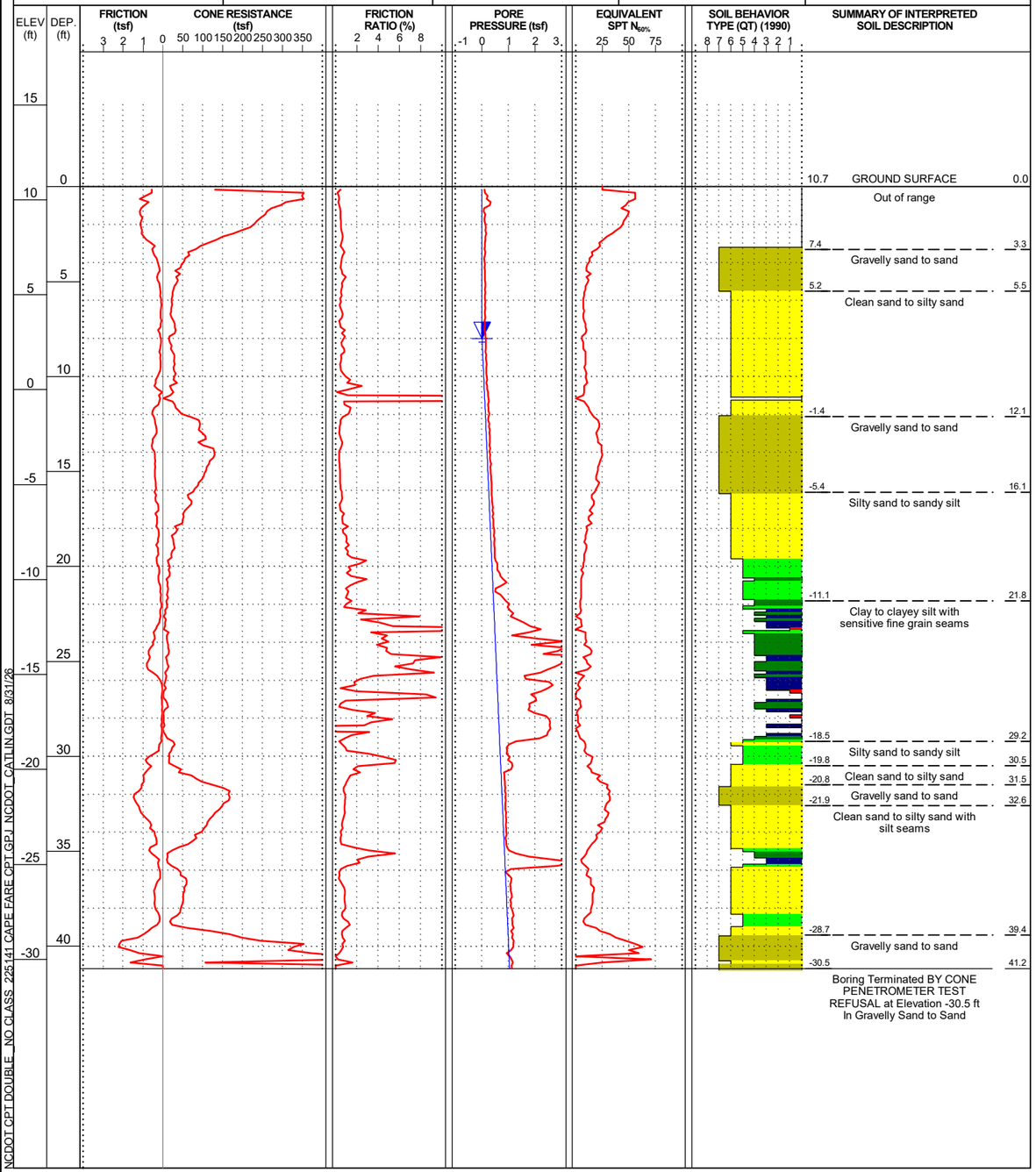
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	153

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: FLY_4100	**STATION:** 41+00	**OFFSET:** 7 ft LT	**ALIGNMENT:** -FLY- / **EST. 0 HR.** 8.0
COLLAR ELEV.: 10.7 ft	**TOTAL DEPTH:** 41.2 ft	**NORTHING:** 178,030	**EASTING:** 2,314,497 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/31/26	**COMP. DATE:** 03/31/26 / **SURF. WATER DEPTH:** N/A



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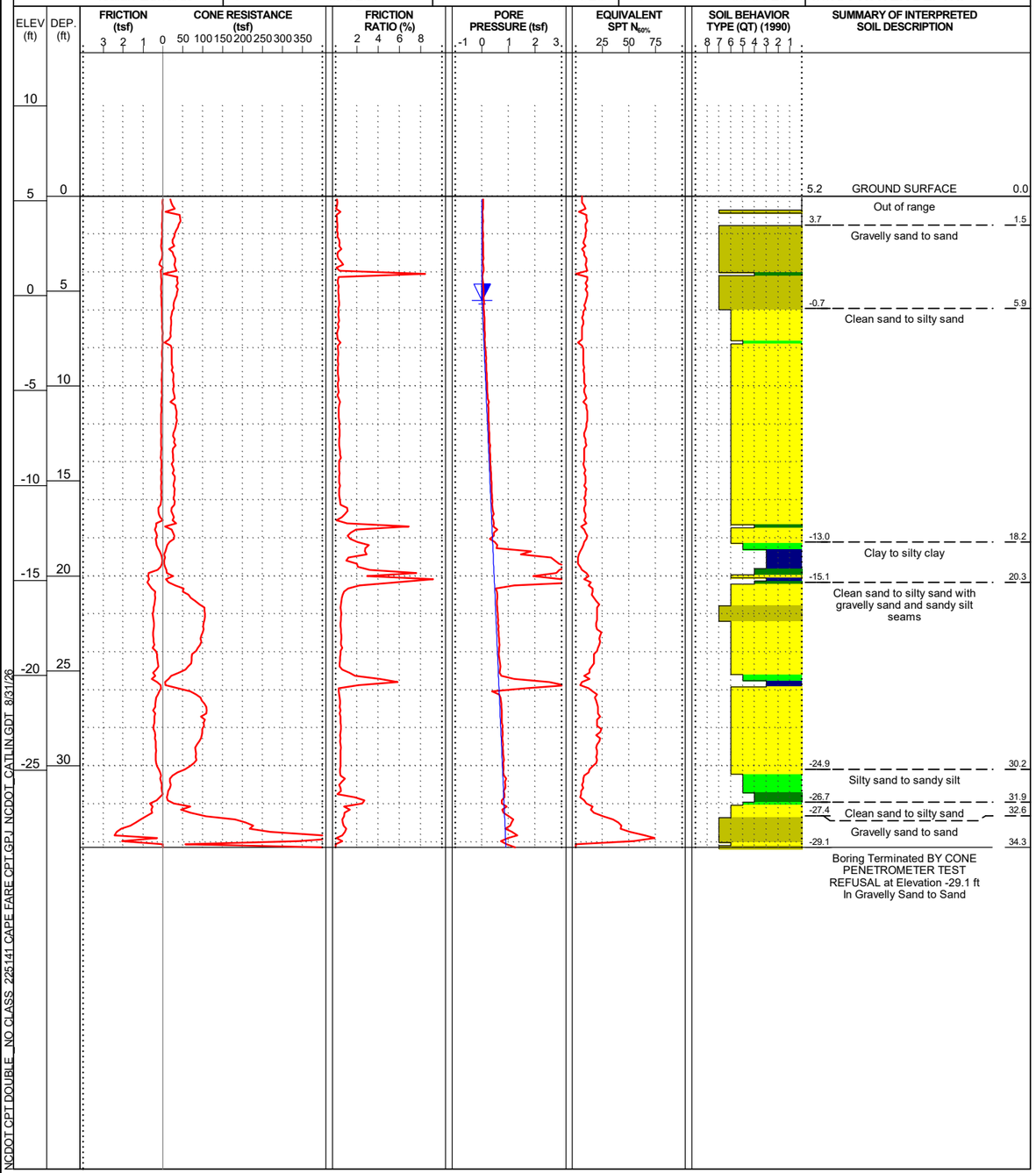
CONE PENETRATION TEST BORING REPORT

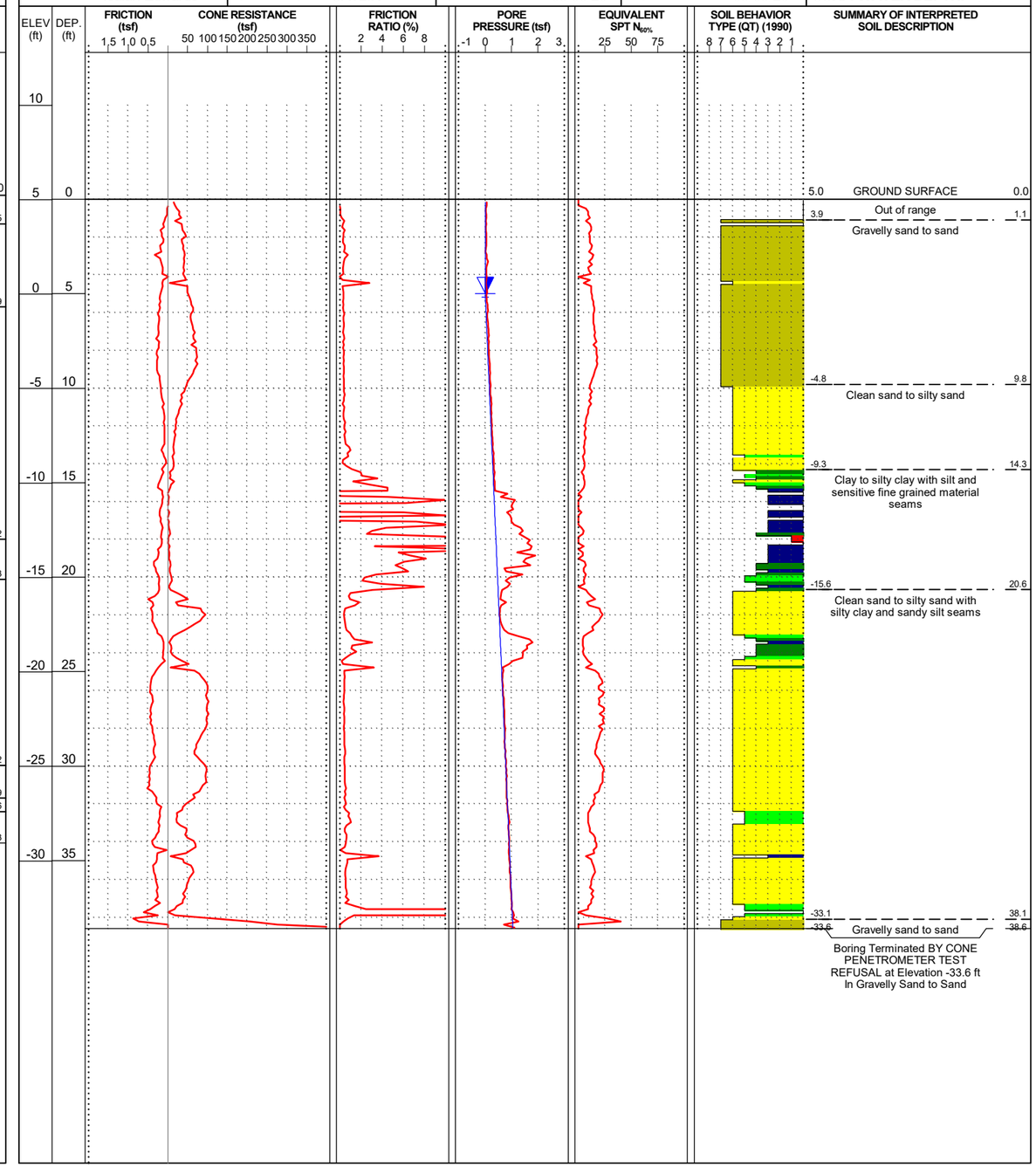
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	154

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_10500	**STATION:** 105+00	**OFFSET:** 4 ft RT	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 5.5
COLLAR ELEV.: 5.2 ft	**TOTAL DEPTH:** 34.3 ft	**NORTHING:** 177,984	**EASTING:** 2,312,102	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/04/26	**COMP. DATE:** 05/04/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_10700	**STATION:** 107+00	**OFFSET:** 2 ft LT	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 5.0
COLLAR ELEV.: 5.0 ft	**TOTAL DEPTH:** 38.6 ft	**NORTHING:** 177,987	**EASTING:** 2,312,302	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26	**SURF. WATER DEPTH:** N/A



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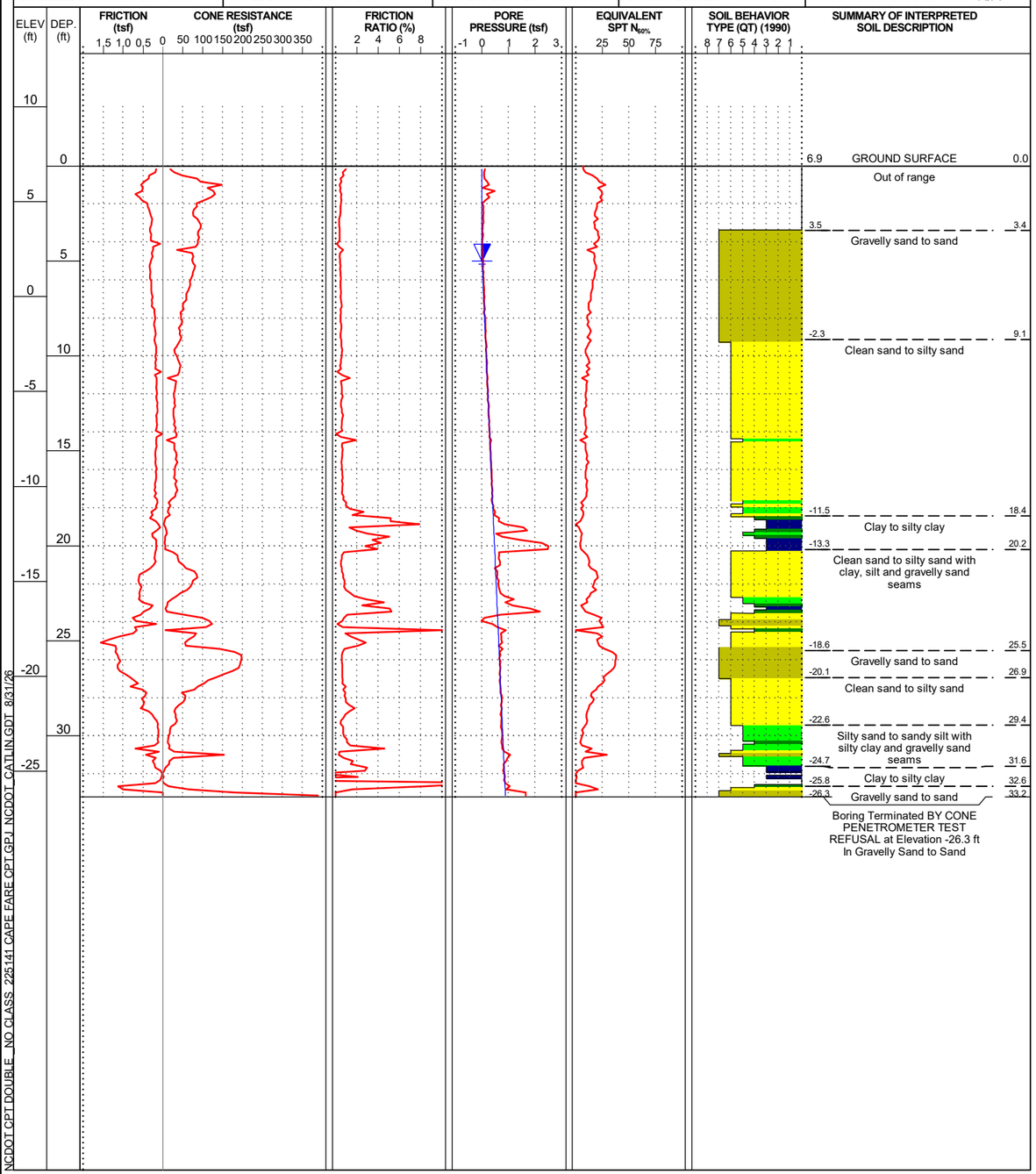
CONE PENETRATION TEST BORING REPORT

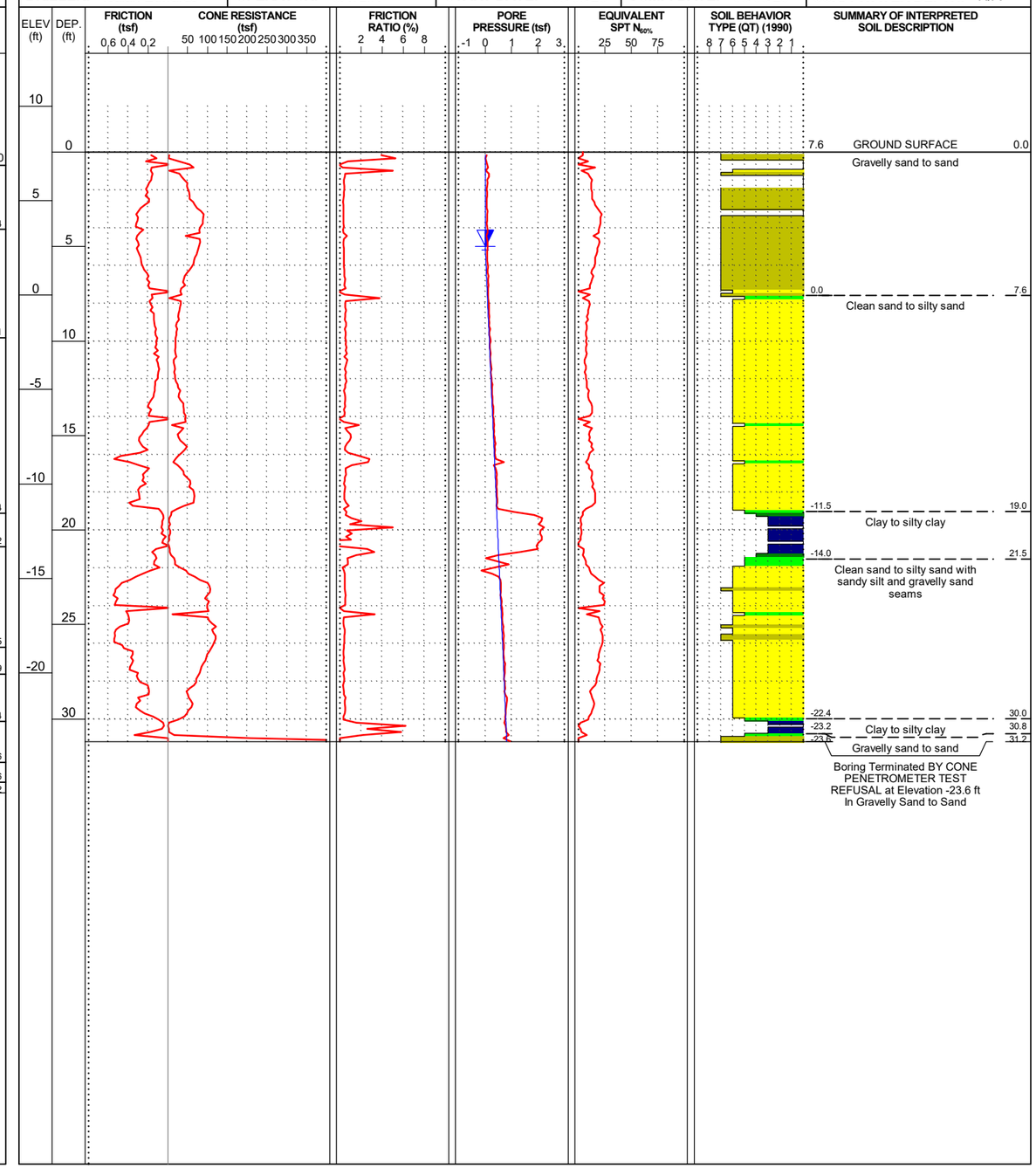
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	155

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_10900	**STATION:** 109+00	**OFFSET:** 3 ft LT	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 5.0
COLLAR ELEV.: 6.9 ft	**TOTAL DEPTH:** 33.2 ft	**NORTHING:** 177,967	**EASTING:** 2,312,501	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_11000	**STATION:** 110+00	**OFFSET:** 7 ft LT	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 5.0
COLLAR ELEV.: 7.6 ft	**TOTAL DEPTH:** 31.2 ft	**NORTHING:** 177,955	**EASTING:** 2,312,600	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26	**SURF. WATER DEPTH:** N/A



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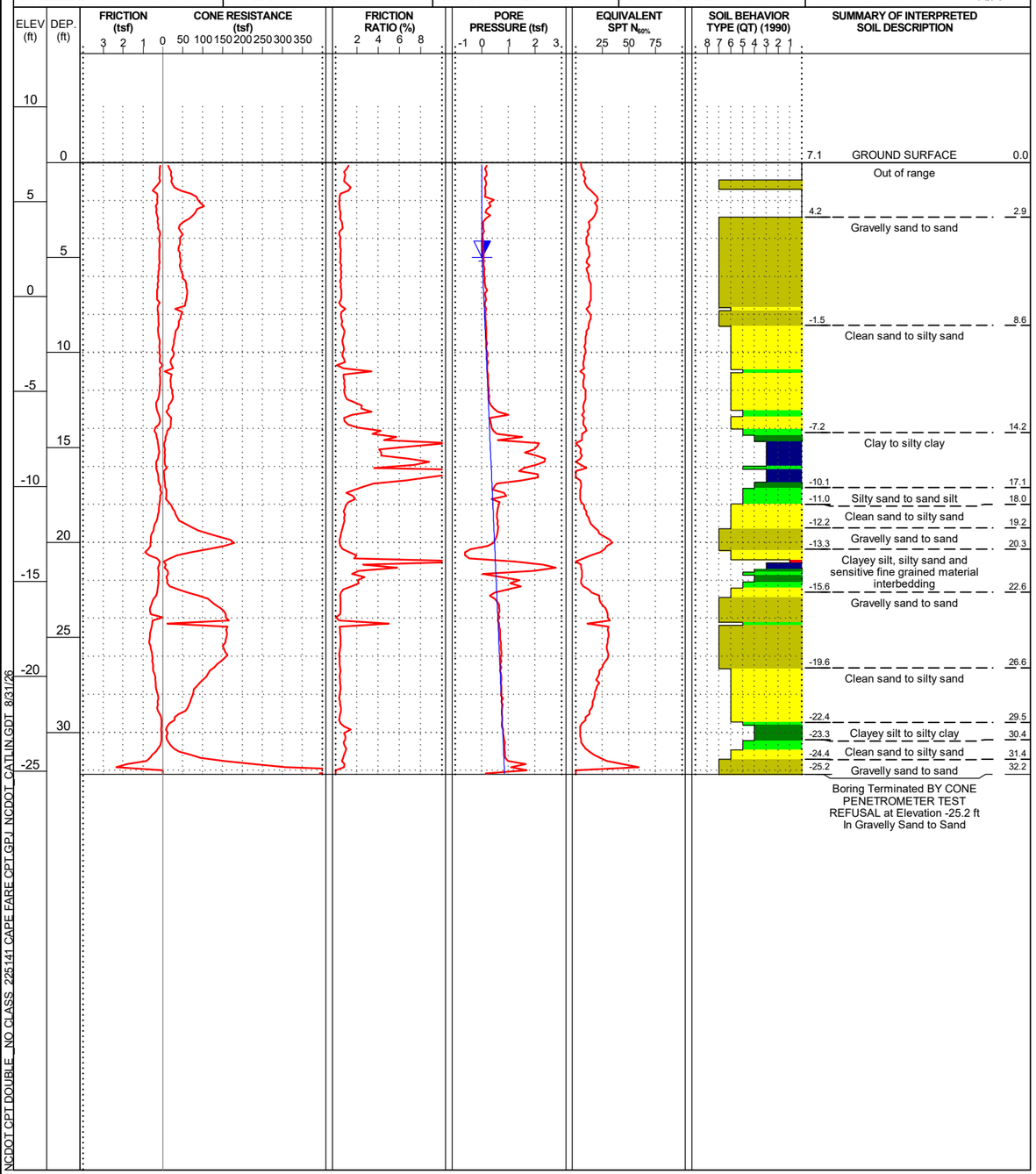
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	156

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: LLT_11200	**STATION:** 112+00	**OFFSET:** 2 ft RT	**ALIGNMENT:** -LLT- / **EST. 0 HR.** 5.0
COLLAR ELEV.: 7.1 ft	**TOTAL DEPTH:** 32.2 ft	**NORTHING:** 177,900	**EASTING:** 2,312,793 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26 / **SURF. WATER DEPTH:** N/A



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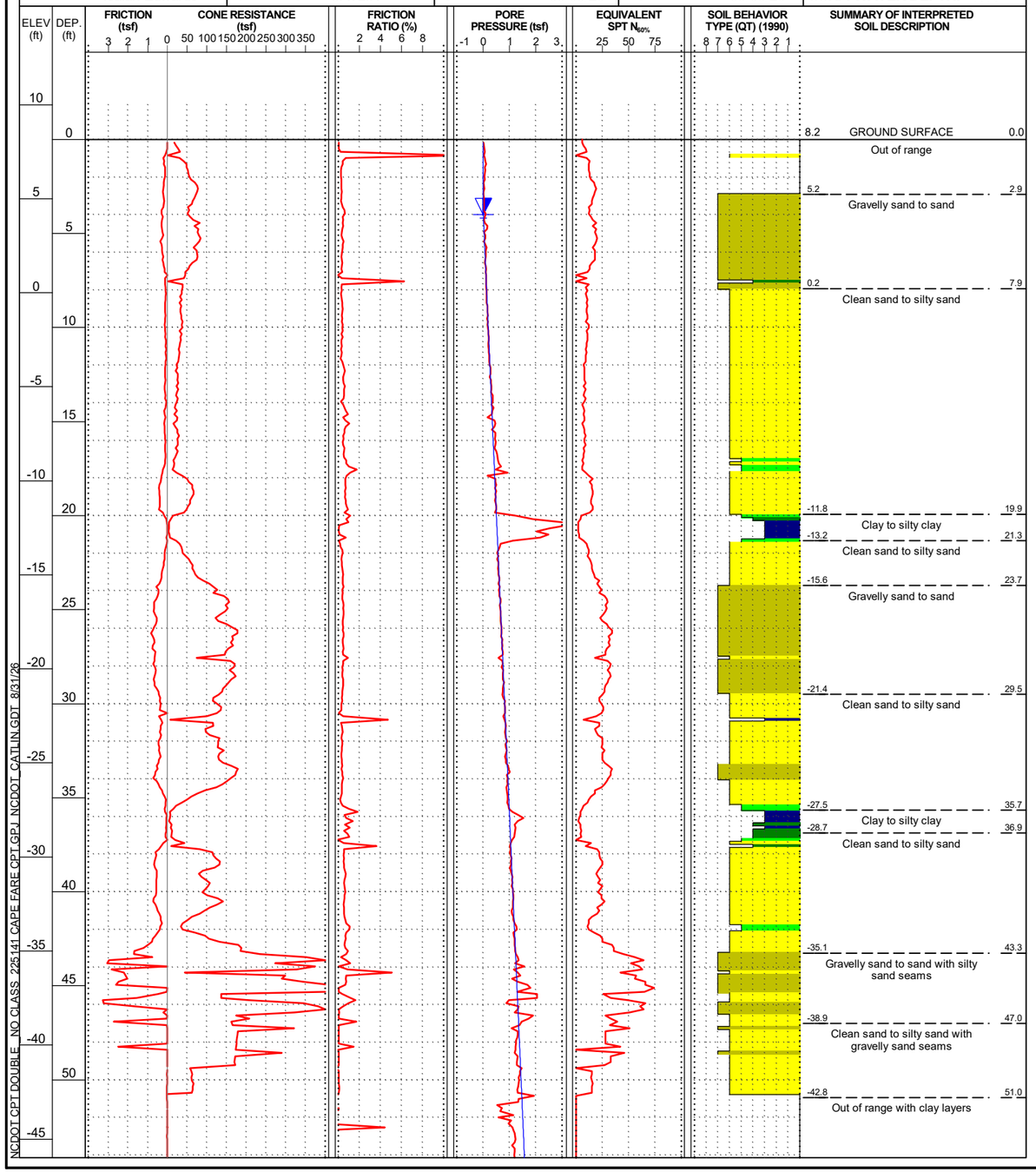
CONE PENETRATION TEST BORING REPORT

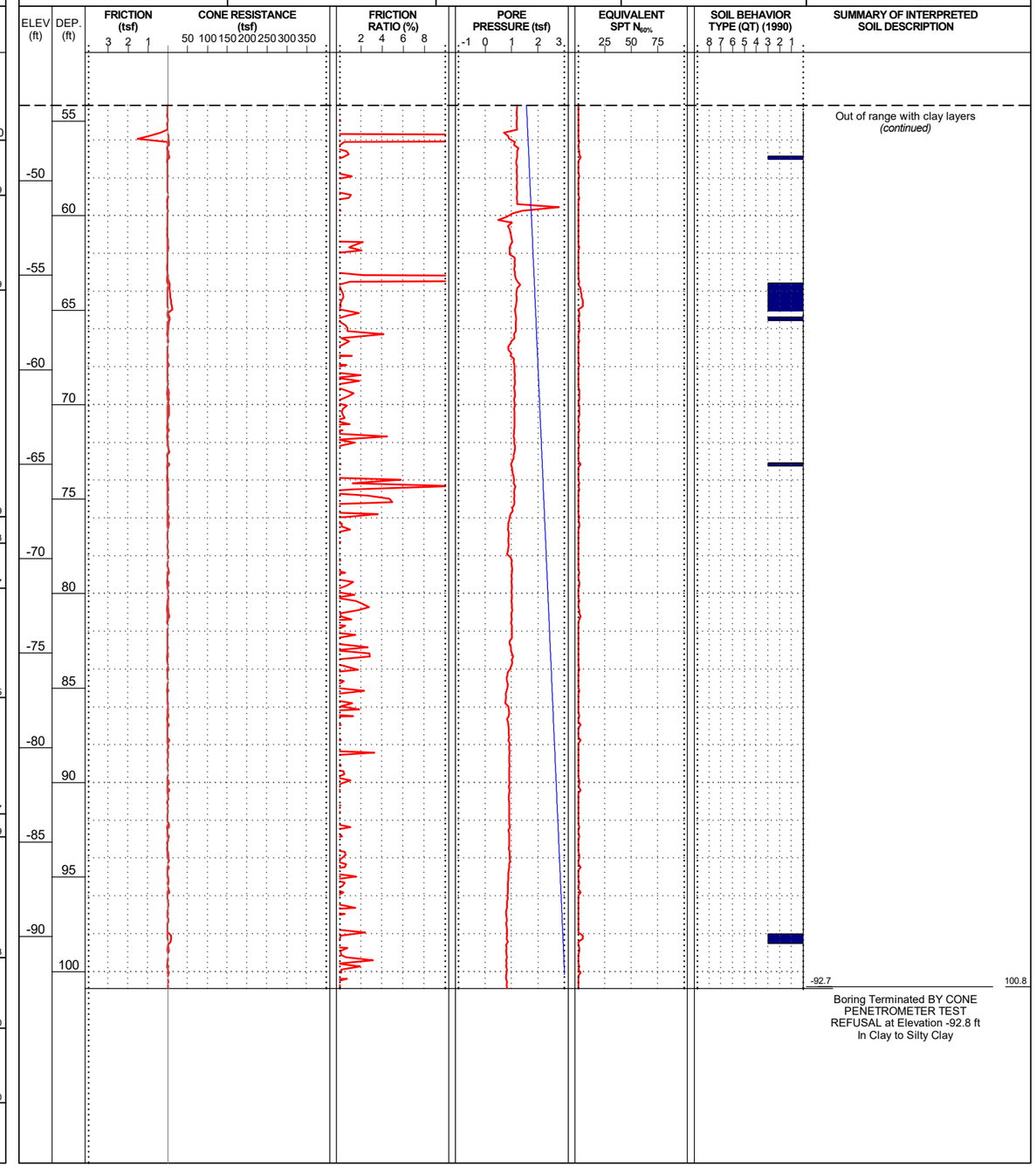
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	157

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: LLT_11400	**STATION:** 114+00	**OFFSET:** 3 ft RT	**ALIGNMENT:** -LLT- / **EST. 0 HR.** 4.0
COLLAR ELEV.: 8.2 ft	**TOTAL DEPTH:** 100.9 ft	**NORTHING:** 177,838	**EASTING:** 2,312,983 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26 / **SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421			**GROUND WTR (ft)**
BORING NO.: LLT_11400	**STATION:** 114+00	**OFFSET:** 3 ft RT	**ALIGNMENT:** -LLT- / **EST. 0 HR.** 4.0
COLLAR ELEV.: 8.2 ft	**TOTAL DEPTH:** 100.9 ft	**NORTHING:** 177,838	**EASTING:** 2,312,983 / **24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26 / **SURF. WATER DEPTH:** N/A



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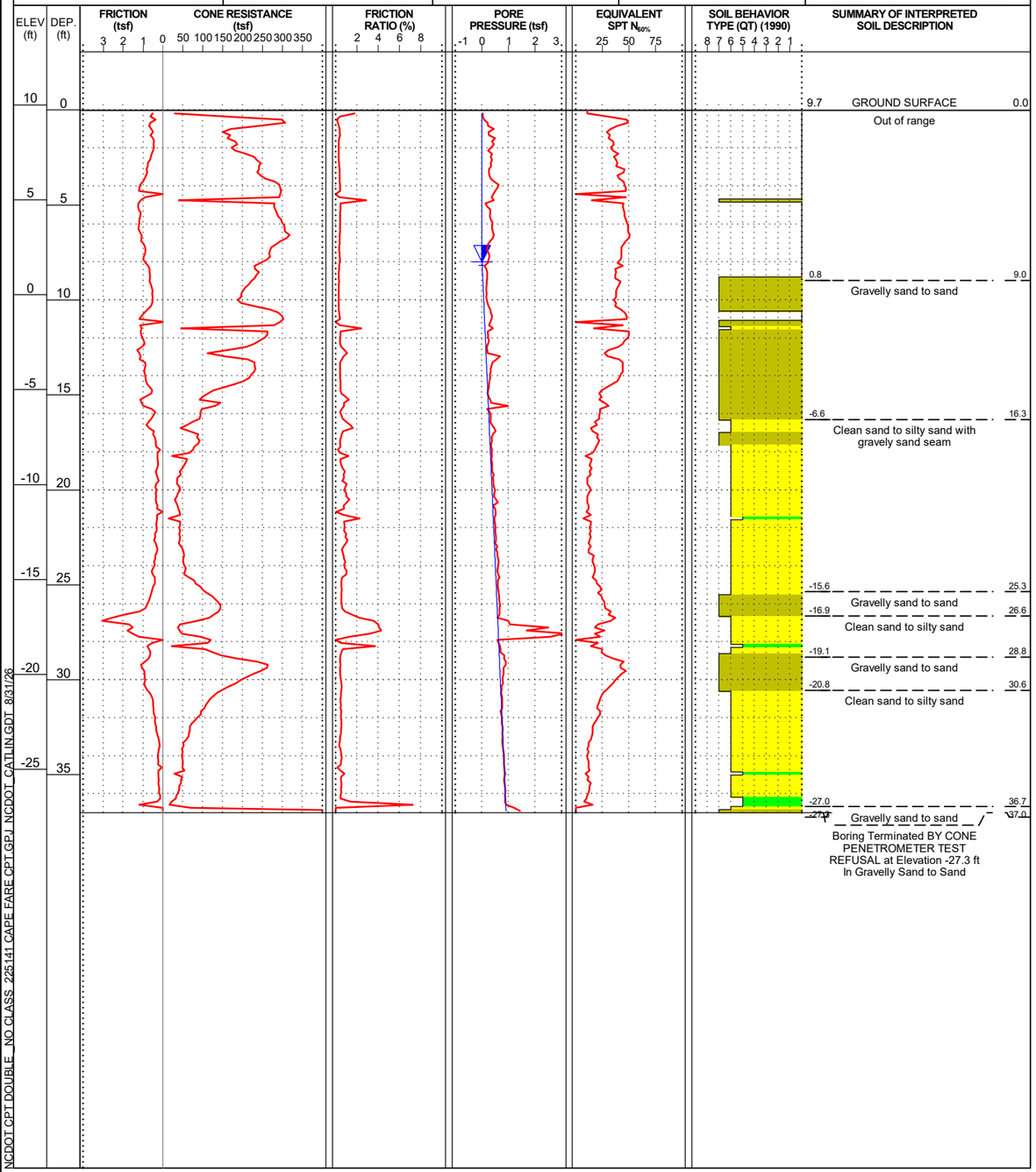
CONE PENETRATION TEST BORING REPORT

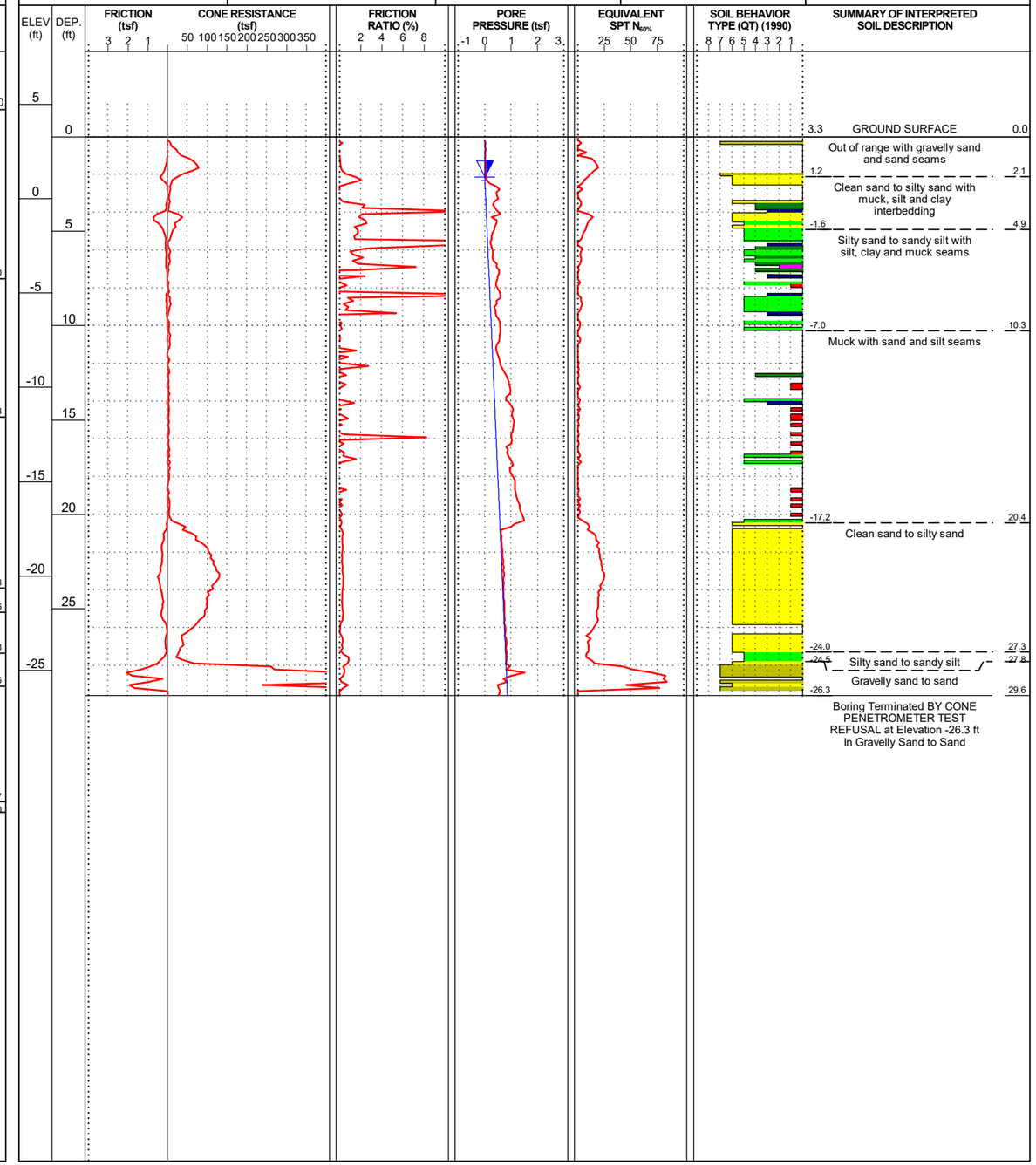
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	158

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_11700	**STATION:** 117+00	**OFFSET:** CL	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 8.0
COLLAR ELEV.: 9.7 ft	**TOTAL DEPTH:** 37.0 ft	**NORTHING:** 177,725	**EASTING:** 2,313,261	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/05/26	**COMP. DATE:** 05/05/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_11900	**STATION:** 119+00	**OFFSET:** CL	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 2.1
COLLAR ELEV.: 3.3 ft	**TOTAL DEPTH:** 29.6 ft	**NORTHING:** 177,637	**EASTING:** 2,313,440	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/04/25	**COMP. DATE:** 12/04/25	**SURF. WATER DEPTH:** N/A



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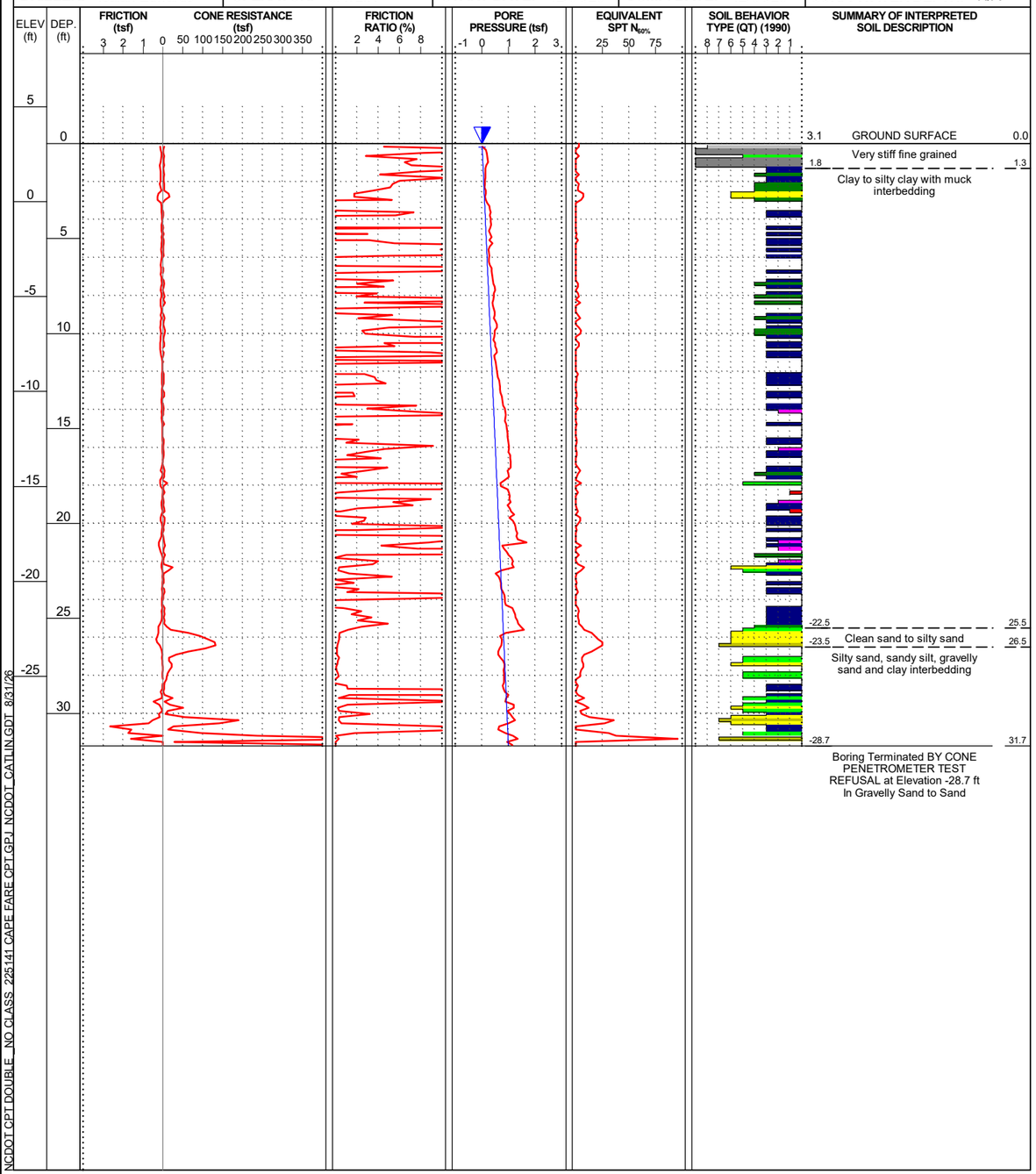
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	159

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LLT_12100	**STATION:** 121+00	**OFFSET:** CL	**ALIGNMENT:** -LLT-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 3.1 ft	**TOTAL DEPTH:** 31.7 ft	**NORTHING:** 177,539	**EASTING:** 2,313,615	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/04/25	**COMP. DATE:** 12/04/25	**SURF. WATER DEPTH:** N/A



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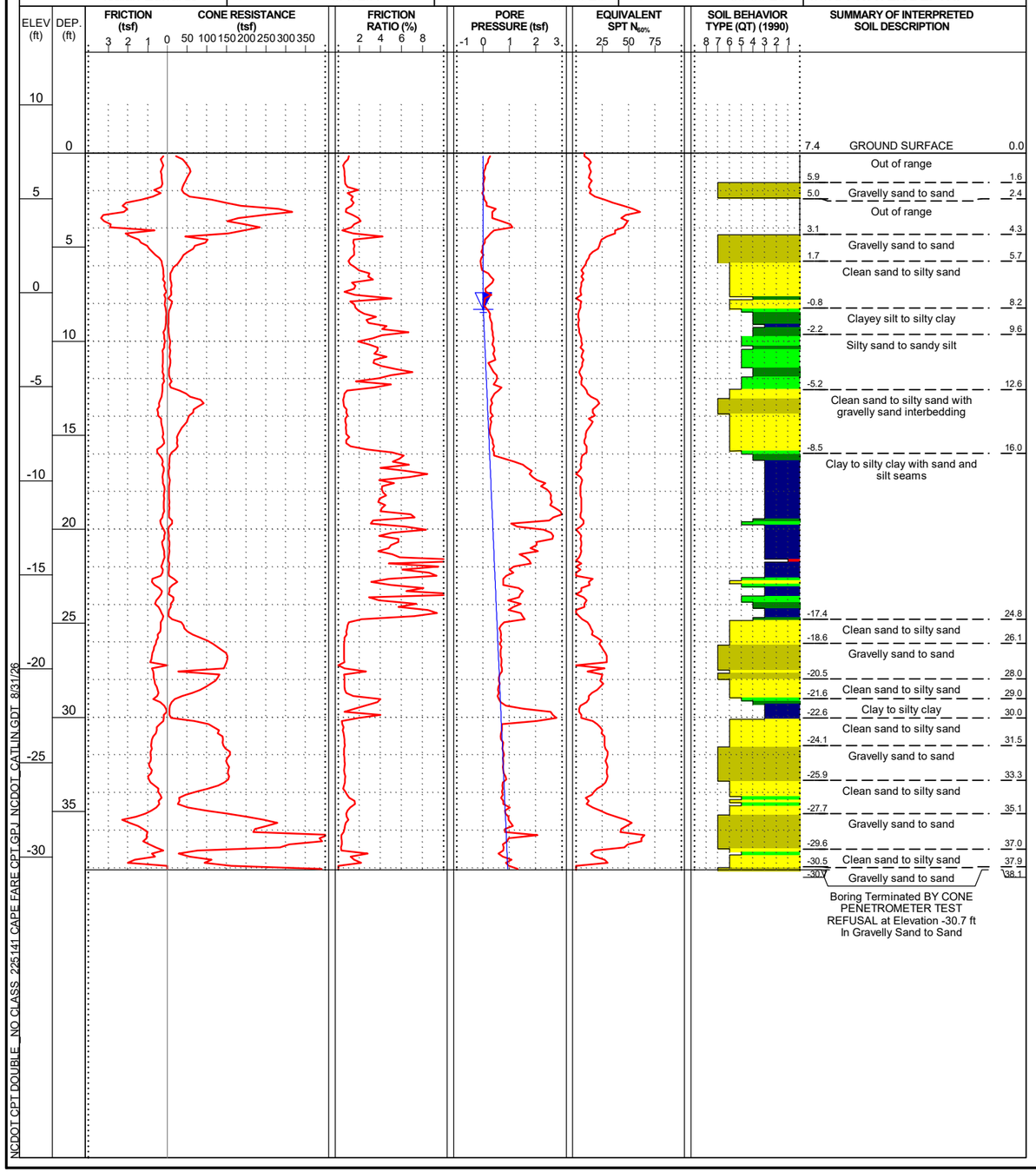
CONE PENETRATION TEST BORING REPORT

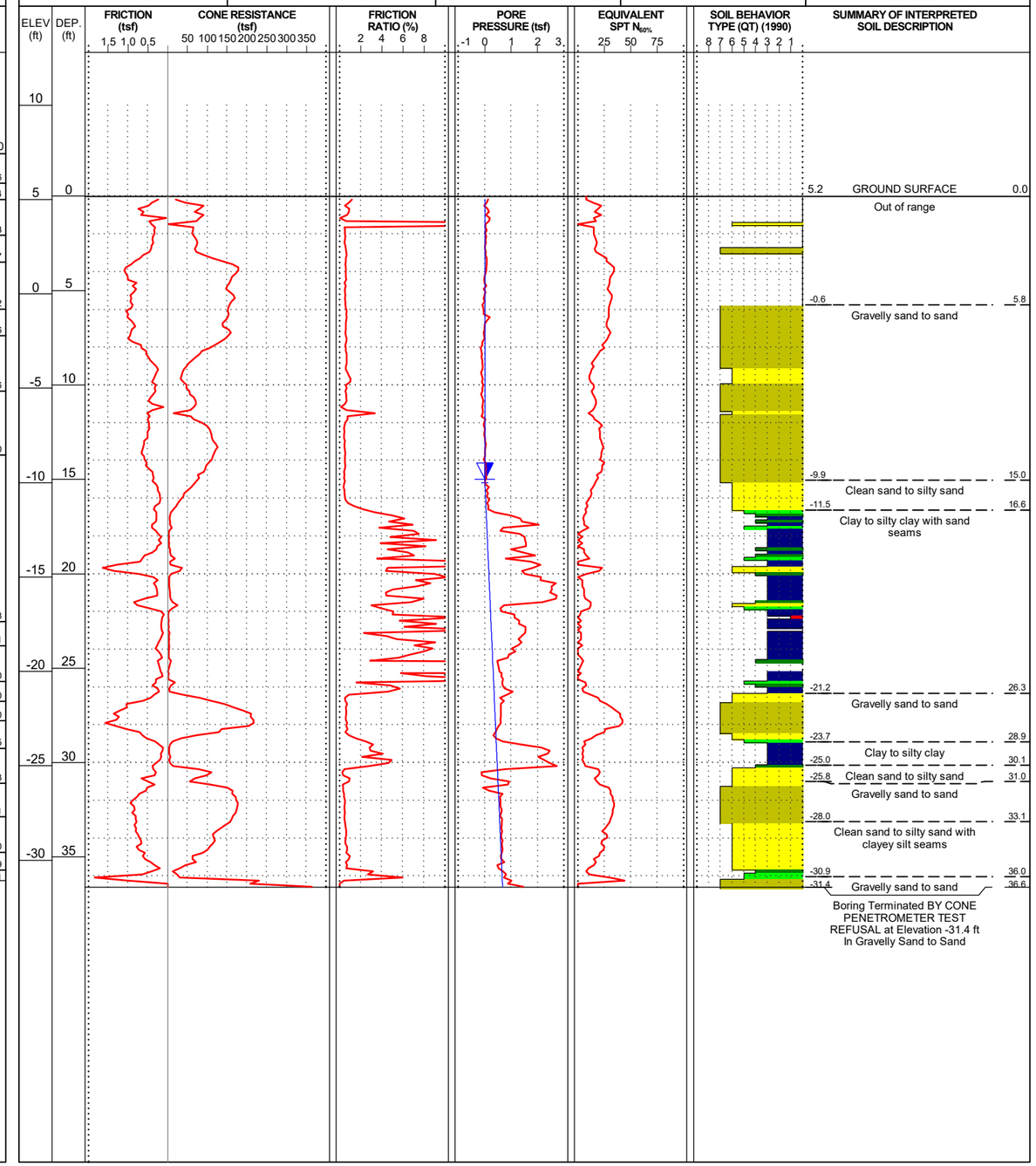
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	160

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_10400	**STATION:** 104+00	**OFFSET:** 3 ft LT	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 8.3
COLLAR ELEV.: 7.4 ft	**TOTAL DEPTH:** 38.1 ft	**NORTHING:** 177,840	**EASTING:** 2,312,014	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/06/26	**COMP. DATE:** 05/06/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_10600	**STATION:** 106+00	**OFFSET:** 4 ft RT	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 15.0
COLLAR ELEV.: 5.2 ft	**TOTAL DEPTH:** 36.6 ft	**NORTHING:** 177,842	**EASTING:** 2,312,214	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/06/26	**COMP. DATE:** 05/06/26	**SURF. WATER DEPTH:** N/A



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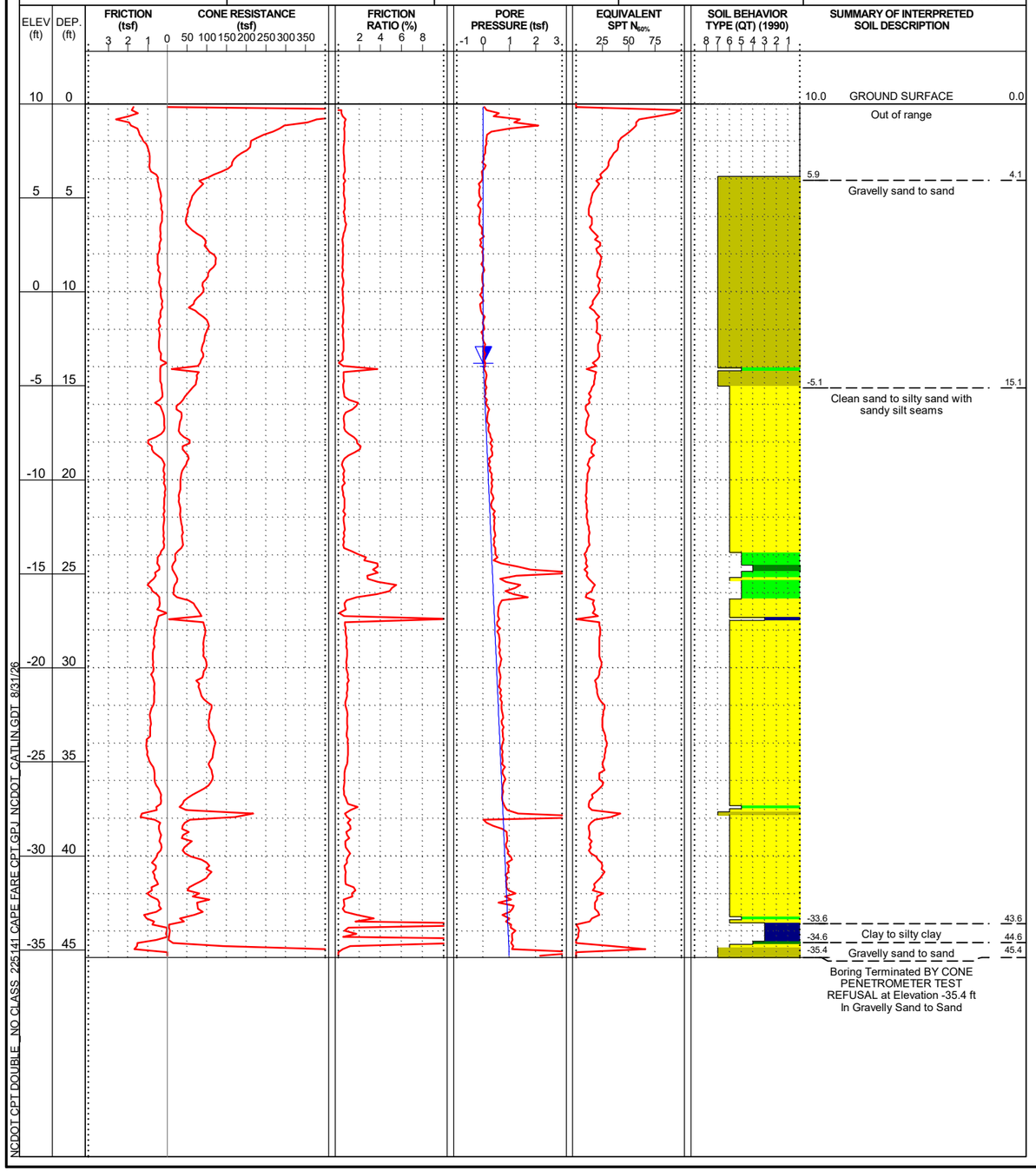
CONE PENETRATION TEST BORING REPORT

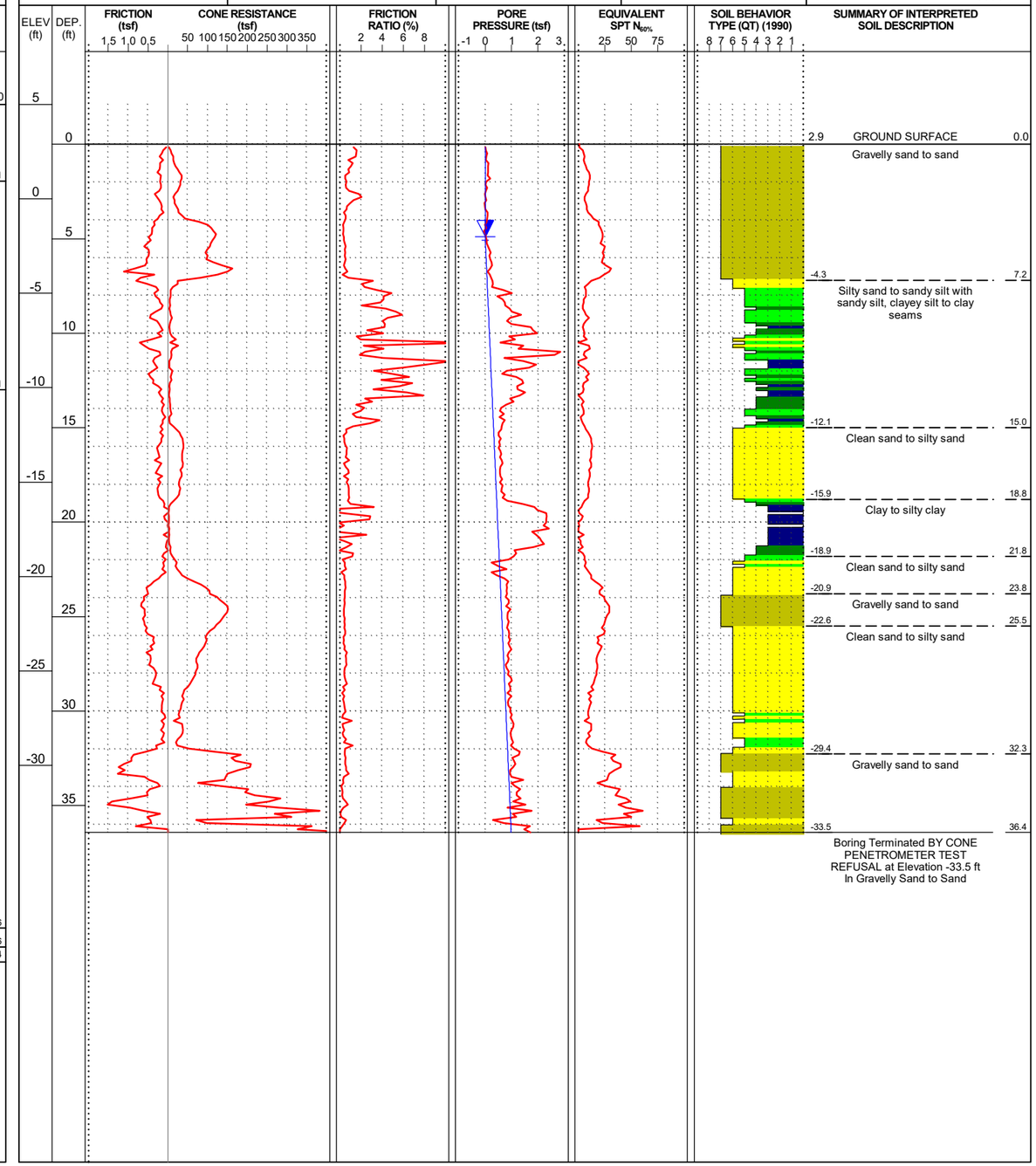
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	161

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_10800	**STATION:** 108+00	**OFFSET:** 18 ft RT	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 13.8
COLLAR ELEV.: 10.0 ft	**TOTAL DEPTH:** 45.4 ft	**NORTHING:** 177,825	**EASTING:** 2,312,413	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/07/26	**COMP. DATE:** 05/07/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_11000	**STATION:** 110+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 4.9
COLLAR ELEV.: 2.9 ft	**TOTAL DEPTH:** 36.4 ft	**NORTHING:** 177,838	**EASTING:** 2,312,615	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 06/04/26	**COMP. DATE:** 06/04/26	**SURF. WATER DEPTH:** N/A



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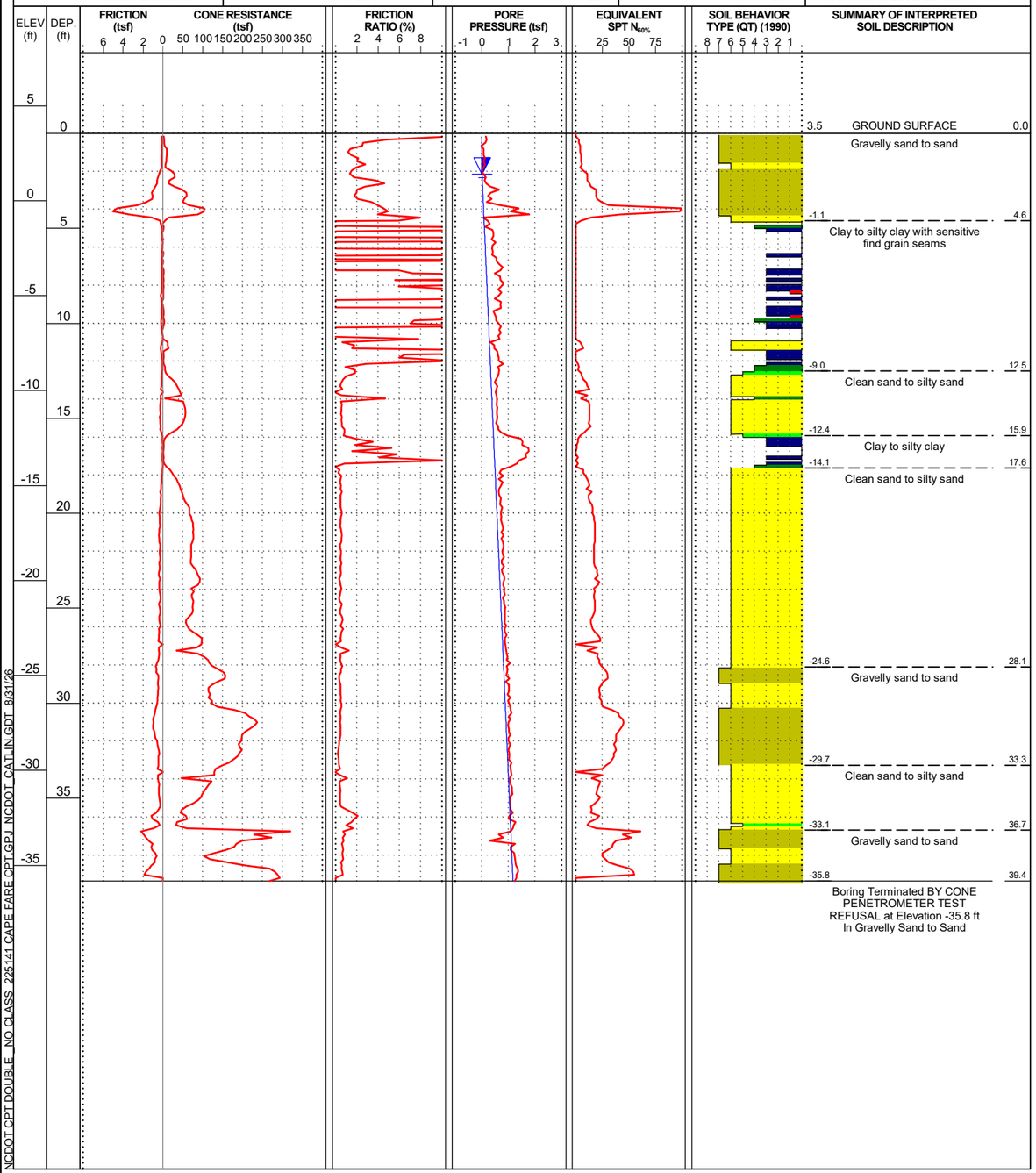
CONE PENETRATION TEST BORING REPORT

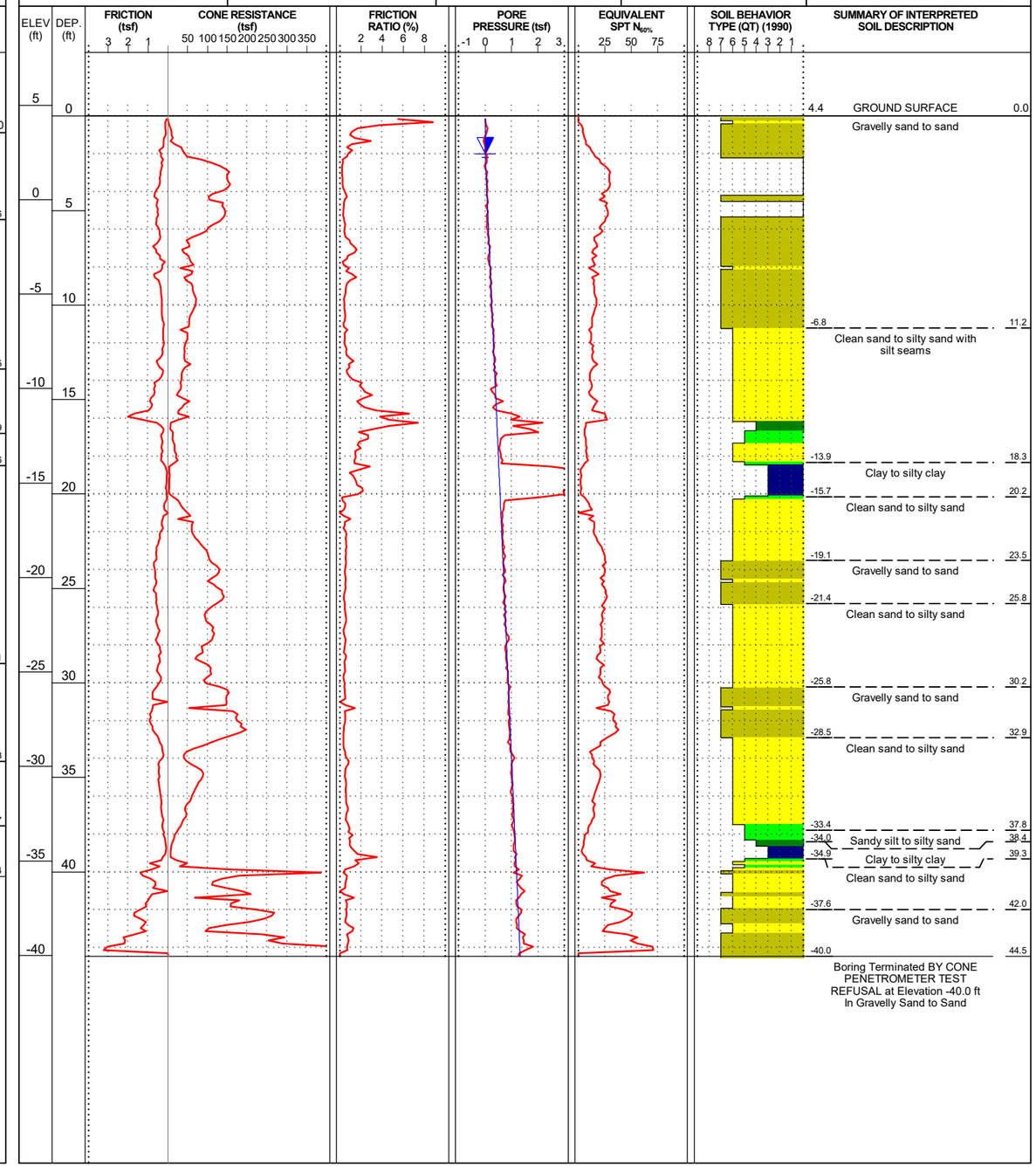
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	162

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_11200	**STATION:** 112+00	**OFFSET:** CL	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 2.2
COLLAR ELEV.: 3.5 ft	**TOTAL DEPTH:** 39.4 ft	**NORTHING:** 177,802	**EASTING:** 2,312,812	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 06/04/26	**COMP. DATE:** 06/04/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: LRT_11400	**STATION:** 114+00	**OFFSET:** CL	**ALIGNMENT:** -LRT-	**EST. 0 HR.** 2.0
COLLAR ELEV.: 4.4 ft	**TOTAL DEPTH:** 44.5 ft	**NORTHING:** 177,761	**EASTING:** 2,313,008	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 06/04/26	**COMP. DATE:** 06/04/26	**SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE _NO CLASS_ 225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

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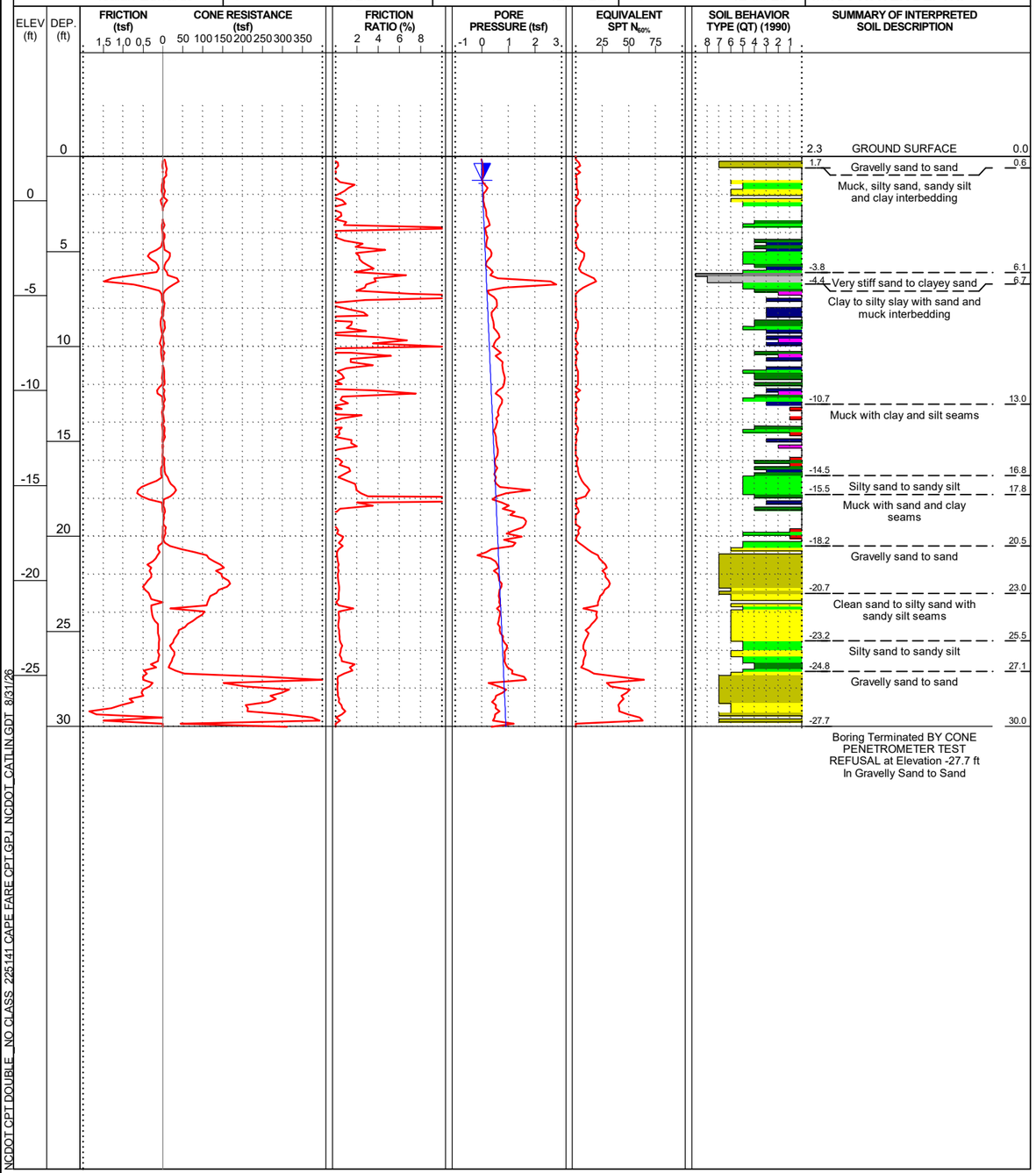
CONE PENETRATION TEST BORING REPORT

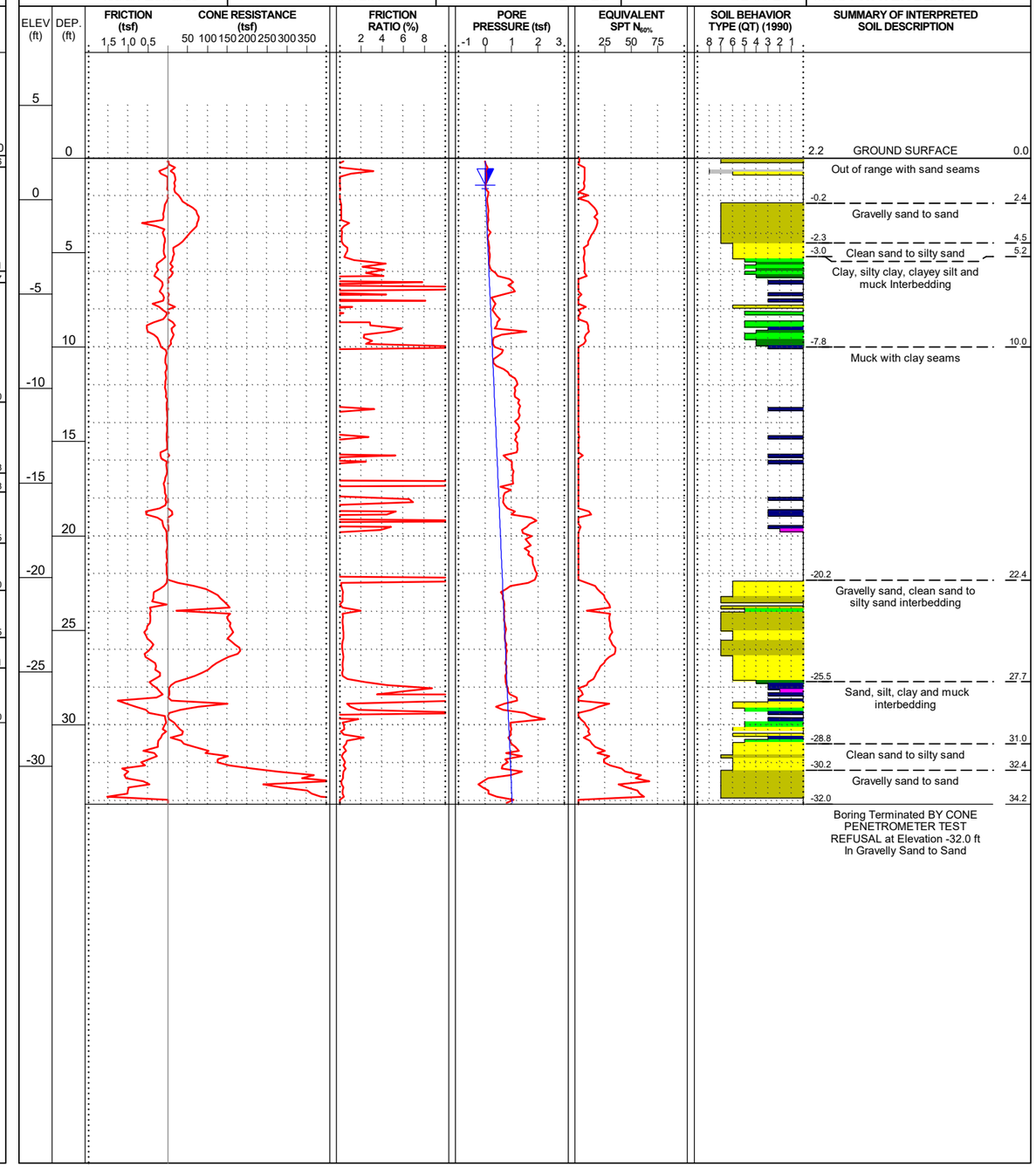
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	163

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPA_1850	**STATION:** 18+50	**OFFSET:** 90 ft RT	**ALIGNMENT:** -Y1RPA-	**EST. 0 HR.** 1.3
COLLAR ELEV.: 2.3 ft	**TOTAL DEPTH:** 30.0 ft	**NORTHING:** 176,901	**EASTING:** 2,314,672	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPA_2050	**STATION:** 20+50	**OFFSET:** 90 ft RT	**ALIGNMENT:** -Y1RPA-	**EST. 0 HR.** 1.4
COLLAR ELEV.: 2.2 ft	**TOTAL DEPTH:** 34.2 ft	**NORTHING:** 177,087	**EASTING:** 2,314,680	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



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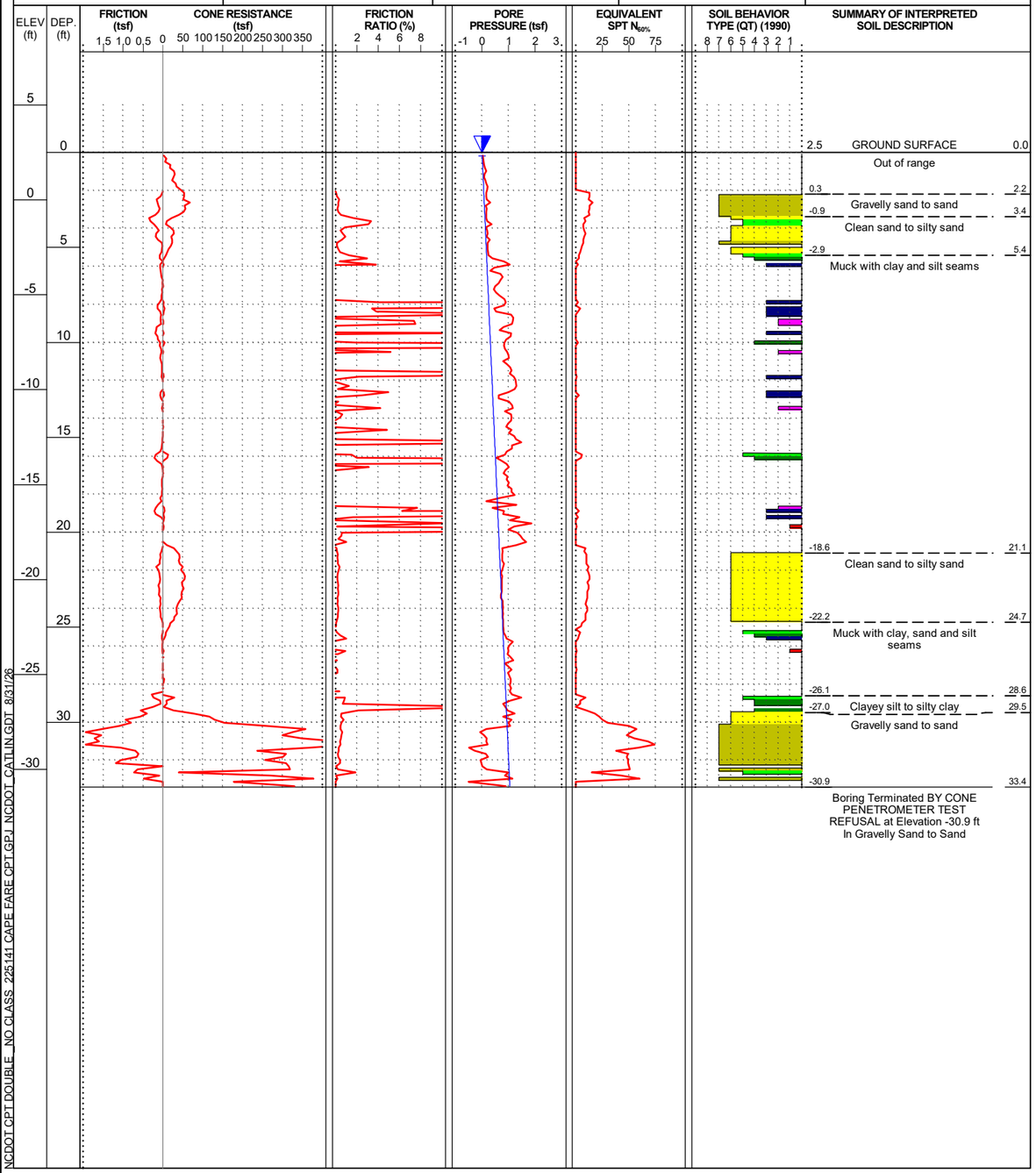
CONE PENETRATION TEST BORING REPORT

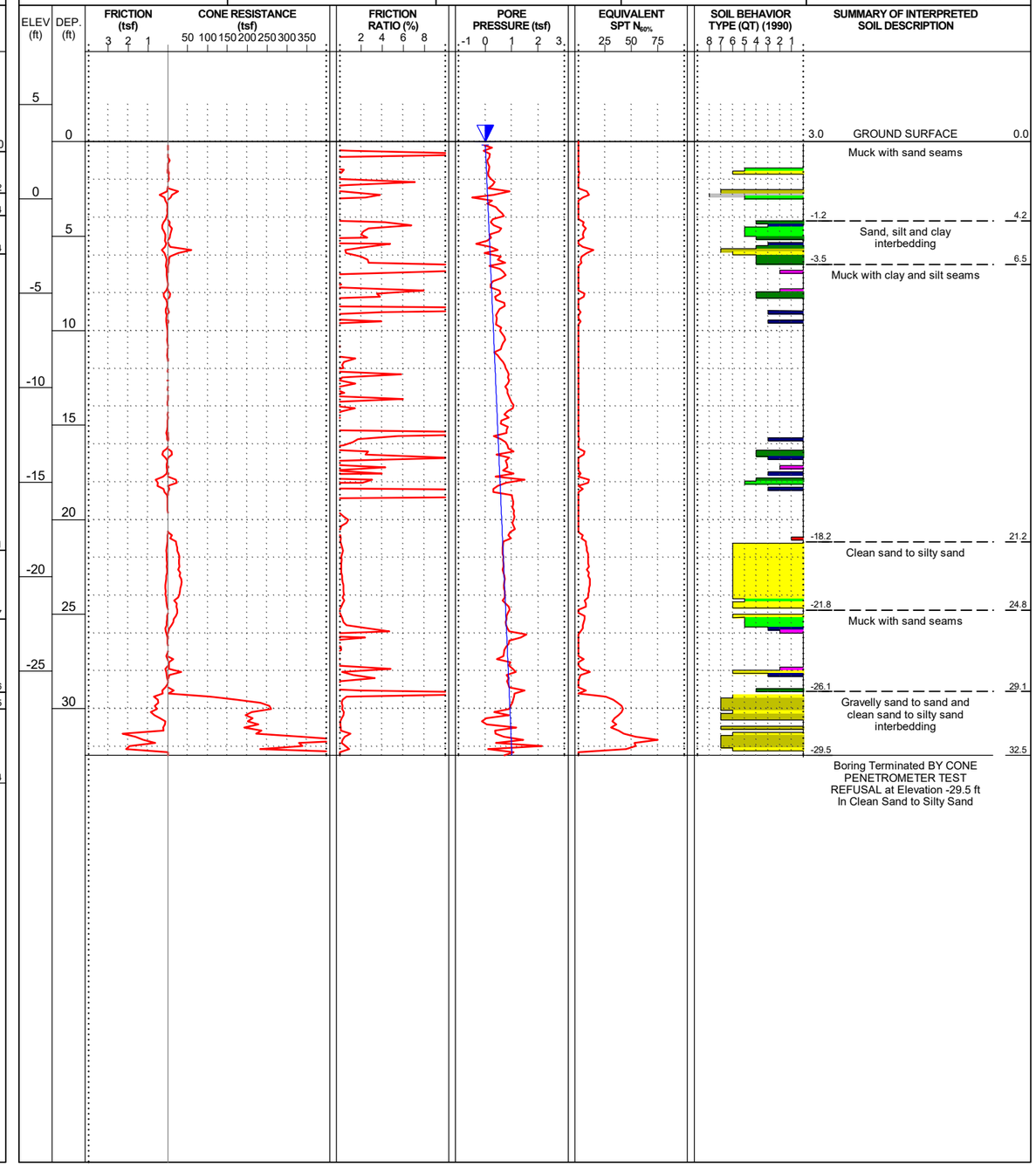
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	164

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPA_2250	**STATION:** 22+50	**OFFSET:** 80 ft RT	**ALIGNMENT:** -Y1RPA-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 2.5 ft	**TOTAL DEPTH:** 33.4 ft	**NORTHING:** 177,286	**EASTING:** 2,314,693	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPA_2350	**STATION:** 23+50	**OFFSET:** 70 ft RT	**ALIGNMENT:** -Y1RPA-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 3.0 ft	**TOTAL DEPTH:** 32.5 ft	**NORTHING:** 177,386	**EASTING:** 2,314,695	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/01/25	**COMP. DATE:** 12/01/25	**SURF. WATER DEPTH:** N/A



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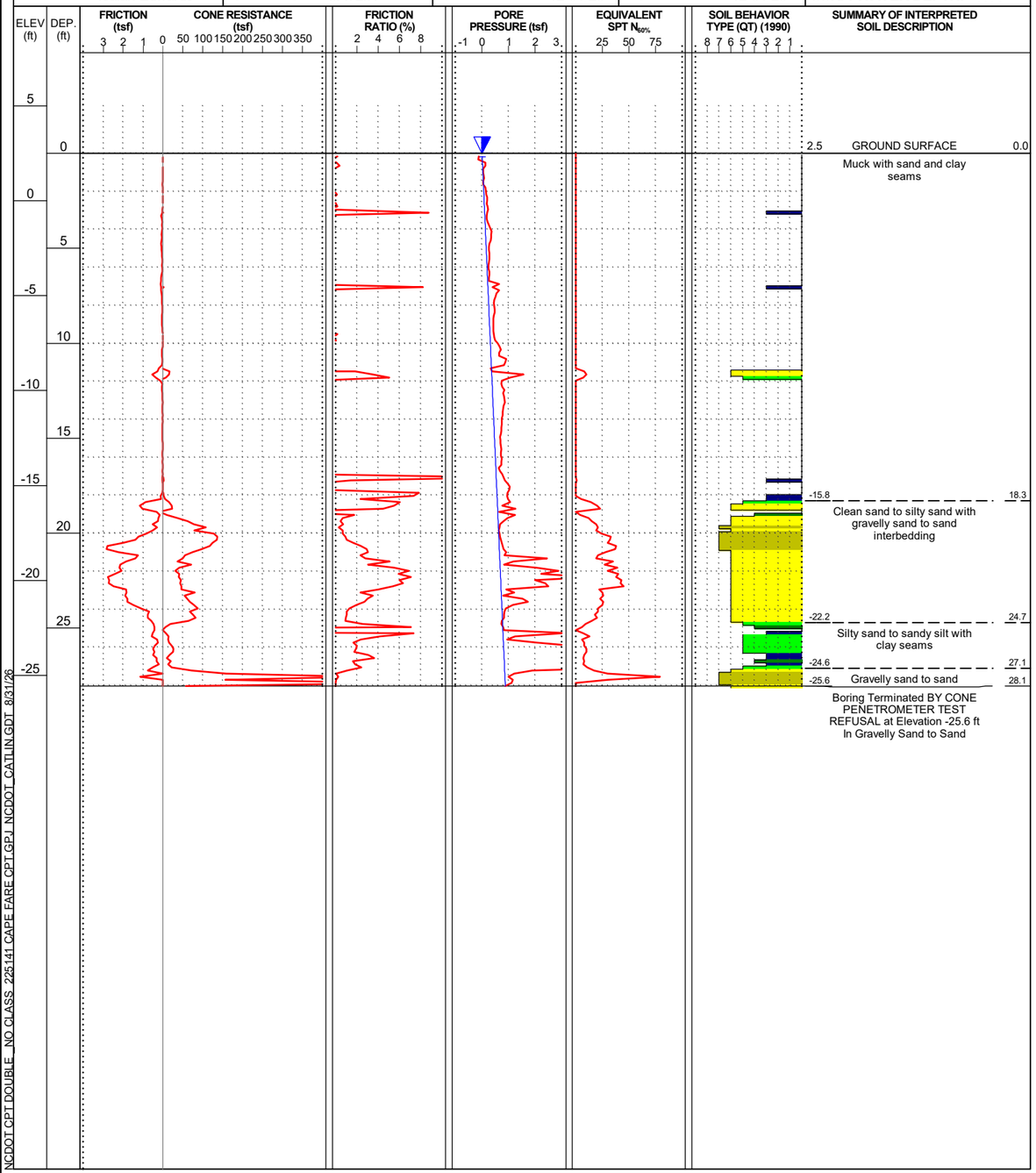
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	165

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPA_2650	**STATION:** 26+50	**OFFSET:** 50 ft RT	**ALIGNMENT:** -Y1RPA-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 2.5 ft	**TOTAL DEPTH:** 28.1 ft	**NORTHING:** 177,687	**EASTING:** 2,314,711	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/01/25	**COMP. DATE:** 12/01/25	**SURF. WATER DEPTH:** N/A



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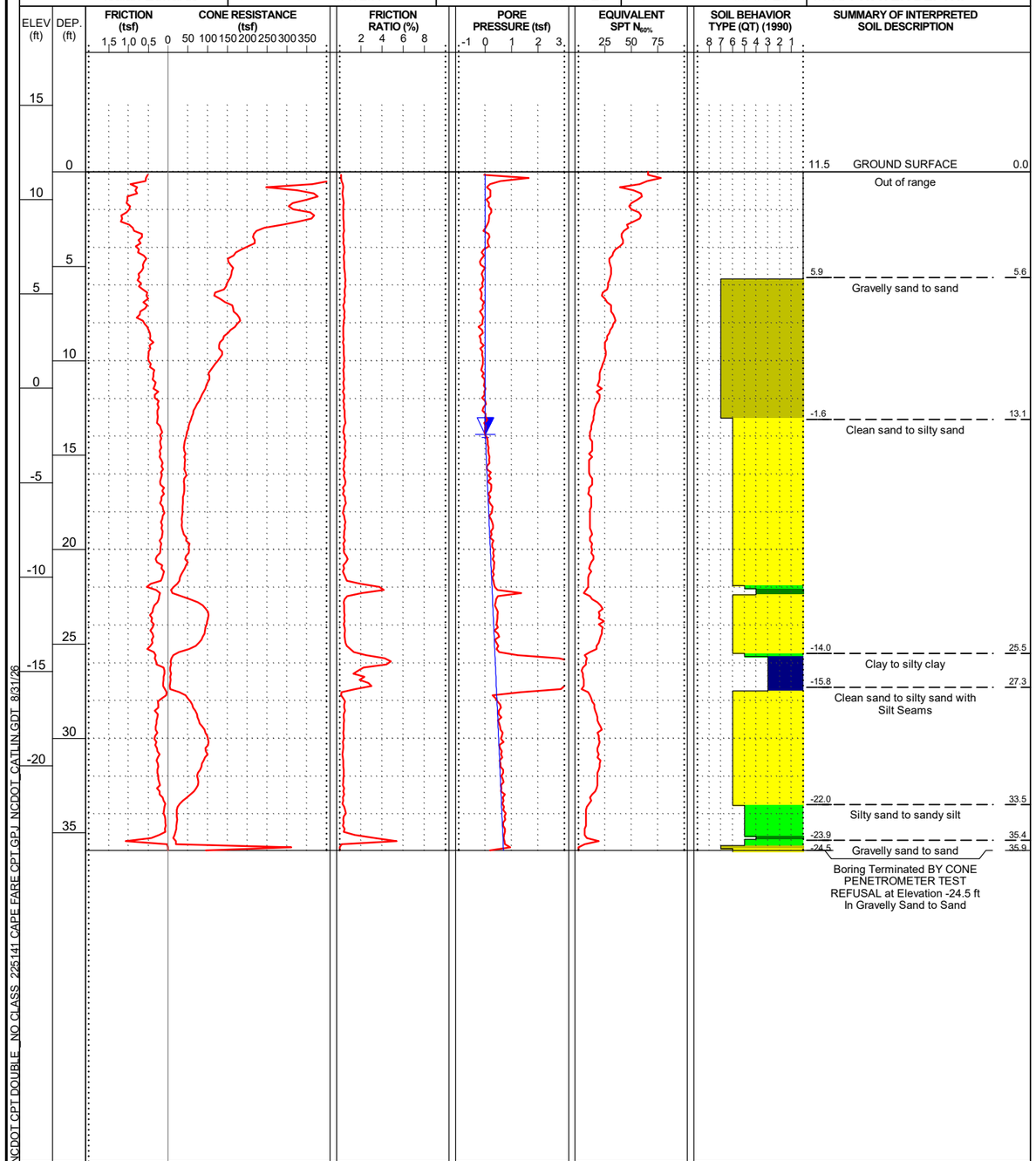
CONE PENETRATION TEST BORING REPORT

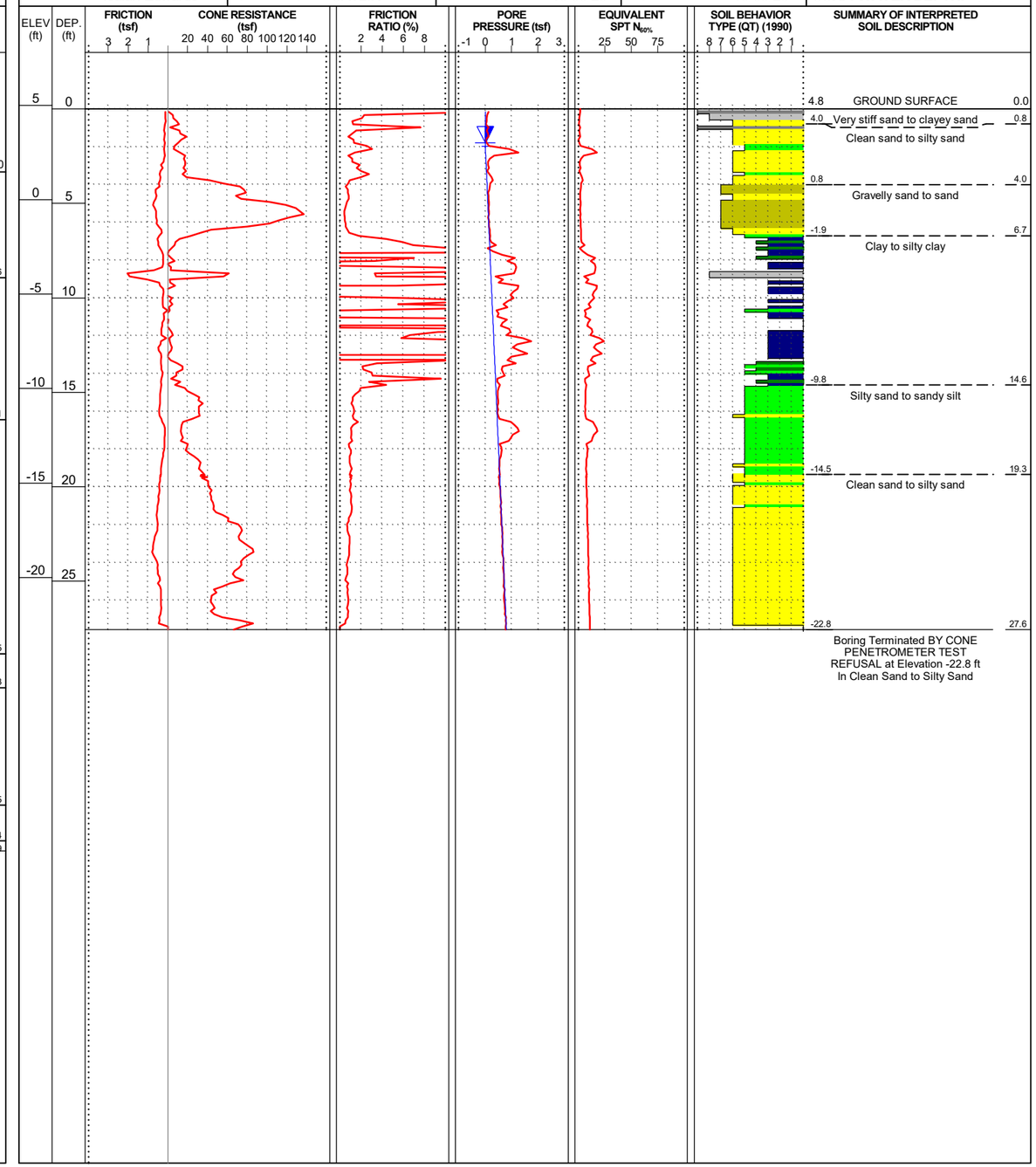
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	166

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_1650	**STATION:** 16+50	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 13.9
COLLAR ELEV.: 11.5 ft	**TOTAL DEPTH:** 35.9 ft	**NORTHING:** 178,008	**EASTING:** 2,312,608	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/31/26	**COMP. DATE:** 03/31/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_2050	**STATION:** 20+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 1.8
COLLAR ELEV.: 4.8 ft	**TOTAL DEPTH:** 27.6 ft	**NORTHING:** 177,942	**EASTING:** 2,313,005	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/03/25	**COMP. DATE:** 10/03/25	**SURF. WATER DEPTH:** N/A



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CONE PENETRATION TEST BORING REPORT

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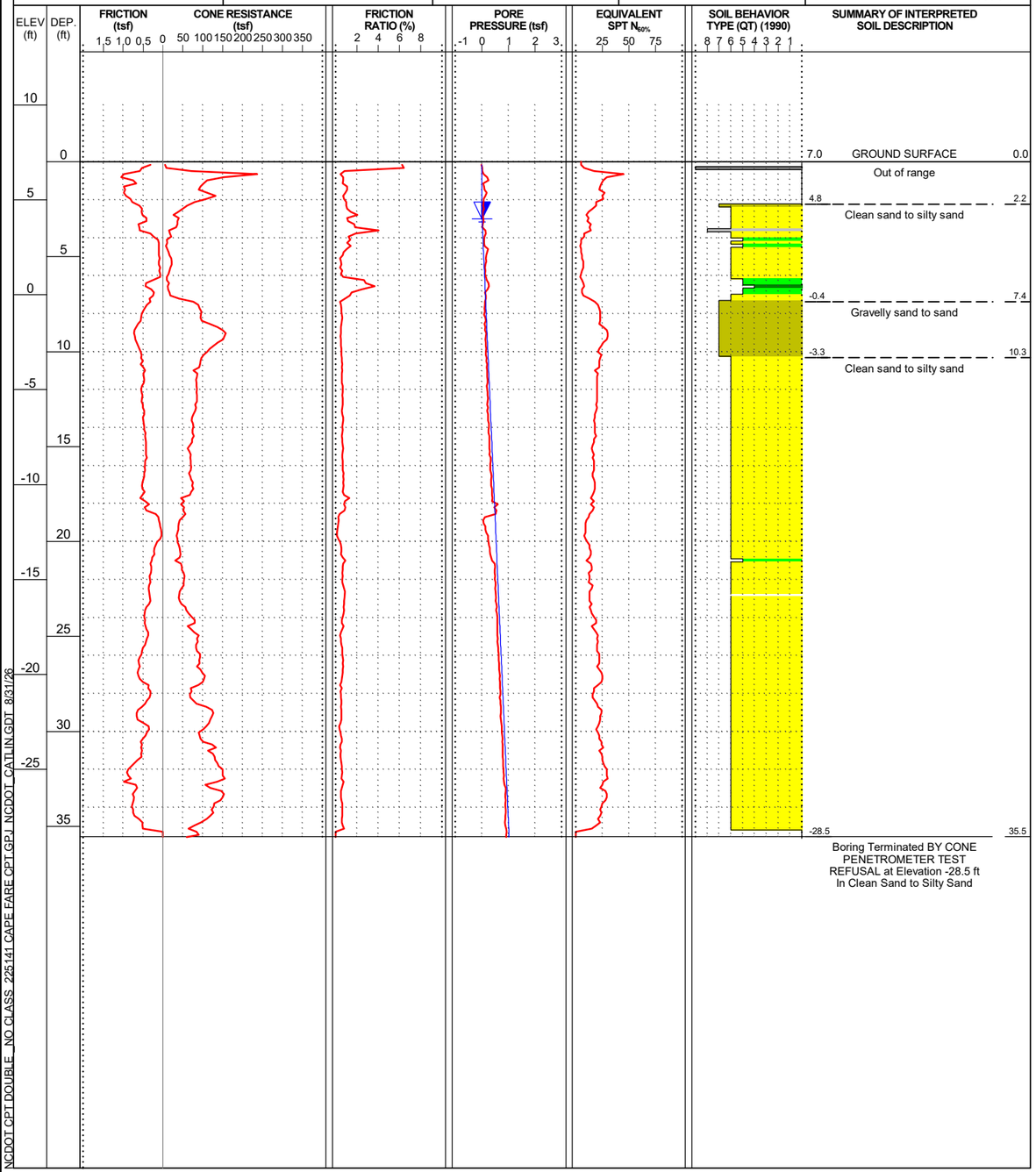
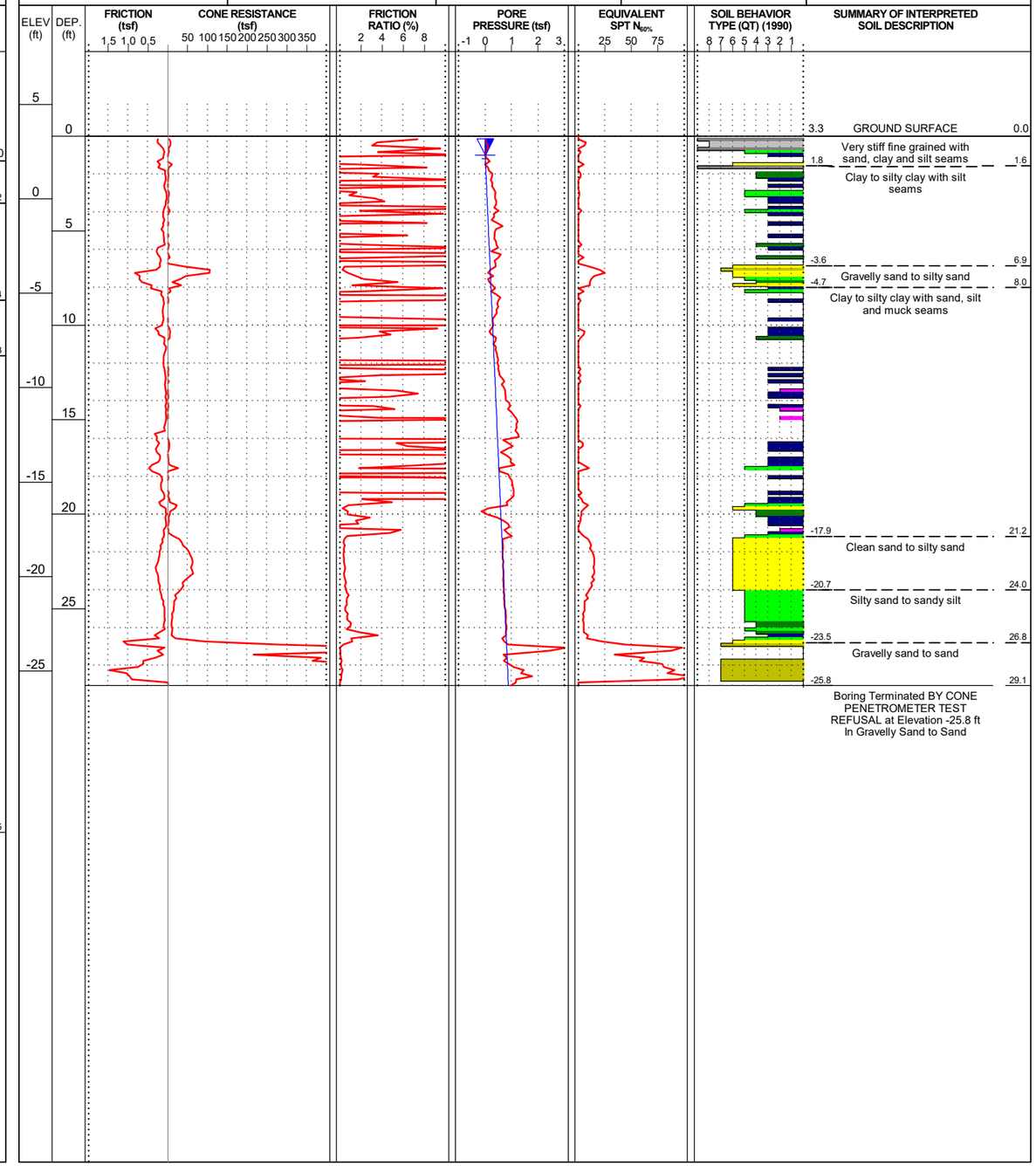
PROJECT REFERENCE	SHEET
HB-0039	167

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_2250	**STATION:** 22+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 3.0
COLLAR ELEV.: 7.0 ft	**TOTAL DEPTH:** 35.5 ft	**NORTHING:** 177,880	**EASTING:** 2,313,196	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/02/25	**COMP. DATE:** 10/02/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_2450	**STATION:** 24+50	**OFFSET:** 40 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 1.0
COLLAR ELEV.: 3.3 ft	**TOTAL DEPTH:** 29.1 ft	**NORTHING:** 177,840	**EASTING:** 2,313,387	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/02/25	**COMP. DATE:** 10/02/25	**SURF. WATER DEPTH:** N/A



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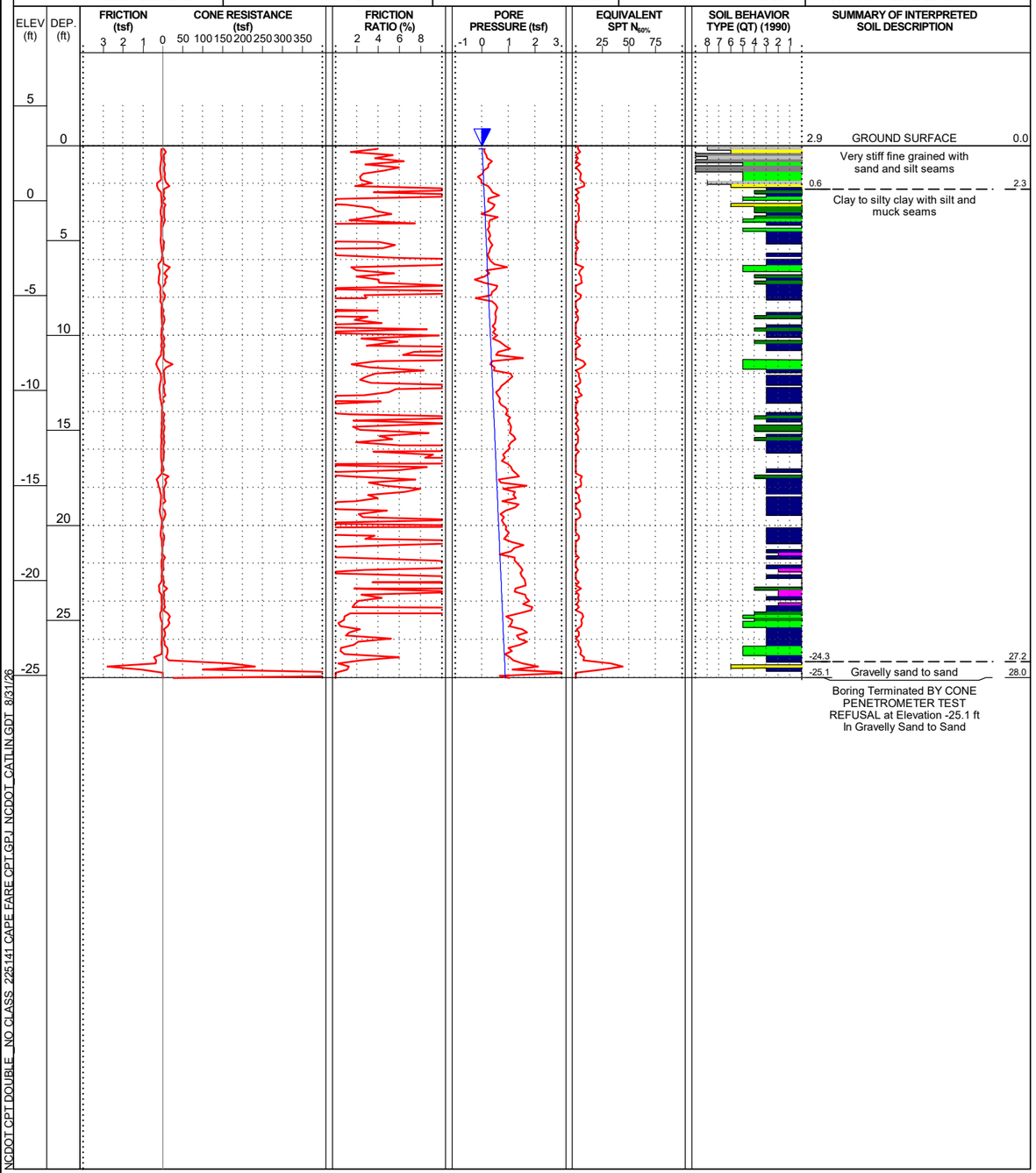
CONE PENETRATION TEST BORING REPORT

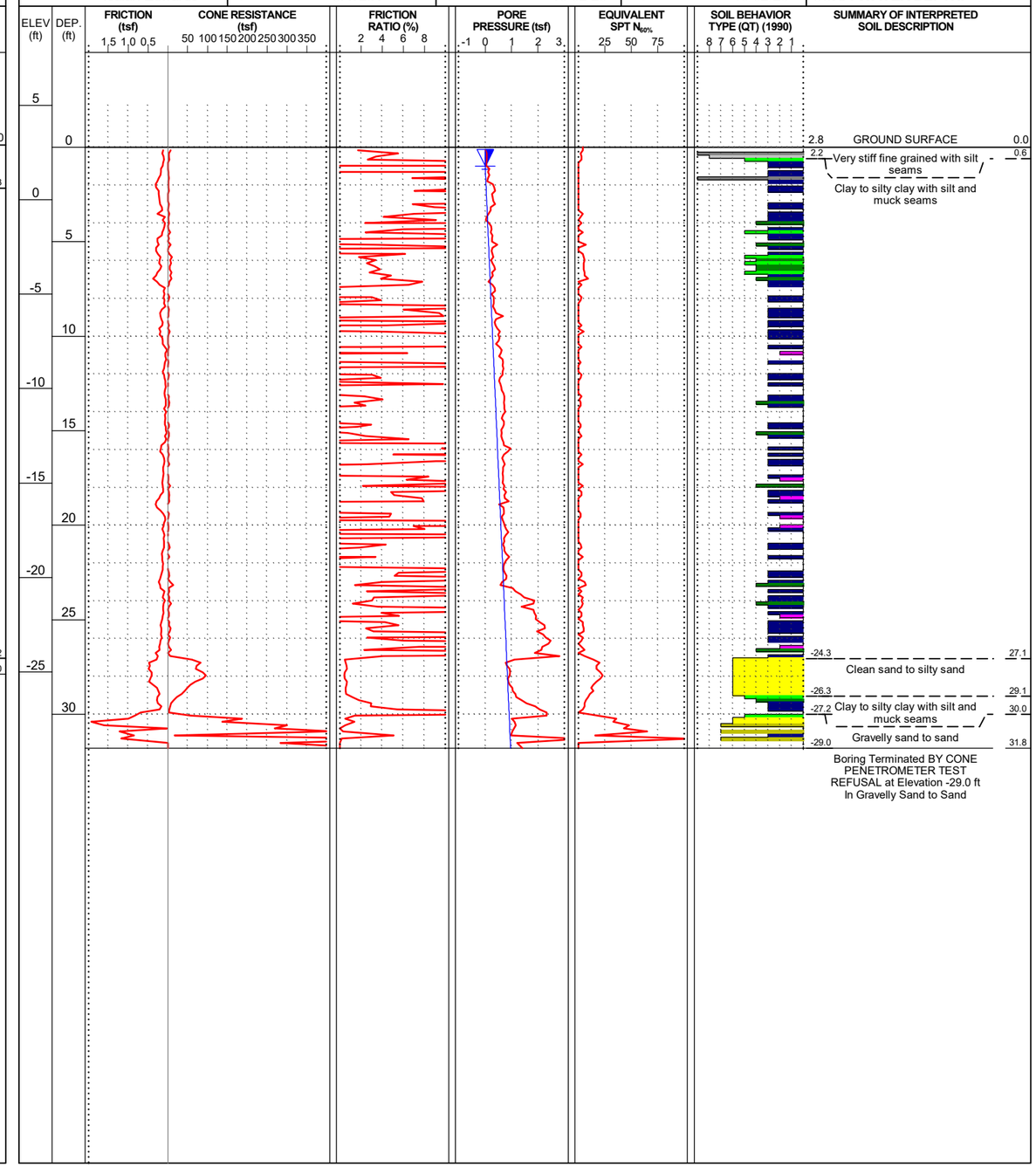
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	168

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_2650	**STATION:** 26+50	**OFFSET:** 40 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 2.9 ft	**TOTAL DEPTH:** 28.0 ft	**NORTHING:** 177,827	**EASTING:** 2,313,578	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/02/25	**COMP. DATE:** 10/02/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_2850	**STATION:** 28+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 1.0
COLLAR ELEV.: 2.8 ft	**TOTAL DEPTH:** 31.8 ft	**NORTHING:** 177,844	**EASTING:** 2,313,770	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/02/25	**COMP. DATE:** 10/02/25	**SURF. WATER DEPTH:** N/A



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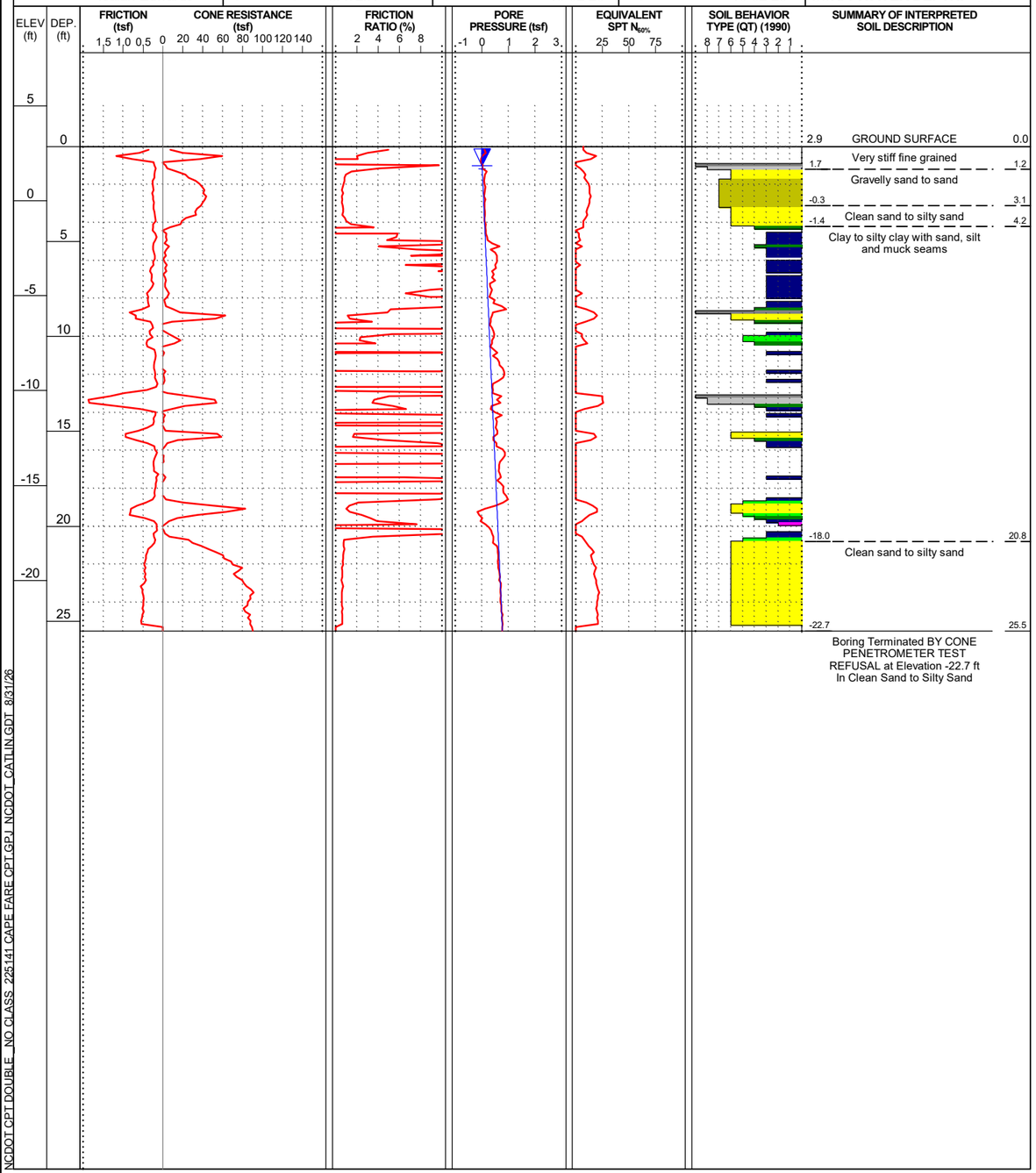
CONE PENETRATION TEST BORING REPORT

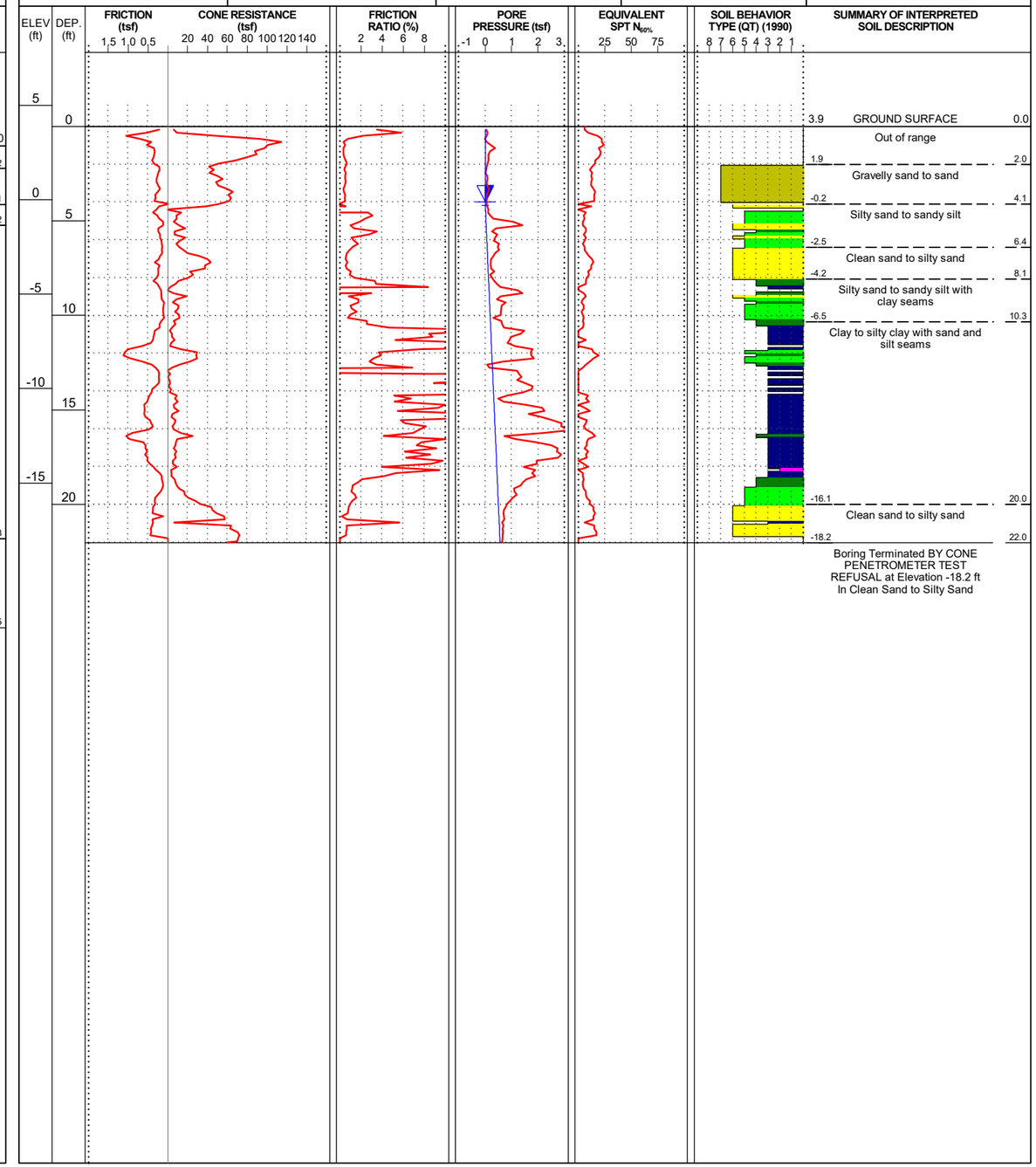
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	169

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_3050	**STATION:** 30+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 1.0
COLLAR ELEV.: 2.9 ft	**TOTAL DEPTH:** 25.5 ft	**NORTHING:** 177,910	**EASTING:** 2,313,952	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/02/25	**COMP. DATE:** 10/02/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_3150	**STATION:** 31+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 4.0
COLLAR ELEV.: 3.9 ft	**TOTAL DEPTH:** 22.0 ft	**NORTHING:** 177,956	**EASTING:** 2,314,036	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 10/03/25	**COMP. DATE:** 10/03/25	**SURF. WATER DEPTH:** N/A



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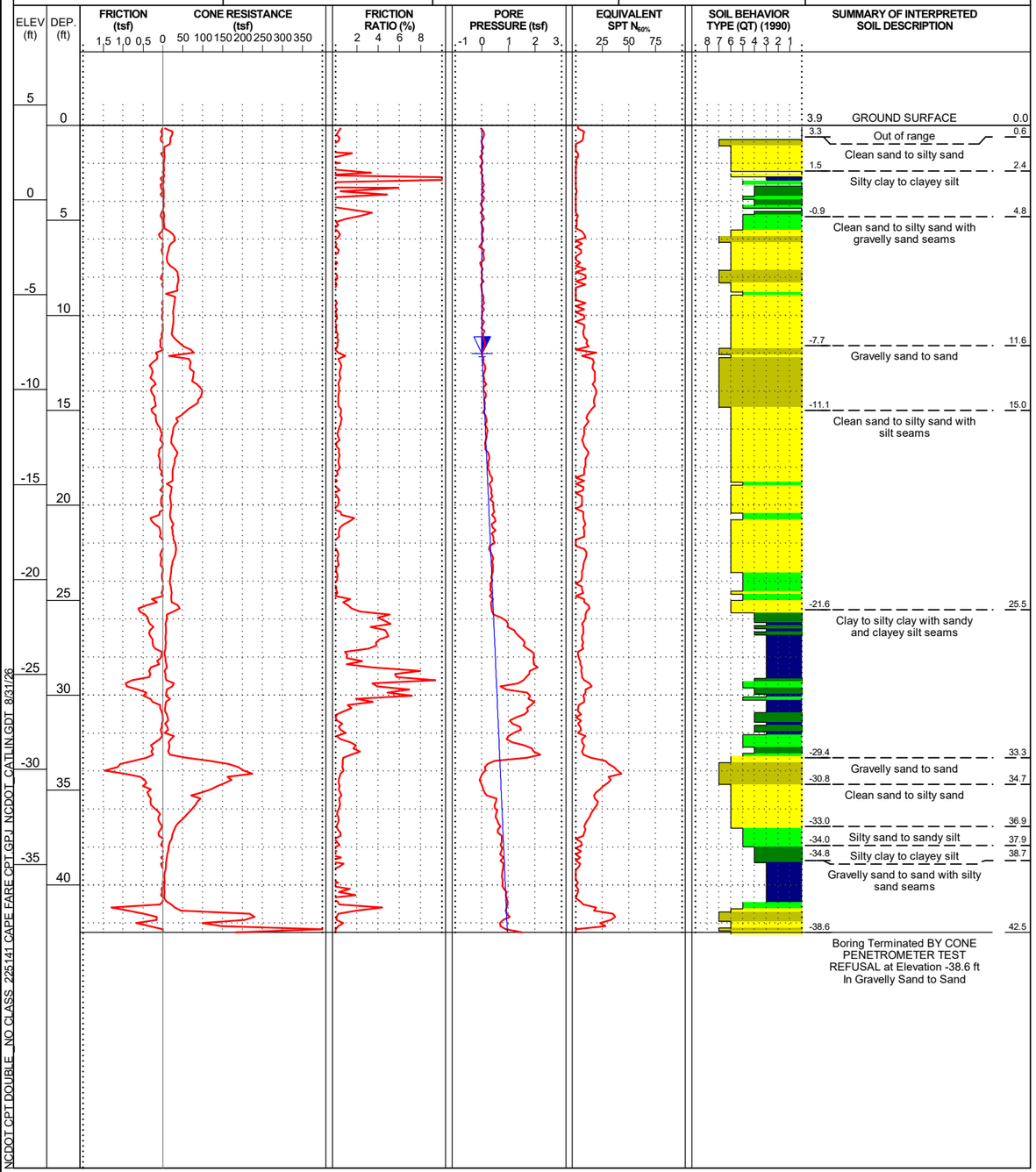
CONE PENETRATION TEST BORING REPORT

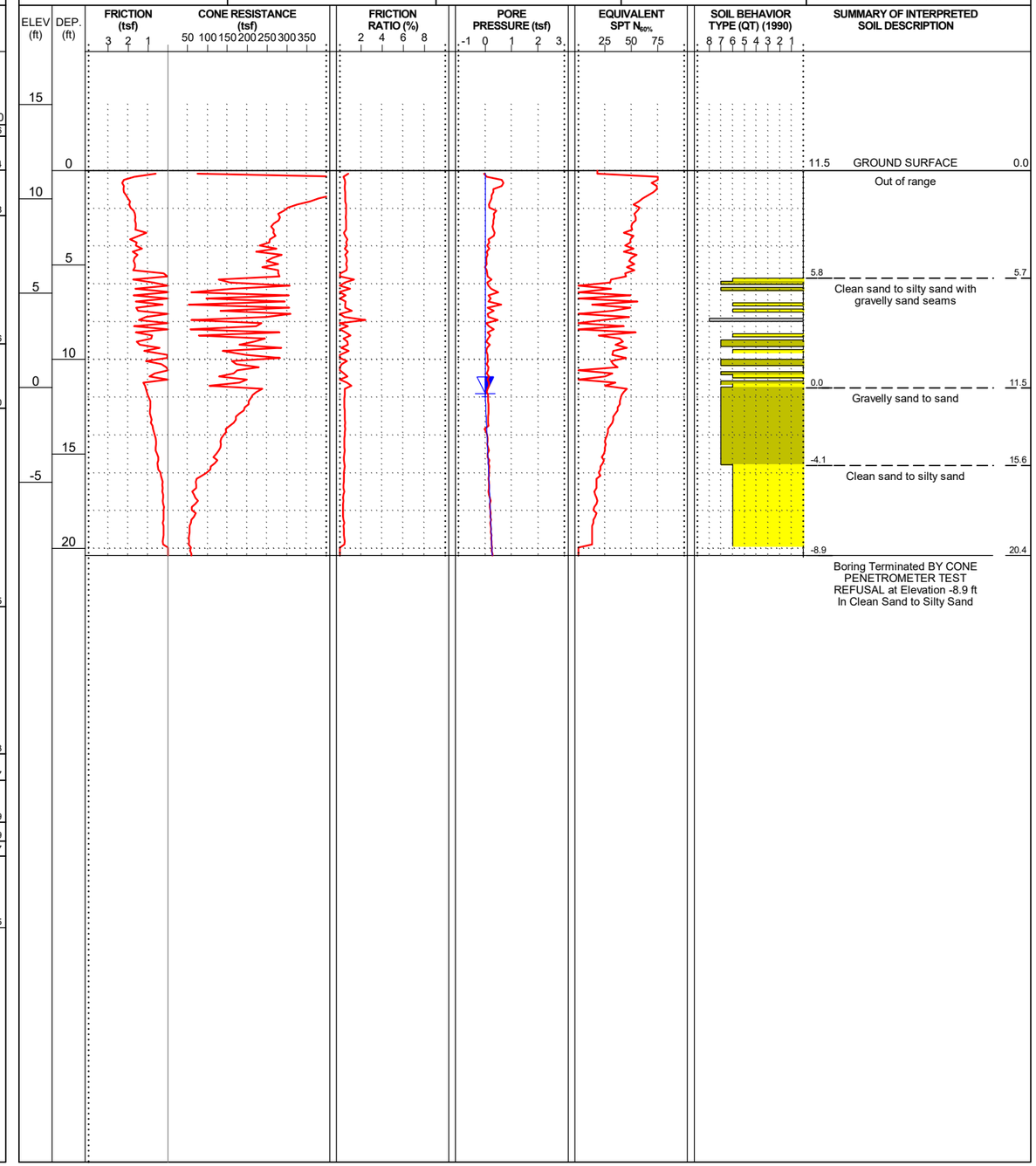
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	170

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_3250	**STATION:** 32+50	**OFFSET:** 30 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 12.0
COLLAR ELEV.: 3.9 ft	**TOTAL DEPTH:** 42.5 ft	**NORTHING:** 178,012	**EASTING:** 2,314,116	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 03/30/26	**COMP. DATE:** 03/30/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_3650	**STATION:** 36+50	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 11.8
COLLAR ELEV.: 11.5 ft	**TOTAL DEPTH:** 20.4 ft	**NORTHING:** 178,294	**EASTING:** 2,314,387	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/01/25	**COMP. DATE:** 10/01/25	**SURF. WATER DEPTH:** N/A



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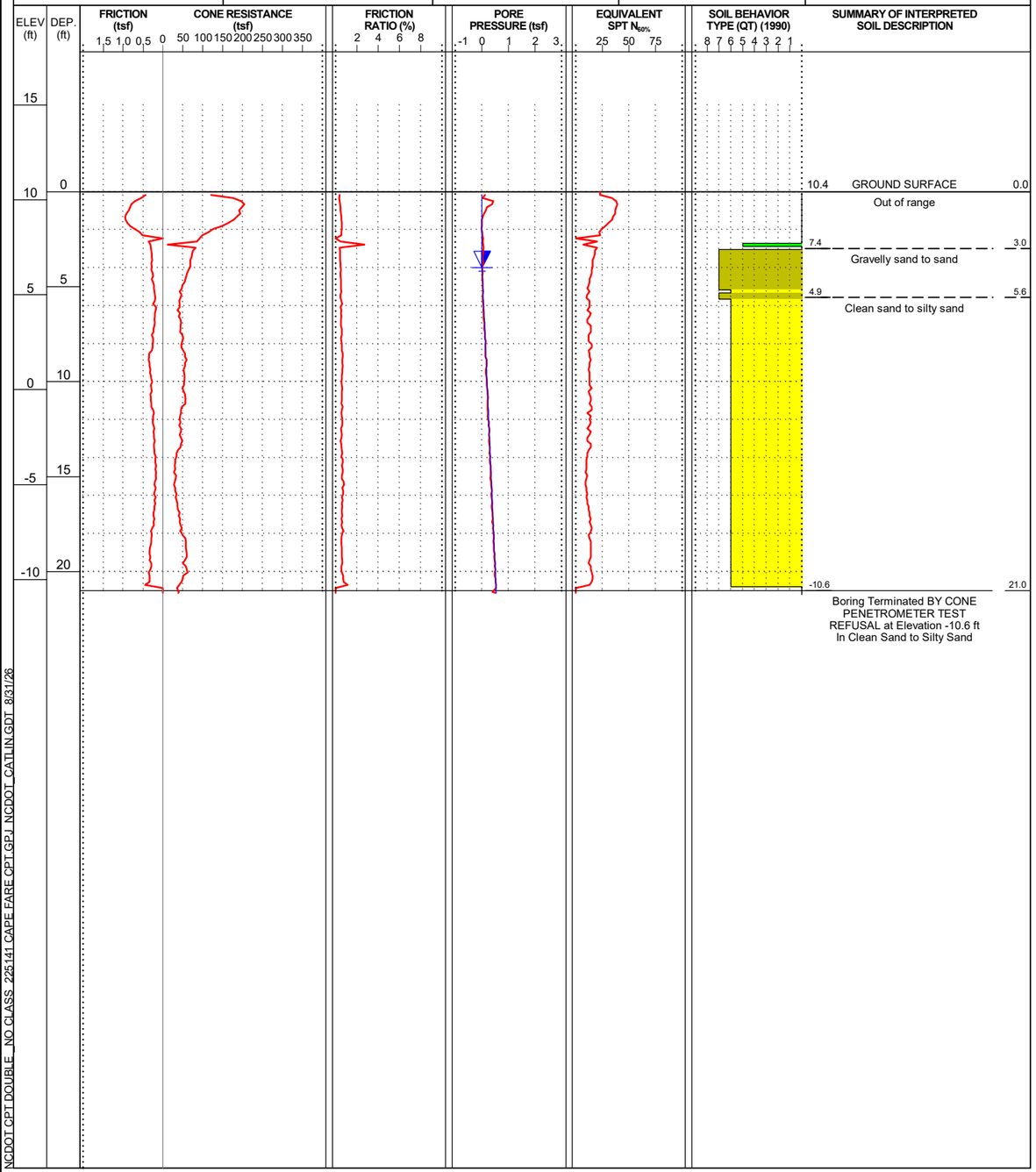
CONE PENETRATION TEST BORING REPORT

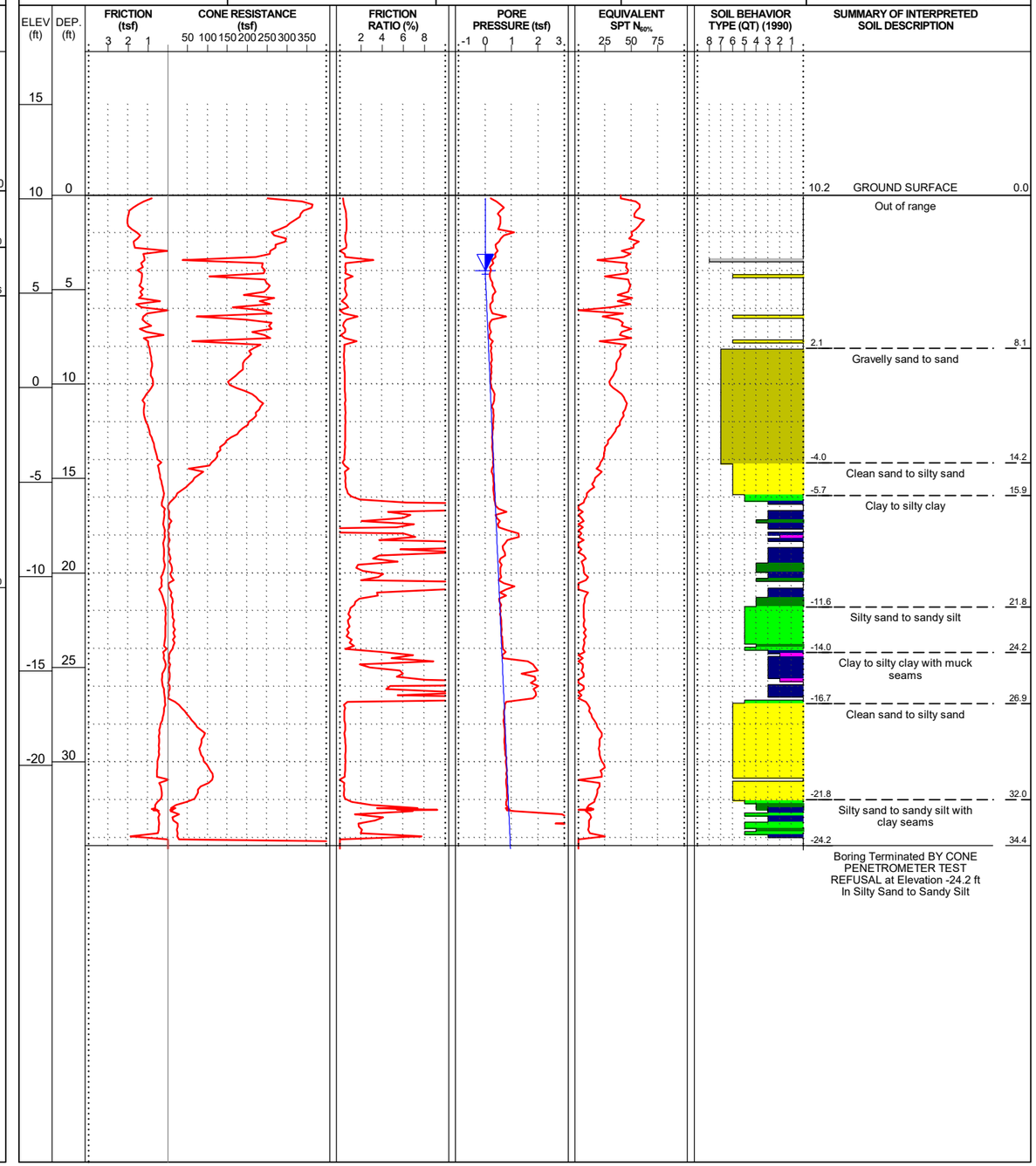
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	171

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_3850	**STATION:** 38+50	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 4.0
COLLAR ELEV.: 10.4 ft	**TOTAL DEPTH:** 21.0 ft	**NORTHING:** 178,468	**EASTING:** 2,314,482	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/01/25	**COMP. DATE:** 10/01/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPB_4050	**STATION:** 40+50	**OFFSET:** 15 ft LT	**ALIGNMENT:** -Y1RPB-	**EST. 0 HR.** 4.0
COLLAR ELEV.: 10.2 ft	**TOTAL DEPTH:** 34.4 ft	**NORTHING:** 178,654	**EASTING:** 2,314,552	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/01/25	**COMP. DATE:** 10/01/25	**SURF. WATER DEPTH:** N/A



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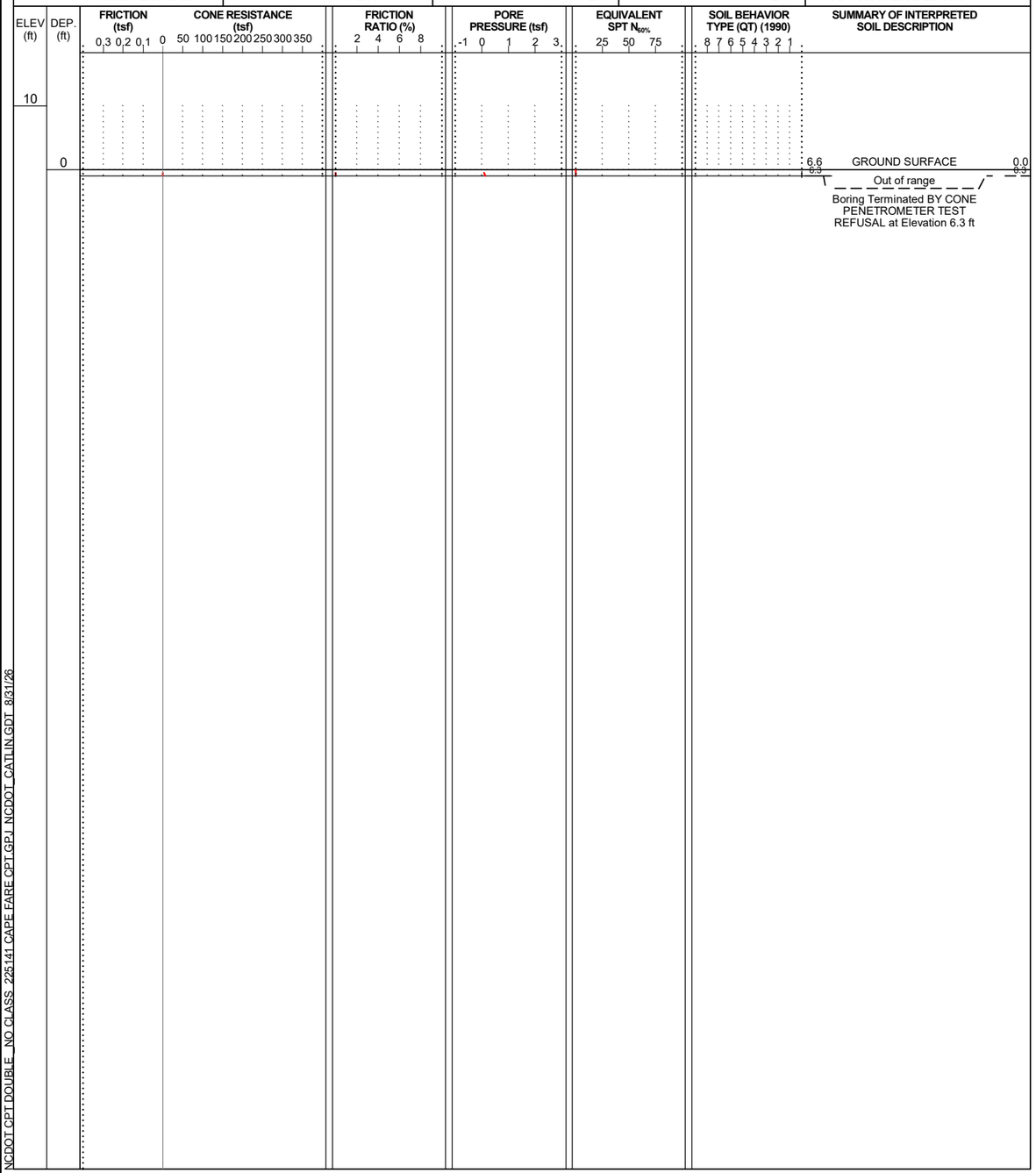
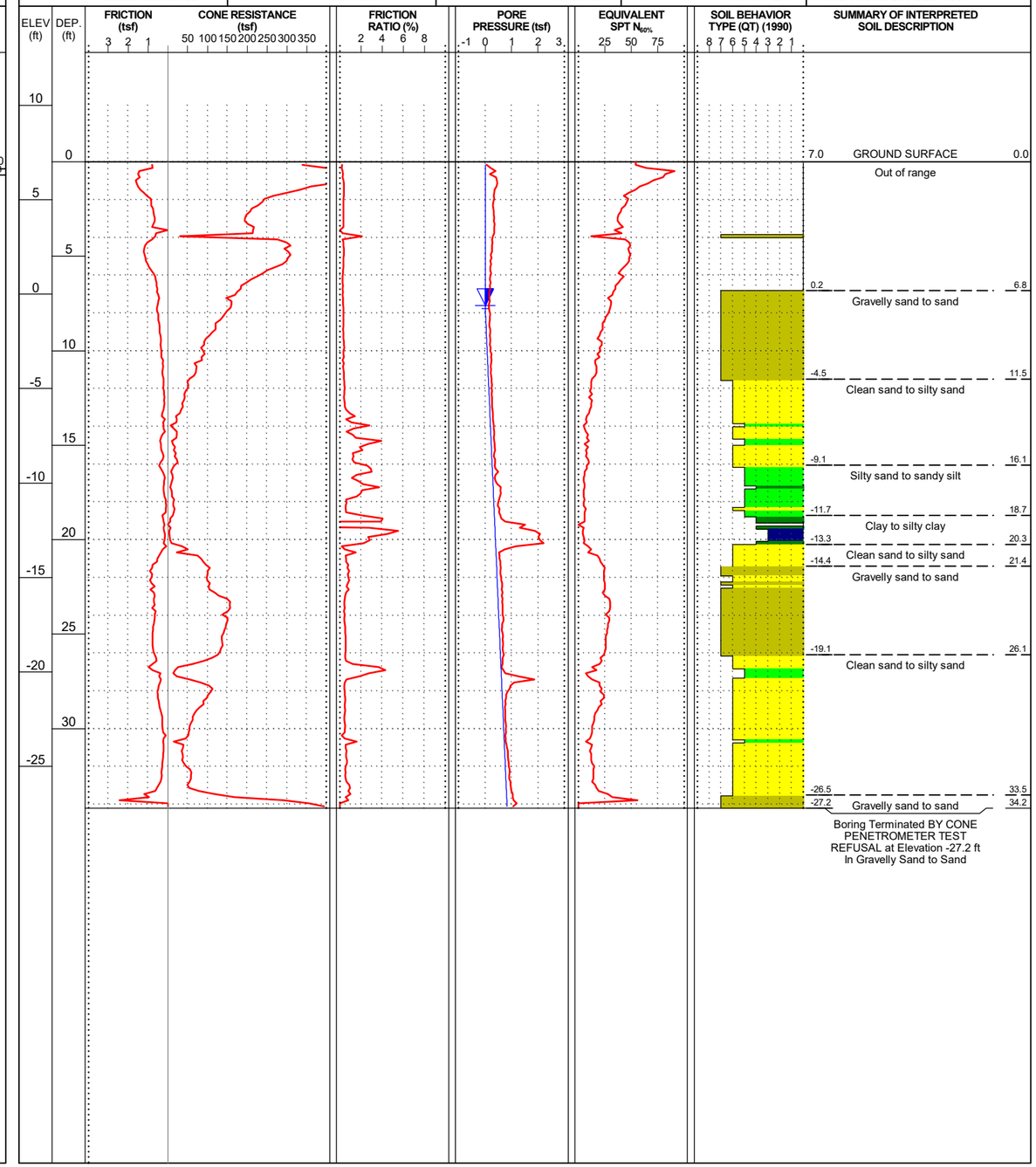
PROJECT REFERENCE	SHEET
HB-0039	172

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_1700	**STATION:** 17+00	**OFFSET:** 20 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** N/A
COLLAR ELEV.: 6.6 ft	**TOTAL DEPTH:** 0.3 ft	**NORTHING:** 177,763	**EASTING:** 2,312,313	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/06/26	**COMP. DATE:** 05/06/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_1900	**STATION:** 19+00	**OFFSET:** CL	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 7.6
COLLAR ELEV.: 7.0 ft	**TOTAL DEPTH:** 34.2 ft	**NORTHING:** 177,729	**EASTING:** 2,312,509	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/06/26	**COMP. DATE:** 05/06/26	**SURF. WATER DEPTH:** N/A



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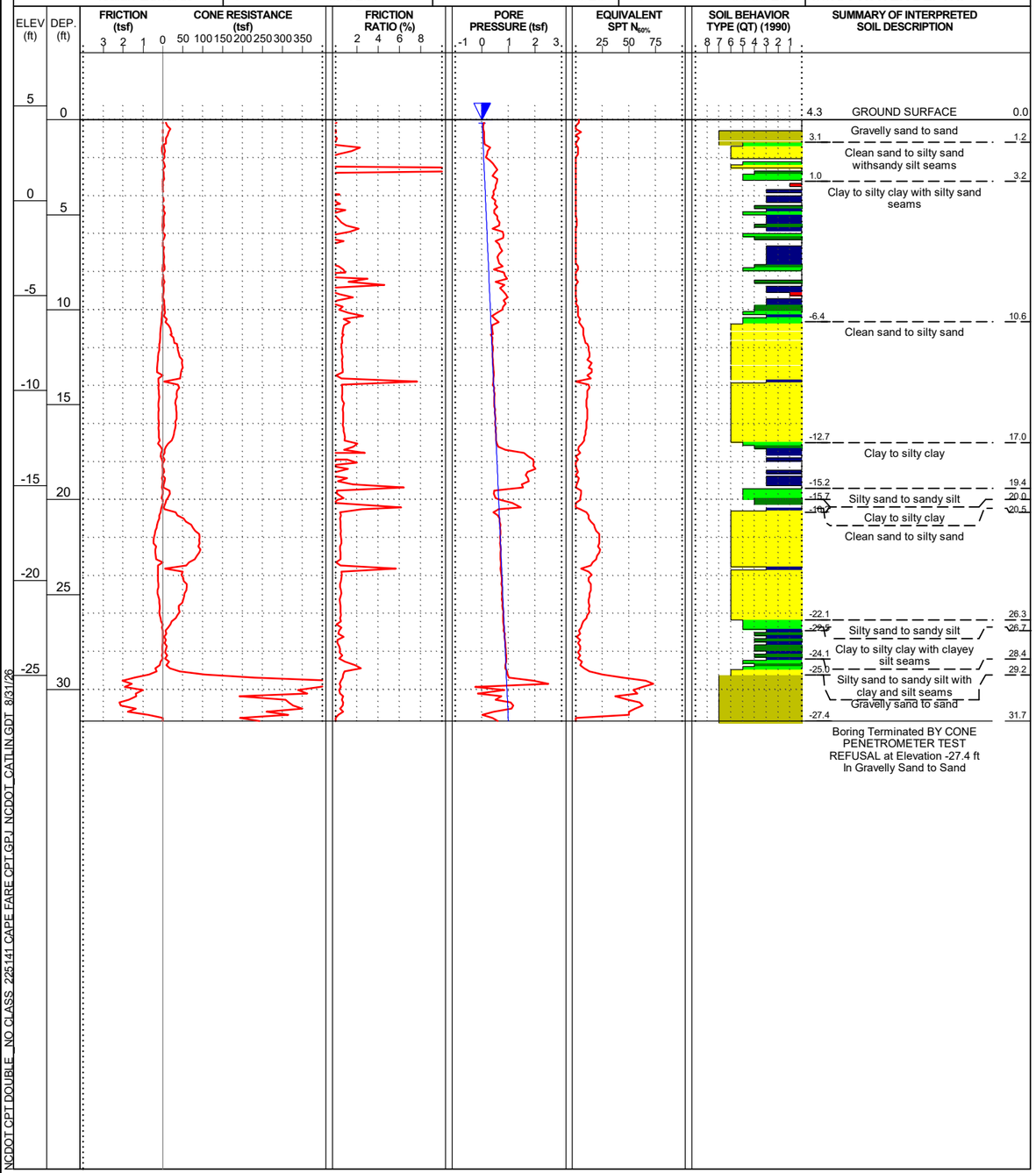
CONE PENETRATION TEST BORING REPORT

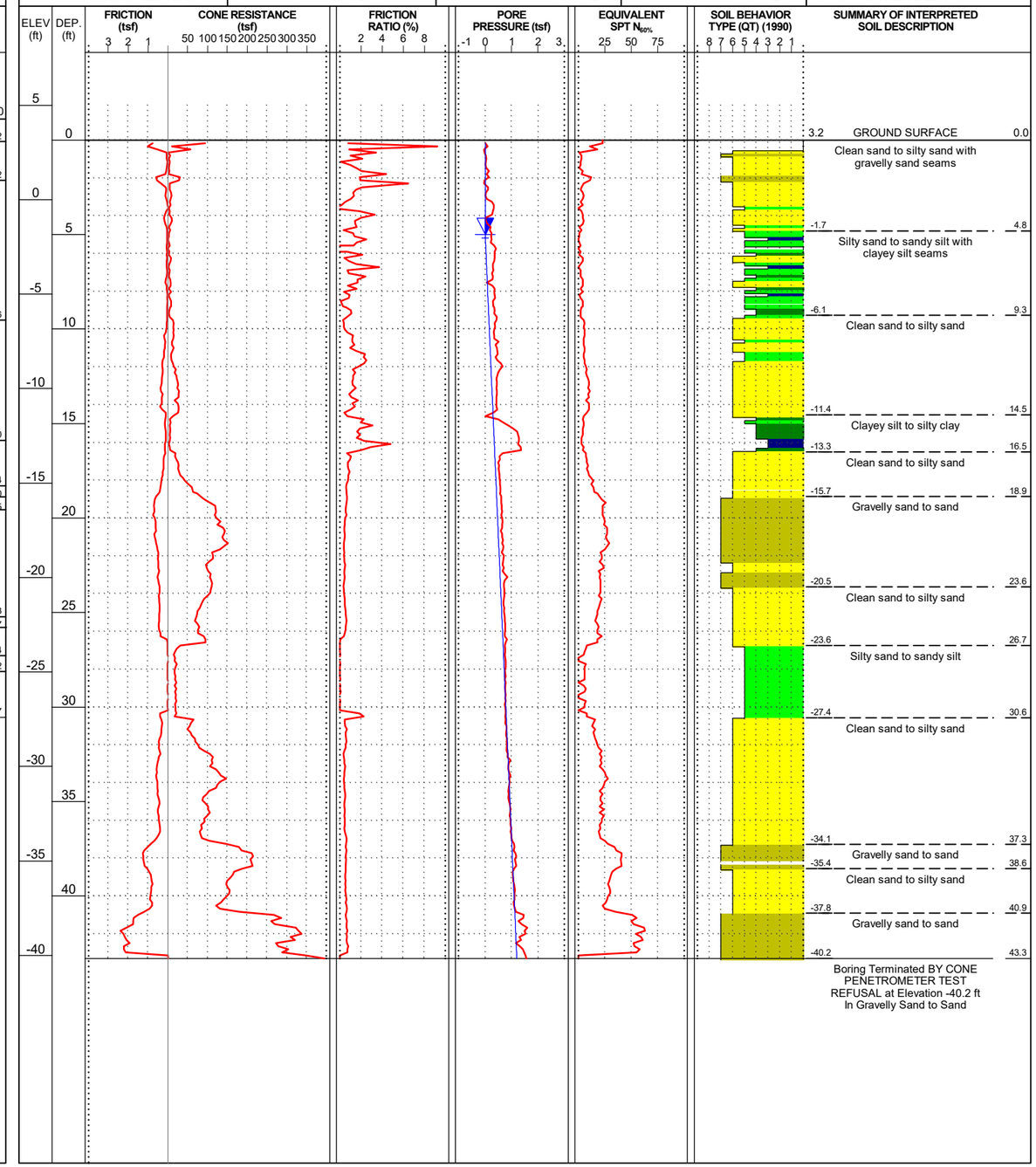
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	173

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_2100	**STATION:** 21+00	**OFFSET:** 15 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 4.3 ft	**TOTAL DEPTH:** 31.7 ft	**NORTHING:** 177,627	**EASTING:** 2,312,680	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/30/26	**COMP. DATE:** 04/30/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_2300	**STATION:** 23+00	**OFFSET:** 15 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 5.0
COLLAR ELEV.: 3.2 ft	**TOTAL DEPTH:** 43.3 ft	**NORTHING:** 177,507	**EASTING:** 2,312,836	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/30/26	**COMP. DATE:** 04/30/26	**SURF. WATER DEPTH:** N/A



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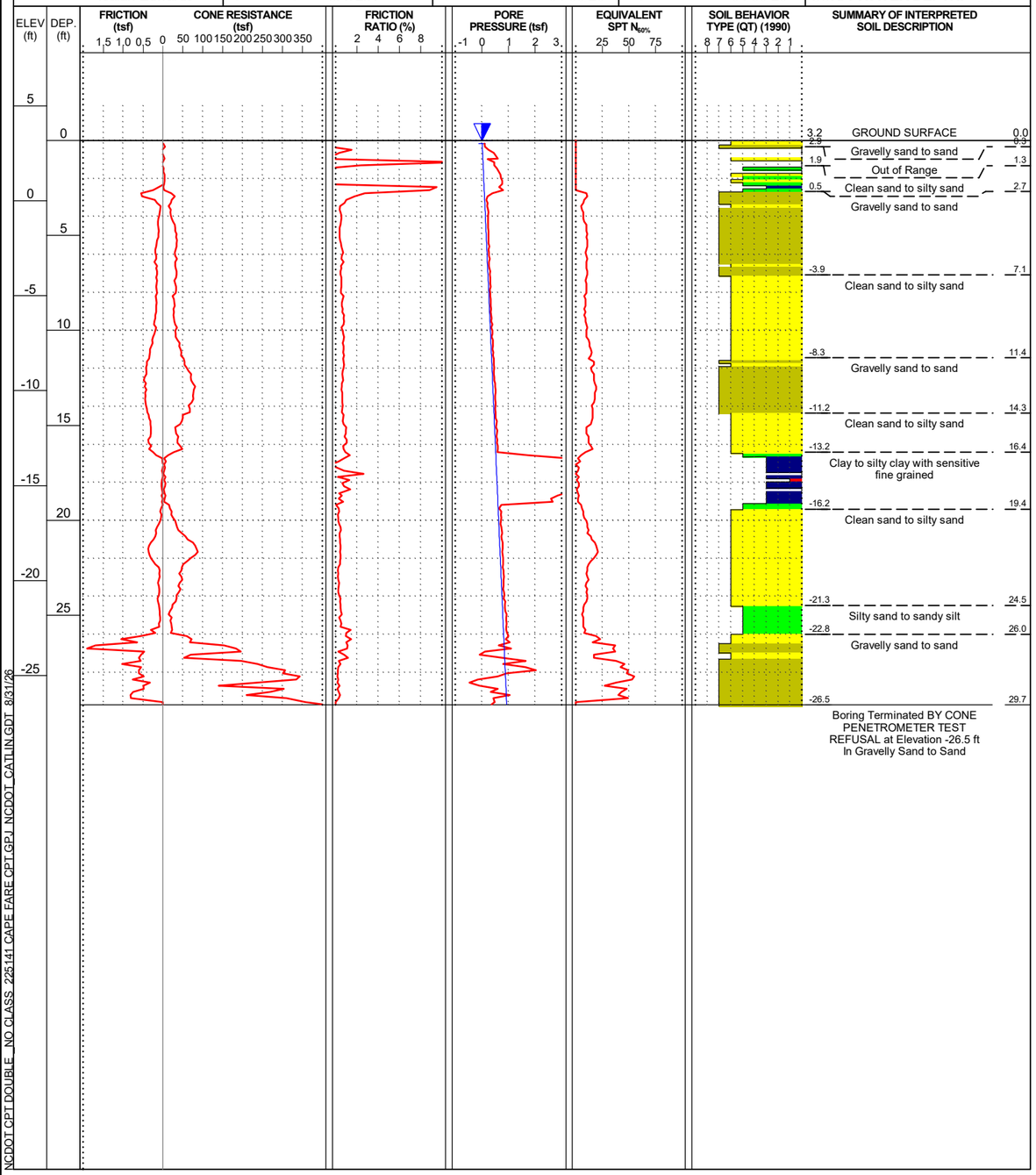
CONE PENETRATION TEST BORING REPORT

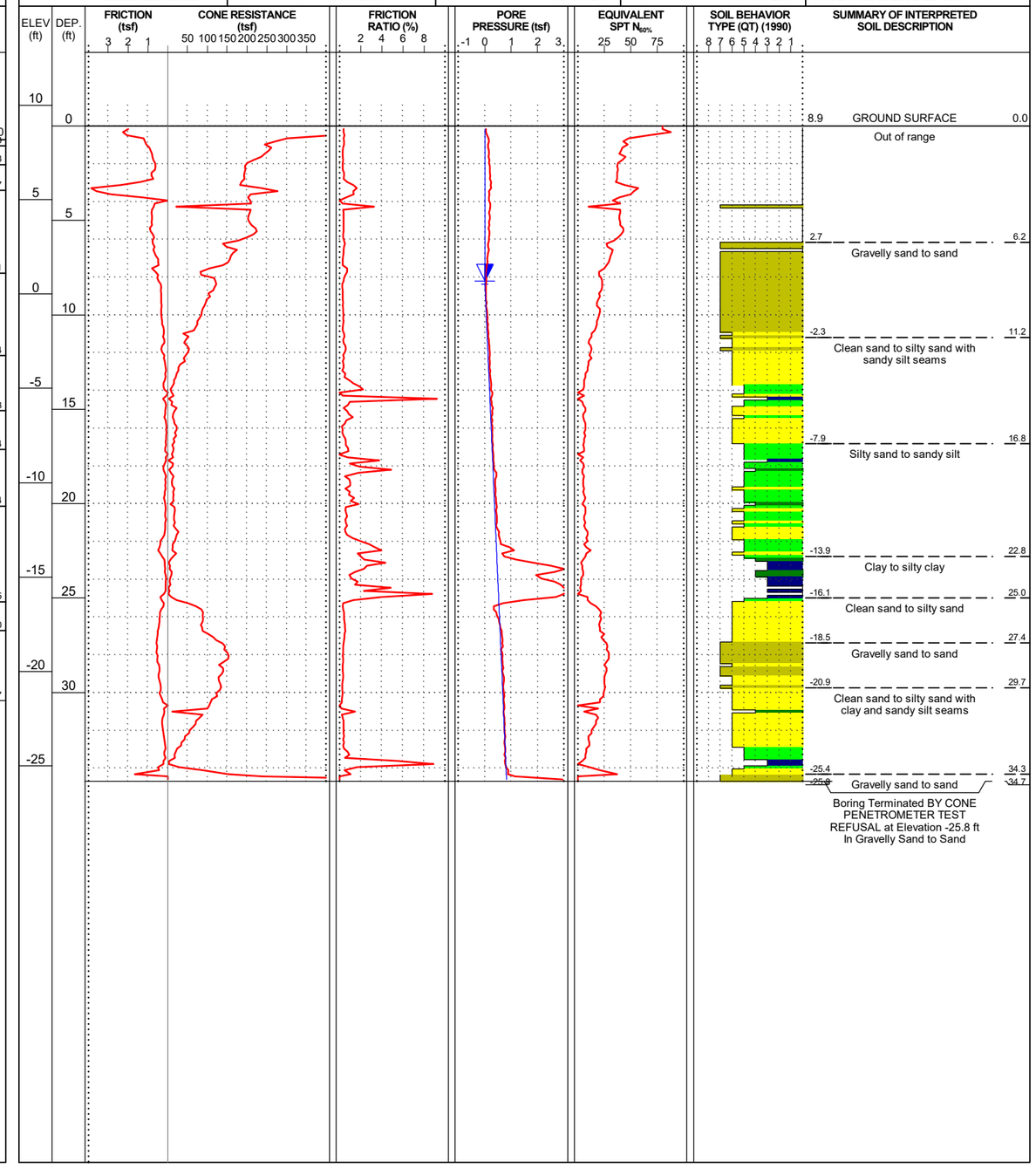
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	174

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_2500	**STATION:** 25+00	**OFFSET:** 15 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 0.0
COLLAR ELEV.: 3.2 ft	**TOTAL DEPTH:** 29.7 ft	**NORTHING:** 177,361	**EASTING:** 2,312,969	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/30/26	**COMP. DATE:** 04/30/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_2700	**STATION:** 27+00	**OFFSET:** 5 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 8.2
COLLAR ELEV.: 8.9 ft	**TOTAL DEPTH:** 34.7 ft	**NORTHING:** 177,210	**EASTING:** 2,313,100	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/06/26	**COMP. DATE:** 05/06/26	**SURF. WATER DEPTH:** N/A



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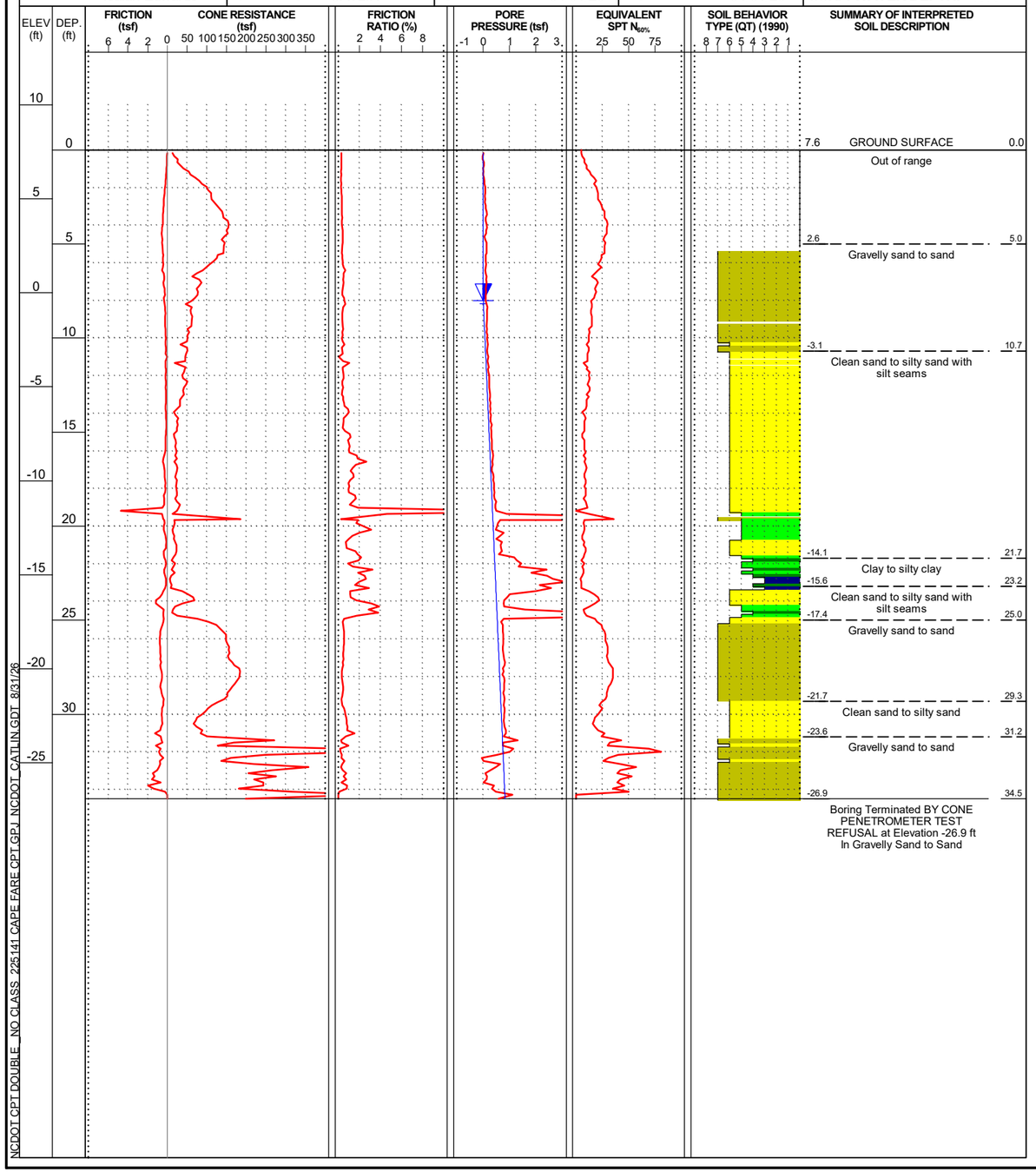
CONE PENETRATION TEST BORING REPORT

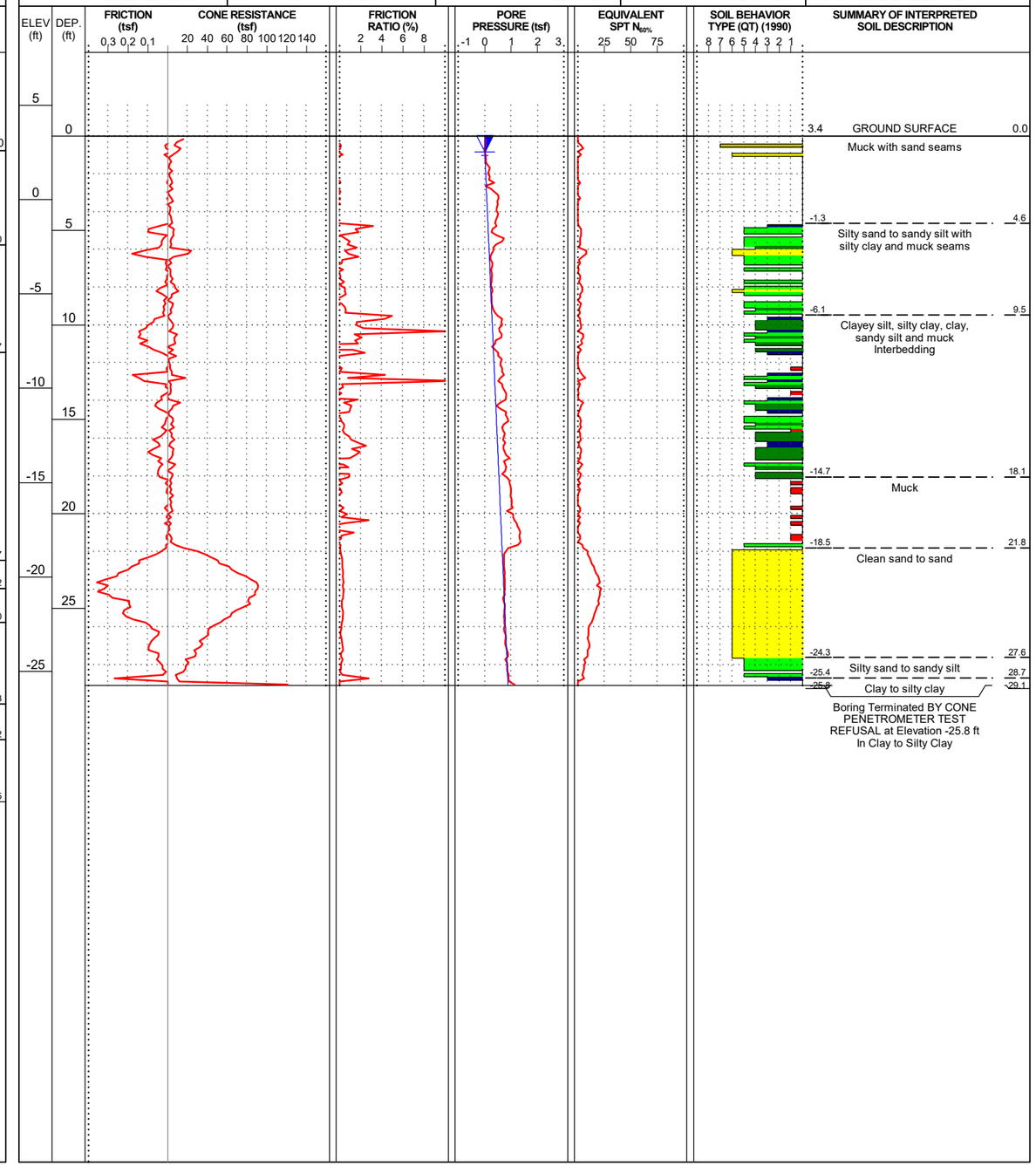
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	175

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_2900	**STATION:** 29+00	**OFFSET:** CL	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 8.0
COLLAR ELEV.: 7.6 ft	**TOTAL DEPTH:** 34.5 ft	**NORTHING:** 177,065	**EASTING:** 2,313,238	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/01/26	**COMP. DATE:** 04/01/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_3100	**STATION:** 31+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 0.8
COLLAR ELEV.: 3.4 ft	**TOTAL DEPTH:** 29.1 ft	**NORTHING:** 176,957	**EASTING:** 2,313,404	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



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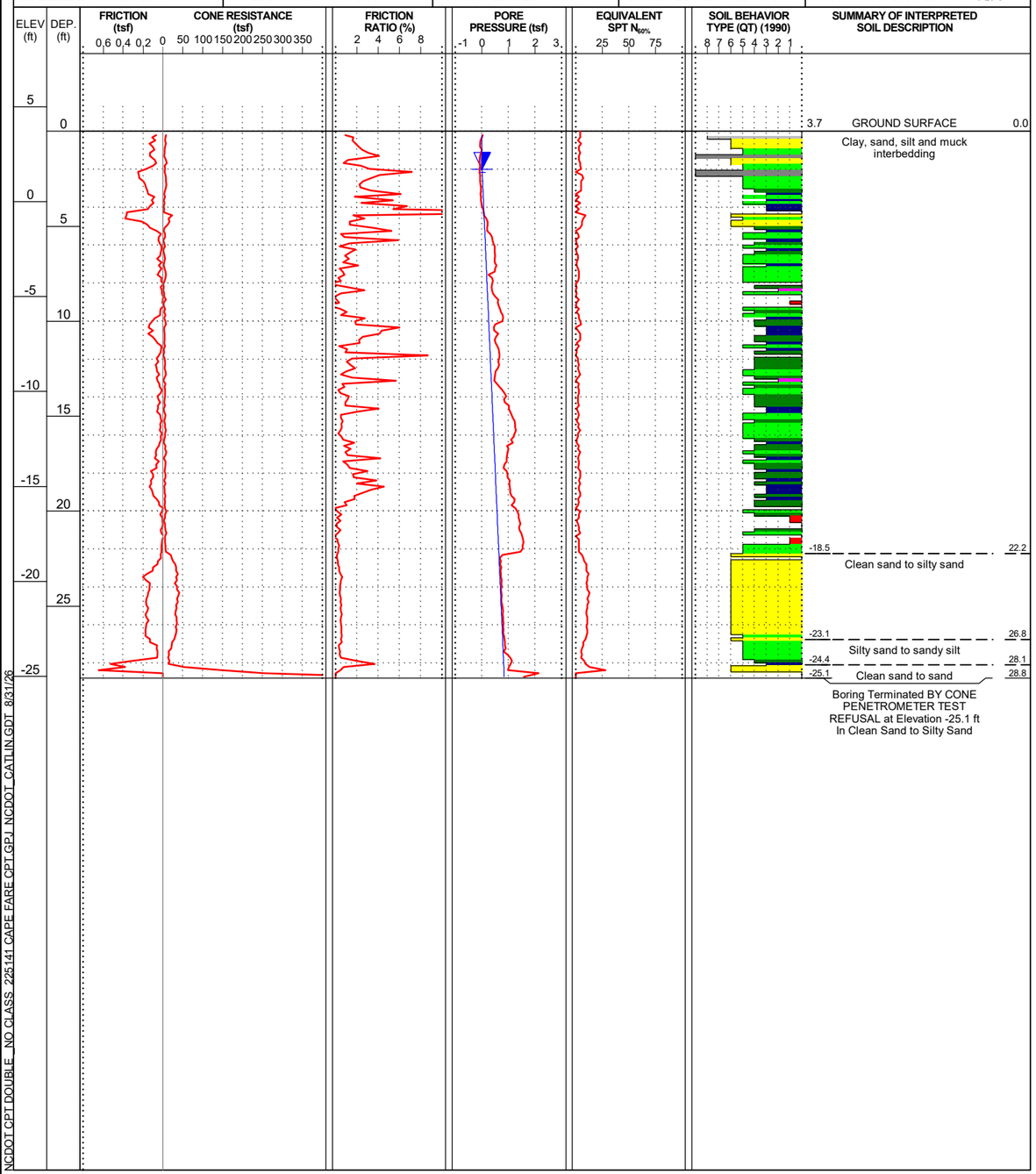
CONE PENETRATION TEST BORING REPORT

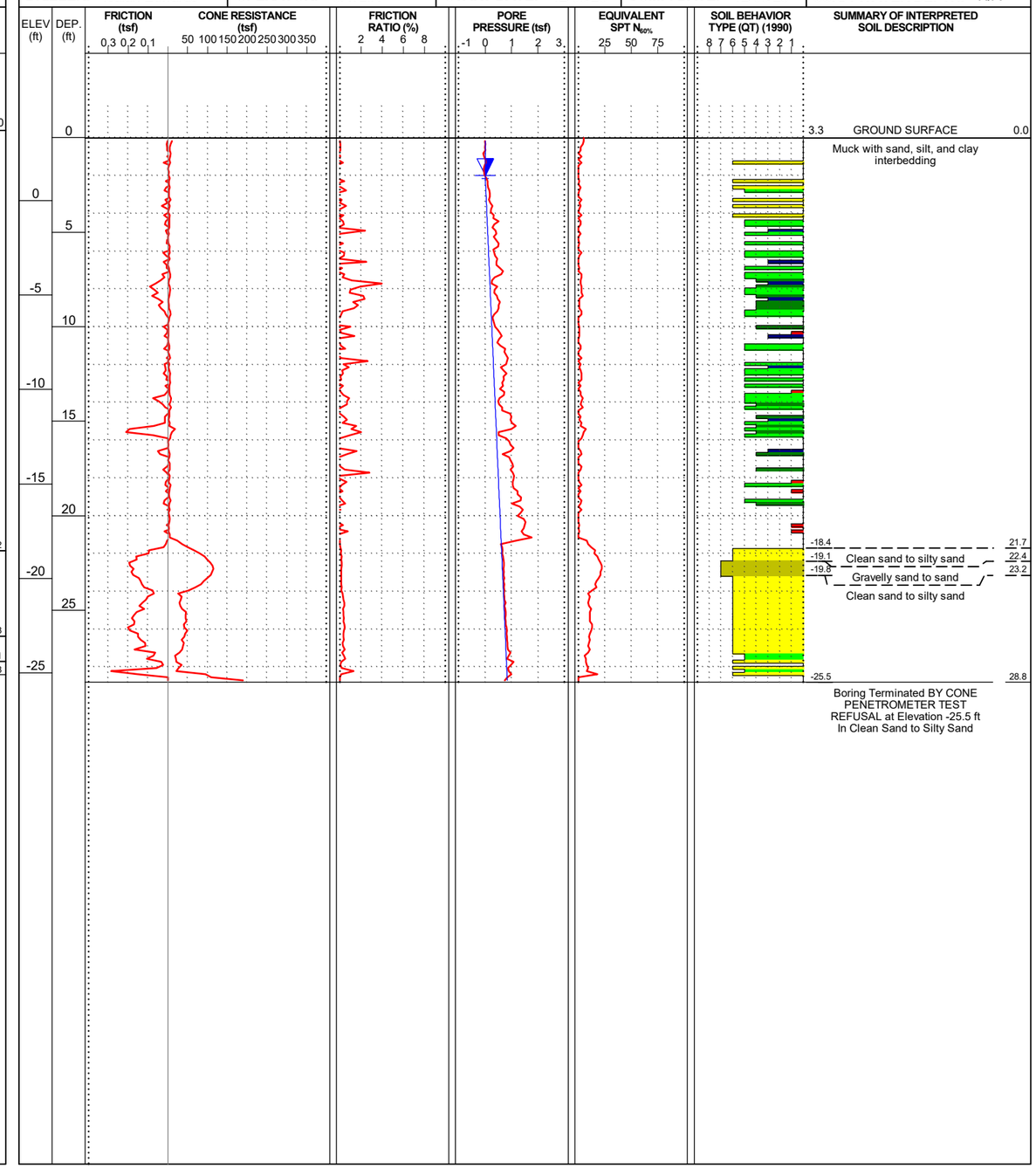
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	176

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_3300	**STATION:** 33+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 2.0
COLLAR ELEV.: 3.7 ft	**TOTAL DEPTH:** 28.8 ft	**NORTHING:** 176,887	**EASTING:** 2,313,588	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_3500	**STATION:** 35+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 2.0
COLLAR ELEV.: 3.3 ft	**TOTAL DEPTH:** 28.8 ft	**NORTHING:** 176,865	**EASTING:** 2,313,784	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



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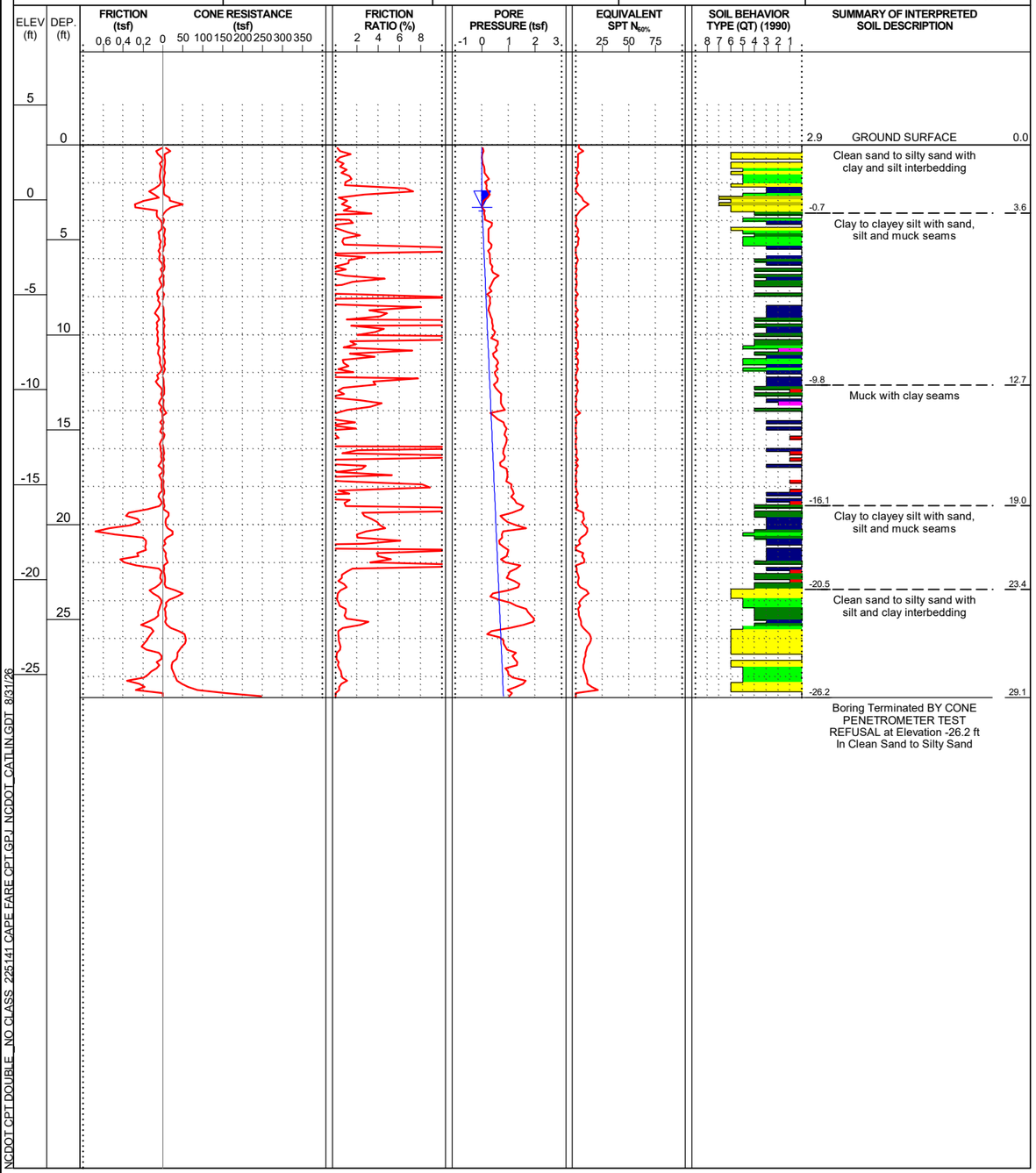
CONE PENETRATION TEST BORING REPORT

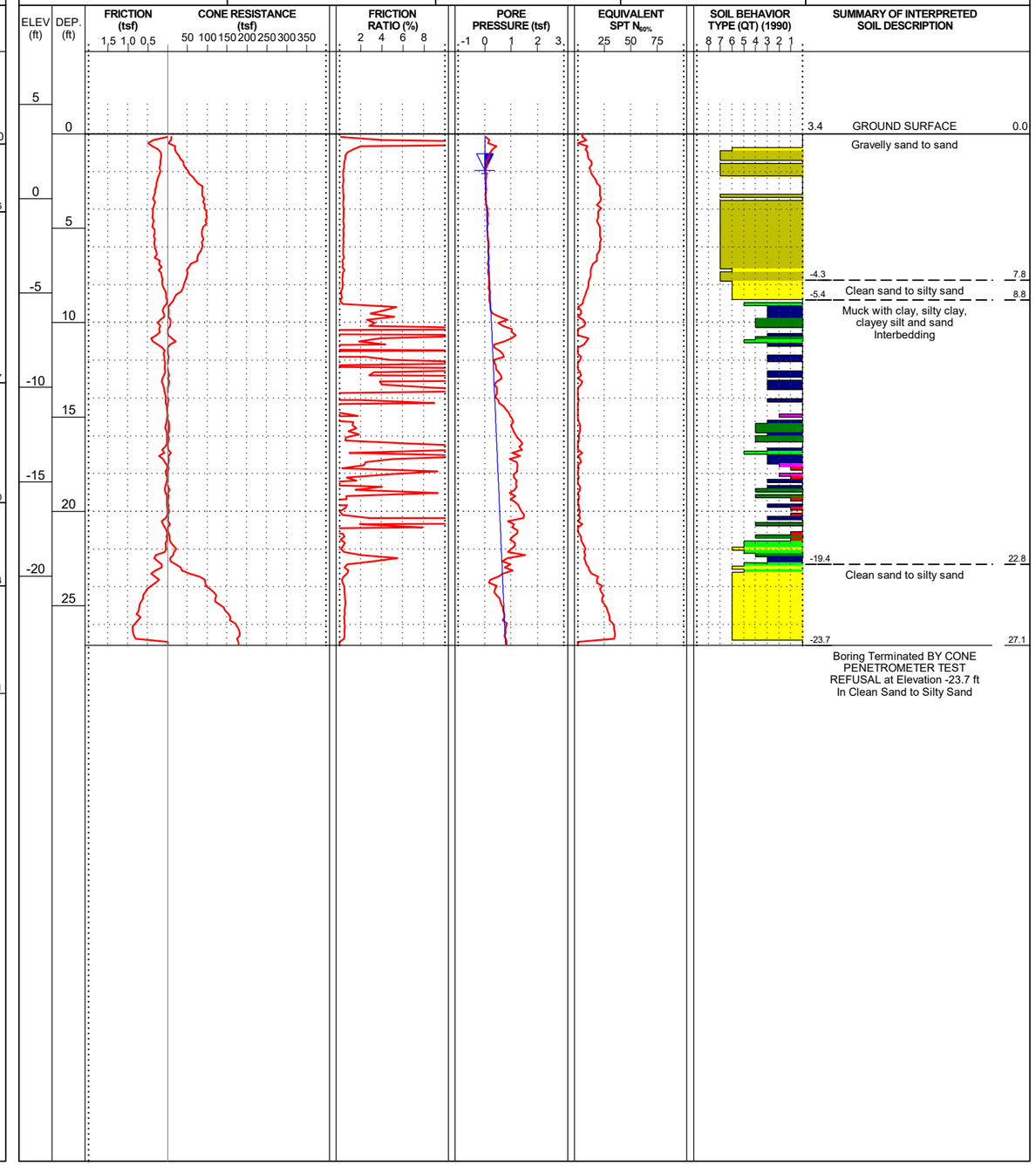
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	177

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_3700	**STATION:** 36+90	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 3.3
COLLAR ELEV.: 2.9 ft	**TOTAL DEPTH:** 29.1 ft	**NORTHING:** 176,891	**EASTING:** 2,313,969	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/03/25	**COMP. DATE:** 12/03/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_3900	**STATION:** 39+20	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 1.9
COLLAR ELEV.: 3.4 ft	**TOTAL DEPTH:** 27.1 ft	**NORTHING:** 176,981	**EASTING:** 2,314,177	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/04/25	**COMP. DATE:** 12/04/25	**SURF. WATER DEPTH:** N/A



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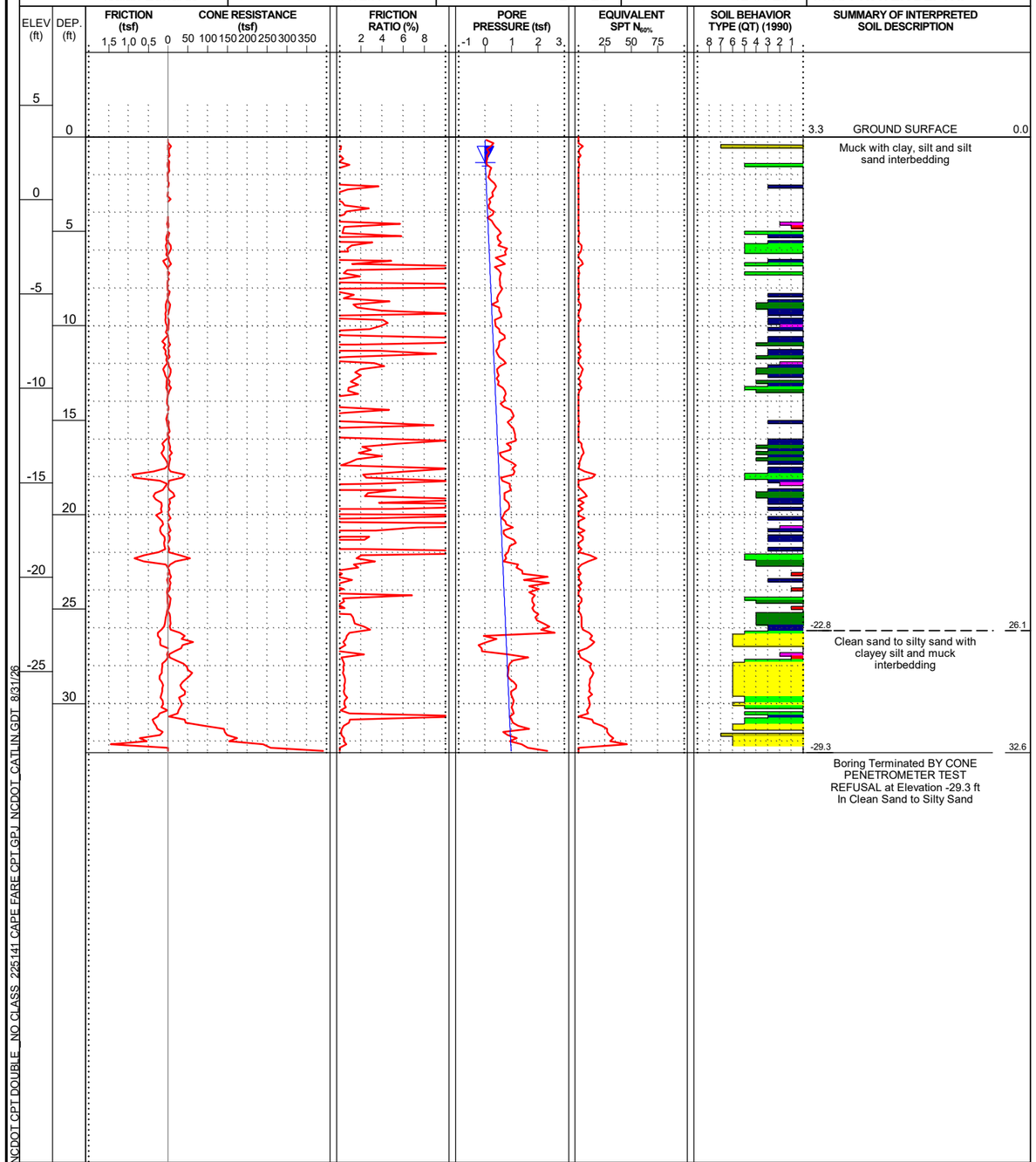
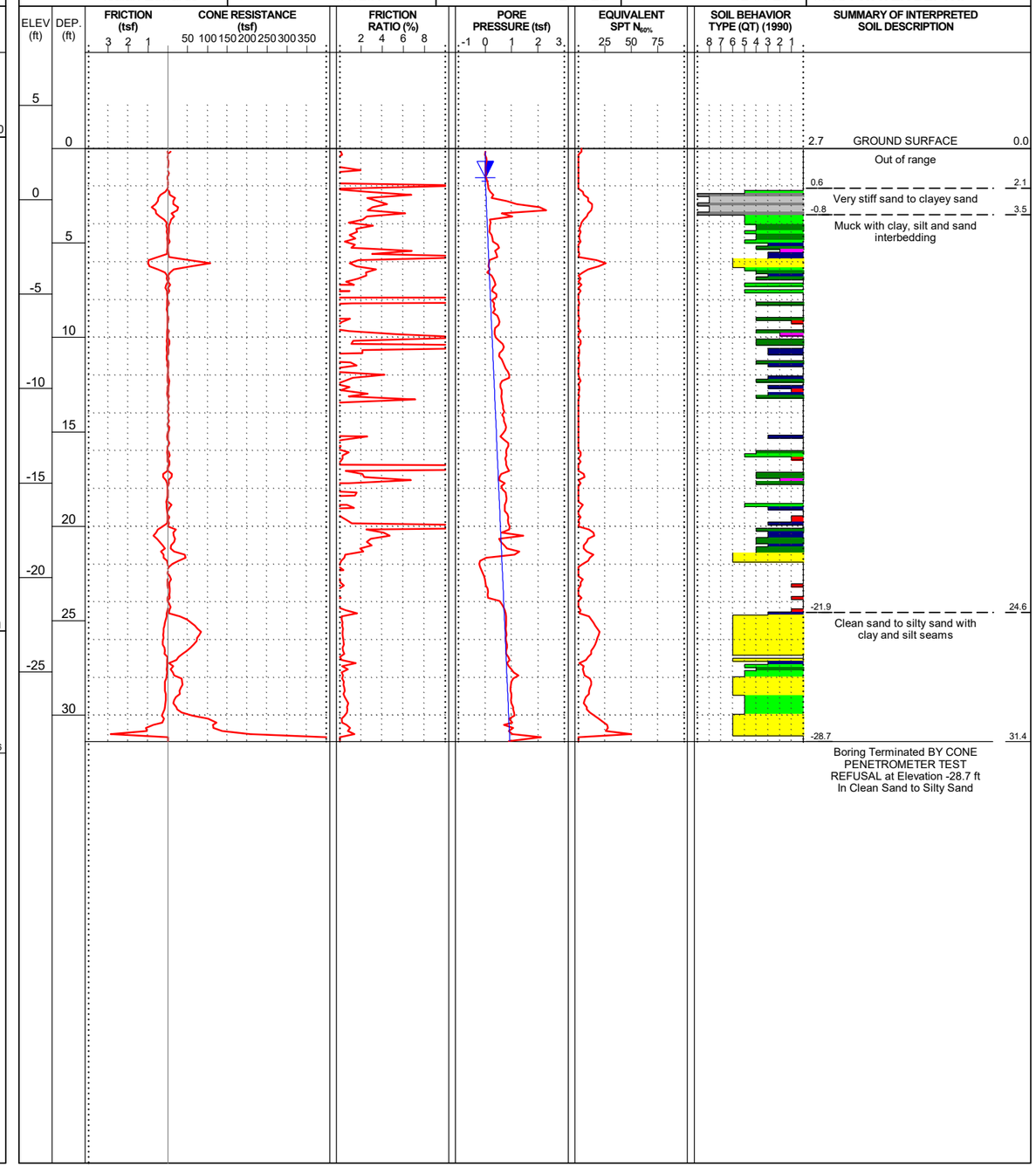
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	178

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_4100A	**STATION:** 41+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 1.4
COLLAR ELEV.: 3.3 ft	**TOTAL DEPTH:** 32.6 ft	**NORTHING:** 177,092	**EASTING:** 2,314,316	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/04/25	**COMP. DATE:** 12/04/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_4300	**STATION:** 43+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 1.6
COLLAR ELEV.: 2.7 ft	**TOTAL DEPTH:** 31.4 ft	**NORTHING:** 177,248	**EASTING:** 2,314,435	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 12/04/25	**COMP. DATE:** 12/04/25	**SURF. WATER DEPTH:** N/A



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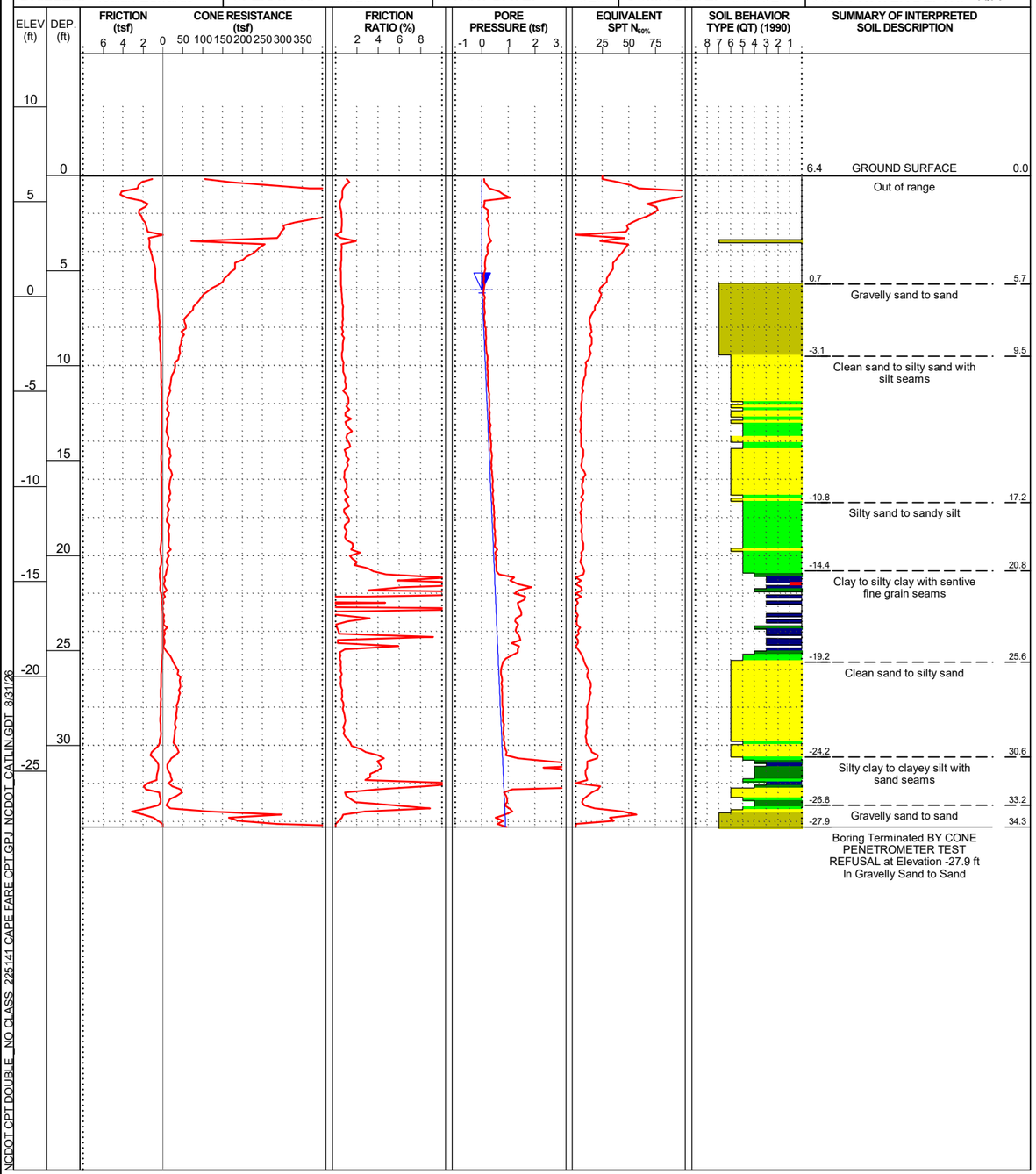
CONE PENETRATION TEST BORING REPORT

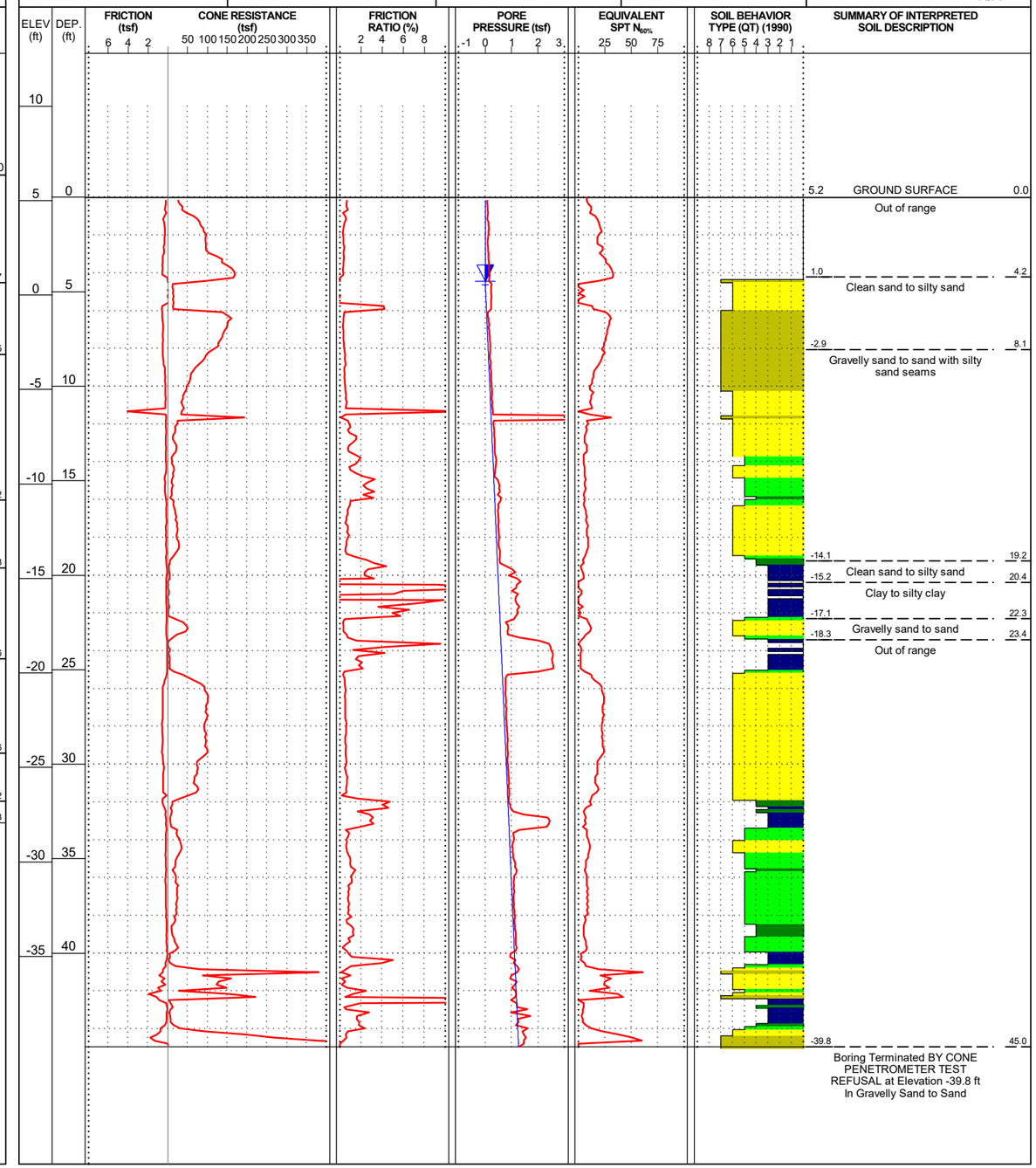
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	179

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_5000	**STATION:** 50+00	**OFFSET:** 5 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 6.0
COLLAR ELEV.: 6.4 ft	**TOTAL DEPTH:** 34.3 ft	**NORTHING:** 177,903	**EASTING:** 2,314,667	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/01/26	**COMP. DATE:** 04/01/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_5200	**STATION:** 52+00	**OFFSET:** 5 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 4.5
COLLAR ELEV.: 5.2 ft	**TOTAL DEPTH:** 45.0 ft	**NORTHING:** 178,101	**EASTING:** 2,314,696	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/01/26	**COMP. DATE:** 04/01/26	**SURF. WATER DEPTH:** N/A



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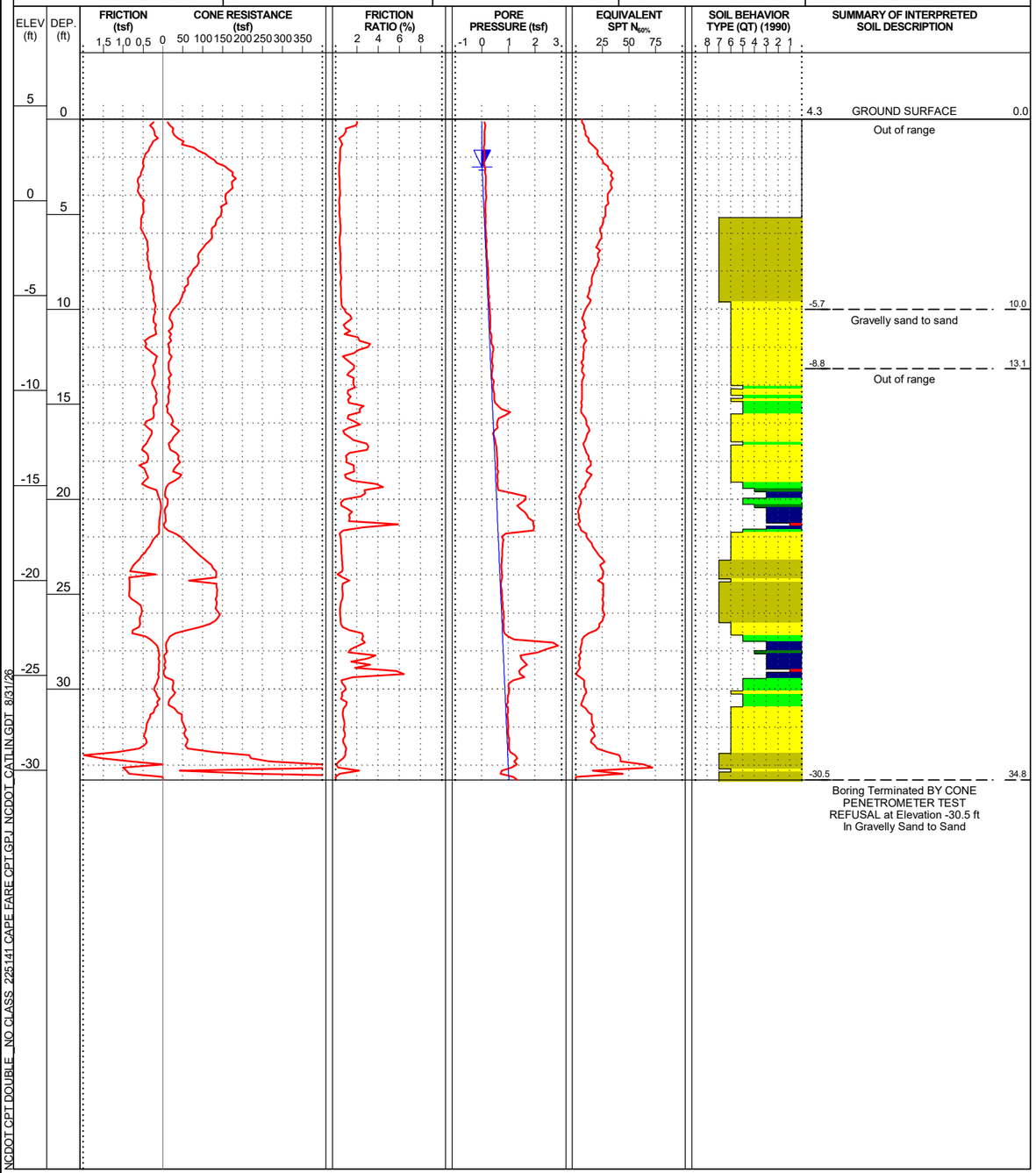
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	180

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y1RPC_5400	**STATION:** 54+00	**OFFSET:** 5 ft RT	**ALIGNMENT:** -Y1RPC-	**EST. 0 HR.** 2.5
COLLAR ELEV.: 4.3 ft	**TOTAL DEPTH:** 34.8 ft	**NORTHING:** 178,299	**EASTING:** 2,314,726	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 04/01/26	**COMP. DATE:** 04/01/26	**SURF. WATER DEPTH:** N/A



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CONE PENETRATION TEST BORING REPORT

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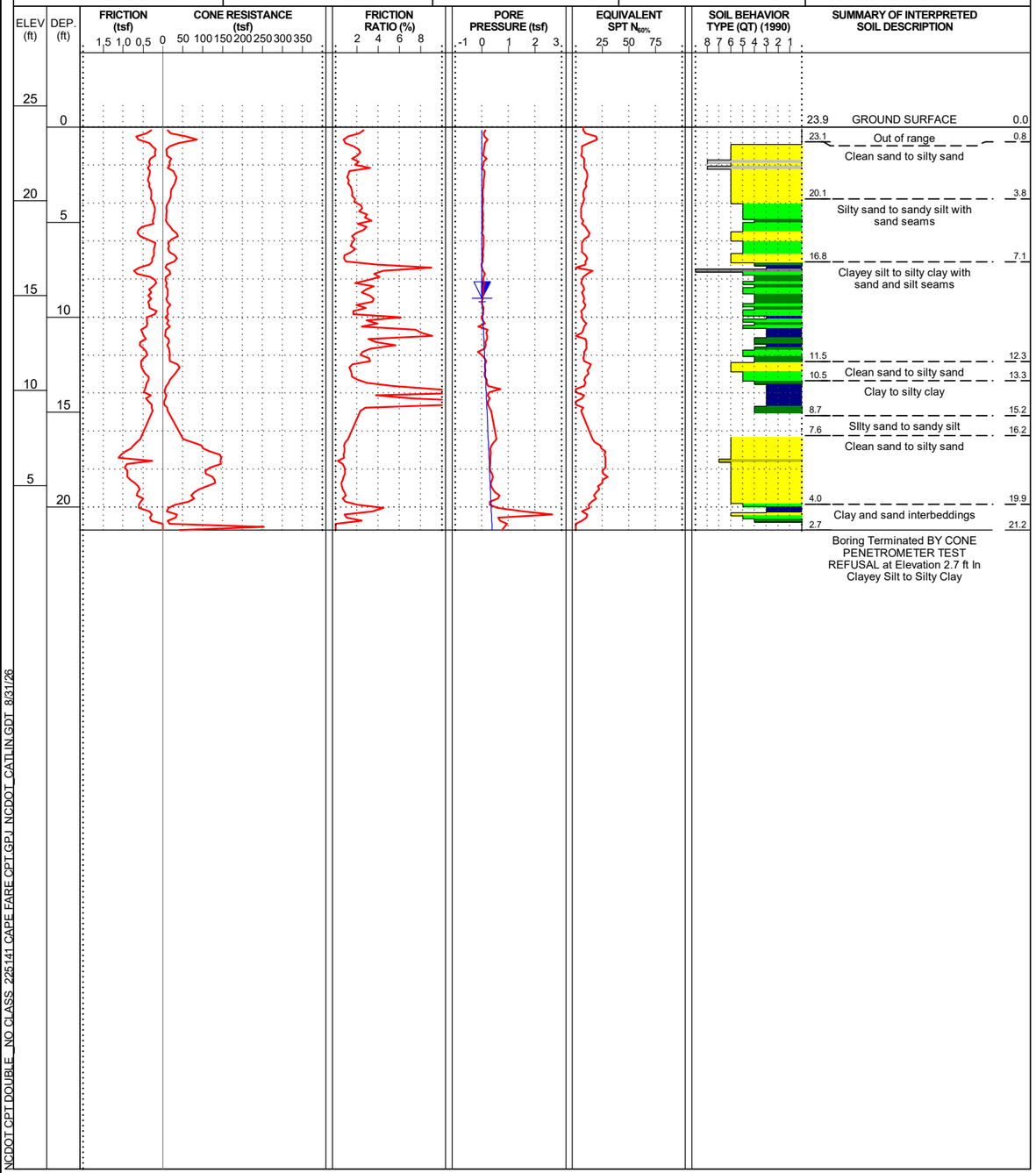
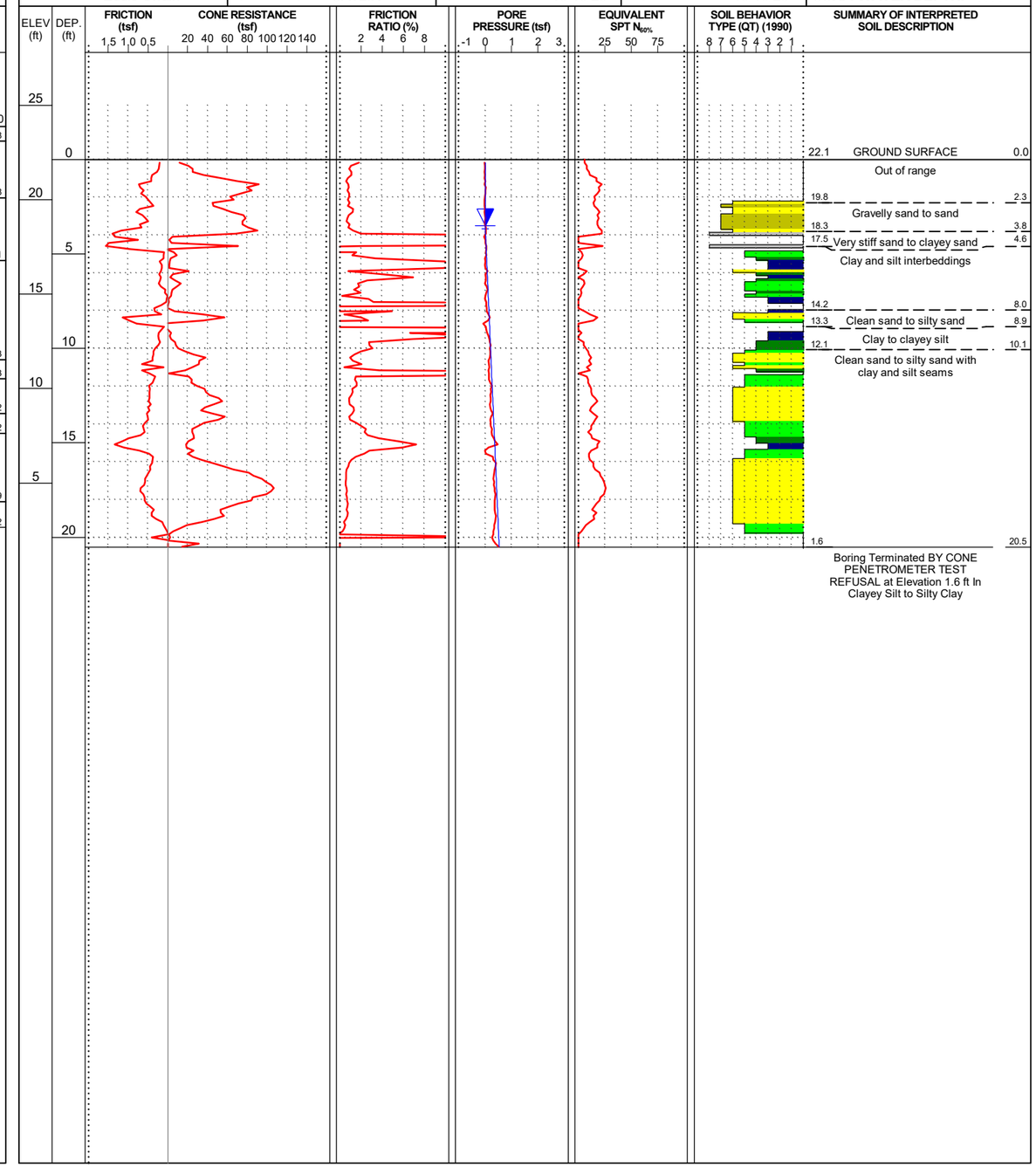
PROJECT REFERENCE	SHEET
HB-0039	181

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_1375	**STATION:** 13+75	**OFFSET:** CL	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 9.0
COLLAR ELEV.: 23.9 ft	**TOTAL DEPTH:** 21.2 ft	**NORTHING:** 174,489	**EASTING:** 2,318,935	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/16/25	**COMP. DATE:** 10/16/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_1575	**STATION:** 15+75	**OFFSET:** CL	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 3.5
COLLAR ELEV.: 22.1 ft	**TOTAL DEPTH:** 20.5 ft	**NORTHING:** 174,327	**EASTING:** 2,318,822	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/16/25	**COMP. DATE:** 10/16/25	**SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE _NO CLASS 225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

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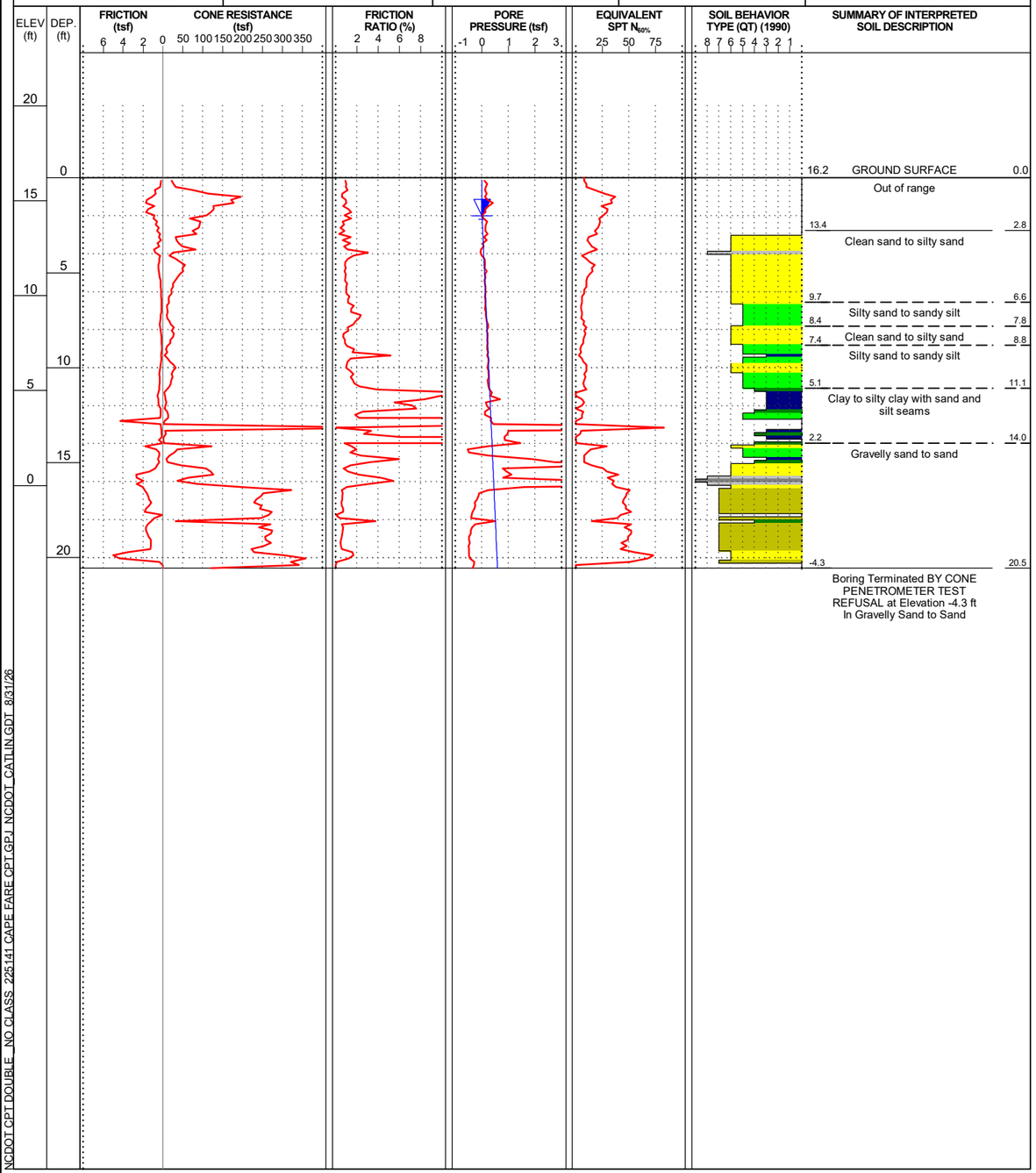
CONE PENETRATION TEST BORING REPORT

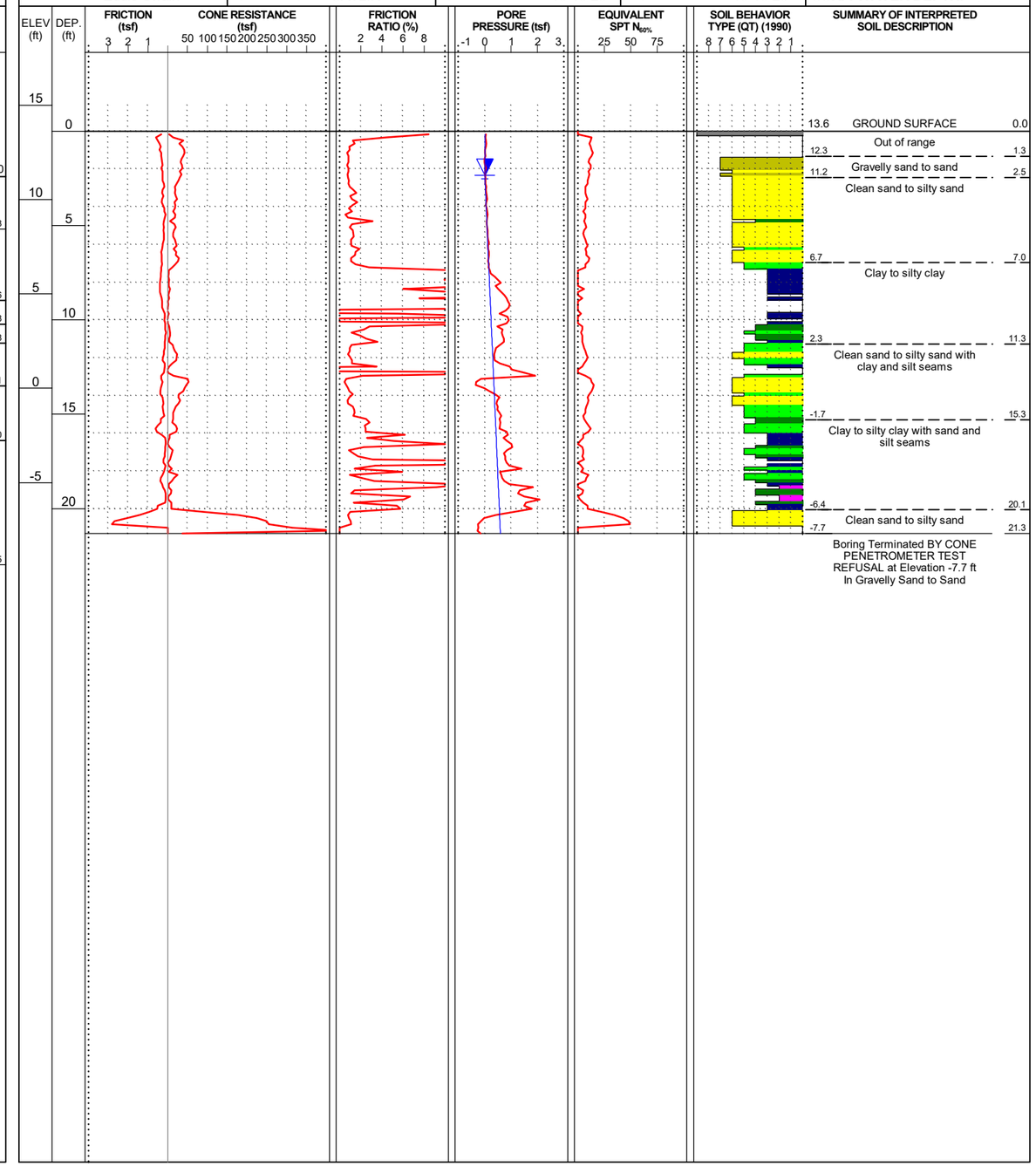
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	182

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_1800	**STATION:** 18+07	**OFFSET:** 41 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 2.0
COLLAR ELEV.: 16.2 ft	**TOTAL DEPTH:** 20.5 ft	**NORTHING:** 174,282	**EASTING:** 2,318,605	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/16/25	**COMP. DATE:** 10/16/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_1900	**STATION:** 19+00	**OFFSET:** 30 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 2.4
COLLAR ELEV.: 13.6 ft	**TOTAL DEPTH:** 21.3 ft	**NORTHING:** 174,257	**EASTING:** 2,318,514	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/16/25	**COMP. DATE:** 10/16/25	**SURF. WATER DEPTH:** N/A



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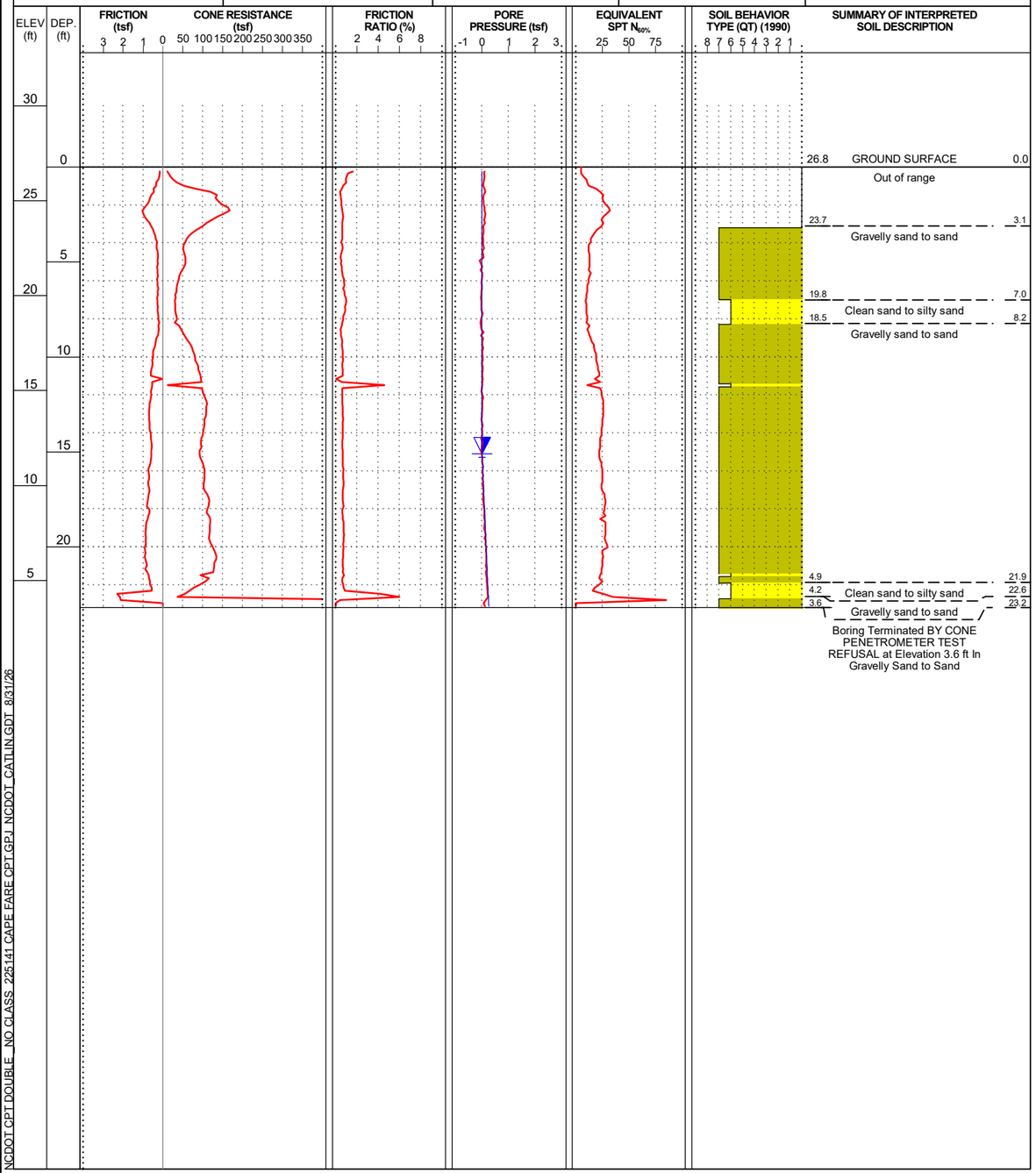
CONE PENETRATION TEST BORING REPORT

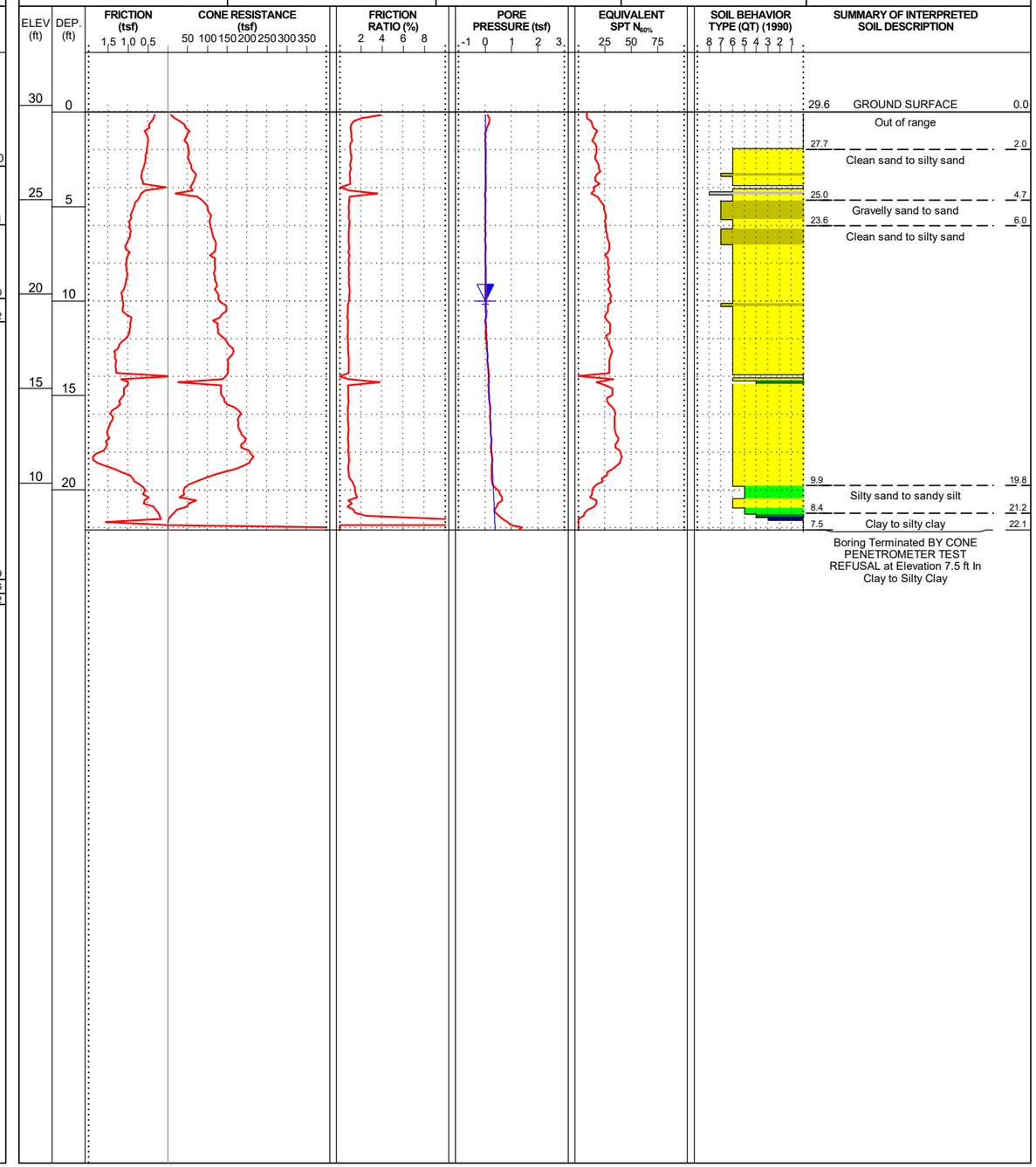
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	183

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_2200	**STATION:** 22+00	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 15.1
COLLAR ELEV.: 26.8 ft	**TOTAL DEPTH:** 23.2 ft	**NORTHING:** 174,322	**EASTING:** 2,318,245	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DPG1563
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/08/26	**COMP. DATE:** 05/08/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_2800	**STATION:** 28+20	**OFFSET:** 30 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 10.0
COLLAR ELEV.: 29.6 ft	**TOTAL DEPTH:** 22.1 ft	**NORTHING:** 174,938	**EASTING:** 2,318,185	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/15/25	**COMP. DATE:** 10/15/25	**SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE _NO CLASS_225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

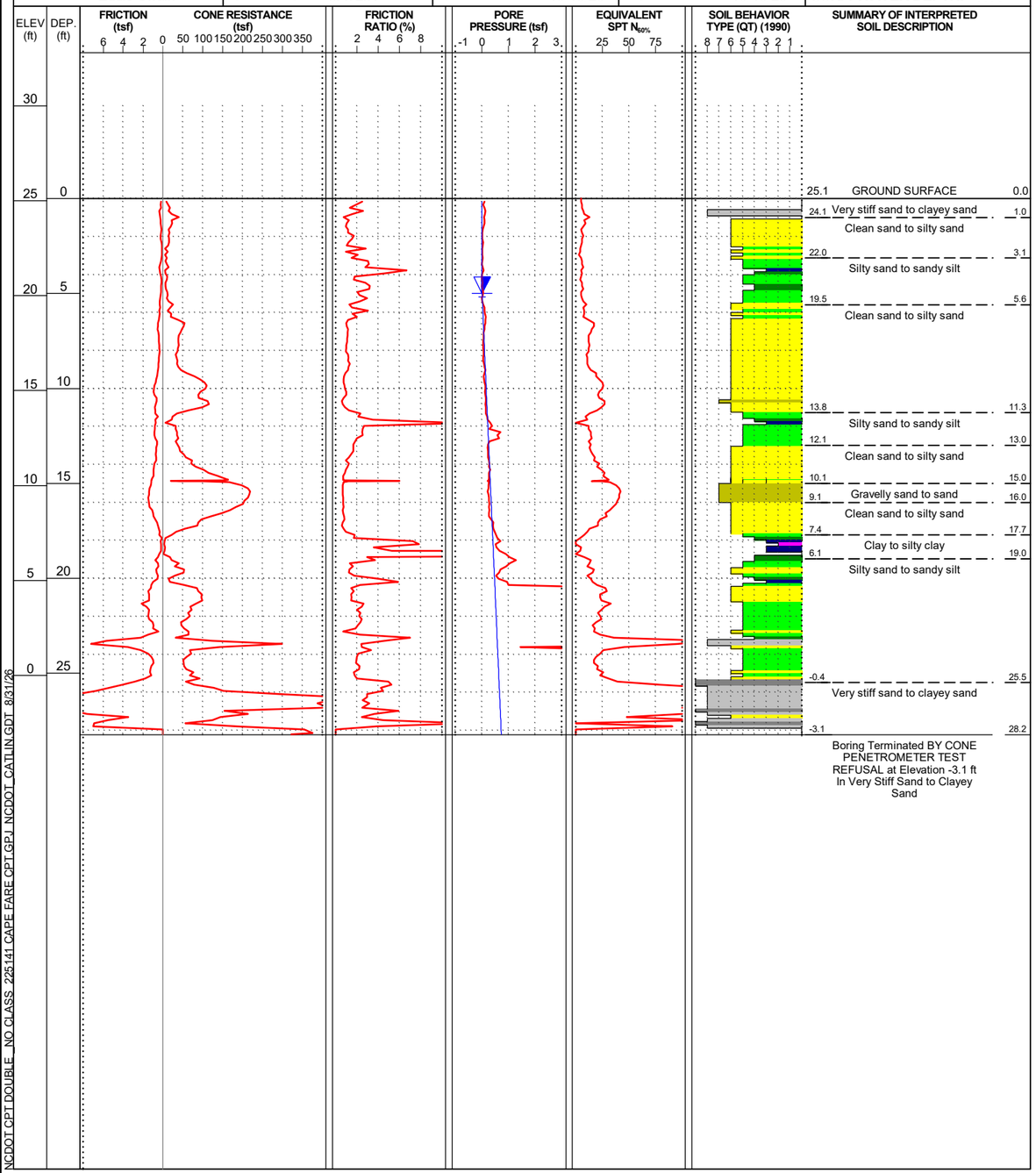
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

CONE PENETRATION TEST BORING REPORT

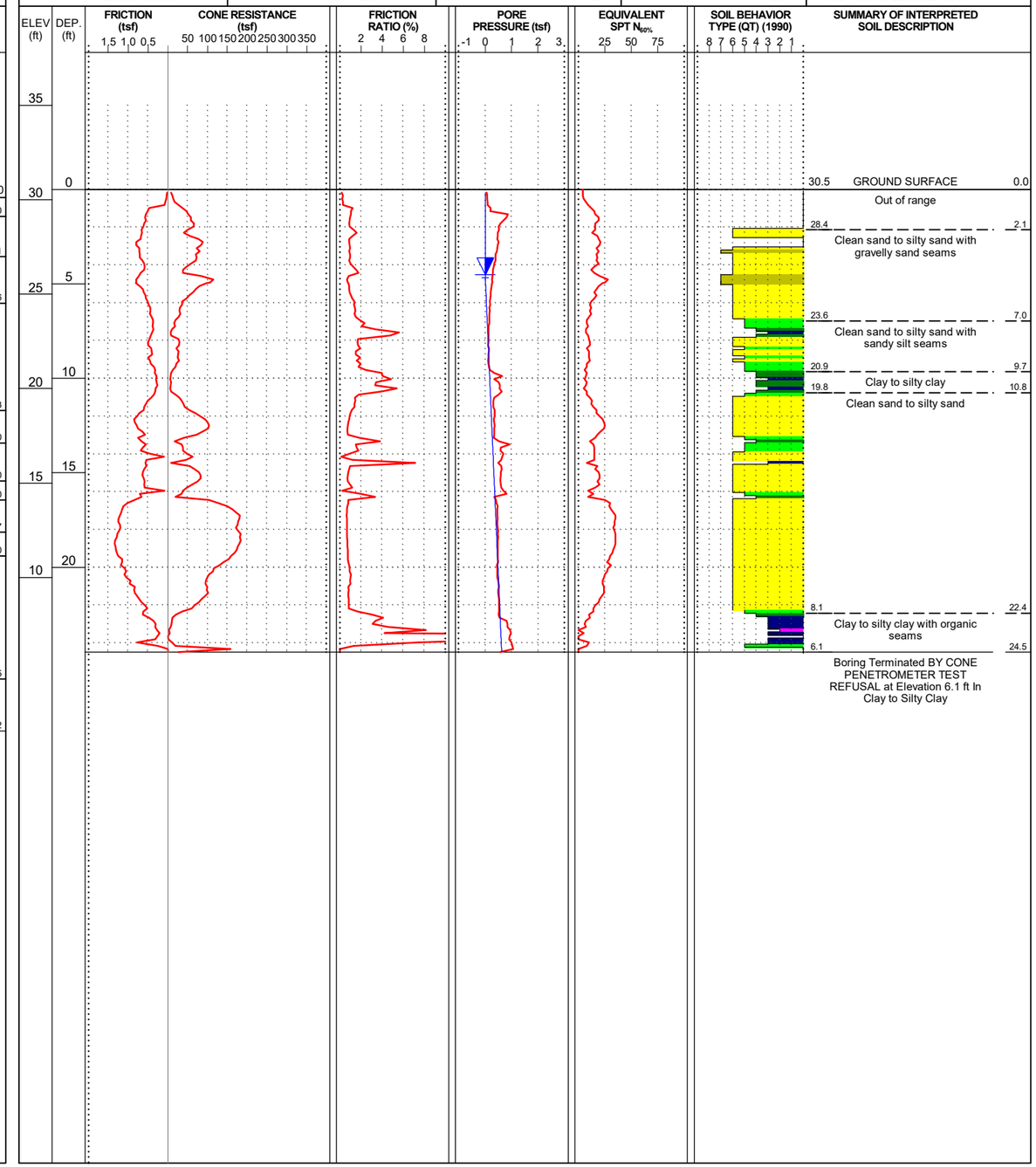
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	184

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_3000	**STATION:** 30+00	**OFFSET:** 30 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 5.0
COLLAR ELEV.: 25.1 ft	**TOTAL DEPTH:** 28.2 ft	**NORTHING:** 175,074	**EASTING:** 2,318,229	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/15/25	**COMP. DATE:** 10/15/25	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_3200	**STATION:** 32+00	**OFFSET:** 25 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 4.5
COLLAR ELEV.: 30.5 ft	**TOTAL DEPTH:** 24.5 ft	**NORTHING:** 175,088	**EASTING:** 2,318,384	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DDG1692	
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/15/25	**COMP. DATE:** 10/15/25	**SURF. WATER DEPTH:** N/A



NCDOT CPT DOUBLE_NO CLASS 225141 CAPE FARE CPT.GPJ NCDOT_CATLIN.GDT 8/31/26

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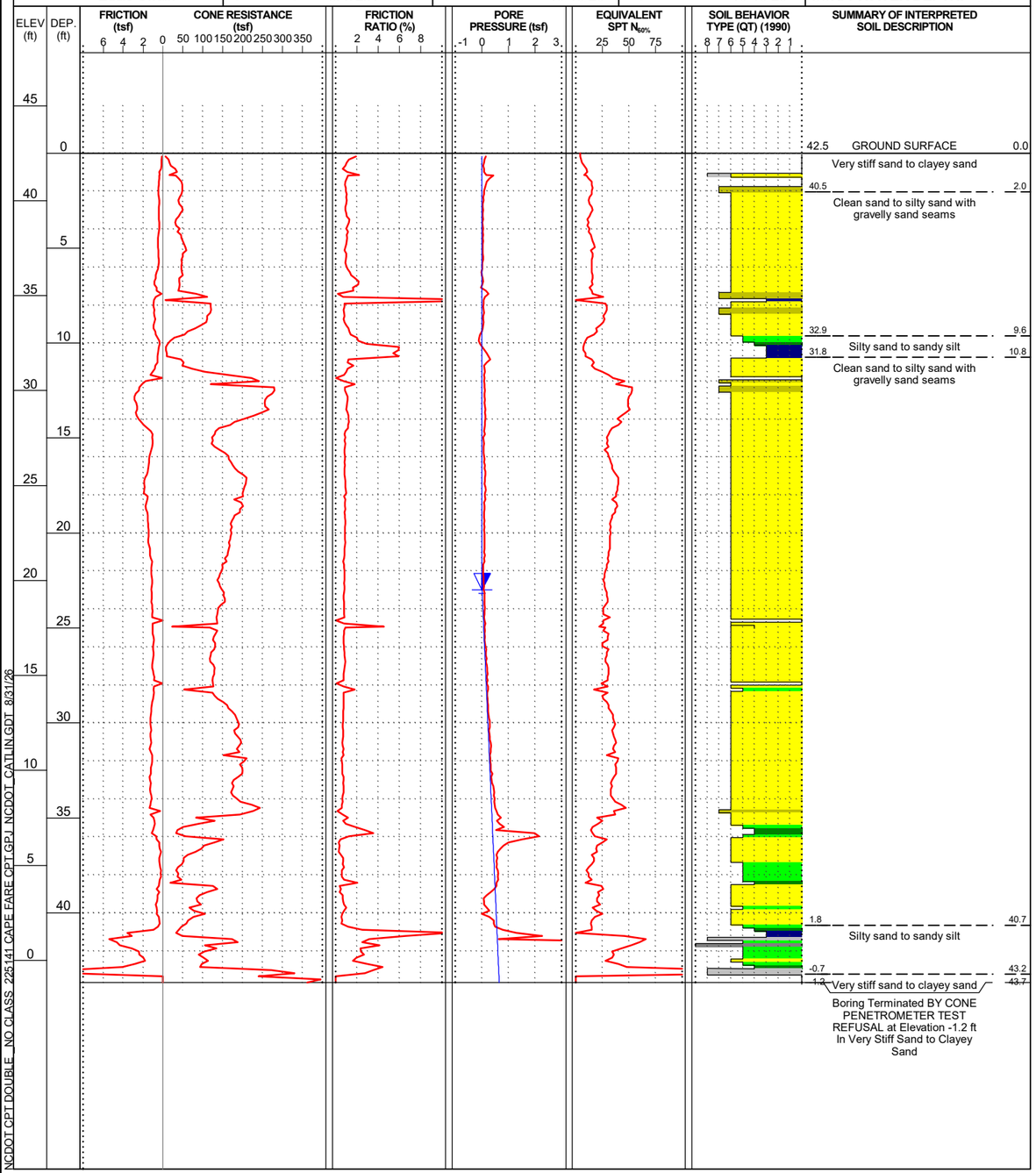
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	185

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPA_3400	**STATION:** 34+00	**OFFSET:** 15 ft RT	**ALIGNMENT:** -Y2LPA-	**EST. 0 HR.** 23.0
COLLAR ELEV.: 42.5 ft	**TOTAL DEPTH:** 43.7 ft	**NORTHING:** 174,939	**EASTING:** 2,318,473	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Eddie Swain	**OPERATOR:** CATLIN	**START DATE:** 10/15/25	**COMP. DATE:** 10/15/25	**SURF. WATER DEPTH:** N/A



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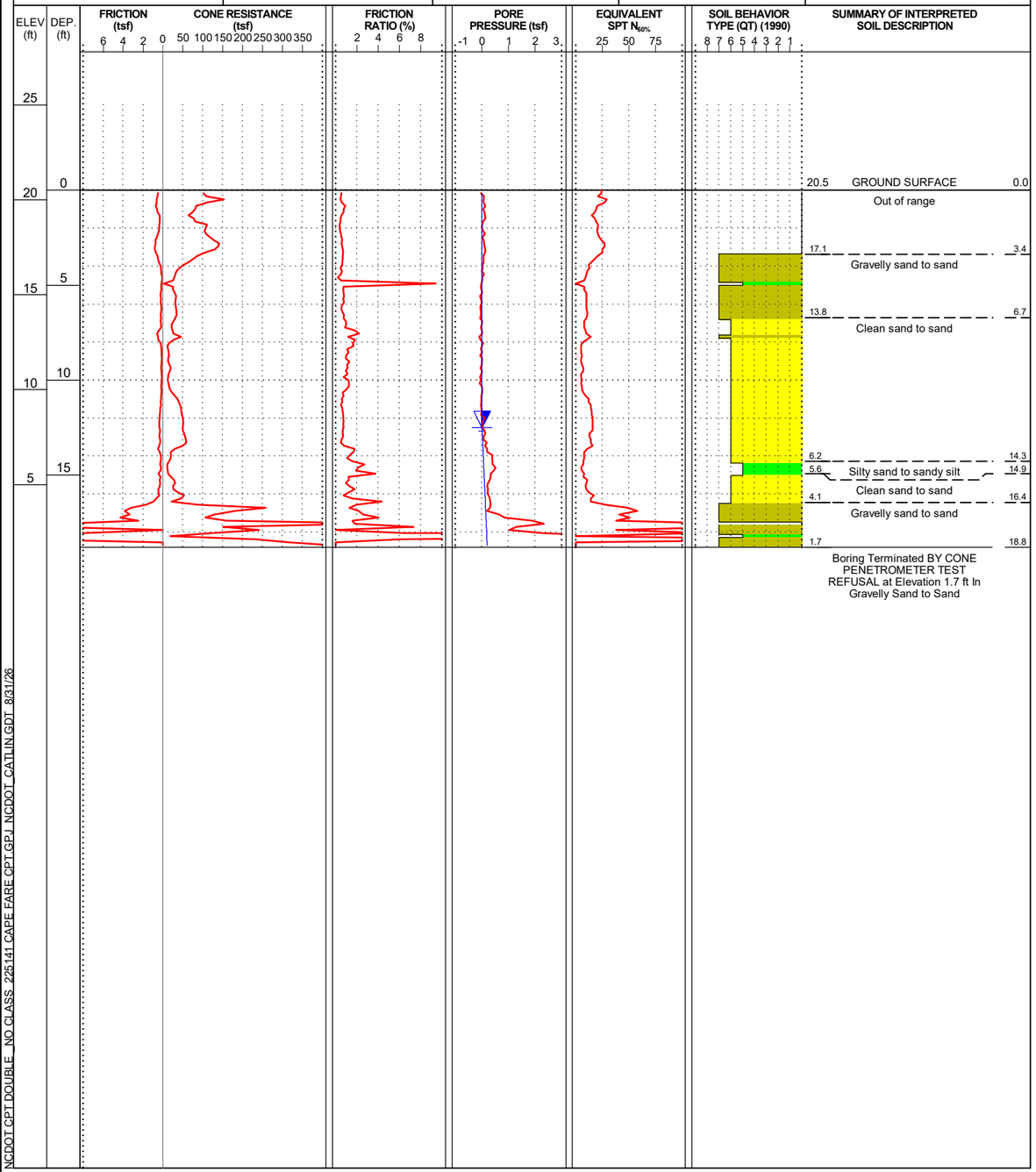
CONE PENETRATION TEST BORING REPORT

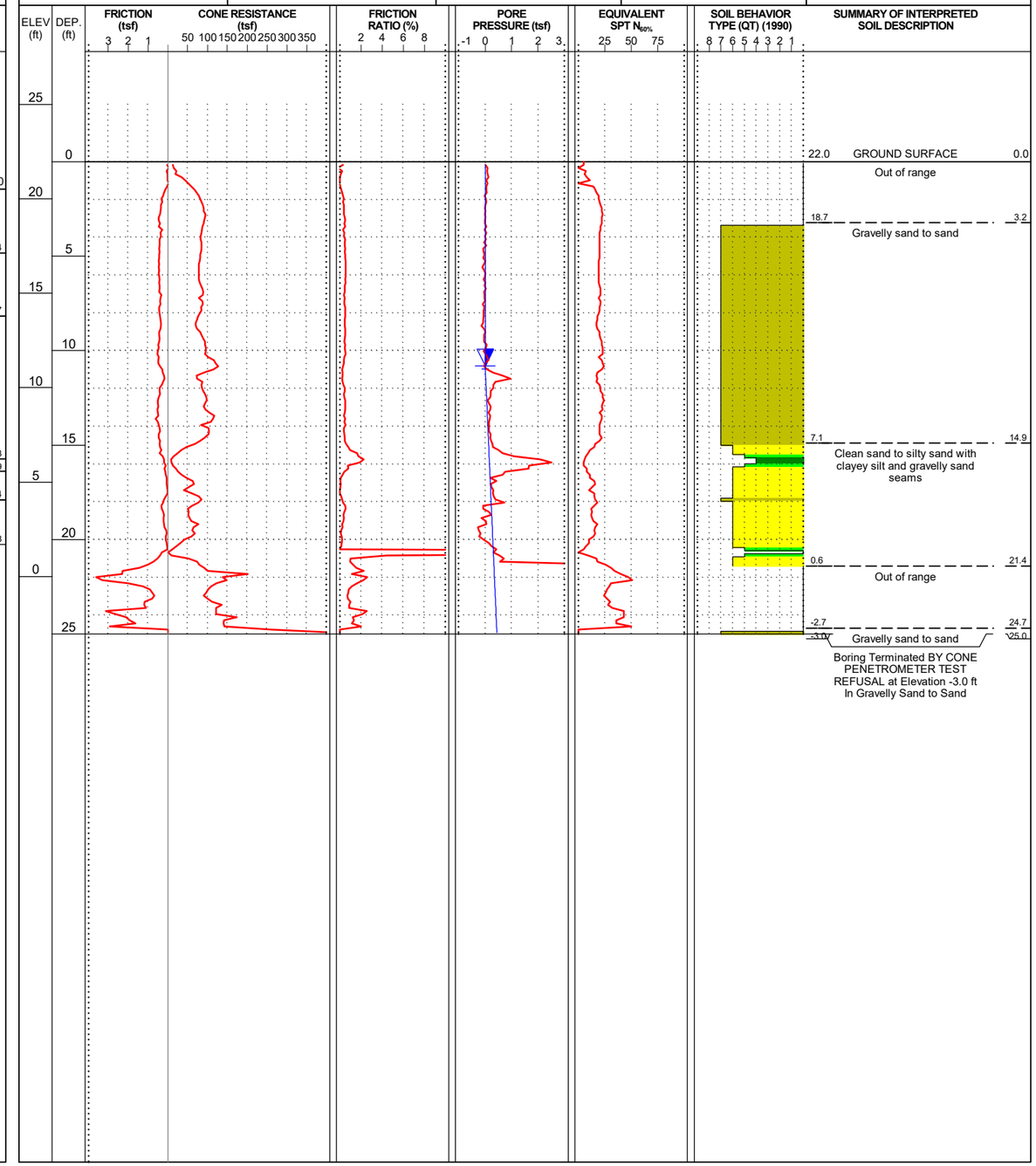
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	186

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPC_2_2850	**STATION:** 28+50	**OFFSET:** CL	**ALIGNMENT:** -Y2LPC_2-	**EST. 0 HR.** 12.5
COLLAR ELEV.: 20.5 ft	**TOTAL DEPTH:** 18.8 ft	**NORTHING:** 175,138	**EASTING:** 2,317,457	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/08/26	**COMP. DATE:** 05/08/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPC_2_3050	**STATION:** 30+50	**OFFSET:** CL	**ALIGNMENT:** -Y2LPC_2-	**EST. 0 HR.** 10.8
COLLAR ELEV.: 22.0 ft	**TOTAL DEPTH:** 25.0 ft	**NORTHING:** 175,115	**EASTING:** 2,317,654	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO	**CONE ID:** DPG1563	
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/08/26	**COMP. DATE:** 05/08/26	**SURF. WATER DEPTH:** N/A



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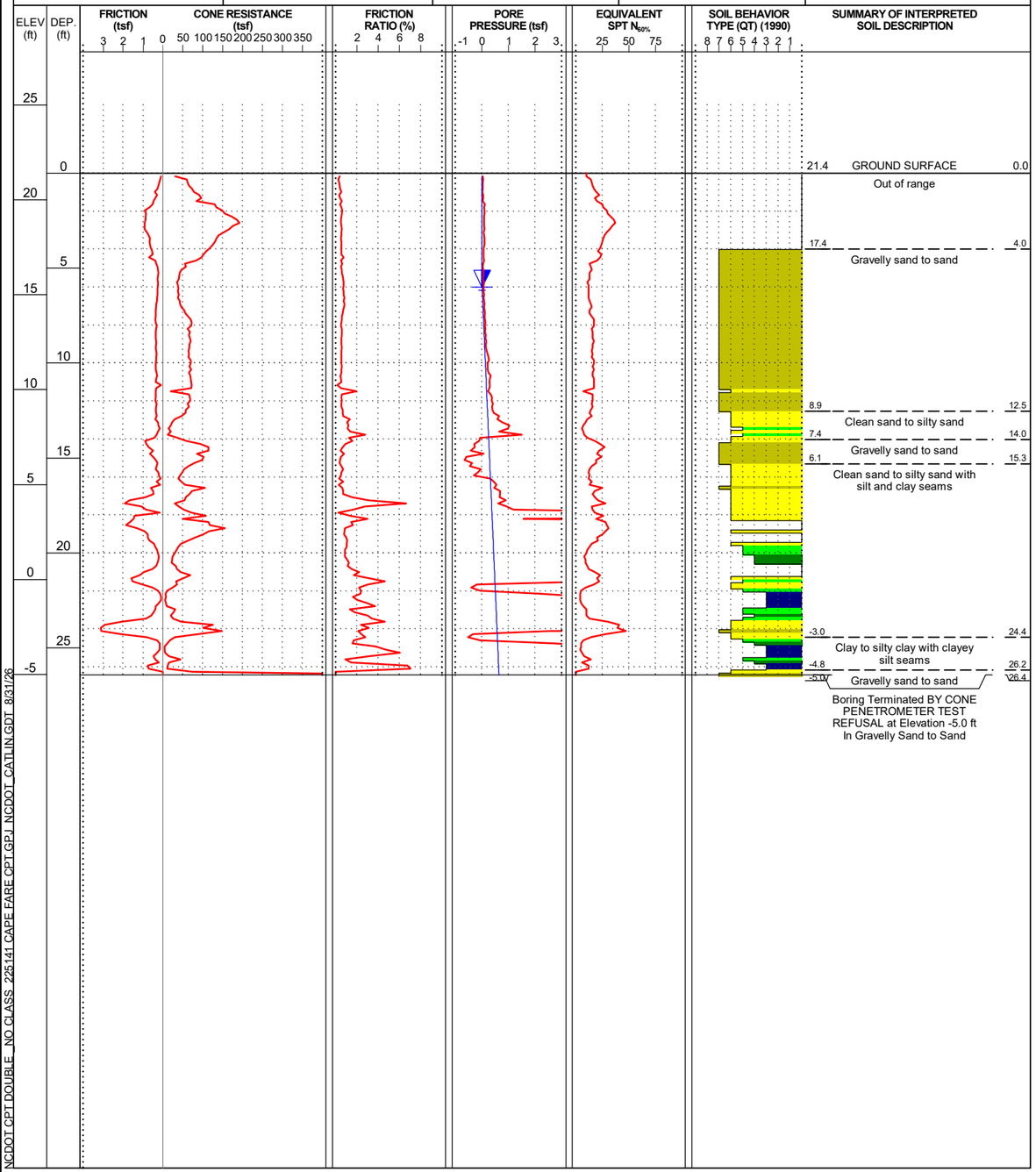
CONE PENETRATION TEST BORING REPORT

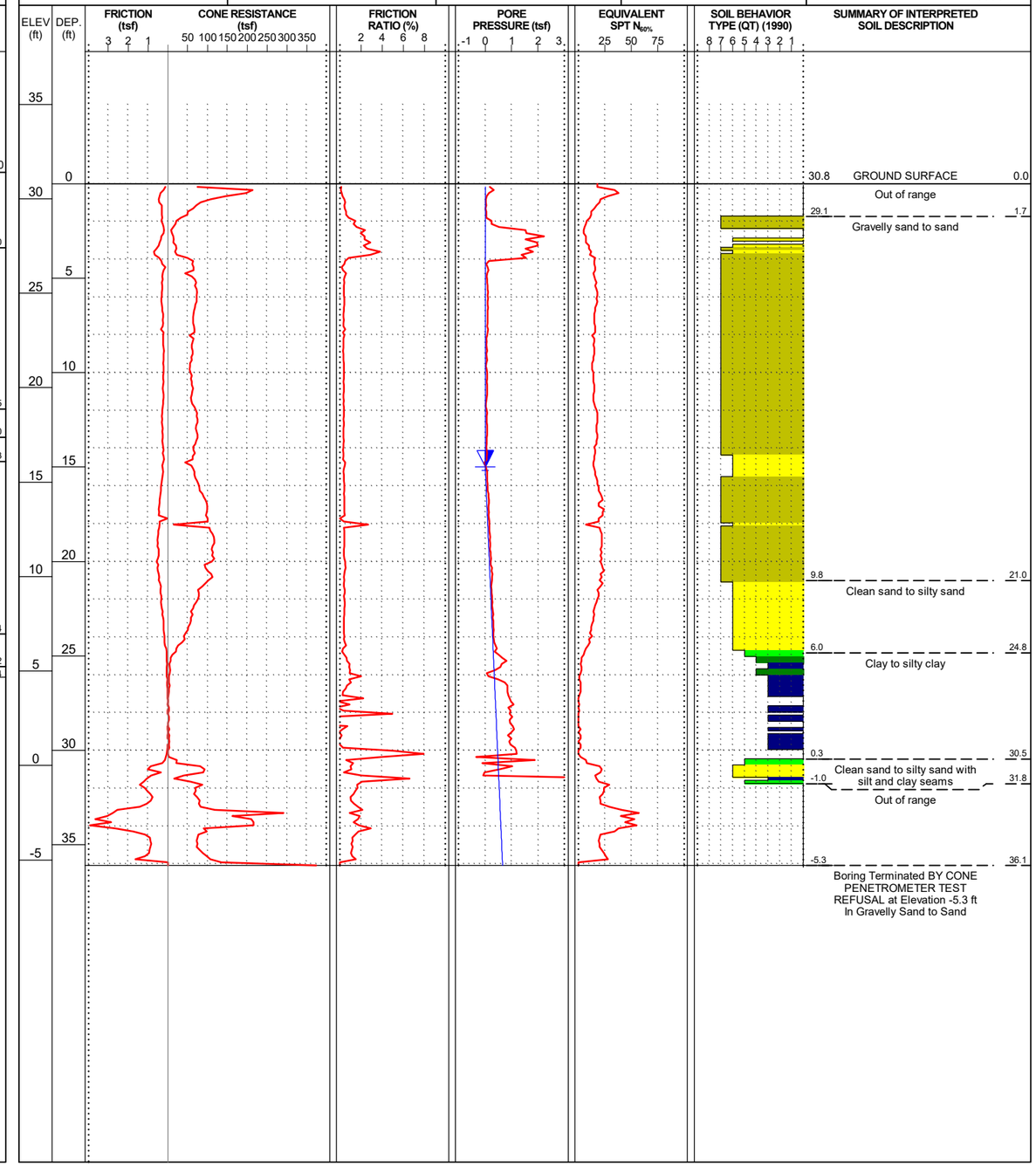
225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	187

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPC_2_3270	**STATION:** 32+70	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y2LPC_2-	**EST. 0 HR.** 6.0
COLLAR ELEV.: 21.4 ft	**TOTAL DEPTH:** 26.4 ft	**NORTHING:** 175,022	**EASTING:** 2,317,854	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/01/26	**COMP. DATE:** 05/01/26	**SURF. WATER DEPTH:** N/A



WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPC_2_3450	**STATION:** 34+50	**OFFSET:** 10 ft LT	**ALIGNMENT:** -Y2LPC_2-	**EST. 0 HR.** 15.0
COLLAR ELEV.: 30.8 ft	**TOTAL DEPTH:** 36.1 ft	**NORTHING:** 174,897	**EASTING:** 2,317,987	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/01/26	**COMP. DATE:** 05/01/26	**SURF. WATER DEPTH:** N/A



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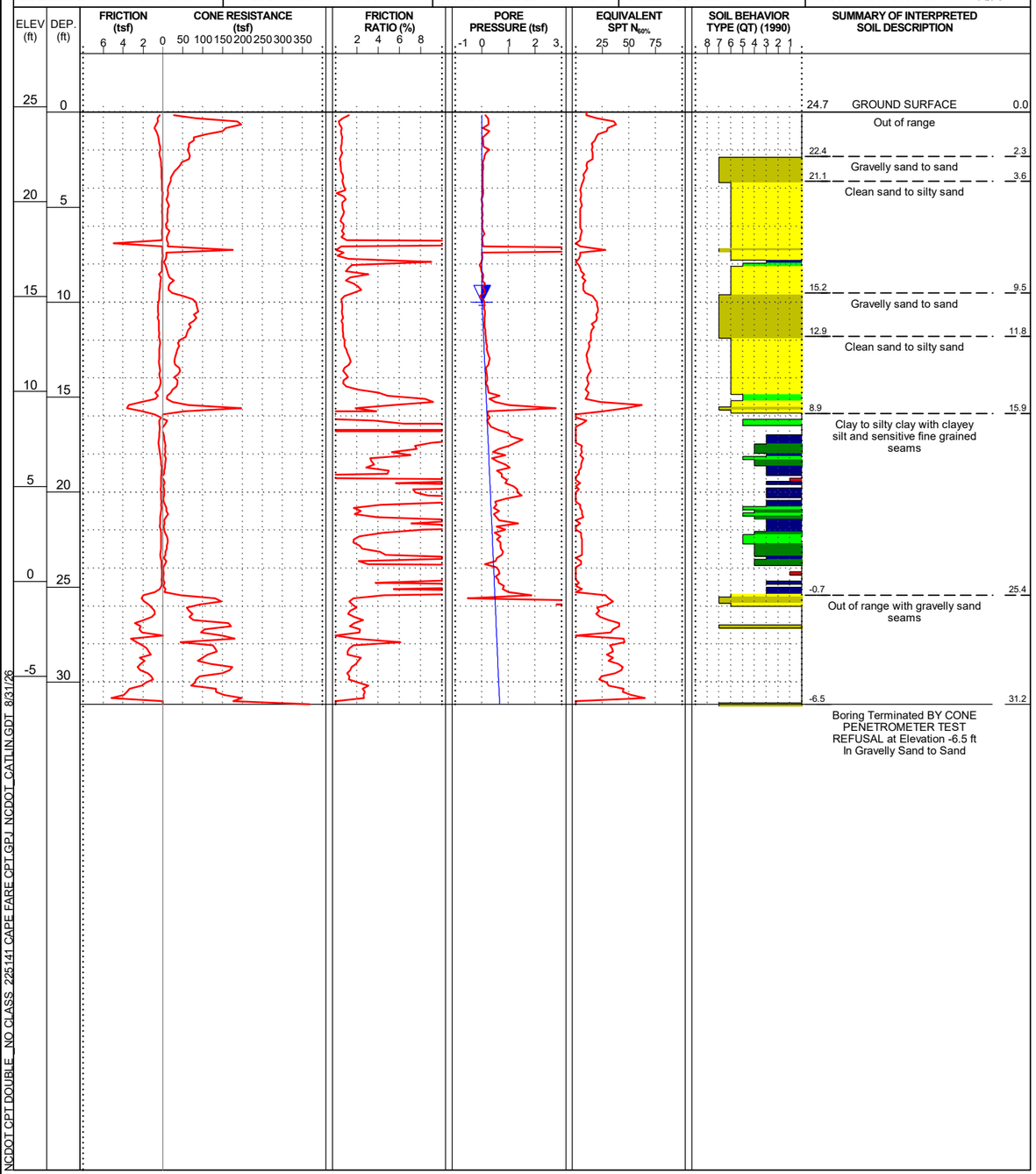
CONE PENETRATION TEST BORING REPORT

225141 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
HB-0039	188

WBS: 50603.1.1	**TIP:** HB-0039	**COUNTY:** NEW HANOVER	**GEOLOGIST:** A. Jessen	
SITE DESCRIPTION: Replace Bridge # 13 over Cape Fear River on US 421				**GROUND WTR (ft)**
BORING NO.: Y2LPCSPUR_2_2580	**STATION:** 25+80	**OFFSET:** 35 ft RT	**ALIGNMENT:** -Y2LPCSPUR_2-	**EST. 0 HR.** 10.0
COLLAR ELEV.: 24.7 ft	**TOTAL DEPTH:** 31.2 ft	**NORTHING:** 175,073	**EASTING:** 2,318,012	**24 HR.** N/A
CPT RIG/MAX. DOWN PRESSURE: CATLIN CPT/DPT-01 /		**CONE TYPE:** TYPE II PIEZO		**CONE ID:** DDG1692
DRILLER: Isaiah Edwards	**OPERATOR:** CATLIN	**START DATE:** 05/01/26	**COMP. DATE:** 05/01/26	**SURF. WATER DEPTH:** N/A



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FLY_3900

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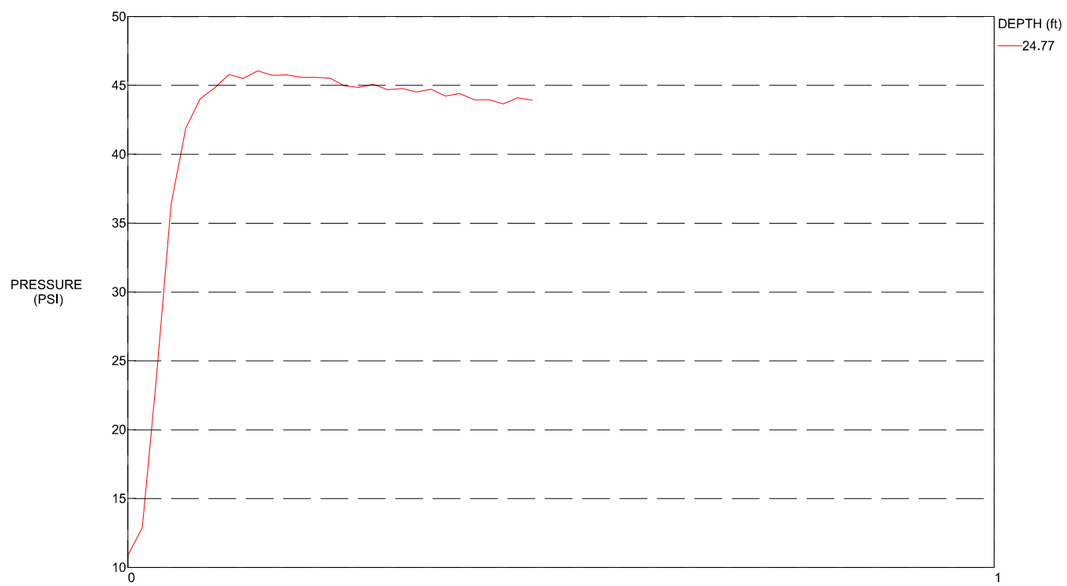

MAXIMUM PRESSURE = 46.065 (PSI)
HYDROSTATIC PRESSURE = 10.735 (PSI), WATER TABLE: 0.00 ft

FLY_4100

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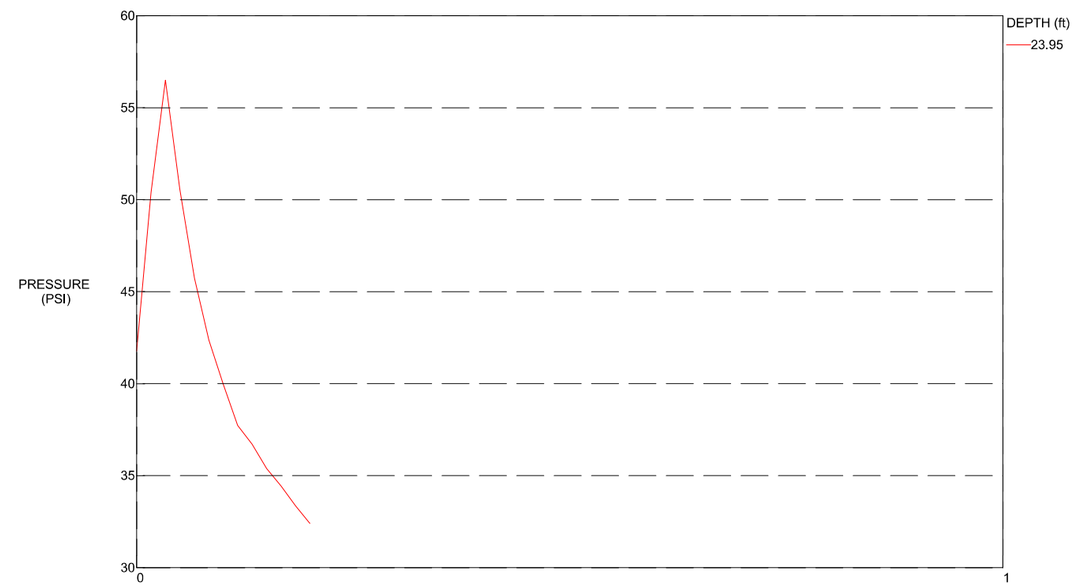

MAXIMUM PRESSURE = 56.493 (PSI)
HYDROSTATIC PRESSURE = 10.38 (PSI), WATER TABLE: 0.00 ft

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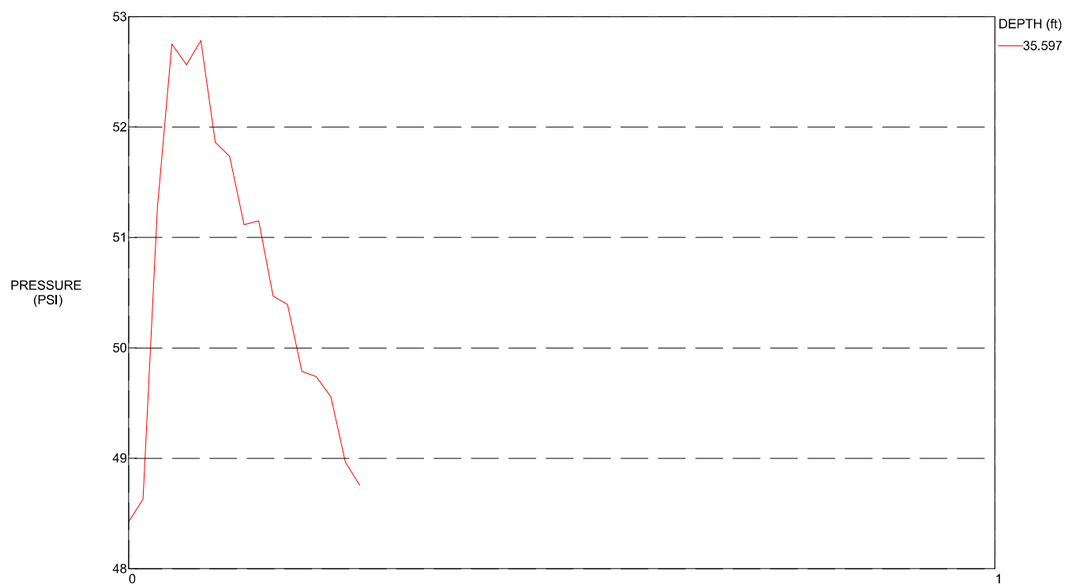
FLY_4100

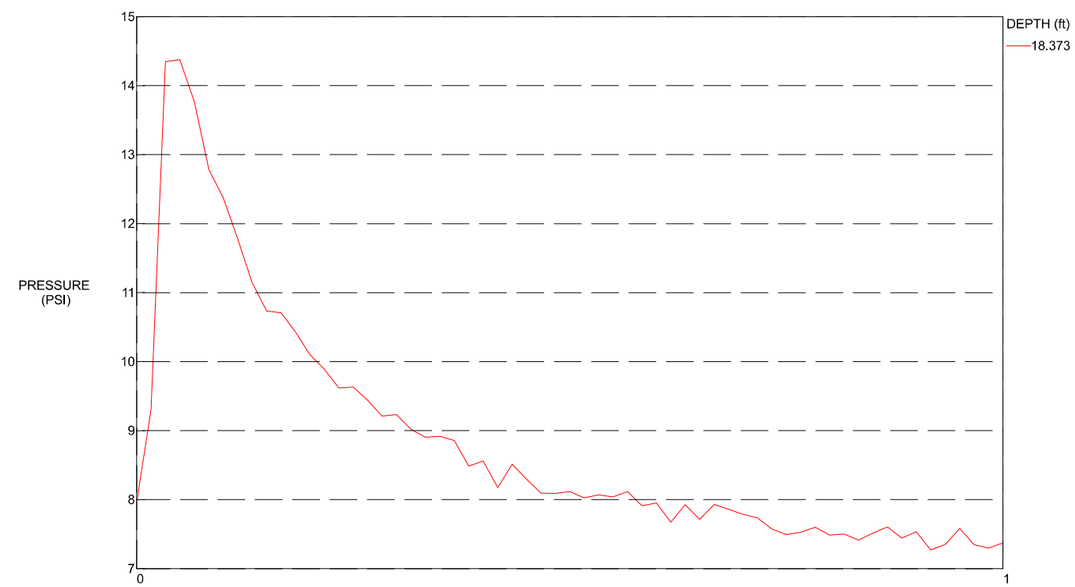
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 52.784 (PSI)
HYDROSTATIC PRESSURE = 15.428 (PSI), WATER TABLE: 0.00 ft

LLT_10500

CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 14.375 (PSI)
HYDROSTATIC PRESSURE = 7.963 (PSI), WATER TABLE: 0.00 ft

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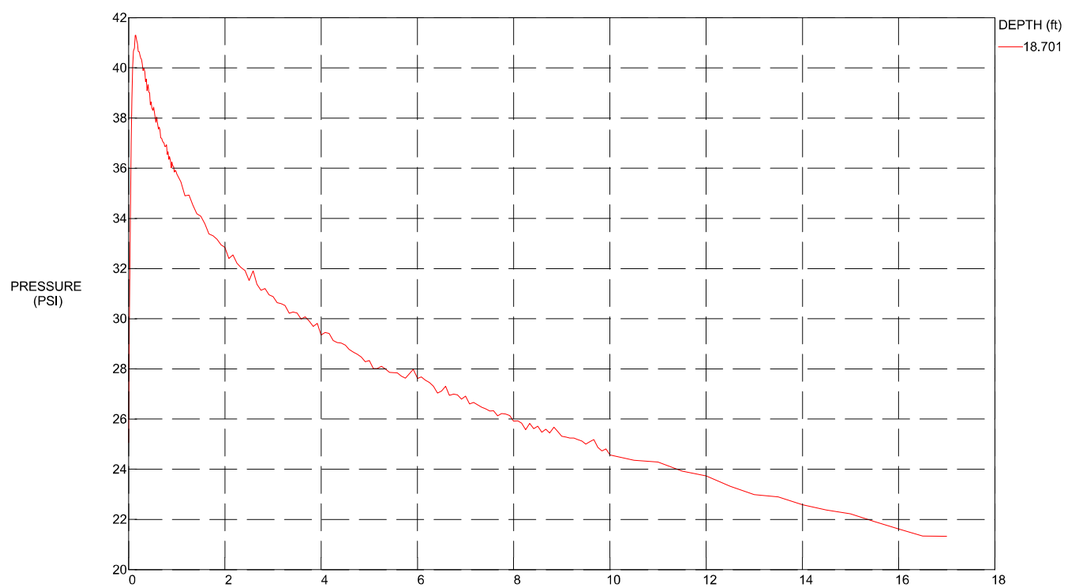
LLT_10500

CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 41.301 (PSI)
HYDROSTATIC PRESSURE = 8.105 (PSI), WATER TABLE: 0.00 ft

LLT_10700

CATLIN
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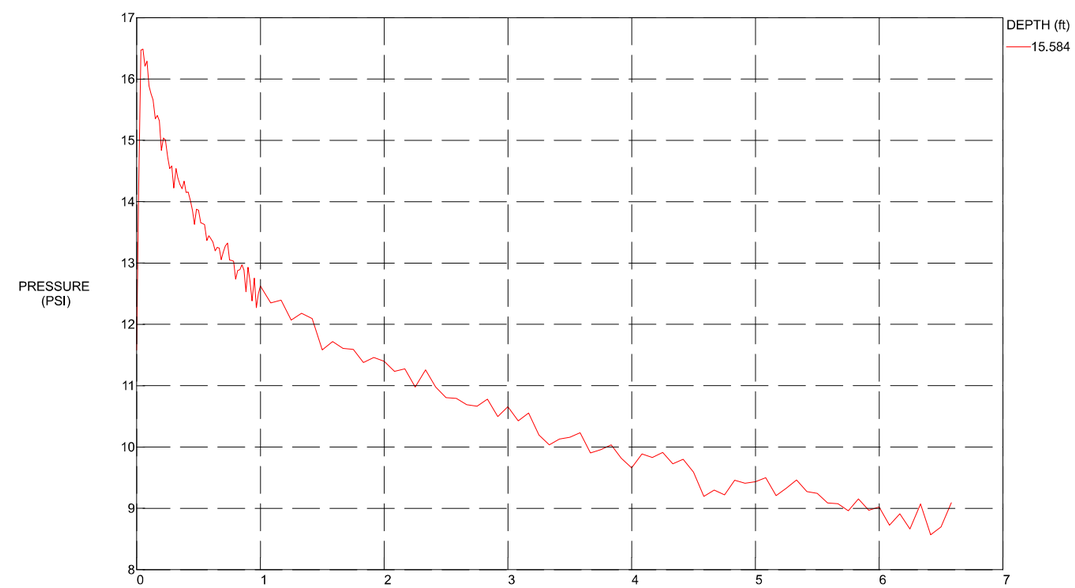
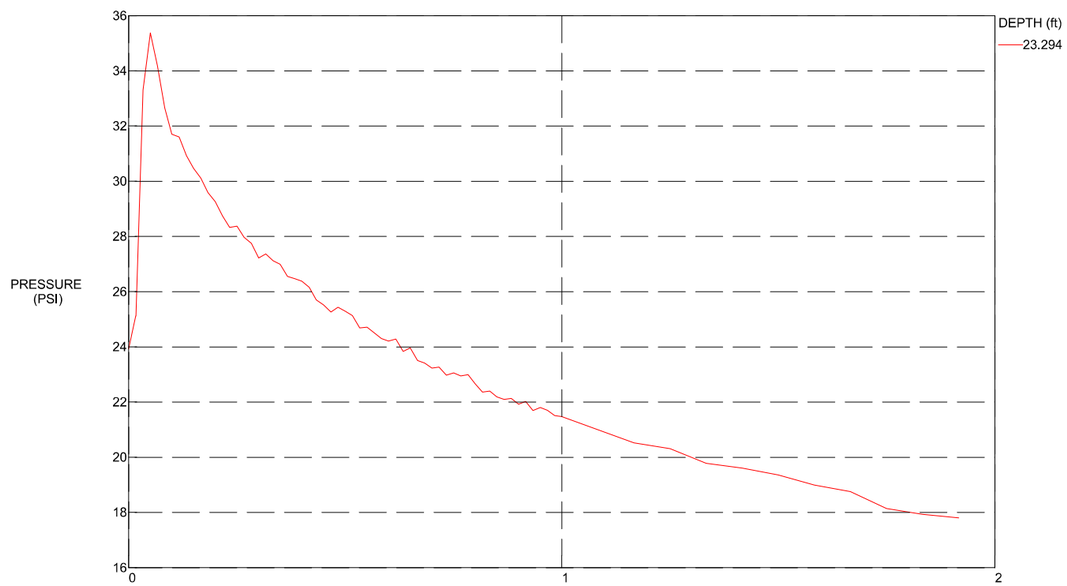


MAXIMUM PRESSURE = 16.489 (PSI)
HYDROSTATIC PRESSURE = 6.754 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

LLT_10900

CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 35.371 (PSI)
HYDROSTATIC PRESSURE = 10.095 (PSI), WATER TABLE: 0.00 ft

LLT_11000

CATLIN
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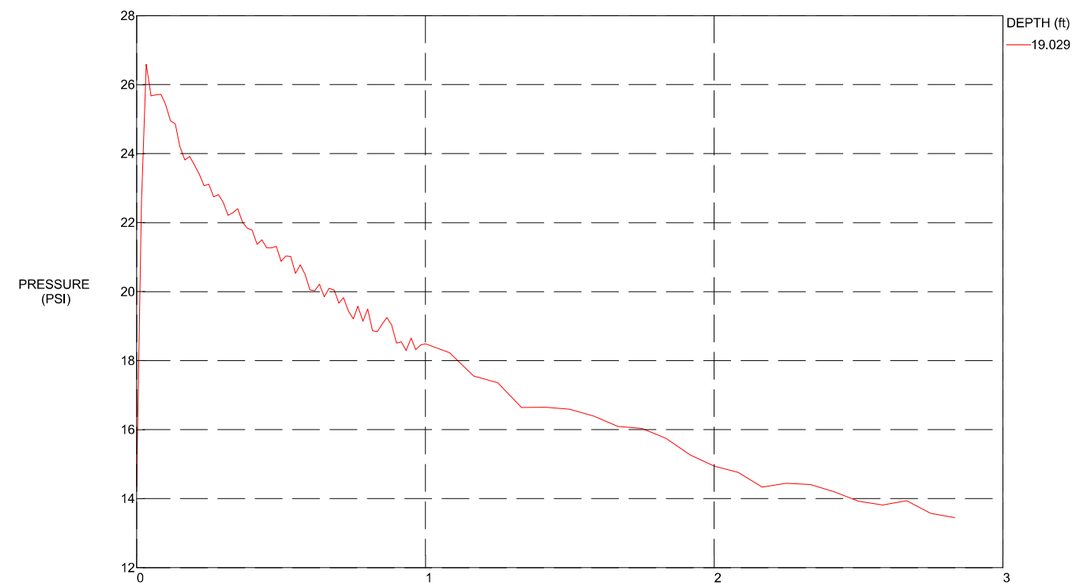

MAXIMUM PRESSURE = 26.587 (PSI)
HYDROSTATIC PRESSURE = 8.247 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

LLT_11200

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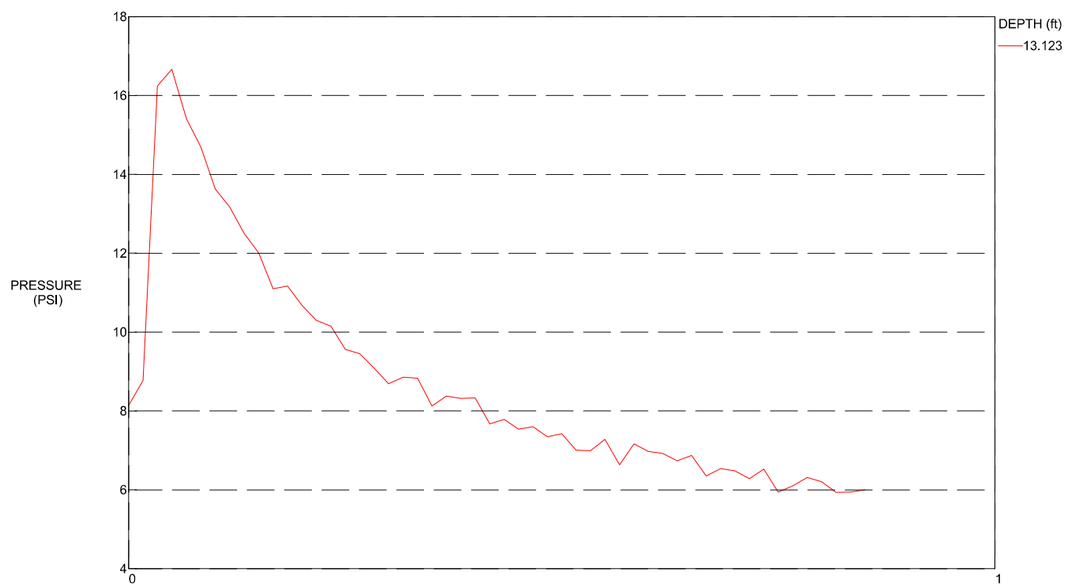
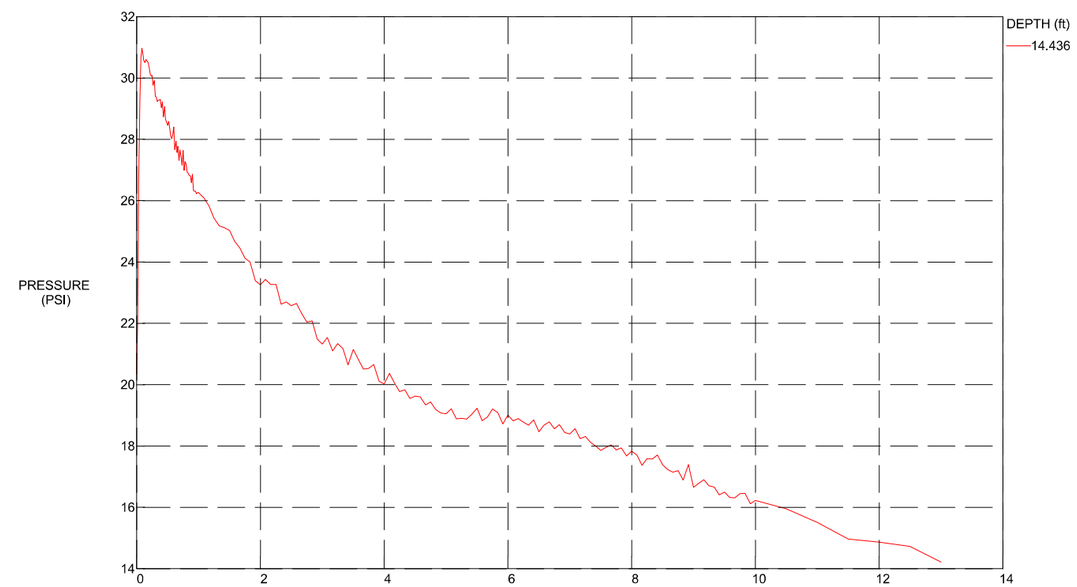


MAXIMUM PRESSURE = 16.664 (PSI)
HYDROSTATIC PRESSURE = 5.688 (PSI), WATER TABLE: 0.00 ft

LLT_11200

CATLIN
Engineers and Scientists

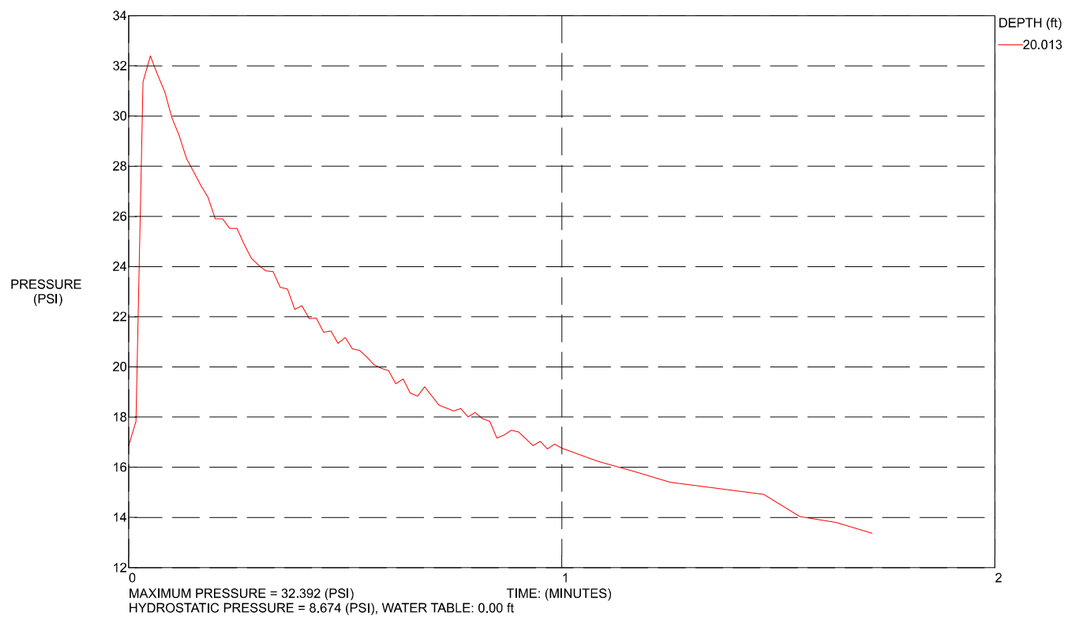


MAXIMUM PRESSURE = 30.965 (PSI)
HYDROSTATIC PRESSURE = 6.256 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

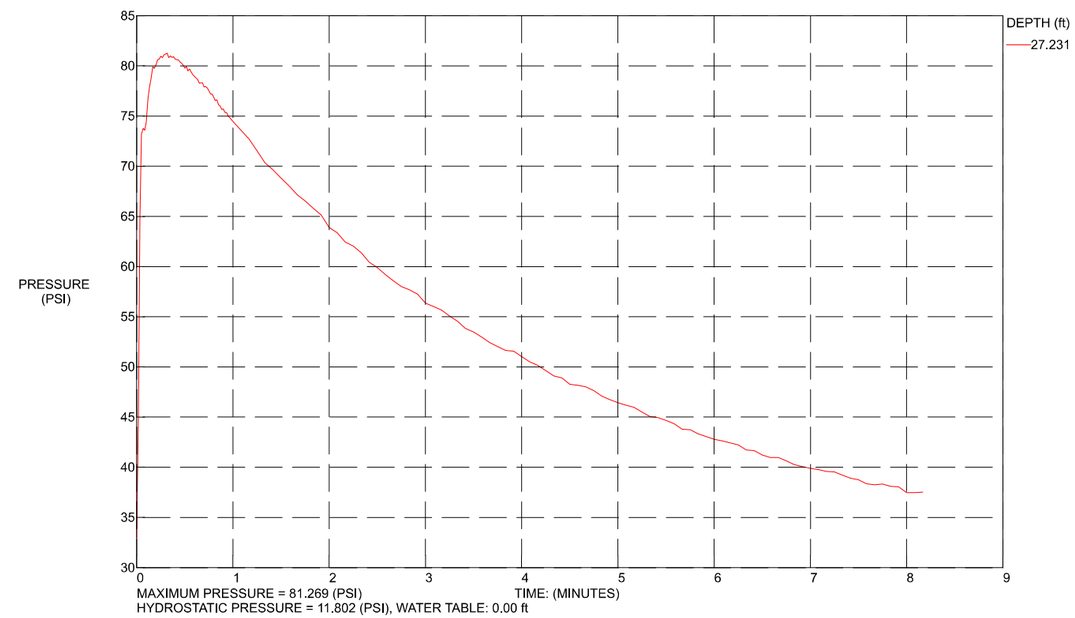
LLT_11400

CATLIN
Engineers and Scientists



LLT_11700

CATLIN
Engineers and Scientists



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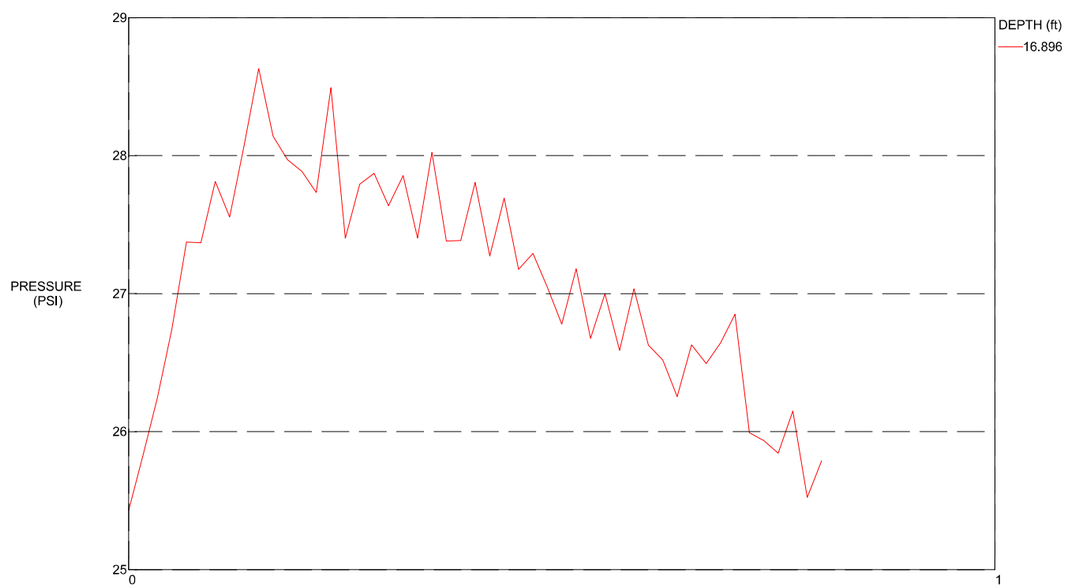
LRT_10400

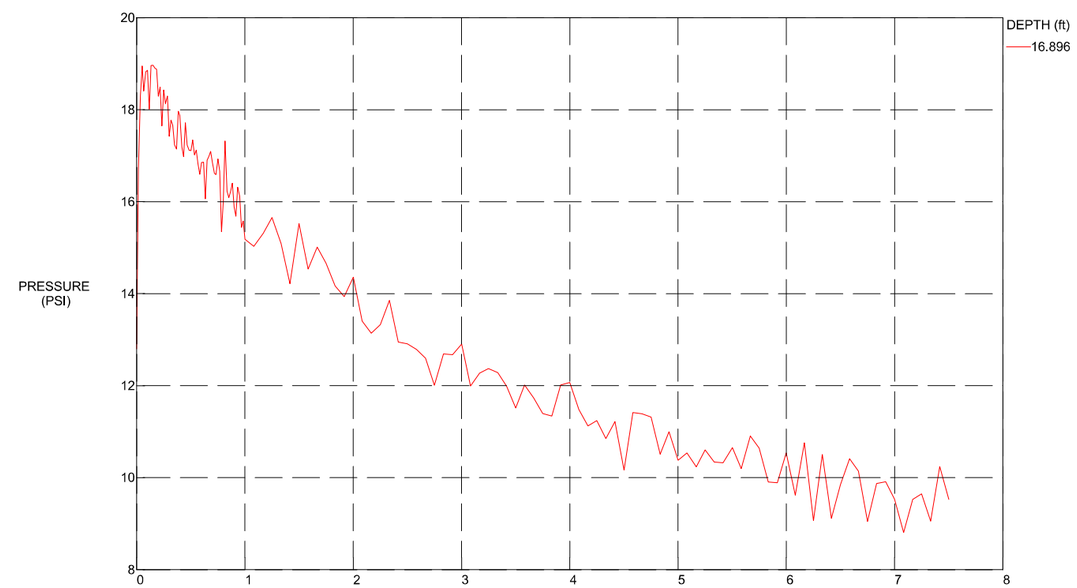
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 28.632 (PSI)
HYDROSTATIC PRESSURE = 7.323 (PSI), WATER TABLE: 0.00 ft

LRT_10600

CATLIN
Engineers and Scientists

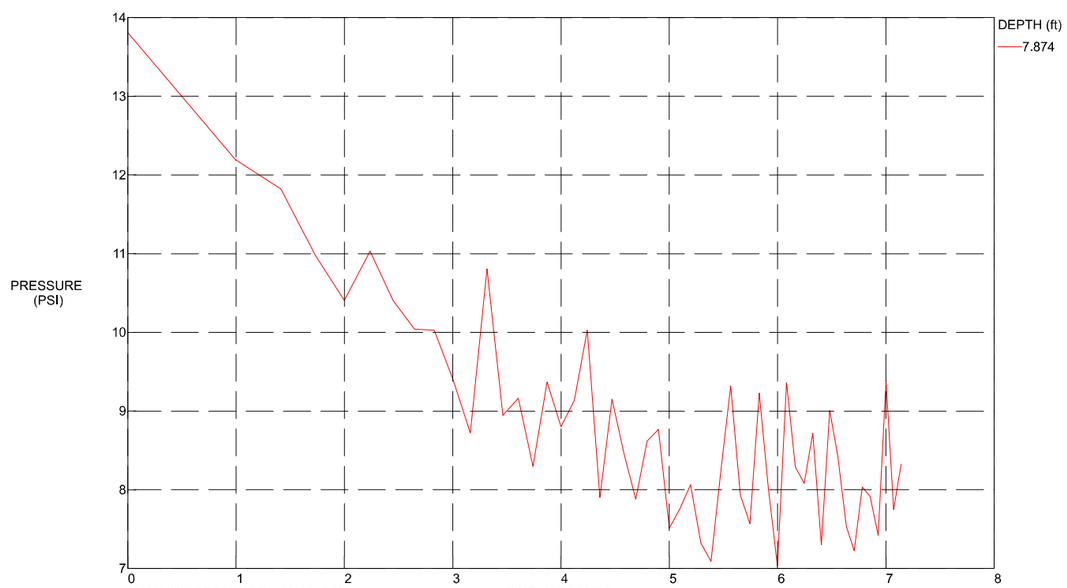


MAXIMUM PRESSURE = 18.966 (PSI)
HYDROSTATIC PRESSURE = 7.323 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

LRT_11000

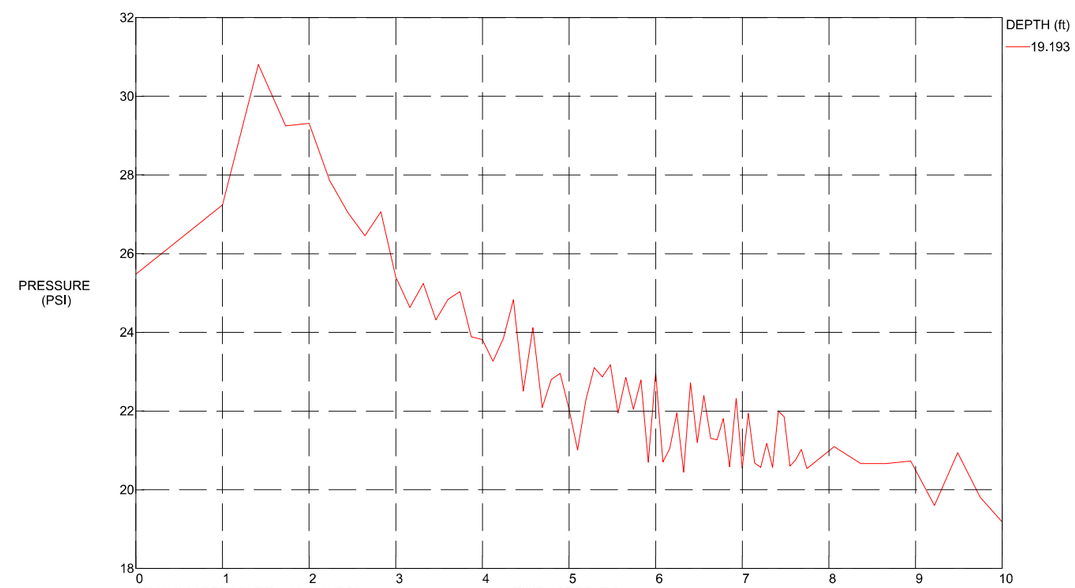
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 13.81 (PSI)
HYDROSTATIC PRESSURE = 3.413 (PSI), WATER TABLE: 0.00 ft

LRT_11000

CATLIN
Engineers and Scientists

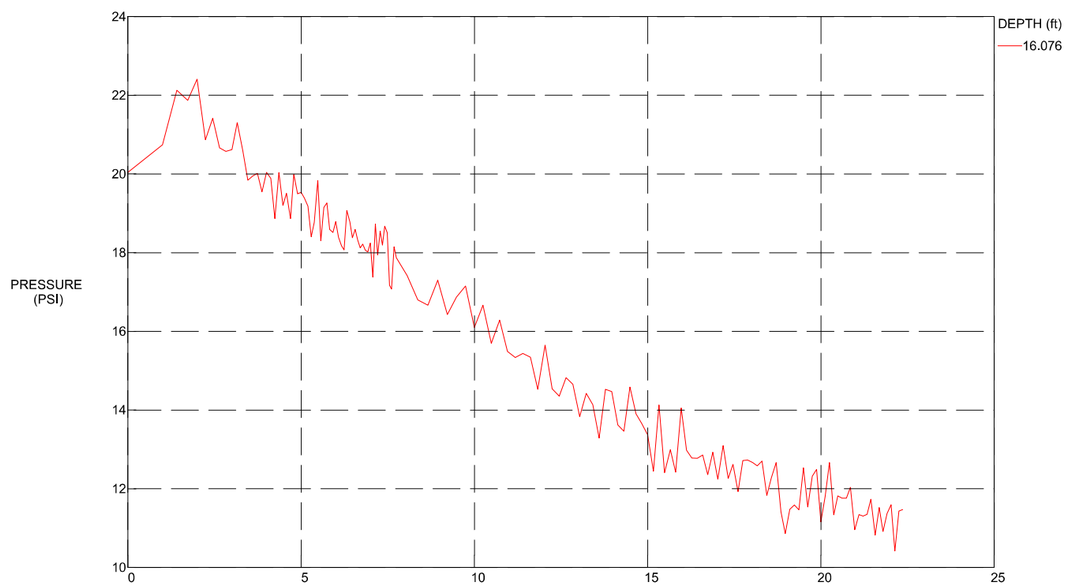


MAXIMUM PRESSURE = 30.806 (PSI)
HYDROSTATIC PRESSURE = 8.318 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

LRT_11200

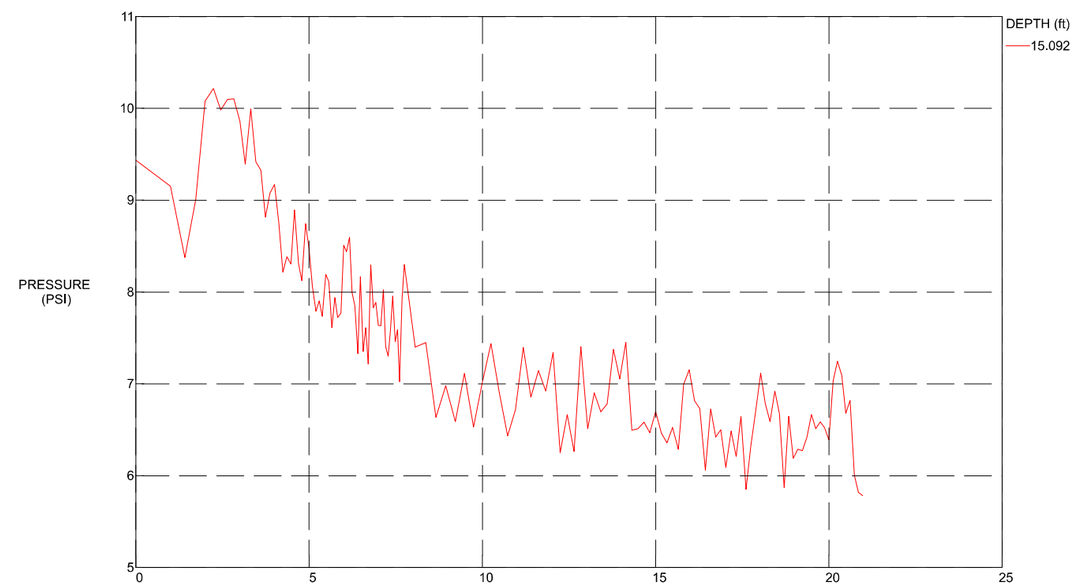
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 22.409 (PSI)
HYDROSTATIC PRESSURE = 6.967 (PSI), WATER TABLE: 0.00 ft

LRT_11400

CATLIN
Engineers and Scientists

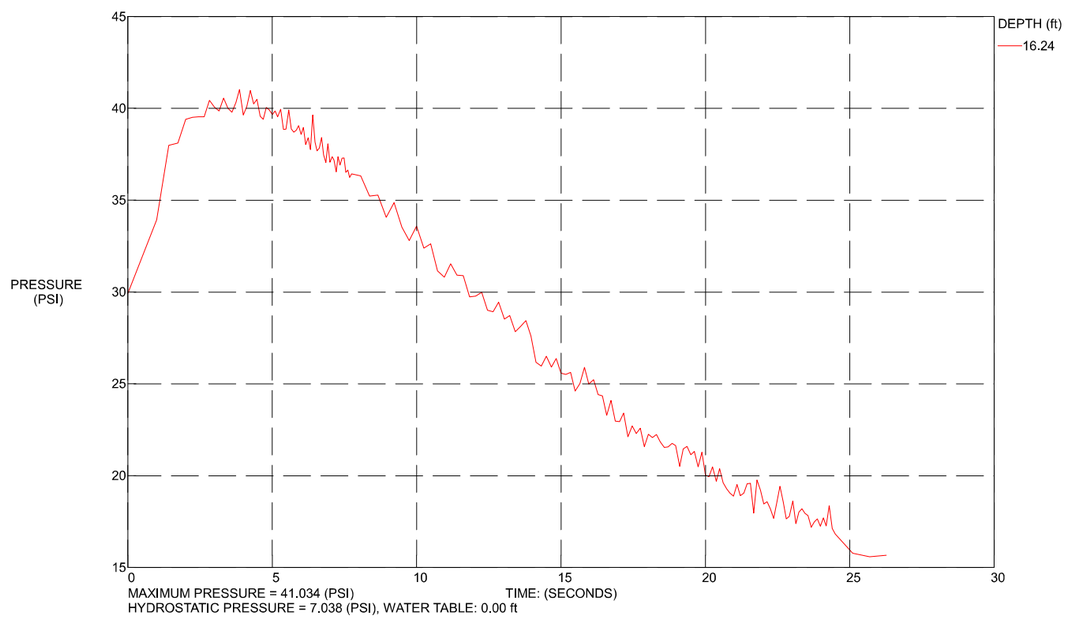


MAXIMUM PRESSURE = 10.217 (PSI)
HYDROSTATIC PRESSURE = 6.541 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

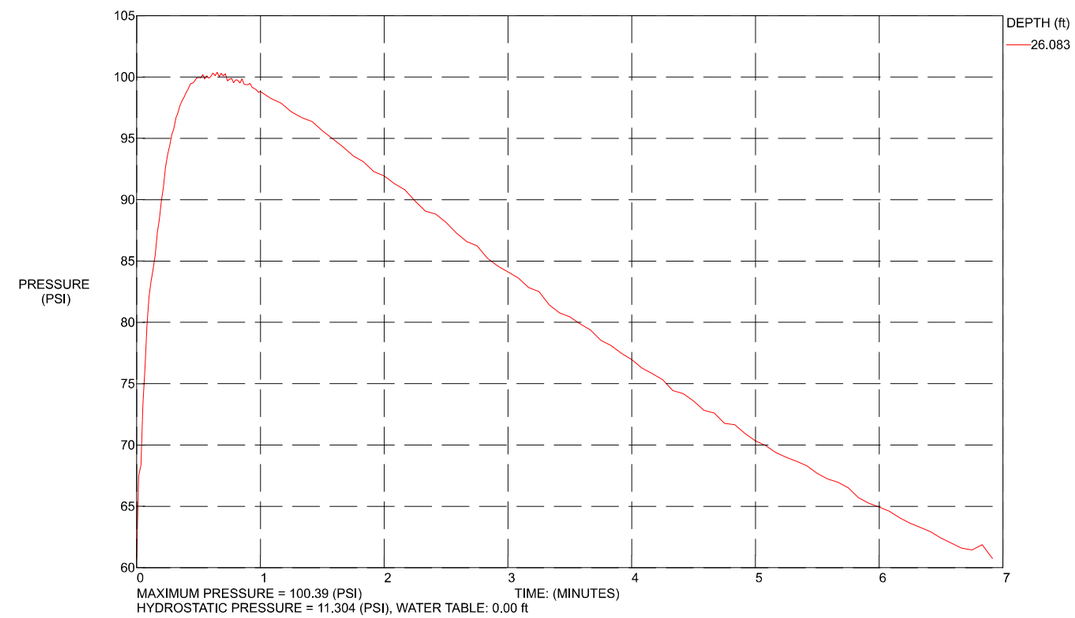
LRT_11400

CATLIN
Engineers and Scientists



Y1RPA_2650

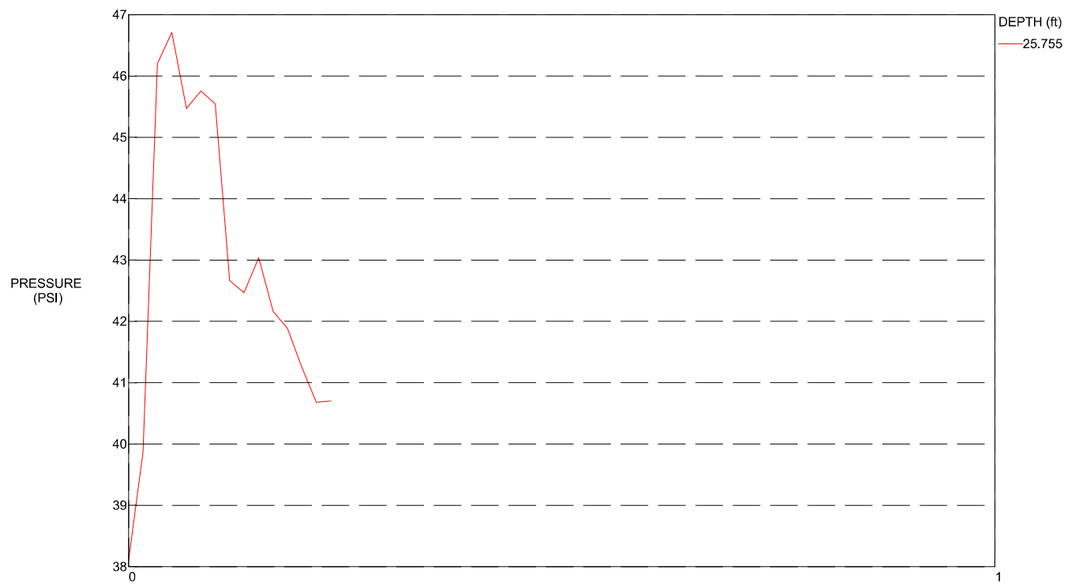
CATLIN
Engineers and Scientists



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y1RPB_1650

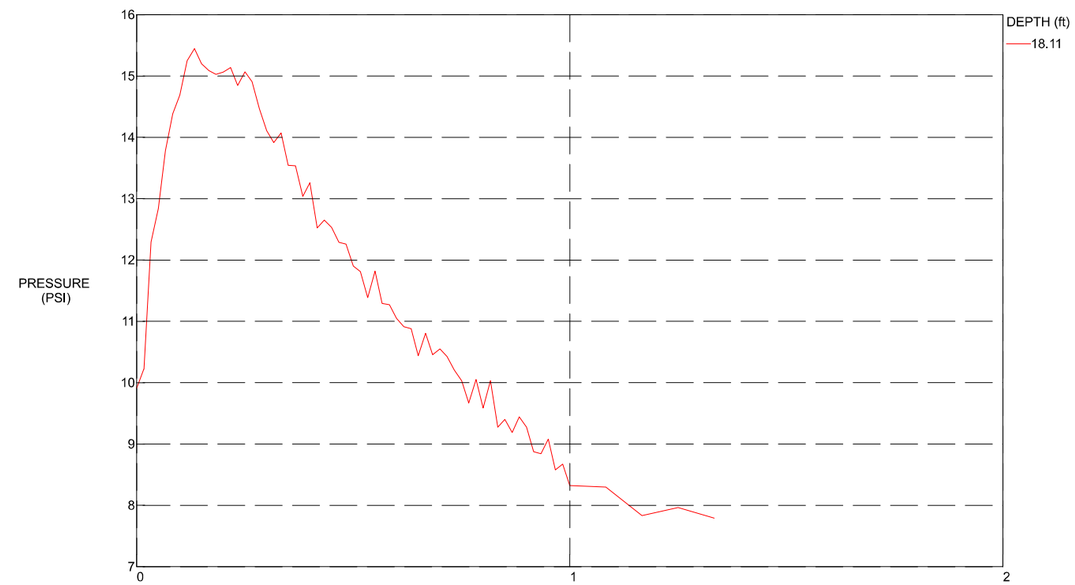
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 46.709 (PSI)
HYDROSTATIC PRESSURE = 11.162 (PSI), WATER TABLE: 0.00 ft

Y1RPB_2250

CATLIN
Engineers and Scientists

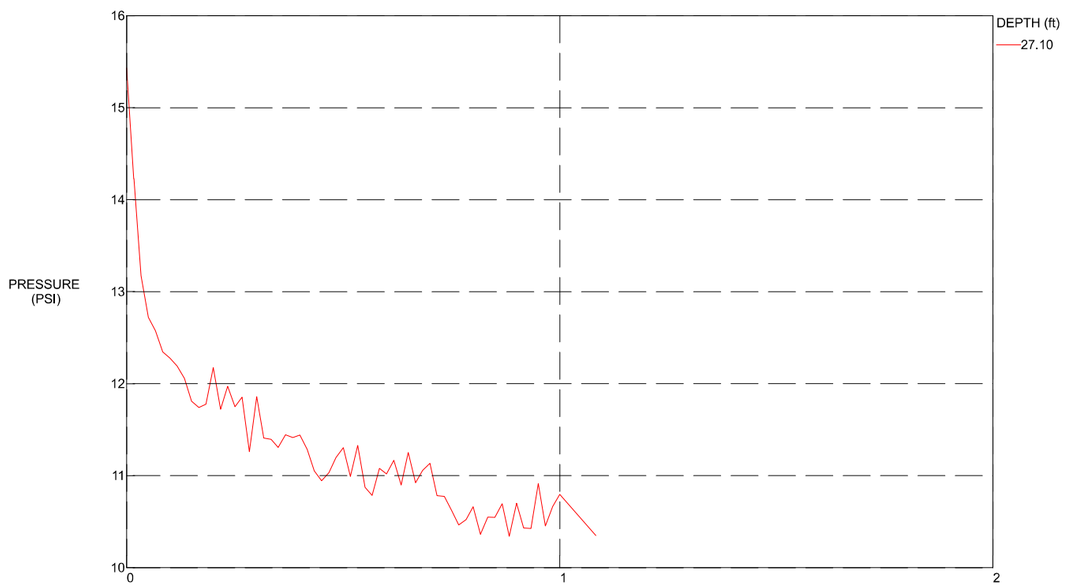


MAXIMUM PRESSURE = 15.445 (PSI)
HYDROSTATIC PRESSURE = 7.849 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y1RPB_2450

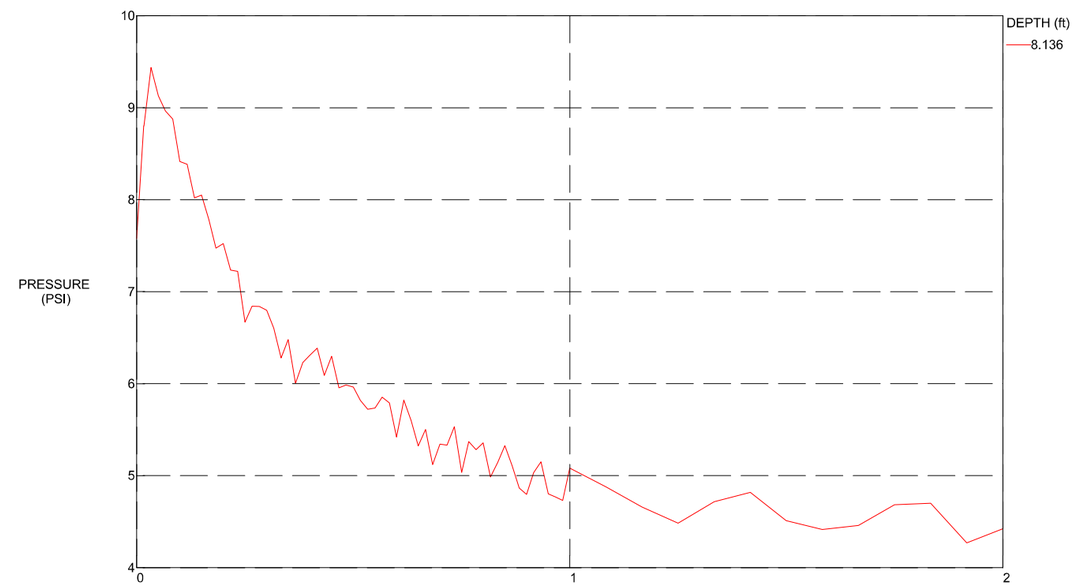
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 15.431 (PSI)
HYDROSTATIC PRESSURE = 11.745 (PSI), WATER TABLE: 0.00 ft

Y1RPB_3050

CATLIN
Engineers and Scientists

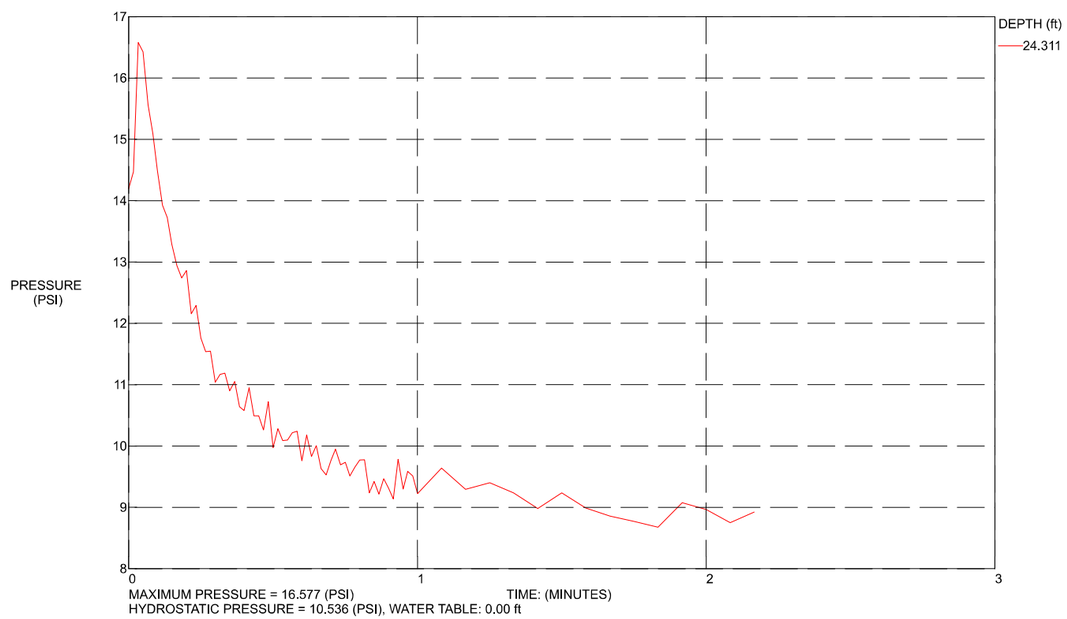


MAXIMUM PRESSURE = 9.436 (PSI)
HYDROSTATIC PRESSURE = 3.526 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y1RPB_4050

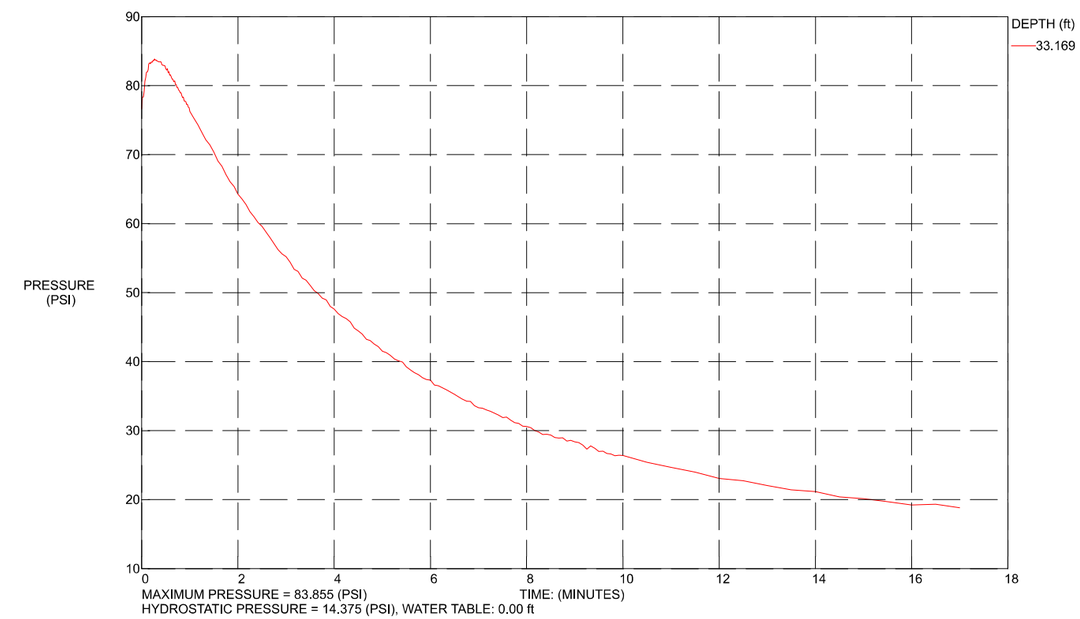
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 16.577 (PSI)
HYDROSTATIC PRESSURE = 10.536 (PSI), WATER TABLE: 0.00 ft

Y1RPB_4050

CATLIN
Engineers and Scientists

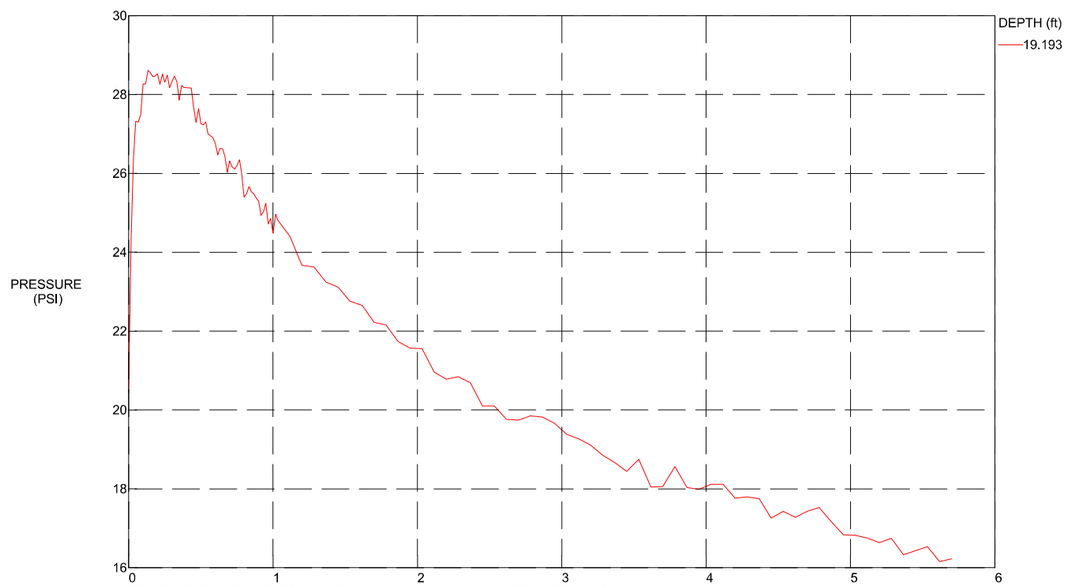


MAXIMUM PRESSURE = 83.855 (PSI)
HYDROSTATIC PRESSURE = 14.375 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y1RPC_1900

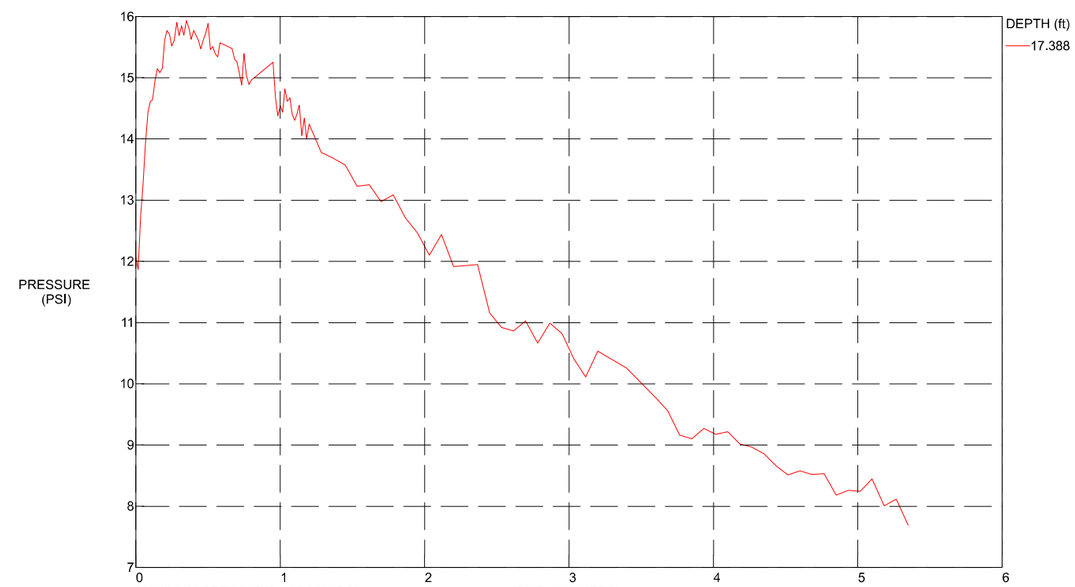
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 28.617 (PSI)
HYDROSTATIC PRESSURE = 8.318 (PSI), WATER TABLE: 0.00 ft

Y1RPC_2100

CATLIN
Engineers and Scientists

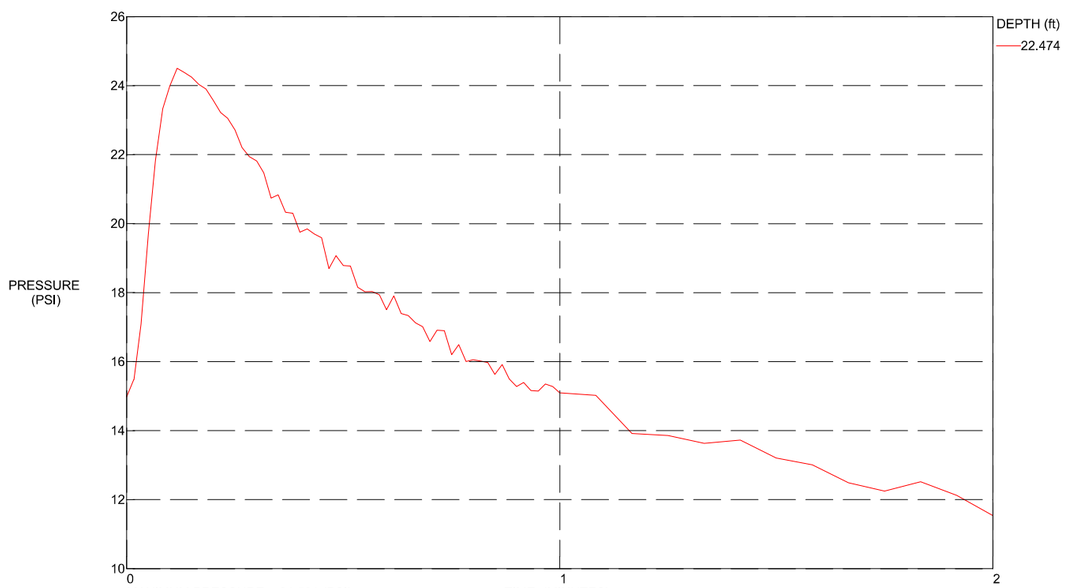


MAXIMUM PRESSURE = 15.936 (PSI)
HYDROSTATIC PRESSURE = 7.536 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y1RPC_2700

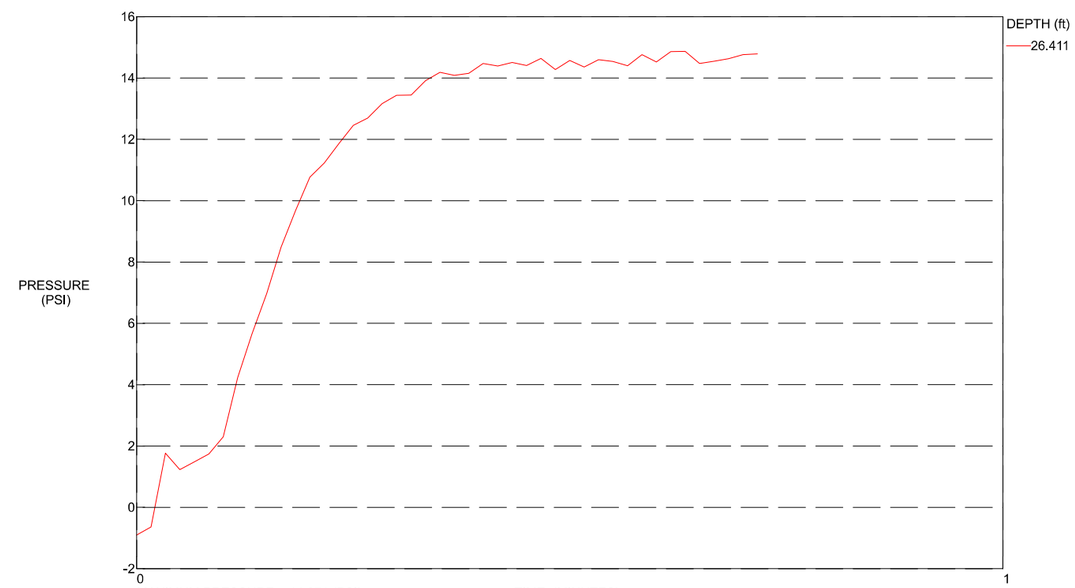
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 24.501 (PSI)
HYDROSTATIC PRESSURE = 9.74 (PSI), WATER TABLE: 0.00 ft

Y1RPC_4100

CATLIN
Engineers and Scientists

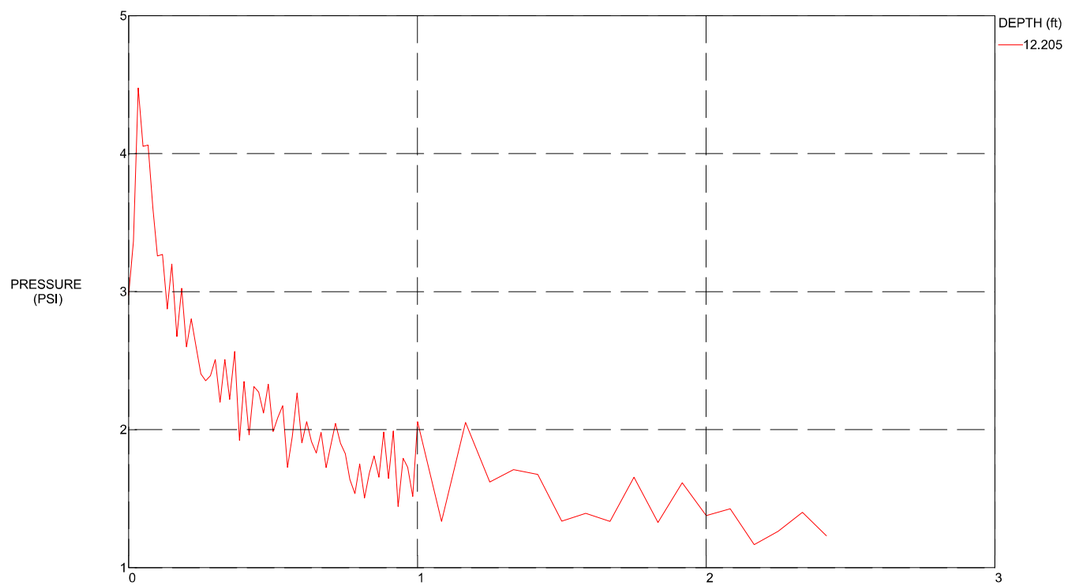


MAXIMUM PRESSURE = 14.871 (PSI)
HYDROSTATIC PRESSURE = 11.446 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPA_1375

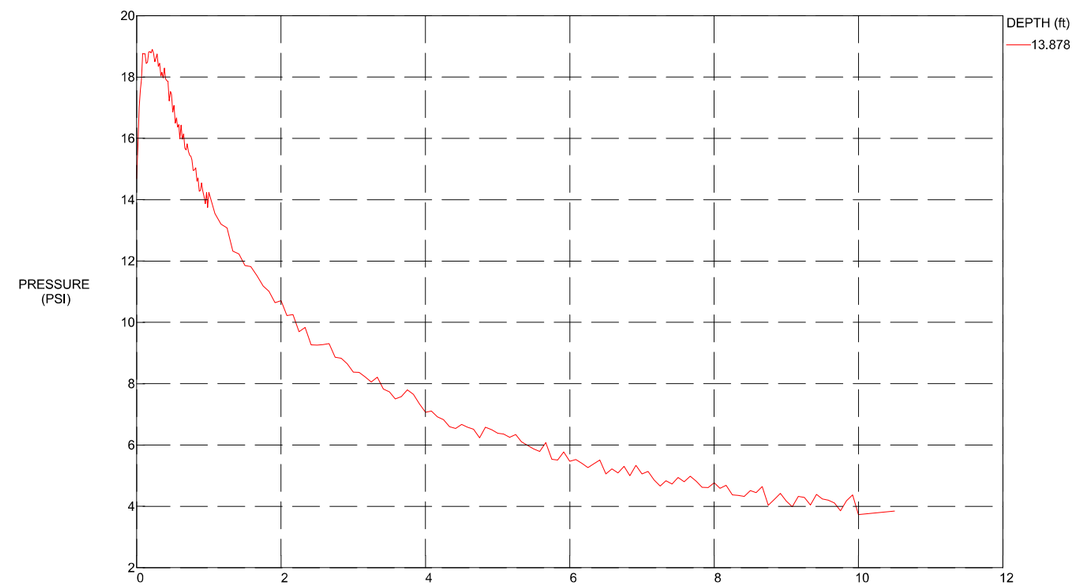
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 4.475 (PSI)
HYDROSTATIC PRESSURE = 5.289 (PSI), WATER TABLE: 0.00 ft

Y2LPA_1375

CATLIN
Engineers and Scientists

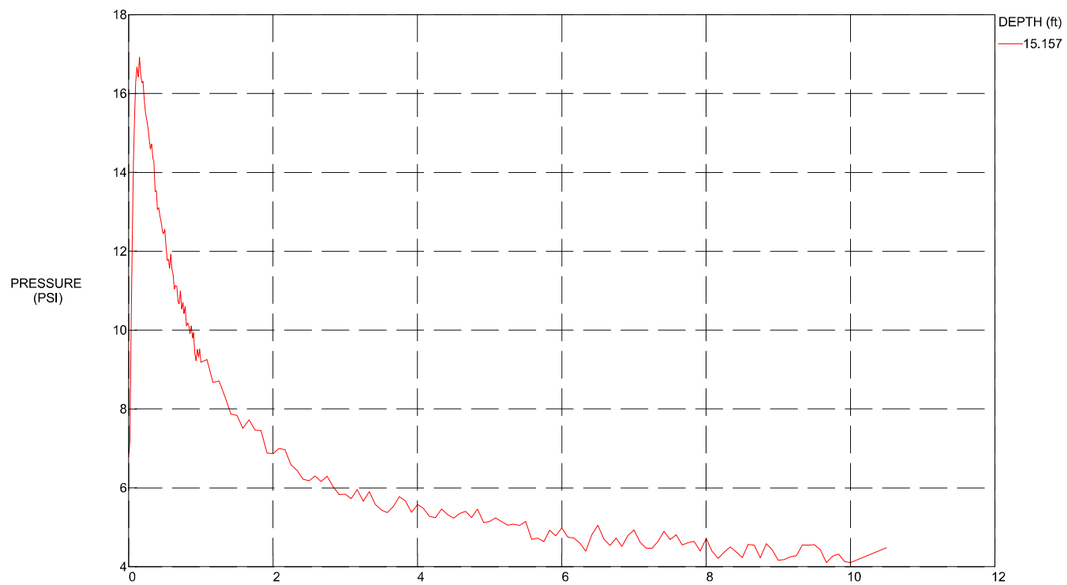


MAXIMUM PRESSURE = 18.896 (PSI)
HYDROSTATIC PRESSURE = 6.015 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPA_1575

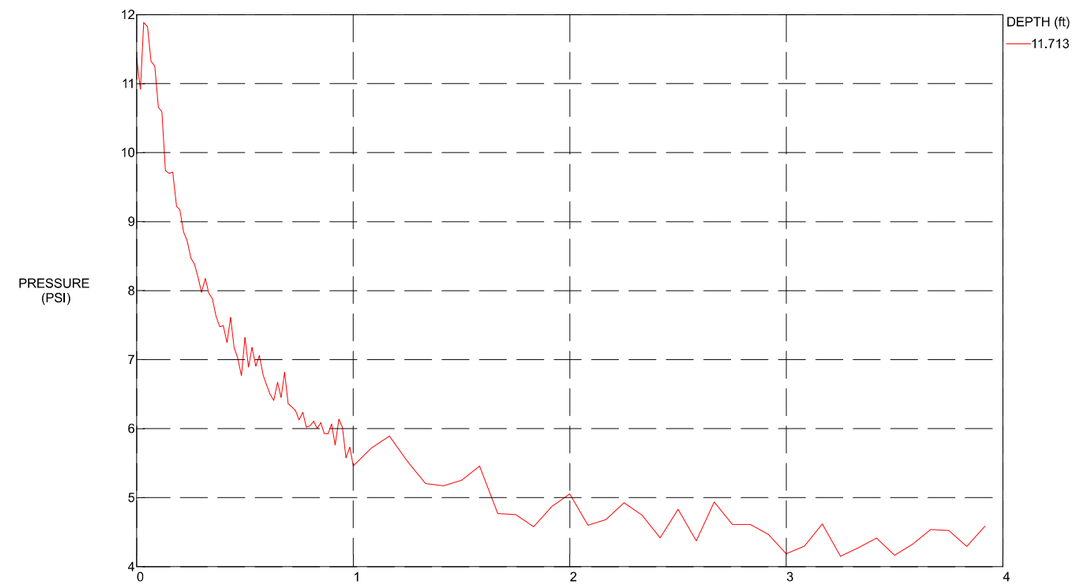
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 16.924 (PSI)
HYDROSTATIC PRESSURE = 6.569 (PSI), WATER TABLE: 0.00 ft

Y2LPA_1800

CATLIN
Engineers and Scientists

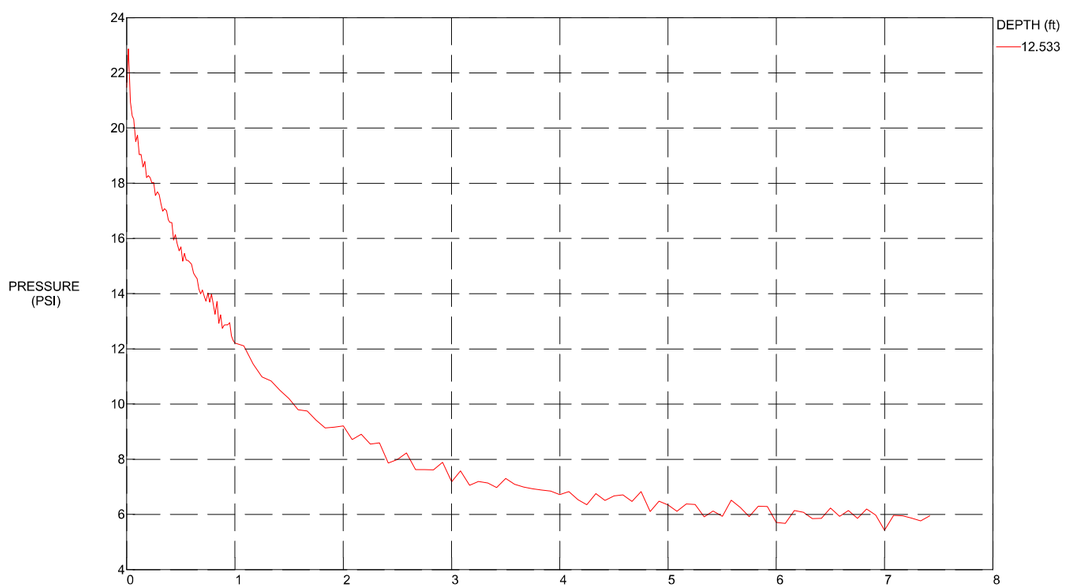


MAXIMUM PRESSURE = 11.883 (PSI)
HYDROSTATIC PRESSURE = 5.076 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPA_1900

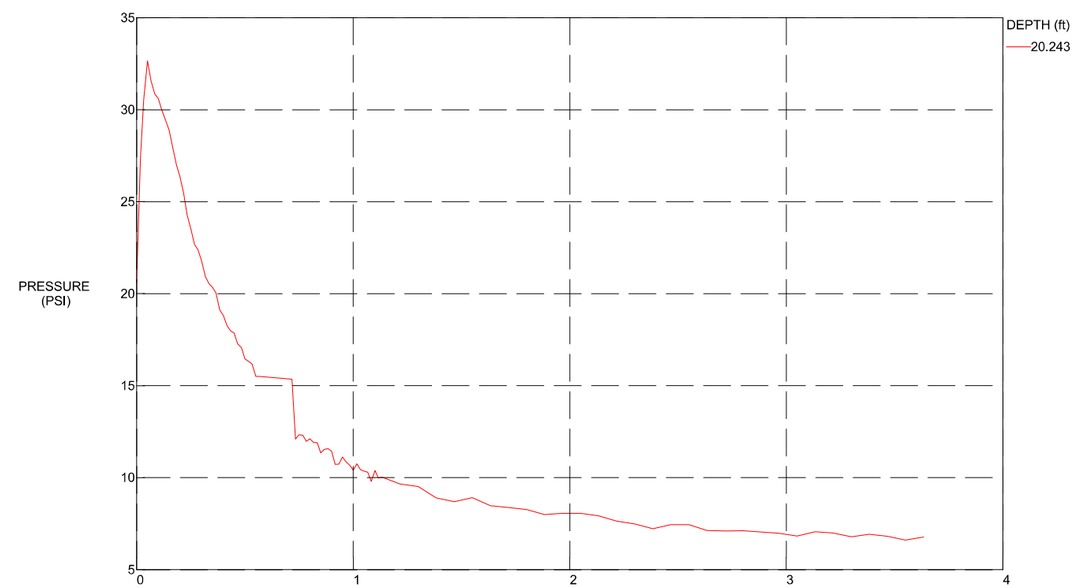
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 22.873 (PSI)
HYDROSTATIC PRESSURE = 5.432 (PSI), WATER TABLE: 0.00 ft

Y2LPA_3000

CATLIN
Engineers and Scientists

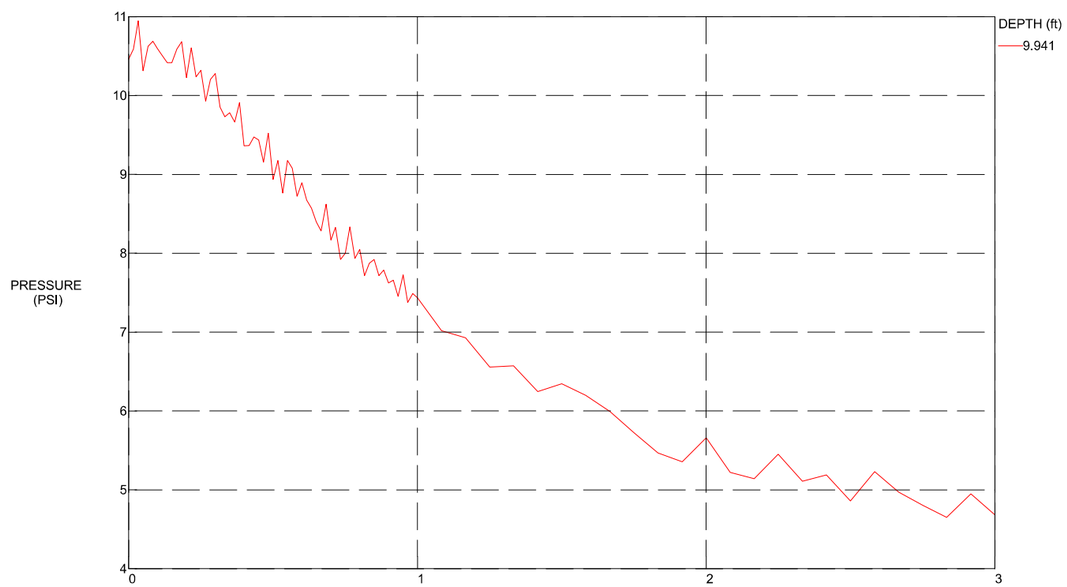


MAXIMUM PRESSURE = 32.642 (PSI)
HYDROSTATIC PRESSURE = 8.773 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPA_3200

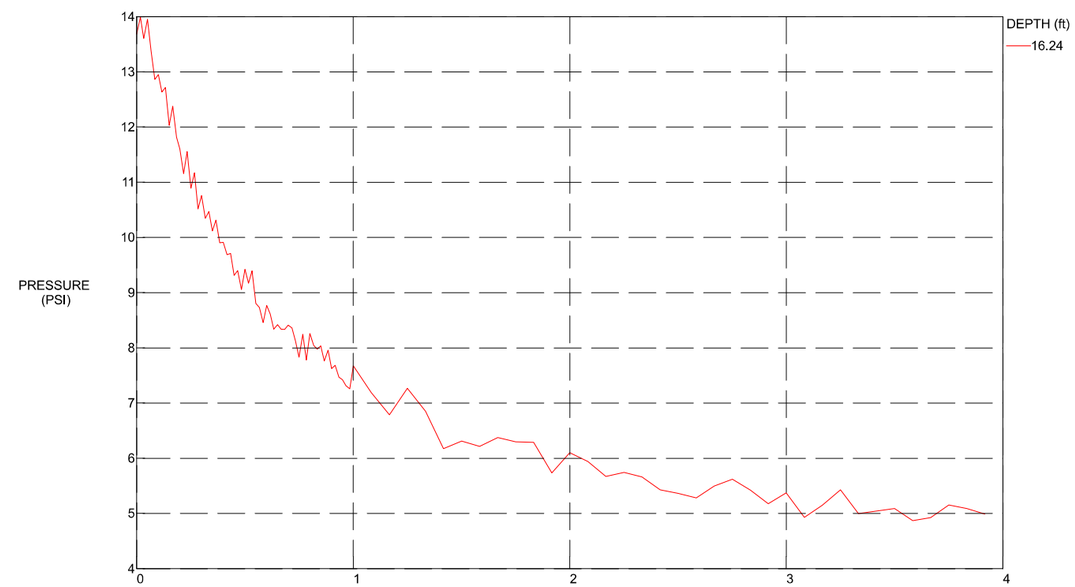
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 10.946 (PSI)
HYDROSTATIC PRESSURE = 4.308 (PSI), WATER TABLE: 0.00 ft

Y2LPA_3200

CATLIN
Engineers and Scientists

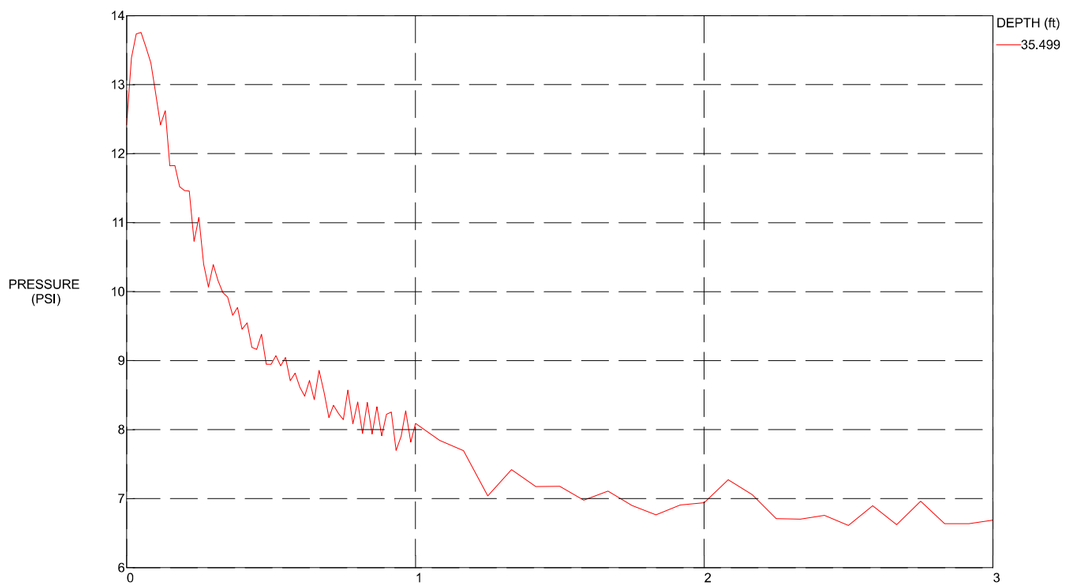


MAXIMUM PRESSURE = 13.987 (PSI)
HYDROSTATIC PRESSURE = 7.038 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPA_3400

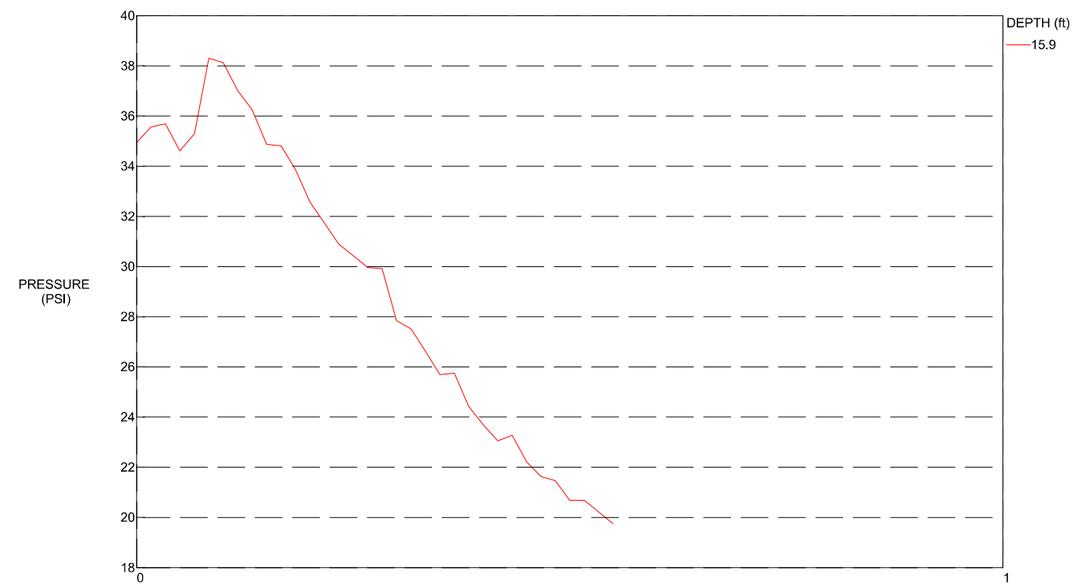
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 13.756 (PSI)
HYDROSTATIC PRESSURE = 15.385 (PSI), WATER TABLE: 0.00 ft

Y2LPC_2_3050

CATLIN
Engineers and Scientists

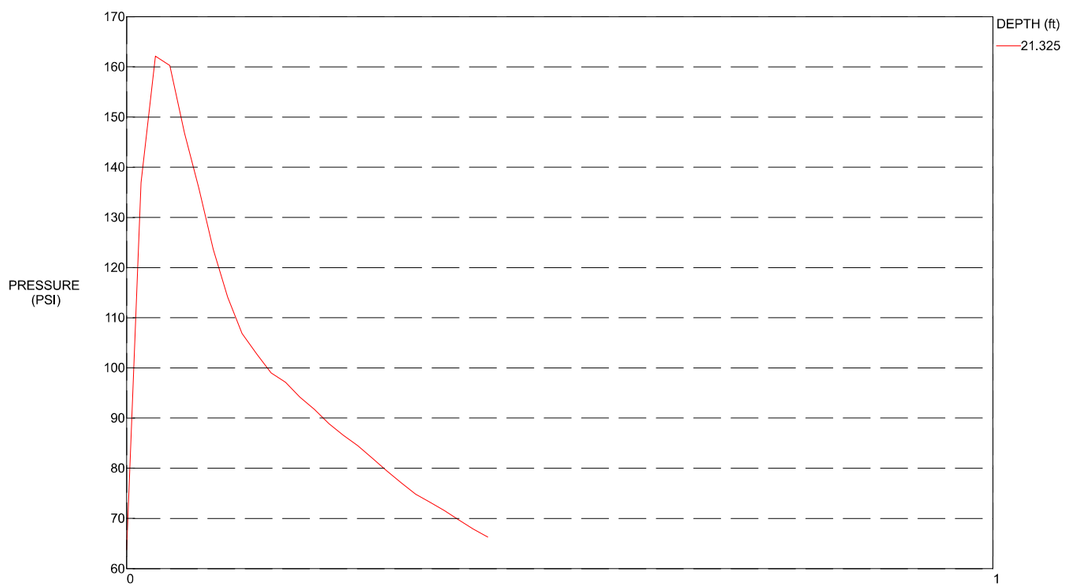


MAXIMUM PRESSURE = 38.308 (PSI)
HYDROSTATIC PRESSURE = 6.896 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPC_2_3050

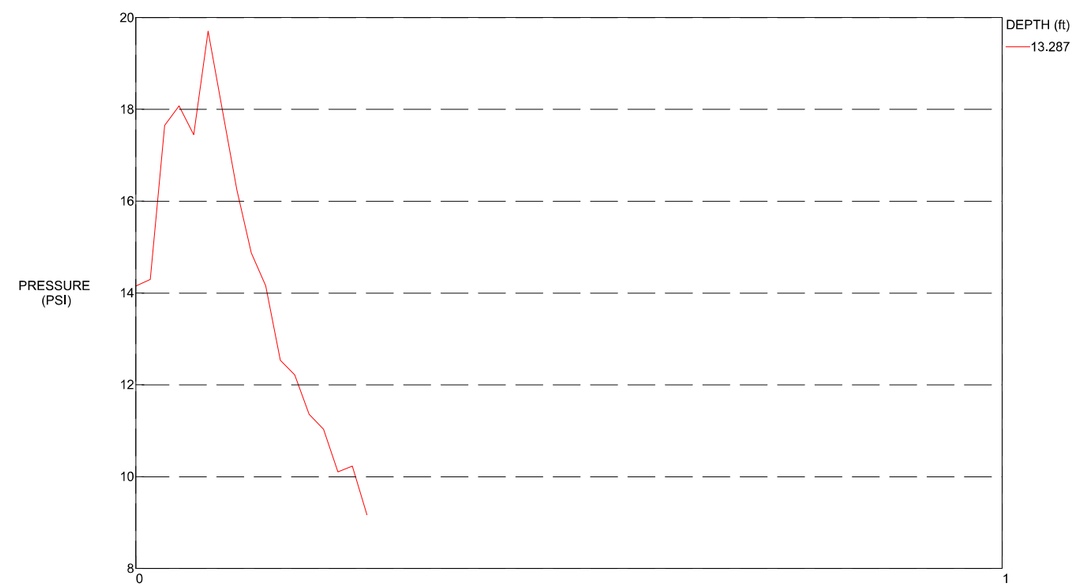
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 162.131 (PSI)
HYDROSTATIC PRESSURE = 9.242 (PSI), WATER TABLE: 0.00 ft

Y2LPC_2_3270

CATLIN
Engineers and Scientists

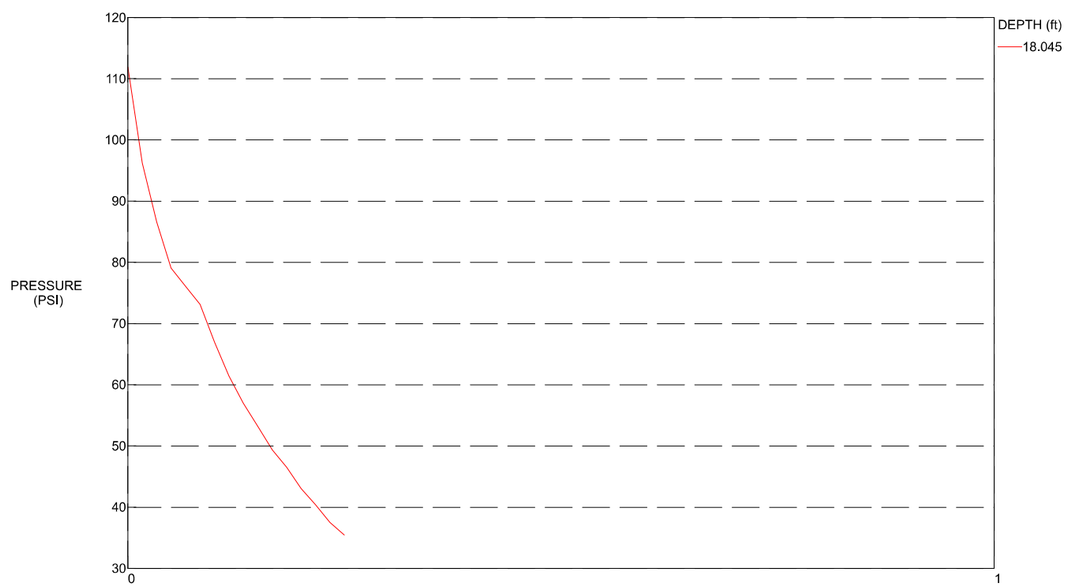


MAXIMUM PRESSURE = 19.704 (PSI)
HYDROSTATIC PRESSURE = 5.759 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPC_2_3270

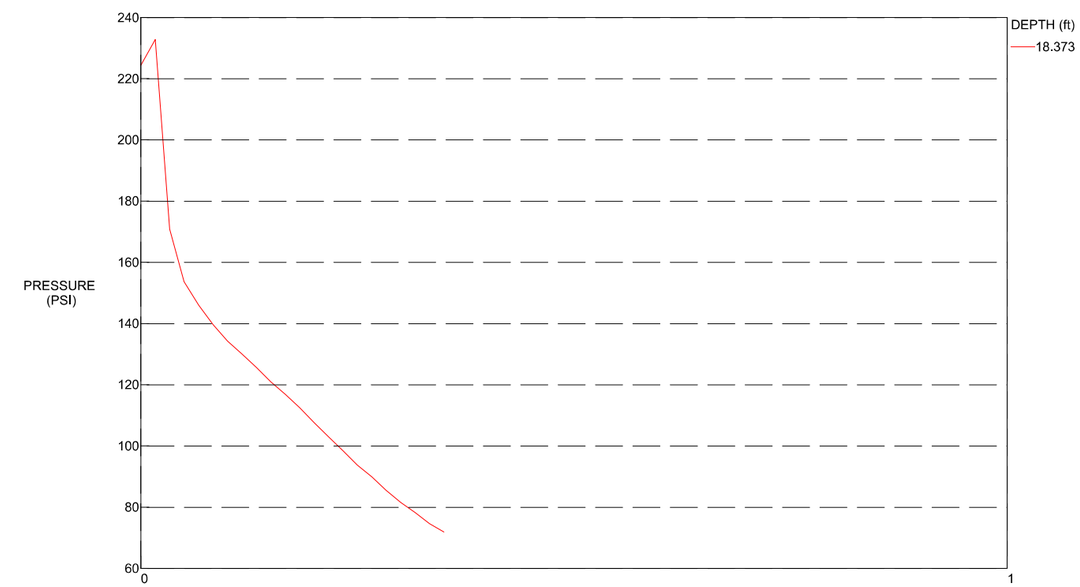
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 111.916 (PSI)
HYDROSTATIC PRESSURE = 7.82 (PSI), WATER TABLE: 0.00 ft

Y2LPC_2_3270

CATLIN
Engineers and Scientists

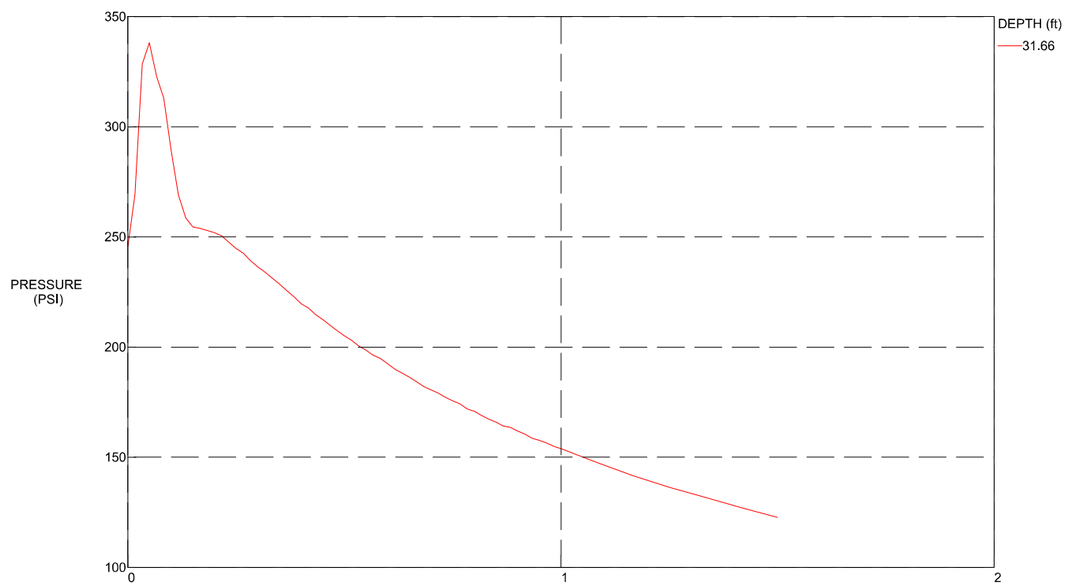


MAXIMUM PRESSURE = 232.817 (PSI)
HYDROSTATIC PRESSURE = 7.963 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPC_2_3450

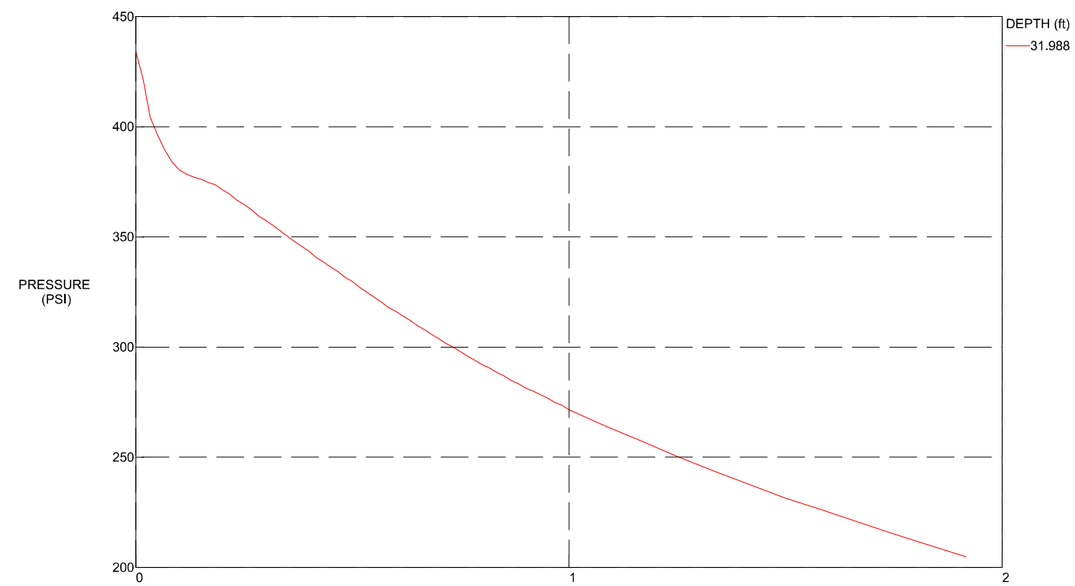
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 338.076 (PSI)
HYDROSTATIC PRESSURE = 13.721 (PSI), WATER TABLE: 0.00 ft

Y2LPC_2_3450

CATLIN
Engineers and Scientists

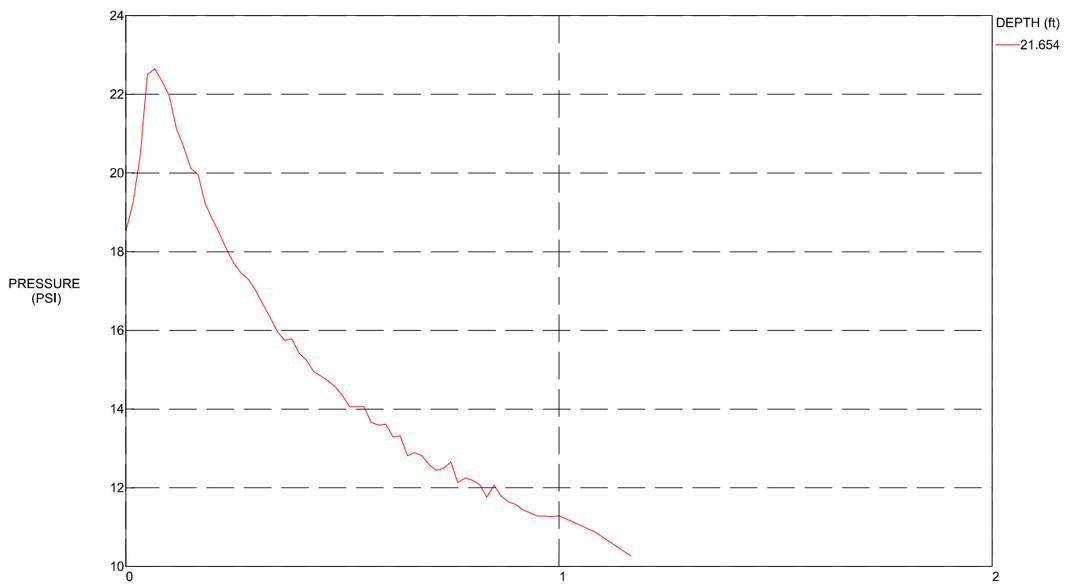


MAXIMUM PRESSURE = 434.054 (PSI)
HYDROSTATIC PRESSURE = 13.863 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPCSPUR_2_2580

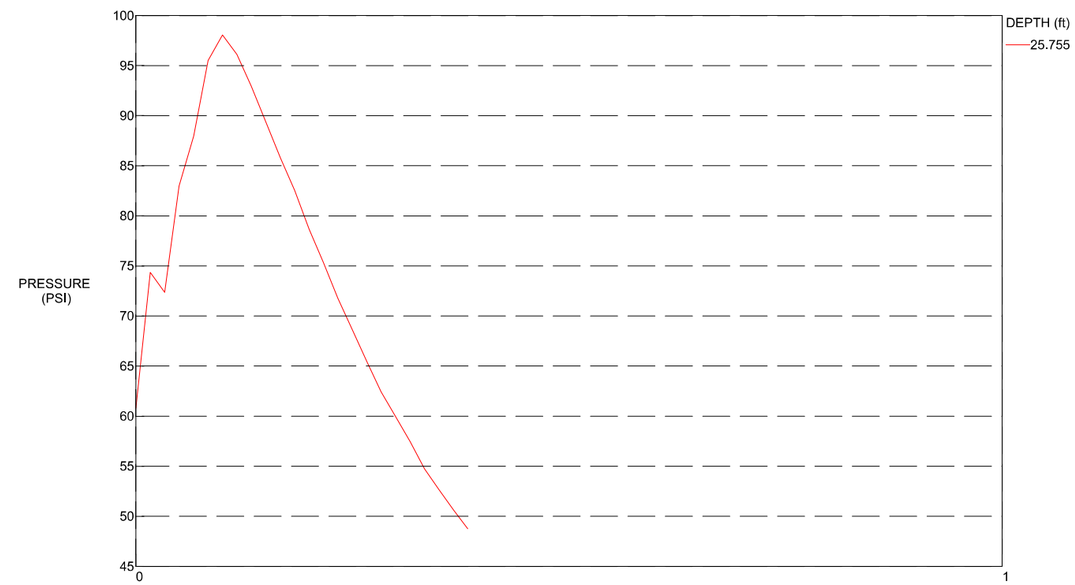
CATLIN
Engineers and Scientists



MAXIMUM PRESSURE = 22.652 (PSI)
HYDROSTATIC PRESSURE = 9.384 (PSI), WATER TABLE: 0.00 ft

Y2LPCSPUR_2_2580

CATLIN
Engineers and Scientists

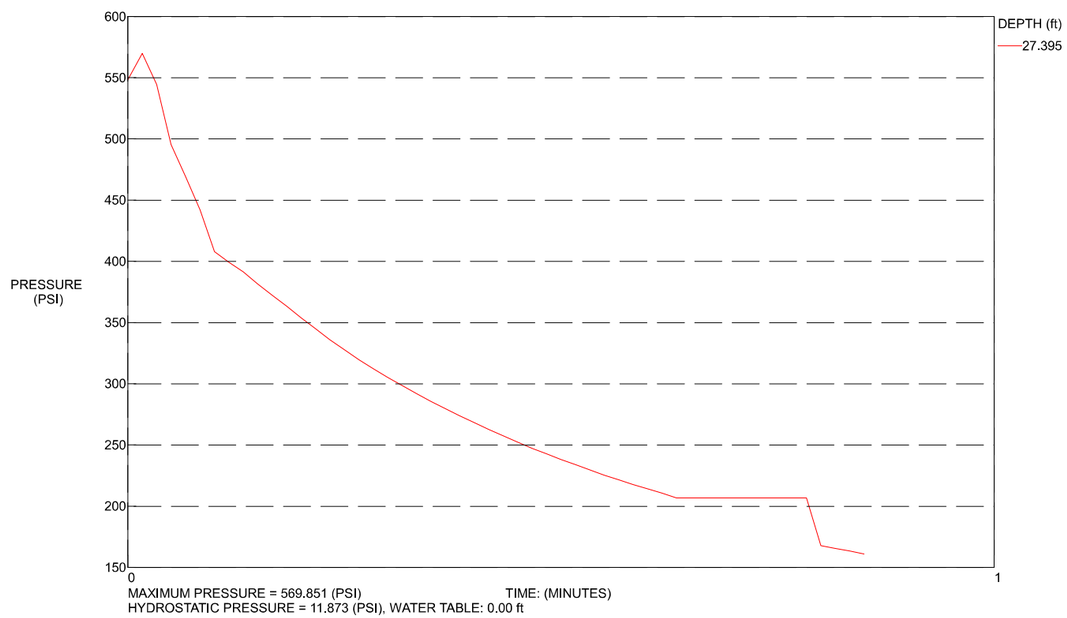


MAXIMUM PRESSURE = 98.074 (PSI)
HYDROSTATIC PRESSURE = 11.162 (PSI), WATER TABLE: 0.00 ft

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Y2LPCSPUR_2_2580

CATLIN
Engineers and Scientists



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

REFERENCE: HB–0039

PROJECT: 50603

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX D
LABORATORY TESTING SUMMARY

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Initial BS

INFRASTRUCTURE CONSULTING & ENGINEERING

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INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
FLY_1500	SS-2162	-FLY-	14+97	CL	177461	2313086	2.7 - 4.2	GLV26-0500	A-4 (0)	NP	NP	55.3	9.2	14.6	20.9	0.0	99.0	66.8	35.9	237.8%	23.8%
FLY_1500	SS-2163	-FLY-	14+97	CL	177461	2313086	7.7 - 9.2	GLV26-0501	A-3 (0)	NP	NP	83.4	14.8	0.8	1.0	0.0	100.0	63.9	2.1	25.8%	0.6%
FLY_1500	SS-2165	-FLY-	14+97	CL	177461	2313086	17.7 - 19.2	GLV26-0502	A-4 (0)	NP	NP	25.7	33.1	21.2	20.0	0.0	100.0	92.2	45.6	18.9%	1.5%
FLY_1500	SS-2167	-FLY-	14+97	CL	177461	2313086	27.7 - 29.2	GLV26-0503	A-3 (0)	NP	NP	41.0	56.4	1.6	1.0	0.8	97.6	84.2	3.7	20.1%	0.1%
FLY_3800	SS-2138	-FLY-	38+00	10' LT	177730	2314517	9.5 - 11.0	GLV26-0504	A-3 (0)	NP	NP	80.7	17.0	1.3	1.0	0.5	98.6	55.6	2.8	14.4%	-
FLY_3800	SS-2140	-FLY-	38+00	10' LT	177730	2314517	19.5 - 21.0	GLV26-0505	A-3 (0)	NP	NP	62.6	35.6	1.8	0.0	0.0	100.0	81.9	3.9	21.1%	0.1%
FLY_3800	SS-2141	-FLY-	38+00	10' LT	177730	2314517	24.5 - 26.0	GLV26-0506	A-2-4 (0)	NP	NP	28.6	48.8	11.4	11.2	0.0	99.3	84.8	27.0	111.0%	15.2%
FLY_3800	SS-2142	-FLY-	38+00	10' LT	177730	2314517	29.5 - 31.0	GLV26-0507	A-3 (0)	NP	NP	74.2	23.1	1.7	1.0	0.0	97.5	50.9	3.5	21.3%	0.3%
FLY_4000	SS-2128	-FLY-	40+00	10' LT	177930	2314502	4.4 - 5.9	GLV26-0448	A-1-b (0)	NP	NP	81.5	17.7	0.8	0.0	0.6	96.8	38.7	0.9	17.6%	-
FLY_4000	SS-2132	-FLY-	40+00	10' LT	177930	2314502	24.4 - 25.9	GLV26-0449	-	-	-	-	-	-	-	-	-	-	-	217.2%	24.8%
FLY_4000	SS-2133	-FLY-	40+00	10' LT	177930	2314502	29.4 - 30.9	GLV26-0450	-	NP	NP	-	-	-	-	-	-	-	-	19.8%	0.5%
L_EB1-B	SS-468	-L-	121+77	36' RT	177459	2313656	0.0 - 1.5	GVL26 - 0275	-	-	-	-	-	-	-	-	-	-	-	40.7%	4.6%
L_EB1-B	SS-469	-L-	121+77	36' RT	177459	2313656	3.4 - 4.9	GVL26 - 0276	A-8 (0)	-	-	-	-	-	-	-	-	-	-	563.9%	91.5%
L_EB1-B	SS-470	-L-	121+77	36' RT	177459	2313656	8.4 - 9.9	GVL26 - 0277	A-8 (0)	-	-	-	-	-	-	-	-	-	-	650.8%	84.6%
L_EB1-B	SS-472	-L-	121+77	36' RT	177459	2313656	18.4 - 19.9	GVL26 - 0279	A-7-5 (25)	81	16	11.6	3.4	41.8	43.2	0.0	100.0	90.1	85.6	190.3%	7.7%
L_EB1-B	SS-473	-L-	121+77	36' RT	177459	2313656	28.4 - 29.9	GVL26 - 0280	A-2-4 (0)	NP	NP	22.0	63.7	8.1	6.2	2.2	97.7	93.6	15.6	18.2%	-
L_EB1-B	SS-475	-L-	121+77	36' RT	177459	2313656	38.4 - 39.9	GVL26 - 0281	A-2-4 (0)	NP	NP	28.3	57.4	8.1	6.2	8.5	90.4	85.5	13.9	16.0%	-
L_EB1-B	SS-481	-L-	121+77	36' RT	177459	2313656	73.5 - 75.0	GVL26 - 0282	A-2-4 (0)	NP	NP	12.6	65.6	9.4	12.4	18.9	78.3	72.4	19.3	11.7%	-
L_EB1-B	SS-483	-L-	121+77	36' RT	177459	2313656	83.4 - 84.9	GVL26 - 0283	A-2-4 (0)	NP	NP	6.5	75.2	6.1	12.2	0.6	99.0	96.9	21.2	23.7%	-
L_EB1-B	SS-487	-L-	121+77	36' RT	177459	2313656	103.6 - 105.1	GVL26 - 0284	A-2-4 (0)	NP	NP	1.2	85.7	4.7	8.4	0.0	100.0	99.9	15.5	22.9%	-
L_EB1-B	SS-490	-L-	121+77	36' RT	177459	2313656	123.4 - 124.9	GVL26 - 0285	A-2-4 (0)	NP	NP	0.4	74.8	12.5	12.3	0.0	100.0	99.9	28.9	25.4%	-
L_EB1-B	SS-492	-L-	121+77	36' RT	177459	2313656	133.6 - 135.1	GVL26 - 0286	A-4 (0)	NP	NP	0.8	68.4	14.7	16.1	0.0	100.0	99.5	36.4	10.5%	-
L_B1-B	SS-546	-L-	124+01	42' RT	177329	2313834	0.0 - 1.5	GLV26-0451	-	-	-	-	-	-	-	-	-	-	-	41.9%	5.8%
L_B1-B	SS-547	-L-	124+01	42' RT	177329	2313834	3.6 - 5.1	GLV26-0452	A-8 (0)	-	-	-	-	-	-	-	-	-	-	785.7%	70.0%
L_B1-B	SS-548	-L-	124+01	42' RT	177329	2313834	8.5 - 10.0	GLV26-0453	A-8 (0)	-	-	-	-	-	-	-	-	-	-	776.2%	62.5%
L_B1-B	SS-549	-L-	124+01	42' RT	177329	2313834	13.5 - 15.0	GLV26-0454	-	-	-	-	-	-	-	-	-	-	-	239.5%	21.2%
L_B1-B	SS-550	-L-	124+01	42' RT	177329	2313834	18.5 - 20.0	GLV26-0455	-	-	-	-	-	-	-	-	-	-	-	233.2%	20.4%
L_B1-B	SS-559	-L-	124+01	42' RT	177329	2313834	68.5 - 70.0	GLV26-0456	A-2-4 (0)	NP	NP	6.6	82.1	5.3	6.0	3.1	96.0	94.8	13.5	22.4%	-
L_B1-B	SS-561	-L-	124+01	42' RT	177329	2313834	78.5 - 80.0	GLV26-0457	A-2-4 (0)	NP	NP	2.9	71.5	17.6	8.0	0.4	99.4	97.6	29.4	21.6%	-
L_B1-B	SS-564	-L-	124+01	42' RT	177329	2313834	93.5 - 95.0	GLV26-0458	A-2-4 (0)	NP	NP	13.6	74.0	0.3	12.1	0.1	99.9	98.6	14.7	28.1%	-
L_B1-B	SS-568	-L-	124+01	42' RT	177329	2313834	118.5 - 120.0	GLV26-0459	A-2-4 (0)	NP	NP	3.0	77.5	7.4	12.1	6.5	93.1	92.7	20.3	25.7%	-
L_B1-B	SS-571	-L-	124+01	42' RT	177329	2313834	133.5 - 135.0	GLV26-0460	A-2-4 (0)	NP	NP	0.6	68.3	13.0	18.1	0.5	99.4	99.0	26.6	25.7%	-
L_B1-A	SS-522	-L-	124+08	33' LT	177384	2313885	0.0 - 1.5	GVL26 - 0291	-	-	-	-	-	-	-	-	-	-	-	192.8%	38.9%
L_B1-A	SS-523	-L-	124+08	33' LT	177384	2313885	3.5 - 5.0	GVL26 - 0292	A-8 (0)	-	-	-	-	-	-	-	-	-	-	377.2%	58.3%
L_B1-A	SS-526	-L-	124+08	33' LT	177384	2313885	18.6 - 20.1	GVL26 - 0293	-	-	-	-	-	-	-	-	-	-	-	449.7%	43.4%
L_B1-A	SS-533	-L-	124+08	33' LT	177384	2313885	73.5 - 75.0	GVL26 - 0294	A-2-4 (0)	NP	NP	3.5	82.0	6.1	8.4	14.6	84.3	83.1	15.1	23.3%	-
L_B1-A	SS-535	-L-	124+08	33' LT	177384	2313885	83.5 - 85.0	GVL26 - 0295	A-2-4 (0)	NP	NP	7.2	76.6	5.7	10.5	1.3	97.6	96.3	18.5	23.5%	-
L_B1-A	SS-538	-L-	124+08	33' LT	177384	2313885	98.5 - 100.0	GVL26 - 0296	A-2-4 (0)	NP	NP	1.8	78.2	7.5	12.5	0.3	99.7	99.6	22.3	26.7%	-
L_B1-A	SS-542	-L-	124+08	33' LT	177384	2313885	123.6 - 125.1	GVL26 - 0297	A-2-4 (0)	NP	NP	0.5	74.7	12.3	12.5	0.0	100.0	99.9	29.3	25.9%	-
L_B1-A	SS-545	-L-	124+08	33' LT	177384	2313885	138.6 - 140.1	GVL26 - 0298	A-4 (0)	25	3	0.9	63.2	17.3	18.6	0.1	99.9	99.6	42.9	32.5%	-
L_B2-B	SS-4139	-L-	126+00	41' RT	177204	2313984	4.4 - 5.9	GVL26 - 0267	-	-	-	-	-	-	-	-	-	-	-	216.9%	23.3%
L_B2-B	SS-4140	-L-	126+00	41' RT	177204	2313984	19.4 - 20.9	GVL26 - 0268	-	-	-	-	-	-	-	-	-	-	-	418.7%	31.4%
L_B2-B	SS-4142	-L-	126+00	41' RT	177204	2313984	29.4 - 30.9	GVL26 - 0269	A-1-b (0)	NP	NP	48.5	34.2	14.1	3.2	28.4	60.0	39.3	11.9	13.0%	-
L_B2-B	SS-4150	-L-	126+00	41' RT	177204	2313984	69.4 - 70.9	GVL26 - 0270	A-2-4 (0)	NP	NP	4.5	72.2	11.0	12.3	0.0	100.0	99.4	26.6	22.6%	-
L_B2-B	SS-4151	-L-	126+00	41' RT	177204	2313984	74.4 - 75.9	GVL26 - 0271	A-2-4 (0)	NP	NP	3.2	81.0	7.6	8.2	0.0	99.9	99.1	18.1	22.3%	-
L_B2-B	SS-4153	-L-	126+00	41' RT	177204	2313984	84.4 - 85.9	GVL26 - 0272	A-2-4 (0)	NP	NP	9.2	75.9	6.7	8.2	10.2	89.6	88.6	16.2	21.4%	-

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INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B2-B	SS-4157	-L-	126+00	41' RT	177204	2313984	104.4 - 105.9	GVL26 - 0273	A-2-4 (0)	NP	NP	1.0	82.9	7.9	8.2	0.0	100.0	99.8	19.2	27.8%	-
L_B2-B	SS-4164	-L-	126+00	41' RT	177204	2313984	139.4 - 140.9	GVL26 - 0274	A-4 (0)	26	4	0.7	65.3	15.6	18.4	0.0	100.0	99.7	41.2	26.2%	-
L_B2-A	SS-4165	-L-	126+02	29' LT	177255	2314033	4.3 - 5.8	GVL26 - 0259	-	-	-	-	-	-	-	-	-	-	-	405.8%	46.3%
L_B2-A	SS-4167	-L-	126+02	29' LT	177255	2314033	19.3 - 20.8	GVL26 - 0260	-	-	-	-	-	-	-	-	-	-	-	212.6%	20.7%
L_B2-A	SS-4168	-L-	126+02	29' LT	177255	2314033	24.3 - 25.8	GVL26 - 0261	A-3 (0)	NP	NP	60.5	37.2	-3.8	6.1	0.0	100.0	71.2	3.2	21.2%	-
L_B2-A	SS-4169	-L-	126+02	29' LT	177255	2314033	29.3 - 30.8	GVL26 - 0262	A-2-4 (0)	NP	NP	32.3	49.1	13.5	5.1	4.9	89.9	78.5	18.1	15.8%	-
L_B2-A	SS-4176	-L-	126+02	29' LT	177255	2314033	69.3 - 70.8	GVL26 - 0263	A-2-4 (0)	NP	NP	5.1	81.6	7.1	6.2	0.0	99.8	99.0	15.9	22.4%	-
L_B2-A	SS-4182	-L-	126+02	29' LT	177255	2314033	104.3 - 105.8	GVL26 - 0264	A-2-4 (0)	NP	NP	1.7	84.9	5.2	8.2	0.0	100.0	99.7	16.0	22.9%	-
L_B2-A	SS-4187	-L-	126+02	29' LT	177255	2314033	129.3 - 130.8	GVL26 - 0265	A-2-4 (0)	NP	NP	0.9	70.4	14.4	14.3	0.0	100.0	99.6	33.7	29.5%	-
L_B2-A	SS-4188	-L-	126+02	29' LT	177255	2314033	134.3 - 135.8	GVL26 - 0266	A-4 (0)	25	3	1.4	62.8	17.4	18.4	1.8	98.0	97.3	41.5	26.1%	-
L_B3-B	SS-4114	-L-	127+97	38' RT	177070	2314123	13.0 - 14.5	GVL26 - 0251	A-4 (0)	NP	NP	39.0	10.4	38.1	12.5	0.0	100.0	66.5	51.9	444.2%	32.9%
L_B3-B	SS-4116	-L-	127+97	38' RT	177070	2314123	23.0 - 24.5	GVL26 - 0252	A-2-4 (0)	NP	NP	18.1	66.7	6.8	8.4	0.0	100.0	97.7	18.8	19.8%	0.3%
L_B3-B	SS-4118	-L-	127+97	38' RT	177070	2314123	33.0 - 34.5	GVL26 - 0253	A-2-4 (0)	NP	NP	32.1	53.8	8.9	5.2	13.9	82.3	82.3	12.6	22.8%	-
L_B3-B	SS-4126	-L-	127+97	38' RT	177070	2314123	72.6 - 74.1	GVL26 - 0254	A-2-4 (0)	NP	NP	4.3	76.4	6.8	12.5	0.4	98.9	98.1	22.0	22.0%	-
L_B3-B	SS-4128	-L-	127+97	38' RT	177070	2314123	82.6 - 84.1	GVL26 - 0255	A-2-4 (0)	NP	NP	15.3	71.2	7.3	6.2	7.3	91.7	89.2	14.6	18.1%	-
L_B3-B	SS-4130	-L-	127+97	38' RT	177070	2314123	92.6 - 94.1	GVL26 - 0256	A-2-4 (0)	NP	NP	2.5	81.8	5.3	10.4	0.0	100.0	99.7	18.2	22.0%	-
L_B3-B	SS-4133	-L-	127+97	38' RT	177070	2314123	107.6 - 109.1	GVL26 - 0257	A-2-4 (0)	NP	NP	1.0	81.1	7.6	10.3	0.0	100.0	99.6	21.0	23.4%	-
L_B3-B	SS-4137	-L-	127+97	38' RT	177070	2314123	132.6 - 134.1	GVL26 - 0258	A-4 (0)	NP	NP	0.9	65.0	15.7	18.4	0.0	99.9	99.5	39.9	26.4%	-
L_B3-A	SS-4087	-L-	128+01	30' LT	177113	2314176	7.8 - 9.3	GVL26 - 0232	A-8 (0)	-	-	-	-	-	-	-	-	-	-	1028.2%	83.4%
L_B3-A	SS-4088	-L-	128+01	30' LT	177113	2314176	12.8 - 14.3	GVL26 - 0233	A-8 (0)	-	-	-	-	-	-	-	-	-	-	923.5%	50.3%
L_B3-A	SS-4089	-L-	128+01	30' LT	177113	2314176	22.8 - 24.3	GVL26 - 0234	A-3 (0)	NP	NP	56.8	40.7	0.3	2.2	0.0	100.0	89.9	3.3	25.6%	0.2%
L_B3-A	SS-4098	-L-	128+01	30' LT	177113	2314176	72.5 - 74.0	GVL26 - 0235	A-2-4 (0)	NP	NP	4.1	82.6	4.9	8.4	0.6	99.3	98.5	16.1	24.5%	-
L_B3-A	SS-4104	-L-	128+01	30' LT	177113	2314176	102.5 - 104.0	GVL26 - 0236	A-2-4 (0)	NP	NP	2.6	78.0	7.0	12.4	8.2	91.2	90.5	20.4	28.4%	-
L_B3-A	SS-4108	-L-	128+01	30' LT	177113	2314176	122.5 - 124.0	GVL26 - 0237	A-2-4 (0)	NP	NP	1.1	71.4	13.3	14.2	0.0	100.0	99.5	31.9	28.2%	-
L_B3-A	SS-4111	-L-	128+01	30' LT	177113	2314176	137.5 - 139.0	GVL26 - 0238	A-4 (0)	NP	NP	0.9	60.2	16.4	22.5	0.0	99.9	99.5	47.2	25.5%	-
L_B4-A	SS-4031	-L-	129+91	33' LT	176968	2314303	2.5 - 4.0	GVL26-0163	A-1-b (0)	NP	NP	89.7	8.9	0.2	1.2	0.0	99.0	40.8	1.6	26.3%	0.3%
L_B4-A	SS-4035	-L-	129+91	33' LT	176968	2314303	32.5 - 34.0	GVL26-0164	A-1-a (0)	NP	NP	70.0	14.7	7.1	8.2	33.9	47.9	19.8	8.5	15.2%	-
L_B4-A	SS-4043	-L-	129+91	33' LT	176968	2314303	72.6 - 74.1	GVL26-0165	A-2-4 (0)	NP	NP	3.6	82.6	3.3	10.5	0.1	99.6	99.1	16.5	24.4%	-
L_B4-A	SS-4048	-L-	129+91	33' LT	176968	2314303	97.6 - 99.1	GVL26-0166	A-2-4 (0)	NP	NP	2.5	81.2	3.8	12.5	0.0	100.0	99.6	18.9	25.6%	-
L_B4-A	SS-4054	-L-	129+91	33' LT	176968	2314303	127.6 - 129.1	GVL26-0167	A-2-4 (0)	NP	NP	1.9	67.5	14.1	16.5	0.0	100.0	99.8	33.9	26.2%	-
L_B4-B	SS-4064	-L-	130+02	27' RT	176923	2314262	33.4 - 34.9	GVL26-0180	A-1-a (0)	NP	NP	57.3	20.3	14.0	8.4	34.1	49.1	26.3	12.3	16.4%	-
L_B4-B	SS-4065	-L-	130+02	27' RT	176923	2314262	38.4 - 39.9	GVL26-0181	A-2-4 (0)	30	6	42.3	43.2	10.0	4.5	12.9	82.8	71.7	13.7	24.6%	-
L_B4-B	SS-4073	-L-	130+02	27' RT	176923	2314262	78.4 - 79.9	GVL26-0182	A-2-4 (0)	28	2	3.0	81.0	5.6	10.4	0.1	99.8	99.1	19.2	25.7%	-
L_B4-B	SS-4075	-L-	130+02	27' RT	176923	2314262	88.4 - 89.9	GVL26-0183	A-2-4 (0)	NP	NP	12.0	70.7	6.9	10.4	14.5	83.1	80.2	18.1	22.7%	-
L_B4-B	SS-4077	-L-	130+02	27' RT	176923	2314262	98.4 - 99.9	GVL26-0184	A-2-4 (0)	NP	NP	3.8	79.6	6.2	10.4	4.1	95.3	93.7	20.1	20.7%	-
L_B4-B	SS-4081	-L-	130+02	27' RT	176923	2314262	118.4 - 119.9	GVL26-0185	A-2-4 (0)	NP	NP	1.6	78.9	9.0	10.5	0.0	100.0	99.1	22.8	26.8%	-
L_B4-B	SS-4083	-L-	130+02	27' RT	176923	2314262	128.4 - 129.9	GVL26-0186	A-2-4 (0)	NP	NP	1.8	66.3	15.4	16.5	3.5	96.3	95.4	35.0	23.6%	-
L_B5-A	SS-7088	-L-	131+44	57' LT	176857	2314415	4.8 - 6.3	26-1926	A-3 (0)	NP	NP	84.8	12.8	0.2	2.2	0.2	98.5	55.6	2.8	15.3%	-
L_B5-A	SS-7092	-L-	131+44	57' LT	176857	2314415	23.0 - 24.5	26-1927	A-3 (0)	NP	NP	83.0	13.5	2.8	0.7	0.2	96.2	54.4	4.1	20.7%	-
L_B5-A	SS-7096	-L-	131+44	57' LT	176857	2314415	43.0 - 44.5	26-1928	A-2-4 (0)	NP	NP	62.3	26.1	6.2	5.4	1.6	95.2	70.0	12.9	39.6%	3.2%
L_B5-A	SS-7097	-L-	131+44	57' LT	176857	2314415	48.0 - 49.5	26-1929	A-2-4 (0)	NP	NP	31.4	34.9	16.6	17.1	15.8	65.0	57.0	25.7	45.3%	6.1%
L_B5-A	SS-7108	-L-	131+44	57' LT	176857	2314415	108.0 - 109.5	26-1930	A-2-4 (0)	NP	NP	2.8	81.5	6.3	9.4	12.0	84.1	83.1	16.1	19.9%	-
L_B5-A	SS-7113	-L-	131+44	57' LT	176857	2314415	133.0 - 134.5	26-1931	A-2-4 (0)	NP	NP	1.5	81.6	5.4	11.5	0.3	94.6	94.5	19.1	24.8%	-
L_B5-B	SS-7066	-L-	131+97	34' RT	176762	2314369	28.0 - 29.5	26-1932	A-2-4 (0)	NP	NP	20.6	48.2	8.5	22.7	0.1	96.1	88.6	34.5	27.7%	-
L_B5-B	SS-7078	-L-	131+97	34' RT	176762	2314369	98.0 - 99.5	26-1933	A-2-4 (0)	NP	NP	7.1	82.0	4.3	6.6	0.1	98.3	97.2	14.4	20.7%	-
L_B5-B	SS-7082	-L-	131+97	34' RT	176762	2314369	118.0 - 119.5	26-1934	A-2-4 (0)	NP	NP	1.5	84.6	3.2	10.7	0.8	95.7	95.5	16.3	25.5%	-

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INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B5-B	SS-7086	-L-	131+97	34' RT	176762	2314369	138.0 - 139.5	26-1935	A-4 (0)	NP	NP	0.7	64.7	13.9	20.7	0.4	95.1	94.8	38.3	23.8%	-
L_B6-A	SS-7041	-L-	133+93	22' LT	176629	2314522	23.1 - 24.6	26-1920	A-3 (0)	NP	NP	66.5	28.9	0.0	4.6	0.2	98.6	74.2	5.2	30.4%	2.1%
L_B6-A	SS-7053	-L-	133+93	22' LT	176629	2314522	88.1 - 89.6	26-1921	A-2-4 (0)	NP	NP	2.2	84.7	3.1	10.0	0.0	98.0	97.5	15.9	24.9%	-
L_B6-A	SS-7061	-L-	133+93	22' LT	176629	2314522	133.1 - 134.6	26-1922	A-2-4 (0)	NP	NP	1.1	72.6	11.5	14.8	0.0	100.0	99.7	30.4	25.5%	-
L_B6-B	SS-2363	-L-	134+01	79' RT	176567	2314442	8.5 - 10.5	26-1767	A-1-b (0)	NP	NP	86.4	10.7	0.9	2.0	0.0	95.7	37.1	3.2	15.8%	-
L_B6-B	SS-2364	-L-	134+01	79' RT	176567	2314442	13.5 - 15.0	26-1768	A-3 (0)	NP	NP	83.4	14.8	0.5	1.3	0.0	99.9	54.1	2.3	19.6%	-
L_B6-B	SS-2366	-L-	134+01	79' RT	176567	2314442	23.5 - 25.0	26-1769	A-3 (0)	NP	NP	76.6	22.5	0.3	0.6	0.0	99.9	74.6	1.4	25.7%	0.7%
L_B6-B	SS-2367	-L-	134+01	79' RT	176567	2314442	28.5 - 30.0	26-1770	-	NP	NP	-	-	-	-	-	-	-	-	156.1%	41.7%
L_B6-B	SS-2368	-L-	134+01	79' RT	176567	2314442	38.5 - 40.0	26-1771	A-2-4 (0)	NP	NP	10.2	73.6	4.4	11.8	0.0	99.9	98.8	17.8	22.5%	-
L_B6-B	SS-2378	-L-	134+01	79' RT	176567	2314442	88.5 - 90.0	26-1772	A-4 (0)	NP	NP	4.3	81.2	5.7	8.8	0.0	99.1	98.6	37.5	22.2%	-
L_B6-B	SS-2380	-L-	134+01	79' RT	176567	2314442	103.5 - 105.0	26-1773	A-2-4 (0)	NP	NP	8.3	78.8	2.3	10.6	0.0	99.6	98.3	15.5	26.1%	-
L_B6-B	SS-2383	-L-	134+01	79' RT	176567	2314442	118.5 - 120.0	26-1774	A-2-4 (0)	NP	NP	1.0	85.7	4.5	8.8	0.0	99.9	99.8	16.0	24.7%	-
L_B6-B	SS-2387	-L-	134+01	79' RT	176567	2314442	138.5 - 140.0	26-1775	A-4 (0)	NP	NP	3.5	64.5	17.0	15.0	0.0	100.0	97.9	36.5	22.4%	-
L_B7-A	SS-2431	-L-	135+79	74' LT	176506	2314667	8.0 - 9.5	26-1798	A-3 (0)	NP	NP	82.2	15.8	1.0	1.0	8.2	90.8	51.5	2.4	18.8%	-
L_B7-A	SS-2432	-L-	135+79	74' LT	176506	2314667	38.0 - 39.5	26-1799	A-2-4 (0)	NP	NP	18.1	60.2	13.1	8.6	0.0	89.7	82.3	22.1	15.3%	-
L_B7-A	SS-2440	-L-	135+79	74' LT	176506	2314667	88.0 - 89.5	26-1800	A-2-4 (0)	NP	NP	3.4	81.2	6.2	9.2	0.0	97.7	96.6	18.7	23.7%	-
L_B7-B	SS-2388	-L-	136+19	8' RT	176425	2314625	3.2 - 4.7	26-1776	A-1-b (0)	NP	NP	84.3	12.4	1.8	1.5	0.0	98.6	47.1	3.9	16.2%	-
L_B7-B	SS-2389	-L-	136+19	8' RT	176425	2314625	28.2 - 29.7	26-1777	-	-	-	-	-	-	-	-	-	-	-	175.1%	-
L_B7-B	SS-2390	-L-	136+19	8' RT	176425	2314625	33.2 - 34.7	26-1778	A-4 (2)	27	10	11.7	47.1	16.4	24.8	0.0	99.8	94.9	47.5	29.5%	-
L_B7-B	SS-2391	-L-	136+19	8' RT	176425	2314625	38.2 - 39.7	26-1779	A-3 (0)	NP	NP	39.3	52.9	1.4	6.4	0.0	99.1	86.5	9.1	22.9%	-
L_B7-B	SS-2398	-L-	136+19	8' RT	176425	2314625	78.2 - 79.7	26-1780	A-2-4 (0)	NP	NP	10.7	76.9	5.8	6.6	0.0	83.5	81.4	11.9	15.3%	-
L_B7-B	SS-2405	-L-	136+19	8' RT	176425	2314625	113.2 - 114.7	26-1781	A-2-4 (0)	NP	NP	2.7	79.5	9.0	8.8	0.0	99.6	98.6	21.2	22.9%	-
L_B7-B	SS-2409	-L-	136+19	8' RT	176425	2314625	138.2 139.7	26-1782	A-4 (0)	NP	NP	1.0	59.1	31.1	8.8	0.0	99.6	99.1	43.8	24.5%	-
L_B8-A	SS-2411	-L-	137+97	45' LT	176320	2314777	8.2 - 9.7	26-1801	A-1-b (0)	NP	NP	88.4	10.8	0.8	0.0	0.0	98.0	39.9	1.3	17.7%	-
L_B8-A	SS-2412	-L-	137+97	45' LT	176320	2314777	33.2 - 34.7	26-1802	-	-	-	-	-	-	-	-	-	-	-	85.4%	-
L_B8-A	SS-2413	-L-	137+97	45' LT	176320	2314777	43.2 - 44.7	26-1803	A-2-4 (0)	NP	NP	14.9	64.5	11.0	9.6	0.0	93.8	90.2	21.0	22.0%	-
L_B8-A	SS-2420	-L-	137+97	45' LT	176320	2314777	93.2 - 94.7	26-1804	A-2-4 (0)	NP	NP	6.2	80.0	6.6	7.2	0.0	94.7	93.7	15.7	23.3%	-
L_B8-A	SS-2421	-L-	137+97	45' LT	176320	2314777	98.2 - 99.7	26-1805	A-2-4 (0)	NP	NP	2.6	81.2	9.0	7.2	0.0	98.6	98.1	19.8	21.6%	-
L_B8-A	SS-2425	-L-	137+97	45' LT	176320	2314777	118.2 - 119.7	26-1806	A-2-4 (0)	NP	NP	2.3	81.2	5.5	11.0	0.0	99.4	98.7	20.0	29.0%	-
L_B8-A	SS-2429	-L-	137+97	45' LT	176320	2314777	138.2 - 139.7	26-1807	A-2-4 (0)	NP	NP	0.7	72.7	11.6	15.0	0.0	97.0	96.7	29.7	27.2%	-
L_B8-B	SS-697	-L-	138+06	40' RT	176258	2314718	4.8 - 6.3	GLV26-0542	A-8 (0)	-	-	-	-	-	-	-	-	-	-	512.9%	62.7%
L_B8-B	SS-699	-L-	138+06	40' RT	176258	2314718	12.8 - 14.3	GLV26-0543	-	-	-	-	-	-	-	-	-	-	-	632.3%	47.5%
L_B8-B	SS-701	-L-	138+06	40' RT	176258	2314718	22.9 - 24.4	GLV26-0544	A-2-4 (0)	NP	NP	20.9	65.5	7.6	6.0	0.0	100.0	97.9	17.4	23.4%	-
L_B8-B	SS-712	-L-	138+06	40' RT	176258	2314718	77.9 - 79.4	GLV26-0545	A-2-4 (0)	NP	NP	3.7	74.9	9.3	12.1	0.2	99.7	99.1	24.3	23.1%	-
L_B8-B	SS-713	-L-	138+06	40' RT	176258	2314718	82.8 - 84.3	GLV26-0546	A-2-4 (0)	NP	NP	2.4	85.6	6.0	6.0	0.0	100.0	99.4	15.2	23.1%	-
L_B8-B	SS-717	-L-	138+06	40' RT	176258	2314718	102.8 - 104.3	GLV26-0547	A-2-4 (0)	NP	NP	2.1	84.2	4.3	9.4	0.0	99.9	99.5	17.2	20.6%	-
L_B8-B	SS-723	-L-	138+06	40' RT	176258	2314718	132.8 - 134.3	GLV26-0548	A-2-4 (0)	NP	NP	2.0	67.2	18.7	12.1	3.5	96.1	94.8	34.4	22.9%	-
L_B9-A	SS-669	-L-	140+02	25' LT	176158	2314900	4.5 - 6.0	GLV26-0508	-	-	-	-	-	-	-	-	-	-	-	335.4%	36.4%
L_B9-A	SS-671	-L-	140+02	25' LT	176158	2314900	13.2 - 14.7	GLV26-0509	-	-	-	-	-	-	-	-	-	-	-	374.1%	42.8%
L_B9-A	SS-672	-L-	140+02	25' LT	176158	2314900	18.3 - 19.8	GLV26-0510	-	-	-	-	-	-	-	-	-	-	-	531.1%	47.4%
L_B9-A	SS-673	-L-	140+02	25' LT	176158	2314900	23.2 - 24.7	GLV26-0511	A-2-4 (0)	NP	NP	26.5	59.9	5.6	8.0	0.3	99.7	91.8	16.4	19.9%	-
L_B9-A	SS-684	-L-	140+02	25' LT	176158	2314900	78.1 - 79.6	GLV26-0512	A-2-4 (0)	NP	NP	5.6	85.3	5.1	4.0	0.0	99.9	98.9	11.3	23.7%	-
L_B9-A	SS-687	-L-	140+02	25' LT	176158	2314900	93.2 - 94.7	GLV26-0513	A-2-4 (0)	NP	NP	14.2	64.8	11.0	10.0	27.5	67.3	62.1	16.1	14.7%	-
L_B9-A	SS-690	-L-	140+02	25' LT	176158	2314900	108.1 - 109.6	GLV26-0514	A-2-4 (0)	NP	NP	2.0	80.5	7.4	10.1	0.0	99.9	99.4	21.1	21.8%	-
L_B9-A	SS-694	-L-	140+02	25' LT	176158	2314900	128.1 - 129.6	GLV26-0515	A-2-4 (0)	NP	NP	1.0	71.4	15.5	12.1	0.0	100.0	99.7	32.6	25.3%	-
L_B9-B	SS-725	-L-	140+02	26' RT	176122	2314863	0.0 - 1.5	GLV26-0549	-	-	-	-	-	-	-	-	-	-	-	40.5%	4.3%

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INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B9-B	SS-726	-L-	140+02	26' RT	176122	2314863	4.8 - 6.3	GLV26-0550	-	-	-	-	-	-	-	-	-	-	-	224.0%	22.0%
L_B9-B	SS-728	-L-	140+02	26' RT	176122	2314863	12.8 - 14.3	GLV26-0551	-	-	-	-	-	-	-	-	-	-	-	528.2%	37.1%
L_B9-B	SS-729	-L-	140+02	26' RT	176122	2314863	17.7 - 19.2	GLV26-0552	-	-	-	-	-	-	-	-	-	-	-	499.3%	31.1%
L_B9-B	SS-731	-L-	140+02	26' RT	176122	2314863	27.8 - 29.3	GLV26-0553	-	-	-	-	-	-	-	-	-	-	-	19.0%	1.2%
L_B9-B	SS-741	-L-	140+02	26' RT	176122	2314863	77.8 - 79.3	GLV26-0554	A-2-4 (0)	NP	NP	3.6	88.0	5.4	3.0	0.3	99.6	99.1	10.6	21.5%	-
L_B9-B	SS-743	-L-	140+02	26' RT	176122	2314863	87.9 - 89.4	GLV26-0555	A-2-4 (0)	NP	NP	2.1	86.1	5.8	6.0	0.5	99.2	98.7	14.6	24.0%	-
L_B9-B	SS-748	-L-	140+02	26' RT	176122	2314863	112.7 - 114.3	GLV26-0556	A-2-4 (0)	NP	NP	1.2	84.7	8.1	6.0	0.0	100.0	99.8	16.8	24.0%	-
L_B9-B	SS-752	-L-	140+02	26' RT	176122	2314863	132. 8 -134.3	GLV26-0557	A-4 (0)	NP	NP	0.8	68.5	16.6	14.1	0.0	100.0	99.6	36.3	25.2%	-
L_B10-A	SS-640	-L-	141+98	78' LT	176069	2315077	0.0 - 1.5	GLV26-0516	-	-	-	-	-	-	-	-	-	-	-	155.8%	21.5%
L_B10-A	SS-641	-L-	141+98	78' LT	176069	2315077	4.4 - 5.9	GLV26-0517	A-4 (0)	NP	NP	8.3	4.9	32.7	54.1	0.0	99.9	93.4	87.7	131.4%	14.5%
L_B10-A	SS-642	-L-	141+98	78' LT	176069	2315077	8.0 - 9.5	GLV26-0518	-	-	-	-	-	-	-	-	-	-	-	194.3%	18.2%
L_B10-A	SS-644	-L-	141+98	78' LT	176069	2315077	18.1 - 19.6	GLV26-0519	-	-	-	-	-	-	-	-	-	-	-	214.8%	21.6%
L_B10-A	SS-645	-L-	141+98	78' LT	176069	2315077	23.1 - 24.6	GLV26-0520	A-4 (0)	20	3	35.7	23.9	18.2	22.2	0.0	99.8	77.2	42.4	20.7%	1.6%
L_B10-A	SS-656	-L-	141+98	78' LT	176069	2315077	78.1 - 79.6	GLV26-0521	A-2-4 (0)	NP	NP	3.0	79.8	7.1	10.1	2.3	97.2	96.3	19.8	25.6%	-
L_B10-A	SS-659	-L-	141+98	78' LT	176069	2315077	92.9 - 94.4	GLV26-0522	A-2-4 (0)	NP	NP	2.0	82.4	7.5	8.1	0.0	100.0	99.2	19.8	23.1%	-
L_B10-A	SS-662	-L-	141+98	78' LT	176069	2315077	108.0 - 109.5	GLV26-0523	A-2-4 (0)	NP	NP	2.2	81.1	8.7	8.0	0.0	100.0	99.4	20.4	20.1%	-
L_B10-A	SS-666	-L-	141+98	78' LT	176069	2315077	133.0 - 134.5	GLV26-0524	A-2-4 (0)	NP	NP	1.0	69.3	15.6	14.1	0.0	100.0	99.5	33.8	26.1%	-
L_B11-A	SS-611	-L-	143+98	118' LT	175982	2315253	0.0 - 1.5	GLV26-0525	-	-	-	-	-	-	-	-	-	-	-	64.0%	7.4%
L_B11-A	SS-613	-L-	143+98	118' LT	175982	2315253	7.8 - 9.3	GLV26-0526	-	-	-	-	-	-	-	-	-	-	-	273.5%	34.9%
L_B11-A	SS-615	-L-	143+98	118' LT	175982	2315253	17.8 - 19.3	GLV26-0527	-	-	-	-	-	-	-	-	-	-	-	56.0%	4.8%
L_B11-A	SS-617	-L-	143+98	118' LT	175982	2315253	27.8 - 29.3	GLV26-0528	A-3 (0)	NP	NP	12.0	84.2	0.8	3.0	0.0	100.0	97.4	4.3	23.9%	0.5%
L_B11-A	SS-627	-L-	143+98	118' LT	175982	2315253	78.5 - 80.0	GLV26-0529	A-2-4 (0)	NP	NP	3.6	80.5	6.8	9.1	0.4	98.4	97.4	19.1	20.4%	-
L_B11-A	SS-629	-L-	143+98	118' LT	175982	2315253	88.5 - 90.0	GLV26-0530	A-2-4 (0)	NP	NP	3.1	85.2	7.7	4.0	0.0	99.9	99.4	14.4	20.7%	-
L_B11-A	SS-633	-L-	143+98	118' LT	175982	2315253	108.5 - 110.0	GLV26-0531	A-2-4 (0)	NP	NP	2.0	82.5	7.5	8.0	0.0	99.9	99.6	19.1	20.9%	-
L_B11-A	SS-637	-L-	143+98	118' LT	175982	2315253	128.5 - 130.0	GLV26-0532	A-2-4 (0)	NP	NP	1.0	74.2	14.7	10.1	0.0	99.9	99.6	28.6	23.2%	-
L_B12-A	SS-584	-L-	146+06	144' LT	175896	2315433	4.5 - 6.0	GLV26-0461	-	-	-	-	-	-	-	-	-	-	-	112.8%	13.3%
L_B12-A	SS-585	-L-	146+06	144' LT	175896	2315433	8.7 - 10.2	GLV26-0462	-	-	-	-	-	-	-	-	-	-	-	43.9%	2.8%
L_B12-A	SS-587	-L-	146+06	144' LT	175896	2315433	18.7 - 20.2	GLV26-0463	-	-	-	-	-	-	-	-	-	-	-	435.8%	All Wood
L_B12-A	SS-599	-L-	146+06	144' LT	175896	2315433	78.4 - 79.9	GLV26-0464	A-2-4 (0)	NP	NP	6.1	38.7	49.2	6.0	4.6	95.2	94.5	12.8	22.3%	-
L_B12-A	SS-604	-L-	146+06	144' LT	175896	2315433	103.5 - 105.0	GLV26-0465	A-2-4 (0)	NP	NP	1.4	87.0	3.6	8.0	0.2	99.7	99.2	14.6	24.5%	-
L_B12-A	SS-609	-L-	146+06	144' LT	175896	2315433	133.5 - 135.0	GLV26-0466	A-2-4 (0)	NP	NP	1.2	71.2	11.5	16.1	0.0	99.9	99.4	34.3	24.5%	-
L_B13-A	SS-842	-L-	148+36	25' LT	175686	2315572	0.0 - 1.5	CATLIN	-	-	-	-	-	-	-	-	-	-	-	86.0%	9.7%
L_B13-A	SS-845	-L-	148+36	25' LT	175686	2315572	12.4 - 14.3	CATLIN	A-7-5 (29)	97	15	8.2	4.7	62.2	24.9	1.3	99.0	94.0	87.0	206.0%	30.7%
L_B13-A	SS-847	-L-	148+36	25' LT	175686	2315572	22.4 - 23.9	CATLIN	A-7-5 (24)	100	15	14.6	7.8	59.3	18.3	2.1	96.8	88.0	76.0	544.0%	39.7%
L_B13-A	SS-850	-L-	148+36	25' LT	175686	2315572	37.4 - 38.9	CATLIN	A-2-4 (0)	NP	NP	32.8	49.0	13.6	4.6	3.1	92.3	82.0	18.0	17.0%	-
L_B13-A	SS-860	-L-	148+36	25' LT	175686	2315572	87.4 - 88.9	CATLIN	A-2-4 (0)	NP	NP	3.6	75.3	11.1	10.0	0.0	99.7	99.0	25.0	24.0%	-
L_B13-A	SS-865	-L-	148+36	25' LT	175686	2315572	112.4 - 113.9	CATLIN	A-2-4 (0)	NP	NP	2.9	78.0	11.1	8.0	0.0	98.8	97.0	22.0	22.0%	-
L_B13-A	SS-868	-L-	148+36	25' LT	175686	2315572	127.4 - 128.9	CATLIN	A-2-4 (0)	22	3	1.2	68.7	18.0	12.1	0.0	99.9	99.0	34.0	25.0%	
L_B13-B	SS-813	-L-	148+43	34' RT	175630	2315553	0.0 - 1.5	CATLIN	-	-	-	29.0	30.3	31.6	9.1	32.3	62.9	53.0	26.0	72.0%	7.7%
L_B13-B	SS-816	-L-	148+43	34' RT	175630	2315553	12.4 - 13.9	CATLIN	A-7-5 (26)	94	15	12.6	5.0	71.3	11.1	0.6	99.2	90.0	83.0	208.0%	27.0%
L_B13-B	SS-817	-L-	148+43	34' RT	175630	2315553	17.4 - 18.9	CATLIN	A-7-5 (14)	138	17	37.8	11.7	40.2	10.3	0.2	99.1	68.0	51.0	383.0%	54.2%
L_B13-B	SS-818	-L-	148+43	34' RT	175630	2315553	22.4 - 23.9	CATLIN	-	-	-	3.2	2.9	51.4	42.5	2.3	97.4	95.0	92.0	126.0%	16.1%
L_B13-B	SS-820	-L-	148+43	34' RT	175630	2315553	32.4 - 33.9	CATLIN	A-2-4 (0)	NP	NP	26.0	52.6	18.7	2.7	5.0	93.9	86.0	21.0	20.0%	-
L_B13-B	SS-828	-L-	148+43	34' RT	175630	2315553	77.4 - 78.9	CATLIN	A-2-4 (0)	NP	NP	7.2	77.6	12.1	3.1	15.4	81.5	79.0	15.0	17.0%	-
L_B13-B	SS-830	-L-	148+43	34' RT	175630	2315553	87.4 - 88.9	CATLIN	A-2-4 (0)	NP	NP	3.4	81.4	1.8	13.4	3.9	95.4	94.0	17.0	23.0%	-
L_B13-B	SS-834	-L-	148+43	34' RT	175630	2315553	107.4 - 108.9	CATLIN	A-2-4 (0)	NP	NP	2.2	84.3	4.5	9.0	0.0	99.9	99.8	13.0	23.0%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B13-B	SS-837	-L-	148+43	34' RT	175630	2315553	122.4 - 123.9	CATLIN	A-2-4 (0)	NP	NP	0.7	73.0	15.4	10.9	0.0	100.0	100.0	30.0	26.0%	-
L_B13-B	SS-840	-L-	148+43	34' RT	175630	2315553	137.4 - 138.9	CATLIN	A-4 (0)	22	2	0.7	66.3	14.8	18.2	0.2	99.7	99.0	38.0	24.0%	-
L_B14-A	SS-754	-L-	149+99	24' LT	175621	2315720	0.0 - 1.5	CATLIN	A-7-6 (10)	46	22	17.1	28.2	21.9	32.8	0.3	99.7	94.0	57.0	47.0%	5.9%
L_B14-A	SS-757	-L-	149+99	24' LT	175621	2315720	12.8 - 14.3	CATLIN	-	-	-	-	-	-	-	-	-	-	-	237.0%	41.7%
L_B14-A	SS-759	-L-	149+99	24' LT	175621	2315720	22.8 - 24.3	CATLIN	A-7-5 (29)	81	23	6.4	4.7	59.9	29.0	5.7	93.6	90.0	84.0	535.0%	25.0%
L_B14-A	SS-760	-L-	149+99	24' LT	175621	2315720	27.8 - 29.3	CATLIN	A-2-4 (0)	21	4	20.5	53.6	11.7	14.2	0.0	100.0	95.0	30.0	22.0%	1.3%
L_B14-A	SS-766	-L-	149+99	24' LT	175621	2315720	57.8 - 59.3	CATLIN	A-2-4 (0)	NP	NP	27.1	62.1	8.8	2.0	0.0	99.4	94.0	12.0	20.0%	-
L_B14-A	SS-770	-L-	149+99	24' LT	175621	2315720	82.8 - 84.3	CATLIN	A-2-4 (0)	NP	NP	7.4	81.1	5.9	5.6	0.0	99.7	98.0	14.0	21.0%	-
L_B14-A	SS-776	-L-	149+99	24' LT	175621	2315720	112.8 - 114.3	CATLIN	A-2-4 (0)	NP	NP	2.4	83.6	6.4	7.6	0.0	99.9	99.7	18.0	23.0%	-
L_B14-A	SS-778	-L-	149+99	24' LT	175621	2315720	122.8 - 124.3	CATLIN	A-2-4 (0)	NP	NP	0.6	78.5	11.3	9.6	0.0	78.5	11.3	9.6	27.0%	-
L_B14-A	SS-780	-L-	149+99	24' LT	175621	2315720	132.8 - 134.3	CATLIN	A-2-4 (0)	20	3	0.6	70.7	15.0	13.7	0.0	100.0	100.0	33.0	28.0%	-
L_B14-A	SS-782	-L-	149+99	24' LT	175621	2315720	142.8 - 144.3	CATLIN	A-4 (0)	24	4	0.5	67.1	14.3	18.1	0.0	100.0	100.0	37.0	26.0%	-
L_B14-B	SS-783	-L-	150+06	29' RT	175569	2315706	0.0 - 1.5	CATLIN	-	-	-	43.9	30.3	16.2	9.6	0.7	99.0	72.0	27.0	141.0%	-
L_B14-B	SS-785	-L-	150+06	29' RT	175569	2315706	7.6 - 9.1	CATLIN	A-3 (0)	NP	NP	54.5	43.7	0.0	1.8	0.0	100.0	89.0	2.0	24.0%	0.2%
L_B14-B	SS-787	-L-	150+06	29' RT	175569	2315706	17.6 - 19.1	CATLIN	-	-	-	-	-	-	-	-	-	-	-	444.0%	44.7%
L_B14-B	SS-788	-L-	150+06	29' RT	175569	2315706	22.6 - 24.1	CATLIN	A-5 (15)	70	8	5.8	16.0	50.9	27.3	0.1	99.9	97.0	81.0	202.0%	-
L_B14-B	SS-790	-L-	150+06	29' RT	175569	2315706	32.6 - 34.1	CATLIN	A-2-4 (0)	NP	NP	17.7	69.5	6.9	5.9	0.8	98.0	94.0	13.0	21.0%	-
L_B14-B	SS-801	-L-	150+06	29' RT	175569	2315706	87.6 - 89.1	CATLIN	A-2-4 (0)	NP	NP	2.4	83.6	4.6	9.4	0.0	99.9	99.8	16.0	27.0%	-
L_B14-B	SS-806	-L-	150+06	29' RT	175569	2315706	112.6 - 114.1	CATLIN	A-2-4 (0)	NP	NP	2.9	81.5	8.4	7.2	0.0	100.0	100.0	19.0	30.0%	-
L_B14-B	SS-808	-L-	150+06	29' RT	175569	2315706	122.6 - 124.1	CATLIN	A-2-4 (0)	NP	NP	0.9	76.9	11.0	11.2	0.0	100.0	100.0	26.0	30.0%	-
L_B14-B	SS-811	-L-	150+06	29' RT	175569	2315706	137.6 - 139.1	CATLIN	A-4 (0)	22	3	1.0	66.7	16.9	15.4	0.0	100.0	100.0	37.0	24.0%	-
L_B15-A	SS-181	-L-	151+98	31' LT	175556	2315907	7.9 - 9.4	GVL26-0016	A-3 (0)	NP	NP	77.8	19.7	0.3	2.2	0.0	99.7	56.9	2.8	20.6%	-
L_B15-A	SS-182	-L-	151+98	31' LT	175556	2315907	12.9 - 14.4	GVL26-0017	-	-	-	33.7	12.4	34.9	19.0	0.0	99.4	72.7	54.4	324.7%	39.0%
L_B15-A	SS-184	-L-	151+98	31' LT	175556	2315907	22.9 - 24.4	GVL26-0018	-	-	-	26.1	15.5	36.9	21.5	0.0	100.0	83.8	60.5	229.2%	24.7%
L_B15-A	SS-188	-L-	151+98	31' LT	175556	2315907	42.9 - 44.4	GVL26-0019	A-1-b (0)	NP	NP	52.9	25.7	13.0	8.4	28.7	51.0	31.8	12.5	11.1%	-
L_B15-A	SS-195	-L-	151+98	31' LT	175556	2315907	82.9 - 84.4	GVL26-0020	A-2-4 (0)	NP	NP	3.9	84.6	3.2	8.3	0.0	94.5	94.2	12.8	24.2%	-
L_B15-A	SS-198	-L-	151+98	31' LT	175556	2315907	97.9 - 99.4	GVL26-0021	A-2-4 (0)	NP	NP	1.5	84.2	5.1	9.2	0.0	97.2	96.8	17.2	25.9%	-
L_B15-A	SS-202	-L-	151+98	31' LT	175556	2315907	117.9 - 119.4	GVL26-0022	A-2-4 (0)	NP	NP	1.1	78.2	9.5	11.2	0.0	89.4	89.3	22.2	24.8%	-
L_B15-A	SS-204	-L-	151+98	31' LT	175556	2315907	127.9 - 129.4	GVL26-0023	A-2-4 (0)	NP	NP	0.7	69.4	15.7	14.2	0.0	74.6	74.5	26.0	24.8%	-
L_B15-A	SS-206	-L-	151+98	31' LT	175556	2315907	137.9 - 139.4	GVL26-0024	A-2-4 (0)	NP	NP	0.9	64.0	20.9	14.2	0.9	71.0	70.9	28.7	21.7%	-
L_B16-A	SS-210	-L-	154+14	88' LT	175534	2316130	18.0 - 19.5	GVL26-0025	-	-	-	-	-	-	-	-	-	-	-	150.2%	12.5%
L_B16-A	SS-212	-L-	154+14	88' LT	175534	2316130	28.0 - 29.5	GVL26-0026	A-4 (0)	23	3	14.7	52.8	12.2	20.3	1.5	97.6	95.3	37.4	30.1%	2.8%
L_B16-A	SS-215	-L-	154+14	88' LT	175534	2316130	43.0 - 44.5	GVL26-0027	A-1-a (0)	NP	NP	57.6	23.5	12.5	6.4	36.3	47.0	26.6	10.1	12.0%	-
L_B16-A	SS-217	-L-	154+14	88' LT	175534	2316130	53.0 - 54.5	GVL26-0028	A-2-4 (0)	NP	NP	31.0	55.4	10.4	3.2	1.8	95.9	91.2	14.3	16.9%	-
L_B16-A	SS-227	-L-	154+14	88' LT	175534	2316130	103.0 - 104.5	GVL26-0029	A-2-4 (0)	NP	NP	0.4	82.0	8.4	9.2	0.0	95.0	94.7	20.7	22.2%	-
L_B16-A	SS-229	-L-	154+14	88' LT	175534	2316130	113.0 - 114.5	GVL26-0030	A-2-4 (0)	NP	NP	4.9	85.1	5.8	4.2	1.8	98.0	96.8	13.2	24.7%	-
L_B16-A	SS-232	-L-	154+14	88' LT	175534	2316130	128.0 - 129.5	GVL26-0031	A-2-4 (0)	NP	NP	1.0	71.3	14.4	13.3	0.0	98.9	98.7	31.2	25.0%	-
L_B16-B	SS-266	-L-	154+41	69' RT	175377	2316099	8.0 - 9.5	GVL26-0045	A-3 (0)	NP	NP	70.0	28.5	0.5	1.0	0.7	99.2	72.9	1.9	65.3%	18.1%
L_B16-B	SS-268	-L-	154+41	69' RT	175377	2316099	18.0 - 19.5	GVL26-0046	A-2-4 (0)	NP	NP	2.9	81.6	5.5	10.0	0.0	99.6	99.2	19.1	157.0%	8.7%
L_B16-B	SS-270	-L-	154+41	69' RT	175377	2316099	28.0 - 29.5	GVL26-0047	A-2-4 (0)	NP	NP	37.5	34.2	8.2	20.1	15.8	61.1	56.6	18.3	73.1%	-
L_B16-B	SS-272	-L-	154+41	69' RT	175377	2316099	38.0 - 39.5	GVL26-0048	A-1-a (0)	NP	NP	51.8	23.8	16.4	8.0	35.0	48.1	29.3	13.6	8.3%	-
L_B16-B	SS-281	-L-	154+41	69' RT	175377	2316099	83.0 - 84.5	GVL26-0049	A-2-4 (0)	NP	NP	6.0	81.6	7.2	5.2	0.0	99.2	98.4	15.1	22.9%	-
L_B16-B	SS-284	-L-	154+41	69' RT	175377	2316099	98.0 - 99.5	GVL26-0050	A-2-4 (0)	NP	NP	3.0	85.1	7.7	4.2	0.0	99.7	98.9	15.6	24.9%	-
L_B16-B	SS-285	-L-	154+41	69' RT	175377	2316099	103.0 - 104.5	GVL26-0051	A-1-b (0)	NP	NP	31.8	22.8	14.9	30.5	43.7	45.0	35.1	21.4	24.1%	-
L_B16-B	SS-288	-L-	154+41	69' RT	175377	2316099	118.0 - 119.5	GVL26-0052	A-2-4 (0)	NP	NP	3.7	78.6	7.6	10.1	0.0	99.4	97.9	22.1	23.8%	-
L_B16-B	SS-290	-L-	154+41	69' RT	175377	2316099	128.0 - 129.5	GVL26-0053	A-2-4 (0)	NP	NP	2.9	69.7	15.3	12.1	5.9	93.9	92.4	30.7	25.0%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B16-B	SS-292	-L-	154+41	69' RT	175377	2316099	138.0 - 139.5	GVL26-0054	A-2-4 (0)	NP	NP	1.8	73.8	18.4	6.0	0.0	99.7	98.5	34.9	24.2%	-
L_B17-A	SS-238	-L-	155+97	51' LT	175435	2316288	12.7 - 14.2	GVL26-0034	A-3 (0)	NP	NP	69.8	28.1	1.0	1.1	0.0	98.6	66.0	2.2	23.2%	0.5%
L_B17-A	SS-239	-L-	155+97	51' LT	175435	2316288	17.7 - 19.2	GVL26-0035	A-5 (5)	48	10	2.6	7.8	39.0	50.6	0.0	60.3	59.2	56.1	58.8%	11.8%
L_B17-A	SS-241	-L-	155+97	51' LT	175435	2316288	27.7 - 29.2	GVL26-0036	A-2-4 (0)	NP	NP	9.9	88.2	0.8	1.1	0.0	100.0	99.7	2.4	26.4%	-
L_B17-A	SS-244	-L-	155+97	51' LT	175435	2316288	42.7 - 44.2	GVL26-0037	A-1-a (0)	NP	NP	60.1	19.2	14.6	6.1	32.7	46.0	23.7	10.6	12.7%	-
L_B17-A	SS-247	-L-	155+97	51' LT	175435	2316288	57.7 - 59.2	GVL26-0038	A-3 (0)	NP	NP	25.6	65.5	6.3	2.6	0.8	98.1	93.7	9.8	21.7%	-
L_B17-A	SS-253	-L-	155+97	51' LT	175435	2316288	87.7 - 89.2	GVL26-0039	A-2-4 (0)	NP	NP	5.8	80.4	5.2	8.6	5.6	93.0	92.2	15.1	24.2%	-
L_B17-A	SS-256	-L-	155+97	51' LT	175435	2316288	102.7 - 104.2	GVL26-0040	A-3 (0)	NP	NP	26.2	64.6	6.6	2.6	0.0	99.8	94.6	10.4	21.9%	-
L_B17-A	SS-258	-L-	155+97	51' LT	175435	2316288	112.7 - 114.2	GVL26-0041	A-2-4 (0)	NP	NP	3.9	86.5	5.0	4.6	0.0	99.7	99.3	12.5	22.5%	-
L_B17-A	SS-260	-L-	155+97	51' LT	175435	2316288	122.7 - 124.2	GVL26-0042	A-2-4 (0)	NP	NP	1.9	78.4	9.1	10.6	0.0	99.7	99.4	23.9	25.7%	-
L_B17-A	SS-261	-L-	155+97	51' LT	175435	2316288	127.7 - 129.2	GVL26-0043	A-2-4 (0)	NP	NP	1.5	75.8	10.1	12.6	0.0	100.0	99.8	27.1	22.6%	-
L_B17-A	SS-263	-L-	155+97	51' LT	175435	2316288	137.7 - 139.2	GVL26-0044	A-2-4 (0)	NP	NP	1.2	71.0	9.8	18.0	0.0	100.0	99.6	35.4	25.1%	-
L_B18-A	SS-296	-L-	158+95	51' LT	175330	2316567	9.3 - 10.8	GVL26-0103	A-2-4 (0)	NP	NP	59.2	24.9	11.9	4.0	13.7	87.1	52.6	14.9	15.8%	-
L_B18-A	SS-301	-L-	158+95	51' LT	175330	2316567	31.9 - 33.4	GVL26-0104	A-2-4 (0)	NP	NP	8.8	75.0	4.2	12.0	22.2	75.9	73.6	14.2	18.4%	-
L_B18-A	SS-303	-L-	158+95	51' LT	175330	2316567	40.2 - 41.7	GVL26-0105	A-2-4 (0)	NP	NP	8.9	76.2	4.9	10.0	5.9	92.8	90.4	15.5	23.0%	-
L_B18-A	SS-306	-L-	158+95	51' LT	175330	2316567	52.5 - 54.0	GVL26-0106	A-2-4 (0)	NP	NP	2.1	80.4	7.5	10.0	0.0	99.8	99.4	20.9	23.7%	-
L_B18-A	SS-308	-L-	158+95	51' LT	175330	2316567	61.2 - 62.7	GVL26-0107	A-2-4 (0)	NP	NP	1.4	86.3	5.3	7.0	0.0	100.0	99.8	15.6	22.5%	-
L_B18-A	SS-310	-L-	158+95	51' LT	175330	2316567	70.2 - 71.7	GVL26-0108	A-2-4 (0)	NP	NP	3.5	86.2	4.3	6.0	0.0	99.9	99.5	12.7	21.6%	-
L_B18-A	SS-312	-L-	158+95	51' LT	175330	2316567	80.1 - 81.6	GVL26-0109	A-2-4 (0)	NP	NP	1.7	78.1	10.1	10.1	0.0	100.0	99.6	24.6	23.7%	-
L_B18-A	SS-313	-L-	158+95	51' LT	175330	2316567	85.0 - 86.5	GVL26-0110	A-2-4 (0)	NP	NP	1.6	77.8	10.5	10.1	0.0	99.9	99.4	24.6	24.9%	-
L_B18-A	SS-315	-L-	158+95	51' LT	175330	2316567	97.7 - 99.3	GVL26-0111	A-4 (0)	NP	NP	0.5	70.0	15.3	14.2	0.0	100.0	99.9	39.5	24.9%	-
L_B18-A	SS-319	-L-	158+95	51' LT	175330	2316567	116.0 - 117.5	GVL26-0112	A-4 (0)	27	3	1.3	62.8	13.7	22.2	0.0	100.0	99.1	42.4	26.5%	-
L_B18-A	SS-322	-L-	158+95	51' LT	175330	2316567	130.2 - 131.7	GVL26-0113	A-4 (0)	27	2	0.6	61.4	13.8	24.2	0.0	100.0	99.7	45.9	24.6%	-
L_B18-A	SS-326	-L-	158+95	51' LT	175330	2316567	149.8 - 151.3	GVL26-0114	A-4 (0)	28	2	1.9	54.1	21.8	22.2	0.0	100.0	98.9	65.7	26.0%	-
L_B18-A	SS-330	-L-	158+95	51' LT	175330	2316567	167.2 - 168.7	GVL26-0115	A-4 (2)	30	4	1.6	44.9	25.1	28.4	0.0	100.0	98.8	75.4	23.3%	-
L_B18-A	SS-334	-L-	158+95	51' LT	175330	2316567	199.8 - 201.3	GVL26-0116	A-2-4 (0)	NP	NP	46.8	36.4	8.6	8.2	0.1	99.7	86.5	22.7	18.0%	-
L_B18-A	SS-339	-L-	158+95	51' LT	175330	2316567	225.4 - 226.9	GVL26-0117	A-4 (0)	29	8	36.4	24.2	15.0	24.4	0.1	99.8	90.8	41.9	18.4%	-
L_B18-B	SS-346	-L-	159+03	51' RT	175231	2316539	45.1 - 46.6	GVL26-0168	A-2-4 (0)	NP	NP	2.4	85.6	3.6	8.4	0.0	99.6	99.4	16.1	22.2%	-
L_B18-B	SS-349	-L-	159+03	51' RT	175231	2316539	58.5 - 60.0	GVL26-0169	A-2-4 (0)	NP	NP	1.5	85.7	0.3	12.5	0.0	99.9	99.8	15.5	22.9%	-
L_B18-B	SS-350	-L-	159+03	51' RT	175231	2316539	63.2 - 64.7	GVL26-0170	A-2-4 (0)	NP	NP	1.6	81.0	7.0	10.4	0.0	99.9	99.4	20.9	23.4%	-
L_B18-B	SS-353	-L-	159+03	51' RT	175231	2316539	76.9 - 78.4	GVL26-0171	A-2-4 (0)	NP	NP	2.9	77.1	9.5	10.5	0.0	99.8	99.0	24.3	26.9%	-
L_B18-B	SS-354	-L-	159+03	51' RT	175231	2316539	81.5 - 83.0	GVL26-0172	A-2-4 (0)	NP	NP	1.4	74.8	11.3	12.5	0.0	100.0	99.7	28.2	26.3%	-
L_B18-B	SS-357	-L-	159+03	51' RT	175231	2316539	95.9 - 97.4	GVL26-0173	A-2-4 (0)	NP	NP	0.7	79.9	11.0	8.4	0.0	100.0	99.9	30.3	25.5%	-
L_B18-B	SS-360	-L-	159+03	51' RT	175231	2316539	110.4 - 111.9	GVL26-0174	A-4 (0)	NP	NP	1.1	64.4	14.0	20.5	0.0	100.0	99.3	40.4	26.7%	-
L_B18-B	SS-363	-L-	159+03	51' RT	175231	2316539	126.3 - 127.8	GVL26-0175	A-4 (1)	30	6	3.8	47.5	21.9	26.8	0.1	95.6	93.2	54.1	24.6%	-
L_B18-B	SS-366	-L-	159+03	51' RT	175231	2316539	144.3 - 145.8	GVL26-0176	A-4 (0)	28	2	0.7	58.2	18.2	22.9	0.0	100.0	99.6	59.7	27.2%	-
L_B18-B	SS-376	-L-	159+03	51' RT	175231	2316539	189.6 - 191.1	GVL26-0177	A-2-4 (0)	NP	NP	63.7	21.3	4.6	10.4	0.1	99.8	72.1	15.9	20.2%	-
L_B18-B	SS-381	-L-	159+03	51' RT	175231	2316539	211.9 - 213.4	GVL26-0178	A-2-4 (0)	25	3	46.6	23.2	9.5	20.7	0.0	99.9	82.4	32.9	21.1%	-
L_B19-A	SS-383	-L-	163+83	42' LT	175150	2317021	11.5 - 13.0	GVL26-0187	A-1-a (0)	NP	NP	55.8	24.1	11.7	8.4	46.9	41.6	25.7	9.7	9.3%	-
L_B19-A	SS-388	-L-	163+83	42' LT	175150	2317021	34.6 - 36.1	GVL26-0188	A-2-4 (0)	NP	NP	8.3	73.9	7.6	10.2	23.0	75.2	73.1	15.7	19.9%	-
L_B19-A	SS-393	-L-	163+83	42' LT	175150	2317021	58.6 - 60.1	GVL26-0189	A-2-4 (0)	NP	NP	1.5	80.1	8.1	10.3	0.0	99.2	98.5	21.9	22.7%	-
L_B19-A	SS-397	-L-	163+83	42' LT	175150	2317021	84.5 - 86.0	GVL26-0190	A-2-4 (0)	NP	NP	2.0	72.8	12.9	12.3	0.0	100.0	99.5	33.0	23.6%	-
L_B19-A	SS-401	-L-	163+83	42' LT	175150	2317021	106.2 - 107.9	GVL26-0191	A-4 (0)	NP	NP	0.7	65.0	14.1	20.2	0.0	100.0	99.8	42.4	30.0%	-
L_B19-A	SS-407	-L-	163+83	42' LT	175150	2317021	133.7 - 135.2	GVL26-0192	A-4 (0)	27	3	1.7	64.1	13.9	20.3	0.0	100.0	99.0	48.4	25.6%	-
L_B19-A	SS-412	-L-	163+83	42' LT	175150	2317021	160.0 - 161.5	GVL26-0193	A-4 (1)	28	2	1.7	55.0	19.0	24.3	0.0	99.7	98.7	73.3	23.2%	-
L_B19-A	SS-418	-L-	163+83	42' LT	175150	2317021	193.5 - 195.0	GVL26-0194	A-2-4 (0)	NP	NP	46.3	39.3	4.3	10.1	0.0	99.9	86.4	21.3	21.1%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B19-B	SS-426	-L-	163+87	46' RT	175066	2316993	46.4 - 47.9	GVL26 - 0239	A-2-4 (0)	NP	NP	2.4	88.2	5.0	4.4	0.0	99.9	99.5	11.8	22.6%	-
L_B19-B	SS-430	-L-	163+87	46' RT	175066	2316993	65.9 - 67.4	GVL26 - 0240	A-2-4 (0)	NP	NP	2.3	86.4	5.1	6.2	0.0	99.9	99.8	14.2	21.8%	-
L_B19-B	SS-432	-L-	163+87	46' RT	175066	2316993	76.5 - 78.0	GVL26 - 0241	A-2-4 (0)	NP	NP	1.5	75.5	12.6	10.4	0.2	99.7	99.2	28.0	22.5%	-
L_B19-B	SS-434	-L-	163+87	46' RT	175066	2316993	87.5 - 89.0	GVL26 - 0242	A-2-4 (0)	NP	NP	0.4	71.9	15.4	12.3	0.0	100.0	100.0	35.0	23.4%	-
L_B19-B	SS-436	-L-	163+87	46' RT	175066	2316993	103.5 - 105.0	GVL26 - 0243	A-4 (0)	NP	NP	1.8	65.7	18.2	14.3	0.0	100.0	99.4	38.8	24.9%	-
L_B19-B	SS-438	-L-	163+87	46' RT	175066	2316993	115.0 - 116.5	GVL26 - 0244	A-4 (0)	NP	NP	4.9	55.0	19.8	20.3	0.8	98.3	94.3	48.2	25.5%	-
L_B19-B	SS-442	-L-	163+87	46' RT	175066	2316993	137.2 - 138.7	GVL26 - 0245	A-4 (0)	NP	NP	0.1	61.9	15.7	22.3	0.0	100.0	99.9	55.0	27.7%	-
L_B19-B	SS-445	-L-	163+87	46' RT	175066	2316993	155.0 - 156.5	GVL26 - 0246	A-4 (2)	30	3	1.7	45.2	34.8	18.3	0.0	99.9	99.1	74.5	23.1%	-
L_B19-B	SS-448	-L-	163+87	46' RT	175066	2316993	171.9 - 173.4	GVL26 - 0247	A-4 (0)	27	5	17.1	46.7	21.9	14.3	0.0	100.0	90.6	47.0	21.2%	-
L_B19-B	SS-450	-L-	163+87	46' RT	175066	2316993	184.9 - 186.4	GVL26 - 0248	A-2-4 (0)	NP	NP	65.5	22.0	2.4	10.1	0.0	99.9	70.7	14.0	17.0%	-
L_B19-B	SS-455	-L-	163+87	46' RT	175066	2316993	209.6 - 211.3	GVL26 - 0249	A-2-6 (0)	34	11	62.3	10.4	9.1	18.2	0.0	100.0	70.7	28.3	19.7%	-
L_B19-B	SS-456	-L-	163+87	46' RT	175066	2316993	216.6 - 218.1	GVL26 - 0250	A-2-4 (0)	NP	NP	21.5	50.1	8.2	20.2	0.1	99.7	92.5	31.1	19.6%	-
L_B20-A	SS-6077	-L-	165+88	32' LT	175068	2317209	8.1 - 9.6	26-1901	A-3 (0)	NP	NP	50.1	42.6	3.3	4.0	0.0	99.9	83.2	8.6	21.7%	1.2%
L_B20-A	SS-6083	-L-	165+88	32' LT	175068	2317209	38.0 - 39.5	26-1902	A-6 (5)	29	15	10.5	38.7	21.2	29.6	0.0	100.0	97.7	54.0	16.7%	-
L_B20-A	SS-6096	-L-	165+88	32' LT	175068	2317209	103.1 - 104.6	26-1903	A-2-4 (0)	NP	NP	1.8	85.5	5.3	7.4	0.0	99.8	99.6	16.4	22.2%	-
L_B20-A	SS-7001	-L-	165+88	32' LT	175068	2317209	128.1 - 129.6	26-1904	A-2-4 (0)	NP	NP	2.1	81.7	8.8	7.4	0.0	99.9	99.7	20.7	18.5%	-
L_B20-A	SS-7003	-L-	165+88	32' LT	175068	2317209	148.1 - 149.6	26-1905	A-2-4 (0)	NP	NP	0.5	78.4	11.7	9.4	0.0	99.2	99.1	32.0	21.7%	-
L_B20-B	SS-7006	-L-	166+00	35' RT	175001	2317197	4.8 - 6.3	26-1906	A-6 (0)	25	11	12.0	36.2	28.4	23.4	0.0	99.7	95.2	36.1	19.5%	2.1%
L_B20-B	SS-7008	-L-	166+00	35' RT	175001	2317197	13.0 - 14.5	26-1907	A-2-4 (0)	NP	NP	4.6	65.8	18.1	11.5	2.5	92.3	90.3	34.0	59.8%	6.1%
L_B20-B	SS-7012	-L-	166+00	35' RT	175001	2317197	33.0 - 34.5	26-1908	A-4 (0)	NP	NP	2.0	68.9	3.9	25.2	0.0	100.0	99.3	60.5	23.2%	-
L_B20-B	SS-7030	-L-	166+00	35' RT	175001	2317197	123.0 - 124.5	26-1909	A-2-4 (0)	NP	NP	4.0	83.3	5.7	7.0	0.0	98.6	96.3	15.6	20.7%	-
L_B20-B	SS-7032	-L-	166+00	35' RT	175001	2317197	143.0 - 144.5	26-1910	A-2-4 (0)	NP	NP	0.1	76.6	13.9	9.4	0.0	99.9	99.9	35.3	23.1%	-
L_B20-B	SS-7035	-L-	166+00	35' RT	175001	2317197	158.0 - 159.5	26-1911	A-4 (0)	NP	NP	0.8	67.2	13.0	19.0	0.0	100.0	99.7	38.4	25.3%	-
L_B21-B	SS-6051	-L-	167+98	36' RT	174931	2317382	8.0 - 9.5	26-1815	A-3 (0)	NP	NP	67.9	26.0	0.8	5.3	0.0	98.9	76.0	6.3	16.9%	-
L_B21-B	SS-6053	-L-	167+98	36' RT	174931	2317382	23.0 - 24.5	26-1816	A-2-4 (0)	NP	NP	22.5	43.2	17.7	16.6	0.0	98.3	90.5	34.8	21.0%	-
L_B21-B	SS-6057	-L-	167+98	36' RT	174931	2317382	43.0 - 44.5	26-1817	A-4 (0)	NP	NP	3.7	50.4	21.3	24.6	0.2	99.7	97.9	56.3	22.9%	-
L_B21-B	SS-6061	-L-	167+98	36' RT	174931	2317382	63.0 - 64.5	26-1818	A-1-a (0)	NP	NP	65.1	17.5	12.2	5.2	46.7	37.8	18.7	7.8	9.5%	-
L_B21-B	SS-6068	-L-	167+98	36' RT	174931	2317382	103.0 - 104.5	26-1819	-	NP	NP	-	-	-	-	-	-	-	-	19.3%	-
L_B21-B	SS-6071	-L-	167+98	36' RT	174931	2317382	118.0 - 119.5	26-1820	A-2-4 (0)	NP	NP	1.6	86.2	5.5	6.7	0.0	100.0	99.7	15.7	20.8%	-
L_B21-B	SS-6072	-L-	167+98	36' RT	174931	2317382	123.0 - 124.5	26-1821	A-2-4 (0)	NP	NP	1.1	84.8	5.4	8.7	0.0	99.9	99.8	17.7	20.7%	-
L_B21-A	SS-6012	-L-	168+03	26' LT	174987	2317408	7.8 - 9.3	26-1808	A-2-4 (0)	NP	NP	66.5	22.9	5.1	5.5	0.0	97.1	69.4	10.8	16.5%	-
L_B21-A	SS-6016	-L-	168+03	26' LT	174987	2317408	22.8 - 24.3	26-1809	A-2-4 (0)	NP	NP	29.4	38.1	17.2	15.3	0.0	95.7	83.8	32.8	18.1%	-
L_B21-A	SS-6020	-L-	168+03	26' LT	174987	2317408	42.8 - 44.3	26-1810	A-4 (0)	NP	NP	1.1	55.6	22.0	21.3	0.0	96.0	95.6	51.4	28.7%	-
L_B21-A	SS-6034	-L-	168+03	26' LT	174987	2317408	62.8 - 64.3	26-1811	A-1-b (0)	NP	NP	65.8	16.7	10.9	6.6	27.3	56.1	27.6	11.2	10.4%	-
L_B21-A	SS-6041	-L-	168+03	26' LT	174987	2317408	107.8 - 109.3	26-1812	A-2-4 (0)	NP	NP	4.3	80.8	6.4	8.5	12.1	74.5	73.3	13.1	19.5%	-
L_B21-A	SS-6043	-L-	168+03	26' LT	174987	2317408	117.8 - 119.3	26-1813	A-2-4 (0)	NP	NP	1.3	87.3	2.6	8.8	0.0	100.0	99.8	14.9	19.6%	-
L_B21-A	SS-6047	-L-	168+03	26' LT	174987	2317408	137.8 - 139.3	26-1814	A-2-4 (0)	NP	NP	2.6	84.7	5.4	7.3	0.0	100.0	99.6	15.5	24.5%	-
L_B22-A	SS-960	-L-	169+96	33' LT	174926	2317591	0.0 - 1.5	26-1783	A-3 (0)	NP	NP	57.0	36.3	3.3	3.4	0.0	94.5	73.9	7.7	1.2%	-
L_B22-A	SS-962	-L-	169+96	33' LT	174926	2317591	7.5 - 9.0	26-1784	A-3 (0)	NP	NP	31.3	63.0	1.2	4.5	0.0	99.8	97.1	6.3	16.3%	-
L_B22-A	SS-964	-L-	169+96	33' LT	174926	2317591	17.5 - 19.0	26-1785	A-1-b (0)	NP	NP	56.0	19.0	5.4	19.6	0.0	73.3	45.6	19.5	29.0%	-
L_B22-A	SS-966	-L-	169+96	33' LT	174926	2317591	27.5 - 29.0	26-1786	A-4 (0)	NP	NP	9.8	39.4	40.4	10.4	0.0	92.2	86.4	58.4	14.1%	-
L_B22-A	SS-970	-L-	169+96	33' LT	174926	2317591	47.5 - 49.0	26-1787	A-4 (0)	NP	NP	2.5	51.5	20.8	25.2	0.0	99.6	98.6	57.3	23.3%	-
L_B22-A	SS-975	-L-	169+96	33' LT	174926	2317591	72.5 - 74.0	26-1788	A-1-b (0)	NP	NP	55.0	25.0	14.6	5.4	0.0	67.3	41.7	15.1	10.5%	-
L_B22-A	SS-981	-L-	169+96	33' LT	174926	2317591	112.5 - 114.0	26-1789	A-2-4 (0)	NP	NP	3.6	84.2	4.9	7.3	0.0	99.1	98.9	14.3	21.6%	-
L_B22-A	SS-985	-L-	169+96	33' LT	174926	2317591	132.5 - 134.0	26-1790	A-2-4 (0)	NP	NP	5.3	67.6	15.9	11.2	0.0	95.9	92.4	30.1	21.8%	-
L_B22-B	SS-988	-L-	169+97	41' RT	174856	2317566	4.5 - 6.0	26-1791	A-2-4 (0)	NP	NP	32.2	57.9	2.6	7.3	0.0	100.0	92.6	12.5	16.6%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L_B22-B	SS-990	-L-	169+97	41' RT	174856	2317566	12.5 - 14.0	26-1792	A-3 (0)	NP	NP	14.9	77.1	1.4	6.6	0.0	98.8	94.8	8.7	20.2%	-
L_B22-B	SS-993	-L-	169+97	41' RT	174856	2317566	27.5 - 29.0	26-1793	A-2-4 (0)	NP	NP	25.6	43.1	18.5	12.8	0.0	89.1	77.5	29.3	22.3%	-
L_B22-B	SS-997	-L-	169+97	41' RT	174856	2317566	47.5 - 49.0	26-1794	A-6 (6)	38	14	4.7	48.8	19.9	26.6	0.0	99.5	97.6	56.7	25.2%	-
L_B22-B	SS-1003	-L-	169+97	41' RT	174856	2317566	77.5 - 79.0	26-1795	A-2-4 (0)	NP	NP	36.9	45.4	14.4	3.3	0.0	87.8	74.5	16.9	17.7%	-
L_B22-B	SS-1010	-L-	169+97	41' RT	174856	2317566	112.5 - 114.0	26-1796	A-2-4 (0)	NP	NP	2.3	78.8	6.2	12.7	0.0	97.5	97.3	20.9	24.2%	-
L_B22-B	SS-1012	-L-	169+97	41' RT	174856	2317566	127.5 - 129.0	26-1797	A-2-4 (0)	NP	NP	1.0	83.8	6.0	9.2	0.0	99.9	99.8	19.1	23.3%	-
L_B23-B	SS-24B	-L-	171+33	52' RT	174798	2317690	18.0 - 19.5	26-1994	A-2-6 (1)	38	20	43.9	32.8	0.4	22.9	0.2	93.1	69.2	22.5	22.3%	-
L_B23-B	SS-27B	-L-	171+33	52' RT	174798	2317690	33.0 - 34.5	26-1995	A-2-4 (0)	NP	NP	19.6	50.4	15.2	14.8	5.1	89.4	80.7	28.1	20.5%	-
L_B23-B	SS-43B	-L-	171+33	52' RT	174798	2317690	133.0 - 134.5	26-1997	A-2-4 (0)	NP	NP	1.0	81.8	4.4	12.8	0.0	100.0	99.6	21.6	25.2%	-
L_B23-A	SS-2312	-L-	171+96	110' LT	174928	2317805	14.4 - 15.9	26-1751	A-3 (0)	NP	NP	38.1	53.3	5.2	3.4	0.0	92.9	80.9	9.0	104.7%	-
L_B23-A	SS-2315	-L-	171+96	110' LT	174928	2317805	29.4 - 30.9	26-1752	A-4 (0)	NP	NP	11.9	45.9	23.4	18.8	0.0	98.3	93.4	43.1	22.7%	-
L_B23-A	SS-2318	-L-	171+96	110' LT	174928	2317805	44.4 - 45.9	26-1753	A-2-4 (0)	NP	NP	1.3	73.1	14.6	11.0	0.0	99.6	99.0	31.9	26.4%	-
L_B23-A	SS-2320	-L-	171+96	110' LT	174928	2317805	54.4 - 55.9	26-1754	A-6 (5)	36	19	13.5	41.9	15.6	29.0	0.0	99.4	96.4	47.4	21.2%	-
L_B23-A	SS-2322	-L-	171+96	110' LT	174928	2317805	64.4 - 65.9	26-1755	A-1-a (0)	NP	NP	59.0	20.0	14.5	6.5	0.0	45.8	24.1	11.2	12.1%	-
L_B23-A	SS-2332	-L-	171+96	110' LT	174928	2317805	119.4 - 120.9	26-1756	A-2-4 (0)	NP	NP	2.9	82.7	5.6	8.8	0.0	96.8	95.5	17.1	24.4%	-
L_B23-A	SS-2335	-L-	171+96	110' LT	174928	2317805	134.4 - 135.9	26-1757	A-2-4 (0)	NP	NP	1.1	80.6	9.3	9.0	0.0	99.9	99.6	26.8	24.7%	-
L_B24-A	SS-932	-L-	174+67	94' LT	174817	2318054	4.9 - 6.4	26-1725	A-6 (16)	39	22	3.0	16.5	33.4	47.1	0.0	98.3	97.0	85.4	24.5%	-
L_B24-A	SS-934	-L-	174+67	94' LT	174817	2318054	12.9 - 14.4	26-1726	A-3 (0)	NP	NP	13.7	82.1	0.6	3.6	0.0	100.0	97.7	4.7	20.7%	-
L_B24-A	SS-939	-L-	174+67	94' LT	174817	2318054	37.9 - 39.4	26-1727	A-6 (4)	35	13	23.4	26.8	26.9	22.9	0.0	98.4	87.4	51.6	21.0%	-
L_B24-A	SS-940	-L-	174+67	94' LT	174817	2318054	42.9 - 44.4	26-1728	A-4 (0)	NP	NP	9.6	52.2	15.3	22.9	0.0	94.9	89.5	40.0	20.9%	-
L_B24-A	SS-944	-L-	174+67	94' LT	174817	2318054	62.9 - 64.4	26-1729	A-6 (6)	33	12	3.2	40.1	31.9	24.8	0.0	99.4	98.2	65.5	21.3%	-
L_B24-A	SS-950	-L-	174+67	94' LT	174817	2318054	92.9 - 94.4	26-1730	A-2-4 (0)	NP	NP	30.6	50.4	15.6	3.4	0.0	96.0	86.3	20.0	14.9%	-
L_B24-A	SS-957	-L-	174+67	94' LT	174817	2318054	127.9 - 129.4	26-1731	A-2-4 (0)	NP	NP	3.9	81.9	6.7	7.5	0.0	99.7	99.2	16.8	21.2%	-
L_B24-B	SS-960A	-L-	175+34	94' RT	174618	2318050	0.0 - 1.5	26-1758	A-3 (0)	NP	NP	59.0	36.7	1.0	3.3	0.0	97.4	69.0	5.1	1.3%	-
L_B24-B	SS-965	-L-	175+34	94' RT	174618	2318050	22.6 - 24.1	26-1759	A-3 (0)	NP	NP	74.5	22.6	2.6	0.3	0.0	99.6	58.9	3.3	19.2%	-
L_B24-B	SS-967	-L-	175+34	94' RT	174618	2318050	32.6 - 34.1	26-1760	A-6 (3)	34	14	27.7	28.1	21.8	22.4	0.0	98.8	82.8	45.8	21.0%	-
L_B24-B	SS-968	-L-	175+34	94' RT	174618	2318050	37.6 - 39.1	26-1761	A-2-4 (0)	NP	NP	37.4	35.1	19.2	8.3	0.0	85.0	70.5	25.0	21.7%	-
L_B24-B	SS-971	-L-	175+34	94' RT	174618	2318050	52.6 - 54.1	26-1762	A-2-4 (0)	NP	NP	7.5	57.2	16.3	19.0	0.0	80.9	77.0	31.9	20.5%	-
L_B24-B	SS-973	-L-	175+34	94' RT	174618	2318050	62.6 - 64.1	26-1763	A-6 (6)	32	13	5.5	37.8	29.6	27.1	0.0	99.8	97.6	64.8	20.7%	-
L_B24-B	SS-974	-L-	175+34	94' RT	174618	2318050	67.6 - 69.1	26-1764	A-2-6 (0)	32	15	15.3	39.0	18.7	27.0	0.0	50.4	47.7	24.8	22.5%	-
L_B24-B	SS-978	-L-	175+34	94' RT	174618	2318050	87.6 - 89.1	26-1765	A-2-4 (0)	NP	NP	23.2	61.6	14.9	0.3	0.0	91.7	80.9	16.1	18.7%	-
L_B24-B	SS-985A	-L-	175+34	94' RT	174618	2318050	122.6 - 124.1	26-1766	A-2-4 (0)	NP	NP	3.0	77.3	11.1	8.6	0.0	100.0	99.4	22.6	25.4%	-
L_B25-B	SS-904	-L-	177+22	72' RT	174572	2318233	13.0 - 14.5	26-1732	A-3 (0)	NP	NP	45.9	50.7	1.9	1.5	0.0	99.7	85.5	4.1	19.1%	-
L_B25-B	SS-907	-L-	177+22	72' RT	174572	2318233	28.0 - 29.5	26-1733	A-4 (0)	NP	NP	27.6	21.9	31.4	19.1	0.0	83.7	70.4	44.0	14.3%	-
L_B25-B	SS-908	-L-	177+22	72' RT	174572	2318233	33.0 - 34.5	26-1734	A-2-4 (0)	NP	NP	34.5	50.1	10.9	4.5	0.0	93.2	77.8	15.7	24.2%	-
L_B25-B	SS-909	-L-	177+22	72' RT	174572	2318233	38.0 - 39.5	26-1735	A-6 (5)	37	14	4.8	45.4	24.5	25.3	0.0	96.9	94.4	52.6	19.3%	-
L_B25-B	SS-913	-L-	177+22	72' RT	174572	2318233	58.0 - 59.5	26-1736	A-4 (0)	NP	NP	1.6	49.6	27.5	21.3	0.0	99.9	99.3	59.9	22.6%	-
L_B25-B	SS-918	-L-	177+22	72' RT	174572	2318233	83.0 - 84.5	26-1737	A-2-4 (0)	NP	NP	38.4	29.7	22.6	9.3	0.0	95.3	78.4	32.0	16.3%	-
L_B25-B	SS-926	-L-	177+22	72' RT	174572	2318233	123.0 - 124.5	26-1738	A-2-4 (0)	NP	NP	2.5	78.0	7.9	11.6	0.0	99.8	99.4	21.8	21.3%	-
L1LT_B25-A	SS-2282	-L1LT-	300+95	14' LT	174676	2318290	4.8 - 6.3	CATLIN	A-4 (0)	20	4	17.2	51.5	15.4	15.9	0.0	100.0	96.0	38.0	11.0%	-
L1LT_B25-A	SS-2285	-L1LT-	300+95	14' LT	174676	2318290	19.8 - 21.3	CATLIN	A-3 (0)	NP	NP	32.2	61.9	3.1	2.8	0.0	100.0	88.0	7.0	21.0%	-
L1LT_B25-A	SS-2286	-L1LT-	300+95	14' LT	174676	2318290	24.8 - 26.3	CATLIN	A-3 (0)	NP	NP	63.2	32.7	3.3	0.8	0.1	99.9	77.0	5.0	20.0%	-
L1LT_B25-A	SS-2291	-L1LT-	300+95	14' LT	174676	2318290	49.8 - 51.3	CATLIN	A-4 (0)	27	5	2.1	57.8	18.6	21.5	1.6	98.4	98.0	43.0	30.0%	-
L1LT_B25-A	SS-2294	-L1LT-	300+95	14' LT	174676	2318290	64.8 - 66.3	CATLIN	A-4 (0)	24	3	1.0	63.5	21.8	13.7	0.0	100.0	100.0	42.0	24.0%	-
L1LT_B25-A	SS-2295	-L1LT-	300+95	14' LT	174676	2318290	69.8 - 71.3	CATLIN	A-4 (4)	28	10	7.0	38.6	28.4	26.0	0.0	100.0	98.0	61.0	18.0%	-
L1LT_B25-A	SS-2307	-L1LT-	300+95	14' LT	174676	2318290	129.8 - 131.3	CATLIN	A-2-4 (0)	NP	NP	7.3	78.9	8.0	5.8	0.0	99.9	98.0	16.0	22.0%	

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L1LT_B26-C	SS-122	-L1LT-	302+74	41' LT	174700	2318459	7.7 - 9.2	GVL26-0001	A-4 (2)	27	7	11.5	42.7	17.7	28.1	0.0	100.0	97.1	55.1	29.4%	-
L1LT_B26-C	SS-126	-L1LT-	302+74	41' LT	174700	2318459	27.7 - 29.2	GVL26-0002	A-3 (0)	NP	NP	77.6	19.4	0.0	3.0	0.0	99.9	56.7	3.6	19.3%	-
L1LT_B26-C	SS-128	-L1LT-	302+74	41' LT	174700	2318459	37.7 - 39.2	GVL26-0003	A-4 (0)	31	7	25.4	37.5	18.9	18.2	0.0	99.5	86.1	39.4	25.4%	-
L1LT_B26-C	SS-129	-L1LT-	302+74	41' LT	174700	2318459	42.7 - 44.2	GVL26-0004	A-2-4 (0)	NP	NP	41.8	30.9	17.2	10.1	0.2	98.6	78.2	29.3	19.6%	-
L1LT_B26-C	SS-131	-L1LT-	302+74	41' LT	174700	2318459	52.7 - 54.2	GVL26-0005	A-2-4 (0)	NP	NP	6.1	54.6	17.1	22.2	17.2	82.1	79.1	35.2	18.5%	-
L1LT_B26-C	SS-137	-L1LT-	302+74	41' LT	174700	2318459	82.4 - 83.9	GVL26-0006	A-1-b (0)	NP	NP	52.1	22.8	15.1	10.0	18.5	60.9	38.4	17.0	12.6%	-
L1LT_B26-C	SS-143	-L1LT-	302+74	41' LT	174700	2318459	112.4 - 113.9	GVL26-0007	A-2-4 (0)	NP	NP	15.2	71.6	8.2	5.0	2.5	93.4	90.3	14.4	19.8%	-
L1LT_B26-C	SS-149	-L1LT-	302+74	41' LT	174700	2318459	142.4 - 143.9	GVL26-0008	A-2-4 (0)	NP	NP	2.0	83.1	5.9	9.0	0.0	99.8	99.4	17.6	25.1%	-
L1LT_B27-C	SS-152	-L1LT-	304+94	37' RT	174670	2318687	3.6 - 5.1	GVL26-0009	A-3 (0)	NP	NP	49.9	42.7	3.4	4.0	0.0	100.0	81.2	8.6	19.4%	0.9%
L1LT_B27-C	SS-157	-L1LT-	304+94	37' RT	174670	2318687	27.7 - 29.2	GVL26-0010	A-3 (0)	NP	NP	40.3	55.2	1.5	3.0	0.0	100.0	85.0	5.3	20.1%	-
L1LT_B27-C	SS-161	-L1LT-	304+94	37' RT	174670	2318687	47.7 - 49.2	GVL26-0011	A-4 (1)	29	6	6.3	52.6	18.9	22.2	0.0	95.7	93.7	48.1	24.9%	-
L1LT_B27-C	SS-164	-L1LT-	304+94	37' RT	174670	2318687	62.7 - 64.2	GVL26-0012	A-2-4 (0)	NP	NP	3.8	60.8	17.3	18.1	12.1	75.9	74.6	29.9	22.9%	-
L1LT_B27-C	SS-171	-L1LT-	304+94	37' RT	174670	2318687	97.7 - 99.2	GVL26-0013	A-2-4 (0)	NP	NP	23.8	58.8	11.3	6.1	0.0	97.9	87.0	18.8	19.2%	-
L1LT_B27-C	SS-177	-L1LT-	304+94	37' RT	174670	2318687	132.7 - 134.2	GVL26-0014	A-2-4 (0)	NP	NP	3.7	78.3	6.8	11.2	0.0	85.7	85.4	17.5	24.8%	-
L1LT_B27-C	SS-178	-L1LT-	304+94	37' RT	174670	2318687	137.7 - 139.2	GVL26-0015	A-2-4 (0)	NP	NP	1.9	87.2	5.7	5.2	0.0	99.1	98.9	13.8	24.2%	-
L1LT_B28-C	SS-5004	-L1LT-	307+03	56' RT	174680	2318894	17.8 - 19.3	26-1713	A-3 (0)	NP	NP	65.9	32.2	0.3	1.6	0.0	99.8	65.1	2.1	18.7%	-
L1LT_B28-C	SS-5008	-L1LT-	307+03	56' RT	174680	2318894	42.8 - 44.3	26-1714	A-6 (4)	32	13	1.3	49.4	22.0	27.3	0.0	98.1	97.6	53.7	21.7%	-
L1LT_B28-C	SS-5013	-L1LT-	307+03	56' RT	174680	2318894	67.8 - 69.3	26-1715	A-6 (2)	28	14	17.6	39.5	15.4	27.5	0.0	97.0	92.8	43.9	14.4%	-
L1LT_B28-C	SS-5017	-L1LT-	307+03	56' RT	174680	2318894	87.8 - 89.3	26-1716	A-2-4 (0)	NP	NP	18.3	67.8	10.3	3.6	0.0	98.6	92.5	15.2	17.5%	-
L1LT_B28-C	SS-5025	-L1LT-	307+03	56' RT	174680	2318894	132.7 - 134.2	26-1717	A-2-4 (0)	NP	NP	1.7	88.0	5.1	5.2	0.0	100.0	99.8	12.3	22.8%	-
L1LT_B29-C	SS-5029	-L1LT-	308+98	58' LT	174815	2319075	4.3 - 5.8	26-1718	A-2-4 (0)	NP	NP	36.2	53.7	4.5	5.6	0.0	99.7	89.7	11.1	8.5%	-
L1LT_B29-C	SS-5033	-L1LT-	308+98	58' LT	174815	2319075	22.7 - 24.2	26-1719	A-1-b (0)	NP	NP	81.4	16.5	0.7	1.4	0.0	98.6	47.5	2.3	16.1%	-
L1LT_B29-C	SS-5037	-L1LT-	308+98	58' LT	174815	2319075	42.7 - 44.2	26-1720	A-6 (4)	34	13	1.6	52.2	21.3	24.9	0.0	100.0	99.2	52.2	22.3%	-
L1LT_B29-C	SS-5041	-L1LT-	308+98	58' LT	174815	2319075	62.7 - 64.2	26-1721	A-6 (5)	31	12	3.8	40.9	26.4	28.9	0.0	99.0	97.4	64.0	20.5%	-
L1LT_B29-C	SS-5052	-L1LT-	308+98	58' LT	174815	2319075	122.7 - 124.2	26-1722	A-2-4 (0)	NP	NP	6.5	81.6	5.1	6.8	0.0	99.9	99.2	14.3	20.6%	-
L1LT_B29-C	SS-5054	-L1LT-	308+98	58' LT	174815	2319075	132.7 - 134.2	26-1723	A-2-4 (0)	NP	NP	1.3	82.0	7.9	8.8	0.0	99.9	99.7	20.1	22.2%	-
L1LT_B29-C	SS-5055	-L1LT-	308+98	58' LT	174815	2319075	137.7 - 139.2	26-1724	A-2-4 (0)	NP	NP	1.4	84.5	7.1	7.0	0.0	99.8	99.4	17.5	24.7%	-
L1LT_B30-C	SS-5058	-L1LT-	310+85	42' LT	174819	2319263	4.3 - 5.8	26-1739	A-3 (0)	NP	NP	41.6	54.7	0.2	3.5	0.0	99.8	87.8	4.1	11.1%	-
L1LT_B30-C	SS-5060	-L1LT-	310+85	42' LT	174819	2319263	12.7 - 14.2	26-1740	A-3 (0)	NP	NP	60.7	37.0	0.9	1.4	0.0	99.7	78.2	2.7	18.9%	-
L1LT_B30-C	SS-5064	-L1LT-	310+85	42' LT	174819	2319263	37.7 - 39.2	26-1741	A-6 (5)	37	16	5.1	49.2	18.6	27.1	0.0	98.9	95.9	51.2	18.8%	-
L1LT_B30-C	SS-5079	-L1LT-	310+85	42' LT	174819	2319263	117.7 - 119.2	26-1742	A-2-4 (0)	NP	NP	4.5	82.7	7.2	5.6	0.0	99.9	99.3	15.4	20.9%	-
L1LT_B30-C	SS-5083	-L1LT-	310+85	42' LT	174819	2319263	137.7 - 139.2	26-1743	A-2-4 (0)	NP	NP	0.8	81.8	8.6	8.8	0.0	99.9	99.8	21.7	22.1%	-
L1LT_B31-C	SS-2445	-L1LT-	312+74	58' RT	174741	2319461	23.0 - 24.5	26-1912	A-2-4 (0)	NP	NP	43.2	29.7	9.0	18.1	0.0	97.2	83.1	27.0	41.3%	3.8%
L1LT_B31-C	SS-2447	-L1LT-	312+74	58' RT	174741	2319461	33.0 - 34.5	26-1913	A-4 (0)	NP	NP	1.0	68.7	15.5	14.8	0.0	99.9	99.4	49.4	27.6%	-
L1LT_B31-C	SS-2450	-L1LT-	312+74	58' RT	174741	2319461	48.0 - 49.5	26-1914	A-2-4 (0)	NP	NP	7.0	60.1	10.1	22.8	14.4	82.9	79.9	31.3	25.4%	-
L1LT_B31-C	SS-2452	-L1LT-	312+74	58' RT	174741	2319461	58.1 - 59.6	26-1915	A-4 (0)	NP	NP	6.4	51.7	16.7	25.2	10.0	82.2	78.7	44.5	24.0%	-
L1LT_EB2-C	SS-2474	-L1LT-	314+52	52' RT	174767	2319638	27.9 - 29.0	26-1916	A-3 (0)	NP	NP	43.9	49.1	0.5	6.5	0.4	96.0	87.4	7.1	21.0%	0.6%
L1LT_EB2-C	SS-2478	-L1LT-	314+52	52' RT	174767	2319638	47.9 - 49.4	26-1917	A-4 (0)	NP	NP	2.6	55.5	12.7	29.2	3.8	93.6	92.5	45.7	34.0%	-
L1LT_EB2-C	SS-2480	-L1LT-	314+52	52' RT	174767	2319638	57.9 - 59.4	26-1918	A-2-4 (0)	NP	NP	5.1	63.7	11.8	19.4	1.0	91.5	89.6	32.3	21.9%	-
L1LT_EB2-C	SS-2482	-L1LT-	314+52	52' RT	174767	2319638	67.9 - 69.4	26-1919	A-4 (0)	NP	NP	6.0	50.2	18.3	25.5	0.0	96.5	93.0	54.2	21.9%	-
L1RT_B26-C	SS-2254A	-L1RT-	301+69	19' LT	174544	2318409	3.8 - 5.3	CATLIN	A-2-4 (0)	15	1	27.0	46.4	14.5	12.1	0.0	100.0	92.0	29.0	15.0%	-
L1RT_B26-C	SS-2260	-L1RT-	301+69	19' LT	174544	2318409	33.8 - 35.3	CATLIN	A-2-4 (0)	30	9	48.4	31.0	6.7	13.9	0.7	97.2	69.0	21.0	26.0%	-
L1RT_B26-C	SS-2261	-L1RT-	301+69	19' LT	174544	2318409	38.8 - 40.3	CATLIN	A-4 (0)	21	4	26.9	35.0	24.9	13.2	4.3	93.3	84.0	37.0	25.0%	-
L1RT_B26-C	SS-2262	-L1RT-	301+69	19' LT	174544	2318409	43.8 - 45.3	CATLIN	A-4 (1)	32	8	3.0	52.1	23.0	21.9	2.3	97.6	96.0	48.0	23.0%	-
L1RT_B26-C	SS-2264A	-L1RT-	301+69	19' LT	174544	2318409	53.8 - 55.3	CATLIN	A-2-4 (0)	19	2	7.1	57.1	20.5	15.3	11.3	86.5	83.0	34.0	20.0%	-
L1RT_B26-C	SS-2266A	-L1RT-	301+69	19' LT	174544	2318409	63.8 - 65.3	CATLIN	A-4 (3)	27	8	5.0	38.8	29.4	26.8	3.7	96.2	95.0	61.0	23.0%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L1RT_B26-C	SS-2276	-L1RT-	301+69	19' LT	174544	2318409	118.8 - 120.3	CATLIN	A-2-4 (0)	NP	NP	6.5	75.1	11.4	7.0	5.7	91.5	90.0	19.0	19.0%	-
L1RT_B26-C	SS-2278	-L1RT-	301+69	19' LT	174544	2318409	128.8 - 130.3	CATLIN	A-2-4 (0)	NP	NP	1.9	81.8	8.6	7.7	0.0	99.9	99.7	19.0	23.0%	-
L1RT_B27-C	SS-2338	-L1RT-	303+75	20' LT	174397	2318556	7.9 - 9.4	26-1744	A-2-4 (0)	NP	NP	17.0	58.5	11.4	13.1	0.0	100.0	96.4	28.6	15.2%	-
L1RT_B27-C	SS-2341	-L1RT-	303+75	20' LT	174397	2318556	27.9 - 29.4	26-1745	A-3 (0)	NP	NP	55.3	40.0	1.2	3.5	0.0	99.9	84.7	5.1	19.9%	-
L1RT_B27-C	SS-2342	-L1RT-	303+75	20' LT	174397	2318556	32.9 - 34.4	26-1746	A-2-6 (0)	36	16	55.2	23.1	3.1	18.6	0.0	93.5	60.6	21.1	29.7%	-
L1RT_B27-C	SS-2344	-L1RT-	303+75	20' LT	174397	2318556	42.9 - 44.4	26-1747	A-4 (0)	NP	NP	7.1	56.4	17.4	19.1	0.0	97.9	93.7	39.7	23.7%	-
L1RT_B27-C	SS-2347	-L1RT-	303+75	20' LT	174397	2318556	57.9 - 59.4	26-1748	A-6 (6)	33	13	5.4	36.8	24.8	33.0	0.0	100.0	99.1	64.7	20.5%	-
L1RT_B27-C	SS-2350	-L1RT-	303+75	20' LT	174397	2318556	72.9 - 74.4	26-1749	A-1-b (0)	NP	NP	54.6	26.1	13.8	5.5	0.0	69.9	39.9	15.8	11.3%	-
L1RT_B27-C	SS-2358	-L1RT-	303+75	20' LT	174397	2318556	122.9 - 124.4	26-1750	A-2-4 (0)	NP	NP	1.3	81.9	10.1	6.7	0.0	100.0	99.8	21.0	19.3%	-
L1RT_B28-C	SS-7123	-L1RT-	306+10	13' LT	174289	2318749	13.0 - 14.5	26-1923	A-3 (0)	NP	NP	46.9	47.5	2.6	3.0	0.0	99.7	85.3	6.9	34.2%	3.3%
L1RT_B28-C	SS-7127	-L1RT-	306+10	13' LT	174289	2318749	38.0 - 39.5	26-1924	A-4 (0)	NP	NP	2.3	54.6	18.2	24.9	0.0	95.5	94.7	45.3	22.0%	-
L1RT_B28-C	SS-7129	-L1RT-	306+10	13' LT	174289	2318749	48.0 - 49.5	26-1925	A-2-4 (0)	NP	NP	4.3	62.0	14.3	19.4	8.7	87.0	85.1	32.6	22.6%	-
L1RT_B29-C	SS-874	-L1RT-	308+02	54' LT	174337	2318933	12.7 - 14.2	CATLIN	A-3 (0)	NP	NP	40.0	56.0	2.2	1.8	0.2	99.5	86.0	4.0	21.0%	-
L1RT_B29-C	SS-880	-L1RT-	308+02	54' LT	174337	2318933	42.4 - 43.9	CATLIN	A-4 (0)	22	4	2.1	52.1	24.1	21.7	0.6	99.4	99.0	49.0	21.0%	-
L1RT_B29-C	SS-883	-L1RT-	308+02	54' LT	174337	2318933	57.4 - 58.9	CATLIN	A-4 (2)	27	6	2.6	47.5	27.9	22.0	0.1	99.9	99.0	60.0	24.0%	-
L1RT_B29-C	SS-897	-L1RT-	308+02	54' LT	174337	2318933	127.4 - 128.9	CATLIN	A-2-4 (0)	NP	NP	1.6	88.9	3.9	5.6	0.1	99.8	99.8	12.0	24.0%	-
L1RT_B30-C	SS-2A	-L1RT-	309+94	16' LT	174320	2319127	4.8 - 6.3	26-1956	A-3 (0)	NP	NP	56.0	39.4	0.2	4.4	0.0	99.8	79.6	5.2	12.4%	-
L1RT_B30-C	SS-5A	-L1RT-	309+94	16' LT	174320	2319127	18.0 - 19.5	26-1957	A-3 (0)	NP	NP	47.2	48.3	0.5	4.0	0.0	99.3	85.1	5.1	28.4%	-
L1RT_B30-C	SS-10A	-L1RT-	309+94	16' LT	174320	2319127	43.0 - 44.5	26-1958	A-6 (4)	33	11	1.7	49.7	20.5	28.1	0.0	99.4	98.9	56.1	24.4%	-
L1RT_B30-C	SS-14A	-L1RT-	309+94	16' LT	174320	2319127	63.0 - 64.5	26-1959	A-4 (0)	NP	NP	1.5	60.7	16.4	21.4	0.0	99.7	99.0	50.0	26.4%	-
L1RT_B31-C	SS-32A	-L1RT-	311+93	10' LT	174335	2319326	43.0 - 44.5	26-1960	A-4 (0)	NP	NP	0.9	54.2	21.4	23.5	1.6	95.8	95.4	53.1	25.7%	-
L1RT_B31-C	SS-37A	-L1RT-	311+93	10' LT	174335	2319326	68.0 - 69.5	26-1961	A-6 (3)	29	11	8.3	43.4	15.7	32.6	0.0	100.0	97.8	55.5	21.8%	-
L1RT_B31-C	SS-45A	-L1RT-	311+93	10' LT	174335	2319326	133.0 - 134.5	26-1962	A-2-4 (0)	NP	NP	1.4	79.6	6.4	12.6	0.0	99.9	99.6	22.8	23.1%	-
L1RT_EB2-C	SS-49A	-L1RT-	313+54	9' LT	174352	2319486	13.0 - 14.5	26-1963	A-3 (0)	NP	NP	30.0	66.2	0.6	3.2	0.0	99.9	93.0	4.7	19.8%	-
L1RT_EB2-C	SS-55A	-L1RT-	313+54	9' LT	174352	2319486	43.0 - 44.5	26-1964	A-6 (3)	34	12	3.4	53.4	16.3	26.9	0.0	97.0	95.0	50.2	22.7%	-
L1RT_EB2-C	SS-59A	-L1RT-	313+54	9' LT	174352	2319486	63.0 - 64.5	26-1965	A-4 (0)	NP	NP	2.2	55.5	17.5	24.8	2.5	94.6	93.4	52.6	19.8%	-
LLT_10600	SS-2248	-LLT-	106+00	4' LT	177992	2312202	3.3 - 4.8	CATLIN	A-3 (0)	NP	NP	78.7	16.7	3.7	0.9	10.3	88.5	51.0	5.0	21.0%	-
LLT_10600	SS-2249	-LLT-	106+00	4' LT	177992	2312202	13.3 - 14.8	CATLIN	-	-	-	-	-	-	-	-	-	-	-	213.0%	16.1%
LLT_10600	SS-2250	-LLT-	106+00	4' LT	177992	2312202	18.3 - 19.8	CATLIN	A-7-5 (30)	101	20	12.1	6.9	56.1	24.9	0.0	100.0	93.0	82.0	328.0%	35.2%
LLT_10600	SS-2251	-LLT-	106+00	4' LT	177992	2312202	23.3 - 24.8	CATLIN	A-2-4 (0)	NP	NP	74.0	14.3	6.7	5.0	0.0	100.0	63.0	13.0	18.0%	0.5%
LLT_10800	SS-2244	-LLT-	108+00	8'LT	177985	2312402	13.2 - 14.7	CATLIN	A-3 (0)	NP	NP	73.9	24.1	1.0	1.0	0.0	100.0	75.0	2.0	27.0%	-
LLT_10800	SS-2245	-LLT-	108+00	8'LT	177985	2312402	18.2 - 19.7	CATLIN	A-2-4 (0)	NP	NP	47.2	44.4	5.1	3.3	0.6	99.1	87.0	11.0	25.0%	-
LLT_11100	SS-2237	-LLT-	111+00	5' LT	177932	2312698	3.2 - 4.7	CATLIN	A-3 (0)	NP	NP	61.5	35.8	0.9	1.8	7.7	91.8	66.0	3.0	22.0%	-
LLT_11100	SS-2239	-LLT-	111+00	5' LT	177932	2312698	18.2 - 19.7	CATLIN	-	-	-	-	-	-	-	-	-	-	-	192.0%	-
LLT_11100	SS-2240	-LLT-	111+00	5' LT	177932	2312698	23.2 - 24.7	CATLIN	A-4 (0)	21	5	27.9	39.5	14.3	18.3	0.0	100.0	87.0	37.0	18.0%	-
LLT_11300	SS-2230	-LLT-	113+00	CL	177873	2312890	3.2 - 4.7	CATLIN	A-3 (0)	NP	NP	59.2	36.7	2.1	2.0	0.1	97.9	61.0	5.0	14.0%	-
LLT_11300	SS-2233	-LLT-	113+00	CL	177873	2312890	18.2 - 19.7	CATLIN	A-3 (0)	NP	NP	81.0	16.3	1.7	1.0	0.4	99.6	65.0	3.0	22.0%	-
LLT_11500	SS-2225	-LLT-	115+00	10' RT	177795	2313074	13.2 - 14.7	CATLIN	-	-	-	-	-	-	-	-	-	-	-	24.0%	1.9%
LLT_11500	SS-2226	-LLT-	115+00	10' RT	177795	2313074	23.2 - 24.7	CATLIN	A-4 (1)	23	8	31.8	27.0	17.9	23.3	0.0	99.6	82.0	46.0	21.0%	2.7%
LLT_11500	SS-2228	-LLT-	115+00	10' RT	177795	2313074	38.2 - 39.7	CATLIN	A-3 (0)	NP	NP	44.7	52.9	0.2	2.2	0.0	100.0	99.0	3.0	23.0%	-
LLT_11600	SS-2209	-LLT-	116+00	5' LT	177771	2313172	8.3 - 9.8	GLV26-0558	A-3 (0)	NP	NP	31.6	66.8	1.6	0.0	0.0	99.9	88.8	2.4	21.9%	-
LLT_11600	SS-2210	-LLT-	116+00	5' LT	177771	2313172	18.3 - 19.8	GLV26-0559	A-3 (0)	NP	NP	16.9	77.7	3.4	2.0	0.0	100.0	97.3	7.2	26.4%	0.8%
LLT_11600	SS-2211	-LLT-	116+00	5' LT	177771	2313172	23.3 - 24.8	GLV26-0560	-	-	-	-	-	-	-	-	-	-	-	73.8%	6.2%
LLT_11600	SS-2212	-LLT-	116+00	5' LT	177771	2313172	28.3 - 29.8	GLV26-0561	A-3 (0)	NP	NP	34.9	58.0	3.1	4.0	0.0	99.4	92.6	7.5	29.8%	1.4%
LLT_11800	SS-574	-LLT-	118+00	CL	177682	2313351	4.8 - 6.3	GLV26-0467	A-3 (0)	NP	NP	46.0	50.8	2.2	1.0	0.3	99.3	73.4	3.9	18.9%	-
LLT_11800	SS-576	-LLT-	118+00	CL	177682	2313351	13.5 - 15.0	GLV26-0468	A-3 (0)	NP	NP	26.2	69.2	2.6	2.0	0.0	100.0	90.3	5.9	27.9%	1.1%

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
LLT_11800	SS-578	-LLT-	118+00	CL	177682	2313351	23.5 - 25.0	GLV26-0469	A-3 (0)	NP	NP	30.5	60.9	4.6	4.0	0.0	99.9	92.3	10.3	20.8%	-
LLT_12000	SS-460	-LLT-	120+00	CL	177589	2313528	3.6 - 5.1	GVL26 - 0288	A-8 (0)	-	-	-	-	-	-	-	-	-	-	631.4%	68.1%
LLT_12000	SS-461	-LLT-	120+00	CL	177589	2313528	8.6 - 10.1	GVL26 - 0289	A-8 (0)	-	-	-	-	-	-	-	-	-	-	649.9%	82.4%
LLT_12000	SS-462	-LLT-	120+00	CL	177589	2313528	23.6 - 25.1	GVL26 - 0290	-	-	-	-	-	-	-	-	-	-	-	22.0%	0.5%
LLT_EB1-A	SS-494	-LLT-	121+63	17' LT	177521	2313678	0.0 - 1.5	GVL26 - 0299	-	-	-	-	-	-	-	-	-	-	-	99.6%	26.6%
LLT_EB1-A	SS-495	-LLT-	121+63	17' LT	177521	2313678	3.6 - 5.1	GVL26 - 0300	A-4 (0)	23	3	9.3	43.8	20.2	26.7	0.0	100.0	97.2	56.3	26.5%	3.8%
LLT_EB1-A	SS-496	-LLT-	121+63	17' LT	177521	2313678	8.4 - 9.9	GVL26 - 0301	-	-	-	-	-	-	-	-	-	-	-	40.6%	17.7%
LLT_EB1-A	SS-498	-LLT-	121+63	17' LT	177521	2313678	18.6 - 20.1	GVL26 - 0302	-	-	-	-	-	-	-	-	-	-	-	178.4%	20.6%
LLT_EB1-A	SS-500	-LLT-	121+63	17' LT	177521	2313678	28.4 - 29.9	GVL26 - 0303	A-2-4 (0)	NP	NP	19.1	68.6	1.8	10.5	0.0	99.7	96.7	12.8	26.1%	1.3%
LLT_EB1-A	SS-508	-LLT-	121+63	17' LT	177521	2313678	68.5 - 70.0	GVL26 - 0304	A-2-4 (0)	NP	NP	10.1	79.3	4.2	6.4	0.0	99.8	98.7	13.1	20.5%	-
LLT_EB1-A	SS-511	-LLT-	121+63	17' LT	177521	2313678	83.6 - 85.1	GVL26 - 0305	A-2-4 (0)	NP	NP	4.8	76.5	6.2	12.5	0.3	99.4	98.2	21.7	21.4%	-
LLT_EB1-A	SS-514	-LLT-	121+63	17' LT	177521	2313678	98.6 - 100.1	GVL26 - 0306	A-2-4 (0)	NP	NP	1.4	76.2	7.9	14.5	0.0	100.0	99.9	25.1	22.8%	-
LLT_EB1-A	SS-516	-LLT-	121+63	17' LT	177521	2313678	108.5 - 110.0	GVL26 - 0307	A-2-4 (0)	NP	NP	1.2	81.7	8.7	8.4	0.0	100.0	100.0	19.8	24.7%	-
LLT_EB1-A	SS-519	-LLT-	121+63	17' LT	177521	2313678	123.4 - 124.9	GVL26 - 0308	A-2-4 (0)	NP	NP	0.6	71.9	15.0	12.5	0.0	100.0	99.8	32.0	26.9%	-
LLT_EB1-A	SS-521	-LLT-	121+63	17' LT	177521	2313678	133.5 - 135.0	GVL26 - 0309	A-4 (0)	NP	NP	0.6	65.5	15.3	18.6	0.0	100.0	99.6	39.9	25.5%	-
LRT_10500	SS-2216	-LRT-	105+00	5' RT	177838	2312114	8.2 - 9.7	GLV26-0562	A-3 (0)	NP	NP	58.8	34.4	2.8	4.0	1.0	97.7	69.6	8.1	18.8%	-
LRT_10500	SS-2217	-LRT-	105+00	5' RT	177838	2312114	28.2 - 29.7	GLV26-0563	A-2-4 (0)	20	3	50.1	19.4	12.3	18.2	0.0	100.0	77.9	33.8	19.9%	1.8%
LRT_10700	SS-2219	-LRT-	107+00	10' RT	177836	2312314	3.2 - 4.7	GLV26-0564	A-3 (0)	NP	NP	70.1	25.3	3.6	1.0	0.2	99.4	74.3	5.4	12.6%	-
LRT_10700	SS-2220	-LRT-	107+00	10' RT	177836	2312314	23.2 - 24.7	GLV26-0565	-	-	-	-	-	-	-	-	-	-	-	182.3%	28.2%
LRT_11100	SS-2637	-LRT-	111+03	20' LT	177836	2312719	17.7 - 19.2	26-1980	A-2-4 (0)	NP	NP	36.7	46.8	4.1	12.4	0.3	99.5	85.1	19.8	15.5%	1.7%
LRT_11300	SS-2642	-LRT-	112+93	4' LT	177789	2312904	12.9 - 14.4	26-1981	A-3 (0)	NP	NP	77.5	18.6	0.5	3.4	3.8	96.1	62.5	4.6	31.8%	2.0%
LRT_11500	SS-2647	-LRT-	114+96	20' RT	177717	2313094	3.0 - 4.5	26-1982	A-3 (0)	NP	NP	83.5	12.6	0.6	3.3	1.4	96.3	58.8	4.0	38.8%	2.4%
LRT_11500	SS-2648	-LRT-	114+96	20' RT	177717	2313094	8.0 - 9.5	26-1983	A-3 (0)	NP	NP	86.8	10.4	0.5	2.3	0.0	100.0	60.4	3.2	20.4%	1.2%
LRT_11500	SS-2649	-LRT-	114+96	20' RT	177717	2313094	13.0 - 14.5	26-1984	A-3 (0)	NP	NP	85.9	12.5	0.4	1.2	0.0	100.0	75.3	1.9	25.8%	-
Y1RPA_B1-C	SS-2499	-Y1RPA-	15+95	17' LT	176642	2314607	23.6 - 25.1	26-1936	A-2-4 (0)	NP	NP	41.1	32.2	8.9	17.8	9.8	71.8	62.8	20.7	92.6%	11.2%
Y1RPA_B1-C	SS-2510	-Y1RPA-	15+95	17' LT	176642	2314607	83.6 - 85.1	26-1937	A-2-4 (0)	NP	NP	4.7	83.8	4.5	7.0	0.0	99.9	99.4	14.2	22.8%	-
Y1RPA_B1-C	SS-2514	-Y1RPA-	15+95	17' LT	176642	2314607	103.6 - 105.1	26-1938	A-2-4 (0)	NP	NP	2.6	80.7	4.7	12.0	0.0	98.4	97.8	19.6	23.4%	-
Y1RPA_B1-C	SS-2516	-Y1RPA-	15+95	17' LT	176642	2314607	118.6 - 120.1	26-1939	A-2-4 (0)	NP	NP	1.3	78.1	6.5	14.1	0.0	99.9	99.7	23.8	28.2%	-
Y1RPA_B1-C	SS-2520	-Y1RPA-	15+95	17' LT	176642	2314607	138.6 - 140.1	26-1940	A-4 (0)	NP	NP	0.6	68.6	12.7	18.1	0.0	99.2	98.9	35.9	26.0%	-
Y1RPA_EB1-C	SS-2522	-Y1RPA-	17+73	56' LT	176814	2314532	13.6 - 15.1	26-1941	A-3 (0)	NP	NP	69.4	24.8	0.8	5.0	0.7	96.7	73.5	6.5	34.5%	4.4%
Y1RPA_EB1-C	SS-2523	-Y1RPA-	17+73	56' LT	176814	2314532	28.6 - 30.1	26-1942	A-3 (0)	NP	NP	66.0	25.9	1.5	6.6	0.0	99.9	75.5	9.7	20.2%	2.3%
Y1RPA_EB1-C	SS-2532	-Y1RPA-	17+73	56' LT	176814	2314532	78.6 - 80.1	26-1943	A-2-4 (0)	NP	NP	6.8	75.6	8.0	9.6	0.0	97.5	96.1	19.5	22.6%	-
Y1RPA_EB1-C	SS-2537	-Y1RPA-	17+73	56' LT	176814	2314532	103.6 - 105.1	26-1944	A-2-4 (0)	NP	NP	2.5	80.1	5.8	11.6	0.0	99.5	99.1	20.2	24.3%	-
Y1RPA_EB1-C	SS-2540	-Y1RPA-	17+73	56' LT	176814	2314532	123.6 - 125.1	26-1945	A-2-4 (0)	NP	NP	1.1	77.7	9.6	11.6	0.0	99.5	99.4	25.1	26.6%	-
Y1RPA_EB1-C	SS-2542	-Y1RPA-	17+73	56' LT	176814	2314532	133.6 - 135.1	26-1946	A-2-4 (0)	NP	NP	0.6	72.6	15.2	11.6	0.0	99.0	98.9	30.5	26.6%	-
Y1RPA_1950	SS-4000	-Y1RPA-	19+50	90' RT	176993	2314672	14.3 - 15.8	GVL26-0118	A-4 (0)	NP	NP	14.9	7.6	36.4	41.1	32.2	52.8	47.2	41.7	254.6%	26.9%
Y1RPA_1950	SS-4001	-Y1RPA-	19+50	90' RT	176993	2314672	24.3 - 25.8	GVL26-0119	A-1-b (0)	NP	NP	77.4	21.1	0.3	1.2	0.0	99.6	50.3	1.9	23.5%	0.4%
Y1RPA_1950	SS-4002	-Y1RPA-	19+50	90' RT	176993	2314672	29.3 - 30.8	GVL26-0120	A-2-4 (0)	NP	NP	9.5	75.2	7.1	8.2	0.1	99.2	97.6	17.2	20.7%	-
Y1RPA_1950	SS-4004	-Y1RPA-	19+50	90' RT	176993	2314672	39.0 - 40.5	GVL26-0121	A-2-4 (0)	NP	NP	28.4	55.3	9.1	7.2	5.9	84.6	77.0	15.9	19.7%	-
Y1RPA_2150	SS-4009	-Y1RPA-	21+50	85' RT	177186	2314686	2.2 - 3.7	GVL26-0122	A-3 (0)	NP	NP	9.2	81.5	6.1	3.2	11.2	87.8	86.3	10.2	19.0%	32.2%
Y1RPA_2150	SS-4012	-Y1RPA-	21+50	85' RT	177186	2314686	27.2 - 28.7	GVL26-0123	A-3 (0)	NP	NP	43.1	53.1	0.6	3.2	0.5	97.6	78.2	4.2	23.7%	0.6%
Y1RPA_2150	SS-4014	-Y1RPA-	21+50	85' RT	177186	2314686	37.8 - 39.3	GVL26-0124	A-2-4 (0)	NP	NP	39.4	44.1	8.1	8.4	11.4	83.2	73.4	15.5	17.0%	-
Y1RPA_2450	SS-4018	-Y1RPA-	24+52	65' RT	177488	2314702	3.1 - 4.6	GVL26-0131	A-3 (0)	NP	NP	70.5	27.7	0.6	1.2	0.0	99.9	75.0	2.2	18.6%	0.2%
Y1RPA_2450	SS-4019	-Y1RPA-	24+52	65' RT	177488	2314702	13.1 - 14.6	GVL26-0132	A-5 (12)	70	7	7.2	3.7	47.7	41.4	0.0	99.8	95.2	89.5	210.2%	17.6%
Y1RPA_2450	SS-4021	-Y1RPA-	24+52	65' RT	177488	2314702	23.1 - 24.6	GVL26-0133	A-3 (0)	NP	NP	63.2	32.8	0.8	3.2	0.0	99.8	69.0	4.4	37.7%	0.4%
Y1RPA_2450	SS-4022	-Y1RPA-	24+52	65' RT	177488	2314702	28.1 - 29.6	GVL26-0134	A-3 (0)	NP	NP	30.1	61.4	0.0	8.5	1.0	97.0	82.7	9.2	24.4%	1.1%

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
Y1RPA_2550	SS-235	-Y1RPA-	25+60	60' RT	177596	2314710	27.7 - 29.2	GVL26-0032	A-2-4 (0)	24	5	23.1	47.7	9.0	20.2	0.3	97.6	87.2	30.7	36.8%	4.0%
Y1RPA_2550	SS-236	-Y1RPA-	25+60	60' RT	177596	2314710	32.7 - 34.2	GVL26-0033	A-1-a (0)	NP	NP	54.3	26.6	12.9	6.2	41.2	38.9	24.9	8.4	8.1%	-
Y1RPB_1750	SS-2121	-Y1RPB-	17+50	5' LT	177988	2312706	9.5 - 11.0	GLV26-0470	A-3 (0)	NP	NP	68.0	30.4	0.6	1.0	0.0	99.9	79.7	2.2	23.9%	-
Y1RPB_1750	SS-2124	-Y1RPB-	17+50	5' LT	177988	2312706	24.5 - 26.0	GLV26-0471	A-2-4 (0)	NP	NP	61.7	27.1	6.2	5.0	0.8	98.5	66.3	13.7	54.1%	7.6%
Y1RPB_1750	SS-2125	-Y1RPB-	17+50	5' LT	177988	2312706	29.5 - 31.0	GLV26-0472	A-2-4 (0)	NP	NP	52.0	39.4	4.6	4.0	0.0	99.4	74.2	10.6	18.3%	0.6%
Y1RPB_1750	SS-2126	-Y1RPB-	17+50	5' LT	177988	2312706	34.5 - 36.0	GLV26-0473	A-3 (0)	NP	NP	52.5	44.5	1.0	2.0	0.1	98.7	80.9	3.7	27.0%	0.2%
Y1RPB_1850	SS-2115	-Y1RPB-	18+50	CL	177963	2312803	14.5 - 16.0	GLV26-0474	A-1-b (0)	NP	NP	80.0	18.7	0.3	1.0	93.0	90.3	47.4	1.5	10.8%	-
Y1RPB_1850	SS-2116	-Y1RPB-	18+50	CL	177963	2312803	19.5 - 21.0	GLV26-0475	A-3 (0)	NP	NP	46.6	52.2	1.2	0.0	0.1	99.8	87.7	1.7	22.0%	0.1%
Y1RPB_1850	SS-2117	-Y1RPB-	18+50	CL	177963	2312803	24.5 - 26.0	GLV26-0476	-	-	-	-	-	-	-	-	-	-	-	215.8%	24.6%
Y1RPB_1850	SS-2118	-Y1RPB-	18+50	CL	177963	2312803	29.5 - 31.0	GLV26-0477	A-2-4 (0)	NP	NP	38.9	38.2	10.8	12.1	0.0	99.7	86.0	25.7	14.5%	1.2%
Y1RPB_1950	SS-2105	-Y1RPB-	19+50	5' RT	177935	2312899	9.4 - 10.9	GLV26-0478	A-3 (0)	NP	NP	66.4	27.4	3.2	3.0	1.3	97.4	66.5	7.1	14.0%	0.4%
Y1RPB_1950	SS-2108	-Y1RPB-	19+50	5' RT	177935	2312899	24.4 - 25.9	GLV26-0479	A-3 (0)	NP	NP	81.0	11.5	5.5	2.0	0.3	99.0	50.6	7.8	31.0%	3.3%
Y1RPB_1950	SS-2109	-Y1RPB-	19+50	5' RT	177935	2312899	29.4 - 30.9	GLV26-0480	A-3 (0)	NP	NP	70.7	24.3	0.8	4.2	0.0	100.0	63.7	6.5	17.7%	0.3%
Y1RPB_2150	SS-86	-Y1RPB-	21+61	19' LT	177897	2313109	8.4 - 9.9	CATLIN	A-3 (0)	NP	NP	84.3	11.6	1.9	2.2	0.1	99.9	62.0	4.0	33.0%	1.4%
Y1RPB_2150	SS-88	-Y1RPB-	21+61	19' LT	177897	2313109	18.5 - 20.0	CATLIN	-	-	-	-	-	-	-	-	-	-	-	-	0.3%
Y1RPB_2150	SS-89	-Y1RPB-	21+61	19' LT	177897	2313109	23.5 - 25.0	CATLIN	A-2-4 (0)	17	7	48.2	25.2	11.2	15.4	0.0	98.9	70.0	27.0	18.0%	-
Y1RPB_2350	SS-76	-Y1RPB-	23+36	63' LT	177886	2313286	3.5 - 5.0	CATLIN	A-2-4 (0)	16	2	48.1	29.2	11.2	11.5	2.3	96.2	78.0	23.0	17.0%	1.2%
Y1RPB_2350	SS-78	-Y1RPB-	23+36	63' LT	177886	2313286	13.5 - 15.0	CATLIN	A-8 (0)	-	-	-	-	-	-	-	-	-	-	504.0%	87.2%
Y1RPB_2350	SS-80	-Y1RPB-	23+36	63' LT	177886	2313286	23.5 - 25.0	CATLIN	A-3 (0)	NP	NP	41.8	51.9	2.3	4.0	0.0	100.0	96.0	7.0	26.0%	-
Y1RPB_2550	SS-70	-Y1RPB-	25+50	66' LT	177854	2313484	0.0 - 1.5	CATLIN	-	-	-	-	-	-	-	-	-	-	-	158.0%	33.5%
Y1RPB_2550	SS-71	-Y1RPB-	25+50	66' LT	177854	2313484	3.5 - 5.0	CATLIN	A-8 (0)	-	-	-	-	-	-	-	-	-	-	894.0%	73.2%
Y1RPB_2550	SS-72	-Y1RPB-	25+50	66' LT	177854	2313484	23.5 - 25.0	CATLIN	A-2-4 (0)	21	6	47.3	28.3	18.4	6.0	0.0	99.7	83.0	26.0	21.0%	-
Y1RPB_B1	SS-2004	-Y1RPB-	26+46	81' LT	177868	2313573	29.4 - 30.9	GVL26-0125	A-2-4 (0)	NP	NP	48.8	28.9	14.1	8.2	0.0	100.0	65.0	25.1	12.6%	-
Y1RPB_B1	SS-2005	-Y1RPB-	26+46	81' LT	177868	2313573	34.4 - 35.9	GVL26-0126	A-1-b (0)	NP	NP	61.6	33.5	0.5	4.4	0.1	90.2	37.9	5.1	20.0%	-
Y1RPB_B1	SS-2011	-Y1RPB-	26+46	81' LT	177868	2313573	62.5 - 64.0	GVL26-0127	A-2-4 (0)	NP	NP	4.1	83.1	2.4	10.4	0.6	98.4	96.9	15.8	23.4%	-
Y1RPB_B1	SS-2015	-Y1RPB-	26+46	81' LT	177868	2313573	87.5 - 89.0	GVL26-0128	A-2-4 (0)	NP	NP	2.7	82.5	4.3	10.5	0.0	100.0	99.8	16.6	28.1%	-
Y1RPB_B1	SS-2022	-Y1RPB-	26+46	81' LT	177868	2313573	122.5 - 124.0	GVL26-0129	A-4 (0)	NP	NP	0.6	65.1	15.8	18.5	0.0	100.0	99.9	39.9	25.0%	-
Y1RPB_B1	SS-2024	-Y1RPB-	26+46	81' LT	177868	2313573	137.5 - 139.0	GVL26-0130	A-4 (0)	26	2	0.5	62.6	14.3	22.6	0.0	100.0	99.8	44.4	25.5%	-
Y1RPB_2750	SS-68	-Y1RPB-	27+52	61' LT	177856	2313672	28.7 - 30.0	CATLIN	A-1-b (0)	NP	NP	33.3	29.4	33.5	3.8	18.0	62.0	50.0	24.0	19.0%	-
Y1RPB_2950	SS-64	-Y1RPB-	29+50	30' LT	177872	2313862	18.4 - 19.9	CATLIN	A-2-4 (0)	NP	NP	12.6	72.0	8.2	7.2	0.1	99.8	97.0	16.0	25.0%	-
Y1RPB_2950	SS-66	-Y1RPB-	29+50	30' LT	177872	2313862	28.5 - 30.0	CATLIN	A-1-b (0)	NP	NP	48.9	24.5	23.6	3.0	30.8	57.1	36.0	16.0	20.0%	-
Y1RPB_3350	SS-2098	-Y1RPB-	33+50	5' LT	178057	2314206	14.3 - 15.8	GLV26-0481	A-1-b (0)	NP	NP	70.7	27.8	1.5	0.0	1.3	95.0	48.5	2.1	13.6%	0.2%
Y1RPB_3350	SS-2100	-Y1RPB-	33+50	5' LT	178057	2314206	24.3 - 25.8	GLV26-0483	-	-	-	-	-	-	-	-	-	-	-	181.1%	21.8%
Y1RPB_3450	SS-2089	-Y1RPB-	34+50	5' LT	178130	2314274	9.3 - 10.8	GLV26-0484	A-3 (0)	NP	NP	74.1	22.6	3.3	0.0	0.8	97.2	60.0	4.1	15.3%	-
Y1RPB_3450	SS-2093	-Y1RPB-	34+50	5' LT	178130	2314274	29.3 - 30.8	GLV26-0485	-	-	-	-	-	-	-	-	-	-	-	51.0%	4.6%
Y1RPB_3550	SS-2082	-Y1RPB-	35+50	10' LT	178211	2314332	14.3 - 15.8	GLV26-0486	A-3 (0)	NP	NP	75.4	23.4	1.2	0.0	0.0	97.1	62.9	1.6	17.9%	-
Y1RPB_3550	SS-2084	-Y1RPB-	35+50	10' LT	178211	2314332	24.3 - 25.8	GLV26-0487	A-3 (0)	NP	NP	27.2	69.5	2.3	1.0	0.0	100.0	95.0	5.2	42.5%	3.1%
Y1RPB_3550	SS-2085	-Y1RPB-	35+50	10' LT	178211	2314332	29.3 - 30.8	GLV26-0488	A-4 (0)	22	9	40.6	24.2	15.0	20.2	0.1	99.8	77.1	38.2	18.2%	2.0%
Y1RPB_3750	SS-2072	-Y1RPB-	37+50	10' LT	178379	2314437	4.4 - 5.9	GLV26-0489	A-3 (0)	NP	NP	83.9	13.3	2.8	0.0	0.0	99.8	56.4	3.4	12.8%	-
Y1RPB_3750	SS-2075	-Y1RPB-	37+50	10' LT	178379	2314437	19.4 - 20.9	GLV26-0490	A-3 (0)	NP	NP	71.4	27.3	1.3	0.0	0.0	100.0	68.5	1.8	20.4%	0.3%
Y1RPB_3750	SS-2076	-Y1RPB-	37+50	10' LT	178379	2314437	24.4 - 25.9	GLV26-0491	A-3 (0)	NP	NP	60.6	32.7	3.7	3.0	0.0	99.9	79.6	8.3	62.5%	5.0%
Y1RPB_3750	SS-2077	-Y1RPB-	37+50	10' LT	178379	2314437	29.4 - 30.9	GLV26-0492	A-3 (0)	NP	NP	50.9	46.1	2.0	1.0	0.0	100.0	82.0	4.2	23.8%	0.5%
Y1RPB_3950	SS-2064	-Y1RPB-	39+50	10' LT	178559	2314521	4.4 - 5.9	GLV26-0493	A-1-b (0)	NP	NP	81.1	16.2	2.7	0.0	99.3	96.5	46.3	3.5	12.8%	-
Y1RPB_3950	SS-2067	-Y1RPB-	39+50	10' LT	178559	2314521	19.4 - 20.9	GLV26-0494	A-3 (0)	NP	NP	36.7	59.9	2.4	1.0	0.0	99.5	91.0	5.9	18.1%	0.6%
Y1RPB_3950	SS-2068	-Y1RPB-	39+50	10' LT	178559	2314521	24.4 - 25.9	GLV26-0495	A-3 (0)	NP	NP	20.3	75.8	2.9	1.0	0.0	99.9	95.9	6.6	28.9%	1.4%
Y1RPB_3950	SS-2069	-Y1RPB-	39+50	10' LT	178559	2314521	29.4 - 30.9	GLV26-0496	A-2-4 (0)	NP	NP	22.2	50.8	12.9	14.1	0.0	99.9	91.6	33.0	20.2%	1.5%

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
Y1RPB_4150	SS-2059	-Y1RPB-	41+50	15' LT	178748	2314586	14.4 - 15.9	GLV26-0497	A-3 (0)	NP	NP	66.6	32.3	1.1	0.0	0.0	100.0	84.6	1.6	19.6%	0.2%
Y1RPB_4150	SS-2060	-Y1RPB-	41+50	15' LT	178748	2314586	19.4 - 20.9	GLV26-0498	A-3 (0)	NP	NP	34.7	61.5	2.8	1.0	0.0	100.0	93.1	6.0	44.2%	3.2%
Y1RPB_4150	SS-2061	-Y1RPB-	41+50	15' LT	178748	2314586	24.4 - 25.9	GLV26-0499	-	-	-	-	-	-	-	-	-	-	-	109.7%	11.8%
Y1RPC_1800	SS-2173	-Y1RPC-	18+00	10' RT	177751	2312412	23.0 - 24.5	GLV26-0566	A-2-4 (0)	NP	NP	73.7	15.5	3.8	7.0	0.0	100.0	64.0	11.6	18.0%	0.8%
Y1RPC_1800	SS-2174	-Y1RPC-	18+00	10' RT	177751	2312412	28.0 - 29.5	GLV26-0567	A-3 (0)	NP	NP	91.3	8.1	0.6	0.0	0.0	99.8	53.1	0.7	24.3%	0.3%
Y1RPC_2000	SS-2175	-Y1RPC-	20+00	5' LT	177693	2312603	3.2 - 4.7	GLV26-0568	A-3 (0)	NP	NP	70.2	27.9	1.9	0.0	1.5	96.5	57.7	2.4	15.6%	-
Y1RPC_2000	SS-2177	-Y1RPC-	20+00	5' LT	177693	2312603	13.2 - 14.7	GLV26-0569	-	-	-	-	-	-	-	-	-	-	-	62.4%	5.0%
Y1RPC_2000	SS-2178	-Y1RPC-	20+00	5' LT	177693	2312603	18.2 - 19.7	GLV26-0570	A-4 (0)	NP	NP	12.4	56.4	19.0	12.2	0.0	100.0	93.9	36.8	76.4%	7.4%
Y1RPC_2200	SS-2253	-Y1RPC-	22+00	15' RT	177571	2312761	8.0 - 9.5	CATLIN	-	-	-	-	-	-	-	-	-	-	-	478.0%	39.6%
Y1RPC_2200	SS-2254	-Y1RPC-	22+00	15' RT	177571	2312761	13.0 - 14.5	CATLIN	A-3 (0)	NP	NP	80.9	15.8	1.1	2.2	1.6	98.4	57.0	4.0	28.0%	0.4%
Y1RPC_2200	SS-2255	-Y1RPC-	22+00	15' RT	177571	2312761	18.0 - 19.5	CATLIN	A-2-4 (0)	NP	NP	36.4	50.9	5.5	7.2	0.0	99.8	84.0	15.0	20.0%	-
Y1RPC_2400	SS-2257	-Y1RPC-	24+05	12' RT	177435	2312911	3.0 - 4.5	CATLIN	-	-	-	2.1	1.5	60.5	35.9	0.0	99.9	98.0	97.0	153.0%	15.2%
Y1RPC_2400	SS-2258	-Y1RPC-	24+05	12' RT	177435	2312911	8.0 - 9.5	CATLIN	A-1-b (0)	NP	NP	88.3	8.6	1.9	1.2	0.0	100.0	45.0	4.0	24.0%	0.9%
Y1RPC_2400	SS-2259	-Y1RPC-	24+05	12' RT	177435	2312911	18.0 - 19.5	CATLIN	A-2-4 (0)	18	2	15.0	54.9	13.9	16.2	0.0	100.0	96.0	35.0	21.0%	-
Y1RPC_2600	SS-2263	-Y1RPC-	26+00	15' RT	177283	2313031	3.3 - 4.8	CATLIN	A-7-5 (19)	66	20	9.7	14.9	43.6	31.8	0.6	99.3	94.0	75.0	172.0%	19.2%
Y1RPC_2600	SS-2264	-Y1RPC-	26+00	15' RT	177283	2313031	8.3 - 9.8	CATLIN	A-3 (0)	NP	NP	76.0	21.7	1.3	1.0	2.7	97.2	71.0	3.0	26.0%	0.6%
Y1RPC_2600	SS-2265	-Y1RPC-	26+00	15' RT	177283	2313031	13.3 - 14.8	CATLIN	-	-	-	-	-	-	-	-	-	-	-	22.0%	0.1%
Y1RPC_2600	SS-2266	-Y1RPC-	26+00	15' RT	177283	2313031	18.3 - 19.8	CATLIN	A-2-4 (0)	16	2	29.7	41.8	14.4	14.1	0.0	100.0	93.0	32.0	19.0%	-
Y1RPC_2800	SS-2183	-Y1RPC-	28+00	CL	177136	2313168	8.3 - 9.8	GLV26-0571	A-3 (0)	NP	NP	77.9	19.7	1.4	1.0	0.0	99.7	57.9	3.3	19.2%	-
Y1RPC_2800	SS-2184	-Y1RPC-	28+00	CL	177136	2313168	18.3 - 19.8	GLV26-0572	A-1-b (0)	NP	NP	85.3	12.3	1.4	1.0	0.0	99.7	42.0	2.8	26.8%	0.9%
Y1RPC_2800	SS-2185	-Y1RPC-	28+00	CL	177136	2313168	23.3 - 24.8	GLV26-0573	A-3 (0)	NP	NP	71.9	22.9	3.2	2.0	0.0	99.8	58.1	6.5	31.1%	1.9%
Y1RPC_3000	SS-2028	-Y1RPC-	30+00	15' LT	177013	2313324	23.8 - 25.3	GVL26-0135	A-3 (0)	NP	NP	65.8	31.1	0.0	3.1	0.3	98.9	62.4	3.6	22.3%	22.9%
Y1RPC_3200	SS-2031	-Y1RPC-	32+00	10' LT	176916	2313494	0.0 - 1.5	GVL26-0136	-	-	-	-	-	-	-	-	-	-	-	170.0%	25.0%
Y1RPC_3200	SS-2032	-Y1RPC-	32+00	10' LT	176916	2313494	13.3 - 14.8	GVL26-0137	-	NP	NP	-	-	-	-	-	-	-	-	278.8%	28.2%
Y1RPC_3200	SS-2035	-Y1RPC-	32+00	10' LT	176916	2313494	28.3 - 29.8	GVL26-0138	A-1-b (0)	NP	NP	49.7	23.3	1.1	25.9	33.3	51.5	30.7	16.3	10.5%	-
Y1RPC_3400	SS-2036	-Y1RPC-	34+00	10' LT	176870	2313686	0.0 - 1.5	GVL26-0139	A-8 (0)	-	-	-	-	-	-	-	-	-	-	318.1%	70.2%
Y1RPC_3400	SS-2037	-Y1RPC-	34+00	10' LT	176870	2313686	4.3 - 5.8	GVL26-0140	A-4 (0)	NP	NP	31.7	7.4	30.9	30.0	0.0	100.0	73.9	61.6	366.5%	44.6%
Y1RPC_3400	SS-2038	-Y1RPC-	34+00	10' LT	176870	2313686	9.3 - 10.8	GVL26-0141	A-8 (0)	-	-	-	-	-	-	-	-	-	-	1065.2%	83.6%
Y1RPC_3400	SS-2039	-Y1RPC-	34+00	10' LT	176870	2313686	19.3 - 20.8	GVL26-0142	A-4 (1)	24	5	15.7	29.4	24.3	30.6	0.0	100.0	93.6	58.8	33.4%	2.8%
Y1RPC_3400	SS-2040	-Y1RPC-	34+00	10' LT	176870	2313686	24.3 - 25.8	GVL26-0143	A-1-b (0)	NP	NP	72.2	17.0	5.8	5.0	0.1	96.7	43.6	11.6	18.4%	0.7%
Y1RPC_3600	SS-2042	-Y1RPC-	36+00	10' LT	176873	2313882	0.0 - 1.5	GVL26-0144	-	-	-	-	-	-	-	-	-	-	-	146.2%	27.9%
Y1RPC_3600	SS-2043	-Y1RPC-	36+00	10' LT	176873	2313882	9.0 - 10.5	GVL26-0145	A-8 (0)	-	-	-	-	-	-	-	-	-	-	810.5%	79.8%
Y1RPC_3600	SS-2045	-Y1RPC-	36+00	10' LT	176873	2313882	24.0 - 25.5	GVL26-0146	A-3 (0)	NP	NP	53.2	43.7	0.1	3.0	0.1	99.9	88.3	4.2	32.3%	0.4%
Y1RPC_3800	SS-2154	-Y1RPC-	38+20	10' LT	176935	2314090	3.2 - 4.7	GLV26-0533	A-3 (0)	NP	NP	76.4	20.8	2.8	0.0	0.0	99.7	66.1	3.7	17.6%	-
Y1RPC_3800	SS-2155	-Y1RPC-	38+20	10' LT	176935	2314090	8.2 - 9.7	GLV26-0534	A-1-b (0)	NP	NP	91.8	7.7	0.5	0.0	0.0	99.7	37.9	0.8	17.6%	0.3%
Y1RPC_3800	SS-2156	-Y1RPC-	38+20	10' LT	176935	2314090	13.2 - 14.7	GLV26-0535	A-2-4 (0)	NP	NP	65.8	25.3	6.9	2.0	0.8	98.9	77.2	10.8	41.3%	2.8%
Y1RPC_3800	SS-2157	-Y1RPC-	38+20	10' LT	176935	2314090	18.2 - 19.7	GLV26-0536	A-4 (0)	NP	NP	17.2	50.6	18.0	14.2	0.2	99.7	95.8	39.6	74.1%	7.2%
Y1RPC_3800	SS-2158	-Y1RPC-	38+20	10' LT	176935	2314090	23.2 - 24.7	GLV26-0537	A-2-4 (0)	NP	NP	59.8	16.5	15.5	8.2	0.0	98.0	63.6	24.6	170.5%	21.2%
Y1RPC_4400	SS-2047	-Y1RPC-	44+00	20' LT	177341	2314471	0.0 - 1.5	GVL26-0147	A-3 (0)	NP	NP	73.0	22.3	1.7	3.0	0.3	98.5	57.1	6.2	29.0%	0.9%
Y1RPC_4400	SS-2048	-Y1RPC-	44+00	20' LT	177341	2314471	4.0 - 5.5	GVL26-0148	A-3 (0)	NP	NP	72.5	26.0	0.5	1.0	0.5	98.2	66.4	2.0	19.3%	0.1%
Y1RPC_4400	SS-2049	-Y1RPC-	44+00	20' LT	177341	2314471	9.0 - 10.5	GVL26-0149	A-3 (0)	NP	NP	40.9	57.0	0.1	2.0	0.4	99.5	90.8	2.5	51.0%	1.4%
Y1RPC_4400	SS-2050	-Y1RPC-	44+00	20' LT	177341	2314471	14.0 - 15.5	GVL26-0150	A-1-b (0)	NP	NP	61.0	11.8	15.2	12.0	0.0	83.9	42.9	23.7	652.8%	60.6%
Y1RPC_4400	SS-2051	-Y1RPC-	44+00	20' LT	177341	2314471	24.0 - 25.5	GVL26-0151	A-3 (0)	NP	NP	74.1	24.9	0.0	1.0	0.6	95.8	52.4	2.7	16.6%	0.2%
Y1RPC_4500	SS-2146	-Y1RPC-	45+00	10' RT	177419	2314540	9.3 - 10.8	GLV26-0538	A-3 (0)	NP	NP	65.8	31.5	2.7	0.0	0.6	99.0	68.7	3.6	17.4%	-
Y1RPC_4500	SS-2149	-Y1RPC-	45+00	10' RT	177419	2314540	24.3 - 25.8	GLV26-0539	-	-	-	-	-	-	-	-	-	-	-	99.9%	3.2%
Y1RPC_4500	SS-2150	-Y1RPC-	45+00	10' RT	177419	2314540	29.3 - 30.8	GLV26-0540	-	-	-	-	-	-	-	-	-	-	-	23.3%	3.5%

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
Y1RPC_4500	SS-2152	-Y1RPC-	45+00	10' RT	177419	2314540	39.3 - 40.8	GLV26-0541	A-3 (0)	NP	NP	43.4	54.8	1.8	0.0	0.0	99.5	74.2	2.8	21.7%	0.1%
Y1RPC_4900	SS-2190	-Y1RPC-	49+00	5' RT	177804	2314651	18.3 - 19.8	GLV26-0574	A-3 (0)	NP	NP	72.5	24.6	1.9	1.0	0.0	99.1	64.8	3.8	26.5%	0.8%
Y1RPC_4900	SS-2191	-Y1RPC-	49+00	5' RT	177804	2314651	23.3 - 24.8	GLV26-0575	A-2-4 (0)	NP	NP	60.7	26.5	6.8	6.0	0.0	99.9	73.8	14.5	26.8%	1.0%
Y1RPC_5100	SS-2194	-Y1RPC-	51+00	5' RT	178002	2314681	3.2 - 4.7	GLV26-0576	A-1-b (0)	NP	NP	75.7	18.9	4.4	1.0	18.2	75.7	31.5	5.0	12.0%	-
Y1RPC_5100	SS-2196	-Y1RPC-	51+00	5' RT	178002	2314681	13.2 - 14.7	GLV26-0577	-	-	-	-	-	-	-	-	-	-	-	62.7%	5.3%
Y1RPC_5100	SS-2197	-Y1RPC-	51+00	5' RT	178002	2314681	18.2 - 19.7	GLV26-0578	A-2-4 (0)	NP	NP	43.8	36.8	11.2	8.2	0.0	99.8	78.1	21.9	98.8%	10.4%
Y1RPC_5100	SS-2198	-Y1RPC-	51+00	5' RT	178002	2314681	23.2 - 24.7	GLV26-0579	-	-	-	-	-	-	-	-	-	-	-	73.2%	5.5%
Y1RPC_5300	SS-2200	-Y1RPC-	53+00	5' RT	178200	2314711	3.2 - 4.7	GLV26-0580	A-1-b (0)	NP	NP	69.4	28.7	1.9	0.0	0.7	97.1	50.3	2.6	17.3%	-
Y1RPC_5300	SS-2203	-Y1RPC-	53+00	5' RT	178200	2314711	18.2 - 19.7	GLV26-0581	A-2-4 (0)	NP	NP	30.2	57.1	6.7	6.0	0.0	99.7	86.5	14.5	67.5%	6.8%
Y2LPA_1475	SS-2	-Y2LPA-	14+75	CL	174400	2318890	3.5 - 5.0	CATLIN	A-2-4 (0)	NP	NP	22.4	69.9	4.3	3.4	0.0	99.9	93.0	13.0	25.0%	-
Y2LPA_2000	SS-6	-Y2LPA-	20+00	20' RT	174244	2318422	0.0 - 1.5	CATLIN	A-3 (0)	NP	NP	56.7	37.5	3.0	2.8	3.4	93.9	69.0	7.0	6.0%	-
Y2LPA_2110	SS-12	-Y2LPA-	21+10	20' LT	174248	2318306	3.5 - 5.0	CATLIN	A-1-b (0)	NP	NP	77.6	20.0	0.7	1.7	0.0	100.0	45.0	3.0	12.0%	-
Y2LPA_2300	SS-17	-Y2LPA-	23+00	30' RT	174425	2318243	3.5 - 5.0	CATLIN	A-3 (0)	NP	NP	62.4	31.2	3.7	2.7	0.0	100.0	62.0	8.0	10.0%	-
Y2LPA_2900	SS-25	-Y2LPA-	29+00	30' RT	175007	2318186	18.5 - 20.0	CATLIN	A-3 (0)	NP	NP	36.1	58.1	1.2	4.6	0.2	98.0	90.0	6.0	24.0%	-
Y2LPA_2900	SS-28	-Y2LPA-	29+00	30' RT	175007	2318186	33.5 - 35.0	CATLIN	A-4 (0)	21	3	25.6	35.2	22.1	17.1	0.0	99.8	89.0	41.0	24.0%	-
Y2LPA_3100	SS-34	-Y2LPA-	31+00	25' RT	175109	2318303	8.5 - 10.0	CATLIN	-	-	-	-	-	-	-	-	-	-	-	107.0%	5.9%
Y2LPA_3100	SS-35	-Y2LPA-	31+00	25' RT	175109	2318303	13.5 - 15.0	CATLIN	-	-	-	-	-	-	-	-	-	-	-	312.0%	48.7%
Y2LPA_3100	SS-38	-Y2LPA-	31+00	25' RT	175109	2318303	28.5 - 30.0	CATLIN	A-6 (2)	29	11	26.7	29.3	28.7	15.3	0.3	97.5	86.0	45.0	23.0%	-
Y2LPA_3100	SS-43	-Y2LPA-	31+00	25' RT	175109	2318303	53.5 - 55.0	CATLIN	A-4 (4)	30	9	0.5	46.5	39.8	13.2	0.0	100.0	100.0	65.0	23.0%	-
Y2LPA_3300	SS-48	-Y2LPA-	33+00	15' LT	175042	2318476	3.5 - 5.0	CATLIN	A-2-4 (0)	NP	NP	24.6	54.8	12.9	7.7	0.0	100.0	91.0	24.0	15.0%	-
Y2LPA_3300	SS-54	-Y2LPA-	33+00	15' LT	175042	2318476	33.5 - 35.0	CATLIN	A-6 (2)	31	14	24.0	36.1	22.6	17.3	0.0	99.6	88.0	42.0	21.0%	-
Y2LPA_3300	SS-59	-Y2LPA-	33+00	15' LT	175042	2318476	58.5 - 60.0	CATLIN	A-2-4 (0)	NP	NP	3.3	75.3	12.0	9.4	0.0	99.9	98.0	24.0	28.0%	-
Y2LPA_EB2-C	SS-94	-Y2LPA-	35+01	22' RT	174850	2318448	7.8 - 9.3	CATLIN	A-4 (1)	21	9	13.0	43.2	23.6	20.2	0.0	100.0	98.0	47.0	18.0%	-
Y2LPA_EB2-C	SS-99	-Y2LPA-	35+01	22' RT	174850	2318448	32.8 - 34.3	CATLIN	A-1-b (0)	NP	NP	73.3	23.3	3.4	0.0	0.0	99.8	49.0	4.0	17.0%	-
Y2LPA_EB2-C	SS-101	-Y2LPA-	35+01	22' RT	174850	2318448	42.8 - 44.3	CATLIN	A-4 (0)	26	6	28.2	37.4	20.5	13.9	0.7	97.6	84.0	36.0	23.0%	-
Y2LPA_EB2-C	SS-104	-Y2LPA-	35+01	22' RT	174850	2318448	57.8 - 59.3	CATLIN	A-4 (0)	22	2	4.7	58.8	17.2	19.3	3.6	95.7	94.0	38.0	25.0%	-
Y2LPA_EB2-C	SS-107	-Y2LPA-	35+01	22' RT	174850	2318448	72.8 - 74.3	CATLIN	A-6 (5)	31	12	3.3	47.4	22.7	26.6	0.5	99.3	98.0	59.0	26.0%	-
Y2LPA_EB2-C	SS-111	-Y2LPA-	35+01	22' RT	174850	2318448	92.8 - 94.3	CATLIN	A-1-b (0)	NP	NP	53.0	23.4	21.0	2.6	23.7	59.2	40.0	15.0	15.0%	-
Y2LPC_2_B1-C	SS-71A	-Y2LPC_2-	13+42	12' RT	174684	2317684	18.0 - 19.5	26-1986	-	NP	NP	-	-	-	-	-	-	-	-	140.7%	-
Y2LPC_2_B1-C	SS-76A	-Y2LPC_2-	13+42	12' RT	174684	2317684	43.0 - 44.5	26-1987	A-2-4 (0)	NP	NP	2.5	72.6	12.5	12.4	6.4	91.7	90.6	27.1	25.6%	-
Y2LPC_2_B1-C	SS-87A	-Y2LPC_2-	13+42	12' RT	174684	2317684	113.0 - 114.5	26-1988	A-2-4 (0)	NP	NP	2.1	83.3	0.2	14.4	0.0	100.0	99.8	17.7	22.3%	-
Y2LPC_2_B1-C	SS-91A	-Y2LPC_2-	13+42	12' RT	174684	2317684	138.0 - 139.5	26-1989	A-2-4 (0)	NP	NP	2.1	83.0	4.5	10.4	0.0	100.0	99.7	18.6	23.2%	-
Y2LPC_2_B2-C	SS-2573	-Y2LPC_2-	15+54	4' RT	174489	2317653	7.9 - 9.4	26-1966	A-3 (0)	NP	NP	42.2	51.5	1.3	5.0	0.6	96.0	77.9	6.6	19.9%	1.1%
Y2LPC_2_B2-C	SS-2577	-Y2LPC_2-	15+54	4' RT	174489	2317653	27.9 - 29.4	26-1967	A-2-4 (0)	NP	NP	7.0	56.5	12.5	24.0	22.9	74.7	71.6	30.2	26.6%	-
Y2LPC_2_B2-C	SS-2580	-Y2LPC_2-	15+54	4' RT	174489	2317653	42.8 - 44.3	26-1968	A-6 (4)	29	11	7.3	39.6	22.1	31.0	0.0	99.8	98.5	58.6	18.9%	-
Y2LPC_2_B2-C	SS-2592	-Y2LPC_2-	15+54	4' RT	174489	2317653	102.8 - 104.3	26-1969	A-2-4 (0)	NP	NP	2.2	80.8	4.2	12.8	0.0	99.6	99.3	19.4	26.8%	-
Y2LPC_2_B2-C	SS-2597	-Y2LPC_2-	15+54	4' RT	174489	2317653	127.8 - 129.3	26-1970	A-2-4 (0)	NP	NP	1.3	77.3	8.6	12.8	0.0	99.5	98.8	26.6	24.0%	-
Y2LPC_2_B3-C	SS-2600	-Y2LPC_2-	17+48	2' LT	174395	2317491	2.8 - 4.3	26-1971	A-3 (0)	NP	NP	44.0	44.3	5.4	6.3	21.1	65.6	51.7	8.9	19.7%	2.9%
Y2LPC_2_B3-C	SS-2602	-Y2LPC_2-	17+48	2' LT	174395	2317491	12.8 - 14.3	26-1972	-	-	-	-	-	-	-	-	-	-	-	463.9%	-
Y2LPC_2_B3-C	SS-2603	-Y2LPC_2-	17+48	2' LT	174395	2317491	17.8 - 19.3	26-1973	A-3 (0)	NP	NP	61.6	36.7	0.5	1.2	0.0	98.0	71.5	1.9	38.3%	3.6%
Y2LPC_2_B3-C	SS-2606	-Y2LPC_2-	17+48	2' LT	174395	2317491	32.5 - 34.0	26-1974	A-2-4 (0)	NP	NP	6.1	63.3	12.1	18.5	17.4	80.0	77.0	27.0	24.0%	-
Y2LPC_2_B3-C	SS-2607	-Y2LPC_2-	17+48	2' LT	174395	2317491	37.5 - 39.0	26-1975	A-6 (4)	31	11	1.7	49.7	21.8	26.8	0.0	99.9	99.2	59.7	24.3%	-
Y2LPC_2_B3-C	SS-2612	-Y2LPC_2-	17+48	2' LT	174395	2317491	62.5 - 64.0	26-1976	A-1-b (0)	NP	NP	41.9	43.3	9.5	5.3	24.9	63.6	47.4	10.5	11.0%	-
Y2LPC_2_B3-C	SS-2621	-Y2LPC_2-	17+48	2' LT	174395	2317491	107.5 - 109.0	26-1977	A-2-4 (0)	NP	NP	2.2	83.7	1.5	12.6	0.0	99.7	99.3	16.9	25.5%	-
Y2LPC_2_B3-C	SS-2622	-Y2LPC_2-	17+48	2' LT	174395	2317491	112.5 - 114.0	26-1978	A-2-4 (0)	NP	NP	1.2	81.6	0.5	16.7	0.0	99.6	99.4	21.2	26.6%	-
Y2LPC_2_B3-C	SS-2627	-Y2LPC_2-	17+48	2' LT	174395	2317491	137.5 - 139.0	26-1979	A-4 (0)	NP	NP	3.9	63.2	16.3	16.6	0.0	96.1	94.2	36.0	17.2%	-

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SPLIT SPOON SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
												Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
Y2LPC_2_B4-C	SS-2546	-Y2LPC_2-	19+51	1' LT	174456	2317300	13.0 - 14.5	26-1947	A-4 (0)	NP	NP	23.3	41.5	19.7	15.5	0.0	97.8	90.9	35.9	31.3%	6.3%
Y2LPC_2_B4-C	SS-2550	-Y2LPC_2-	19+51	1' LT	174456	2317300	33.0 - 34.5	26-1948	A-4 (0)	NP	NP	1.0	50.9	24.5	23.6	0.0	99.3	98.9	59.4	28.0%	-
Y2LPC_2_B4-C	SS-2564	-Y2LPC_2-	19+51	1' LT	174456	2317300	103.0 - 104.5	26-1949	A-2-4 (0)	NP	NP	1.7	74.2	8.5	15.6	0.0	99.5	99.2	27.8	27.3%	-
Y2LPC_2_B4-C	SS-2569	-Y2LPC_2-	19+51	1' LT	174456	2317300	128.0 - 129.5	26-1950	A-2-4 (0)	NP	NP	2.2	77.8	6.6	13.4	0.0	99.9	99.6	24.1	24.6%	-
Y2LPC_2_B5-C	SS-98A	-Y2LPC_2-	21+41	11' RT	174603	2317186	28.0 - 29.5	26-1990	A-2-4 (0)	NP	NP	1.5	74.8	9.1	14.6	2.9	96.6	95.8	30.0	28.3%	-
Y2LPC_2_B5-C	SS-10B	-Y2LPC_2-	21+41	11' RT	174603	2317186	93.0 - 94.5	26-1991	A-2-4 (0)	NP	NP	3.9	75.3	4.2	16.6	2.3	95.5	95.1	22.0	24.8%	-
Y2LPC_2_B5-C	SS-13B	-Y2LPC_2-	21+41	11' RT	174603	2317186	108.0 - 109.5	26-1992	A-2-4 (0)	NP	NP	1.6	86.2	1.8	10.4	0.0	100.0	99.5	15.7	25.8%	-
Y2LPC_2_B5-C	SS-17B	-Y2LPC_2-	21+41	11' RT	174603	2317186	128.0 - 129.5	26-1993	A-2-4 (0)	NP	NP	1.7	87.3	2.2	8.8	0.0	99.9	99.7	14.5	25.0%	-
Y2LPC_2_B6-C	SS-7146	-Y2LPC_2-	23+43	5' RT	174794	2317143	4.8 - 6.3	26-1951	-	NP	NP	-	-	-	-	-	-	-	-	21.6%	-
Y2LPC_2_B6-C	SS-7150	-Y2LPC_2-	23+43	5' RT	174794	2317143	23.0 - 24.5	26-1952	A-2-4 (0)	NP	NP	6.3	60.5	12.3	20.9	16.4	80.8	77.8	29.7	17.7%	-
Y2LPC_2_B6-C	SS-7164	-Y2LPC_2-	23+43	5' RT	174794	2317143	98.0 - 99.5	26-1953	A-2-4 (0)	NP	NP	2.9	79.4	2.9	14.8	0.0	99.9	99.2	20.7	25.9%	-
Y2LPC_2_B6-C	SS-7168	-Y2LPC_2-	23+43	5' RT	174794	2317143	118.0 - 119.5	26-1954	A-2-4 (0)	NP	NP	1.3	78.0	5.9	14.8	0.0	99.9	99.4	25.6	22.4%	-
Y2LPC_2_B6-C	SS-7171	-Y2LPC_2-	23+43	5' RT	174794	2317143	138.0 - 139.5	26-1955	A-2-4 (0)	NP	NP	1.5	72.7	11.0	14.8	0.0	99.8	99.2	31.4	23.8%	-
Y2LPC_2_EB2-C	SS-5087	-Y2LPC_2-	27+48	2' LT	175112	2317359	7.8 - 9.3	26-1822	A-3 (0)	NP	NP	75.1	21.8	0.4	2.7	0.0	97.9	70.7	3.4	14.5%	-
Y2LPC_2_EB2-C	SS-5091	-Y2LPC_2-	27+48	2' LT	175112	2317359	27.8 - 29.3	26-1823	A-2-4 (0)	NP	NP	14.1	53.7	17.5	14.7	0.0	96.2	90.3	32.1	23.3%	-
Y2LPC_2_EB2-C	SS-5095	-Y2LPC_2-	27+48	2' LT	175112	2317359	47.8 - 49.3	26-1824	A-4 (0)	NP	NP	8.1	35.9	27.0	29.0	0.0	99.6	97.6	61.2	2.5%	-
Y2LPC_2_EB2-C	SS-5099	-Y2LPC_2-	27+48	2' LT	175112	2317359	72.8 - 74.3	26-1825	A-2-4 (0)	NP	NP	53.4	29.1	14.8	2.7	0.0	82.2	64.0	15.5	17.1%	-
Y2LPC_2_EB2-C	SS-6002	-Y2LPC_2-	27+48	2' LT	175112	2317359	97.8 - 99.3	26-1826	A-2-4 (0)	NP	NP	5.1	81.4	5.8	7.7	0.0	99.9	99.1	16.2	21.5%	-
Y2LPC_2_EB2-C	SS-6005	-Y2LPC_2-	27+48	2' LT	175112	2317359	112.8 - 114.3	26-1827	A-2-4 (0)	NP	NP	2.0	84.2	6.1	7.7	0.0	100.0	99.7	17.1	25.0%	-
Y2LPC_2_EB2-C	SS-6008	-Y2LPC_2-	27+48	2' LT	175112	2317359	132.8 - 134.3	26-1828	A-2-4 (0)	NP	NP	2.7	85.3	6.0	6.0	0.0	100.0	99.6	14.5	18.5%	-
Y2LPC_2_2950	SS-63B	-Y2LPC_2-	29+50	CL	175139	2317557	23.0 - 24.5	26-1998	A-4 (0)	NP	NP	27.3	26.2	23.6	22.9	0.0	96.5	83.0	47.3	16.6%	-
Y2LPC_2_3350	SS-56B	-Y2LPC_2-	33+50	CL	174963	2317910	17.8 - 19.3	26-1999	A-2-6 (0)	30	12	35.9	32.8	6.2	25.1	0.0	95.4	77.5	31.4	28.2%	-
Y2LPCSPUR_2_2450	SS-50B	-Y2LPCSPUR_2-	24+49	37' RT	175060	2317879	22.2 - 23.7	26-2000	A-4 (0)	NP	NP	26.0	27.9	29.1	17.0	0.0	99.9	87.3	52.0	23.4%	-

Notes:
Per the AASHTO M-145 Standard: Highly organic soils (peat or muck) may be classified in an A-8 group. Classification of these materials is based on a visual inspection, and is not dependent on percentage passing the No. 200 sieve, liquid limit, or plasticity index.

For Highly organic soils, when enough non-organic material was available, sieve analysis, atterberg limits, and AASHTO classifications were performed.
It should be noted that the A-1-a/A-1-b classifications shown for highly organic soils may have had their sieve analysis skewed by large pieces of organic material.

Chad Hawkins
Certified Lab Technician Signature

147-02-0821
Certification Number

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SHELBY TUBE SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID (CONSOL.)	Lab ID	AASHTO Class.	L.L.	P.I.	% Moisture	Unit Weight (pcf)	Specific Gravity (CONSOL.)	% Organic (1)	% Organic (2)	% Organic (CONSOL.)
FLY_1300	ST-57	-FLY-	12+86	11' RT	177611	2313232	3.0 - 5.0	No Test	26-2145	A-8 (0)	NP	NP	411.8	78.0	-	52.8	-	-
FLY_1300	ST-58	-FLY-	12+86	11' RT	177611	2313232	8.0 - 10.0	No Test	26-2146	A-8 (0)	NP	NP	853.0	23.5	-	65.4	-	-
FLY_1300	ST-59	-FLY-	12+86	11' RT	177611	2313232	13.0 - 15.0	No Test	26-2147	A-3 (0)	NP	NP	52.0	100.0	-	1.9	-	-
FLY_1500	ST-45	-FLY-	14+97	CL	177461	2313086	12.0 - 14.0	No Test	26-1494	A-3 (0)	NP	NP	19.7	114.9	-	0.1	-	-
L_EB1-B	ST-50	-L-	121+77	36' RT	177459	2313656	5.0 - 7.0	No Test	26-1497	A-8 (0)	NP	NP	864.3	-	-	75.6	-	-
L_EB1-B	ST-51	-L-	121+77	36' RT	177459	2313656	8.0 - 10.0	Test	26-1498	A-8 (0)	NP	NP	638.0	62.8	1.669	74.1	-	55.8
L_EB1-B	ST-52	-L-	121+77	36' RT	177459	2313656	13.0 - 15.0	Test	26-1499	A-8 (0)	NP	NP	348.2	69.6	1.535	24.0	-	10.2
L_EB1-B	ST-53	-L-	121+77	36' RT	177459	2313656	18.0 - 20.0	Test	26-1500	A-8 (0)	NP	NP	155.5	74.9	1.351	20.1	-	18.7
LLT_12000	ST-43	-LLT-	120+00	CL	177589	2313528	1.0 - 3.0	No Test	26-1495	A-8 (0)	NP	NP	128.7	66.4	-	22.1	-	-
LLT_12000	ST-44	-LLT-	120+00	CL	177589	2313528	17.1 - 19.6	Test	26-1496	A-8 (0)	NP	NP	498.1	-	1.894	68.5	-	23.4
LRT_10900	ST-50A	-LRT-	109+04	31' LT	177868	2312520	4.0 - 6.0	No Test	26-2148	A-2-4 (0)	NP	NP	36.6	61.3	-	4.1	-	-
LRT_10900	ST-51A	-LRT-	109+04	31' LT	177868	2312520	9.0 - 11.0	No Test	26-2149	A-8 (0)	NP	NP	207.6	97.2	-	15.9	-	-
LRT_10900	ST-52A	-LRT-	109+04	31' LT	177868	2312520	14.0 - 16.0	No Test	26-2150	A-1-b (0)	NP	NP	22.1	69.8	-	1.9	-	-
LRT_11100	ST-53A	-LRT-	111+03	20' LT	177836	2312719	5.0 - 7.0	No Test	26-2151	A-2-4 (0)	NP	NP	14.5	-	-	1.2	-	-
LRT_11100	ST-54	-LRT-	111+03	20' LT	177836	2312719	10.0 - 12.0	No Test	26-2152	A-8 (0)	NP	NP	321.3	66.5	-	25.3	-	-
LRT_11100	ST-55	-LRT-	111+03	20' LT	177836	2312719	15.0 - 17.0	No Test	26-2153	A-1-b (0)	NP	NP	12.0	162.5	-	0.1	-	-
Y1RPA_1950	ST-10	-Y1RPA-	19+50	90' RT	176993	2314672	4.0 - 6.0	No Test	26-0131	A-1-b (0)	NP	NP	17.0	113.8	-	0.6	0.2	-
Y1RPA_1950	ST-11	-Y1RPA-	19+50	90' RT	176993	2314672	9.0 - 11.0	No Test	26-0132	A-1-a (0)	NP	NP	713.6	61.1	-	83.9	-	-
Y1RPA_2150	ST-12	-Y1RPA-	21+50	85' RT	177186	2314686	7.0 - 9.0	No Test	26-0133	A-1-a (0)	NP	NP	434.8	72.9	-	58.2	12.5	-
Y1RPA_2150	ST-13	-Y1RPA-	21+50	85' RT	177186	2314686	12.0 - 14.0	No Test	26-0134	A-1-a (0)	NP	NP	787.8	65.6	-	86.8	-	-
Y1RPA_2150	ST-14	-Y1RPA-	21+50	85' RT	177186	2314686	17.0 - 19.0	Test	26-0135	A-1-a (0)	NP	NP	627.1	60.9	1.856	60.6	-	51.6
Y1RPA_2450	ST-15	-Y1RPA-	24+52	65' RT	177488	2314702	18.0 - 20.0	No Test	26-0136	A-1-a (0)	NP	NP	861.5	64.8	-	87.9	66.0	-
Y1RPA_2550	ST-26	-Y1RPA-	25+60	60' RT	177596	2314710	4.0 - 6.0	No Test	26-0757	A-3 (0)	NP	NP	18.2	145.9	-	0.1	-	-
Y1RPA_2550	ST-27	-Y1RPA-	25+60	60' RT	177596	2314710	8.0 - 10.0	No Test	26-0758	A-3 (0)	NP	NP	16.0	163.8	-	0.1	-	-
Y1RPA_2550	ST-28	-Y1RPA-	25+60	60' RT	177596	2314710	14.0 - 16.0	Test	26-0759	A-4 (0)	NP	NP	154.1	91.4	1.763	34.0	-	15.2
Y1RPA_2550	ST-29	-Y1RPA-	25+60	60' RT	177596	2314710	20.0 - 22.0	No Test	26-0760	A-1-b (0)	NP	NP	275.1	52.1	-	21.6	-	-
Y1RPB_2550	ST-01	-Y1RPB-	25+50	66' LT	177854	2313484	2.1 - 3.9	No Test	26-0016	-	-	-	591.4	62.0	-	57.8	-	-
Y1RPB_2550	ST-02	-Y1RPB-	25+50	66' LT	177854	2313484	7.3 - 9.1	No Test	26-0017	-	-	-	627.8	61.7	-	74.1	70.7	-
Y1RPB_2550	ST-03	-Y1RPB-	25+50	66' LT	177854	2313484	12.3 - 14.3	No Test	26-0018	-	-	-	523.4	-	-	37.6	45.4	-
Y1RPB_2750	ST-04	-Y1RPB-	27+52	61' LT	177856	2313672	0.0 - 1.6	No Test	26-0019	A-1-b (0)	NP	NP	209.7	74.0	-	21.2	31.2	-
Y1RPB_2750	ST-05	-Y1RPB-	27+52	61' LT	177856	2313672	2.0 - 3.7	Test	26-0020	A-2-4 (0)	NP	NP	292.5	69.4	2.344	45.1	34.3	19.5
Y1RPB_2750	ST-06	-Y1RPB-	27+52	61' LT	177856	2313672	7.0 - 7.6	No Test	26-0021	-	NP	NP	597.0	-	-	73.3	-	-
Y1RPB_2950	ST-07	-Y1RPB-	29+50	30' LT	177872	2313862	0.2 - 1.9	No Test	26-0022	A-1-b (0)	NP	NP	151.6	72.7	-	5.1	13.9	-
Y1RPB_2950	ST-08	-Y1RPB-	29+50	30' LT	177872	2313862	7.0 - 9.0	No Test	26-0023	A-1-a (0)	NP	NP	660.4	58.5	-	55.9	50.5	-
Y1RPB_2950	ST-09	-Y1RPB-	29+50	30' LT	177872	2313862	12.2 - 14.3	Test	26-0024	A-1-a (0)	NP	NP	349.4	64.4	1.703	32.8	45.7	-
Y1RPC_2200	ST-47	-Y1RPC-	22+00	15' RT	177571	2312761	1.0 - 3.0	Test	26-1501	A-8 (0)	NP	NP	153.5	69.3	2.021	5.3	-	2.5
Y1RPC_2200	ST-48	-Y1RPC-	22+00	15' RT	177571	2312761	6.0 - 8.0	Test	26-1502	A-8 (0)	NP	NP	372.5	-	1.949	78.6	-	48.5
Y1RPC_2600	ST-49	-Y1RPC-	26+00	15' RT	177283	2313031	13.0 - 15.0	No Test	26-1503	A-3 (0)	NP	NP	18.9	-	-	0.1	-	-
Y1RPC_3000	ST-23	-Y1RPC-	30+00	15' LT	177013	2313324	3.0 - 5.0	Test	26-0137	A-1-a (0)	NP	NP	184.2	72.5	1.579	29.9	-	15.6
Y1RPC_3000	ST-24	-Y1RPC-	30+00	15' LT	177013	2313324	8.0 - 10.0	Test	26-0138	A-1-a (0)	NP	NP	602.2	63.1	1.671	36.9	93.1	-
Y1RPC_3000	ST-25	-Y1RPC-	30+00	15' LT	177013	2313324	13.0 - 15.0	Test	26-0139	A-2-4 (0)	NP	NP	302.2	64.1	2.117	45.7	-	29.7

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - SHELBY TUBE SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID (CONSOL.)	Lab ID	AASHTO Class.	L.L.	P.I.	% Moisture	Unit Weight (pcf)	Specific Gravity (CONSOL.)	% Organic (1)	% Organic (2)	% Organic (CONSOL.)
Y1RPC_3200	ST-21	-Y1RPC-	32+00	10' LT	176916	2313494	3.0 - 5.0	Test	26-0140	A-1-a (0)	NP	NP	329.9	66.5	1.848	44.9	60.4	31.1
Y1RPC_3200	ST-22	-Y1RPC-	32+00	10' LT	176916	2313494	8.0 - 10.0	Test	26-0141	A-1-a (0)	NP	NP	580.6	62.8	1.669	70.3	70.6	68.1
Y1RPC_3400	ST-19	-Y1RPC-	34+00	10' LT	176870	2313686	10.0 - 12.0	Test	26-0142	A-1-a (0)	NP	NP	505.7	65.5	1.986	60.0	-	33.8
Y1RPC_3400	ST-20	-Y1RPC-	34+00	10' LT	176870	2313686	14.0 - 16.0	Test	26-0143	A-1-a (0)	NP	NP	329.6	68.4	2.179	74.3	46.3	26.5
Y1RPC_3600	ST-16	-Y1RPC-	36+00	10' LT	176873	2313882	4.0 - 6.0	No Test	26-0144	A-1-a (0)	NP	NP	791.5	65.8	-	46.3	-	-
Y1RPC_3600	ST-17	-Y1RPC-	36+00	10' LT	176873	2313882	14.0 - 16.0	Test	26-0145	A-1-a (0)	NP	NP	357.3	69.1	2.054	7.0	-	36.5
Y1RPC_3600	ST-18	-Y1RPC-	36+00	10' LT	176873	2313882	18.0 - 20.0	No Test	26-0146	A-2-4 (0)	NP	NP	23.6	117.7	-	0.7	-	-
Y1RPC_4000	ST-39	-Y1RPC-	40+00	10' LT	177027	2314242	3.0 - 5.0	Test	26-0769	A-4 (0)	NP	NP	205.5	95.1	2.342	18.4	-	22.8
Y1RPC_4000	ST-40	-Y1RPC-	40+00	10' LT	177027	2314242	8.0 - 10.0	Test	26-0770	A-1-b (0)	NP	NP	327.3	80.6	1.893	66.8	-	61.8
Y1RPC_4000	ST-41	-Y1RPC-	40+00	10' LT	177027	2314242	13.0 - 15.0	Test	26-0771	A-1-a (0)	NP	NP	568.0	78.0	1.534	69.9	-	50.2
Y1RPC_4000	ST-42	-Y1RPC-	40+00	10' LT	177027	2314242	18.0 - 20.0	Test	26-0772	A-2-4 (0)	NP	NP	46.7	97.3	2.081	4.1	-	6.2
Y1RPC_4100	ST-34	-Y1RPC-	41+00	5' LT	177088	2314319	3.0 - 5.0	No Test	26-0761	A-1-a (0)	NP	NP	301.5	79.1	-	51.9	-	-
Y1RPC_4100	ST-35	-Y1RPC-	41+00	5' LT	177088	2314319	8.0 - 10.0	No Test	26-0762	A-1-a (0)	NP	NP	456.3	64.4	-	77.8	-	-
Y1RPC_4100	ST-36	-Y1RPC-	41+00	5' LT	177088	2314319	13.0 - 15.0	Test	26-0763	A-1-a (0)	NP	NP	496.3	76.1	1.918	63.9	-	40.8
Y1RPC_4100	ST-37	-Y1RPC-	41+00	5' LT	177088	2314319	18.0 - 20.0	No Test	26-0764	A-1-a (0)	NP	NP	645.8	74.6	-	73.4	-	-
Y1RPC_4100	ST-38	-Y1RPC-	41+00	5' LT	177088	2314319	23.0 - 25.0	Test	26-0765	A-2-4 (0)	NP	NP	146.6	78.9	1.949	14.6	-	12.9
Y1RPC_4200	ST-30	-Y1RPC-	42+00	5' LT	177163	2314384	2.0 - 4.0	Test	26-0766	A-1-a (0)	NP	NP	426.8	-	2.581	63.1	-	25.9
Y1RPC_4200	ST-31	-Y1RPC-	42+00	5' LT	177163	2314384	13.0 - 15.0	No Test	26-0767	A-1-b (0)	NP	NP	397.0	79.6	-	31.5	-	-
Y1RPC_4200	ST-32	-Y1RPC-	42+00	5' LT	177163	2314384	18.0 - 20.0	No Test	26-0768	A-2-4 (0)	NP	NP	783.4	79.1	-	78.1	-	-

Notes:
Per the AASHTO M-145 Standard: Highly organic soils (peat or muck) may be classified in an A-8 group. Classification of these materials is based on a visual inspection, and is not dependent on percentage passing the No. 200 sieve, liquid limit, or plasticity index.

For Highly organic soils, when enough non-organic material was available, sieve analysis, atterberg limits, and AASHTO classifications were performed.
It should be noted that the A-1-a/A-1-b classifications shown for highly organic soils may have had their sieve analysis skewed by large pieces of organic material.

Chad Hawkins
Certified Lab Technician Signature

147-02-0821
Certification Number

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

LABORATORY TESTING SUMMARY - ROCK SAMPLES

Project Number: 50603.1.1
TIP Number: HB-0039
County: NEW HANOVER & BRUNSWICK
Description: REPLACE BRIDGE # 13 OVER CAPE FEAR RIVER ON US 421

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Northing	Easting	Depth Interval (feet)	Lab ID	Rock Type	Geologic Map Unit	Run RQD %	Length (inches)	Diameter (inches)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)
L_B4-A_CORE	RS-1	-L-	129+91	1' RT	176948	2314276	33.5 - 34.1	26-2013	Sandy Limestone	Kp	33%	4.19	1.970	119.621	724
L_B4-A_CORE	RS-2	-L-	129+91	1' RT	176948	2314276	34.6 - 35.2	26-2014	Sandy Limestone	Kp	33%	3.69	1.970	104.021	397
L_B8-B_CORE	RS-3	-L-	138+02	41' RT	176260	2314715	38.3 - 38.7	26-2015	Sandy Limestone	Kp	0%	4.20	1.940	119.371	679
L_B10-A_CORE	RS-4	-L-	141+93	88' LT	176079	2315080	39.4 - 40.0	26-2016	Sandy Limestone	Kp	14%	4.19	1.980	112.070	416
L_B12-A_CORE	RS-5	-L-	146+01	142' LT	175896	2315427	46.1 - 46.5	26-2017	Sandy Limestone	Kp	8%	4.15	2.000	124.800	1,248
L_B14-B_CORE	RS-6	-L-	150+09	15' RT	175580	2315714	46.6 - 47.0	26-2018	Sandy Limestone	Kp	10%	4.22	1.990	123.053	1,116
L_B20-B_CORE	RS-9	-L-	165+84	26' RT	175016	2317185	43.9 - 44.5	26-2021	Sandy Limestone	Kp	93%	4.2	1.990	119.309	552
L_B20-B_CORE	RS-10	-L-	165+84	26' RT	175016	2317185	55.4 - 56.0	26-2022	Sandy Limestone	Kp	84%	4.24	1.980	111.821	379
L_B20-A_CORE	RS-7	-L-	165+89	36' LT	175072	2317212	46.8 - 47.3	26-2019	Sandy Limestone	Kp	94%	4.19	1.960	118.435	1,115
L_B20-A_CORE	RS-8	-L-	165+89	36' LT	175072	2317212	57.2 - 57.8	26-2020	Sandy Limestone	Kp	86%	4.21	1.980	104.832	277
L_B21-A_CORE	RS-11	-L-	168+04	23' LT	174984	2317408	55.3 - 55.8	26-2023	Sandy Limestone	Kp	100%	4.27	1.990	110.198	475
L_B21-A_CORE	RS-12	-L-	168+04	23' LT	174984	2317408	70.3 - 70.8	26-2024	Sandy Limestone	Kp	56%	4.2	1.980	97.531	369
L_B23-A_CORE	RS-13	-L-	171+94	119' LT	174937	2317807	55.8 - 56.2	26-2025	Sandy Limestone	Kp	24%	4.24	1.970	112.819	826
L_B23-A_CORE	RS-14	-L-	171+94	119' LT	174937	2317807	60.4 - 61.0	26-2026	Sandy Limestone	Kp	14%	4.29	2.010	107.578	286
L_B24-A_CORE	RS-15	-L-	174+75	101' LT	174821	2318063	28.8 - 29.4	26-2027	Conglomerate	Tec	40%	4.07	1.980	159.682	8,054
L_B24-A_CORE	RS-16	-L-	174+75	101' LT	174821	2318063	71.1 - 72.0	26-2028	Sandy Limestone	Kp	66%	4.28	1.980	116.438	348
L_B24-A_CORE	RS-17	-L-	174+75	101' LT	174821	2318063	80.1 - 80.6	26-2029	Sandy Limestone	Kp	52%	4.21	1.980	109.387	470
L_B24-A_CORE	RS-18	-L-	174+75	101' LT	174821	2318063	87.6 - 88.0	26-2030	Calcareous Sandstone	Kp	36%	4.07	1.990	161.117	10,078

Chad Hawkins

Certified Lab Technician Signature

147-02-0821

Certification Number

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

REFERENCE: HB–0039

PROJECT: 50603

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX E
CONSOLIDATION REPORTS

CONTENTS

BORING ID	SAMPLE NO.	SHEETS
L_EB1–B	ST–51	234–256
L_EB1–B	ST–52	257–279
L_EB1–B	ST–53	280–302
LLT_12000	ST–44	303–325
Y1RPA_2150	ST–14	326–330
Y1RPA_2550	ST–28	331–335
Y1RPB_2750	ST–05	336–340
Y1RPB_2950	ST–09	341–345
Y1RPC_2200	ST–47	346–368
Y1RPC_2200	ST–48	369–391
Y1RPC_3000	ST–23	392–414
Y1RPC_3000	ST–24	415–437
Y1RPC_3000	ST–25	438–442
Y1RPC_3200	ST–21	443–465
Y1RPC_3200	ST–22	466–488
Y1RPC_3400	ST–19	489–511
Y1RPC_3400	ST–20	512–534
Y1RPC_3600	ST–17	535–539
Y1RPC_4000	ST–39	540–562
Y1RPC_4000	ST–40	563–585
Y1RPC_4000	ST–41	586–608
Y1RPC_4000	ST–42	609–613
Y1RPC_4100	ST–36	614–633
Y1RPC_4100	ST–38	634–658
Y1RPC_4200	ST–30	658–682

INFRASTRUCTURE
CONSULTING & ENGINEERING

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	8.0-10.0
Sample Number	ST-51	Boring Number	L_EB1-B
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment L		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0267	0.1145	0.9723	0.027	10.232	4	-	0.05010	-
2	500	0.1322	0.1146	0.8668	0.132	9.013	3.24	-	0.04916	-
3	1000	0.2741	0.1147	0.7249	0.274	7.374	4.84	-	0.02302	-
4	2000	0.4244	0.1149	0.5746	0.425	5.638	7.29	2.75	0.00960	0.005913
5	4000	0.533	0.1151	0.466	0.534	4.383	15.21	4.7	0.00303	0.002276
6	2000	0.5257	0.1149	0.4733	0.526	4.468	-	-	-	-
7	1000	0.5132	0.1147	0.4858	0.514	4.612	-	-	-	-
8	500	0.5021	0.1146	0.4969	0.503	4.740	-	-	-	-
9	1000	0.507	0.1147	0.492	0.508	4.684	2.89	-	0.01776	-
10	2000	0.5159	0.1149	0.4831	0.516	4.581	2.56	-	0.01933	-
11	4000	0.5424	0.1152	0.4566	0.543	4.275	4	-	0.01105	-
12	8000	0.6234	0.1158	0.3756	0.624	3.339	16	5	0.00187	0.00139
13	16000	0.7006	0.1166	0.2984	0.701	2.447	20.25	6.8	0.00093	0.00064
14	32000	0.7533	0.1178	0.2457	0.754	1.838	33.64	10	0.00038	0.00030
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/10/2026
Machine Apparatus: 2
Technician: KSB

Sampling Date: 4/6/2026
Sample Number: ST-51
Depth (ft): 8.0-10.0
Boring Number: L_EB1-B
Location: Alignment L
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.67
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.39

Parameters	Initial	Final
Height (in)	0.999	0.2457
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.213
Weight of Container (g)	60.35	60.73
Weight of Wet Soil + Container (g)	242.83	84.95
Weight of Dry Soil + Container (g)	86.6	71.32
Moisture Content (%)	595.16	128.71
Moist Weight + Ring Weight (g)	184.68	130.11
Dry Mass (g)	11.69	11.68
Water Content (calc from spec)	595.16	128.71
Dry Density (pcf)	9.03	36.70
Wet Density (pcf)	62.80	83.93
Volume of Solids (in^3)	0.43	0.43
Height of Solids (in)	0.09	0.09
Void Ratio	10.541	1.838

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Void Ratio vs. Effective Stress

L_EB1-B, ST-51, 8.0-10.0 ft

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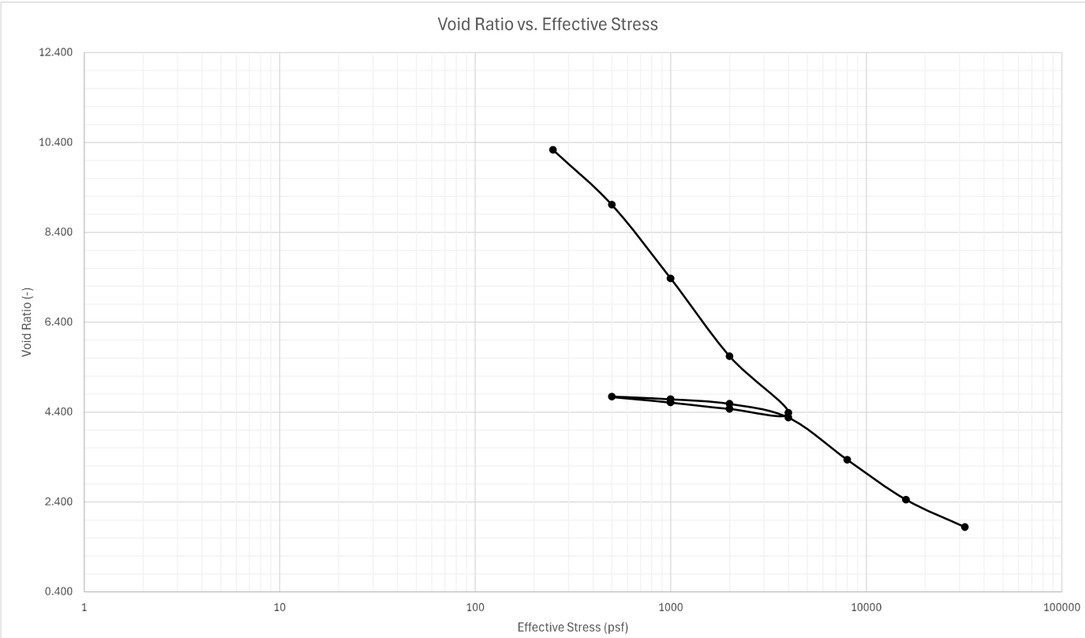

Percent Strain vs. Effective Stress

L_EB1-B, ST-51, 8.0-10.0 ft

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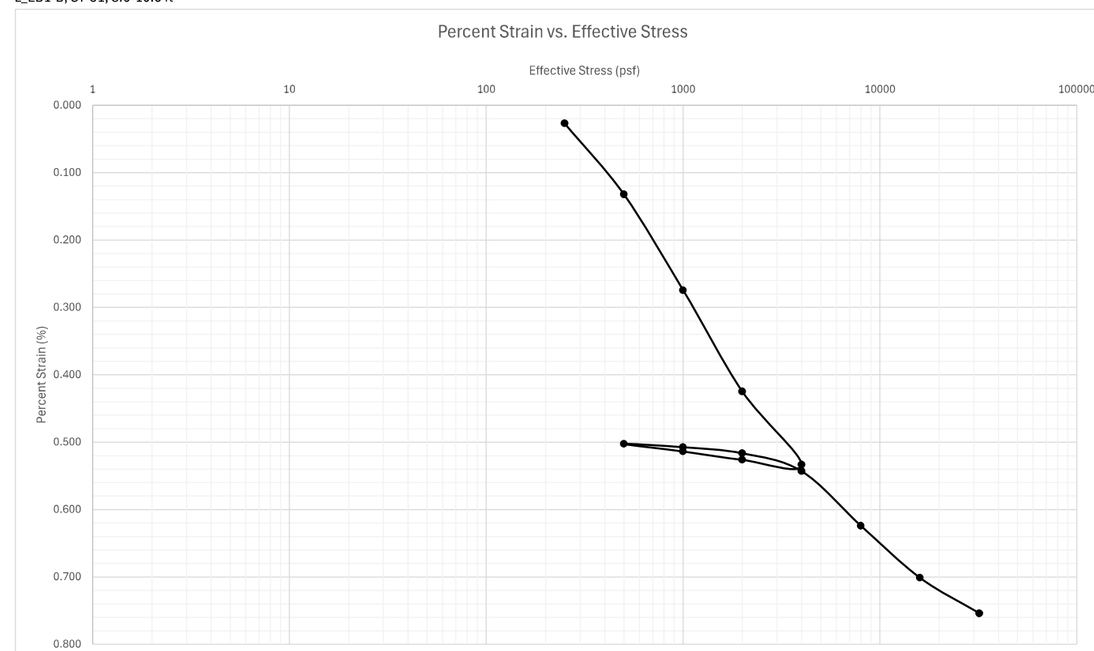

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.1104	0	0.999	0	10.541
1			15	0.25	0.5	250	0.113	0.0026	0.9964	0.26026	10.511
2			30	0.5	0.707106781	250	0.1155	0.0051	0.9939	0.510511	10.482
3		1		1	1	250	0.1184	0.008	0.991	0.800801	10.448
4		2		2	1.414213562	250	0.12	0.0096	0.9894	0.960961	10.430
5		4		4	2	250	0.1215	0.0111	0.9879	1.111111	10.412
6		8		8	2.828427125	250	0.1227	0.0123	0.9867	1.231231	10.399
7		17		17	4.123105626	250	0.124	0.0136	0.9854	1.361361	10.384
8		35		35	5.916079783	250	0.125	0.0146	0.9844	1.461461	10.372
9	1	27		87	9.327379053	250	0.1264	0.016	0.983	1.601602	10.356
10	2	36		156	12.489996	250	0.1276	0.0172	0.9818	1.721722	10.342
11	18	42		1122	33.49626845	250	0.1304	0.02	0.979	2.002002	10.310
12	27	10		1630	40.37325848	250	0.1315	0.0211	0.9779	2.112112	10.297
13	51	31		3091	55.5967625	250	0.1339	0.0235	0.9755	2.352352	10.269
14	115	47		6947	83.34866526	250	0.1371	0.0267	0.9723	2.672673	10.232
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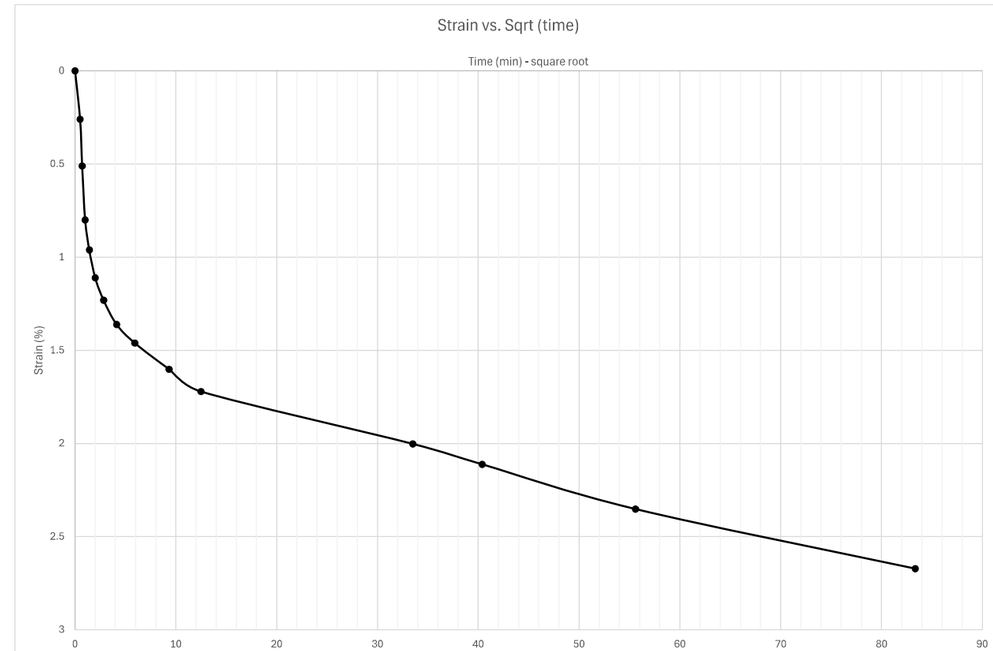
Sequence 1: 250 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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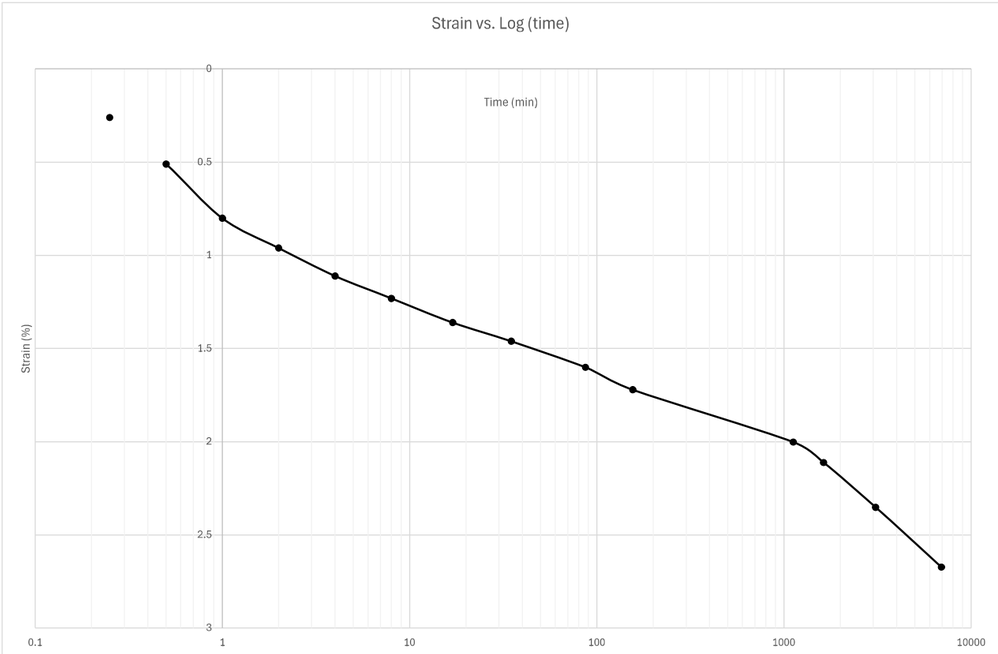
Sequence 1: 250 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1371	-0.0001	0.9724	-0.01001	10.233
1			6	0.1	0.32	500	0.1440	0.0068	0.9655	0.680681	10.154
2			15	0.25	0.50	500	0.1526	0.0154	0.9569	1.541542	10.054
3			30	0.5	0.71	500	0.1615	0.0243	0.9480	2.432432	9.951
4		1		1	1.00	500	0.1780	0.0408	0.9315	4.084084	9.761
5		2		2	1.41	500	0.1915	0.0543	0.9180	5.435435	9.605
6		4		4	2.00	500	0.1993	0.0621	0.9102	6.216216	9.515
7		8		8	2.83	500	0.2061	0.0689	0.9034	6.896897	9.436
8		15		15	3.87	500	0.2113	0.0741	0.8982	7.417417	9.376
9		30		30	5.48	500	0.2165	0.0793	0.8930	7.937938	9.316
10	1			60	7.75	500	0.2209	0.0837	0.8886	8.378378	9.265
11	1	55		115	10.72	500	0.2258	0.0886	0.8837	8.868869	9.209
12	4	30		270	16.43	500	0.2305	0.0933	0.8790	9.339339	9.154
13	7	27		447	21.14	500	0.2332	0.0960	0.8763	9.60961	9.123
14	24	23		1463	38.25	500	0.2389	0.1017	0.8706	10.18018	9.057
15	29	25		1765	42.01	500	0.2399	0.1027	0.8696	10.28028	9.046
16	31	30		1890	43.47	500	0.2404	0.1032	0.8691	10.33033	9.040
17	69	5		4145	64.38	500	0.2427	0.1055	0.8668	10.56056	9.013
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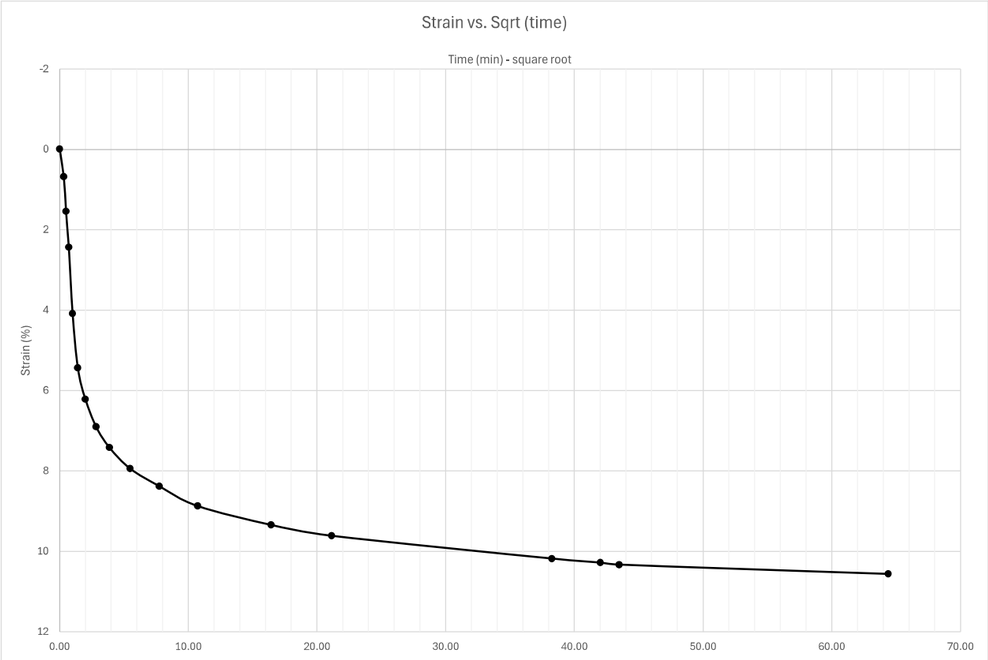
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

L_EB1-B, ST-51, 8.0-10.0 ft

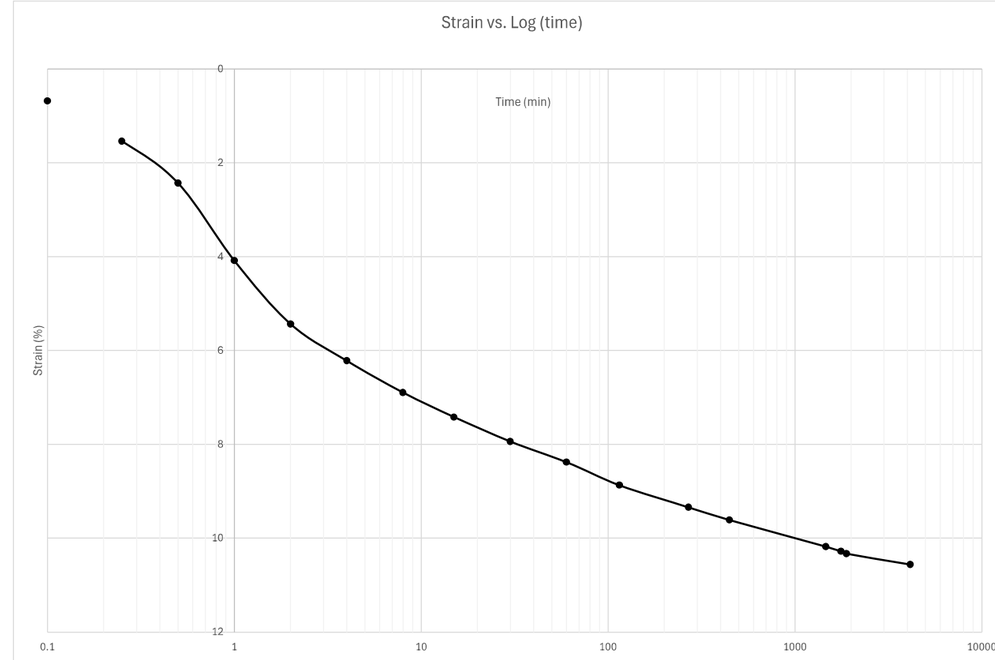
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.2427	-0.0001	0.8669	-0.01001	9.015
1			6	0.10	0.32	1000	0.2587	0.0159	0.8509	1.591592	8.830
2			15	0.25	0.50	1000	0.2672	0.0244	0.8424	2.442442	8.732
3			30	0.50	0.71	1000	0.2762	0.0334	0.8334	3.343343	8.628
4		1		1.00	1.00	1000	0.2885	0.0457	0.8211	4.574575	8.486
5		2		2.00	1.41	1000	0.3032	0.0604	0.8064	6.046046	8.316
6		4		4.00	2.00	1000	0.3194	0.0766	0.7902	7.667668	8.129
7		8		8.00	2.83	1000	0.338	0.0952	0.7716	9.52953	7.914
8		15		15.00	3.87	1000	0.344	0.1012	0.7656	10.13013	7.844
9		36		36.00	6.00	1000	0.354	0.1112	0.7556	11.13113	7.729
10	1	7		67.00	8.19	1000	0.3599	0.1171	0.7497	11.72172	7.661
11	2	13		133.00	11.53	1000	0.3659	0.1231	0.7437	12.32232	7.591
12	4	4		244.00	15.62	1000	0.3708	0.128	0.7388	12.81281	7.535
13	6	46		406.00	20.15	1000	0.3748	0.132	0.7348	13.21321	7.489
14	22	59		1379.00	37.13	1000	0.3842	0.1414	0.7254	14.15415	7.380
15	24	8		1448.00	38.05	1000	0.3847	0.1419	0.7249	14.2042	7.374
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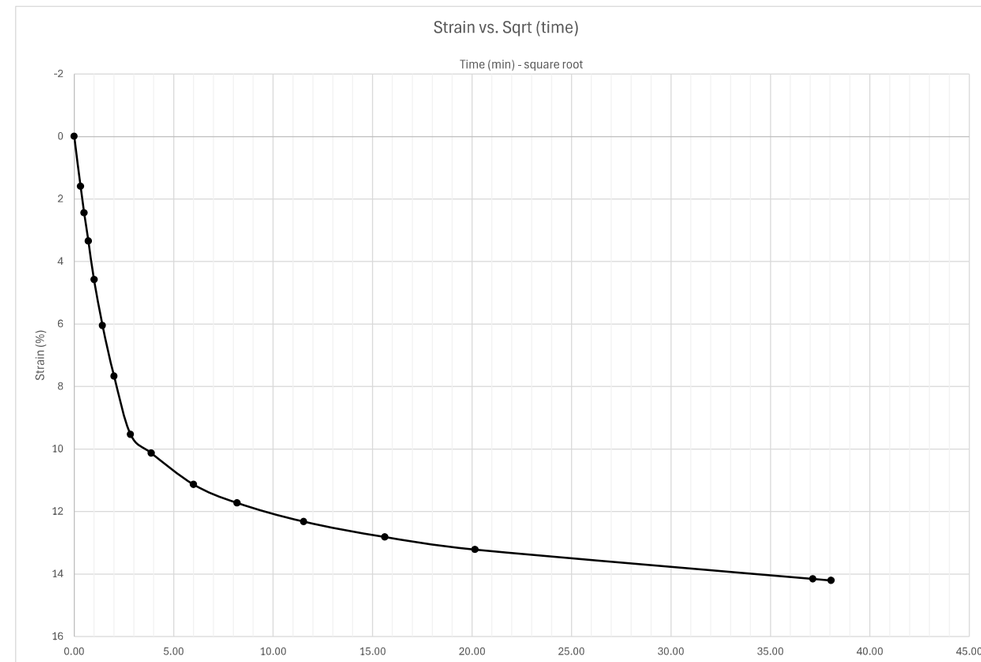
Sequence 3: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

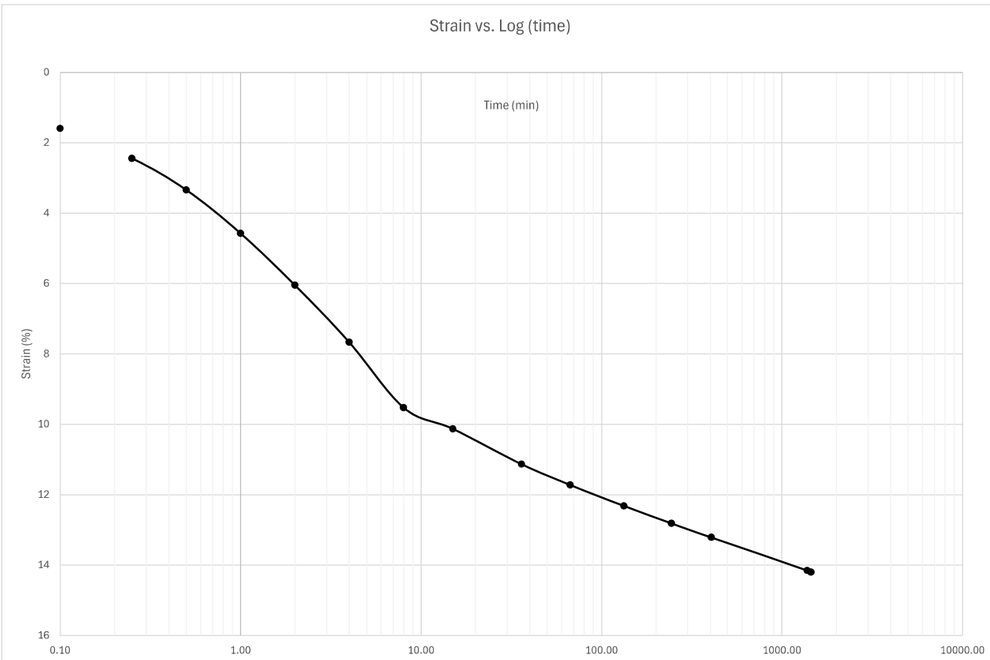


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3847	-0.0002	0.7251	-0.02002	7.377
1			6	0.10	0.32	2000	0.3985	0.0136	0.7113	1.361361	7.217
2			15	0.25	0.50	2000	0.4046	0.0197	0.7052	1.971972	7.147
3			30	0.50	0.71	2000	0.4117	0.0268	0.6981	2.682683	7.065
4		1		1.00	1.00	2000	0.4218	0.0369	0.688	3.693694	6.948
5		2		2.00	1.41	2000	0.4348	0.0499	0.675	4.994995	6.798
6		4		4.00	2.00	2000	0.4503	0.0654	0.6595	6.546547	6.619
7		8		8.00	2.83	2000	0.4662	0.0813	0.6436	8.138138	6.435
8		15		15.00	3.87	2000	0.4786	0.0937	0.6312	9.379379	6.292
9		30		30.00	5.48	2000	0.4895	0.1046	0.6203	10.47047	6.166
10	1	0		60.00	7.75	2000	0.4975	0.1126	0.6123	11.27127	6.073
11	1	58		118.00	10.86	2000	0.5041	0.1192	0.6057	11.93193	5.997
12	4	0		240.00	15.49	2000	0.5105	0.1256	0.5993	12.57257	5.923
13	6	33		393.00	19.82	2000	0.5147	0.1298	0.5951	12.99299	5.875
14	22	46		1366.00	36.96	2000	0.5238	0.1389	0.586	13.9039	5.770
15	40	11		2411.00	49.10	2000	0.5258	0.1409	0.584	14.1041	5.746
16	94	33		5673.00	75.32	2000	0.5348	0.1499	0.575	15.00501	5.643
17	97	46		5866.00	76.59	2000	0.5352	0.1503	0.5746	15.04505	5.638
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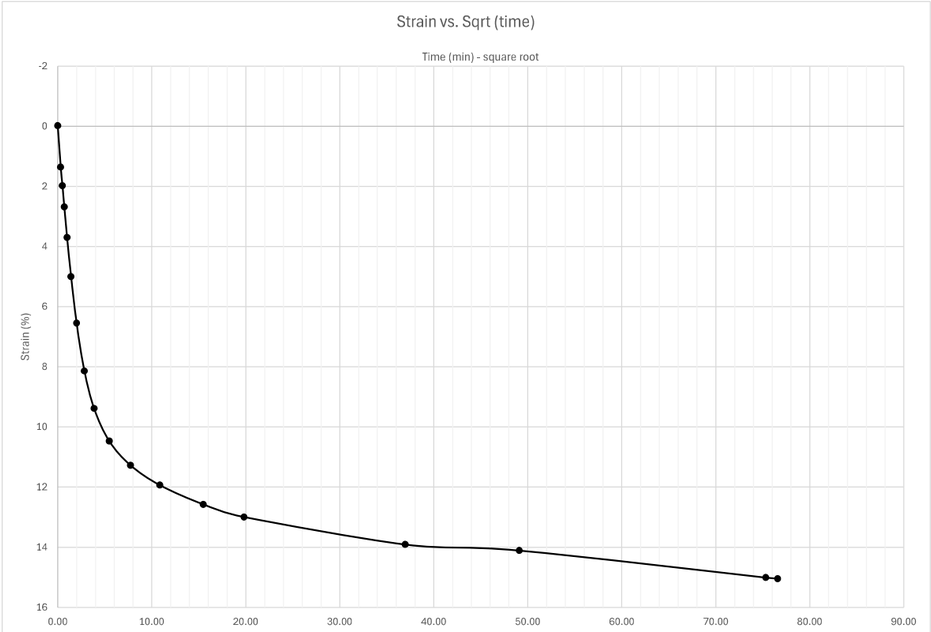
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

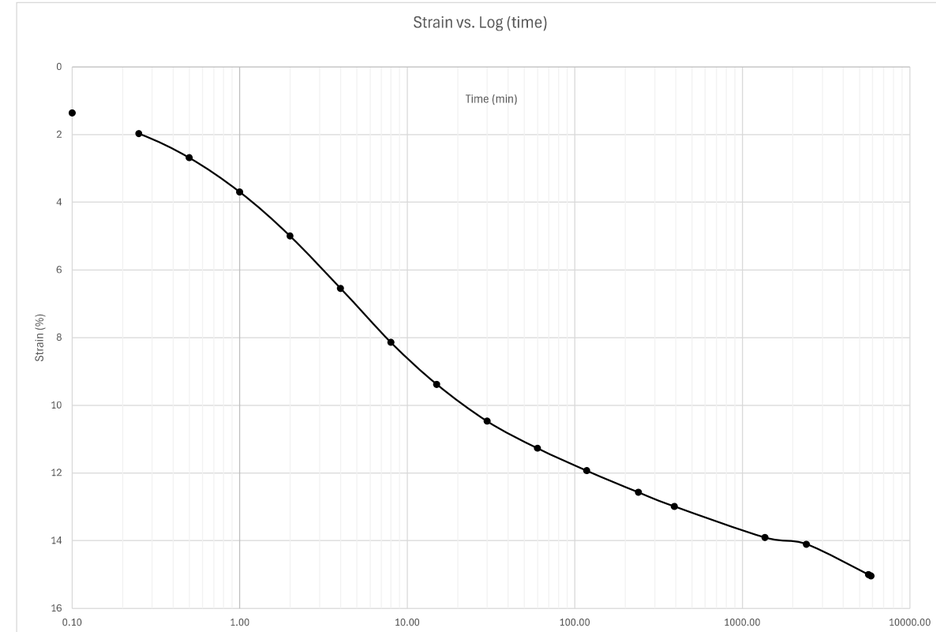
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.5352	-0.0002	0.5748	-0.02002	5.640
1			6	0.10	0.32	4000	0.54	0.0046	0.57	0.46046	5.585
2			15	0.25	0.50	4000	0.5436	0.0082	0.5664	0.820821	5.543
3			30	0.50	0.71	4000	0.547	0.0116	0.563	1.161161	5.504
4		1		1.00	1.00	4000	0.5536	0.0182	0.5564	1.821822	5.428
5		2		2.00	1.41	4000	0.5615	0.0261	0.5485	2.612613	5.336
6		4		4.00	2.00	4000	0.5717	0.0363	0.5383	3.633634	5.219
7		8		8.00	2.83	4000	0.5837	0.0483	0.5263	4.834835	5.080
8		15		15.00	3.87	4000	0.5956	0.0602	0.5144	6.026026	4.942
9		30		30.00	5.48	4000	0.6048	0.0694	0.5052	6.946947	4.836
10	1	0		60.00	7.75	4000	0.6131	0.0777	0.4969	7.777778	4.740
11	2	0		120.00	10.95	4000	0.6199	0.0845	0.4901	8.458458	4.662
12	3	50		230.00	15.17	4000	0.6252	0.0898	0.4848	8.988989	4.601
13	5	14		314.00	17.72	4000	0.6278	0.0924	0.4822	9.249249	4.570
14	20	55		1255.00	35.43	4000	0.6379	0.1025	0.4721	10.26026	4.454
15	24			1440.00	37.95	4000	0.639	0.1036	0.471	10.37037	4.441
16	28	38		1718.00	41.45	4000	0.6405	0.1051	0.4695	10.52052	4.424
17	44	53		2693.00	51.89	4000	0.644	0.1086	0.466	10.87087	4.383
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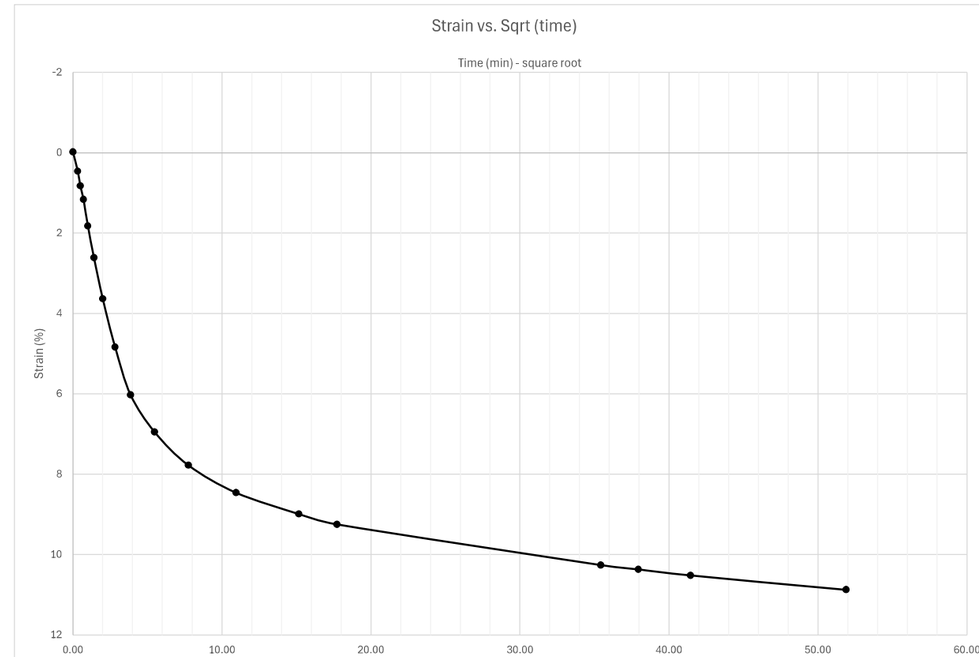
Sequence 5: 4000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

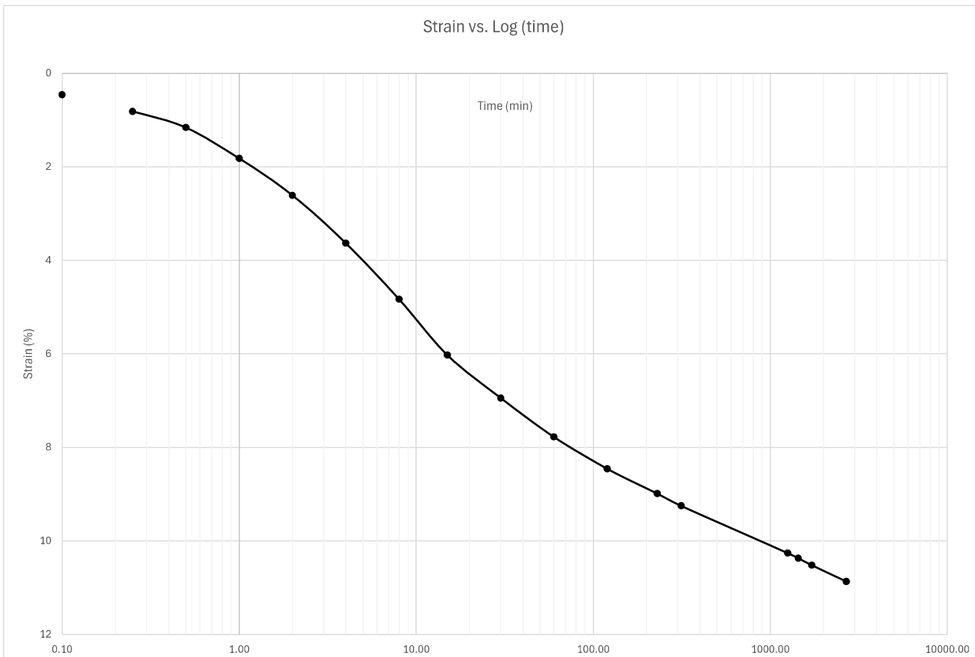


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.644	0.0002	0.4658	0.02002	4.381
1			6	0.10	0.32	2000	0.6419	-0.0019	0.4679	-0.19019	4.405
2			15	0.25	0.50	2000	0.6414	-0.0024	0.4684	-0.24024	4.411
3			30	0.50	0.71	2000	0.6409	-0.0029	0.4689	-0.29029	4.417
4		1		1.00	1.00	2000	0.6403	-0.0035	0.4695	-0.35035	4.424
5		2		2.00	1.41	2000	0.6398	-0.004	0.47	-0.4004	4.430
6		4		4.00	2.00	2000	0.6394	-0.0044	0.4704	-0.44044	4.434
7		8		8.00	2.83	2000	0.639	-0.0048	0.4708	-0.48048	4.439
8		15		15.00	3.87	2000	0.6387	-0.0051	0.4711	-0.510511	4.442
9		30		30.00	5.48	2000	0.6384	-0.0054	0.4714	-0.540541	4.446
10		58		58.00	7.62	2000	0.6381	-0.0057	0.4717	-0.570571	4.449
11	1	57		117.00	10.82	2000	0.6376	-0.0062	0.4722	-0.620621	4.455
12	4			240.00	15.49	2000	0.6372	-0.0066	0.4726	-0.660661	4.460
13	7	3		423.00	20.57	2000	0.6369	-0.0069	0.4729	-0.690691	4.463
14	9	28		568.00	23.83	2000	0.6368	-0.007	0.473	-0.700701	4.464
15	23	56		1436.00	37.89	2000	0.6365	-0.0073	0.4733	-0.730731	4.468
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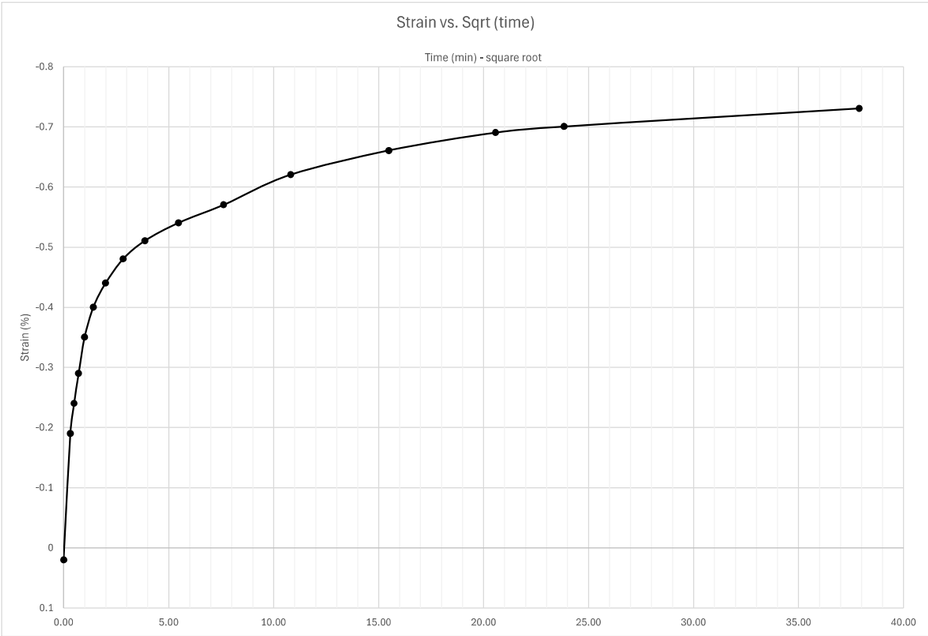
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

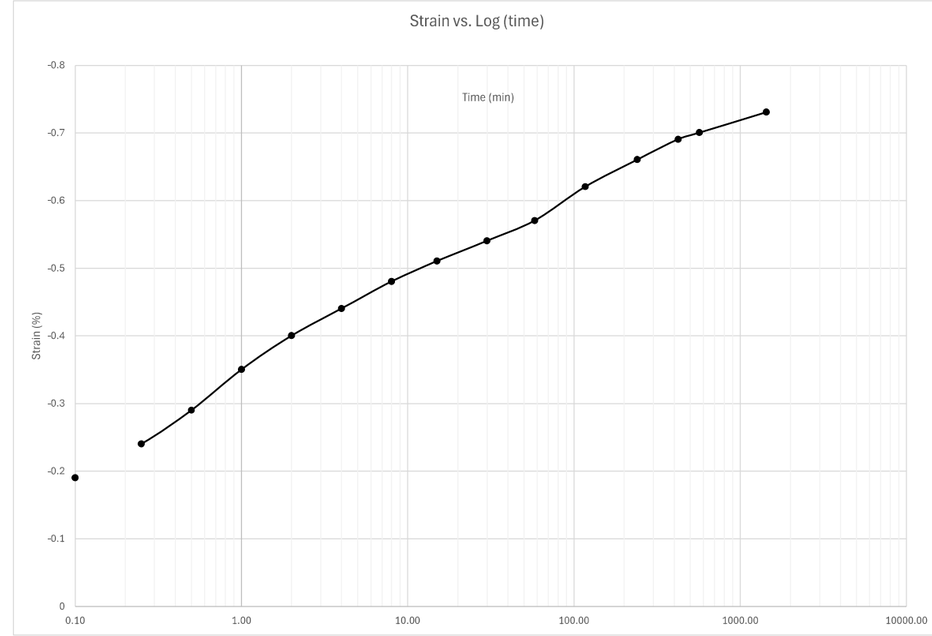
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6365	0.0002	-0.0002	0.02002	-1.002
1			6	0.10	0.32	1000	0.6349	-0.0014	0.4747	-0.14014	4.484
2			15	0.25	0.50	1000	0.6344	-0.0019	0.4752	-0.19019	4.490
3			30	0.50	0.71	1000	0.634	-0.0023	0.4756	-0.23023	4.494
4		1		1.00	1.00	1000	0.6335	-0.0028	0.4761	-0.28028	4.500
5		2		2.00	1.41	1000	0.6328	-0.0035	0.4768	-0.35035	4.508
6		4		4.00	2.00	1000	0.6321	-0.0042	0.4775	-0.42042	4.516
7		8		8.00	2.83	1000	0.6316	-0.0047	0.478	-0.47047	4.522
8		15		15.00	3.87	1000	0.6311	-0.0052	0.4785	-0.520521	4.528
9		30		30.00	5.48	1000	0.6304	-0.0059	0.4792	-0.590591	4.536
10		59		59.00	7.68	1000	0.6298	-0.0065	0.4798	-0.650651	4.543
11	1	53		113.00	10.63	1000	0.6291	-0.0072	0.4805	-0.720721	4.551
12	4	0		240.00	15.49	1000	0.6281	-0.0082	0.4815	-0.820821	4.562
13	7	11		431.00	20.76	1000	0.6271	-0.0092	0.4825	-0.920921	4.574
14	8	34		514.00	22.67	1000	0.6268	-0.0095	0.4828	-0.950951	4.577
15	22	56		1376.00	37.09	1000	0.6251	-0.0112	0.4845	-1.121121	4.597
16	49	55		2995.00	54.73	1000	0.6247	-0.0116	0.4849	-1.161161	4.602
17	95	52		5752.00	75.84	1000	0.6238	-0.0125	0.4858	-1.251251	4.612
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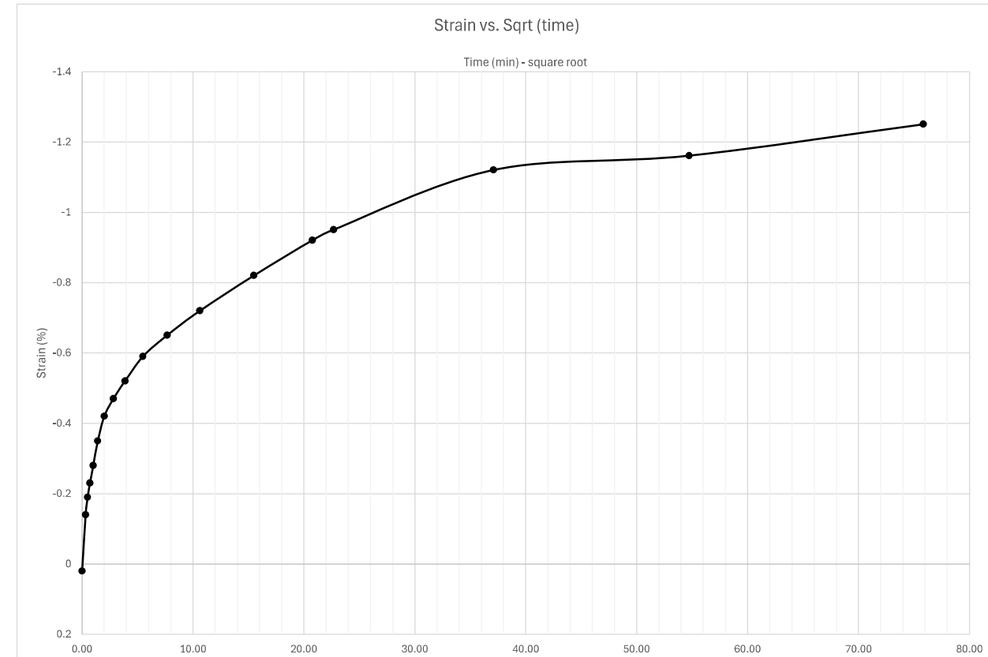
Sequence 7: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

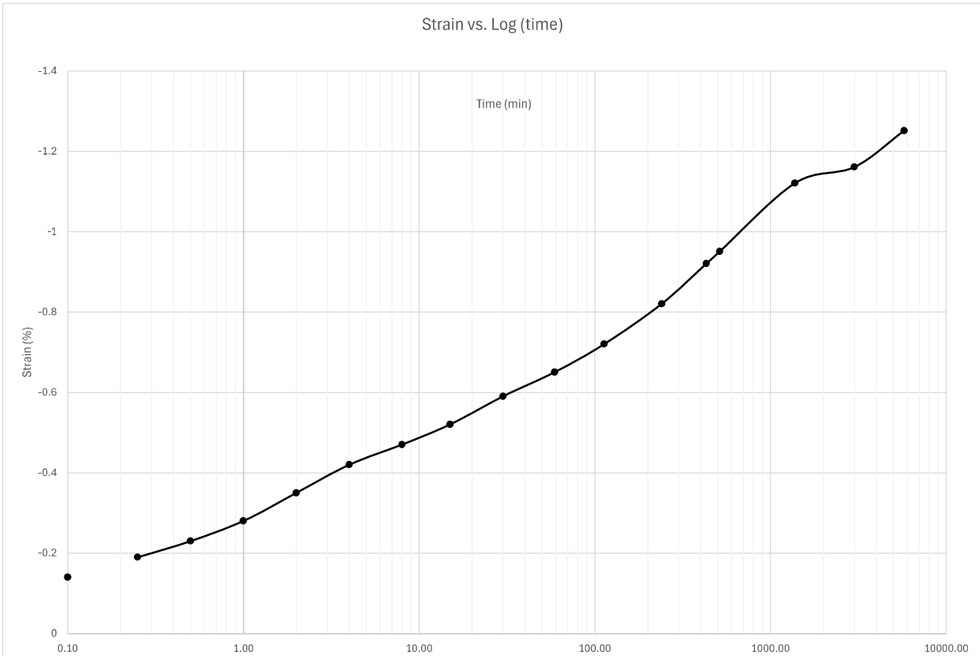


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.6238	0.0001	0.4857	0.01001	4.611
1			6	0.10	0.32	500	0.623	-0.0007	0.4865	-0.07007	4.620
2			15	0.25	0.50	500	0.6227	-0.001	0.4868	-0.1001	4.624
3			30	0.50	0.71	500	0.6224	-0.0013	0.4871	-0.13013	4.627
4		1		1.00	1.00	500	0.6219	-0.0018	0.4876	-0.18018	4.633
5		2		2.00	1.41	500	0.6214	-0.0023	0.4881	-0.23023	4.639
6		4		4.00	2.00	500	0.6209	-0.0028	0.4886	-0.28028	4.644
7		8		8.00	2.83	500	0.6204	-0.0033	0.4891	-0.33033	4.650
8		15		15.00	3.87	500	0.6198	-0.0039	0.4897	-0.39039	4.657
9		30		30.00	5.48	500	0.6193	-0.0044	0.4902	-0.44044	4.663
10		58		58.00	7.62	500	0.6188	-0.0049	0.4907	-0.49049	4.669
11	2			120.00	10.95	500	0.6179	-0.0058	0.4916	-0.580581	4.679
12	3	58		238.00	15.43	500	0.617	-0.0067	0.4925	-0.670671	4.689
13	6	1		361.00	19.00	500	0.6164	-0.0073	0.4931	-0.730731	4.696
14	21	17		1277.00	35.74	500	0.6143	-0.0094	0.4952	-0.940941	4.721
15	24			1440.00	37.95	500	0.614	-0.0097	0.4955	-0.970971	4.724
16	32			1920.00	43.82	500	0.6134	-0.0103	0.4961	-1.031031	4.731
17	46	2		2762.00	52.55	500	0.6126	-0.0111	0.4969	-1.111111	4.740
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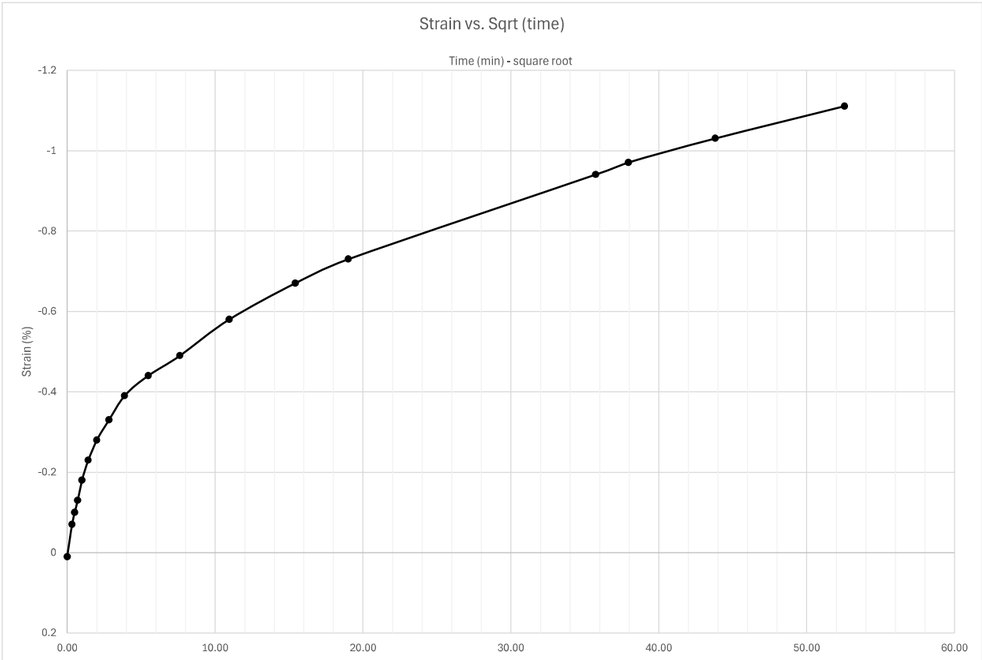
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

L_EB1-B, ST-51, 8.0-10.0 ft

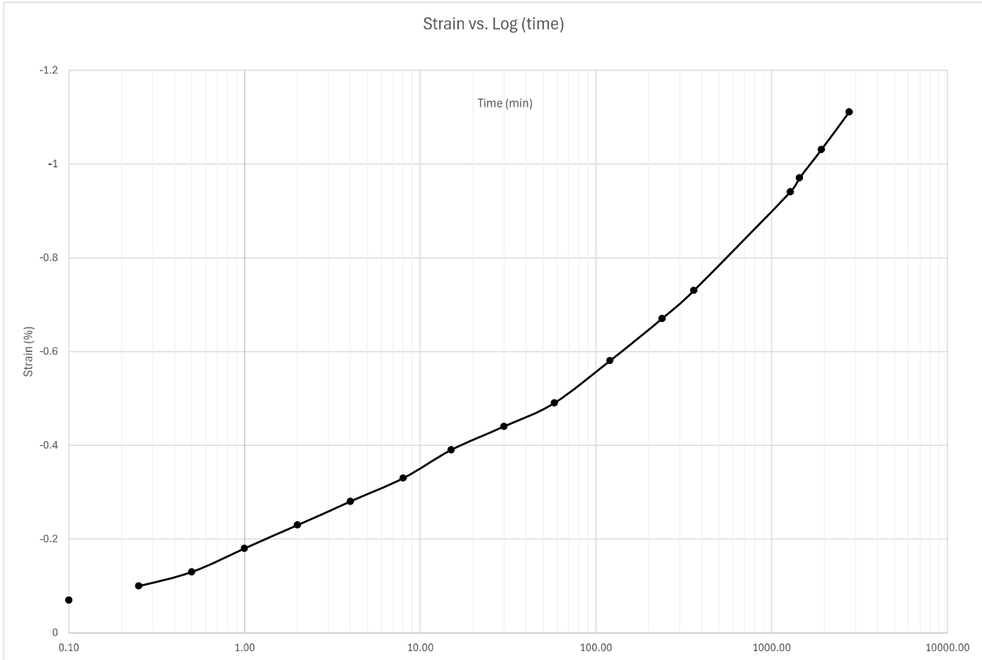
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6126	-0.0001	0.497	-0.01001	4.741
1			6	0.10	0.32	1000	0.6135	0.0008	0.4961	0.08008	4.731
2			15	0.25	0.50	1000	0.6139	0.0012	0.4957	0.12012	4.726
3			30	0.50	0.71	1000	0.6142	0.0015	0.4954	0.15015	4.723
4		1		1.00	1.00	1000	0.6147	0.002	0.4949	0.2002	4.717
5		2		2.00	1.41	1000	0.6151	0.0024	0.4945	0.24024	4.713
6		4		4.00	2.00	1000	0.6155	0.0028	0.4941	0.28028	4.708
7		8		8.00	2.83	1000	0.6157	0.003	0.4939	0.3003	4.706
8		15		15.00	3.87	1000	0.6159	0.0032	0.4937	0.32032	4.703
9		24	40	24.67	4.97	1000	0.6161	0.0034	0.4935	0.34034	4.701
10		41		41.00	6.40	1000	0.6162	0.0035	0.4934	0.35035	4.700
11	1	11		71.00	8.43	1000	0.6164	0.0037	0.4932	0.37037	4.698
12	2	10		130.00	11.40	1000	0.6166	0.0039	0.493	0.39039	4.695
13	4	16		256.00	16.00	1000	0.6168	0.0041	0.4928	0.41041	4.693
14	8	26		506.00	22.49	1000	0.6171	0.0044	0.4925	0.44044	4.689
15	23	32		1412.00	37.58	1000	0.6173	0.0046	0.4923	0.46046	4.687
16	28	45		1725.00	41.53	1000	0.6174	0.0047	0.4922	0.47047	4.686
17	118	45		7125.00	84.41	1000	0.6176	0.0049	0.492	0.49049	4.684
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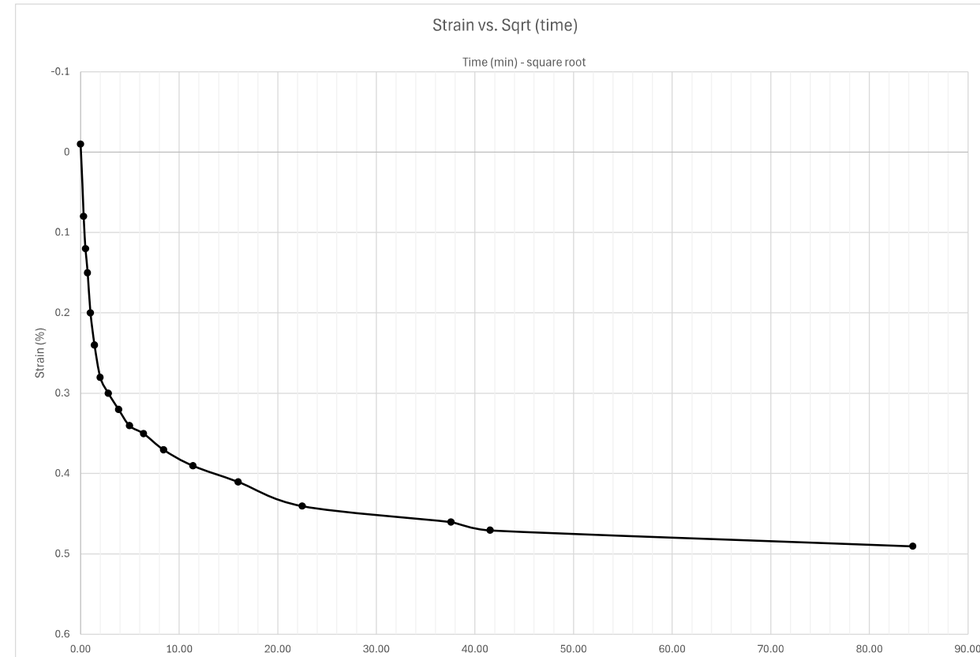
Sequence 9: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

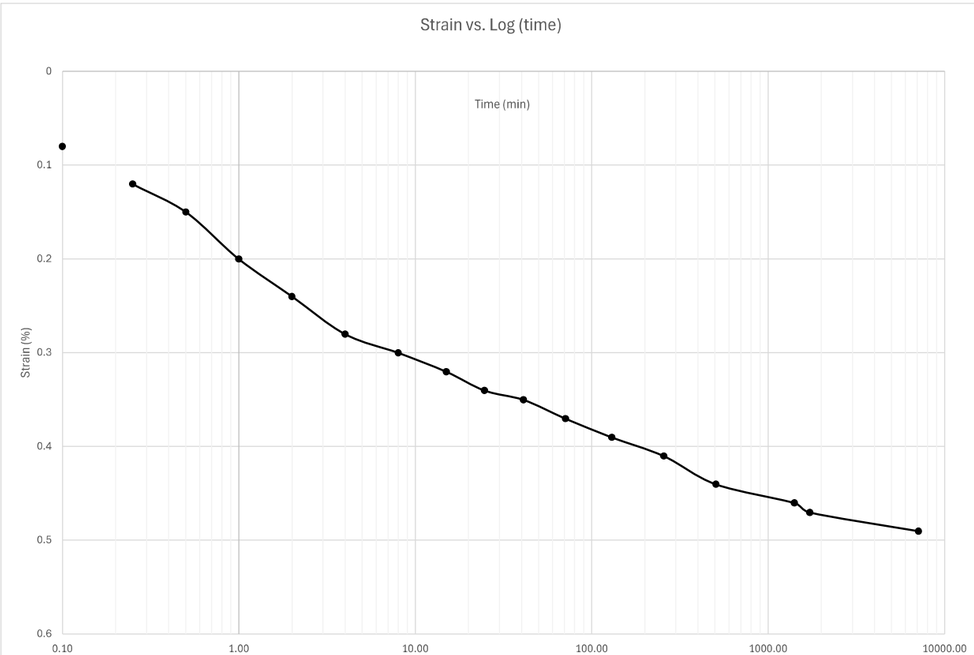


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6176	-0.0002	0.4922	-0.02002	4.686
1			6	0.10	0.32	2000	0.6196	0.0018	0.4902	0.18018	4.663
2			15	0.25	0.50	2000	0.6203	0.0025	0.4895	0.25025	4.655
3			30	0.50	0.71	2000	0.6209	0.0031	0.4889	0.31031	4.648
4		1		1.00	1.00	2000	0.6217	0.0039	0.4881	0.39039	4.639
5		2		2.00	1.41	2000	0.6225	0.0047	0.4873	0.47047	4.629
6		4		4.00	2.00	2000	0.6231	0.0053	0.4867	0.530531	4.622
7		8		8.00	2.83	2000	0.6235	0.0057	0.4863	0.570571	4.618
8		15		15.00	3.87	2000	0.6238	0.006	0.486	0.600601	4.614
9		40		40.00	6.32	2000	0.6243	0.0065	0.4855	0.650651	4.609
10	1	7		67.00	8.19	2000	0.6246	0.0068	0.4852	0.680681	4.605
11	2	10		130.00	11.40	2000	0.6249	0.0071	0.4849	0.710711	4.602
12	4	5		245.00	15.65	2000	0.6253	0.0075	0.4845	0.750751	4.597
13	6	28		388.00	19.70	2000	0.6256	0.0078	0.4842	0.780781	4.594
14	8	26		506.00	22.49	2000	0.6258	0.008	0.484	0.800801	4.591
15	23	50		1430.00	37.82	2000	0.6266	0.0088	0.4832	0.880881	4.582
16	24	19		1459.00	38.20	2000	0.6267	0.0089	0.4831	0.890891	4.581
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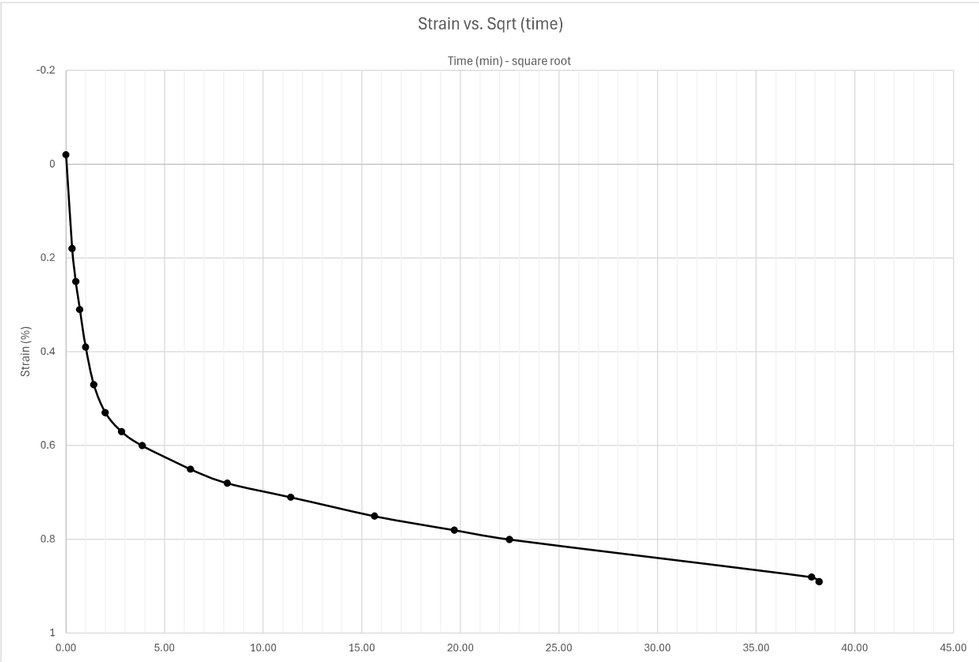
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

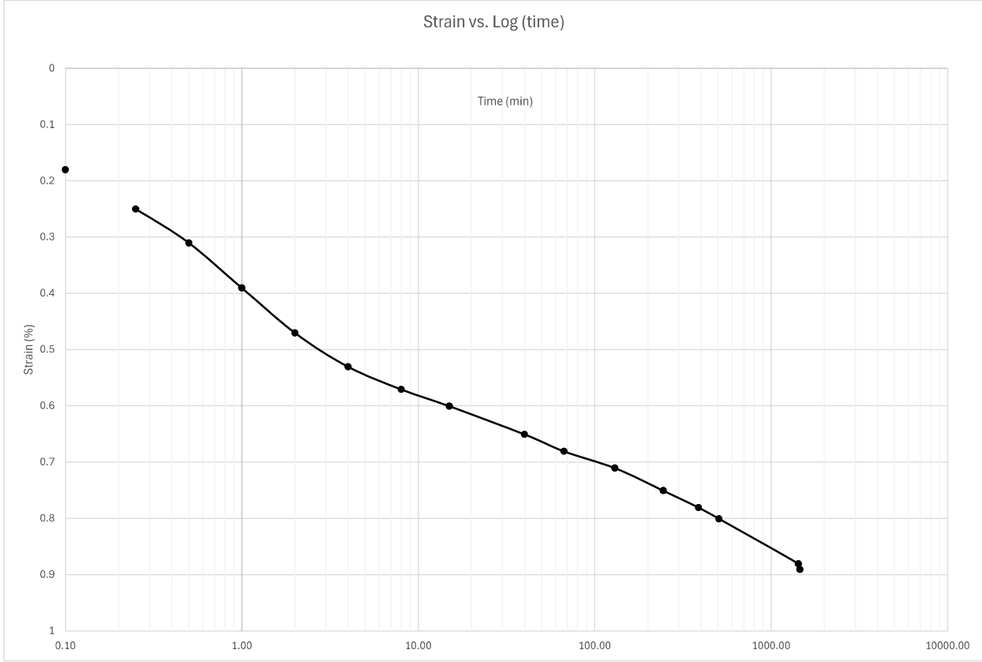
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.6267	-0.0003	0.4834	-0.03003	4.584
1			6	0.10	0.32	4000	0.63	0.003	0.4801	0.3003	4.546
2			15	0.25	0.50	4000	0.6311	0.0041	0.479	0.41041	4.534
3			30	0.50	0.71	4000	0.6323	0.0053	0.4778	0.530531	4.520
4		1		1.00	1.00	4000	0.6339	0.0069	0.4762	0.690691	4.501
5		2		2.00	1.41	4000	0.6356	0.0086	0.4745	0.860861	4.482
6		4		4.00	2.00	4000	0.6373	0.0103	0.4728	1.031031	4.462
7		8		8.00	2.83	4000	0.6386	0.0116	0.4715	1.161161	4.447
8		15		15.00	3.87	4000	0.6397	0.0127	0.4704	1.271271	4.434
9		30		30.00	5.48	4000	0.641	0.014	0.4691	1.401401	4.419
10	1	1		61.00	7.81	4000	0.6423	0.0153	0.4678	1.531532	4.404
11	2	38		158.00	12.57	4000	0.6441	0.0171	0.466	1.711712	4.383
12	4	34		274.00	16.55	4000	0.6454	0.0184	0.4647	1.841842	4.368
13	23	53		1433.00	37.85	4000	0.6509	0.0239	0.4592	2.392392	4.305
14	30	5		1805.00	42.49	4000	0.6517	0.0247	0.4584	2.472472	4.296
15	47	14		2834.00	53.24	4000	0.6535	0.0265	0.4566	2.652653	4.275
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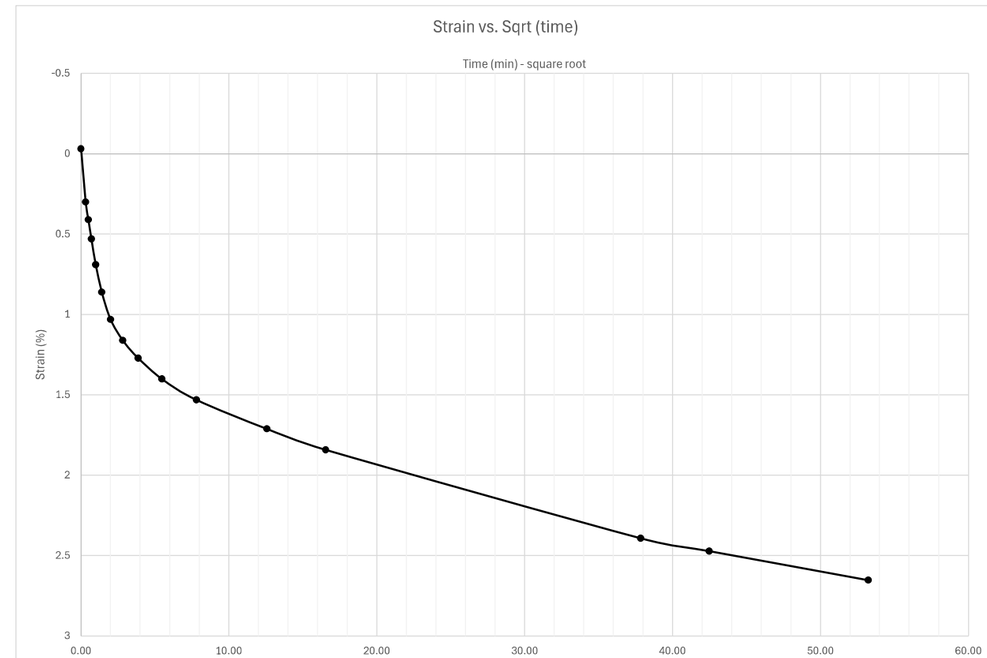
Sequence 11: 4000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

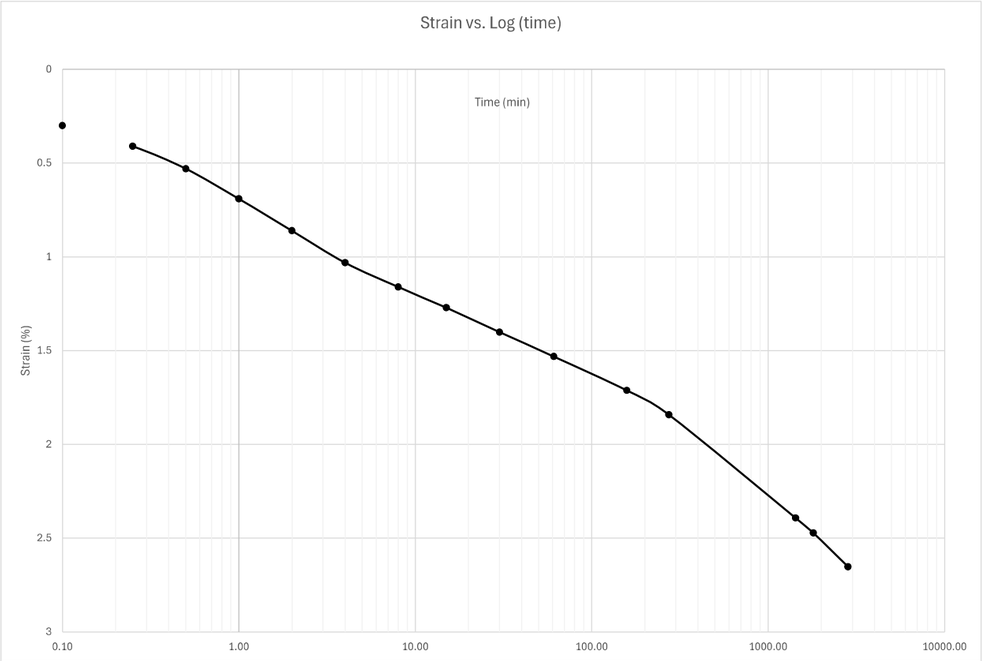


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6535	-0.0006	0.4572	-0.06006	4.282
1			6	0.10	0.32	8000	0.6593	0.0052	0.4514	0.520521	4.215
2			15	0.25	0.50	8000	0.6615	0.0074	0.4492	0.740741	4.189
3			30	0.50	0.71	8000	0.6641	0.01	0.4466	1.001001	4.159
4		1		1.00	1.00	8000	0.668	0.0139	0.4427	1.391391	4.114
5		2		2.00	1.41	8000	0.6734	0.0193	0.4373	1.931932	4.052
6		4	20	4.33	2.08	8000	0.6815	0.0274	0.4292	2.742743	3.958
7		8		8.00	2.83	8000	0.6893	0.0352	0.4214	3.523524	3.868
8		15		15.00	3.87	8000	0.6979	0.0438	0.4128	4.384384	3.769
9		30		30.00	5.48	8000	0.7063	0.0522	0.4044	5.225225	3.672
10	1	0		60.00	7.75	8000	0.7132	0.0591	0.3975	5.915916	3.592
11	1	58		118.00	10.86	8000	0.7187	0.0646	0.392	6.466466	3.528
12	4	2		242.00	15.56	8000	0.7232	0.0691	0.3875	6.916917	3.476
13	7	5		425.00	20.62	8000	0.7274	0.0733	0.3833	7.337337	3.428
14	23	48		1428.00	37.79	8000	0.7351	0.081	0.3756	8.108108	3.339
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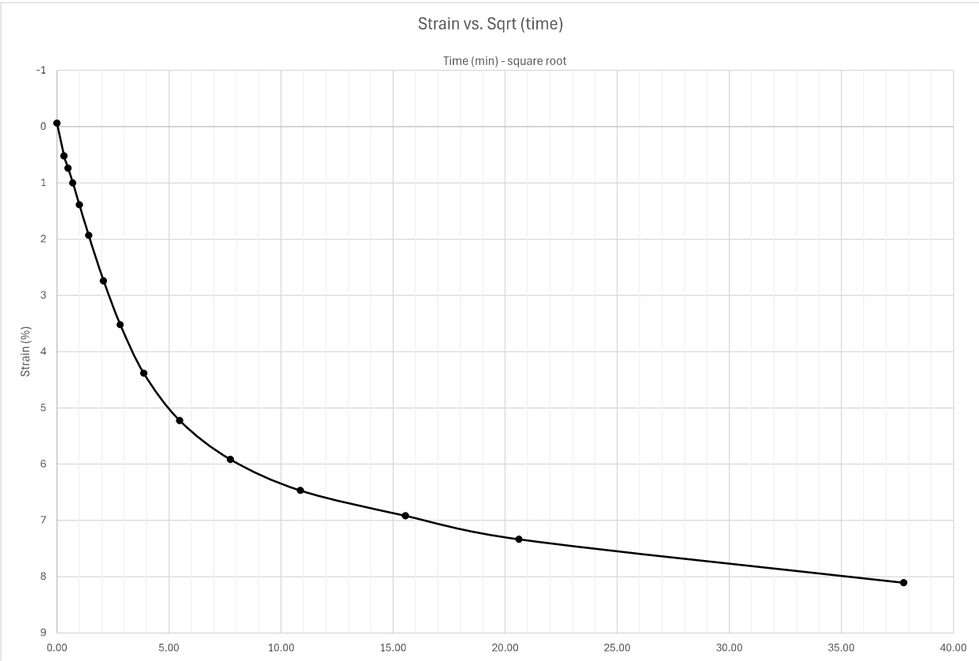
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

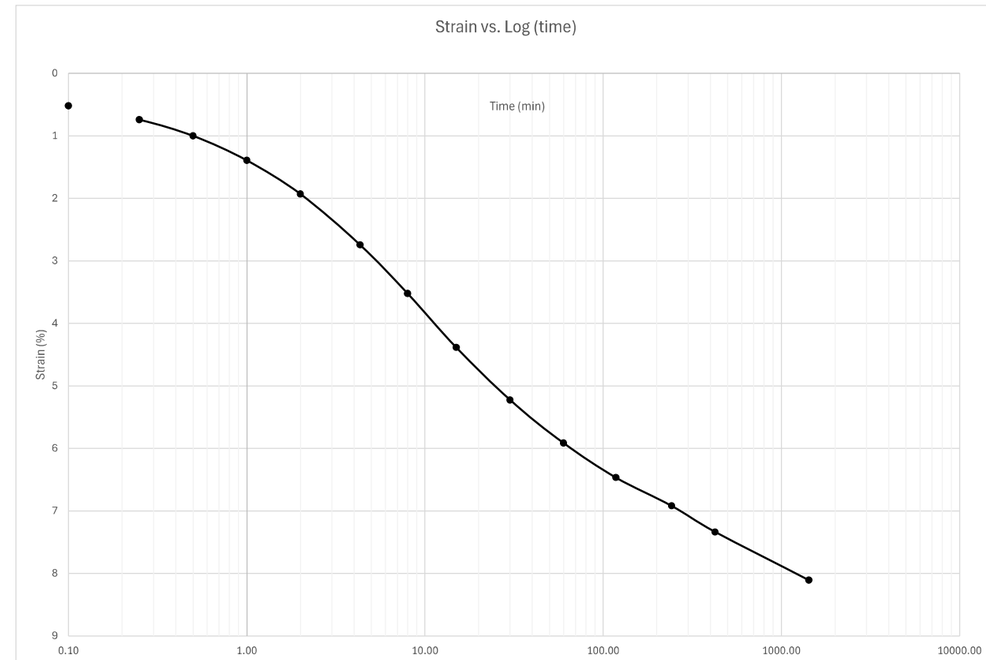
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.7351	-0.0008	0.3764	-0.08008	3.348
1			6	0.10	0.32	16000	0.7403	0.0044	0.3712	0.44044	3.288
2			15	0.25	0.50	16000	0.7423	0.0064	0.3692	0.640641	3.265
3			30	0.50	0.71	16000	0.7446	0.0087	0.3669	0.870871	3.239
4		1		1.00	1.00	16000	0.748	0.0121	0.3635	1.211211	3.199
5		2		2.00	1.41	16000	0.7527	0.0168	0.3588	1.681682	3.145
6		4		4.00	2.00	16000	0.7592	0.0233	0.3523	2.332332	3.070
7		8		8.00	2.83	16000	0.7676	0.0317	0.3439	3.173173	2.973
8		15		15.00	3.87	16000	0.7757	0.0398	0.3358	3.983984	2.879
9		30		30.00	5.48	16000	0.7839	0.048	0.3276	4.804805	2.785
10	1			60.00	7.75	16000	0.7901	0.0542	0.3214	5.425425	2.713
11	2			120.00	10.95	16000	0.7948	0.0589	0.3167	5.895896	2.659
12	4	10		250.00	15.81	16000	0.7991	0.0632	0.3124	6.326326	2.609
13	6	10		370.00	19.24	16000	0.8014	0.0655	0.3101	6.556557	2.582
14	6	58		418.00	20.45	16000	0.802	0.0661	0.3095	6.616617	2.575
15	26	24		1584.00	39.80	16000	0.808	0.0721	0.3035	7.217217	2.506
16	71			4260.00	65.27	16000	0.8119	0.076	0.2996	7.607608	2.461
17	94	53		5693.00	75.45	16000	0.8131	0.0772	0.2984	7.727728	2.447
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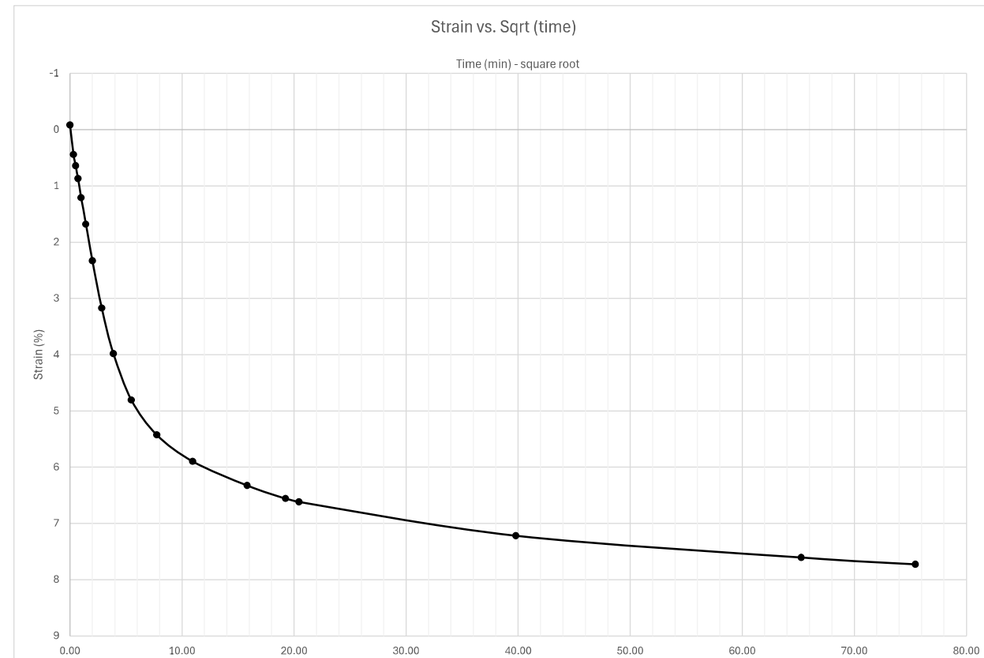
Sequence 13: 16000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

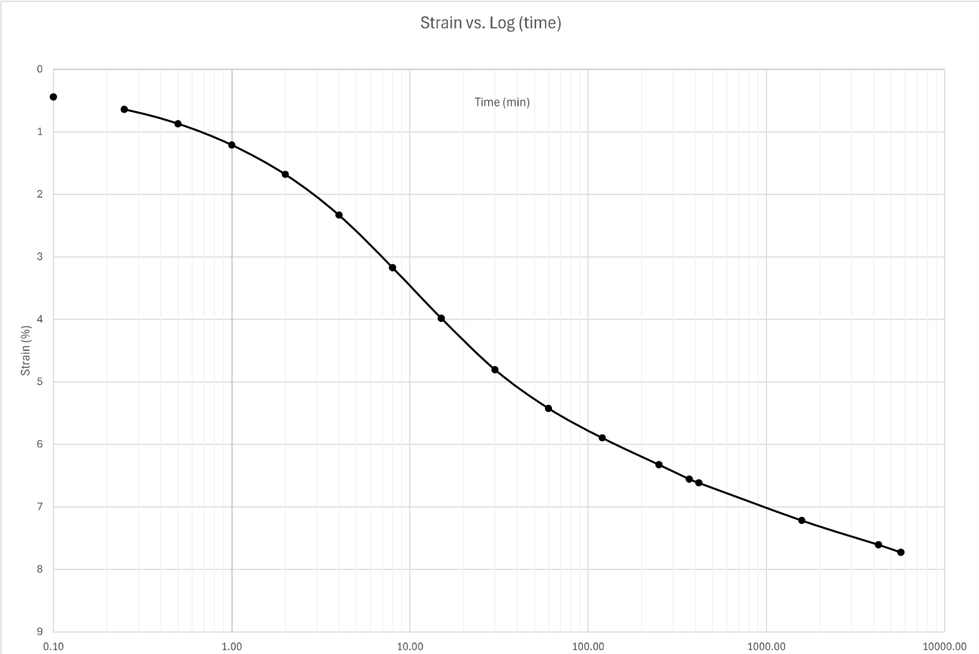


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.8131	-0.0012	0.2996	-0.12012	2.461
1			6	0.10	0.32	32000	0.8171	0.0028	0.2956	0.28028	2.415
2			15	0.25	0.50	32000	0.818	0.0037	0.2947	0.37037	2.404
3			30	0.50	0.71	32000	0.8192	0.0049	0.2935	0.49049	2.391
4		1		1.00	1.00	32000	0.8209	0.0066	0.2918	0.660661	2.371
5		2		2.00	1.41	32000	0.8234	0.0091	0.2893	0.910911	2.342
6		4		4.00	2.00	32000	0.8266	0.0123	0.2861	1.231231	2.305
7		8		8.00	2.83	32000	0.8308	0.0165	0.2819	1.651652	2.257
8		15		15.00	3.87	32000	0.8354	0.0211	0.2773	2.112112	2.203
9		30		30.00	5.48	32000	0.8409	0.0266	0.2718	2.662663	2.140
10	1			60.00	7.75	32000	0.8455	0.0312	0.2672	3.123123	2.087
11	1	58		118.00	10.86	32000	0.8494	0.0351	0.2633	3.513514	2.042
12	3	58		238.00	15.43	32000	0.8529	0.0386	0.2598	3.863864	2.001
13	6	18		378.00	19.44	32000	0.8549	0.0406	0.2578	4.064064	1.978
14	22	47		1367.00	36.97	32000	0.8601	0.0458	0.2526	4.584585	1.918
15	24	39		1479.00	38.46	32000	0.8604	0.0461	0.2523	4.614615	1.915
16	47	1		2821.00	53.11	32000	0.8629	0.0486	0.2498	4.864865	1.886
17	70	43		4243.00	65.14	32000	0.8645	0.0502	0.2482	5.025025	1.867
18	118	57		7137.00	84.48	32000	0.867	0.0527	0.2457	5.275275	1.838
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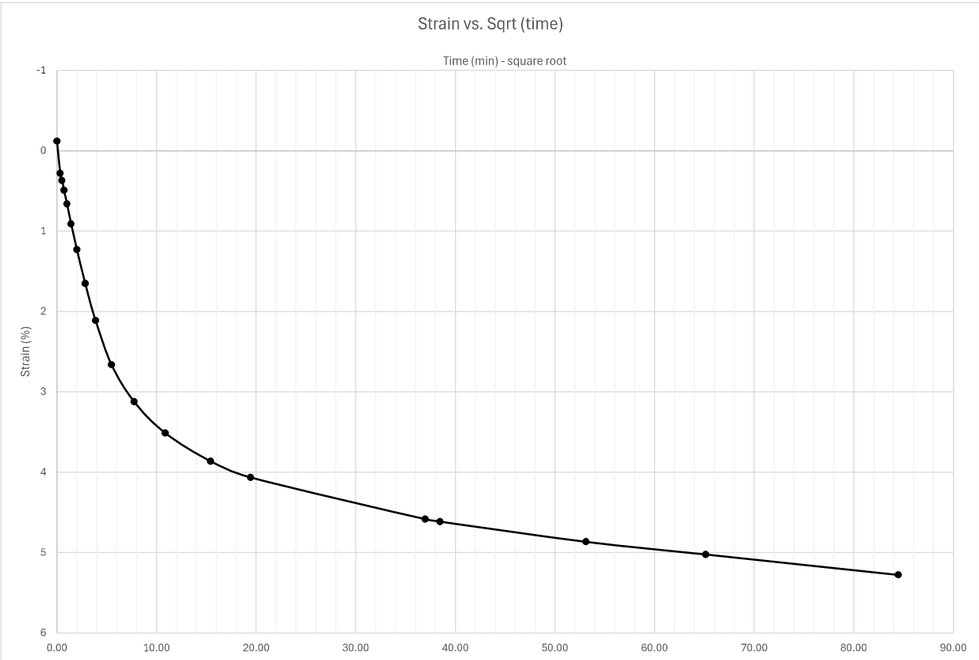
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

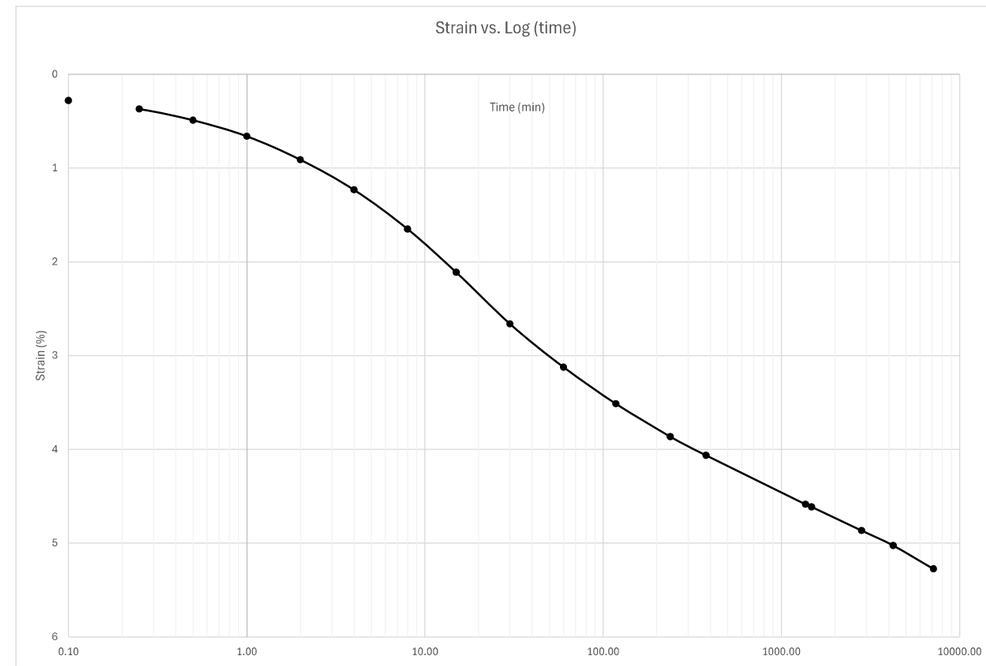
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

L_EB1-B, ST-51, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	13.0-15.0
Sample Number	ST-52	Boring Number	L_EB1-B
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment L		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.1472	0.1145	0.8518	0.147	4.176	100	26	0.00154	0.001374
2	500	0.2383	0.1146	0.7607	0.239	3.623	68.89	21	0.00178	0.001357
3	1000	0.3274	0.1147	0.6716	0.328	3.081	31.36	19.5	0.00305	0.001139
4	2000	0.4237	0.1149	0.5753	0.424	2.496	68.89	19.5	0.00102	0.000836
5	4000	0.5002	0.1151	0.4988	0.501	2.031	56.25	17	0.00094	0.000721
6	2000	0.4941	0.1149	0.5049	0.495	2.068	-	-	-	-
7	1000	0.4834	0.1147	0.5156	0.484	2.133	-	-	-	-
8	500	0.4723	0.1146	0.5267	0.473	2.201	-	-	-	-
9	1000	0.4764	0.1147	0.5226	0.477	2.176	10.24	3.8	0.00565	0.00354
10	2000	0.4854	0.1149	0.5136	0.486	2.121	12.25	3.6	0.00457	0.00361
11	4000	0.5072	0.1152	0.4918	0.508	1.989	12.96	-	0.00396	-
12	8000	0.5679	0.1158	0.4311	0.568	1.620	50.41	14.5	0.00078	0.00063
13	16000	0.6297	0.1166	0.3693	0.630	1.244	44.89	15	0.00064	0.00045
14	32000	0.6747	0.1178	0.3243	0.675	0.971	37.21	13	0.00060	0.00040
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/11/2026
Machine Apparatus: 3
Technician: KSB

Sampling Date: 4/6/2026
Sample Number: ST-52
Depth (ft): 13.0-15.0
Boring Number: L_EB1-B
Location: Alignment L
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.54 (Measured)
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.8

Parameters	Initial	Final
Height (in)	0.999	0.3243
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.601
Weight of Container (g)	60.35	59.9
Weight of Wet Soil + Container (g)	242.83	100.2
Weight of Dry Soil + Container (g)	101.05	85.34
Moisture Content (%)	348.35	58.41
Moist Weight + Ring Weight (g)	194.71	134.54
Dry Mass (g)	20.50	20.04
Water Content (calc from spec)	348.35	58.41
Dry Density (pcf)	15.84	47.68
Wet Density (pcf)	71.00	75.53
Volume of Solids (in^3)	0.81	0.79
Height of Solids (in)	0.16	0.16
Void Ratio	5.071	0.971

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Void Ratio vs. Effective Stress

L_EB1-B, ST-52, 13.0-15.0 ft

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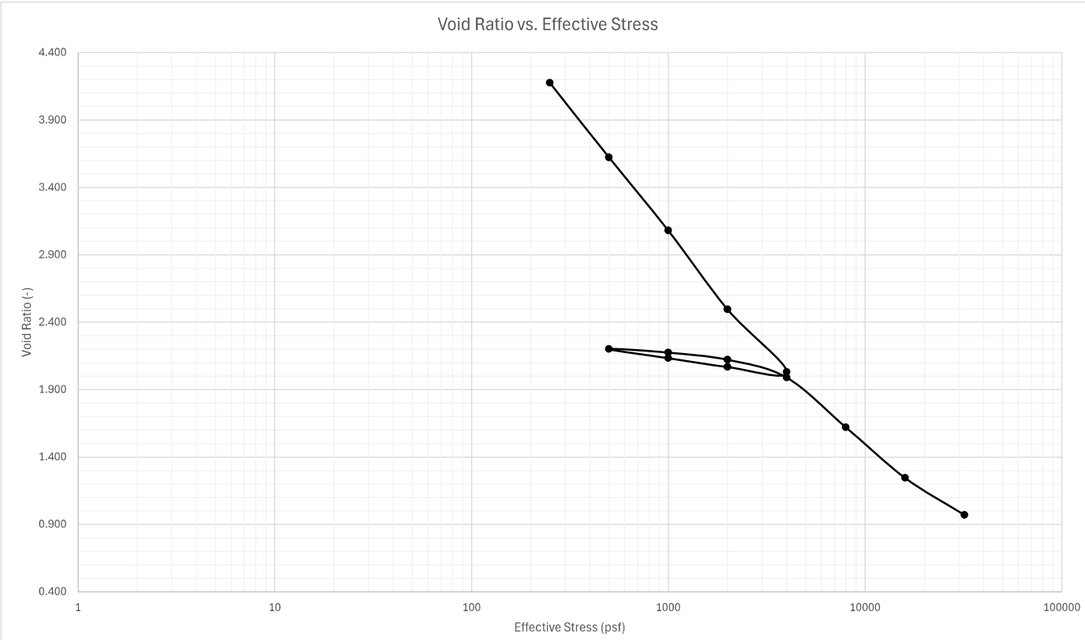
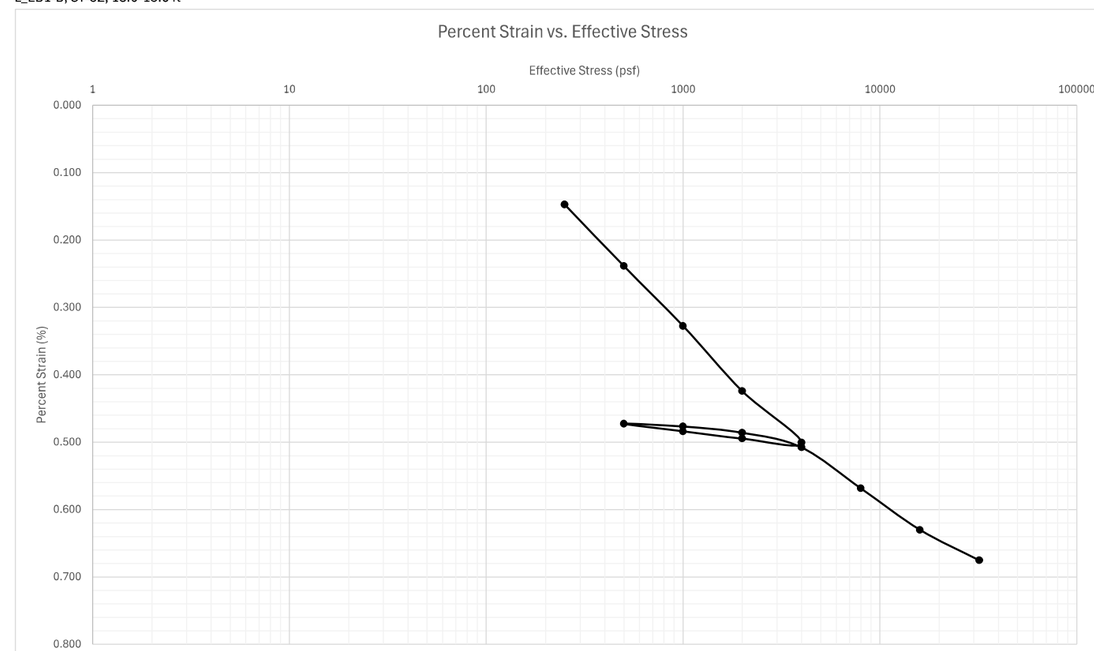


Percent Strain vs. Effective Stress

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0849	0	0.999	0	5.071
1			15	0.25	0.5	250	0.0869	0.002	0.997	0.2002	5.059
2			30	0.5	0.707106781	250	0.0891	0.0042	0.9948	0.42042	5.045
3		1		1	1	250	0.0921	0.0072	0.9918	0.720721	5.027
4		2		2	1.414213562	250	0.097	0.0121	0.9869	1.211211	4.997
5		4		4	2	250	0.1046	0.0197	0.9793	1.971972	4.951
6		8		8	2.828427125	250	0.1162	0.0313	0.9677	3.133133	4.881
7		15	30	15.5	3.937003937	250	0.129	0.0441	0.9549	4.414414	4.803
8		30	31	30.51666667	5.524189232	250	0.1525	0.0676	0.9314	6.766767	4.660
9	1	11		71	8.426149773	250	0.1825	0.0976	0.9014	9.76977	4.478
10	2	35		155	12.4498996	250	0.2021	0.1172	0.8818	11.73173	4.359
11	4	8		248	15.74801575	250	0.2091	0.1242	0.8748	12.43243	4.316
12	5	40		340	18.43908891	250	0.2125	0.1276	0.8714	12.77277	4.295
13	21	20		1280	35.77708764	250	0.2209	0.136	0.863	13.61361	4.244
14	28	59		1739	41.70131892	250	0.2228	0.1379	0.8611	13.8038	4.233
15	94	16		5656	75.20638271	250	0.2321	0.1472	0.8518	14.73473	4.176
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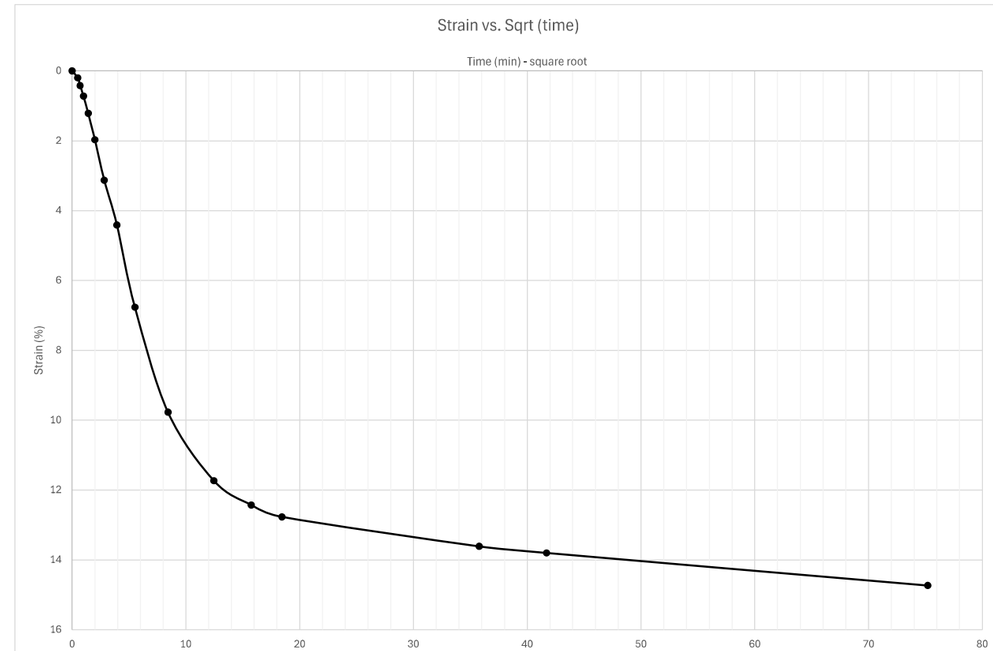
Sequence 1: 250 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

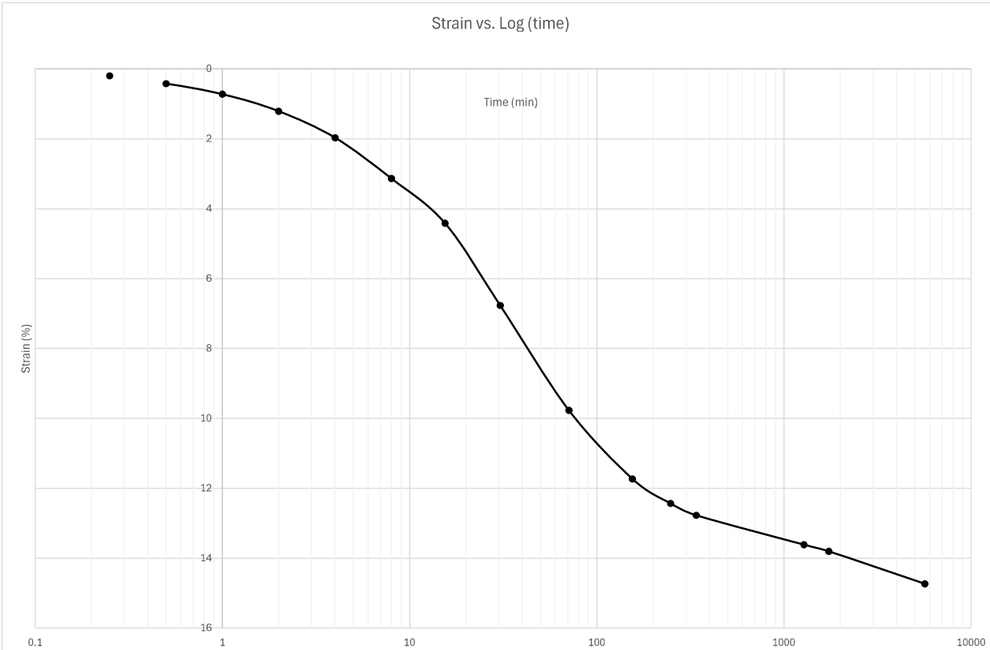


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.2321	-0.0001	0.8519	-0.01001	4.177
1			6	0.1	0.32	500	0.2352	0.0030	0.8488	0.3003	4.158
2			15	0.25	0.50	500	0.2369	0.0047	0.8471	0.47047	4.148
3			30	0.5	0.71	500	0.2388	0.0066	0.8452	0.660661	4.136
4		1		1	1.00	500	0.2410	0.0088	0.8430	0.880881	4.123
5		2		2	1.41	500	0.2448	0.0126	0.8392	1.261261	4.100
6		4		4	2.00	500	0.2493	0.0171	0.8347	1.711712	4.072
7		8		8	2.83	500	0.2565	0.0243	0.8275	2.432432	4.029
8		16		16	4.00	500	0.2671	0.0349	0.8169	3.493493	3.964
9		29		29	5.39	500	0.2771	0.0449	0.8069	4.494494	3.903
10		56		56	7.48	500	0.2904	0.0582	0.7936	5.825826	3.823
11	2	2		122	11.05	500	0.3029	0.0707	0.7811	7.077077	3.747
12	4	24		264	16.25	500	0.3110	0.0788	0.7730	7.887888	3.697
13	7	23		443	21.05	500	0.3144	0.0822	0.7696	8.228228	3.677
14	24	18		1458	38.18	500	0.3202	0.0880	0.7638	8.808809	3.641
15	29	21		1761	41.96	500	0.3211	0.0889	0.7629	8.898899	3.636
16	31	26		1886	43.43	500	0.3214	0.0892	0.7626	8.928929	3.634
17	48	24	11	2904.183333	53.89	500	0.3233	0.0911	0.7607	9.119119	3.623
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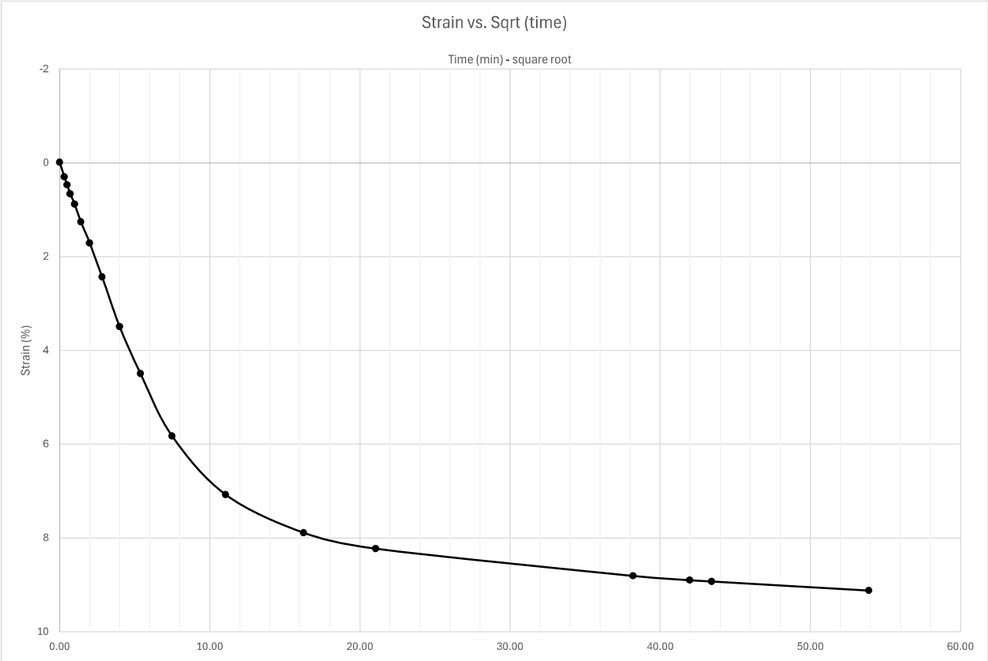
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

L_EB1-B, ST-52, 13.0-15.0 ft

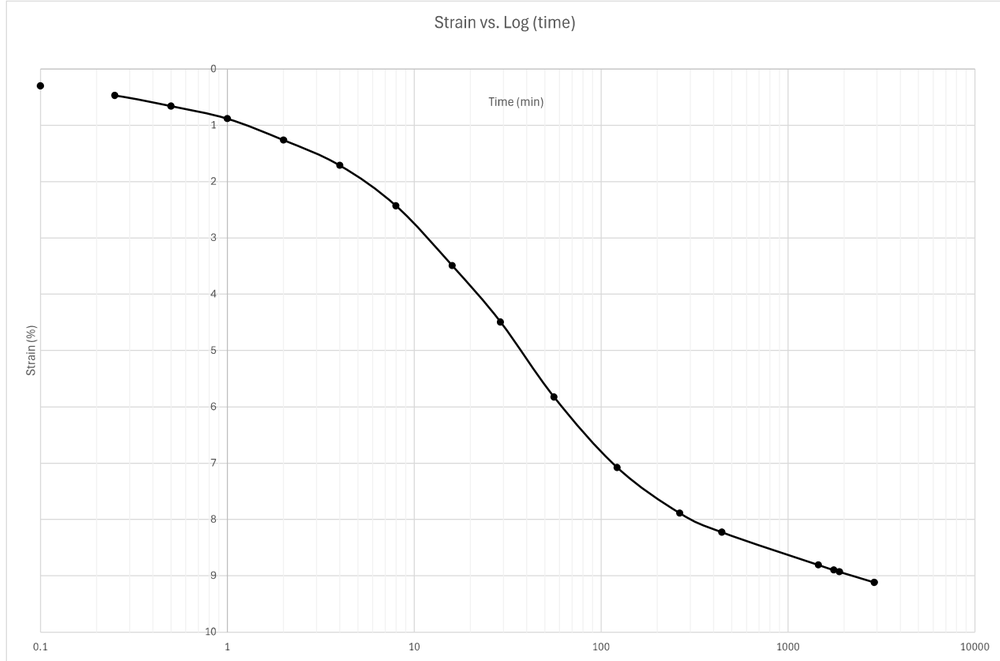
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.3233	-0.0001	0.7608	-0.01001	3.623
1			6	0.10	0.32	1000	0.3261	0.0027	0.758	0.27027	3.606
2			15	0.25	0.50	1000	0.3274	0.004	0.7567	0.4004	3.598
3			30	0.50	0.71	1000	0.3295	0.0061	0.7546	0.610611	3.586
4		1		1.00	1.00	1000	0.3314	0.008	0.7527	0.800801	3.574
5		2		2.00	1.41	1000	0.3349	0.0115	0.7492	1.151151	3.553
6		4		4.00	2.00	1000	0.3396	0.0162	0.7445	1.621622	3.524
7		8		8.00	2.83	1000	0.3464	0.023	0.7377	2.302302	3.483
8		15		15.00	3.87	1000	0.357	0.0336	0.7271	3.363363	3.418
9		31		31.00	5.57	1000	0.3685	0.0451	0.7156	4.514515	3.349
10	1	1		61.00	7.81	1000	0.38	0.0566	0.7041	5.665666	3.279
11	2	9		129.00	11.36	1000	0.3931	0.0697	0.691	6.976977	3.199
12	4			240.00	15.49	1000	0.3999	0.0765	0.6842	7.657658	3.158
13	6	41		401.00	20.02	1000	0.4042	0.0808	0.6799	8.088088	3.132
14	22	54		1374.00	37.07	1000	0.412	0.0886	0.6721	8.868869	3.084
15	24	39		1479.00	38.46	1000	0.4125	0.0891	0.6716	8.918919	3.081
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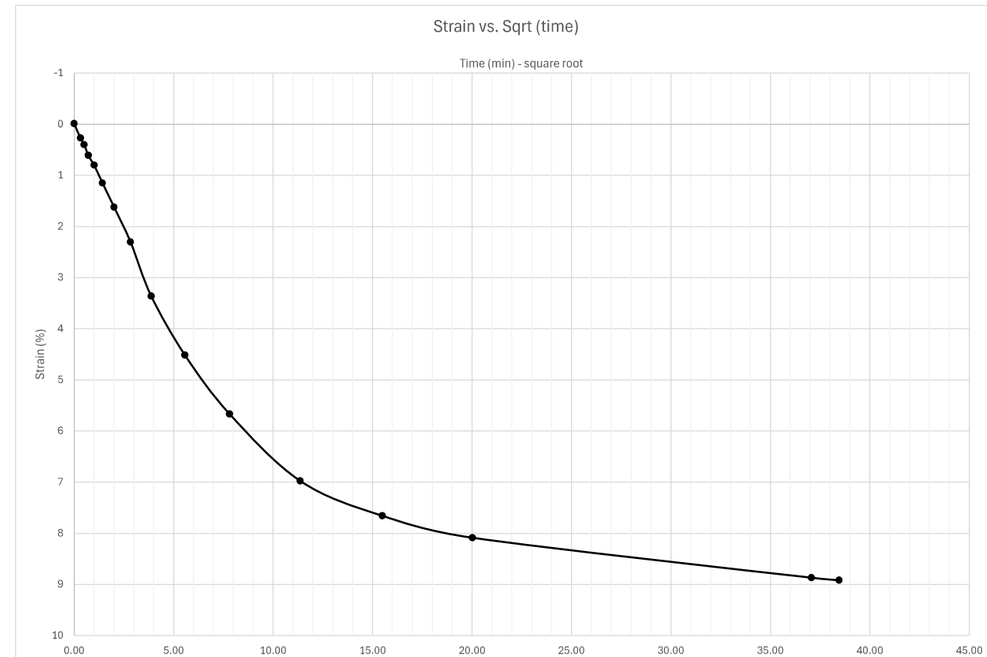
Sequence 3: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

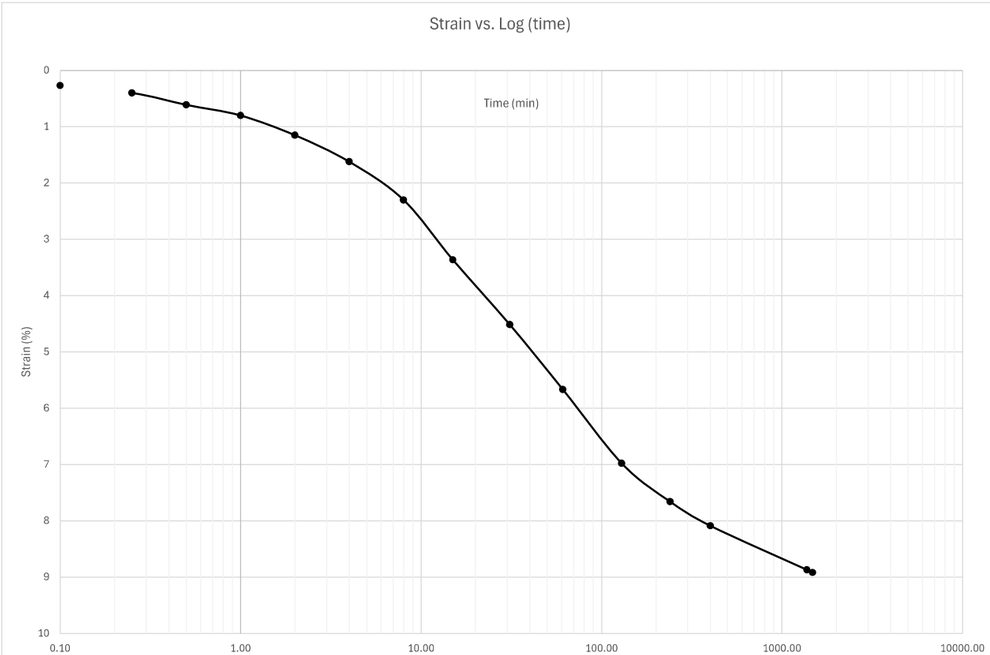


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.4125	-0.0002	0.6718	-0.02002	3.082
1			6	0.10	0.32	2000	0.4153	0.0026	0.669	0.26026	3.065
2			15	0.25	0.50	2000	0.4175	0.0048	0.6668	0.48048	3.052
3			30	0.50	0.71	2000	0.4186	0.0059	0.6657	0.590591	3.045
4		1		1.00	1.00	2000	0.4209	0.0082	0.6634	0.820821	3.031
5		2		2.00	1.41	2000	0.4246	0.0119	0.6597	1.191191	3.009
6		4	0	4.00	2.00	2000	0.4298	0.0171	0.6545	1.711712	2.977
7		8	30	8.50	2.92	2000	0.4381	0.0254	0.6462	2.542543	2.927
8		15		15.00	3.87	2000	0.4465	0.0338	0.6378	3.383383	2.876
9		30		30.00	5.48	2000	0.4596	0.0469	0.6247	4.694695	2.796
10	1	0		60.00	7.75	2000	0.4732	0.0605	0.6111	6.056056	2.714
11	2	0		120.00	10.95	2000	0.4837	0.071	0.6006	7.107107	2.650
12	4	2		242.00	15.56	2000	0.4909	0.0782	0.5934	7.827828	2.606
13	5	56		356.00	18.87	2000	0.4939	0.0812	0.5904	8.128128	2.588
14	22	9		1329.00	36.46	2000	0.5014	0.0887	0.5829	8.878879	2.542
15	29	35		1775.00	42.13	2000	0.503	0.0903	0.5813	9.039039	2.532
16	93	56		5636.00	75.07	2000	0.5088	0.0961	0.5755	9.61962	2.497
17	97	12		5832.00	76.37	2000	0.509	0.0963	0.5753	9.63964	2.496
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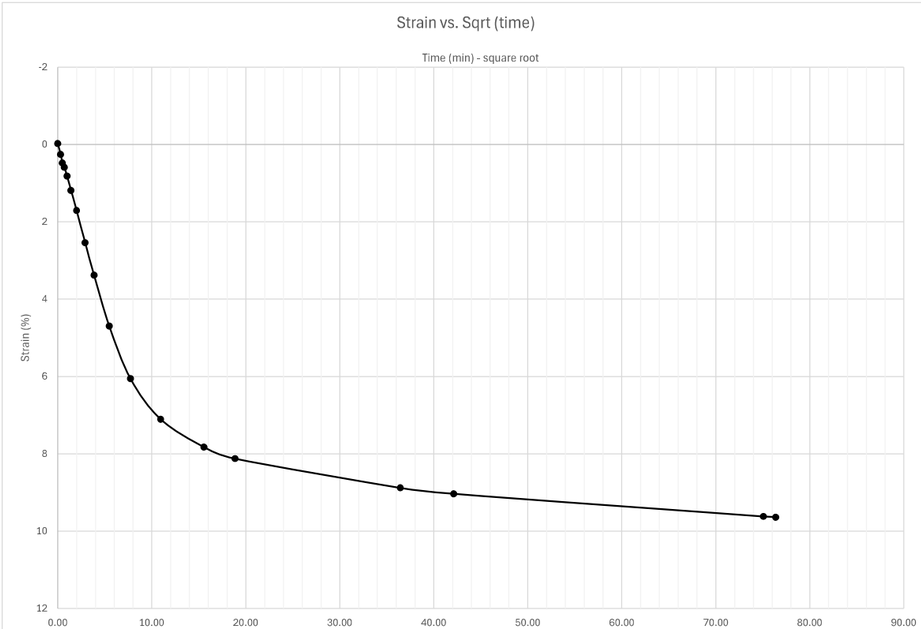
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

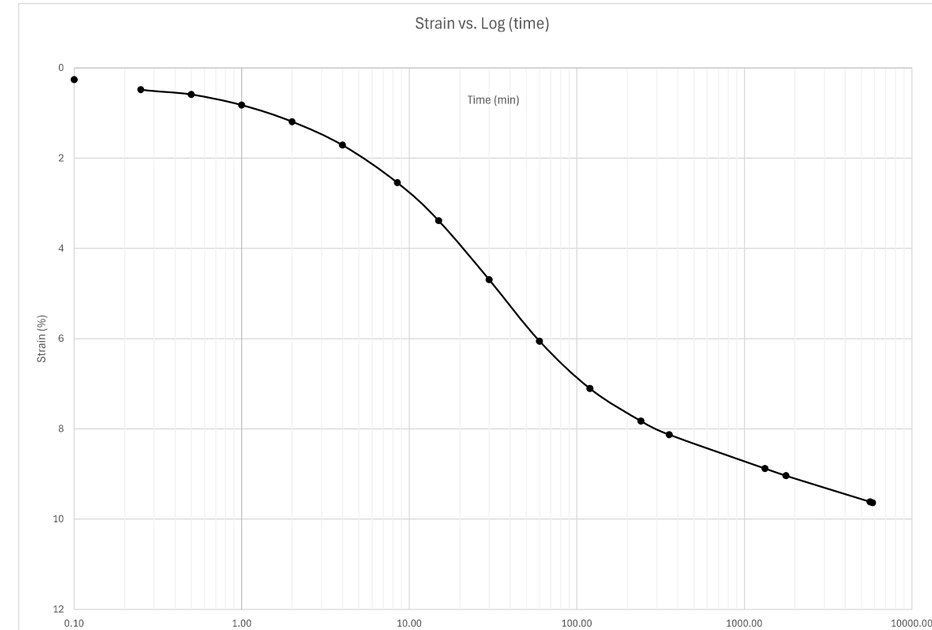
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.509	-0.0002	0.5755	-0.02002	2.497
1			6	0.10	0.32	4000	0.5119	0.0027	0.5726	0.27027	2.480
2			15	0.25	0.50	4000	0.5131	0.0039	0.5714	0.39039	2.472
3			30	0.50	0.71	4000	0.5145	0.0053	0.57	0.530531	2.464
4		1		1.00	1.00	4000	0.5166	0.0074	0.5679	0.740741	2.451
5		2		2.00	1.41	4000	0.5195	0.0103	0.565	1.031031	2.433
6		4		4.00	2.00	4000	0.5238	0.0146	0.5607	1.461461	2.407
7		8		8.00	2.83	4000	0.5299	0.0207	0.5546	2.072072	2.370
8		15		15.00	3.87	4000	0.5385	0.0293	0.546	2.932933	2.318
9		30		30.00	5.48	4000	0.5477	0.0385	0.5368	3.853854	2.262
10	1	0		60.00	7.75	4000	0.5582	0.049	0.5263	4.904905	2.198
11	2	0		120.00	10.95	4000	0.5666	0.0574	0.5179	5.745746	2.147
12	4	1		241.00	15.52	4000	0.5727	0.0635	0.5118	6.356356	2.110
13	5	12		312.00	17.66	4000	0.5744	0.0652	0.5101	6.526527	2.100
14	20	53		1253.00	35.40	4000	0.582	0.0728	0.5025	7.287287	2.054
15	23	58		1438.00	37.92	4000	0.5827	0.0735	0.5018	7.357357	2.049
16	28	36		1716.00	41.42	4000	0.5837	0.0745	0.5008	7.457457	2.043
17	44	53		2693.00	51.89	4000	0.5857	0.0765	0.4988	7.657658	2.031
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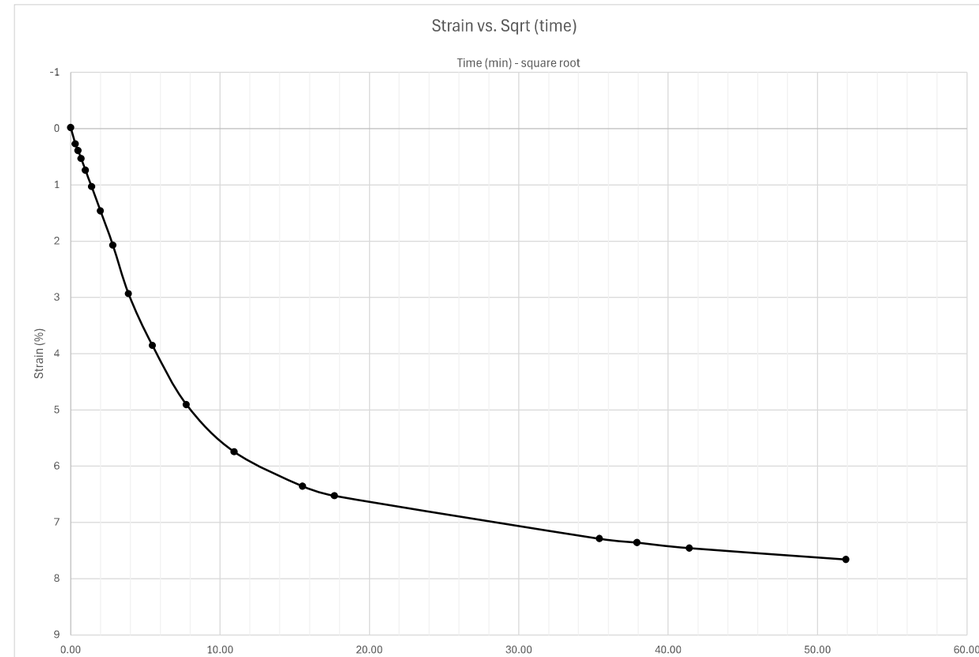
Sequence 5: 4000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

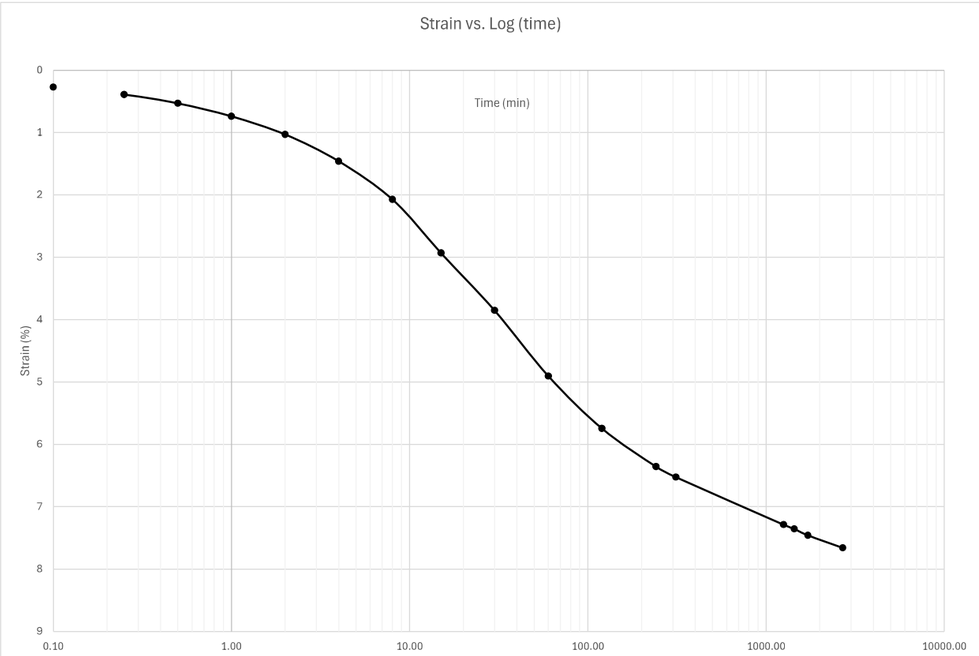


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5857	0.0002	0.4986	0.02002	2.030
1			6	0.10	0.32	2000	0.5847	-0.0008	0.4996	-0.08008	2.036
2			15	0.25	0.50	2000	0.5843	-0.0012	0.5	-0.12012	2.038
3			30	0.50	0.71	2000	0.584	-0.0015	0.5003	-0.15015	2.040
4		1		1.00	1.00	2000	0.5836	-0.0019	0.5007	-0.19019	2.043
5		2		2.00	1.41	2000	0.583	-0.0025	0.5013	-0.25025	2.046
6		5		5.00	2.24	2000	0.5822	-0.0033	0.5021	-0.33033	2.051
7		8		8.00	2.83	2000	0.5818	-0.0037	0.5025	-0.37037	2.054
8		15		15.00	3.87	2000	0.5814	-0.0041	0.5029	-0.41041	2.056
9		30		30.00	5.48	2000	0.5811	-0.0044	0.5032	-0.44044	2.058
10		55		55.00	7.42	2000	0.5806	-0.0049	0.5037	-0.49049	2.061
11	1	58		118.00	10.86	2000	0.5803	-0.0052	0.504	-0.520521	2.063
12	4			240.00	15.49	2000	0.58	-0.0055	0.5043	-0.550551	2.065
13	7			420.00	20.49	2000	0.5798	-0.0057	0.5045	-0.570571	2.066
14	9	25		565.00	23.77	2000	0.5797	-0.0058	0.5046	-0.580581	2.066
15	23	54		1434.00	37.87	2000	0.5794	-0.0061	0.5049	-0.610611	2.068
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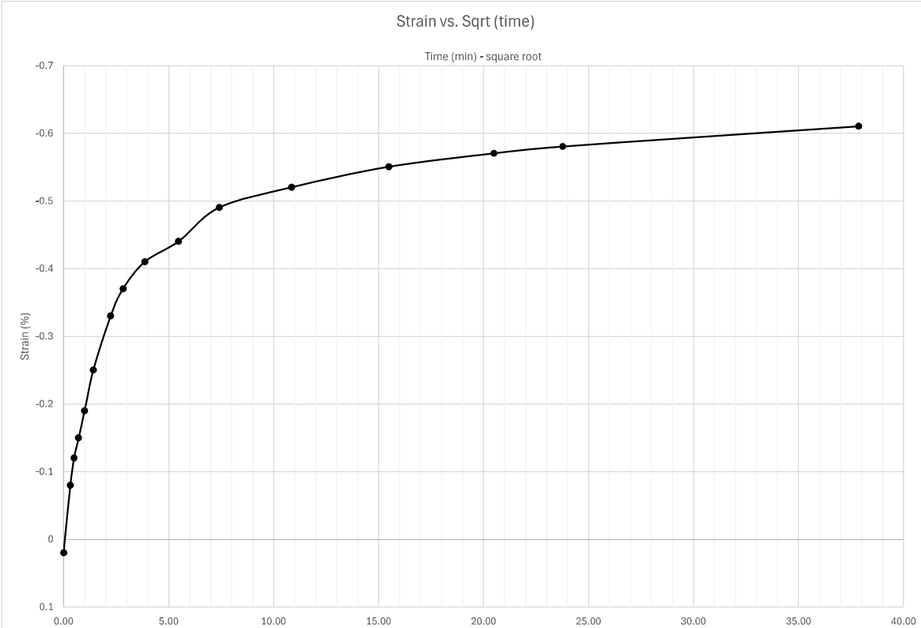
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

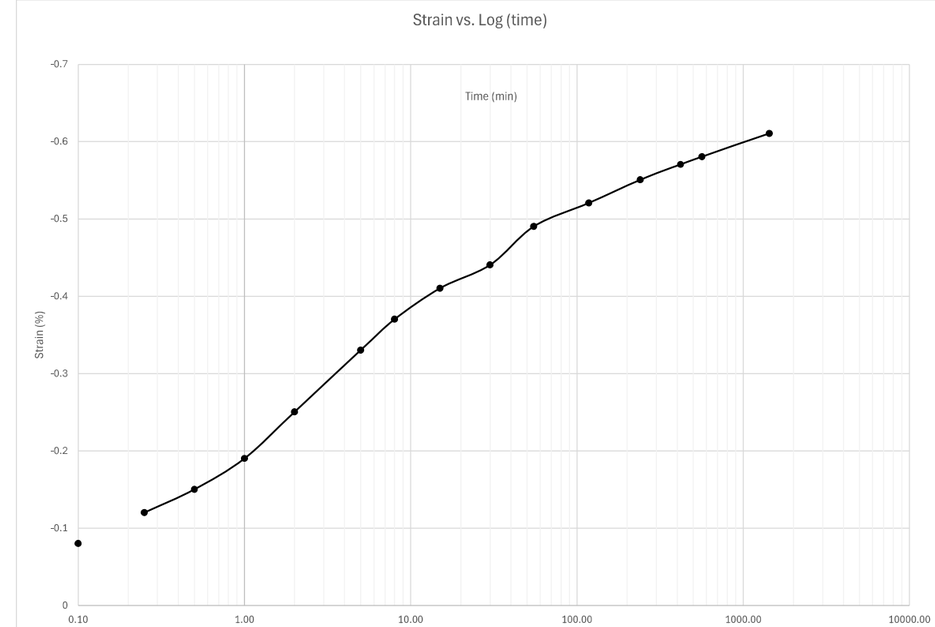
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5794	0.0002	0.5047	0.02002	2.067
1			6	0.10	0.32	1000	0.5786	-0.0006	0.5055	-0.06006	2.072
2			15	0.25	0.50	1000	0.5783	-0.0009	0.5058	-0.09009	2.074
3			30	0.50	0.71	1000	0.5781	-0.0011	0.506	-0.11011	2.075
4		1		1.00	1.00	1000	0.5777	-0.0015	0.5064	-0.15015	2.077
5		2		2.00	1.41	1000	0.5772	-0.002	0.5069	-0.2002	2.080
6		4		4.00	2.00	1000	0.5765	-0.0027	0.5076	-0.27027	2.085
7		8		8.00	2.83	1000	0.5756	-0.0036	0.5085	-0.36036	2.090
8		15		15.00	3.87	1000	0.5747	-0.0045	0.5094	-0.45045	2.096
9		30		30.00	5.48	1000	0.5738	-0.0054	0.5103	-0.540541	2.101
10		58		58.00	7.62	1000	0.5729	-0.0063	0.5112	-0.630631	2.106
11	1	52		112.00	10.58	1000	0.5721	-0.0071	0.512	-0.710711	2.111
12	3	57		237.00	15.39	1000	0.5713	-0.0079	0.5128	-0.790791	2.116
13	7	10		430.00	20.74	1000	0.5707	-0.0085	0.5134	-0.850851	2.120
14	8	33		513.00	22.65	1000	0.5705	-0.0087	0.5136	-0.870871	2.121
15	22	56		1376.00	37.09	1000	0.5695	-0.0097	0.5146	-0.970971	2.127
16	49	52		2992.00	54.70	1000	0.5689	-0.0103	0.5152	-1.031031	2.131
17	95	52		5752.00	75.84	1000	0.5685	-0.0107	0.5156	-1.071071	2.133
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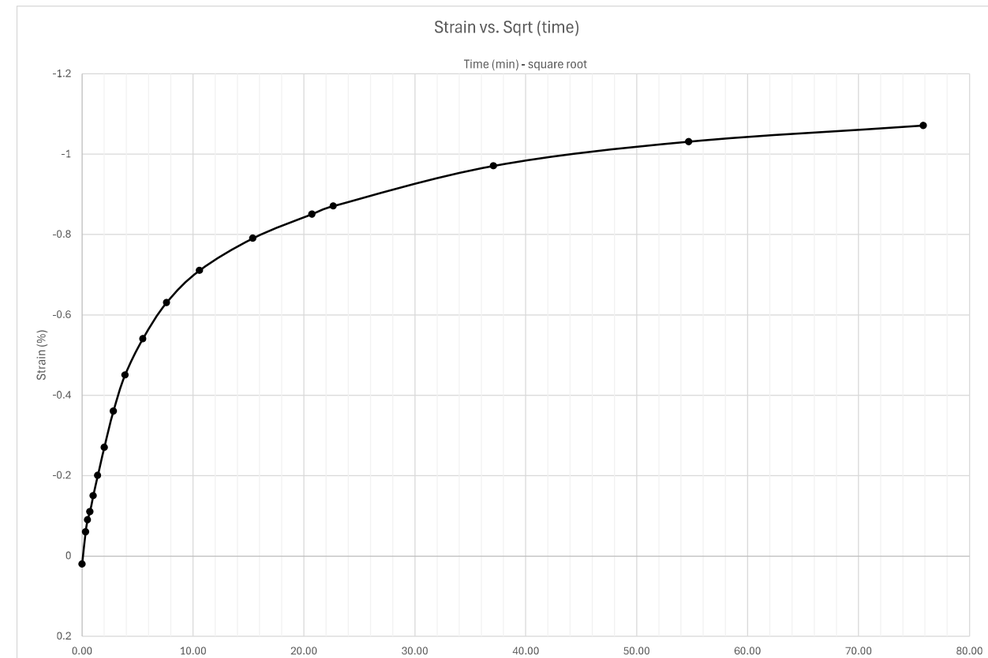
Sequence 7: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

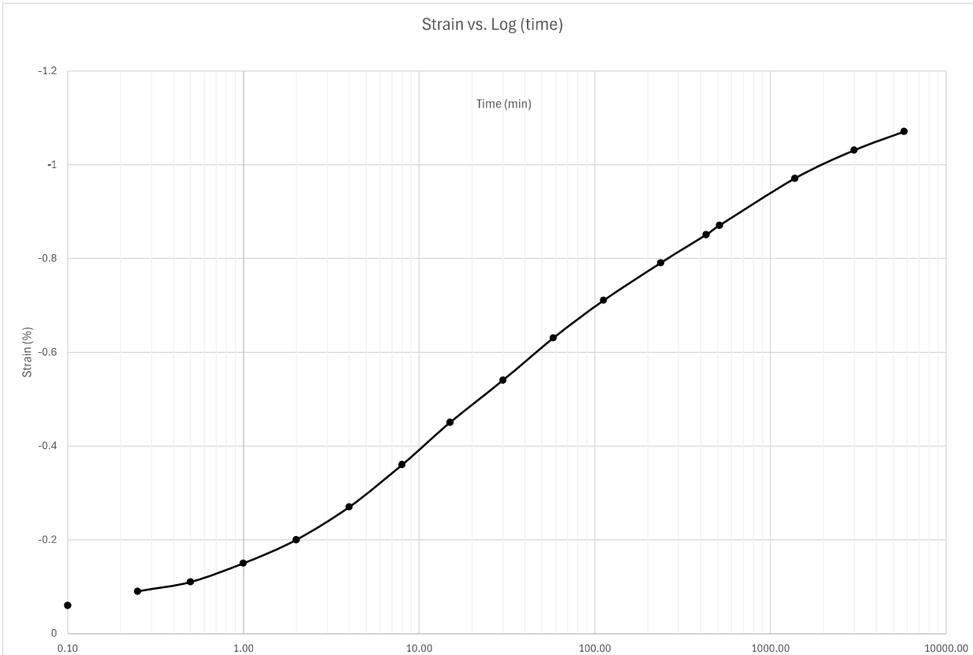


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.5685	0.0001	0.5155	0.01001	2.133
1			6	0.10	0.32	500	0.5679	-0.0005	0.5161	-0.05005	2.136
2			15	0.25	0.50	500	0.5678	-0.0006	0.5162	-0.06006	2.137
3			30	0.50	0.71	500	0.5676	-0.0008	0.5164	-0.08008	2.138
4		1		1.00	1.00	500	0.5674	-0.001	0.5166	-0.1001	2.139
5		2		2.00	1.41	500	0.567	-0.0014	0.517	-0.14014	2.142
6		4		4.00	2.00	500	0.5665	-0.0019	0.5175	-0.19019	2.145
7		8		8.00	2.83	500	0.5658	-0.0026	0.5182	-0.26026	2.149
8		15		15.00	3.87	500	0.565	-0.0034	0.519	-0.34034	2.154
9		30		30.00	5.48	500	0.5641	-0.0043	0.5199	-0.43043	2.159
10		57		57.00	7.55	500	0.5632	-0.0052	0.5208	-0.520521	2.165
11	2			120.00	10.95	500	0.562	-0.0064	0.522	-0.640641	2.172
12	3	56		236.00	15.36	500	0.5611	-0.0073	0.5229	-0.730731	2.178
13	5	59		359.00	18.95	500	0.5605	-0.0079	0.5235	-0.790791	2.181
14	21	15		1275.00	35.71	500	0.5586	-0.0098	0.5254	-0.980981	2.193
15	24			1440.00	37.95	500	0.5584	-0.01	0.5256	-1.001001	2.194
16	32			1920.00	43.82	500	0.5579	-0.0105	0.5261	-1.051051	2.197
17	46			2760.00	52.54	500	0.5573	-0.0111	0.5267	-1.111111	2.201
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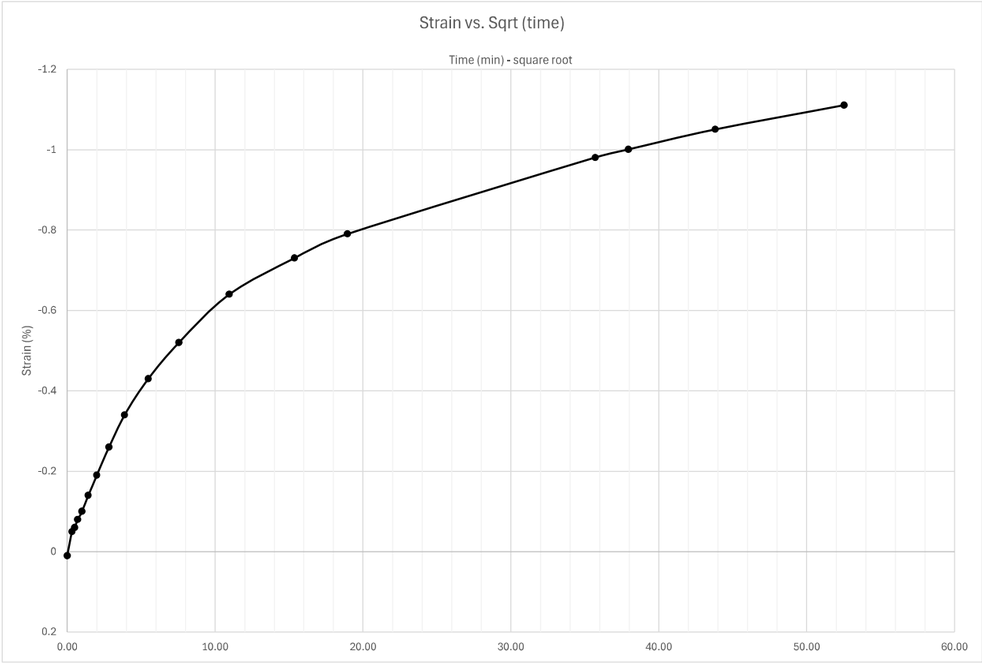
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

L_EB1-B, ST-52, 13.0-15.0 ft

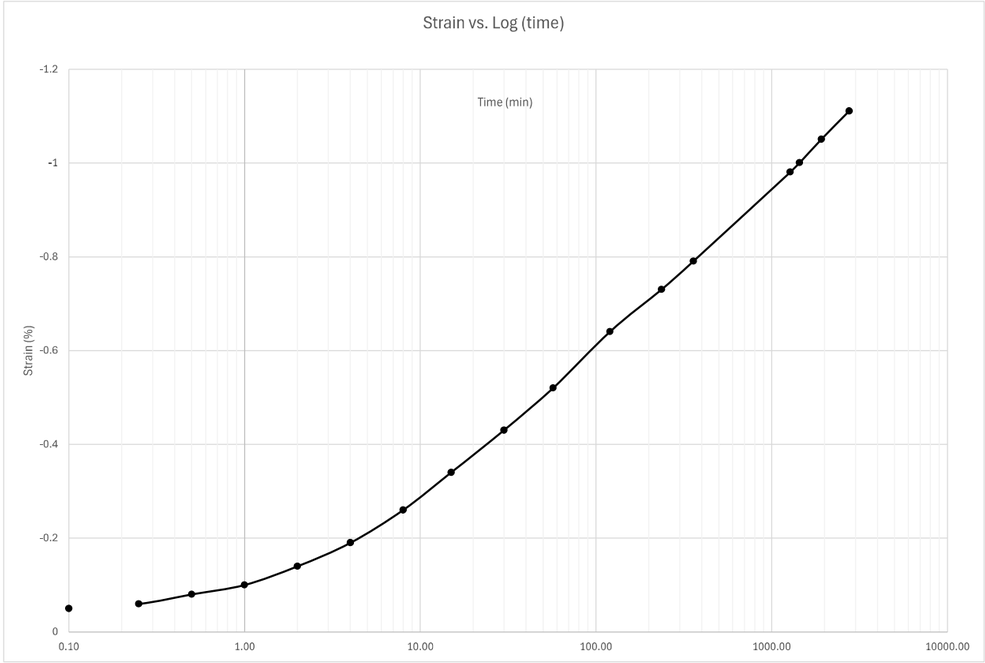
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5573	-0.0001	0.5268	-0.01001	2.201
1			6	0.10	0.32	1000	0.5578	0.0004	0.5263	0.04004	2.198
2			15	0.25	0.50	1000	0.5579	0.0005	0.5262	0.05005	2.198
3			30	0.50	0.71	1000	0.5581	0.0007	0.526	0.07007	2.196
4		1		1.00	1.00	1000	0.5583	0.0009	0.5258	0.09009	2.195
5		2		2.00	1.41	1000	0.5587	0.0013	0.5254	0.13013	2.193
6		4		4.00	2.00	1000	0.559	0.0016	0.5251	0.16016	2.191
7		8		8.00	2.83	1000	0.5595	0.0021	0.5246	0.21021	2.188
8		15		15.00	3.87	1000	0.5598	0.0024	0.5243	0.24024	2.186
9		22		22.00	4.69	1000	0.56	0.0026	0.5241	0.26026	2.185
10		39		39.00	6.24	1000	0.5603	0.0029	0.5238	0.29029	2.183
11	1	9		69.00	8.31	1000	0.5604	0.003	0.5237	0.3003	2.182
12	2	7		127.00	11.27	1000	0.5606	0.0032	0.5235	0.32032	2.181
13	4	13		253.00	15.91	1000	0.5608	0.0034	0.5233	0.34034	2.180
14	8	24		504.00	22.45	1000	0.561	0.0036	0.5231	0.36036	2.179
15	23	30		1410.00	37.55	1000	0.5612	0.0038	0.5229	0.38038	2.178
16	28	41		1721.00	41.48	1000	0.5613	0.0039	0.5228	0.39039	2.177
17	118	43		7123.00	84.40	1000	0.5615	0.0041	0.5226	0.41041	2.176
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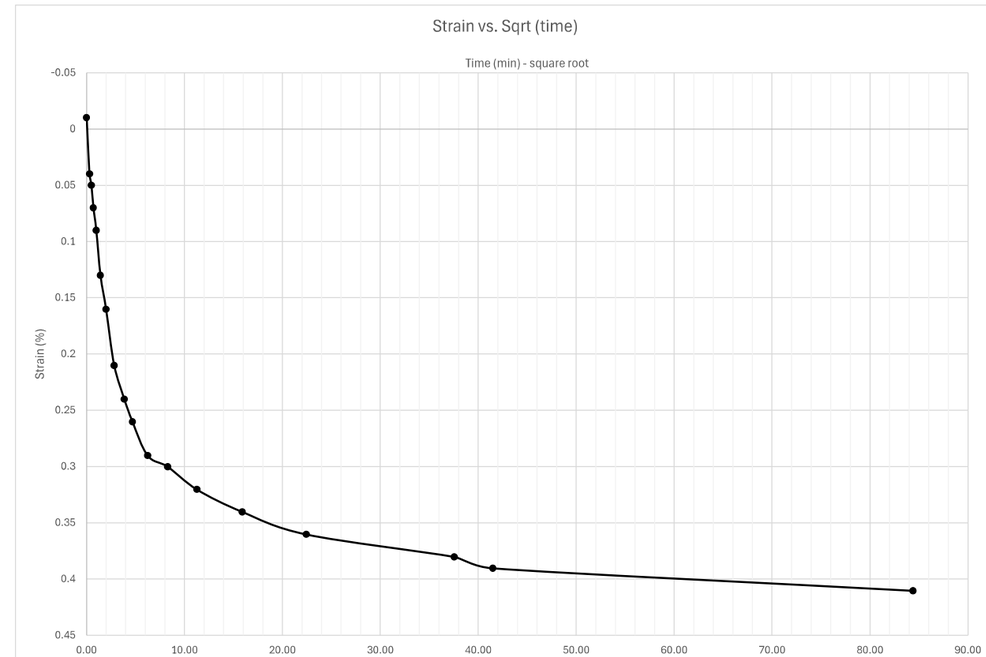
Sequence 9: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

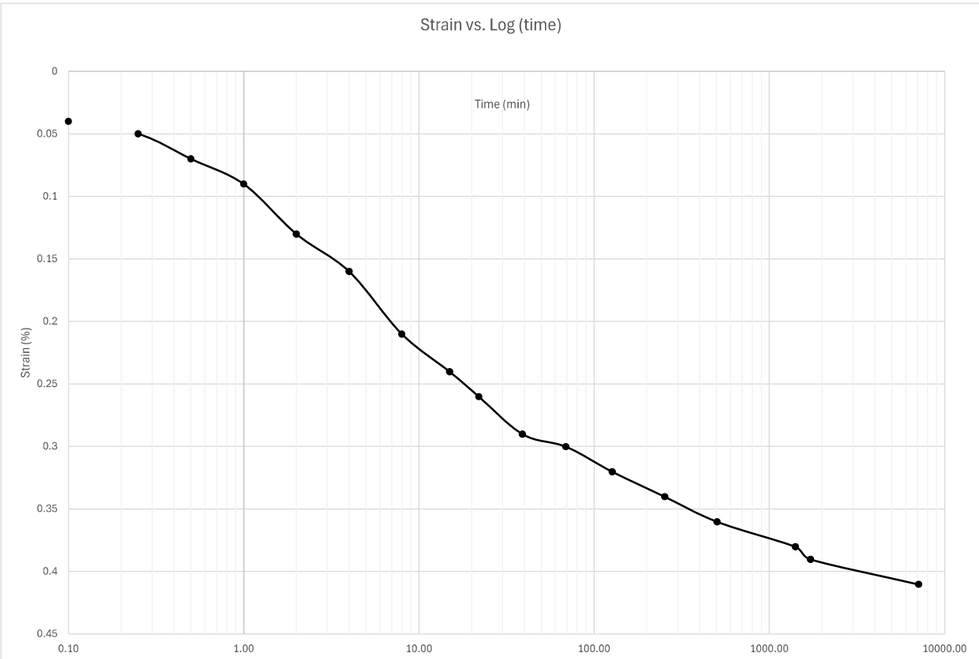


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.5615	-0.0002	0.5228	-0.02002	2.177
1			6	0.10	0.32	2000	0.5625	0.0008	0.5218	0.08008	2.171
2			15	0.25	0.50	2000	0.5628	0.0011	0.5215	0.11011	2.169
3			30	0.50	0.71	2000	0.5631	0.0014	0.5212	0.14014	2.167
4		1		1.00	1.00	2000	0.5636	0.0019	0.5207	0.19019	2.164
5		2		2.00	1.41	2000	0.5644	0.0027	0.5199	0.27027	2.159
6		4		4.00	2.00	2000	0.5653	0.0036	0.519	0.36036	2.154
7		8		8.00	2.83	2000	0.5664	0.0047	0.5179	0.47047	2.147
8		15		15.00	3.87	2000	0.5673	0.0056	0.517	0.560561	2.142
9		38		38.00	6.16	2000	0.5683	0.0066	0.516	0.660661	2.136
10	1	5		65.00	8.06	2000	0.5687	0.007	0.5156	0.700701	2.133
11	2	8		128.00	11.31	2000	0.5691	0.0074	0.5152	0.740741	2.131
12	4	3		243.00	15.59	2000	0.5695	0.0078	0.5148	0.780781	2.128
13	6	26		386.00	19.65	2000	0.5698	0.0081	0.5145	0.810811	2.127
14	8	25		505.00	22.47	2000	0.5699	0.0082	0.5144	0.820821	2.126
15	23	48		1428.00	37.79	2000	0.5706	0.0089	0.5137	0.890891	2.122
16	24	17		1457.00	38.17	2000	0.5707	0.009	0.5136	0.900901	2.121
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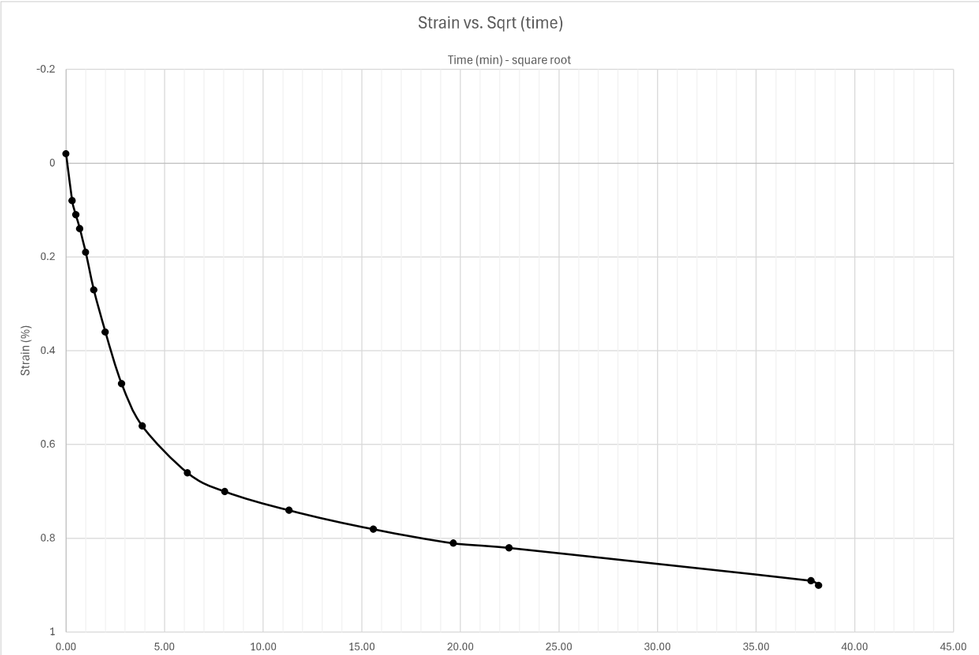
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

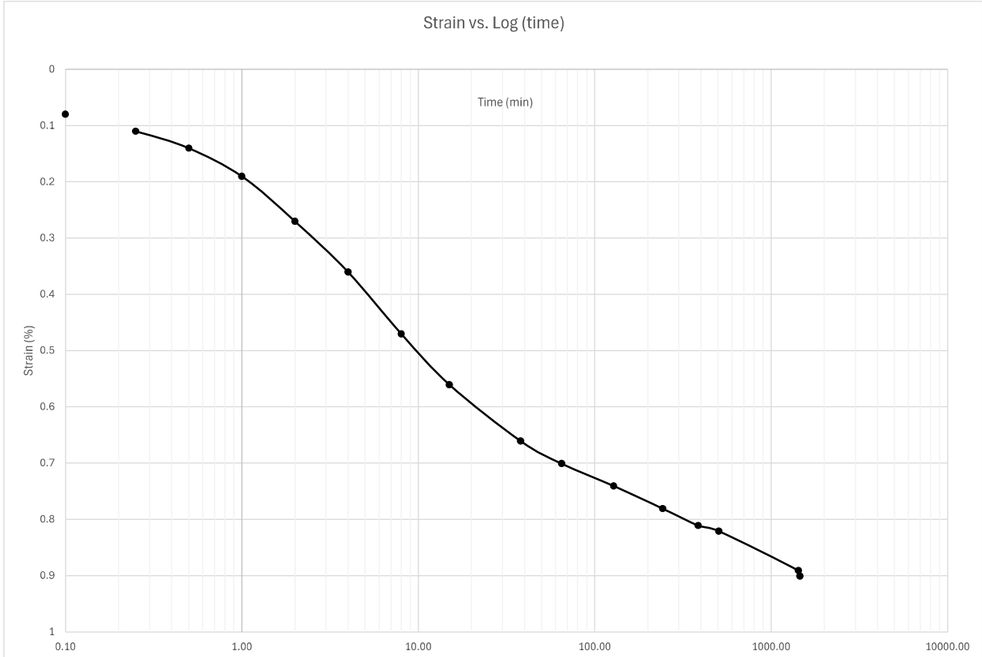
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.5707	-0.0003	0.5139	-0.03003	2.123
1			6	0.10	0.32	4000	0.5724	0.0014	0.5122	0.14014	2.113
2			15	0.25	0.50	4000	0.5729	0.0019	0.5125	0.19019	2.114
3			30	0.50	0.71	4000	0.5736	0.0026	0.5118	0.26026	2.110
4		1		1.00	1.00	4000	0.5745	0.0035	0.5109	0.35035	2.105
5		2		2.00	1.41	4000	0.5759	0.0049	0.5095	0.49049	2.096
6		4		4.00	2.00	4000	0.5777	0.0067	0.5077	0.670671	2.085
7		8		8.00	2.83	4000	0.5799	0.0089	0.5055	0.890891	2.072
8		15		15.00	3.87	4000	0.5818	0.0108	0.5036	1.081081	2.060
9		30		30.00	5.48	4000	0.5837	0.0127	0.5017	1.271271	2.049
10		59		59.00	7.68	4000	0.5851	0.0141	0.5003	1.411411	2.040
11	2	36		156.00	12.49	4000	0.587	0.016	0.4984	1.601602	2.029
12	4	32		272.00	16.49	4000	0.588	0.017	0.4974	1.701702	2.023
13	23	51		1431.00	37.83	4000	0.592	0.021	0.4934	2.102102	1.998
14	30	3		1803.00	42.46	4000	0.5925	0.0215	0.4929	2.152152	1.995
15	47	12		2832.00	53.22	4000	0.5936	0.0226	0.4918	2.262262	1.989
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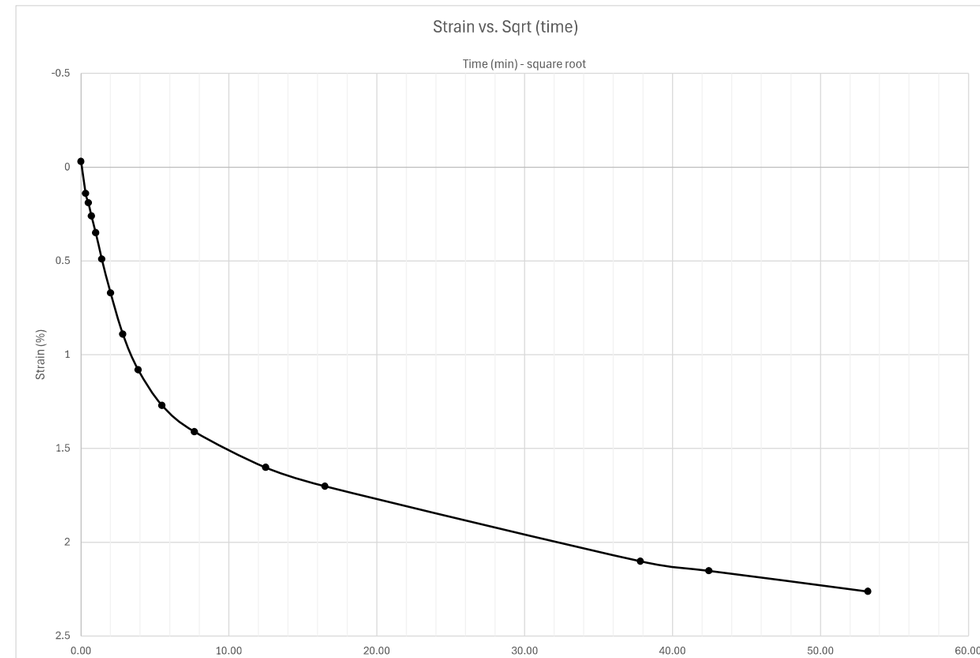
Sequence 11: 4000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

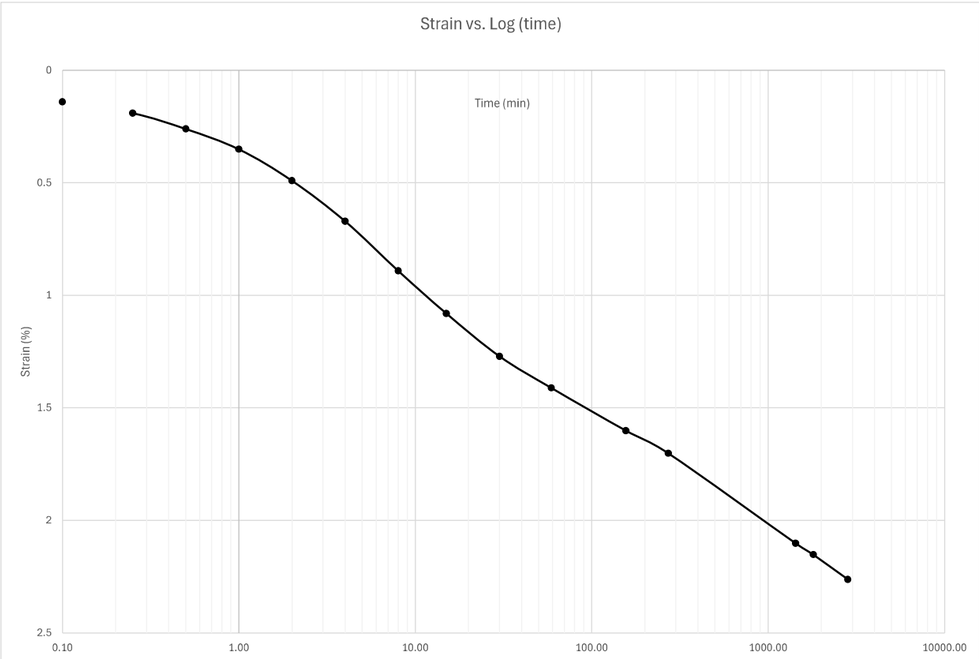


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.5936	-0.0006	0.4924	-0.06006	1.992
1			6	0.10	0.32	8000	0.5969	0.0027	0.4891	0.27027	1.972
2			15	0.25	0.50	8000	0.5978	0.0036	0.4882	0.36036	1.967
3			30	0.50	0.71	8000	0.5991	0.0049	0.4869	0.49049	1.959
4		1		1.00	1.00	8000	0.6008	0.0066	0.4852	0.660661	1.948
5		2		2.00	1.41	8000	0.6034	0.0092	0.4826	0.920921	1.933
6		4		4.00	2.00	8000	0.6072	0.013	0.4788	1.301301	1.910
7		8		8.00	2.83	8000	0.6124	0.0182	0.4736	1.821822	1.878
8		15		15.00	3.87	8000	0.6188	0.0246	0.4672	2.462462	1.839
9		30		30.00	5.48	8000	0.627	0.0328	0.459	3.283283	1.789
10	1	0		60.00	7.75	8000	0.6349	0.0407	0.4511	4.074074	1.741
11	1	58		118.00	10.86	8000	0.6412	0.047	0.4448	4.704705	1.703
12	4	1		241.00	15.52	8000	0.646	0.0518	0.44	5.185185	1.674
13	7	3		423.00	20.57	8000	0.6491	0.0549	0.4369	5.495495	1.655
14	23	47		1427.00	37.78	8000	0.6549	0.0607	0.4311	6.076076	1.620
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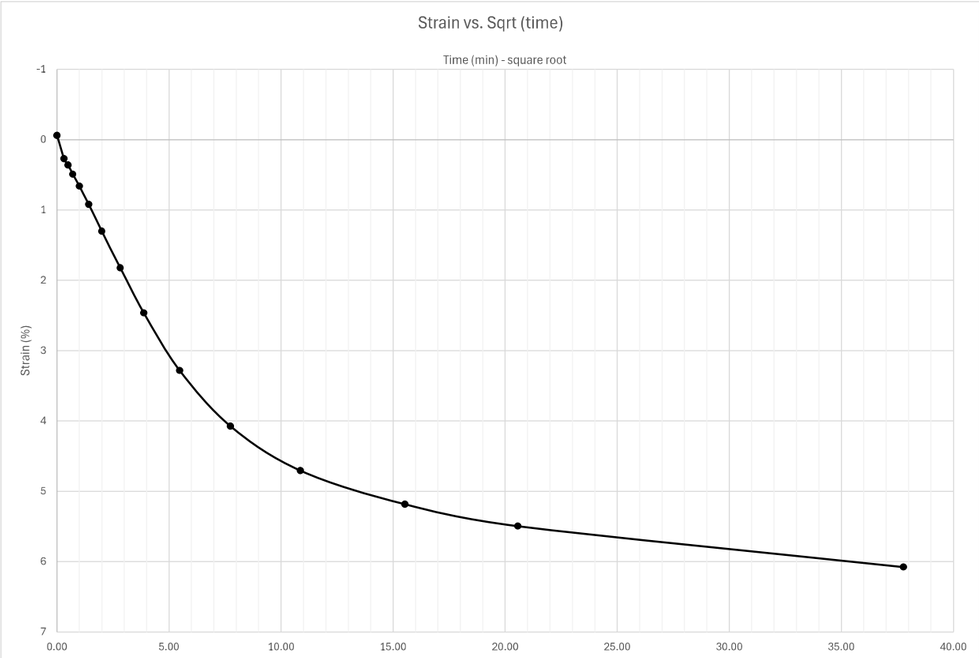
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

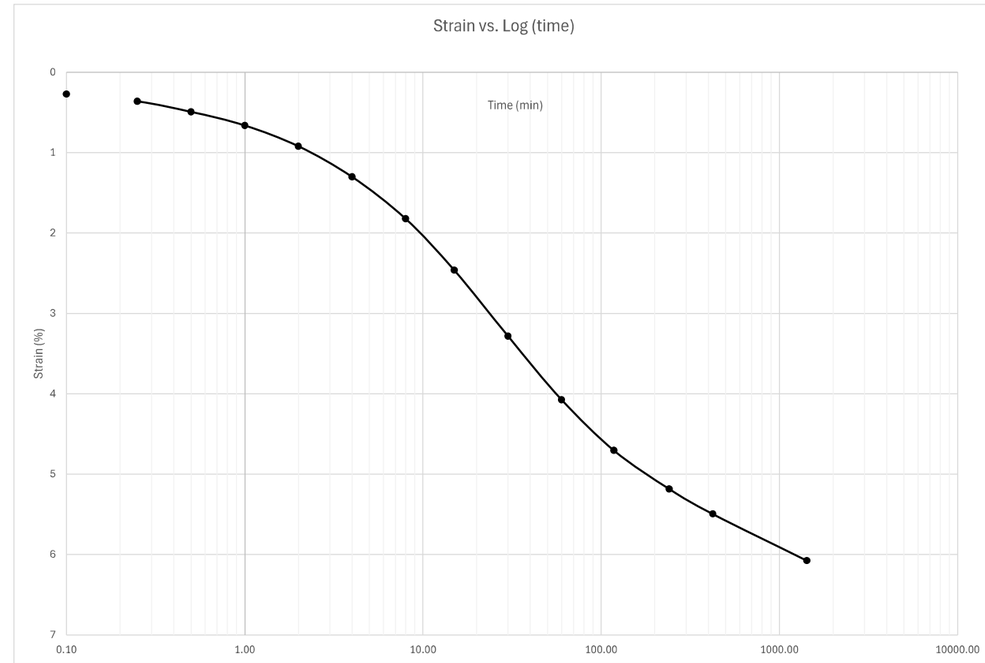
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6549	-0.0008	0.4319	-0.08008	1.625
1			6	0.10	0.32	16000	0.6585	0.0028	0.4283	0.28028	1.603
2			15	0.25	0.50	16000	0.6595	0.0038	0.4273	0.38038	1.597
3			30	0.50	0.71	16000	0.6607	0.005	0.4261	0.500501	1.589
4		1		1.00	1.00	16000	0.6626	0.0069	0.4242	0.690691	1.578
5		2		2.00	1.41	16000	0.6655	0.0098	0.4213	0.980981	1.560
6		4		4.00	2.00	16000	0.6695	0.0138	0.4173	1.381381	1.536
7		8		8.00	2.83	16000	0.6751	0.0194	0.4117	1.941942	1.502
8		15		15.00	3.87	16000	0.6817	0.026	0.4051	2.602603	1.462
9		30		30.00	5.48	16000	0.6902	0.0345	0.3966	3.453453	1.410
10	1			60.00	7.75	16000	0.6977	0.042	0.3891	4.204204	1.365
11	1	58		118.00	10.86	16000	0.7031	0.0474	0.3837	4.744745	1.332
12	4	9		249.00	15.78	16000	0.7072	0.0515	0.3796	5.155155	1.307
13	6	9		369.00	19.21	16000	0.7092	0.0535	0.3776	5.355355	1.295
14	6	57		417.00	20.42	16000	0.7097	0.054	0.3771	5.405405	1.292
15	26	22		1582.00	39.77	16000	0.714	0.0583	0.3728	5.835836	1.265
16	71			4260.00	65.27	16000	0.7168	0.0611	0.37	6.116116	1.248
17	94	52		5692.00	75.45	16000	0.7175	0.0618	0.3693	6.186186	1.244
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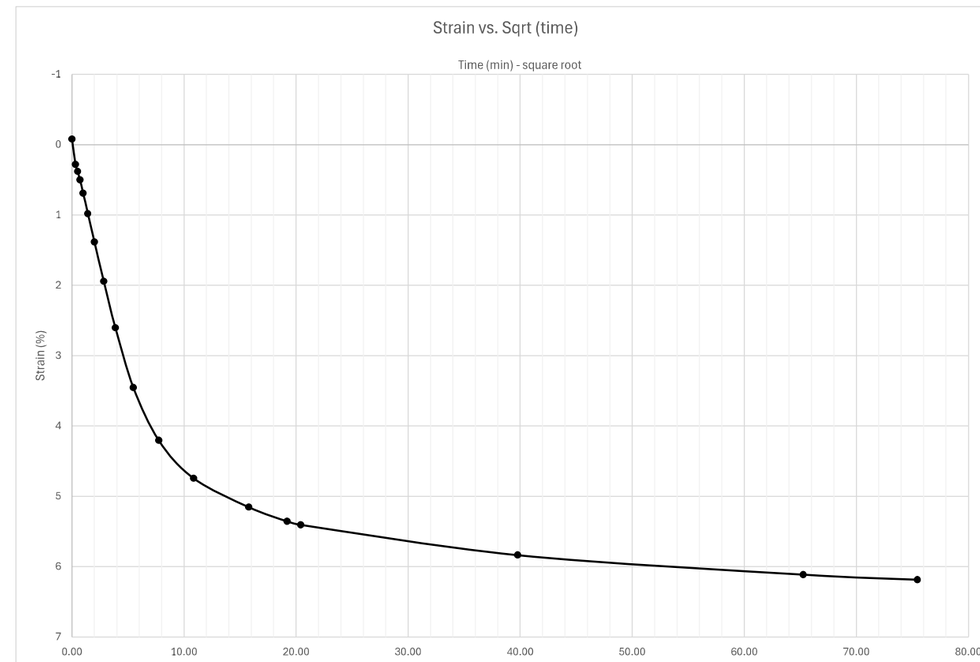
Sequence 13: 16000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

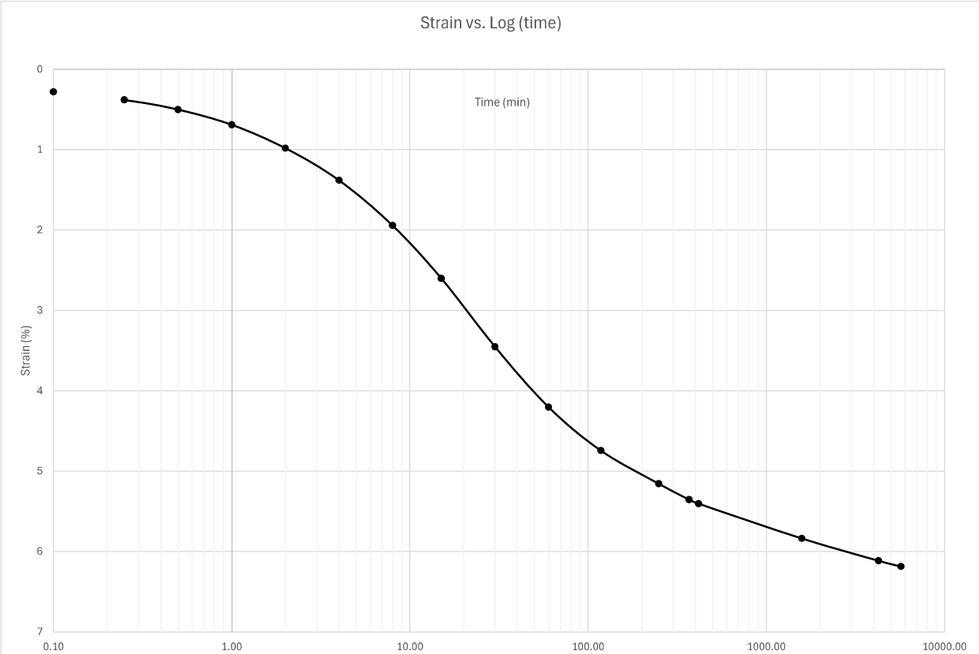


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.7175	-0.0012	0.3705	-0.12012	1.251
1			6	0.10	0.32	32000	0.7208	0.0021	0.3672	0.21021	1.231
2			15	0.25	0.50	32000	0.7215	0.0028	0.3665	0.28028	1.227
3			30	0.50	0.71	32000	0.7224	0.0037	0.3656	0.37037	1.222
4		1		1.00	1.00	32000	0.7236	0.0049	0.3644	0.49049	1.214
5		2		2.00	1.41	32000	0.7259	0.0072	0.3621	0.720721	1.200
6		4		4.00	2.00	32000	0.7288	0.0101	0.3592	1.011011	1.183
7		8		8.00	2.83	32000	0.7328	0.0141	0.3552	1.411411	1.158
8		15		15.00	3.87	32000	0.7373	0.0186	0.3507	1.861862	1.131
9		30		30.00	5.48	32000	0.743	0.0243	0.345	2.432432	1.097
10		59		59.00	7.68	32000	0.7479	0.0292	0.3401	2.922923	1.067
11	1	57		117.00	10.82	32000	0.7517	0.033	0.3363	3.303303	1.044
12	3	57		237.00	15.39	32000	0.7548	0.0361	0.3332	3.613614	1.025
13	6	16		376.00	19.39	32000	0.7562	0.0375	0.3318	3.753754	1.016
14	22	46		1366.00	36.96	32000	0.7598	0.0411	0.3282	4.114114	0.994
15	24	38		1478.00	38.44	32000	0.76	0.0413	0.328	4.134134	0.993
16	47	0		2820.00	53.10	32000	0.7617	0.043	0.3263	4.304304	0.983
17	70	41		4241.00	65.12	32000	0.7628	0.0441	0.3252	4.414414	0.976
18	118	55		7135.00	84.47	32000	0.7637	0.045	0.3243	4.504505	0.971
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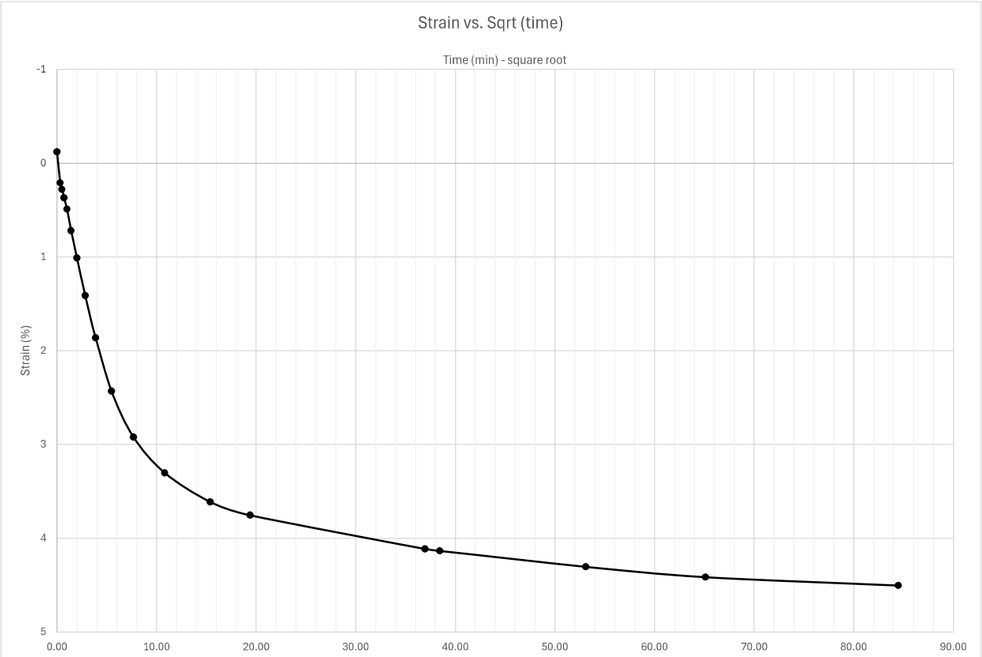
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

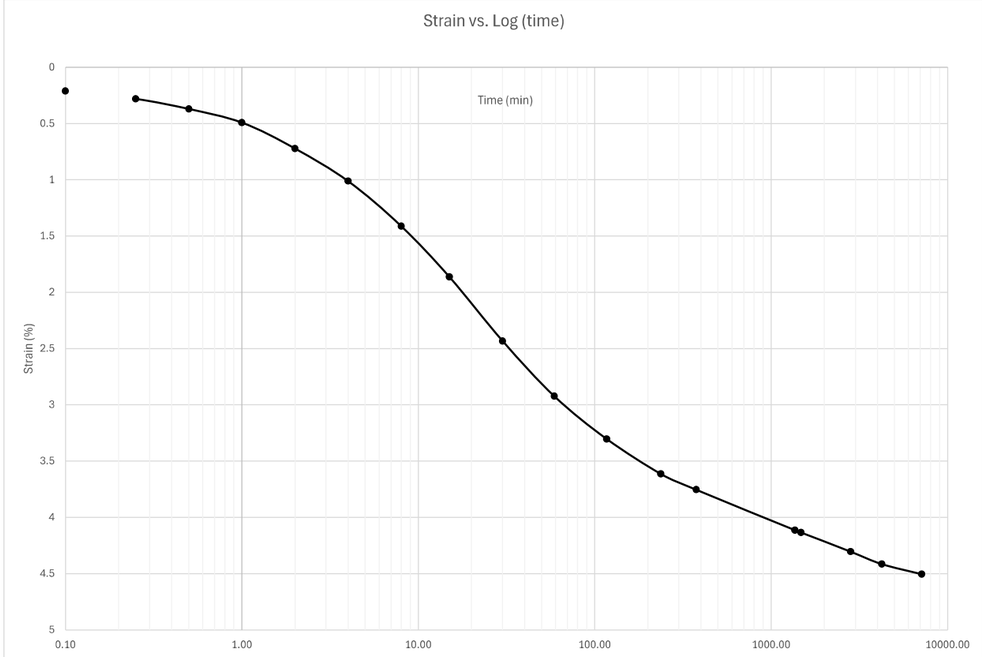
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

L_EB1-B, ST-52, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	18.0-20.0
Sample Number	ST-53	Boring Number	L_EB1-B
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment L		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0504	0.1145	0.9486	0.050	1.527	60.84	19	0.00314	0.002332
2	500	0.1368	0.1146	0.8622	0.137	1.297	134.56	40	0.00117	0.000915
3	1000	0.2246	0.1147	0.7744	0.225	1.063	65.61	36	0.00194	0.00082
4	2000	0.3155	0.1149	0.6835	0.316	0.821	100	30	0.00099	0.000767
5	4000	0.4026	0.1151	0.5964	0.403	0.589	81	25	0.00093	0.000701
6	2000	0.3962	0.1149	0.6028	0.397	0.606	-	-	-	-
7	1000	0.3846	0.1147	0.6144	0.385	0.637	-	-	-	-
8	500	0.3715	0.1146	0.6275	0.372	0.672	-	-	-	-
9	1000	0.3762	0.1147	0.6228	0.377	0.659	13.69	4.4	0.00601	0.00434
10	2000	0.3884	0.1149	0.6106	0.389	0.627	17.64	6	0.00448	0.00306
11	4000	0.4074	0.1152	0.5916	0.408	0.576	6.76	6.2	0.01098	0.00278
12	8000	0.4749	0.1158	0.5241	0.475	0.396	67.24	19	0.00087	0.00071
13	16000	0.5482	0.1166	0.4508	0.549	0.201	57.76	19	0.00075	0.00053
14	32000	0.601	0.1178	0.398	0.602	0.060	50.41	17.5	0.00067	0.00045
15										
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/16/2026
Machine Apparatus: 4
Technician: KSB

Sampling Date: 4/6/2026
Sample Number: ST-53
Depth (ft): 18.0-20.0
Boring Number: L_EB1-B
Location: Alignment L
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.35 (Measured)
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.91

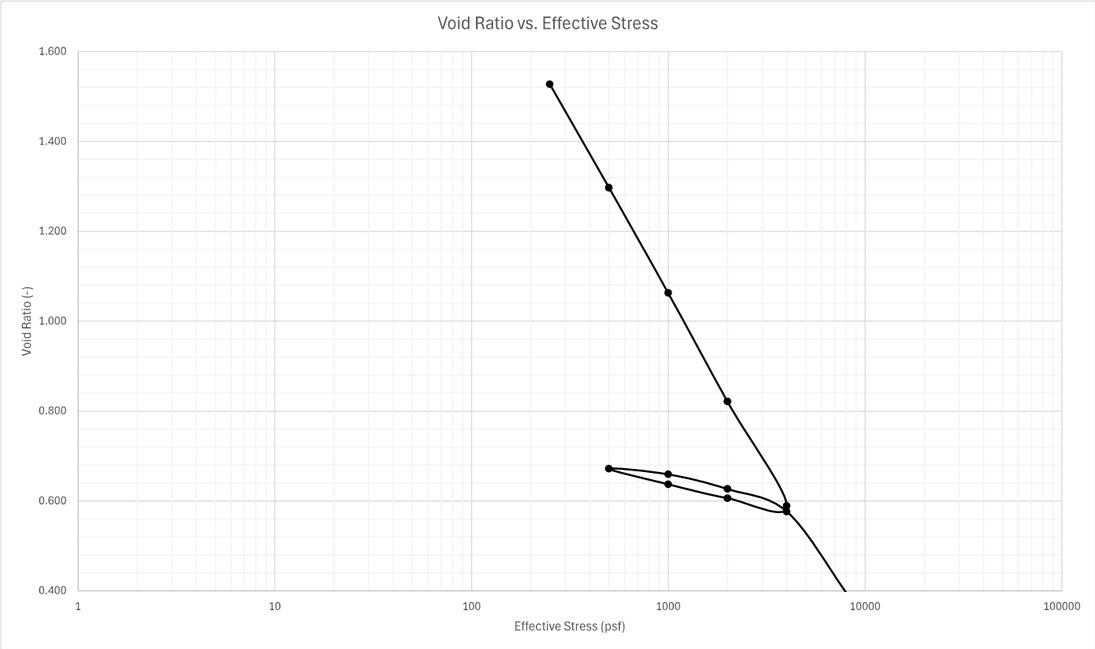
Parameters	Initial	Final
Height (in)	0.999	0.398
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.965
Weight of Container (g)	60.35	61.47
Weight of Wet Soil + Container (g)	242.83	114.96
Weight of Dry Soil + Container (g)	131.7	100.09
Moisture Content (%)	155.75	38.50
Moist Weight + Ring Weight (g)	207.74	159.7
Dry Mass (g)	40.99	41.00
Water Content (calc from spec)	155.75	38.50
Dry Density (pcf)	31.66	79.51
Wet Density (pcf)	80.98	110.12
Volume of Solids (in^3)	1.85	1.85
Height of Solids (in)	0.38	0.38
Void Ratio	1.662	0.060

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

L_EB1-B, ST-53, 18.0-20.0 ft

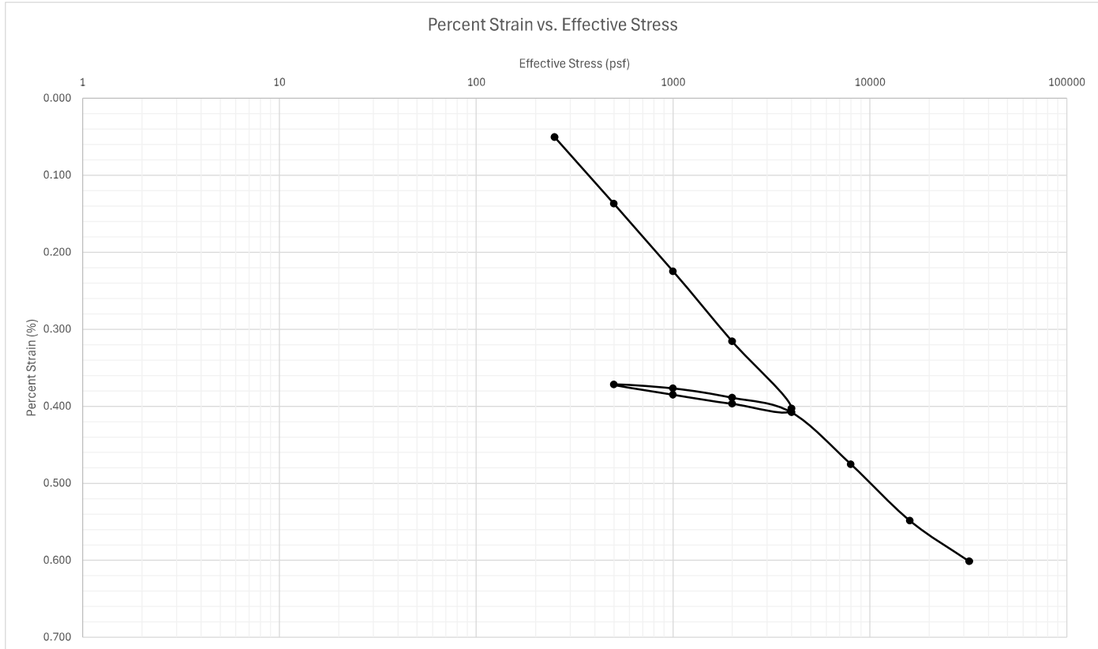
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0882	0	0.999	0	1.662
1			15	0.25	0.5	250	0.0895	0.0013	0.9977	0.13013	1.658
2			30	0.5	0.707106781	250	0.0905	0.0023	0.9967	0.23023	1.655
3		1		1	1	250	0.0924	0.0042	0.9948	0.42042	1.650
4		2		2	1.414213562	250	0.0949	0.0067	0.9923	0.670671	1.644
5		4		4	2	250	0.0984	0.0102	0.9888	1.021021	1.634
6		8		8	2.828427125	250	0.1031	0.0149	0.9841	1.491491	1.622
7		16		16	4	250	0.1094	0.0212	0.9778	2.122122	1.605
8	1	20		80	8.94427191	250	0.1274	0.0392	0.9598	3.923924	1.557
9	2	33		153	12.36931688	250	0.1318	0.0436	0.9554	4.364364	1.545
10	3	30		210	14.49137675	250	0.1333	0.0451	0.9539	4.514515	1.541
11	5	19		319	17.8605711	250	0.135	0.0468	0.9522	4.684685	1.537
12	6	30		390	19.74841766	250	0.1354	0.0472	0.9518	4.724725	1.536
13	24	27		1467	38.301436	250	0.1379	0.0497	0.9493	4.974975	1.529
14	45	13		2713	52.08646657	250	0.1386	0.0504	0.9486	5.045045	1.527
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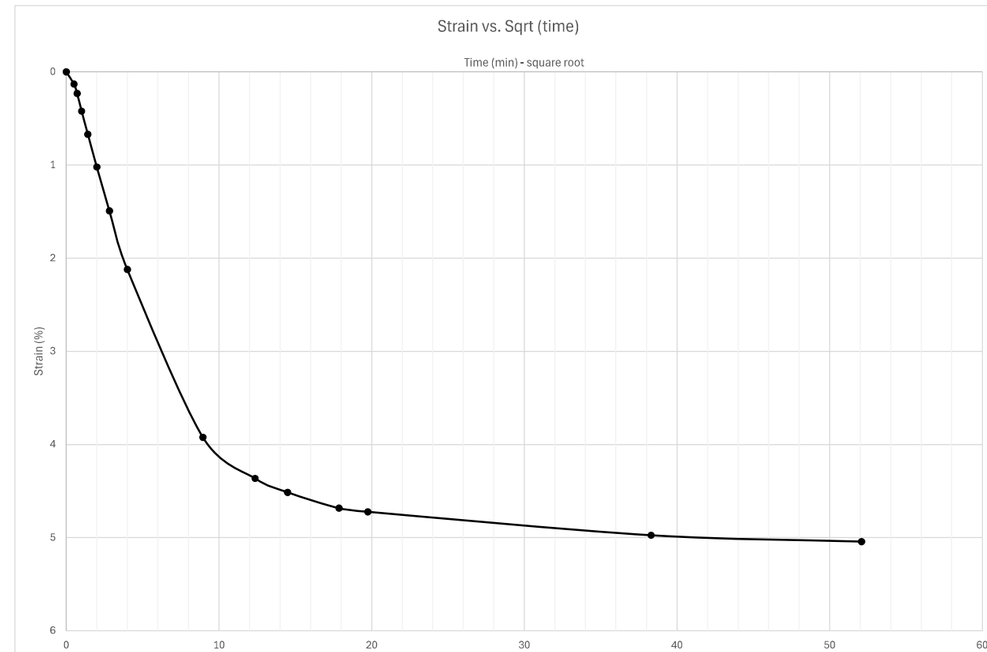
Sequence 1: 250 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

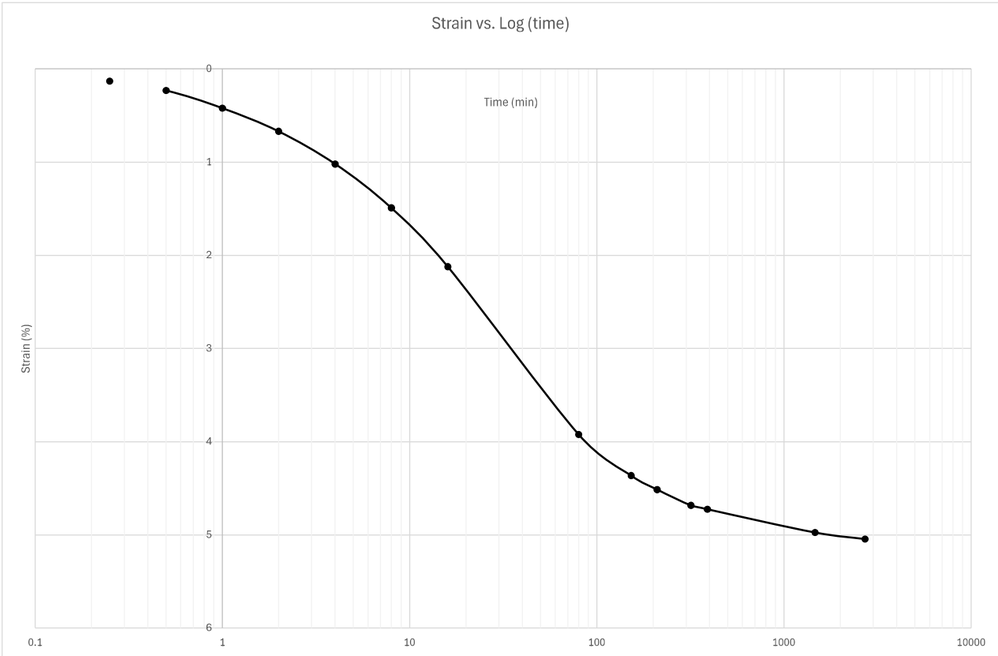


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1386	-0.0001	0.9487	-0.01001	1.528
1			6	0.1	0.32	500	0.1426	0.0039	0.9447	0.39039	1.517
2			15	0.25	0.50	500	0.1432	0.0045	0.9441	0.45045	1.515
3			30	0.5	0.71	500	0.1440	0.0053	0.9433	0.530531	1.513
4		1		1	1.00	500	0.1454	0.0067	0.9419	0.670671	1.509
5		2		2	1.41	500	0.1475	0.0088	0.9398	0.880881	1.504
6		4		4	2.00	500	0.1508	0.0121	0.9365	1.211211	1.495
7		8		8	2.83	500	0.1556	0.0169	0.9317	1.691692	1.482
8		15		15	3.87	500	0.1624	0.0237	0.9249	2.372372	1.464
9		30		30	5.48	500	0.1724	0.0337	0.9149	3.373373	1.437
10	1	0		60	7.75	500	0.1854	0.0467	0.9019	4.674675	1.403
11	2	0		120	10.95	500	0.1983	0.0596	0.8890	5.965966	1.368
12	4	0		240	15.49	500	0.2082	0.0695	0.8791	6.956957	1.342
13	6	22		382	19.54	500	0.2128	0.0741	0.8745	7.417417	1.330
14	22	36		1356	36.82	500	0.2198	0.0811	0.8675	8.118118	1.311
15	30	2		1802	42.45	500	0.2213	0.0826	0.8660	8.268268	1.307
16	94	23		5663	75.25	500	0.2250	0.0863	0.8623	8.638639	1.297
17	97	42		5862	76.56	500	0.2251	0.0864	0.8622	8.648649	1.297
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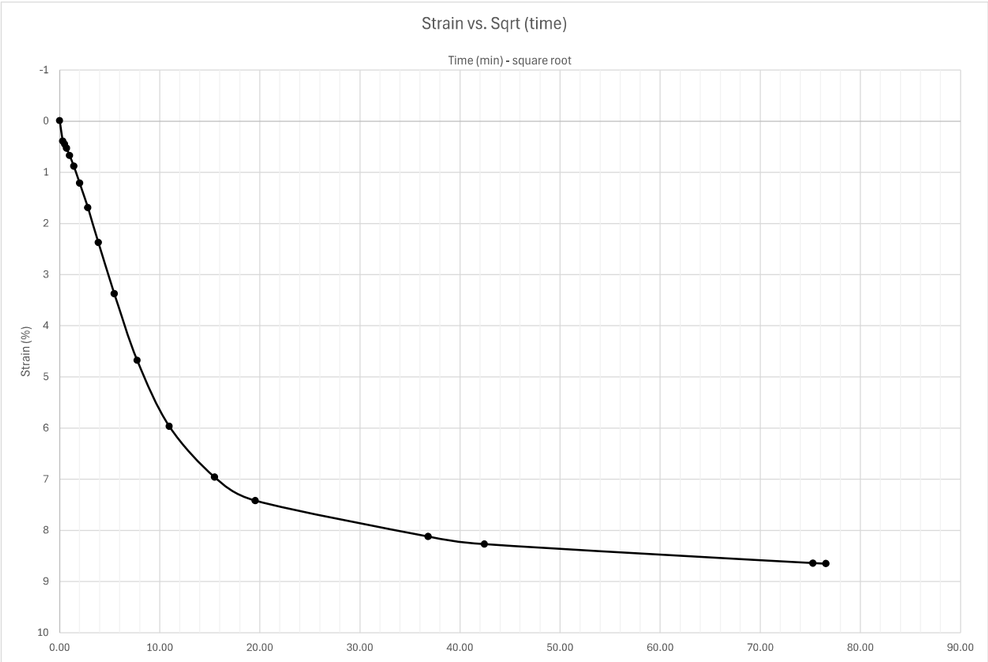
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

L_EB1-B, ST-53, 18.0-20.0 ft

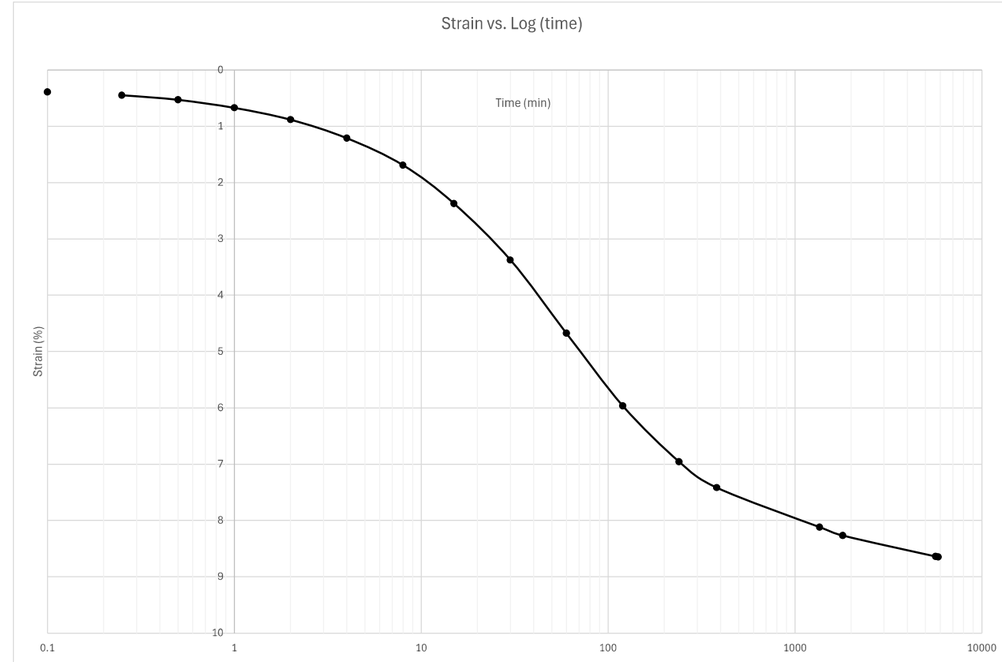
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.2251	-0.0001	0.8623	-0.01001	1.297
1			6	0.10	0.32	1000	0.2278	0.0026	0.8596	0.26026	1.290
2			15	0.25	0.50	1000	0.2289	0.0037	0.8585	0.37037	1.287
3			30	0.50	0.71	1000	0.2301	0.0049	0.8573	0.49049	1.284
4		1		1.00	1.00	1000	0.2319	0.0067	0.8555	0.670671	1.279
5		2		2.00	1.41	1000	0.2344	0.0092	0.853	0.920921	1.273
6		4		4.00	2.00	1000	0.2382	0.013	0.8492	1.301301	1.262
7		8		8.00	2.83	1000	0.2437	0.0185	0.8437	1.851852	1.248
8		15		15.00	3.87	1000	0.2508	0.0256	0.8366	2.562563	1.229
9		30		30.00	5.48	1000	0.2614	0.0362	0.826	3.623624	1.201
10	1	0		60.00	7.75	1000	0.2744	0.0492	0.813	4.924925	1.166
11	2	0		120.00	10.95	1000	0.2872	0.062	0.8002	6.206206	1.132
12	4	0		240.00	15.49	1000	0.2969	0.0717	0.7905	7.177177	1.106
13	5	10		310.00	17.61	1000	0.2996	0.0744	0.7878	7.447447	1.099
14	20	51		1251.00	35.37	1000	0.3093	0.0841	0.7781	8.418418	1.073
15	23	56		1436.00	37.89	1000	0.3101	0.0849	0.7773	8.498498	1.071
16	28	34		1714.00	41.40	1000	0.3111	0.0859	0.7763	8.598599	1.068
17	48	53		2933.00	54.16	1000	0.313	0.0878	0.7744	8.788789	1.063
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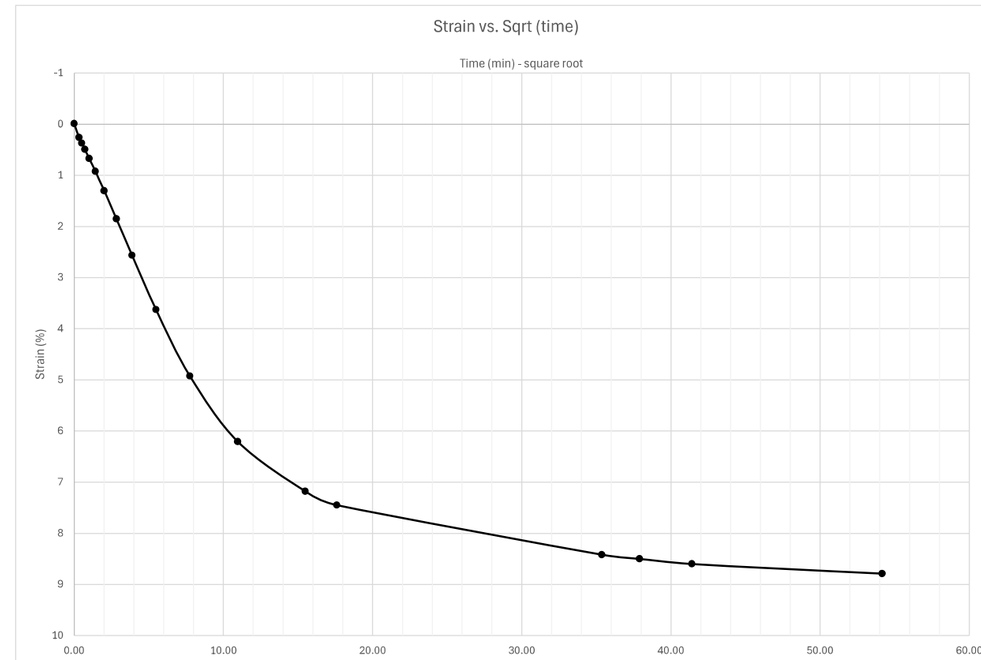
Sequence 3: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

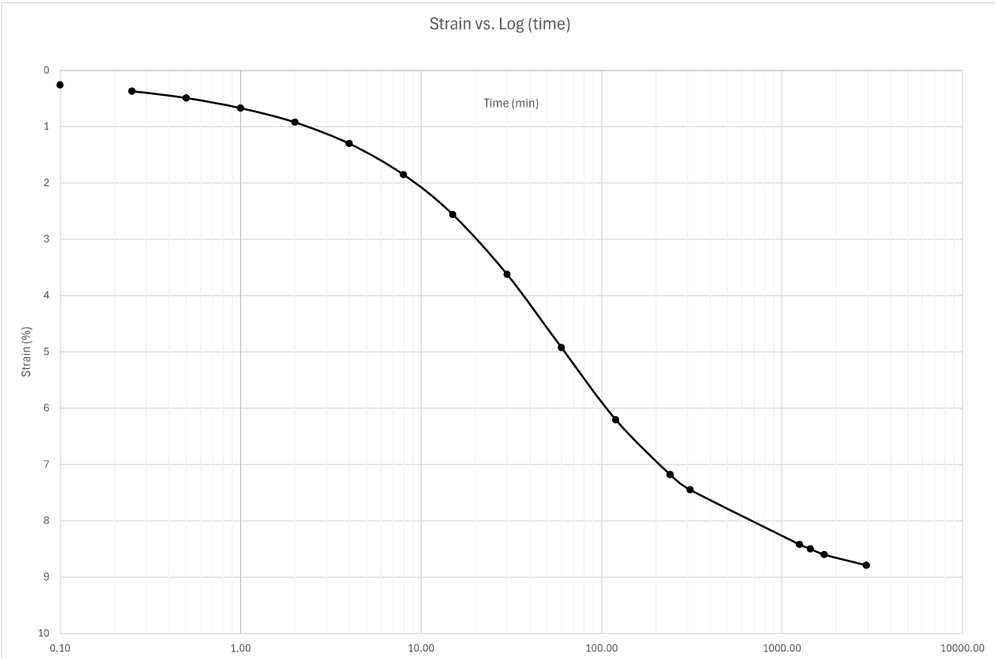


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.313	-0.0002	0.7746	-0.02002	1.064
1			6	0.10	0.32	2000	0.3163	0.0031	0.7713	0.31031	1.055
2			15	0.25	0.50	2000	0.3173	0.0041	0.7703	0.41041	1.052
3			30	0.50	0.71	2000	0.3187	0.0055	0.7689	0.550551	1.049
4		1	30	1.50	1.22	2000	0.3224	0.0092	0.7652	0.920921	1.039
5		2		2.00	1.41	2000	0.3237	0.0105	0.7639	1.051051	1.035
6		4		4.00	2.00	2000	0.3279	0.0147	0.7597	1.471471	1.024
7		8		8.00	2.83	2000	0.3342	0.021	0.7534	2.102102	1.007
8		15		15.00	3.87	2000	0.3417	0.0285	0.7459	2.852853	0.987
9		30		30.00	5.48	2000	0.3532	0.04	0.7344	4.004004	0.957
10	1	2		62.00	7.87	2000	0.3672	0.054	0.7204	5.405405	0.919
11	1	55		115.00	10.72	2000	0.3784	0.0652	0.7092	6.526527	0.889
12	4			240.00	15.49	2000	0.3881	0.0749	0.6995	7.497497	0.864
13	6	57		417.00	20.42	2000	0.3932	0.08	0.6944	8.008008	0.850
14	9	21		561.00	23.69	2000	0.3955	0.0823	0.6921	8.238238	0.844
15	23	50		1430.00	37.82	2000	0.4009	0.0877	0.6867	8.778779	0.830
16	26	15		1575.00	39.69	2000	0.4015	0.0883	0.6861	8.838839	0.828
17	31	32		1892.00	43.50	2000	0.4024	0.0892	0.6852	8.928929	0.826
18	47	15		2835.00	53.24	2000	0.4041	0.0909	0.6835	9.099099	0.821
19	48	15		2895.00	53.81	2000	0.4041	0.0909	0.6835	9.099099	0.821
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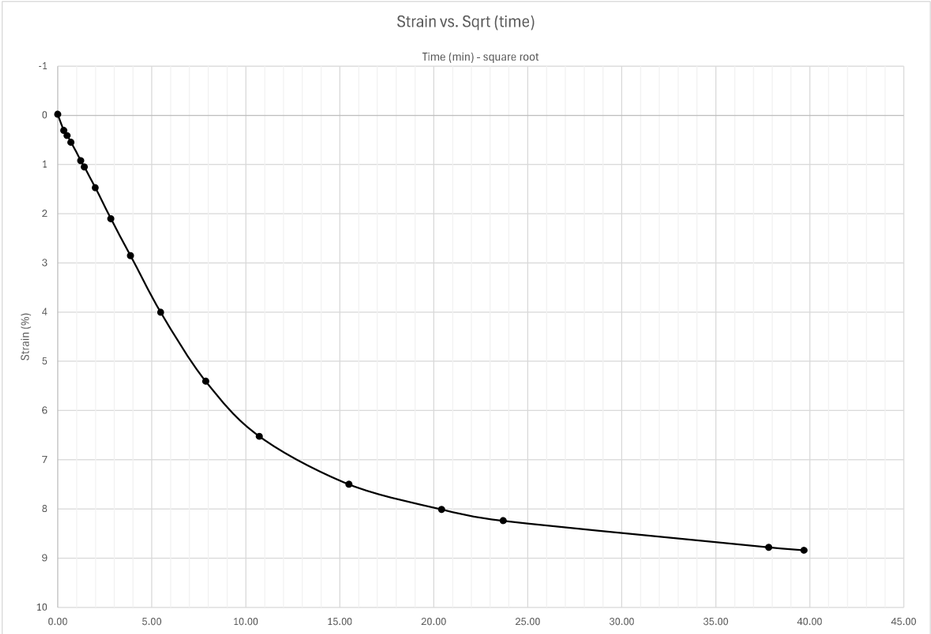
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

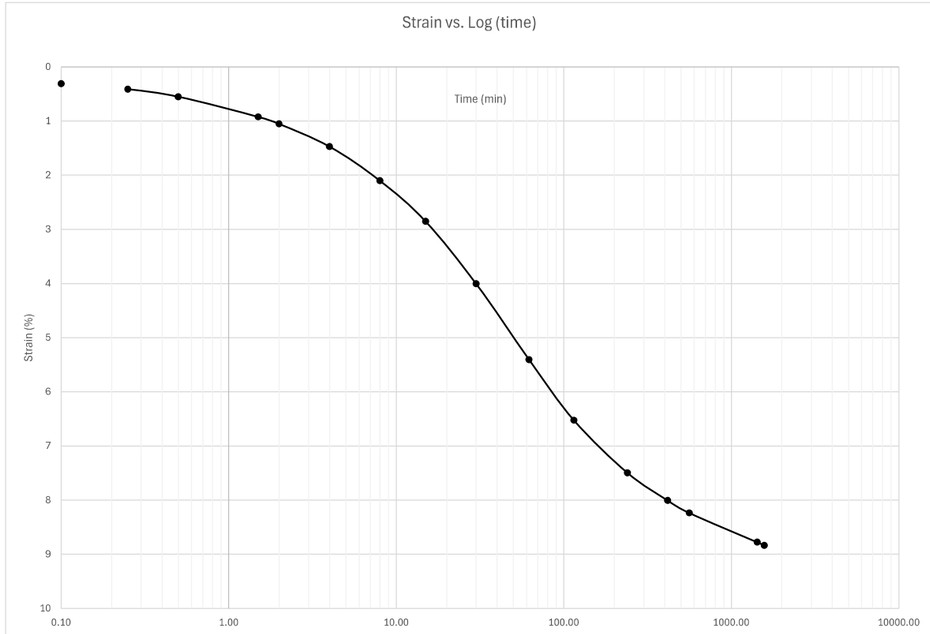
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4041	-0.0002	0.6837	-0.02002	0.822
1			6	0.10	0.32	4000	0.4074	0.0031	0.6804	0.31031	0.813
2			15	0.25	0.50	4000	0.4085	0.0042	0.6793	0.42042	0.810
3			30	0.50	0.71	4000	0.4098	0.0055	0.678	0.550551	0.806
4		1		1.00	1.00	4000	0.4118	0.0075	0.676	0.750751	0.801
5		2		2.00	1.41	4000	0.4148	0.0105	0.673	1.051051	0.793
6		4		4.00	2.00	4000	0.419	0.0147	0.6688	1.471471	0.782
7		8		8.00	2.83	4000	0.4251	0.0208	0.6627	2.082082	0.766
8		15		15.00	3.87	4000	0.433	0.0287	0.6548	2.872873	0.745
9		29		29.00	5.39	4000	0.443	0.0387	0.6448	3.873874	0.718
10	1	0		60.00	7.75	4000	0.4549	0.0506	0.6329	5.065065	0.686
11	1	56		116.00	10.77	4000	0.4665	0.0622	0.6213	6.226226	0.655
12	4	28		268.00	16.37	4000	0.4755	0.0712	0.6123	7.127127	0.631
13	6	68		428.00	20.69	4000	0.4786	0.0743	0.6092	7.437437	0.623
14	26	0		1560.00	39.50	4000	0.4862	0.0819	0.6016	8.198198	0.603
15	71	39		4299.00	65.57	4000	0.4908	0.0865	0.597	8.658659	0.591
16	95	58		5758.00	75.88	4000	0.4914	0.0871	0.5964	8.718719	0.589
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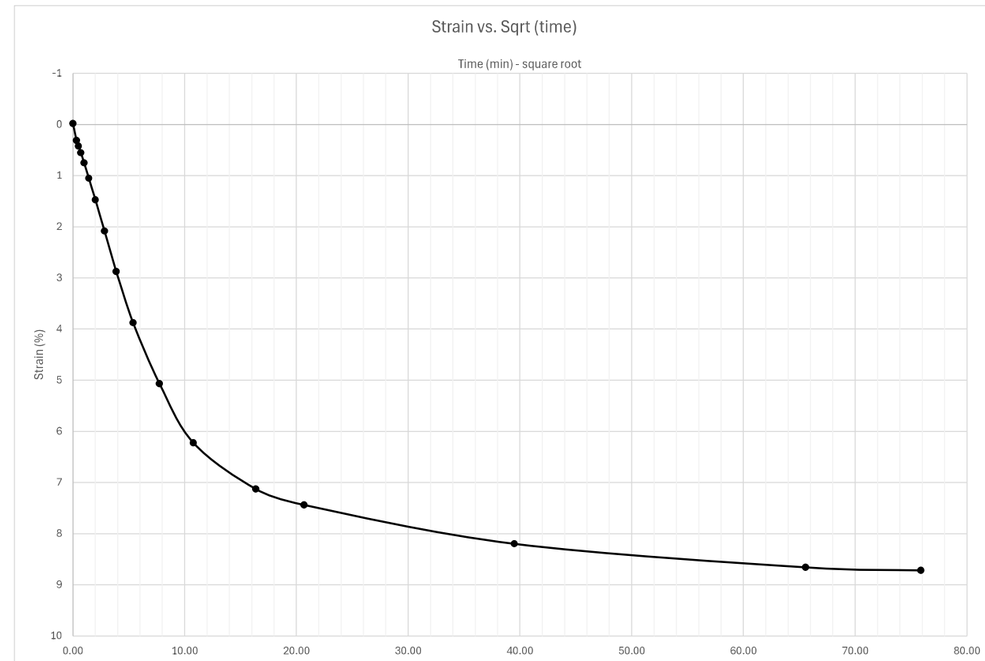
Sequence 5: 4000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

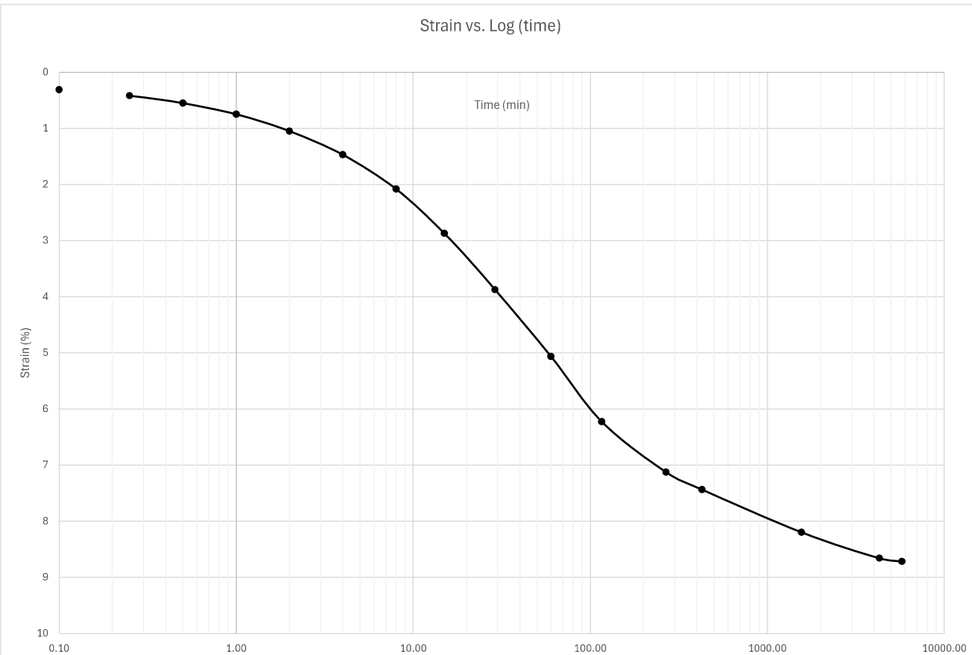


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.4914	0.0002	0.5962	0.02002	0.588
1			6	0.10	0.32	2000	0.4906	-0.0006	0.597	-0.06006	0.591
2			15	0.25	0.50	2000	0.4903	-0.0009	0.5973	-0.09009	0.591
3			30	0.50	0.71	2000	0.49	-0.0012	0.5976	-0.12012	0.592
4		1		1.00	1.00	2000	0.4896	-0.0016	0.598	-0.16016	0.593
5		2		2.00	1.41	2000	0.489	-0.0022	0.5986	-0.22022	0.595
6		4		4.00	2.00	2000	0.4884	-0.0028	0.5992	-0.28028	0.596
7		8		8.00	2.83	2000	0.4877	-0.0035	0.5999	-0.35035	0.598
8		15		15.00	3.87	2000	0.4871	-0.0041	0.6005	-0.41041	0.600
9		30		30.00	5.48	2000	0.4867	-0.0045	0.6009	-0.45045	0.601
10		55		55.00	7.42	2000	0.4864	-0.0048	0.6012	-0.48048	0.602
11	1	58		118.00	10.86	2000	0.486	-0.0052	0.6016	-0.520521	0.603
12	3	53	30	233.50	15.28	2000	0.4856	-0.0056	0.602	-0.560561	0.604
13	5	56		356.00	18.87	2000	0.4854	-0.0058	0.6022	-0.580581	0.604
14	21	13		1273.00	35.68	2000	0.485	-0.0062	0.6026	-0.620621	0.605
15	24			1440.00	37.95	2000	0.4849	-0.0063	0.6027	-0.630631	0.606
16	32	55		1975.00	44.44	2000	0.4849	-0.0063	0.6027	-0.630631	0.606
17	45	58		2758.00	52.52	2000	0.4848	-0.0064	0.6028	-0.640641	0.606
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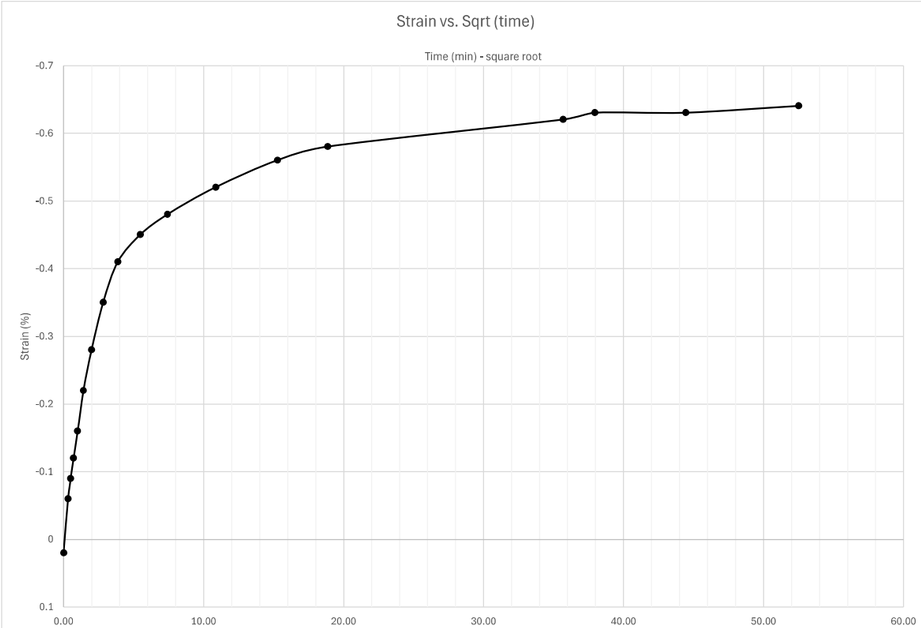
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

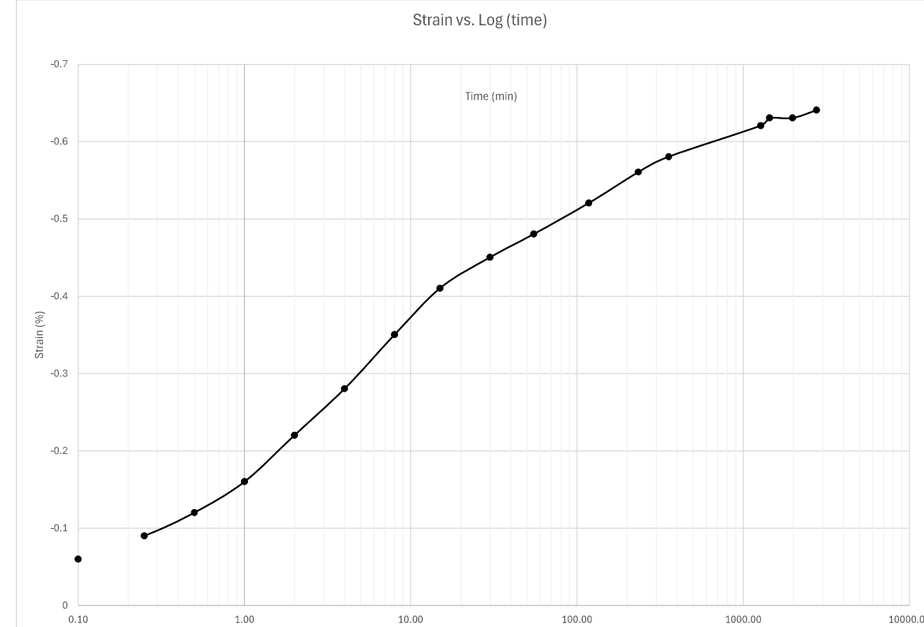
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4848	0.0002	0.6026	0.02002	0.605
1			6	0.10	0.32	1000	0.484	-0.0006	0.6034	-0.06006	0.608
2			15	0.25	0.50	1000	0.4838	-0.0008	0.6036	-0.08008	0.608
3			30	0.50	0.71	1000	0.4835	-0.0011	0.6039	-0.11011	0.609
4		1		1.00	1.00	1000	0.4831	-0.0015	0.6043	-0.15015	0.610
5		2		2.00	1.41	1000	0.4826	-0.002	0.6048	-0.2002	0.611
6		4		4.00	2.00	1000	0.4818	-0.0028	0.6056	-0.28028	0.613
7		8		8.00	2.83	1000	0.4809	-0.0037	0.6065	-0.37037	0.616
8		12	55	12.92	3.59	1000	0.4802	-0.0044	0.6072	-0.44044	0.618
9		20		20.00	4.47	1000	0.4796	-0.005	0.6078	-0.500501	0.619
10		37		37.00	6.08	1000	0.4787	-0.0059	0.6087	-0.590591	0.622
11	1	6		66.00	8.12	1000	0.4779	-0.0067	0.6095	-0.670671	0.624
12	2	5		125.00	11.18	1000	0.4771	-0.0075	0.6103	-0.750751	0.626
13	4	10		250.00	15.81	1000	0.4763	-0.0083	0.6111	-0.830831	0.628
14	8	22		502.00	22.41	1000	0.4755	-0.0091	0.6119	-0.910911	0.630
15	23	28		1408.00	37.52	1000	0.4744	-0.0102	0.613	-1.021021	0.633
16	28	41		1721.00	41.48	1000	0.4742	-0.0104	0.6132	-1.041041	0.634
17	118	41		7121.00	84.39	1000	0.473	-0.0116	0.6144	-1.161161	0.637
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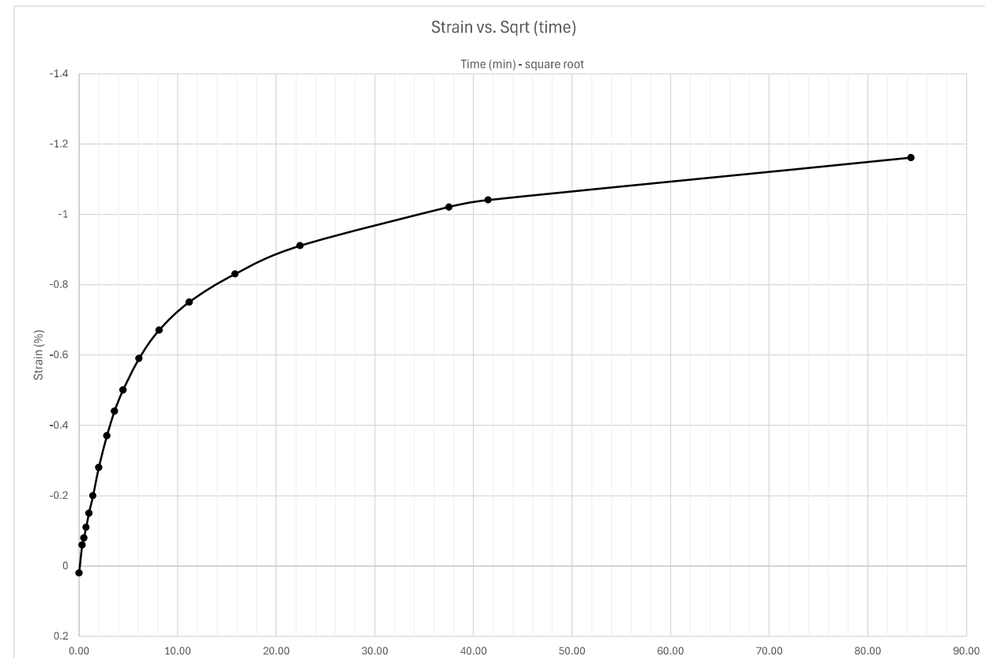
Sequence 7: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

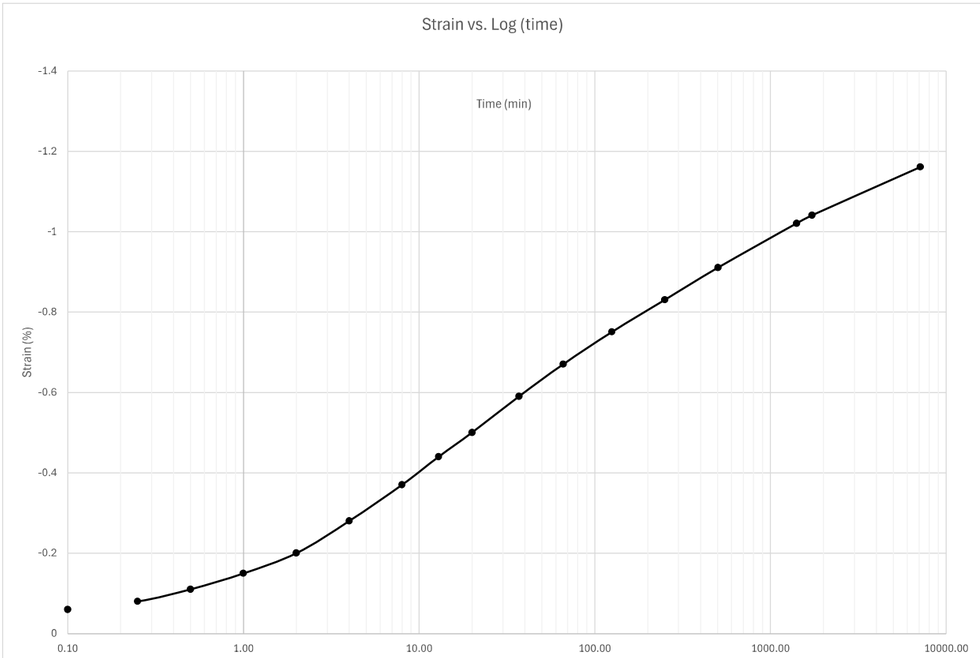


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.473	0.0001	0.6143	0.01001	0.637
1			6	0.10	0.32	500	0.4725	-0.0004	0.6148	-0.04004	0.638
2			15	0.25	0.50	500	0.4723	-0.0006	0.615	-0.06006	0.638
3			30	0.50	0.71	500	0.4722	-0.0007	0.6151	-0.07007	0.639
4		1		1.00	1.00	500	0.472	-0.0009	0.6153	-0.09009	0.639
5		2		2.00	1.41	500	0.4716	-0.0013	0.6157	-0.13013	0.640
6		4		4.00	2.00	500	0.4712	-0.0017	0.6161	-0.17017	0.641
7		8		8.00	2.83	500	0.4705	-0.0024	0.6168	-0.24024	0.643
8		15		15.00	3.87	500	0.4698	-0.0031	0.6175	-0.31031	0.645
9		36		36.00	6.00	500	0.4685	-0.0044	0.6188	-0.44044	0.649
10	1	3		63.00	7.94	500	0.4676	-0.0053	0.6197	-0.530531	0.651
11	2	5		125.00	11.18	500	0.4665	-0.0064	0.6208	-0.640641	0.654
12	4	1		241.00	15.52	500	0.4654	-0.0075	0.6219	-0.750751	0.657
13	6	23		383.00	19.57	500	0.4646	-0.0083	0.6227	-0.830831	0.659
14	8	23		503.00	22.43	500	0.4641	-0.0088	0.6232	-0.880881	0.660
15	23	46		1426.00	37.76	500	0.4621	-0.0108	0.6252	-1.081081	0.666
16	28	52		1732.00	41.62	500	0.4618	-0.0111	0.6255	-1.111111	0.666
17	48	11		2891.00	53.77	500	0.4606	-0.0123	0.6267	-1.231231	0.670
18	54	23		3263.00	57.12	500	0.4604	-0.0125	0.6269	-1.251251	0.670
19	71	32		4292.00	65.51	500	0.4598	-0.0131	0.6275	-1.311311	0.672
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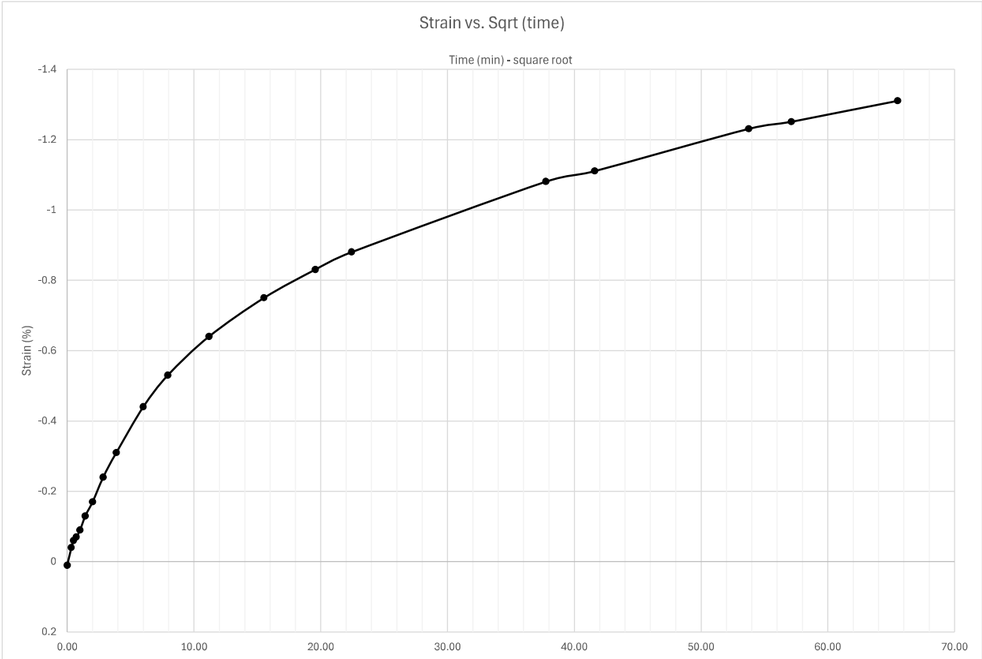
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

L_EB1-B, ST-53, 18.0-20.0 ft

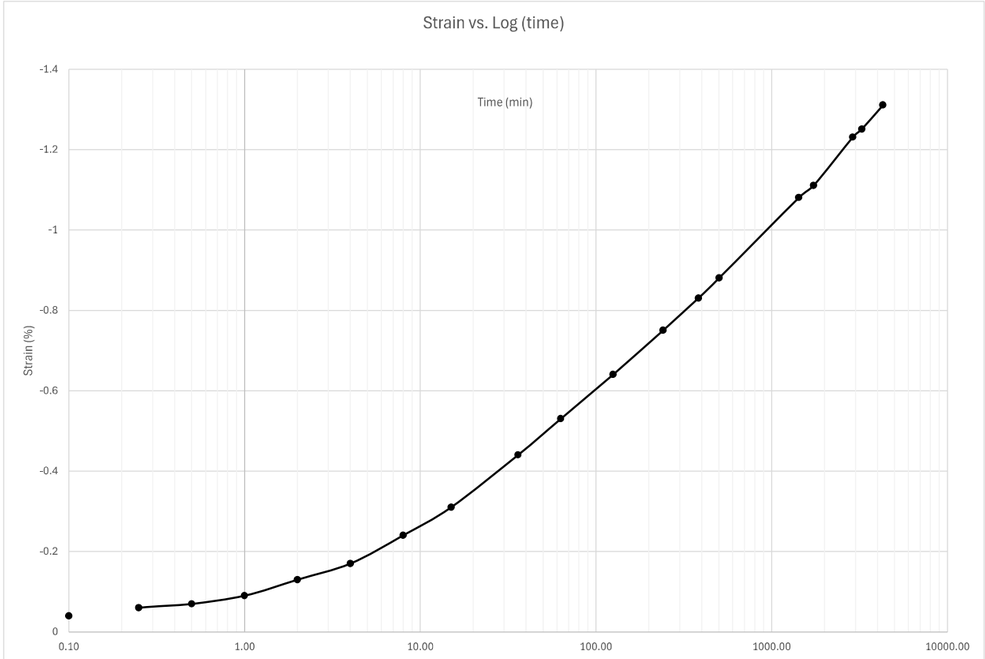
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4598	-0.0001	0.6276	-0.01001	0.672
1			6	0.10	0.32	1000	0.4603	0.0004	0.6271	0.04004	0.671
2			15	0.25	0.50	1000	0.4605	0.0006	0.6269	0.06006	0.670
3			30	0.50	0.71	1000	0.4607	0.0008	0.6267	0.08008	0.670
4		1		1.00	1.00	1000	0.4609	0.001	0.6265	0.1001	0.669
5		2		2.00	1.41	1000	0.4613	0.0014	0.6261	0.14014	0.668
6		4		4.00	2.00	1000	0.4617	0.0018	0.6257	0.18018	0.667
7		8		8.00	2.83	1000	0.4623	0.0024	0.6251	0.24024	0.665
8		15		15.00	3.87	1000	0.4627	0.0028	0.6247	0.28028	0.664
9		30		30.00	5.48	1000	0.4632	0.0033	0.6242	0.33033	0.663
10	1	0		60.00	7.75	1000	0.4635	0.0036	0.6239	0.36036	0.662
11	1	57		117.00	10.82	1000	0.4638	0.0039	0.6236	0.39039	0.661
12	4	0		240.00	15.49	1000	0.464	0.0041	0.6234	0.41041	0.661
13	7	3		423.00	20.57	1000	0.4642	0.0043	0.6232	0.43043	0.660
14	23	45		1425.00	37.75	1000	0.4646	0.0047	0.6228	0.47047	0.659
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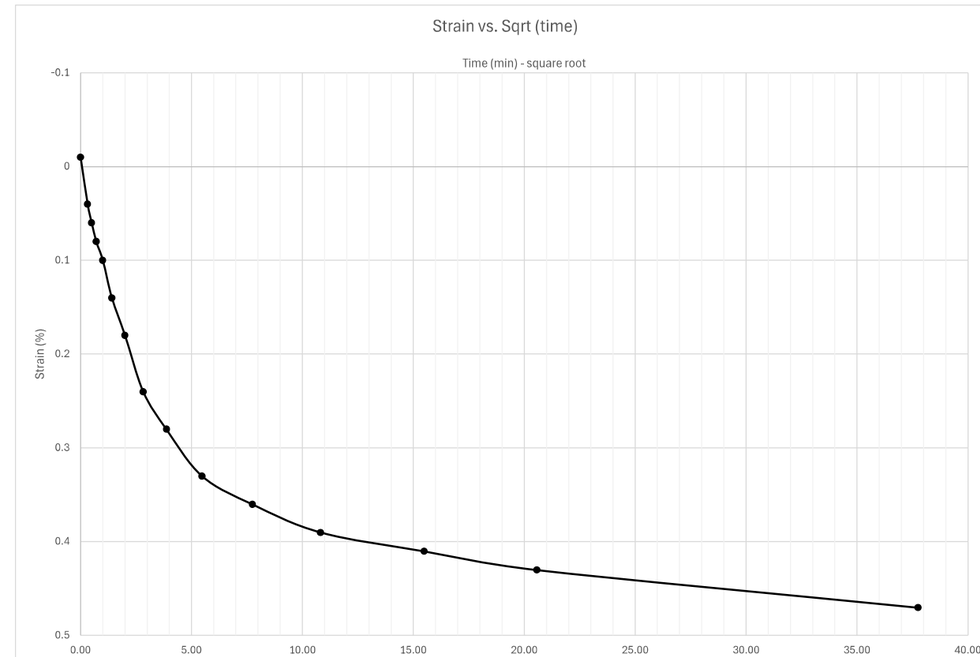
Sequence 9: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

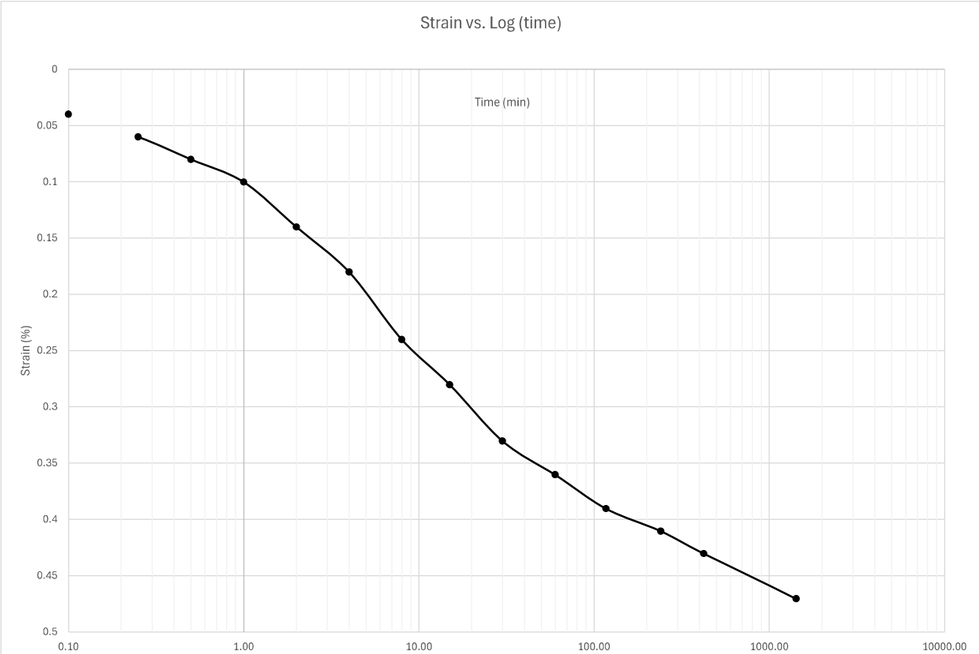


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.4646	-0.0002	0.623	-0.02002	0.660
1			6	0.10	0.32	2000	0.4658	0.001	0.6218	0.1001	0.657
2			15	0.25	0.50	2000	0.4662	0.0014	0.6214	0.14014	0.656
3			30	0.50	0.71	2000	0.4665	0.0017	0.6211	0.17017	0.655
4		1		1.00	1.00	2000	0.467	0.0022	0.6206	0.22022	0.653
5		2		2.00	1.41	2000	0.4678	0.003	0.6198	0.3003	0.651
6		4		4.00	2.00	2000	0.469	0.0042	0.6186	0.42042	0.648
7		8		8.00	2.83	2000	0.4704	0.0056	0.6172	0.560561	0.644
8		15		15.00	3.87	2000	0.4718	0.007	0.6158	0.700701	0.641
9		30		30.00	5.48	2000	0.473	0.0082	0.6146	0.820821	0.637
10	1	0		60.00	7.75	2000	0.4738	0.009	0.6138	0.900901	0.635
11	1	57		117.00	10.82	2000	0.4744	0.0096	0.6132	0.960961	0.634
12	4	8		248.00	15.75	2000	0.475	0.0102	0.6126	1.021021	0.632
13	6	7		367.00	19.16	2000	0.4754	0.0106	0.6122	1.061061	0.631
14	6	56		416.00	20.40	2000	0.4755	0.0107	0.6121	1.071071	0.631
15	26	21		1581.00	39.76	2000	0.4763	0.0115	0.6113	1.151151	0.629
16	71	59		4319.00	65.72	2000	0.4768	0.012	0.6108	1.201201	0.627
17	94	51		5691.00	75.44	2000	0.477	0.0122	0.6106	1.221221	0.627
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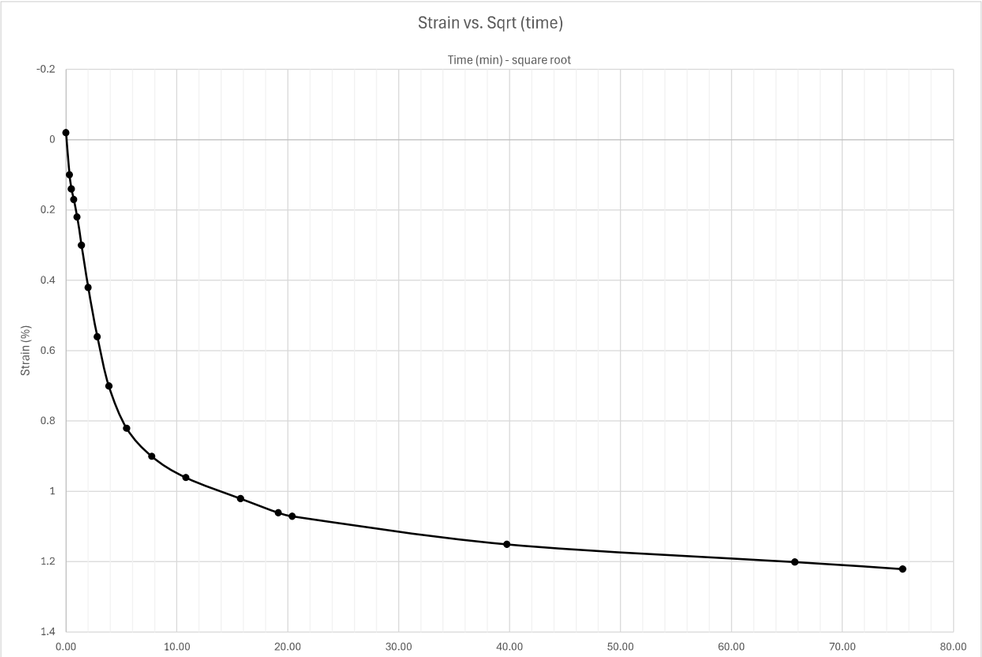
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

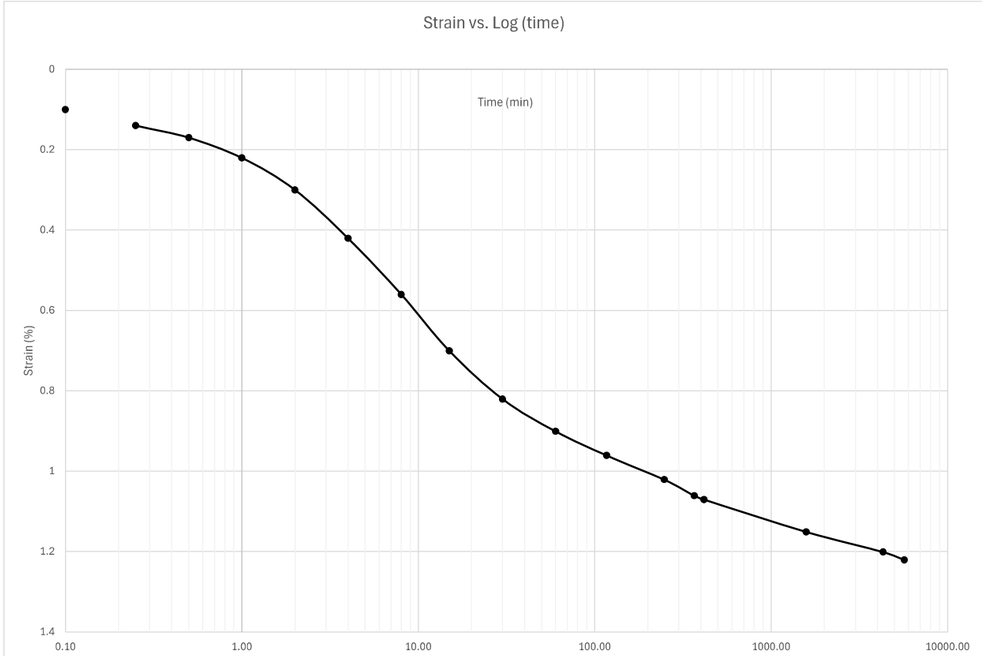
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.477	-0.0003	0.6109	-0.03003	0.628
1			6	0.10	0.32	4000	0.4784	0.0011	0.6095	0.11011	0.624
2			15	0.25	0.50	4000	0.479	0.0017	0.6089	0.17017	0.622
3			30	0.50	0.71	4000	0.4795	0.0022	0.6084	0.22022	0.621
4		1		1.00	1.00	4000	0.4804	0.0031	0.6075	0.31031	0.619
5		2		2.00	1.41	4000	0.4815	0.0042	0.6064	0.42042	0.616
6		4		4.00	2.00	4000	0.483	0.0057	0.6049	0.570571	0.612
7		8		8.00	2.83	4000	0.485	0.0077	0.6029	0.770771	0.606
8		15		15.00	3.87	4000	0.4869	0.0096	0.601	0.960961	0.601
9		30		30.00	5.48	4000	0.4889	0.0116	0.599	1.161161	0.596
10		58		58.00	7.62	4000	0.4904	0.0131	0.5975	1.311311	0.592
11	1	56		116.00	10.77	4000	0.4917	0.0144	0.5962	1.441441	0.588
12	3	56		236.00	15.36	4000	0.4931	0.0158	0.5948	1.581582	0.585
13	6	15		375.00	19.36	4000	0.494	0.0167	0.5939	1.671672	0.582
14	22	45		1365.00	36.95	4000	0.4961	0.0188	0.5918	1.881882	0.577
15	24	38		1478.00	38.44	4000	0.4963	0.019	0.5916	1.901902	0.576
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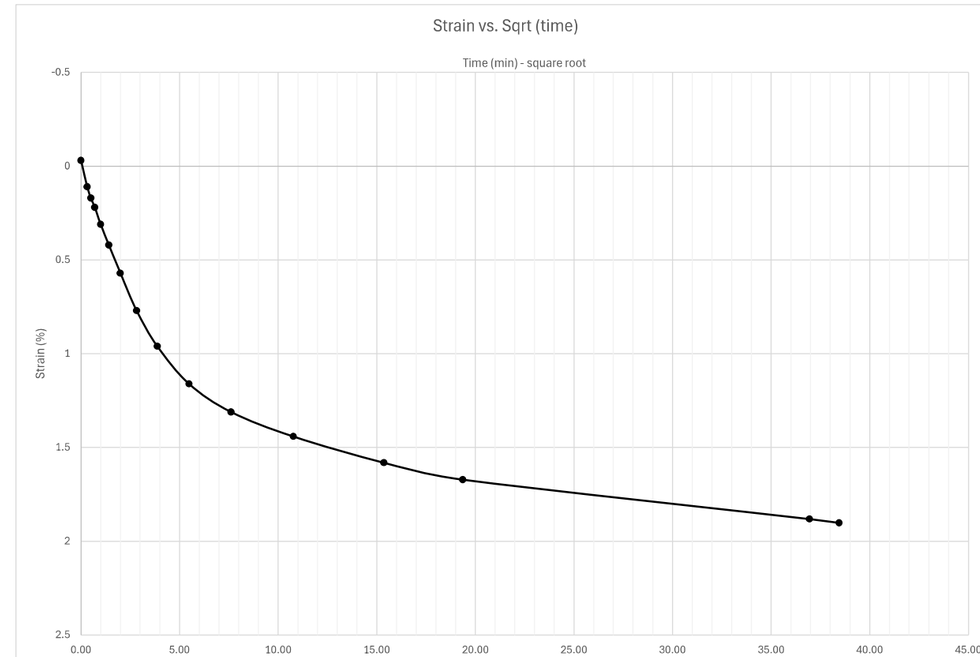
Sequence 11: 4000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

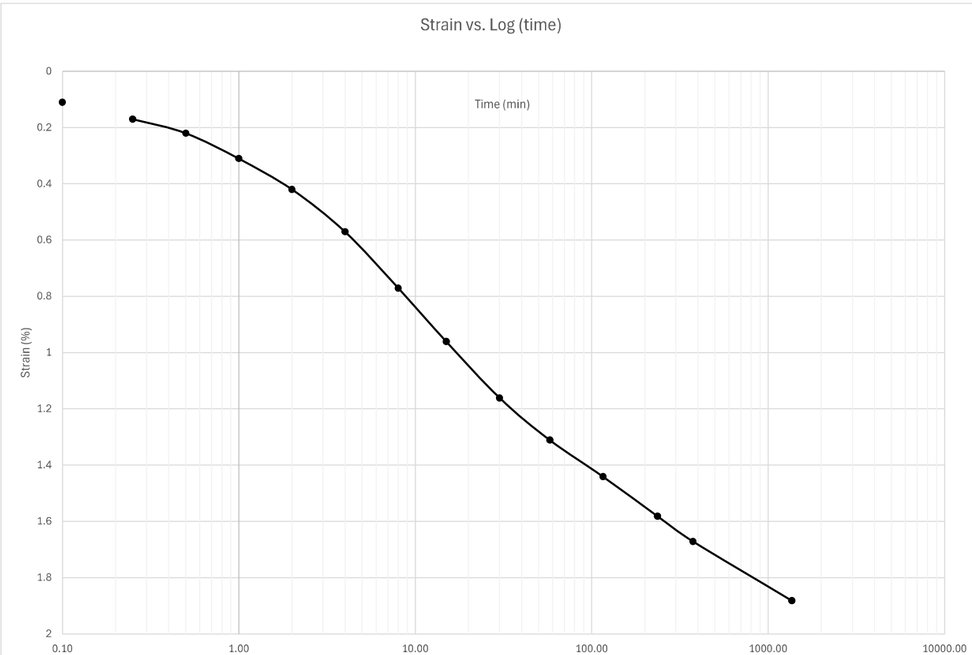


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.4963	-0.0006	0.5922	-0.06006	0.578
1			6	0.10	0.32	8000	0.4989	0.002	0.5896	0.2002	0.571
2			15	0.25	0.50	8000	0.5001	0.0032	0.5884	0.32032	0.568
3			30	0.50	0.71	8000	0.5013	0.0044	0.5872	0.44044	0.564
4		1		1.00	1.00	8000	0.5032	0.0063	0.5853	0.630631	0.559
5		2		2.00	1.41	8000	0.5057	0.0088	0.5828	0.880881	0.553
6		4		4.00	2.00	8000	0.5095	0.0126	0.579	1.261261	0.543
7		8	30	8.50	2.92	8000	0.515	0.0181	0.5735	1.811812	0.528
8		15		15.00	3.87	8000	0.5215	0.0246	0.567	2.462462	0.511
9		30		30.00	5.48	8000	0.5303	0.0334	0.5582	3.343343	0.487
10	1	0		60.00	7.75	8000	0.5398	0.0429	0.5487	4.294294	0.462
11	1	53		113.00	10.63	8000	0.5472	0.0503	0.5413	5.035035	0.442
12	3	56		236.00	15.36	8000	0.5535	0.0566	0.535	5.665666	0.425
13	5	28		328.00	18.11	8000	0.5559	0.059	0.5326	5.905906	0.419
14	9	28		568.00	23.83	8000	0.5595	0.0626	0.529	6.266266	0.409
15	22	12		1332.00	36.50	8000	0.5639	0.067	0.5246	6.706707	0.398
16	24	52		1492.00	38.63	8000	0.5644	0.0675	0.5241	6.756757	0.396
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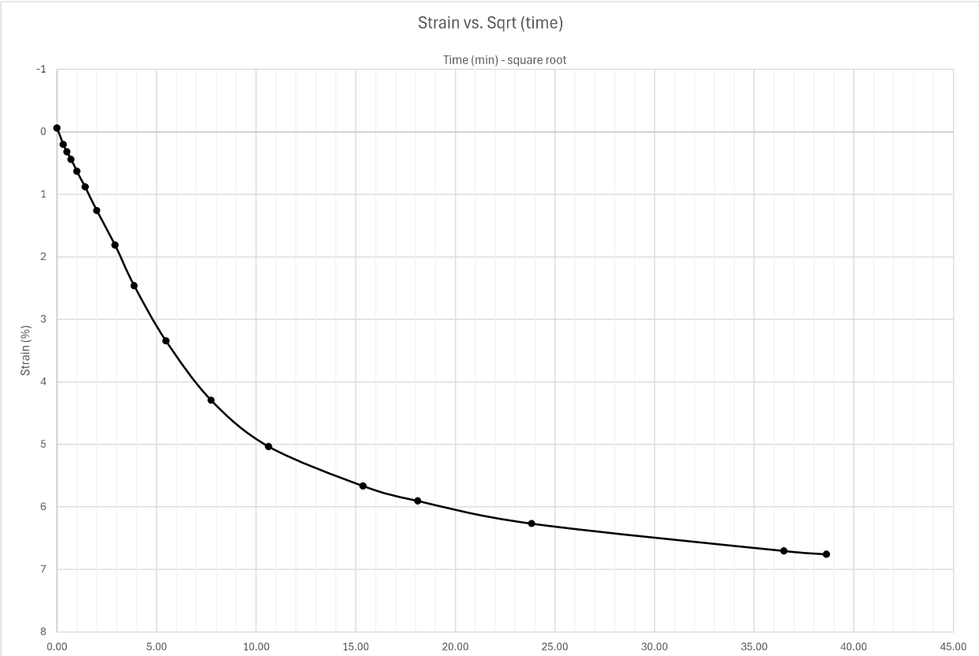
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

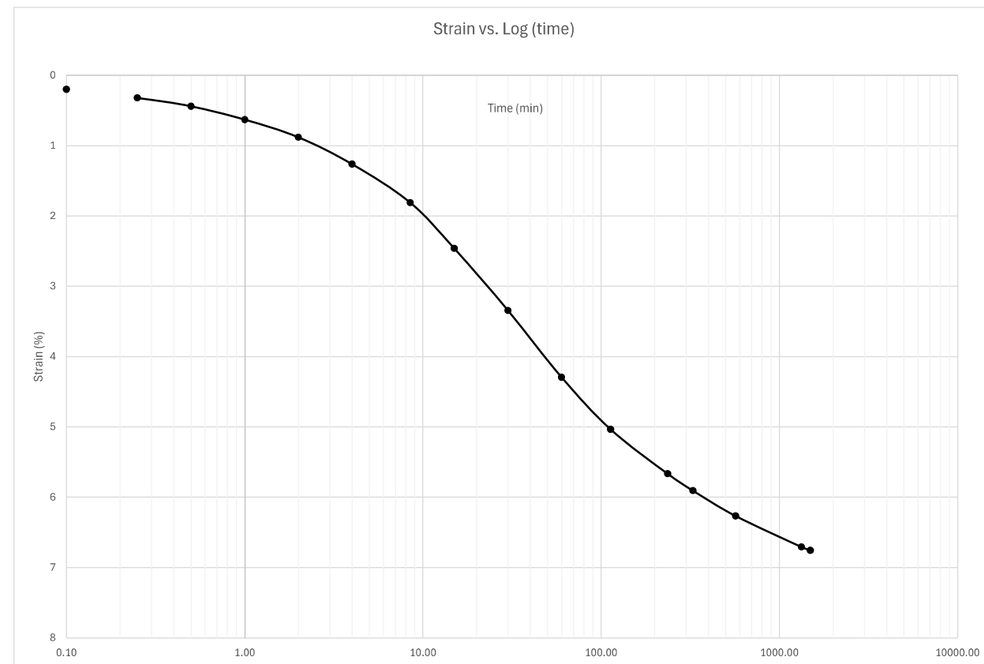
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.5644	-0.0008	0.5249	-0.08008	0.398
1			6	0.10	0.32	16000	0.5678	0.0026	0.5215	0.26026	0.389
2			15	0.25	0.50	16000	0.5692	0.004	0.5201	0.4004	0.386
3			30	0.50	0.71	16000	0.5708	0.0056	0.5185	0.560561	0.381
4		1		1.00	1.00	16000	0.5726	0.0074	0.5167	0.740741	0.377
5		2		2.00	1.41	16000	0.5751	0.0099	0.5142	0.990991	0.370
6		4		4.00	2.00	16000	0.5796	0.0144	0.5097	1.441441	0.358
7		8		8.00	2.83	16000	0.5853	0.0201	0.504	2.012012	0.343
8		15		15.00	3.87	16000	0.5925	0.0273	0.4968	2.732733	0.324
9		30		30.00	5.48	16000	0.6021	0.0369	0.4872	3.693694	0.298
10	1			60.00	7.75	16000	0.6119	0.0467	0.4774	4.674675	0.272
11	1	57		117.00	10.82	16000	0.6194	0.0542	0.4699	5.425425	0.252
12	3	48		228.00	15.10	16000	0.6248	0.0596	0.4645	5.965966	0.238
13	7	16		436.00	20.88	16000	0.6287	0.0635	0.4606	6.356356	0.227
14	20	57		1257.00	35.45	16000	0.6334	0.0682	0.4559	6.826827	0.215
15	24	33		1473.00	38.38	16000	0.634	0.0688	0.4553	6.886887	0.213
16	92	55		5575.00	74.67	16000	0.6385	0.0733	0.4508	7.337337	0.201
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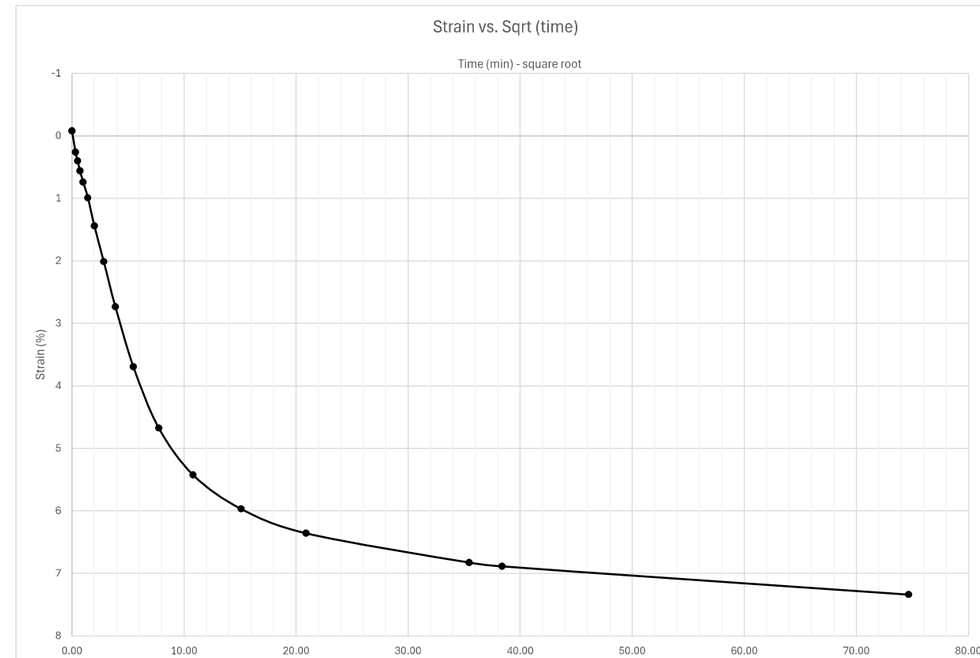
Sequence 13: 16000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

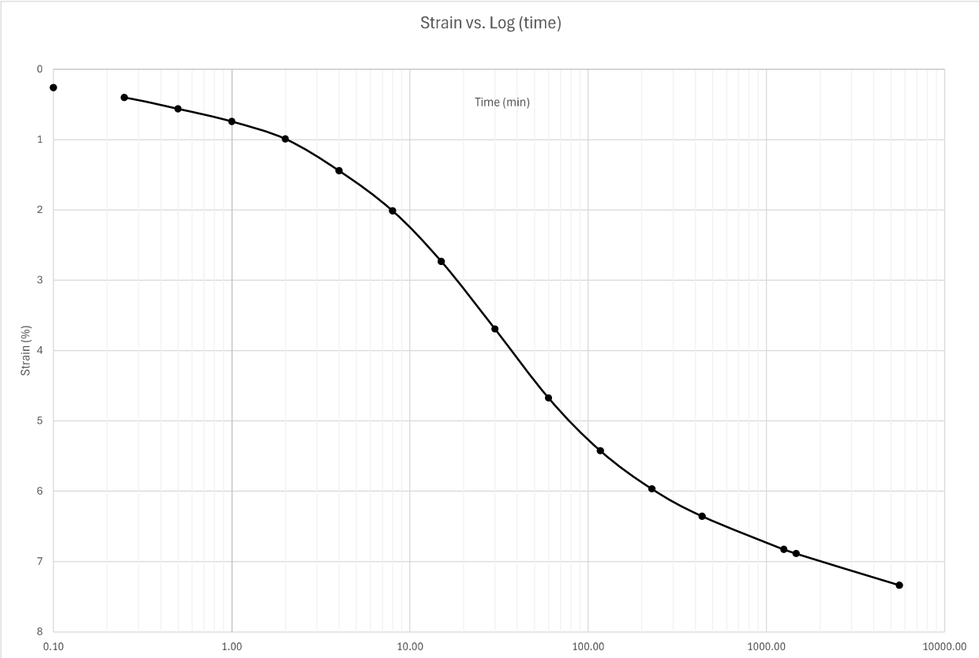


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.6385	-0.0012	0.452	-0.12012	0.204
1			6	0.10	0.32	32000	0.6419	0.0022	0.4486	0.22022	0.195
2			15	0.25	0.50	32000	0.6429	0.0032	0.4476	0.32032	0.193
3			30	0.50	0.71	32000	0.6439	0.0042	0.4466	0.42042	0.190
4		1		1.00	1.00	32000	0.6455	0.0058	0.445	0.580581	0.186
5		2		2.00	1.41	32000	0.6476	0.0079	0.4429	0.790791	0.180
6		4		4.00	2.00	32000	0.6508	0.0111	0.4397	1.111111	0.171
7		8		8.00	2.83	32000	0.655	0.0153	0.4355	1.531532	0.160
8		15		15.00	3.87	32000	0.6601	0.0204	0.4304	2.042042	0.147
9		30		30.00	5.48	32000	0.6669	0.0272	0.4236	2.722723	0.129
10	1			60.00	7.75	32000	0.6737	0.034	0.4168	3.403403	0.110
11	2			120.00	10.95	32000	0.6793	0.0396	0.4112	3.963964	0.096
12	4	21		261.00	16.16	32000	0.6841	0.0444	0.4064	4.444444	0.083
13	7	29		449.00	21.19	32000	0.687	0.0473	0.4035	4.734735	0.075
14	23	23		1403.00	37.46	32000	0.6917	0.052	0.3988	5.205205	0.062
15	30	1		1801.00	42.44	32000	0.6925	0.0528	0.398	5.285285	0.060
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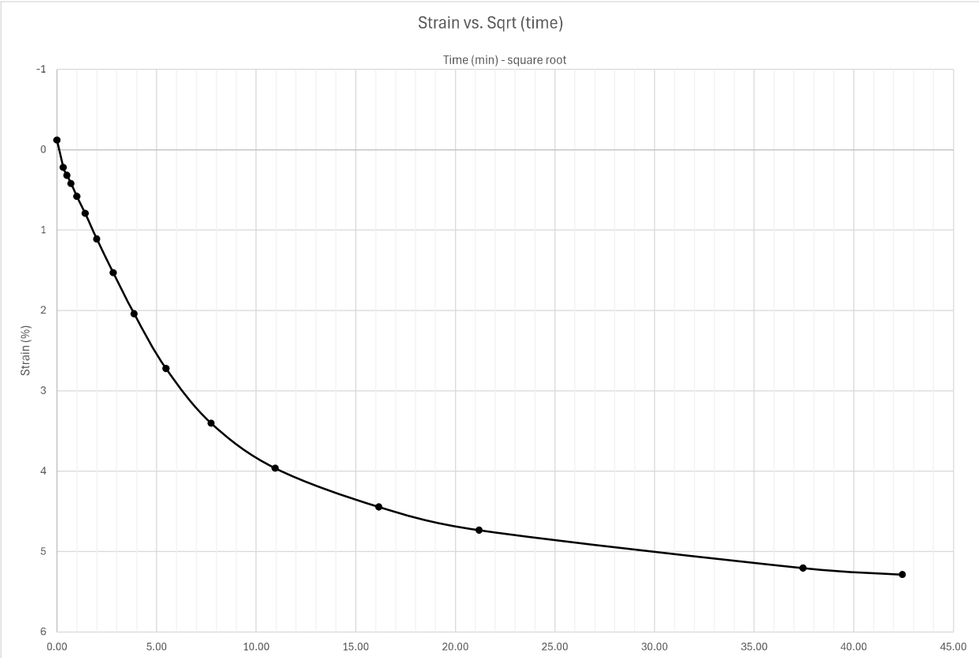
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

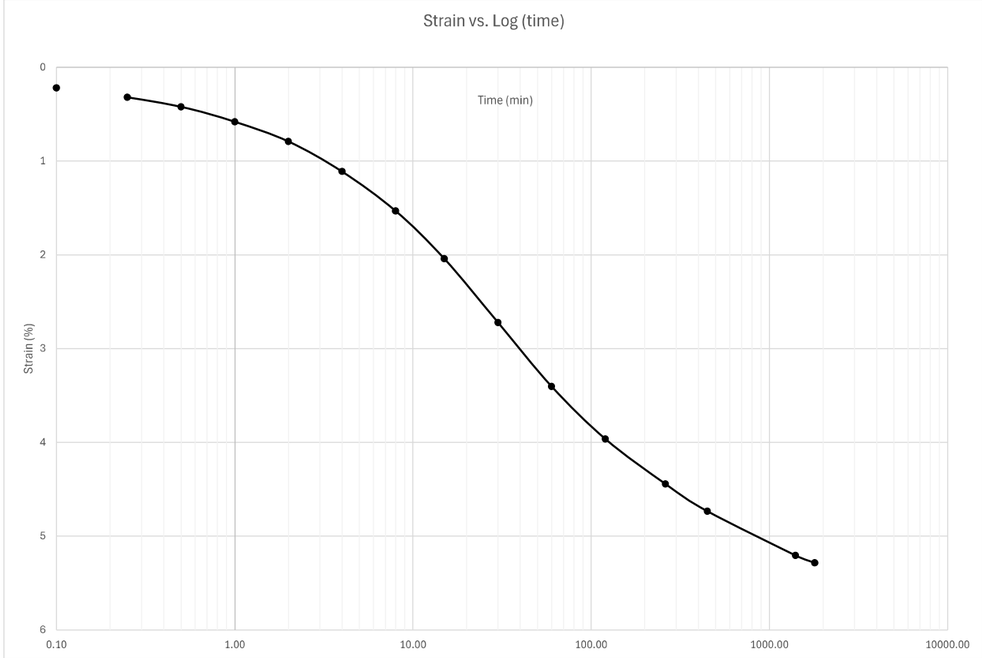
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

L_EB1-B, ST-53, 18.0-20.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	17.0-19.0
Sample Number	ST-44	Boring Number	LLT_12000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment LLT		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0382	0.1145	0.9608	0.038	8.308	12.96	-	0.01510	-
2	500	0.1545	0.1146	0.8445	0.155	7.181	14.44	5.7	0.01047	0.006162
3	1000	0.2921	0.1147	0.7069	0.292	5.848	24.01	11	0.00441	0.002237
4	2000	0.4455	0.1149	0.5535	0.446	4.362	38.44	15	0.00169	0.001006
5	4000	0.5528	0.1151	0.4462	0.553	3.323	67.24	20	0.00063	0.00049
6	2000	0.5448	0.1149	0.4542	0.545	3.400	-	-	-	-
7	1000	0.5301	0.1147	0.4689	0.531	3.543	-	-	-	-
8	500	0.516	0.1146	0.483	0.517	3.679	-	-	-	-
9	1000	0.5216	0.1147	0.4774	0.522	3.625	12.25	3.7	0.00394	0.00303
10	2000	0.5331	0.1149	0.4659	0.534	3.513	12.25	-	0.00376	-
11	4000	0.5633	0.1152	0.4357	0.564	3.221	12.96	-	0.00311	-
12	8000	0.6404	0.1158	0.3586	0.641	2.474	49	16.5	0.00056	0.00038
13	16000	0.7157	0.1166	0.2833	0.716	1.745	50.41	16	0.00034	0.00025
14	32000	0.7669	0.1178	0.2321	0.768	1.249	49	15	0.00023	0.00018
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/9/2026
Machine Apparatus: 1
Technician: KSB

Sampling Date: 2/18/2026
Sample Number: ST-44
Depth (ft): 17.0-19.0
Boring Number: LLT_12000
Location: Alignment LLT
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.89
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.39

Parameters	Initial	Final
Height (in)	0.999	0.2321
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.146
Weight of Container (g)	60.35	60.86
Weight of Wet Soil + Container (g)	242.83	89.7
Weight of Dry Soil + Container (g)	94.15	76.4
Moisture Content (%)	439.88	85.59
Moist Weight + Ring Weight (g)	188.59	132.61
Dry Mass (g)	15.78	15.74
Water Content (calc from spec)	439.88	85.59
Dry Density (pcf)	12.19	52.35
Wet Density (pcf)	65.82	97.16
Volume of Solids (in^3)	0.51	0.51
Height of Solids (in)	0.10	0.10
Void Ratio	8.678	1.249

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Void Ratio vs. Effective Stress

LLT_12000, ST-44, 17.0-19.0 ft

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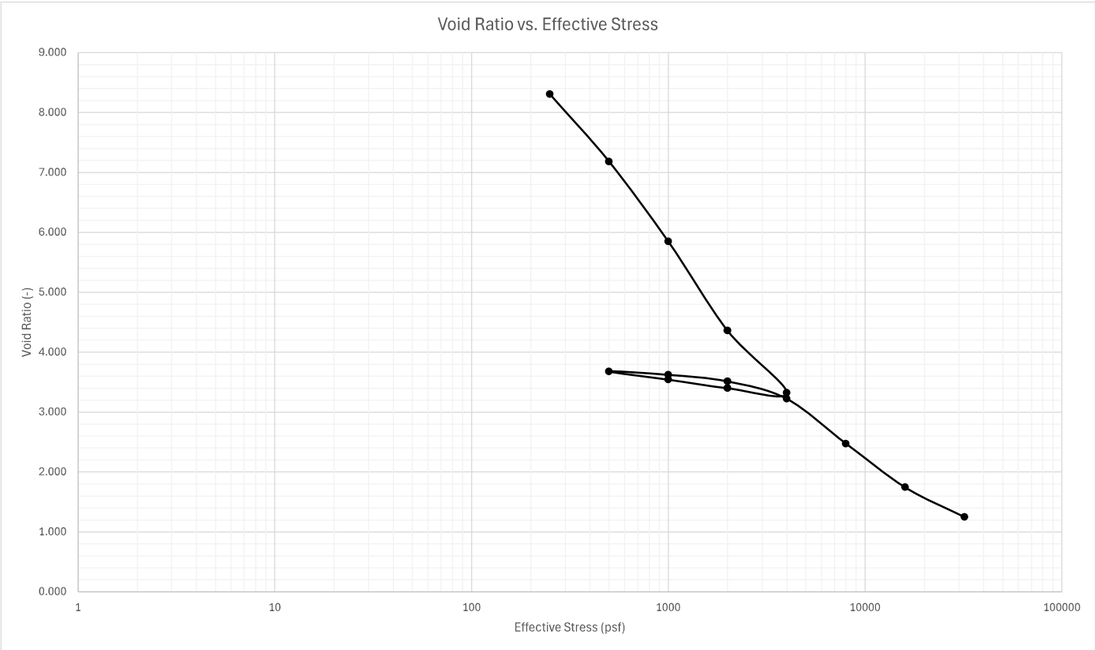
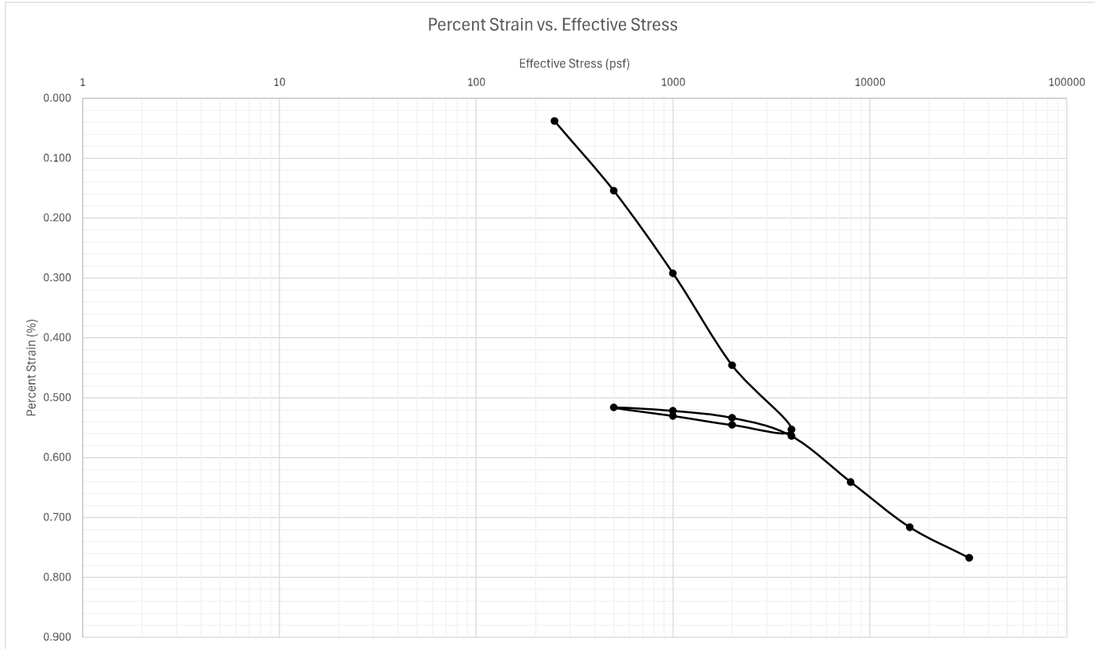


Percent Strain vs. Effective Stress

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.091	0	0.999	0	8.678
1			15	0.25	0.5	250	0.0929	0.0019	0.9971	0.19019	8.660
2			30	0.5	0.707106781	250	0.0952	0.0042	0.9948	0.42042	8.637
3		1		1	1	250	0.0982	0.0072	0.9918	0.720721	8.608
4		2		2	1.414213562	250	0.1018	0.0108	0.9882	1.081081	8.573
5		4		4	2	250	0.106	0.015	0.984	1.501502	8.533
6		8		8	2.828427125	250	0.11	0.019	0.98	1.901902	8.494
7		17		17	4.123105626	250	0.1137	0.0227	0.9763	2.272272	8.458
8		30		30	5.477225575	250	0.1151	0.0241	0.9749	2.412412	8.445
9	1			60	7.745966692	250	0.1168	0.0258	0.9732	2.582583	8.428
10	1	53		113	10.63014581	250	0.1183	0.0273	0.9717	2.732733	8.414
11	3	29		209	14.45683229	250	0.1204	0.0294	0.9696	2.942943	8.393
12	6	58		418	20.4450483	250	0.1211	0.0301	0.9689	3.013013	8.386
13	24	29		1469	38.32753579	250	0.1247	0.0337	0.9653	3.373373	8.352
14	43	15		2595	50.94114251	250	0.1259	0.0349	0.9641	3.493493	8.340
15	51	43		3103	55.70457791	250	0.1265	0.0355	0.9635	3.553554	8.334
16	140	17		8417	91.74420963	250	0.1292	0.0382	0.9608	3.823824	8.308
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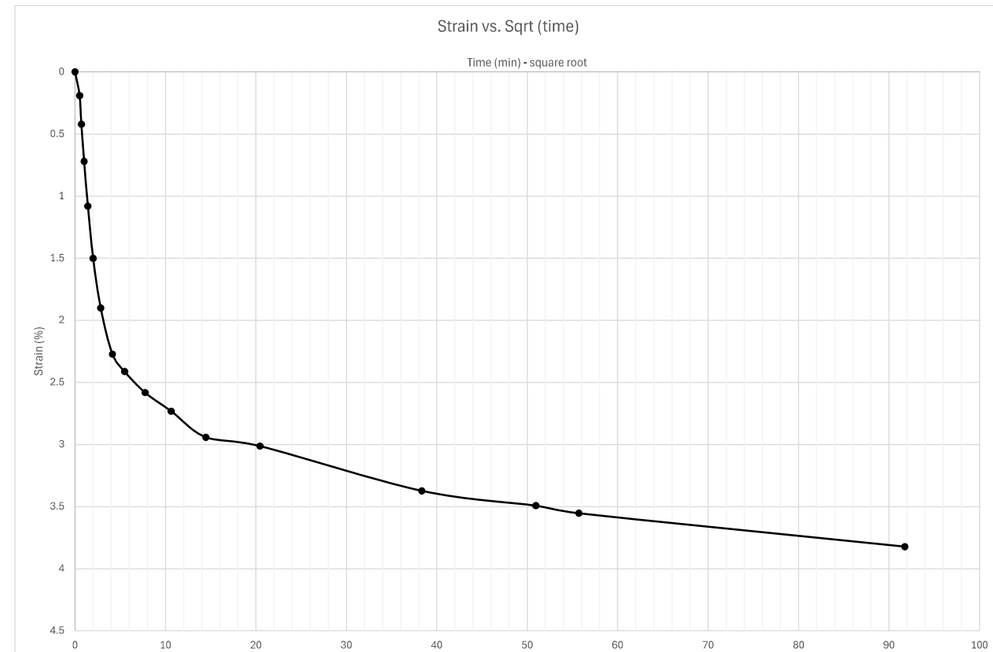
Sequence 1: 250 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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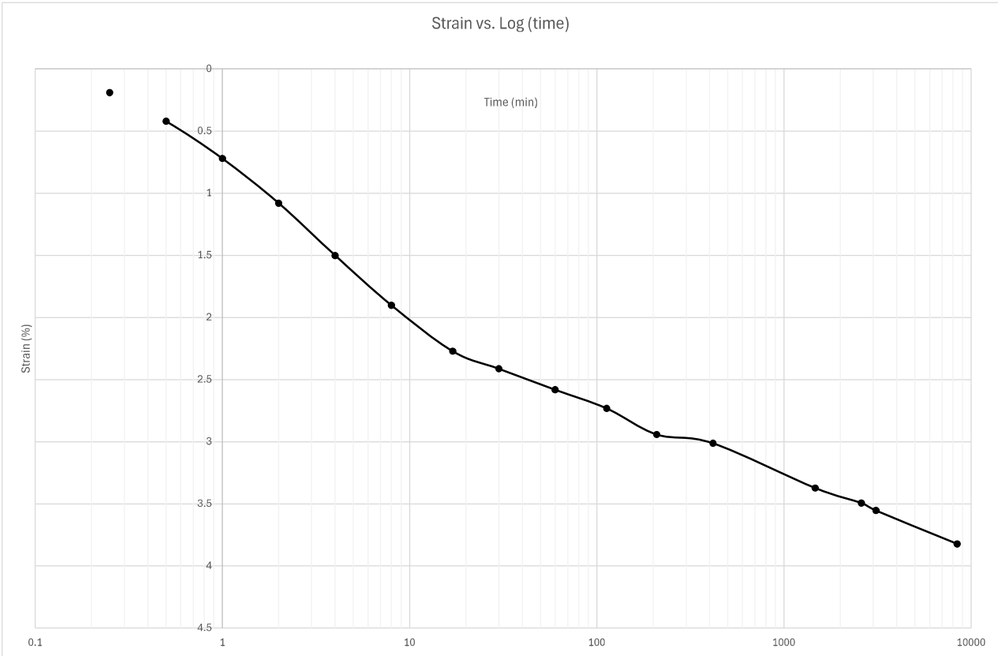
Sequence 1: 250 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1292	-0.0001	0.9609	-0.01001	8.309
1			6	0.1	0.32	500	0.1409	0.0116	0.9492	1.161161	8.196
2			15	0.25	0.50	500	0.1439	0.0146	0.9462	1.461461	8.166
3			30	0.5	0.71	500	0.1478	0.0185	0.9423	1.851852	8.129
4		1		1	1.00	500	0.1536	0.0243	0.9365	2.432432	8.073
5		2		2	1.41	500	0.1604	0.0311	0.9297	3.113113	8.007
6		4		4	2.00	500	0.1714	0.0421	0.9187	4.214214	7.900
7		8		8	2.83	500	0.1849	0.0556	0.9052	5.565566	7.769
8		15		15	3.87	500	0.1955	0.0662	0.8946	6.626627	7.667
9		30		30	5.48	500	0.2083	0.0790	0.8818	7.907908	7.543
10	1	2		62	7.87	500	0.2180	0.0887	0.8721	8.878879	7.449
11	1	57		117	10.82	500	0.2246	0.0953	0.8655	9.53954	7.385
12	4	31		271	16.46	500	0.2310	0.1017	0.8591	10.18018	7.323
13	7	30		450	21.21	500	0.2345	0.1052	0.8556	10.53053	7.289
14	24	25		1465	38.28	500	0.2412	0.1119	0.8489	11.2012	7.224
15	29	28		1768	42.05	500	0.2426	0.1133	0.8475	11.34134	7.210
16	31	32		1892	43.50	500	0.2433	0.1140	0.8468	11.41141	7.204
17	48	23		2903	53.88	500	0.2456	0.1163	0.8445	11.64164	7.181
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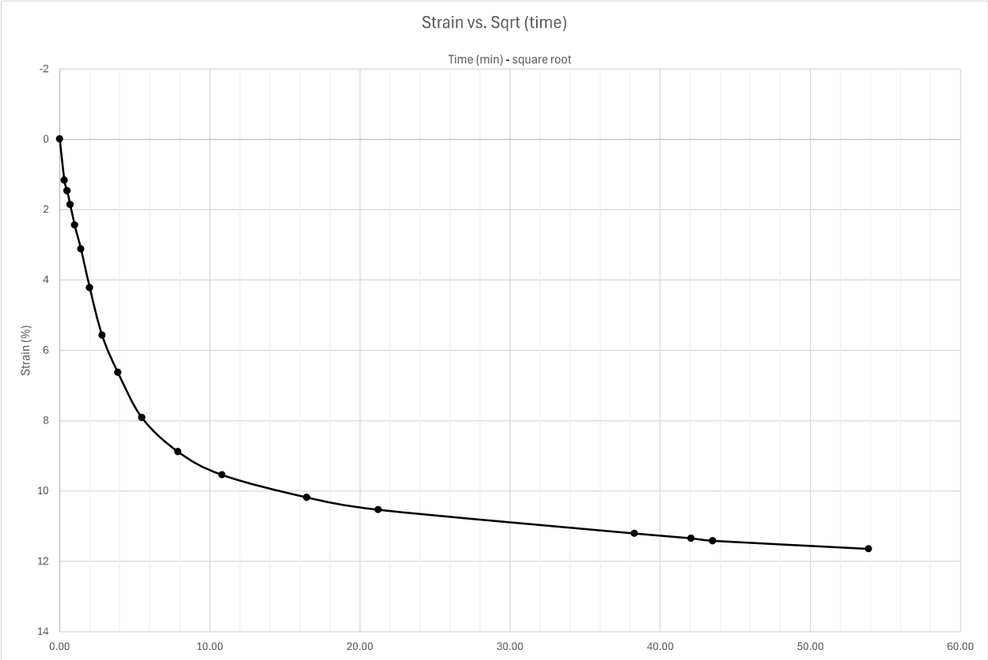
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

LLT_12000, ST-44, 17.0-19.0 ft

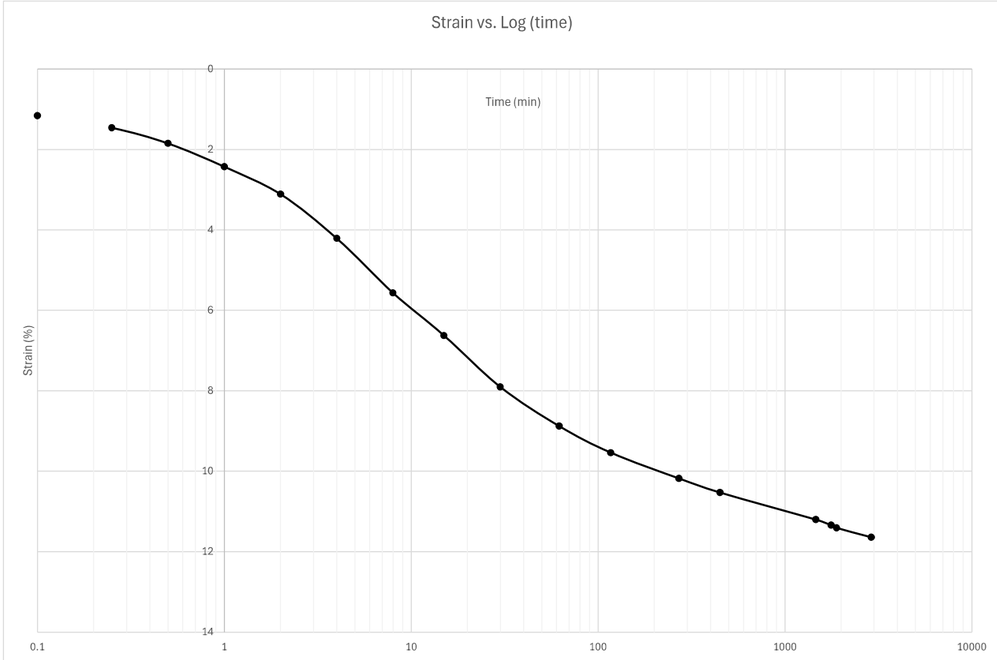
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.2456	-0.0001	0.8446	-0.01001	7.182
1			6	0.10	0.32	1000	0.2541	0.0084	0.8361	0.840841	7.100
2			15	0.25	0.50	1000	0.2567	0.011	0.8335	1.101101	7.075
3			30	0.50	0.71	1000	0.2599	0.0142	0.8303	1.421421	7.044
4		1		1.00	1.00	1000	0.265	0.0193	0.8252	1.931932	6.994
5		2		2.00	1.41	1000	0.2719	0.0262	0.8183	2.622623	6.927
6		4		4.00	2.00	1000	0.2818	0.0361	0.8084	3.613614	6.832
7		8		8.00	2.83	1000	0.2943	0.0486	0.7959	4.864865	6.710
8		15		15.00	3.87	1000	0.3085	0.0628	0.7817	6.286286	6.573
9		37		37.00	6.08	1000	0.3323	0.0866	0.7579	8.668669	6.342
10	1	9		69.00	8.31	1000	0.3452	0.0995	0.745	9.95996	6.217
11	2	15		135.00	11.62	1000	0.3568	0.1111	0.7334	11.12112	6.105
12	4	6		246.00	15.68	1000	0.3648	0.1191	0.7254	11.92192	6.027
13	6	49		409.00	20.22	1000	0.3706	0.1249	0.7196	12.5025	5.971
14	23	1		1381.00	37.16	1000	0.3827	0.137	0.7075	13.71371	5.854
15	24	8		1448.00	38.05	1000	0.3833	0.1376	0.7069	13.77377	5.848
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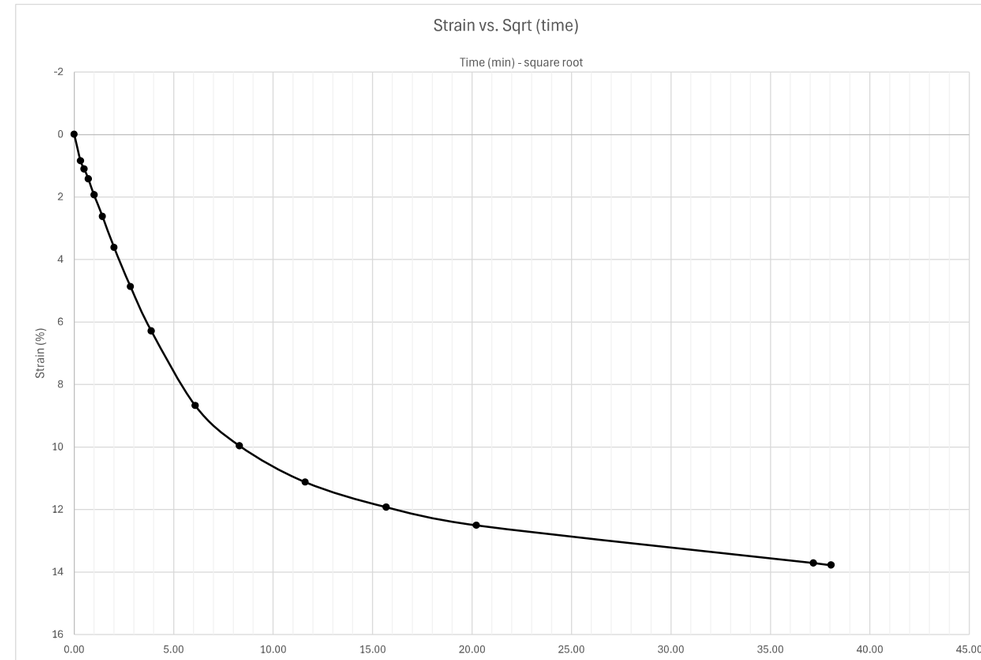
Sequence 3: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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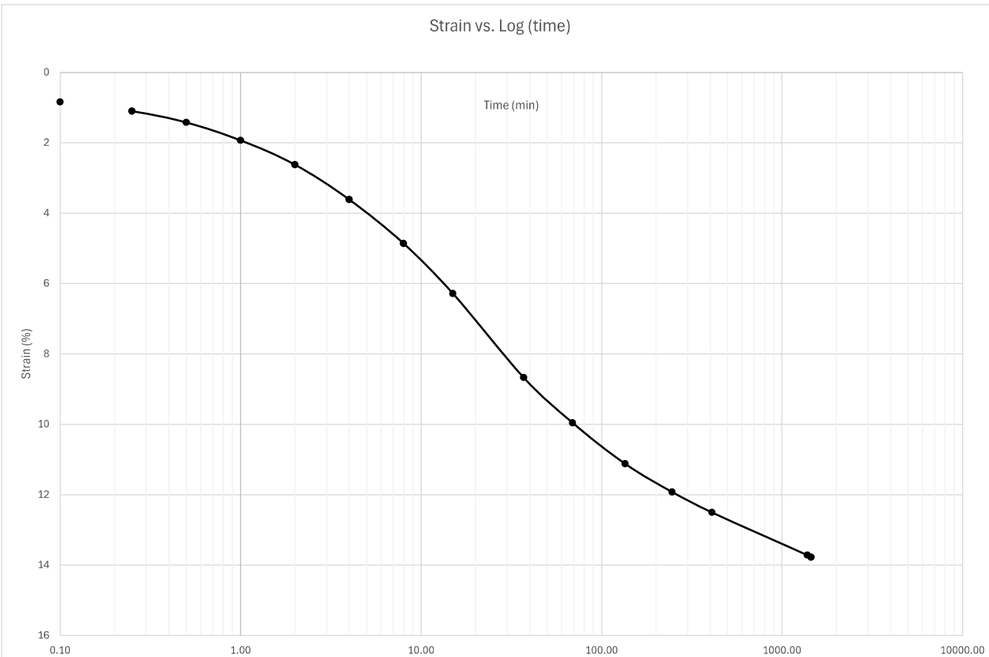
Sequence 3: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3833	-0.0002	0.7071	-0.02002	5.850
1			6	0.10	0.32	2000	0.3919	0.0084	0.6985	0.840841	5.767
2			15	0.25	0.50	2000	0.3947	0.0112	0.6957	1.121121	5.740
3			30	0.50	0.71	2000	0.3973	0.0138	0.6931	1.381381	5.715
4		1		1.00	1.00	2000	0.4015	0.018	0.6889	1.801802	5.674
5		2		2.00	1.41	2000	0.4078	0.0243	0.6826	2.432432	5.613
6		4		4.00	2.00	2000	0.4171	0.0336	0.6733	3.363363	5.523
7		8		8.00	2.83	2000	0.4298	0.0463	0.6606	4.634635	5.400
8		15		15.00	3.87	2000	0.4444	0.0609	0.646	6.096096	5.258
9		30		30.00	5.48	2000	0.4627	0.0792	0.6277	7.927928	5.081
10	1	0		60.00	7.75	2000	0.48	0.0965	0.6104	9.65966	4.913
11	2	0		120.00	10.95	2000	0.4938	0.1103	0.5966	11.04104	4.780
12	4	0		240.00	15.49	2000	0.5051	0.1216	0.5853	12.17217	4.670
13	6	33		393.00	19.82	2000	0.5115	0.128	0.5789	12.81281	4.608
14	22	47		1367.00	36.97	2000	0.5232	0.1397	0.5672	13.98398	4.495
15	30	12		1812.00	42.57	2000	0.5261	0.1426	0.5643	14.27427	4.467
16	94	34		5674.00	75.33	2000	0.5366	0.1531	0.5538	15.32533	4.365
17	97	47		5867.00	76.60	2000	0.5369	0.1534	0.5535	15.35536	4.362
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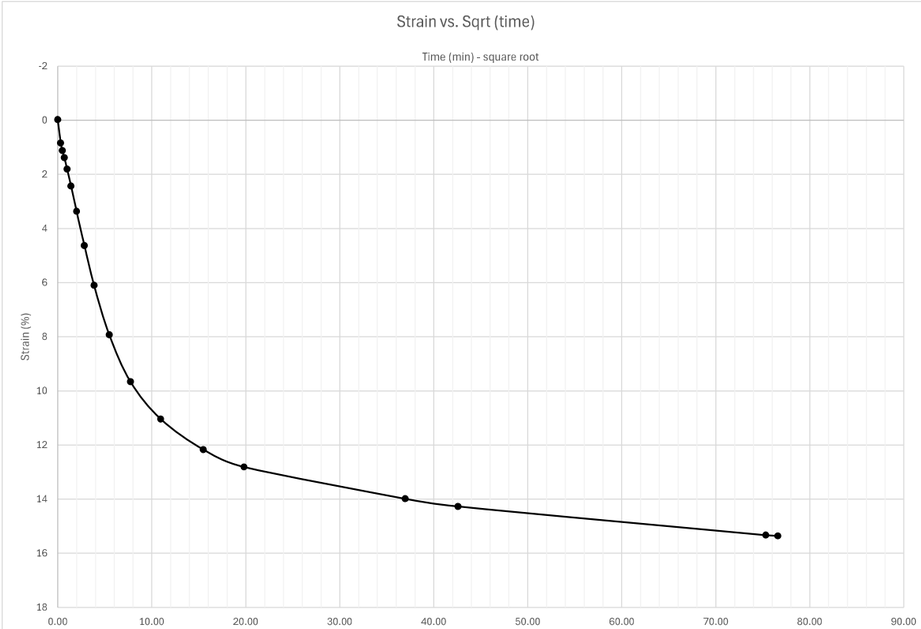
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

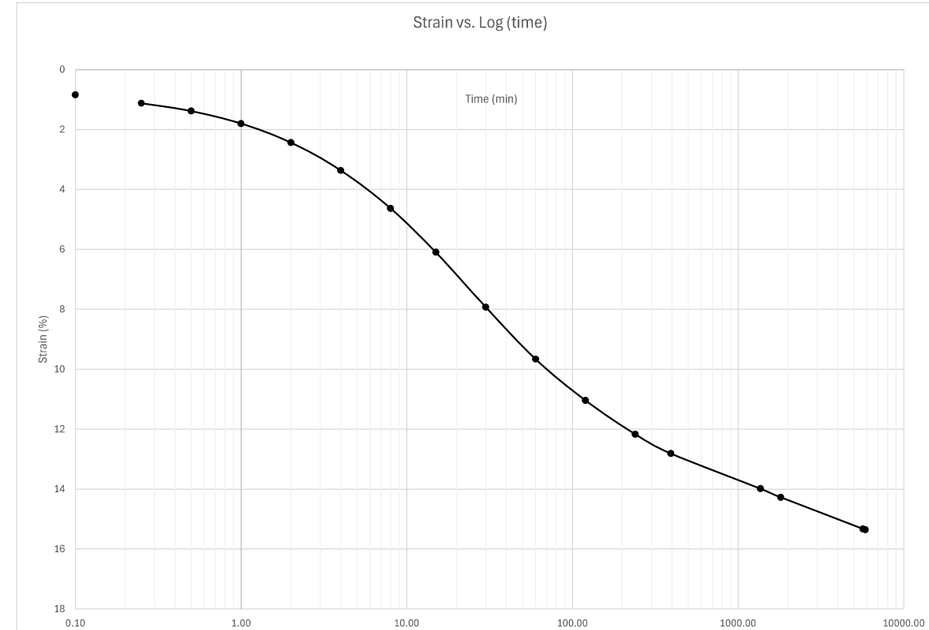
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.5369	-0.0002	0.5537	-0.02002	4.364
1			6	0.10	0.32	4000	0.5431	0.006	0.5475	0.600601	4.304
2			15	0.25	0.50	4000	0.5447	0.0076	0.5459	0.760761	4.289
3			30	0.50	0.71	4000	0.5464	0.0093	0.5442	0.930931	4.272
4		1		1.00	1.00	4000	0.5489	0.0118	0.5417	1.181181	4.248
5		2		2.00	1.41	4000	0.5527	0.0156	0.5379	1.561562	4.211
6		4		4.00	2.00	4000	0.5581	0.021	0.5325	2.102102	4.159
7		8		8.00	2.83	4000	0.5662	0.0291	0.5244	2.912913	4.080
8		15		15.00	3.87	4000	0.5763	0.0392	0.5143	3.923924	3.982
9		30		30.00	5.48	4000	0.5901	0.053	0.5005	5.305305	3.849
10	1	0		60.00	7.75	4000	0.6044	0.0673	0.4862	6.736737	3.710
11	2	0		120.00	10.95	4000	0.6166	0.0795	0.474	7.957958	3.592
12	3	52		232.00	15.23	4000	0.6252	0.0881	0.4654	8.818819	3.509
13	4	20		260.00	16.12	4000	0.6265	0.0894	0.4641	8.948949	3.496
14	5	16		316.00	17.78	4000	0.6284	0.0913	0.4622	9.139139	3.478
15	20	57		1257.00	35.45	4000	0.6385	0.1014	0.4521	10.15015	3.380
16	23	57		1437.00	37.91	4000	0.6397	0.1026	0.4509	10.27027	3.368
17	28	40		1720.00	41.47	4000	0.6411	0.104	0.4495	10.41041	3.355
18	44	54		2694.00	51.90	4000	0.6444	0.1073	0.4462	10.74074	3.323
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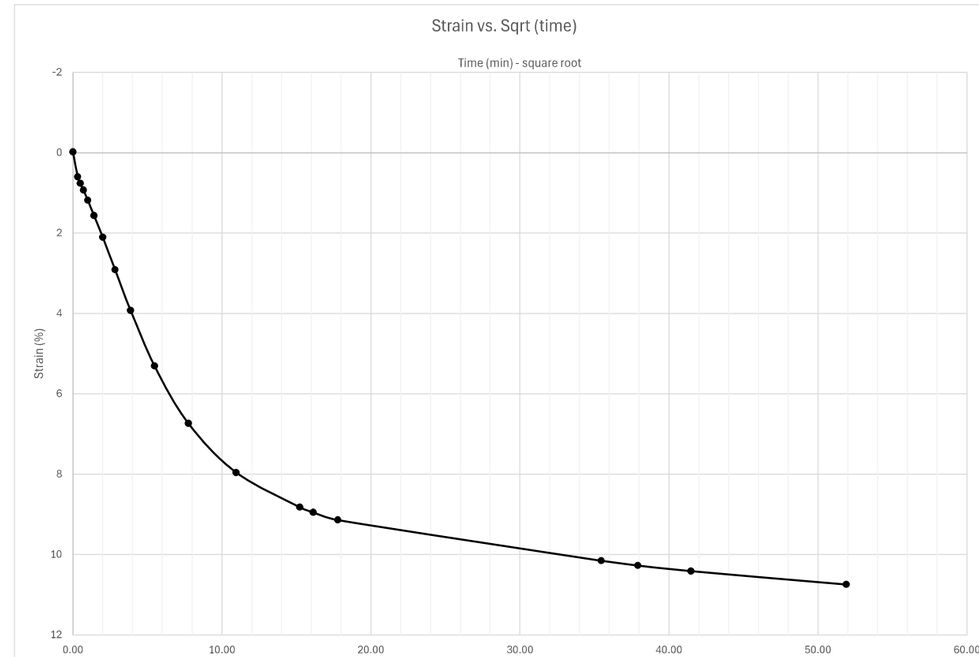
Sequence 5: 4000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

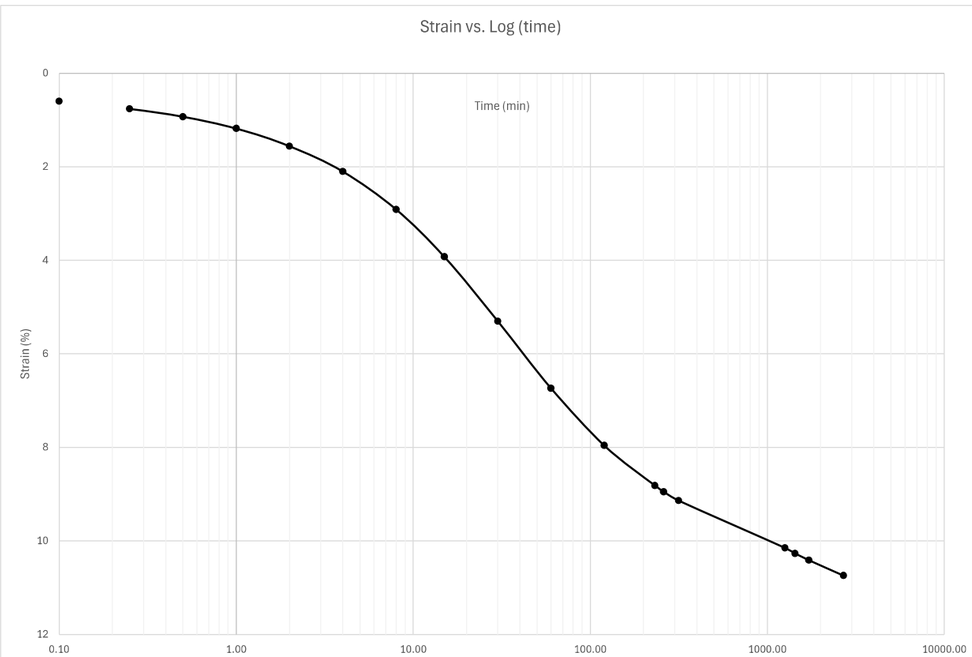


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.6444	0.0002	0.446	0.02002	3.321
1			6	0.10	0.32	2000	0.6425	-0.0017	0.4479	-0.17017	3.339
2			15	0.25	0.50	2000	0.6422	-0.002	0.4482	-0.2002	3.342
3			30	0.50	0.71	2000	0.6419	-0.0023	0.4485	-0.23023	3.345
4		1		1.00	1.00	2000	0.6415	-0.0027	0.4489	-0.27027	3.349
5		2		2.00	1.41	2000	0.641	-0.0032	0.4494	-0.32032	3.354
6		4		4.00	2.00	2000	0.6405	-0.0037	0.4499	-0.37037	3.358
7		8		8.00	2.83	2000	0.6398	-0.0044	0.4506	-0.44044	3.365
8		15		15.00	3.87	2000	0.6391	-0.0051	0.4513	-0.510511	3.372
9		30		30.00	5.48	2000	0.6386	-0.0056	0.4518	-0.560561	3.377
10	1			60.00	7.75	2000	0.6381	-0.0061	0.4523	-0.610611	3.382
11	1	58		118.00	10.86	2000	0.6376	-0.0066	0.4528	-0.660661	3.387
12	4			240.00	15.49	2000	0.6372	-0.007	0.4532	-0.700701	3.390
13	7	4		424.00	20.59	2000	0.6368	-0.0074	0.4536	-0.740741	3.394
14	9	29		569.00	23.85	2000	0.6366	-0.0076	0.4538	-0.760761	3.396
15	23	58		1438.00	37.92	2000	0.6362	-0.008	0.4542	-0.800801	3.400
16	24	24		1464.00	38.26	2000	0.6362	-0.008	0.4542	-0.800801	3.400
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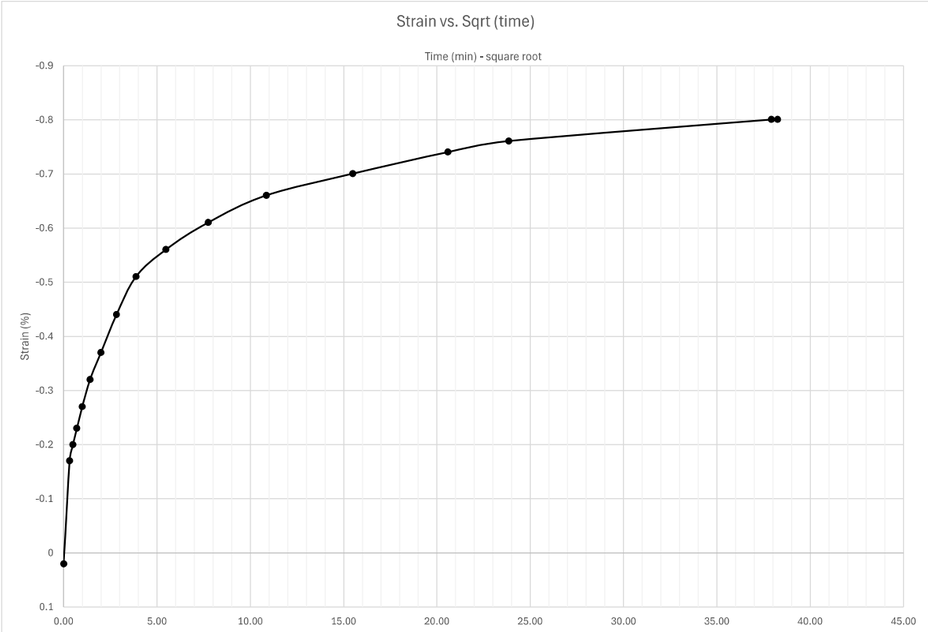
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

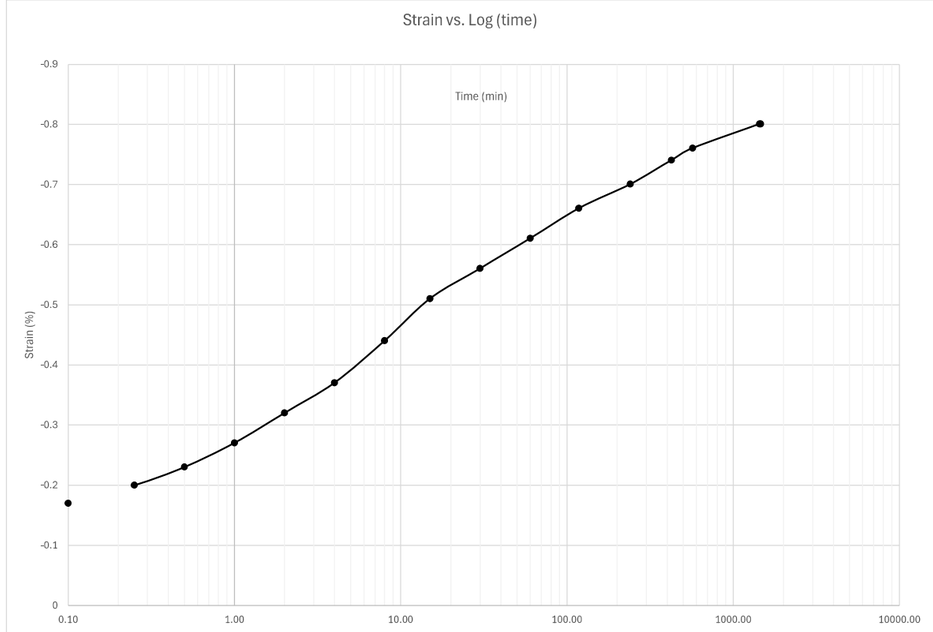
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6362	0.0002	0.454	0.02002	3.398
1			6	0.10	0.32	1000	0.6349	-0.0011	0.4553	-0.11011	3.411
2			15	0.25	0.50	1000	0.6346	-0.0014	0.4556	-0.14014	3.414
3			30	0.50	0.71	1000	0.6343	-0.0017	0.4559	-0.17017	3.417
4		1		1.00	1.00	1000	0.634	-0.002	0.4562	-0.2002	3.420
5		2		2.00	1.41	1000	0.6335	-0.0025	0.4567	-0.25025	3.424
6		4		4.00	2.00	1000	0.6329	-0.0031	0.4573	-0.31031	3.430
7		8		8.00	2.83	1000	0.632	-0.004	0.4582	-0.4004	3.439
8		15		15.00	3.87	1000	0.6311	-0.0049	0.4591	-0.49049	3.448
9		30		30.00	5.48	1000	0.63	-0.006	0.4602	-0.600601	3.458
10	1			60.00	7.75	1000	0.6288	-0.0072	0.4614	-0.720721	3.470
11	1	55		115.00	10.72	1000	0.6276	-0.0084	0.4626	-0.840841	3.482
12	4	0		240.00	15.49	1000	0.6262	-0.0098	0.464	-0.980981	3.495
13	7	12		432.00	20.78	1000	0.6252	-0.0108	0.465	-1.081081	3.505
14	8	35		515.00	22.69	1000	0.6249	-0.0111	0.4653	-1.111111	3.508
15	27	57		1677.00	40.95	1000	0.6232	-0.0128	0.467	-1.281281	3.524
16	49	57		2997.00	54.74	1000	0.6221	-0.0139	0.4681	-1.391391	3.535
17	95	53		5753.00	75.85	1000	0.6213	-0.0147	0.4689	-1.471471	3.543
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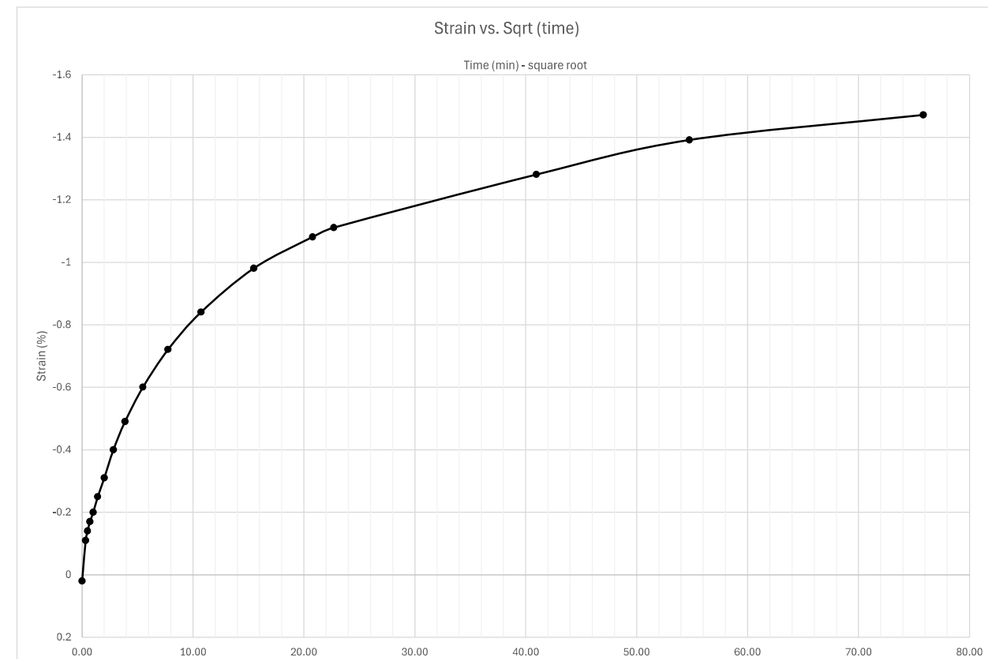
Sequence 7: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

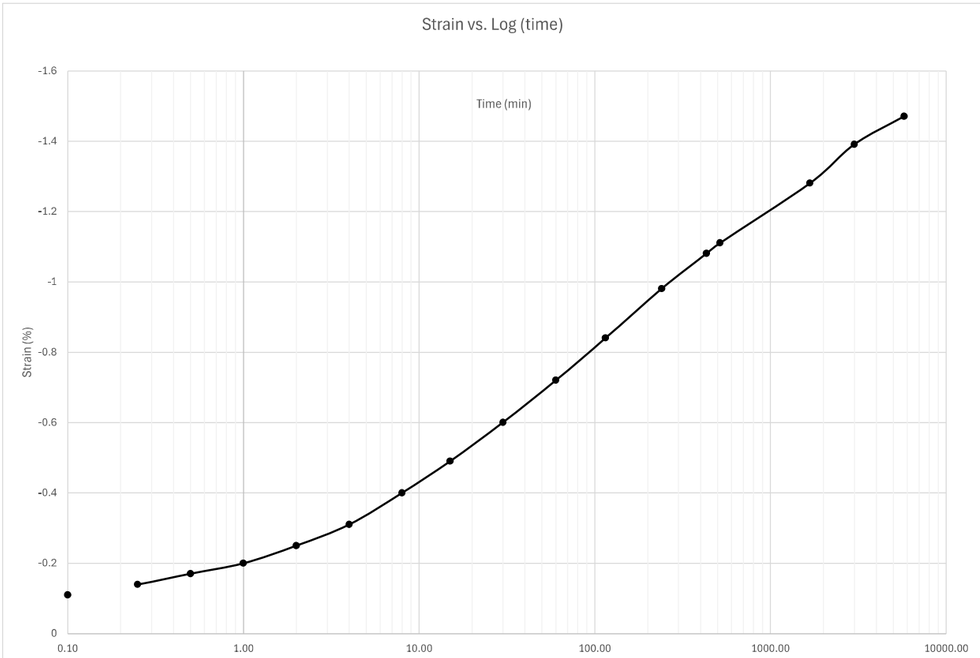


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.6213	0.0001	0.4688	0.01001	3.542
1			6	0.10	0.32	500	0.6205	-0.0007	0.4696	-0.07007	3.549
2			15	0.25	0.50	500	0.6203	-0.0009	0.4698	-0.09009	3.551
3			30	0.50	0.71	500	0.6201	-0.0011	0.47	-0.11011	3.553
4		1		1.00	1.00	500	0.6198	-0.0014	0.4703	-0.14014	3.556
5		2		2.00	1.41	500	0.6194	-0.0018	0.4707	-0.18018	3.560
6		4		4.00	2.00	500	0.619	-0.0022	0.4711	-0.22022	3.564
7		8		8.00	2.83	500	0.6182	-0.003	0.4719	-0.3003	3.572
8		15		15.00	3.87	500	0.6176	-0.0036	0.4725	-0.36036	3.577
9		30		30.00	5.48	500	0.6165	-0.0047	0.4736	-0.47047	3.588
10	1			60.00	7.75	500	0.6155	-0.0057	0.4746	-0.570571	3.598
11	2			120.00	10.95	500	0.6143	-0.0069	0.4758	-0.690691	3.609
12	4			240.00	15.49	500	0.6131	-0.0081	0.477	-0.810811	3.621
13	6	3		363.00	19.05	500	0.6121	-0.0091	0.478	-0.910911	3.631
14	21	19		1279.00	35.76	500	0.6092	-0.012	0.4809	-1.201201	3.659
15	24			1440.00	37.95	500	0.6089	-0.0123	0.4812	-1.231231	3.662
16	32			1920.00	43.82	500	0.6082	-0.013	0.4819	-1.301301	3.669
17	46	4		2764.00	52.57	500	0.6071	-0.0141	0.483	-1.411411	3.679
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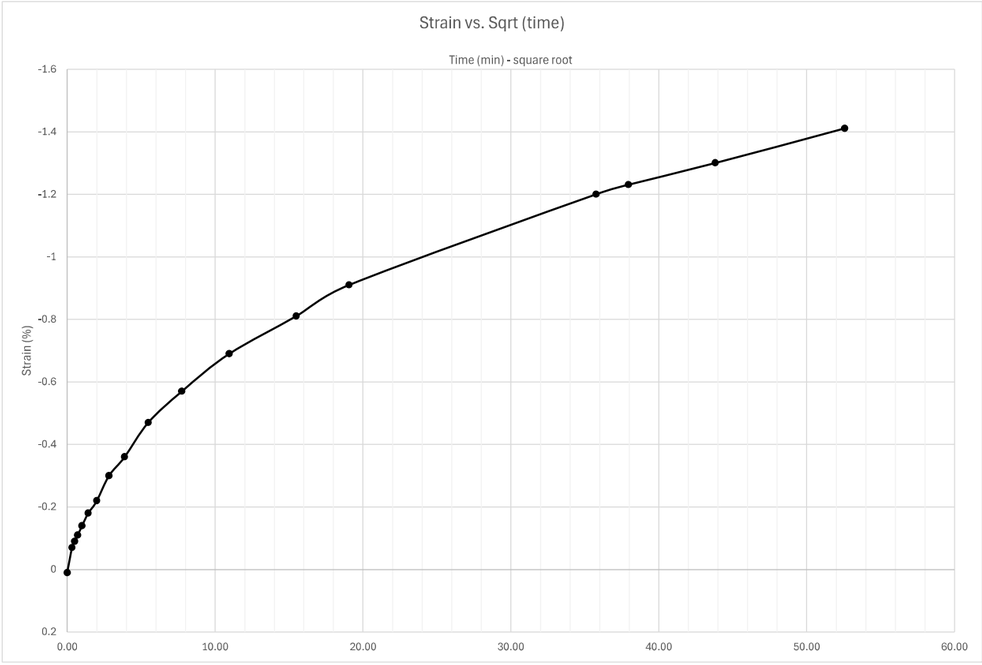
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

LLT_12000, ST-44, 17.0-19.0 ft

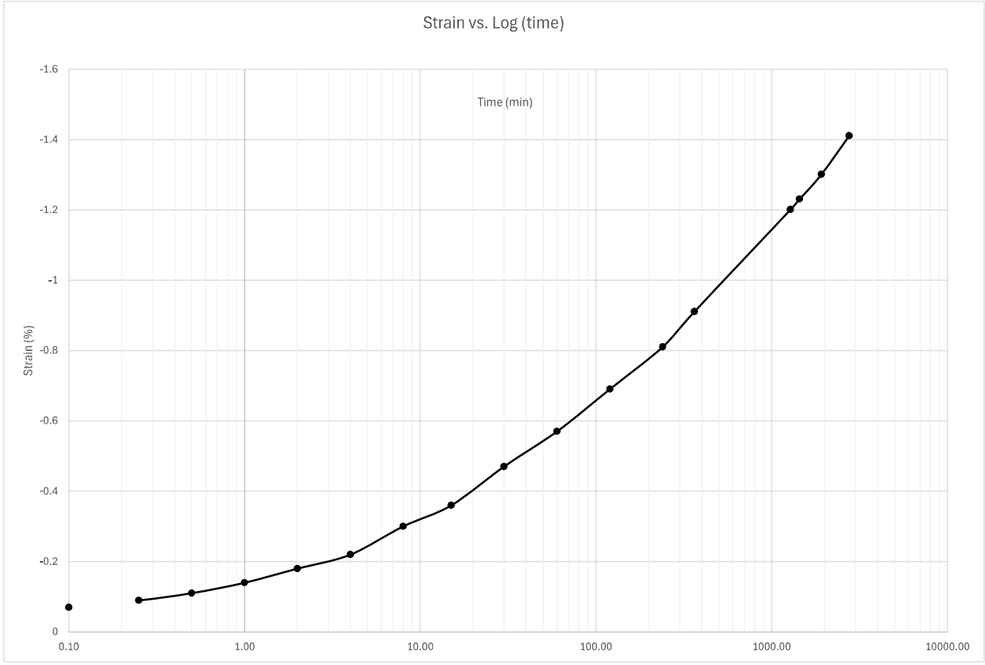
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6071	-0.0001	0.4831	-0.01001	3.680
1			6	0.10	0.32	1000	0.6079	0.0007	0.4823	0.07007	3.672
2			15	0.25	0.50	1000	0.6082	0.001	0.482	0.1001	3.669
3			30	0.50	0.71	1000	0.6084	0.0012	0.4818	0.12012	3.668
4		1		1.00	1.00	1000	0.6087	0.0015	0.4815	0.15015	3.665
5		2		2.00	1.41	1000	0.6091	0.0019	0.4811	0.19019	3.661
6		4		4.00	2.00	1000	0.6095	0.0023	0.4807	0.23023	3.657
7		8		8.00	2.83	1000	0.6101	0.0029	0.4801	0.29029	3.651
8		15		15.00	3.87	1000	0.6105	0.0033	0.4797	0.33033	3.647
9		27		27.00	5.20	1000	0.6108	0.0036	0.4794	0.36036	3.644
10		44		44.00	6.63	1000	0.611	0.0038	0.4792	0.38038	3.642
11	1	13		73.00	8.54	1000	0.6112	0.004	0.479	0.4004	3.640
12	2	13		133.00	11.53	1000	0.6115	0.0043	0.4787	0.43043	3.637
13	4	18		258.00	16.06	1000	0.6117	0.0045	0.4785	0.45045	3.636
14	8	28		508.00	22.54	1000	0.6122	0.005	0.478	0.500501	3.631
15	23	34		1414.00	37.60	1000	0.6125	0.0053	0.4777	0.530531	3.628
16	28	48		1728.00	41.57	1000	0.6126	0.0054	0.4776	0.540541	3.627
17	118	47		7127.00	84.42	1000	0.6128	0.0056	0.4774	0.560561	3.625
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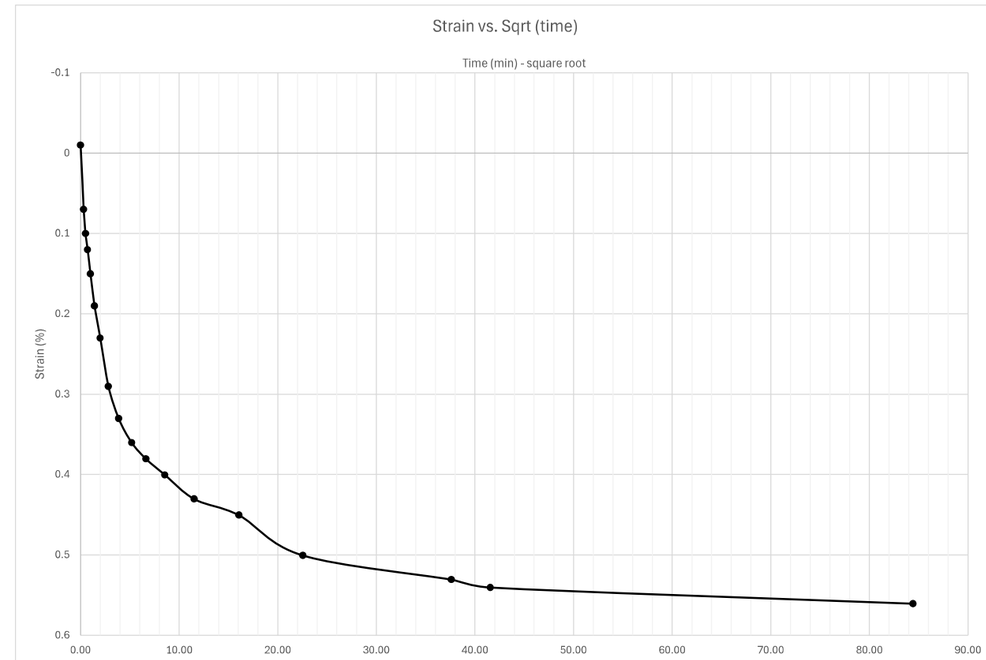
Sequence 9: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6128	-0.0002	0.4776	-0.02002	3.627
1			6	0.10	0.32	2000	0.6145	0.0015	0.4759	0.15015	3.610
2			15	0.25	0.50	2000	0.6149	0.0019	0.4755	0.19019	3.606
3			30	0.50	0.71	2000	0.6153	0.0023	0.4751	0.23023	3.603
4		1		1.00	1.00	2000	0.6159	0.0029	0.4745	0.29029	3.597
5		2		2.00	1.41	2000	0.6167	0.0037	0.4737	0.37037	3.589
6		4		4.00	2.00	2000	0.6177	0.0047	0.4727	0.47047	3.579
7		8		8.00	2.83	2000	0.6189	0.0059	0.4715	0.590591	3.568
8		15		15.00	3.87	2000	0.6198	0.0068	0.4706	0.680681	3.559
9		42		42.00	6.48	2000	0.621	0.008	0.4694	0.800801	3.547
10	1	9		69.00	8.31	2000	0.6215	0.0085	0.4689	0.850851	3.543
11	2	13		133.00	11.53	2000	0.6221	0.0091	0.4683	0.910911	3.537
12	4	7		247.00	15.72	2000	0.6227	0.0097	0.4677	0.970971	3.531
13	6	31		391.00	19.77	2000	0.6232	0.0102	0.4672	1.021021	3.526
14	8	29		509.00	22.56	2000	0.6235	0.0105	0.4669	1.051051	3.523
15	23	52		1432.00	37.84	2000	0.6244	0.0114	0.466	1.141141	3.514
16	24	20		1460.00	38.21	2000	0.6245	0.0115	0.4659	1.151151	3.513
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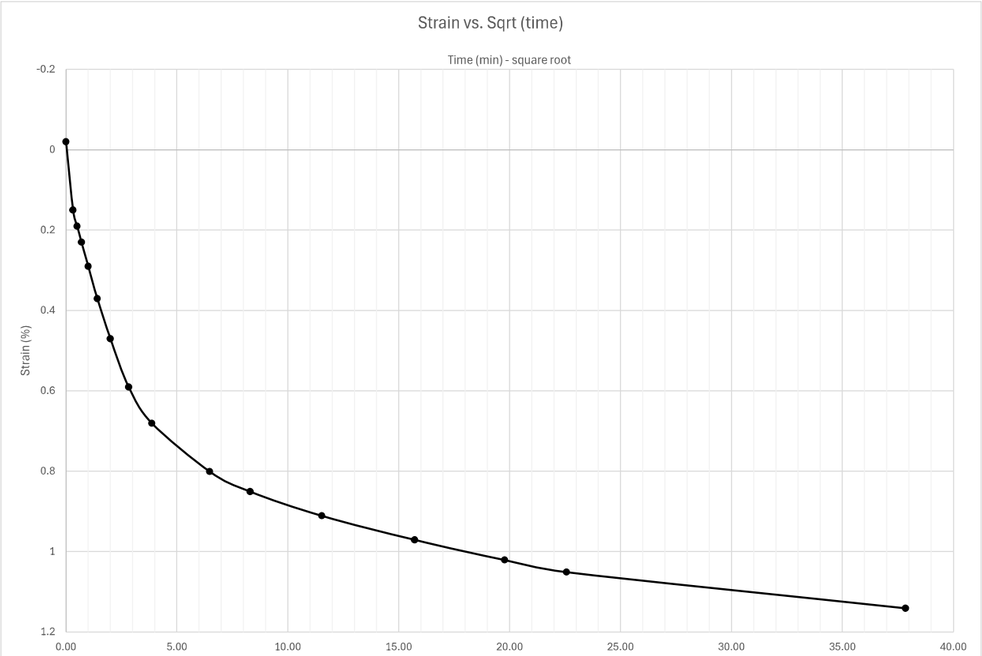
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.6245	-0.0003	0.4662	-0.03003	3.516
1			6	0.10	0.32	4000	0.6273	0.0025	0.4634	0.25025	3.489
2			15	0.25	0.50	4000	0.628	0.0032	0.4627	0.32032	3.482
3			30	0.50	0.71	4000	0.6288	0.004	0.4619	0.4004	3.475
4		1		1.00	1.00	4000	0.6299	0.0051	0.4608	0.510511	3.464
5		2		2.00	1.41	4000	0.6315	0.0067	0.4592	0.670671	3.449
6		4		4.00	2.00	4000	0.6336	0.0088	0.4571	0.880881	3.428
7		8		8.00	2.83	4000	0.6361	0.0113	0.4546	1.131131	3.404
8		15		15.00	3.87	4000	0.6385	0.0137	0.4522	1.371371	3.381
9		30		30.00	5.48	4000	0.6408	0.016	0.4499	1.601602	3.358
10	1	3		63.00	7.94	4000	0.6427	0.0179	0.448	1.791792	3.340
11	2	40		160.00	12.65	4000	0.6451	0.0203	0.4456	2.032032	3.317
12	4	36		276.00	16.61	4000	0.6466	0.0218	0.4441	2.182182	3.302
13	23	55		1435.00	37.88	4000	0.6525	0.0277	0.4382	2.772773	3.245
14	30	8		1808.00	42.52	4000	0.6533	0.0285	0.4374	2.852853	3.237
15	47	15		2835.00	53.24	4000	0.655	0.0302	0.4357	3.023023	3.221
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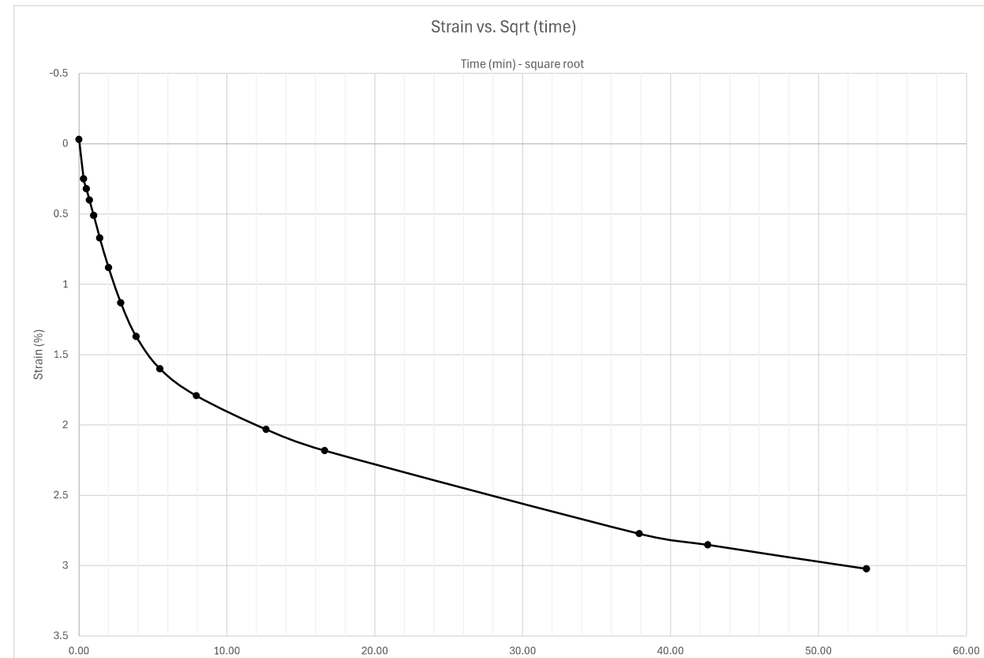
Sequence 11: 4000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

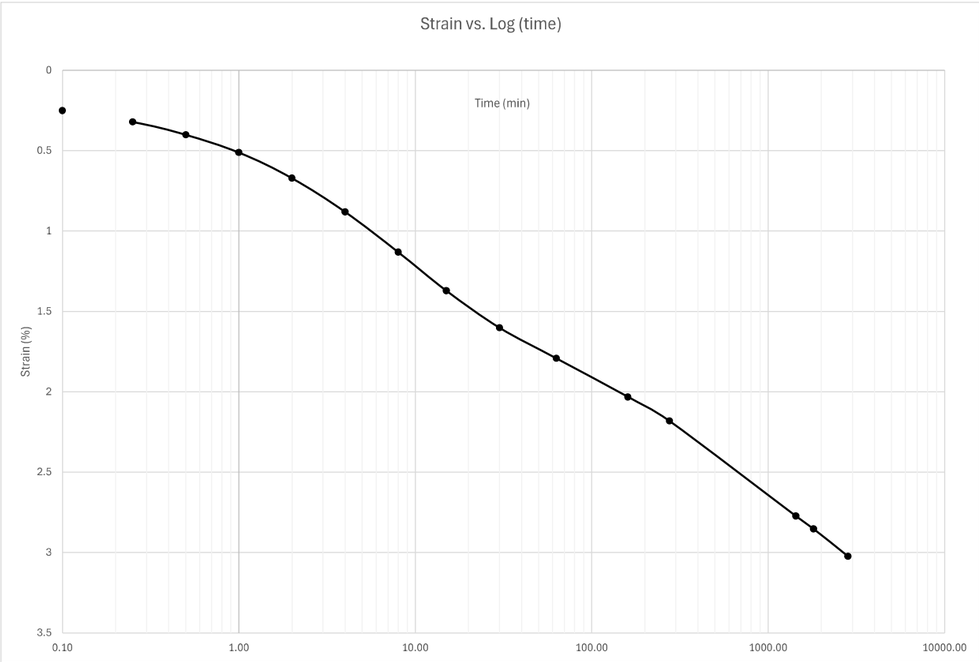


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.655	-0.0006	0.4363	-0.06006	3.227
1			6	0.10	0.32	8000	0.66	0.0044	0.4313	0.44044	3.178
2			15	0.25	0.50	8000	0.6612	0.0056	0.4301	0.560561	3.167
3			30	0.50	0.71	8000	0.6626	0.007	0.4287	0.700701	3.153
4		1		1.00	1.00	8000	0.6644	0.0088	0.4269	0.880881	3.136
5		2		2.00	1.41	8000	0.6676	0.012	0.4237	1.201201	3.105
6		4		4.00	2.00	8000	0.6721	0.0165	0.4192	1.651652	3.061
7		8		8.00	2.83	8000	0.6783	0.0227	0.413	2.272272	3.001
8		15		15.00	3.87	8000	0.686	0.0304	0.4053	3.043043	2.926
9		30		30.00	5.48	8000	0.6963	0.0407	0.395	4.074074	2.827
10	1	0		60.00	7.75	8000	0.7063	0.0507	0.385	5.075075	2.730
11	2	0		120.00	10.95	8000	0.7144	0.0588	0.3769	5.885886	2.651
12	4	3		243.00	15.59	8000	0.7209	0.0653	0.3704	6.536537	2.588
13	7	6		426.00	20.64	8000	0.7251	0.0695	0.3662	6.956957	2.548
14	23	49		1429.00	37.80	8000	0.7327	0.0771	0.3586	7.717718	2.474
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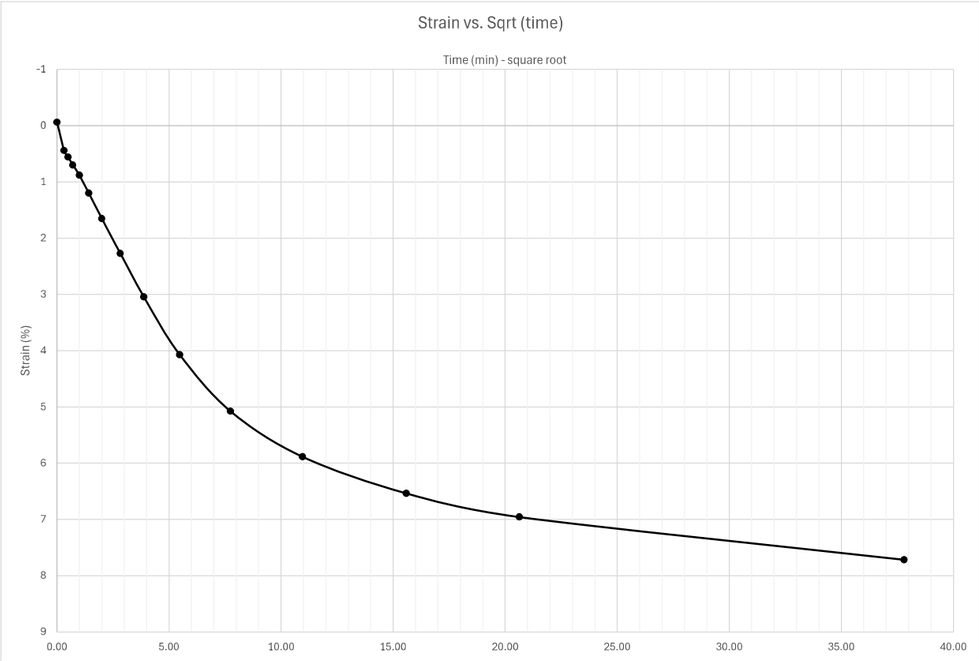
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

LLT_12000, ST-44, 17.0-19.0 ft

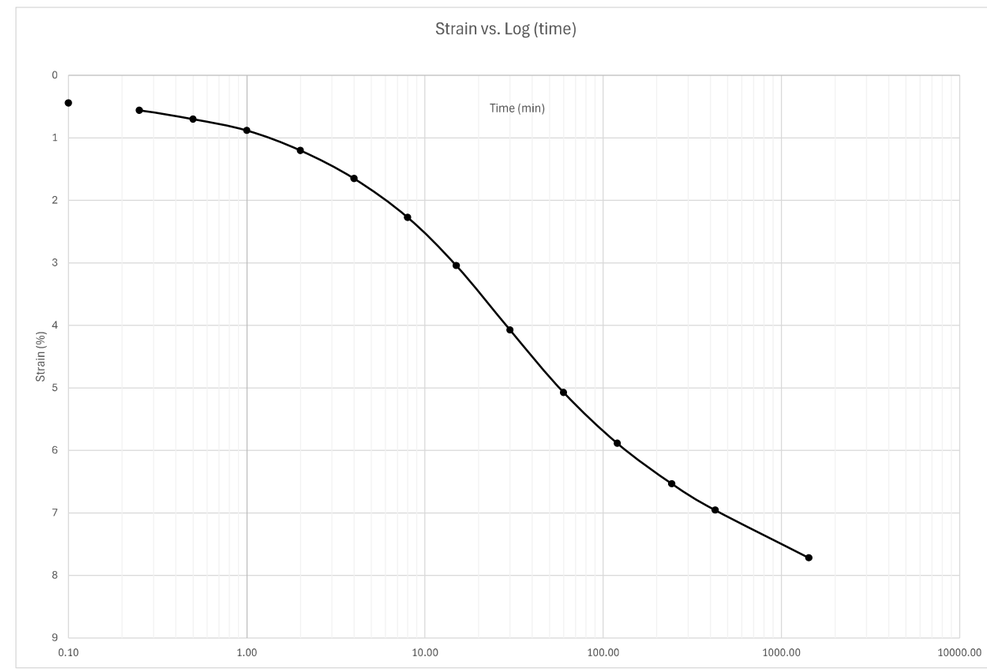
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.7327	-0.0008	0.3594	-0.08008	2.482
1			6	0.10	0.32	16000	0.7367	0.0032	0.3554	0.32032	2.443
2			15	0.25	0.50	16000	0.738	0.0045	0.3541	0.45045	2.430
3			30	0.50	0.71	16000	0.7394	0.0059	0.3527	0.590591	2.417
4		1		1.00	1.00	16000	0.7417	0.0082	0.3504	0.820821	2.395
5		2		2.00	1.41	16000	0.7449	0.0114	0.3472	1.141141	2.364
6		4		4.00	2.00	16000	0.7494	0.0159	0.3427	1.591592	2.320
7		8		8.00	2.83	16000	0.7557	0.0222	0.3364	2.222222	2.259
8		15		15.00	3.87	16000	0.7633	0.0298	0.3288	2.982983	2.185
9		30		30.00	5.48	16000	0.7733	0.0398	0.3188	3.983984	2.088
10	1			60.00	7.75	16000	0.7827	0.0492	0.3094	4.924925	1.997
11	2			120.00	10.95	16000	0.7898	0.0563	0.3023	5.635636	1.929
12	4	11		251.00	15.84	16000	0.7952	0.0617	0.2969	6.176176	1.876
13	6	11		371.00	19.26	16000	0.7976	0.0641	0.2945	6.416416	1.853
14	6	59		419.00	20.47	16000	0.7983	0.0648	0.2938	6.486486	1.846
15	26	25	11	1585.18	39.81	16000	0.8041	0.0706	0.288	7.067067	1.790
16	71			4260.00	65.27	16000	0.8077	0.0742	0.2844	7.427427	1.755
17	94	53		5693.00	75.45	16000	0.8088	0.0753	0.2833	7.537538	1.745
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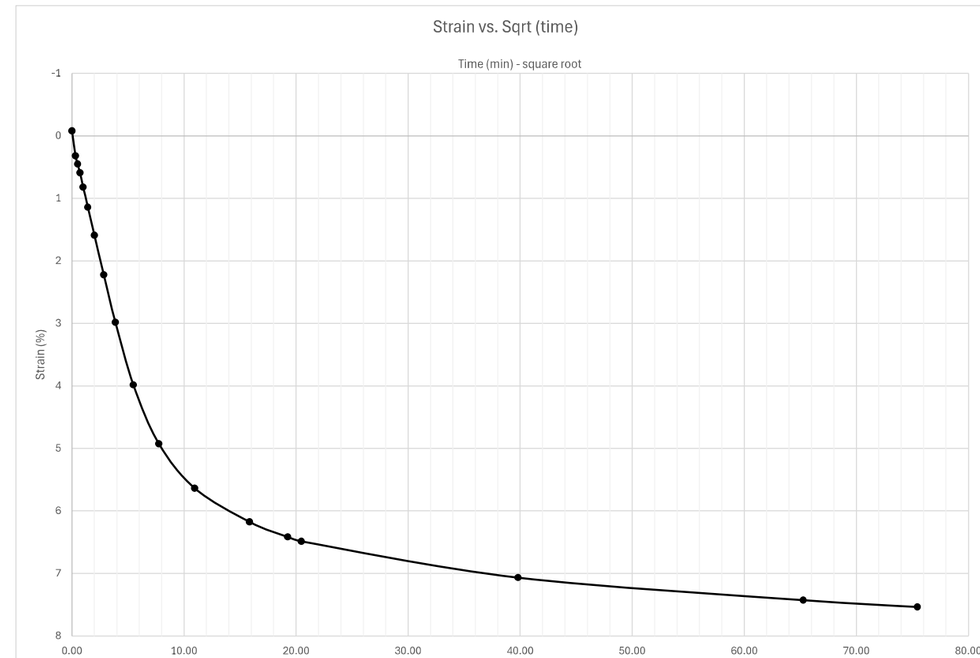
Sequence 13: 16000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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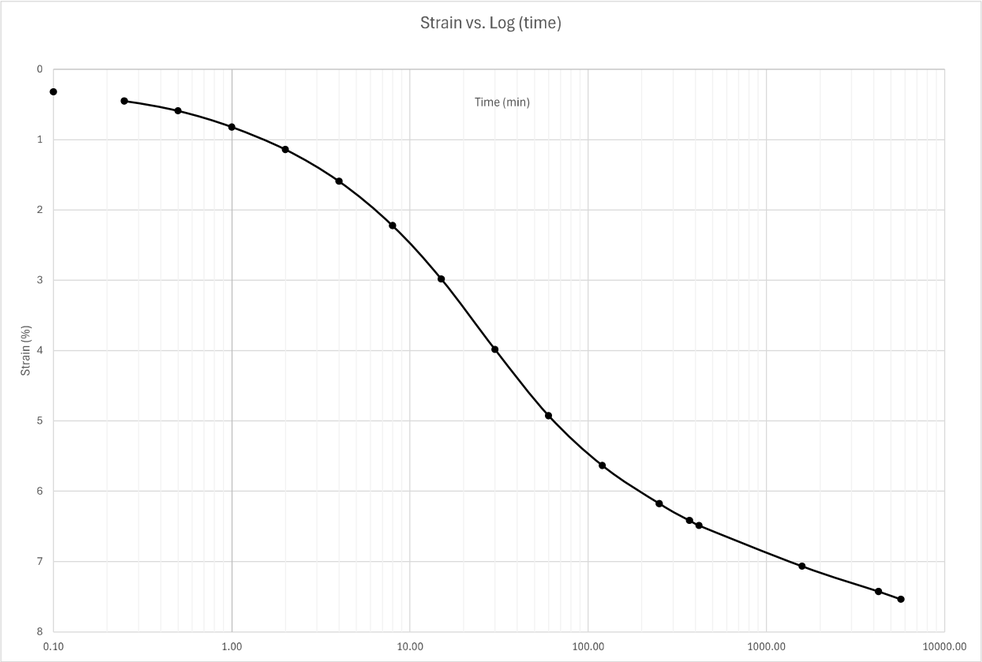
Sequence 13: 16000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.8088	-0.0012	0.2845	-0.12012	1.756
1			6	0.10	0.32	32000	0.812	0.002	0.2813	0.2002	1.725
2			15	0.25	0.50	32000	0.8128	0.0028	0.2805	0.28028	1.717
3			30	0.50	0.71	32000	0.8136	0.0036	0.2797	0.36036	1.710
4		1		1.00	1.00	32000	0.815	0.005	0.2783	0.500501	1.696
5		2		2.00	1.41	32000	0.8171	0.0071	0.2762	0.710711	1.676
6		4		4.00	2.00	32000	0.82	0.01	0.2733	1.001001	1.648
7		8		8.00	2.83	32000	0.8238	0.0138	0.2695	1.381381	1.611
8		15		15.00	3.87	32000	0.8282	0.0182	0.2651	1.821822	1.568
9		30		30.00	5.48	32000	0.8342	0.0242	0.2591	2.422422	1.510
10	1			60.00	7.75	32000	0.8399	0.0299	0.2534	2.992993	1.455
11	2			120.00	10.95	32000	0.8444	0.0344	0.2489	3.443443	1.411
12	4			240.00	15.49	32000	0.8482	0.0382	0.2451	3.823824	1.374
13	6	18		378.00	19.44	32000	0.8503	0.0403	0.243	4.034034	1.354
14	22	48		1368.00	36.99	32000	0.8551	0.0451	0.2382	4.514515	1.308
15	24	40		1480.00	38.47	32000	0.8554	0.0454	0.2379	4.544545	1.305
16	47	2		2822.00	53.12	32000	0.8576	0.0476	0.2357	4.764765	1.283
17	70	45		4245.00	65.15	32000	0.8591	0.0491	0.2342	4.914915	1.269
18	118	59		7139.00	84.49	32000	0.8612	0.0512	0.2321	5.125125	1.249
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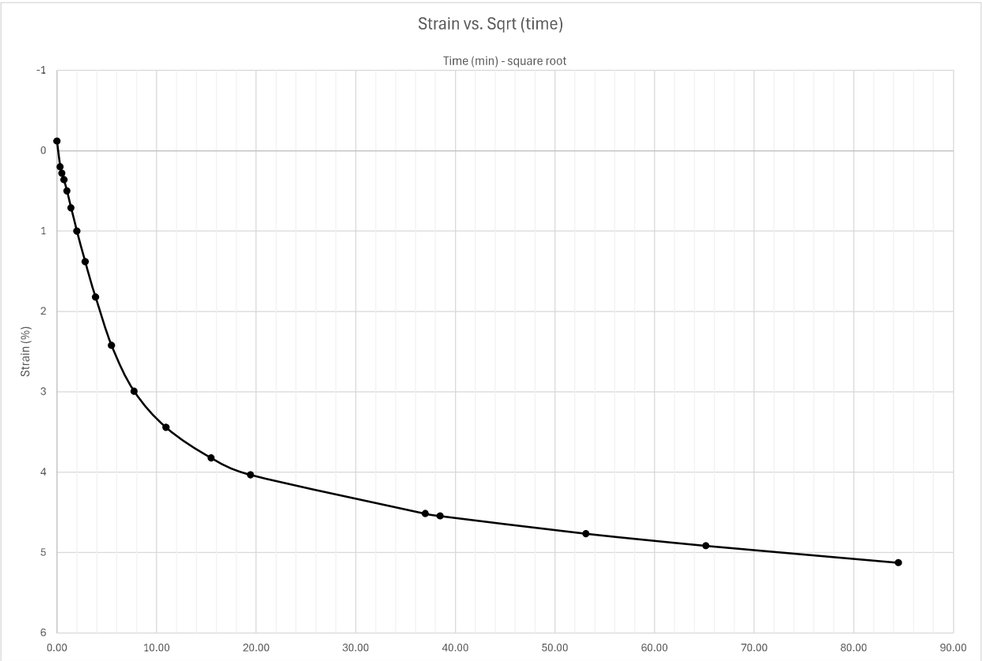
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

LLT_12000, ST-44, 17.0-19.0 ft

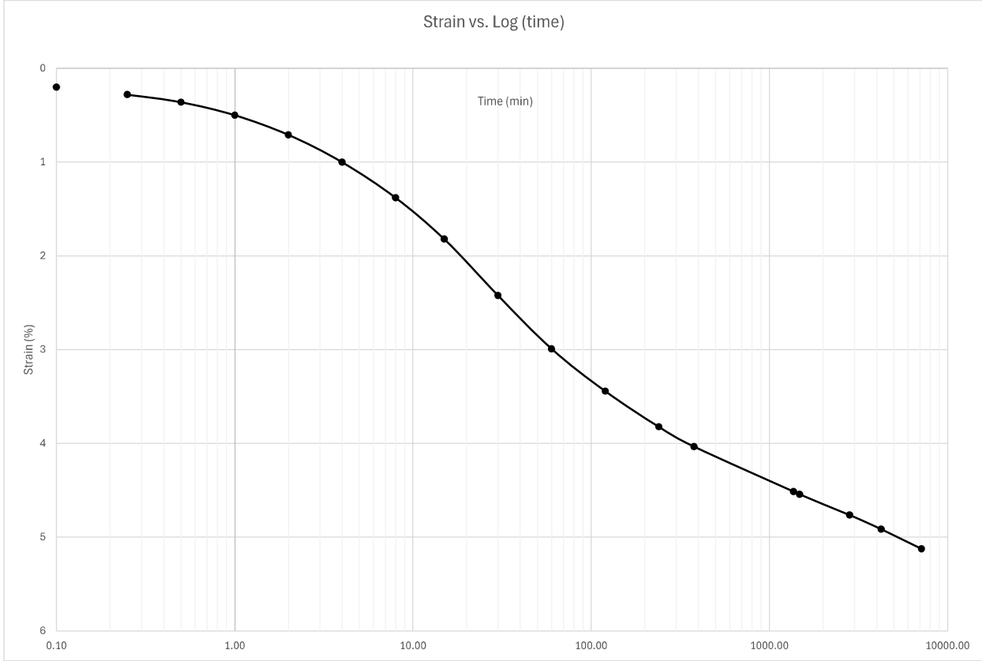
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

LLT_12000, ST-44, 17.0-19.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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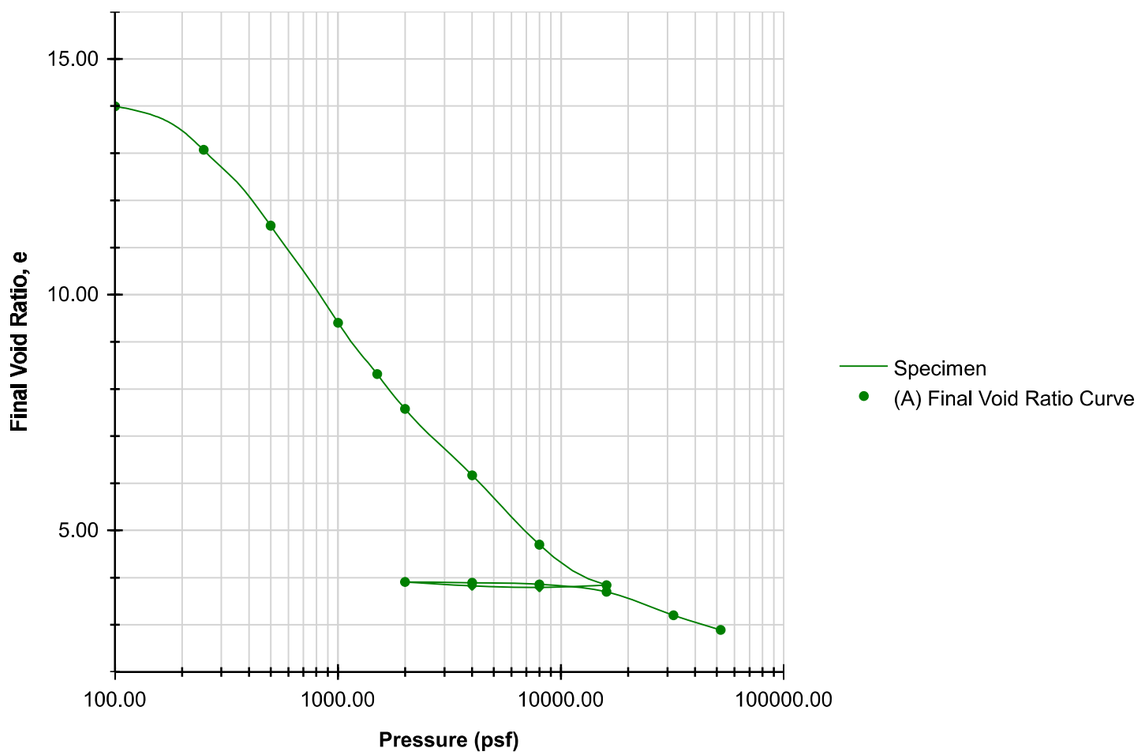
Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	751.5	0.0*	Liquid Limits	NP	Test Date 2/19/2026
Dry Density (pcf)	7.6	76.3	Plastic Limits	NP	
Saturation (%)	98.5	0.0*			
Void Ratio	14.16	0.52*	Specific Gravity	1.856	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	17 -19	Remarks
Sample Number	ST-14	Boring Number	Y1RPA_2150	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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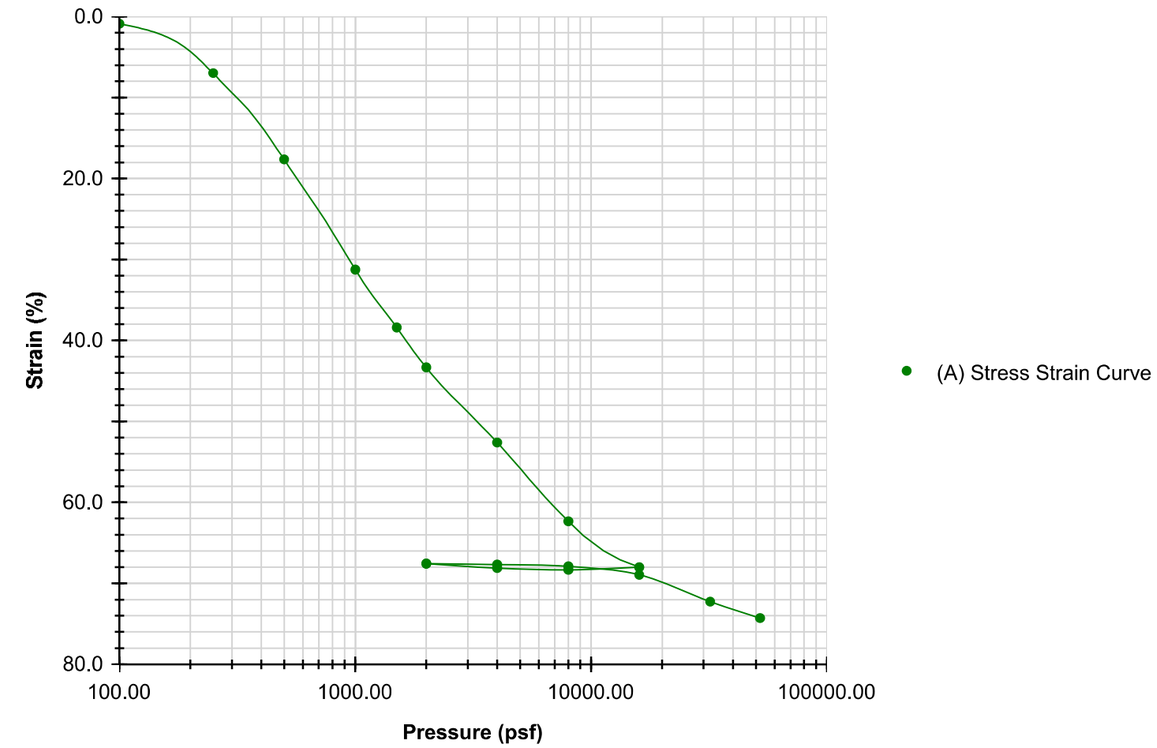
SHEET 326

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	751.5	0.0*	Liquid Limits	NP	Test Date 2/19/2026
Dry Density (pcf)	7.6	76.3	Plastic Limits	NP	
Saturation (%)	98.5	0.0*			
Void Ratio	14.16	0.52*	Specific Gravity	1.856	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	17 -19	Remarks
Sample Number	ST-14	Boring Number	Y1RPA_2150	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

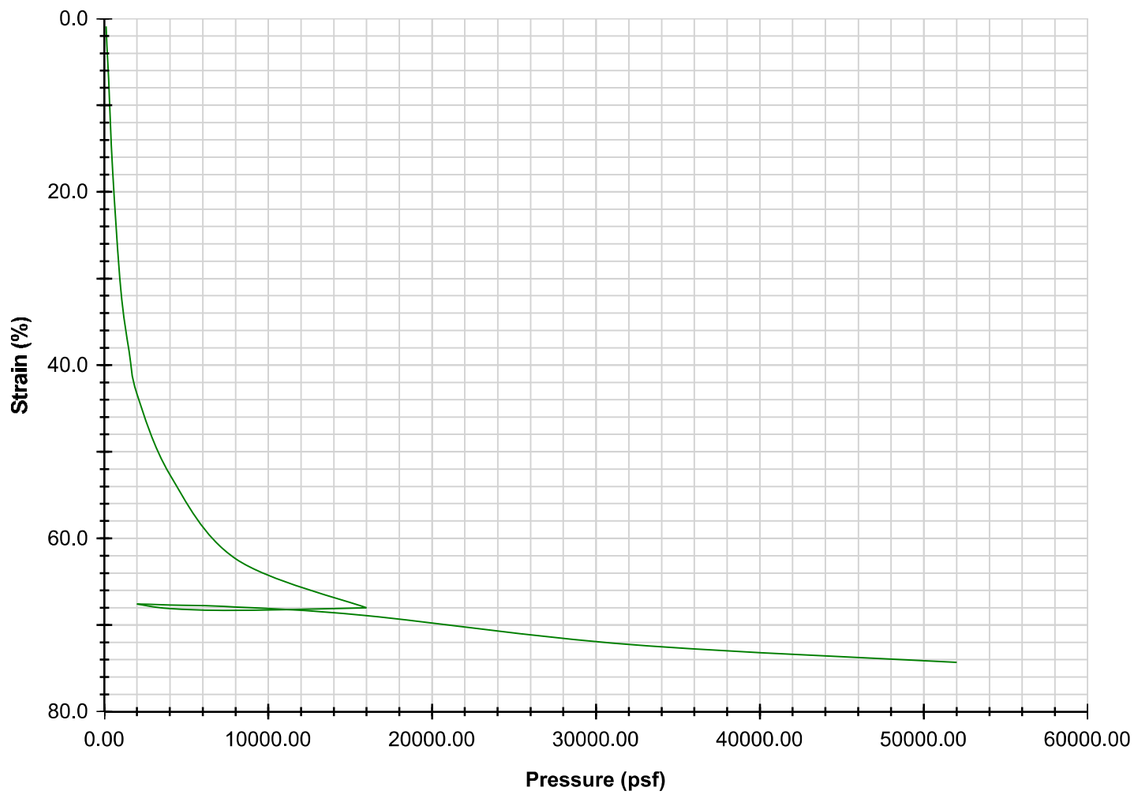
*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	Test Date 2/19/2026
Moisture (%)	751.5	0.0*	Plastic Limits	NP	
Dry Density (pcf)	7.6	76.3			
Saturation (%)	98.5	0.0*			
Void Ratio	14.16	0.52*	Specific Gravity	1.856	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	17 -19	Remarks
Sample Number	ST-14	Boring Number	Y1RPA_2150	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Coefficients of Consolidation

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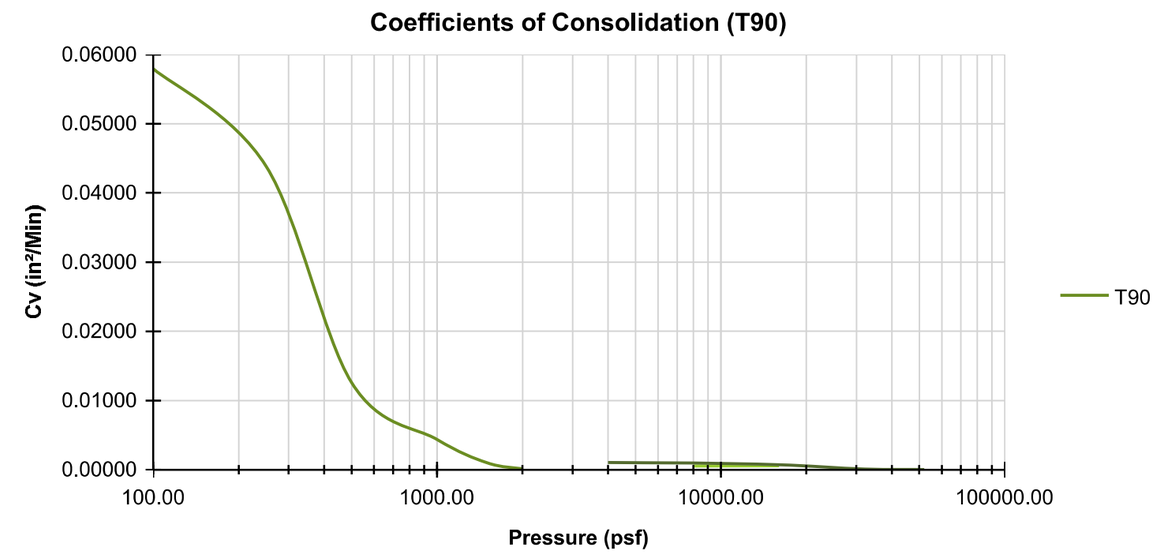

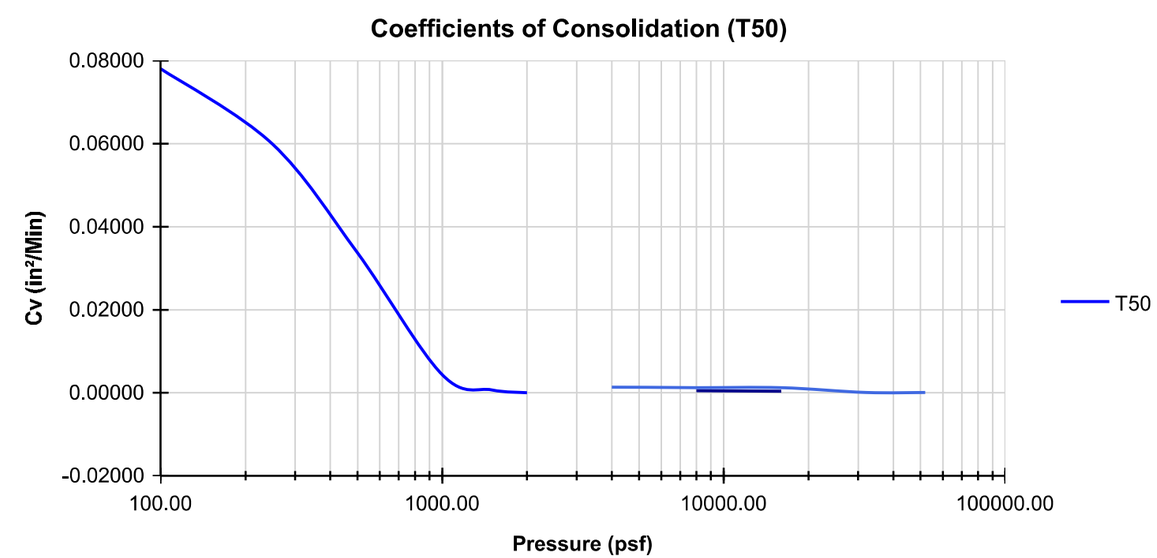

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
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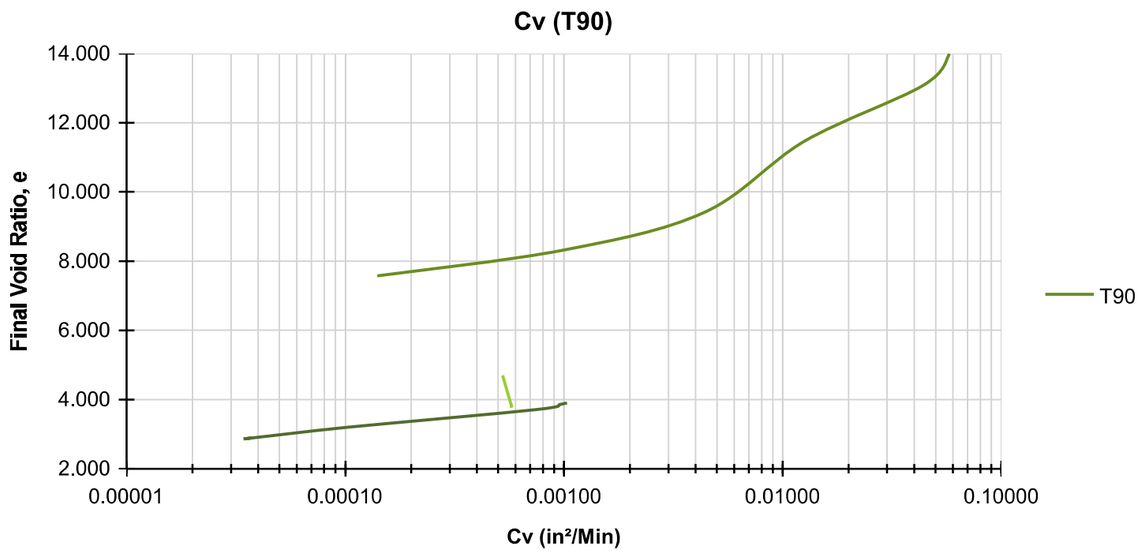
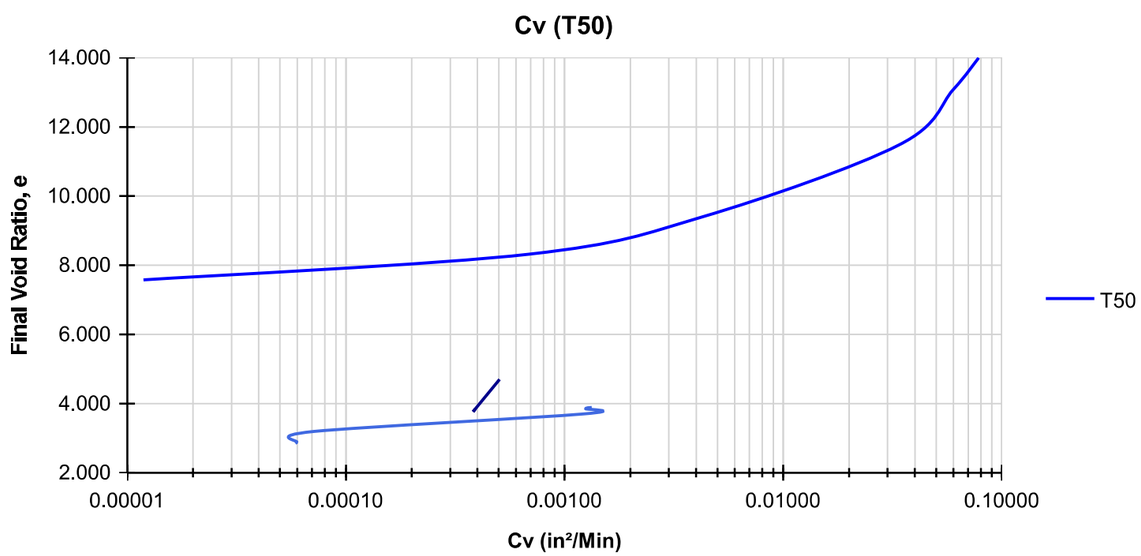
Cv - Void Ratio

ASTM D2435





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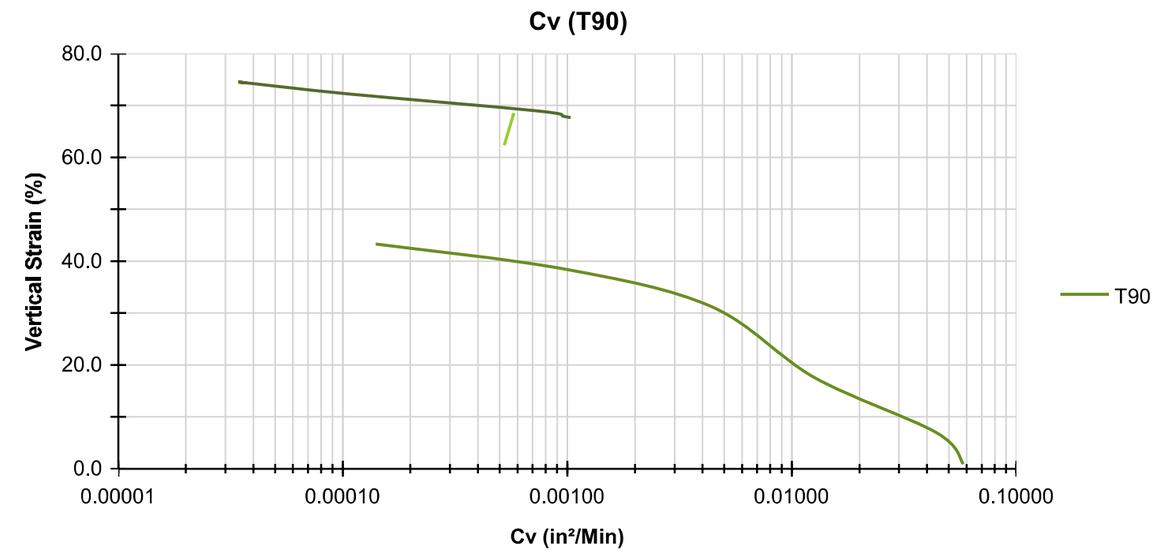
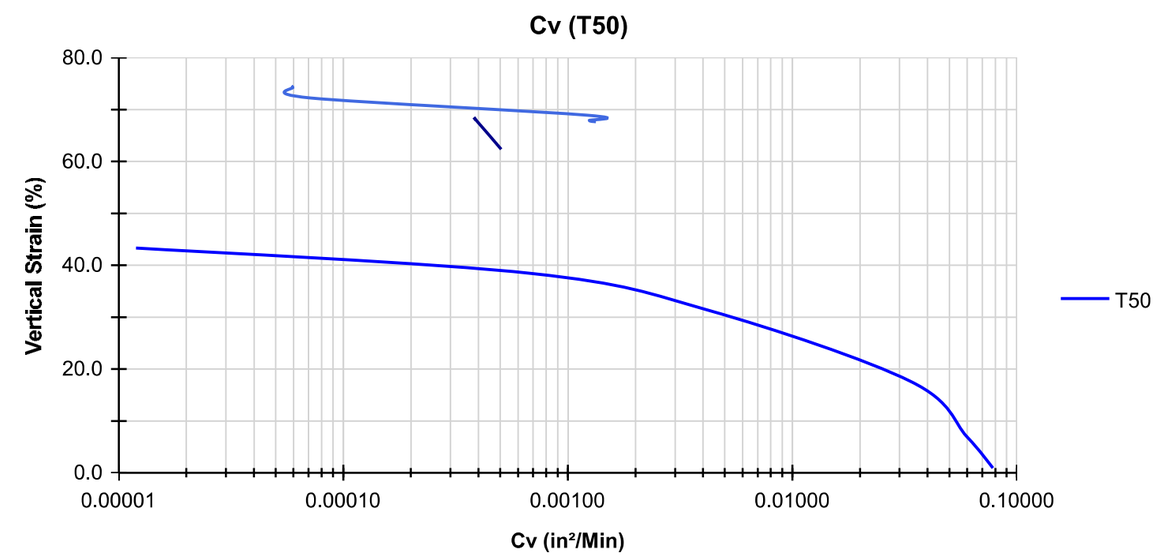
SHEET 328

Cv - Vertical Strain

ASTM D2435





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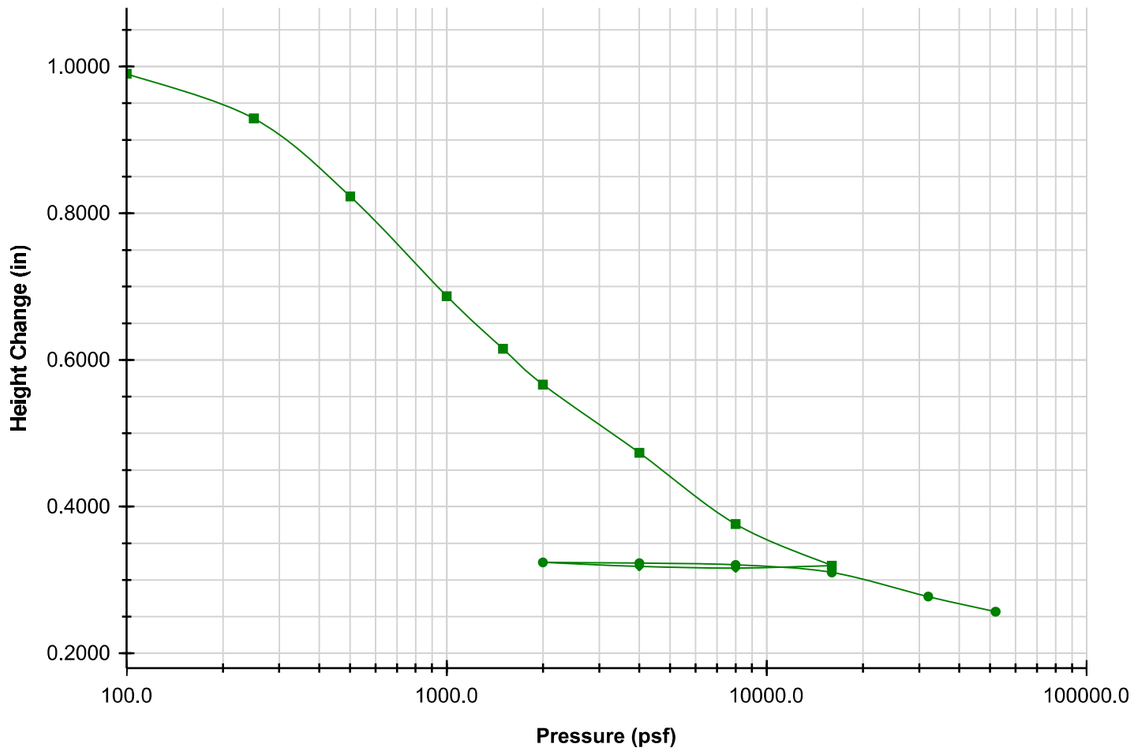
INFRASTRUCTURE CONSULTING & ENGINEERING

Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	751.5	0.0*	Liquid Limits	NP	Test Date 2/19/2026
Dry Density (pcf)	7.6	76.3	Plastic Limits	NP	
Saturation (%)	98.5	0.0*			
Void Ratio	14.16	0.52*	Specific Gravity	1.856	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	17 -19	Remarks
Sample Number	ST-14	Boring Number	Y1RPA_2150	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	17 -19	Remarks
Sample Number	ST-14	Boring Number	Y1RPA 2150	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	0.9990	0.0000	0.0	14.157	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0089	0.9901	0.9241	0.9	13.995	0.060	0.011	0.05796	0.07806	ENABLED
2	250.00	0.0697	0.9293	0.8633	7.0	13.074	0.070	0.011	0.04388	0.05984	ENABLED
3	500.00	0.1760	0.8230	0.7569	17.6	11.463	0.190	0.017	0.01257	0.03366	ENABLED
4	1,000.00	0.3121	0.6869	0.6209	31.2	9.403	0.381	0.090	0.00437	0.00429	ENABLED
5	1,500.00	0.3836	0.6154	0.5494	38.4	8.320	1.343	0.448	0.00100	0.00069	ENABLED
6	2,000.00	0.4327	0.5663	0.5003	43.3	7.577	8.089	1.852	0.00014	0.00001	ENABLED
7	4,000.00	0.5255	0.4735	0.4075	52.6	6.171	0.000	0.000	0.00000	0.00000	ENABLED
8	8,000.00	0.6228	0.3762	0.3102	62.3	4.698	0.954	0.230	0.00052	0.00051	ENABLED
9	16,000.00	0.6794	0.3196	0.2536	68.0	3.840	0.630	0.215	0.00057	0.00039	ENABLED
10	8,000.00	0.6826	0.3164	0.2504	68.3	3.792	0.000	0.000	0.00000	0.00000	ENABLED
11	4,000.00	0.6804	0.3186	0.2526	68.1	3.825	0.000	0.000	0.00000	0.00000	ENABLED
12	2,000.00	0.6749	0.3241	0.2581	67.6	3.908	0.000	0.000	0.00000	0.00000	ENABLED
13	4,000.00	0.6760	0.3230	0.2570	67.7	3.892	0.357	0.076	0.00103	0.00133	ENABLED
14	8,000.00	0.6783	0.3207	0.2547	67.9	3.857	0.379	0.083	0.00096	0.00125	ENABLED
15	16,000.00	0.6887	0.3103	0.2443	68.9	3.699	0.463	0.092	0.00074	0.00122	ENABLED
16	32,000.00	0.7218	0.2772	0.2112	72.3	3.198	2.619	0.879	0.00010	0.00007	ENABLED
17	52,000.00	0.7423	0.2567	0.1907	74.3	2.888	6.243	0.906	0.00004	0.00006	ENABLED

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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	25-051.05
Job Number:	
Test Date:	2/19/2026

Sampling Date:	5/5/2026
Sample Number:	ST-14
Depth (ft)	17 -19
Boring Number:	Y1RPA_2150
Location:	Alignment Y1RPA
Client Name:	
Remarks:	

Specific Gravity:	1.856	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	102.7
Sampling Method:	Undisturbed	Soil Classification:	A-1-a (0)		
Specimen Description:	Black Muck				

Parameters	Initial	Final
Height (in)	0.9990	0.2567
Height Source	NA	TEST RESULTS
Diameter (in)	2.5060	NA
Area (in^2)	4.932	NA
Volume (in^3)	4.9274	1.2661
Weight of Container (g)	61.0	0.0*
Weight of Wet Soil + Container (g)	217.7	0.0*
Weight of Dry Soil + Container (g)	79.4	0.0*
Moisture Content (%)	751.5	0.0*
Moist Weight + Ring Weight (g)	186.9	128.1
Dry Density (pcf)	7.6	76.3
Wet Density (pcf)	65.1	76.3
Saturation (%)	98.5	0.0*
Void Ratio	14.2	0.5*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	2/19/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0555
Specimen Description:	Black Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	50.00

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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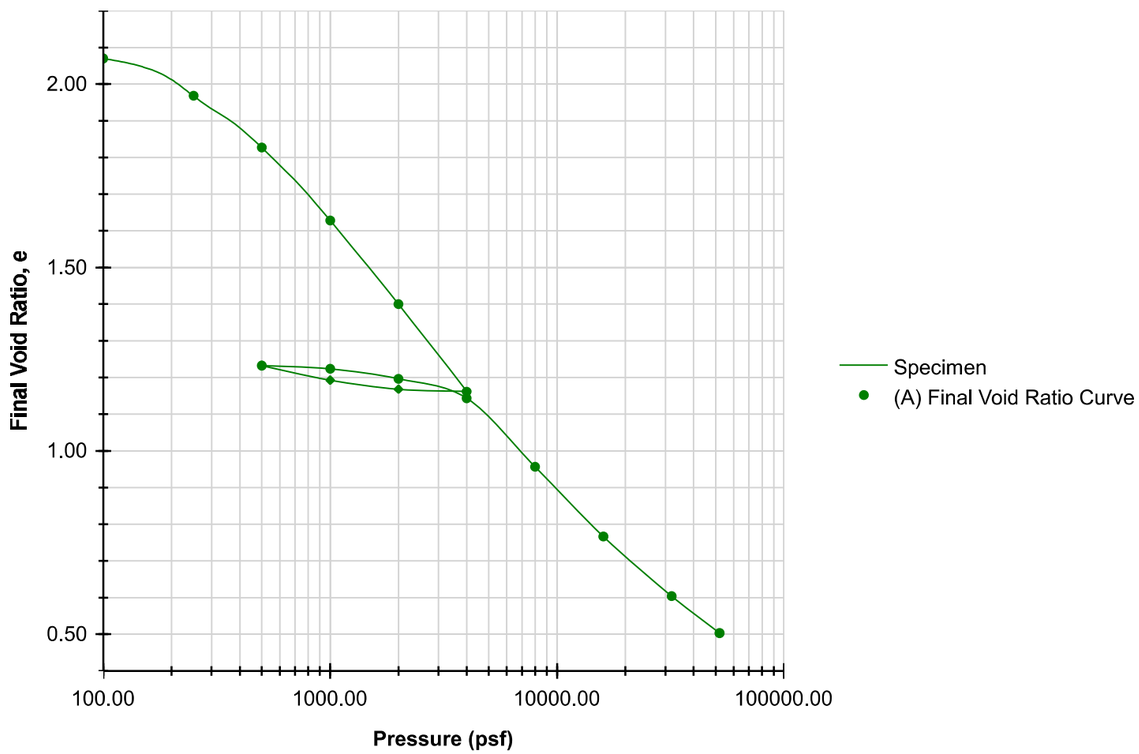
Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/3/2026
Moisture (%)	154.1	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	35.0	129.7			
Saturation (%)	126.5	0.0*			
Void Ratio	2.15	0.00*	**Specific Gravity**	1.763	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-28	**Boring Number**	Y1RPA_2550	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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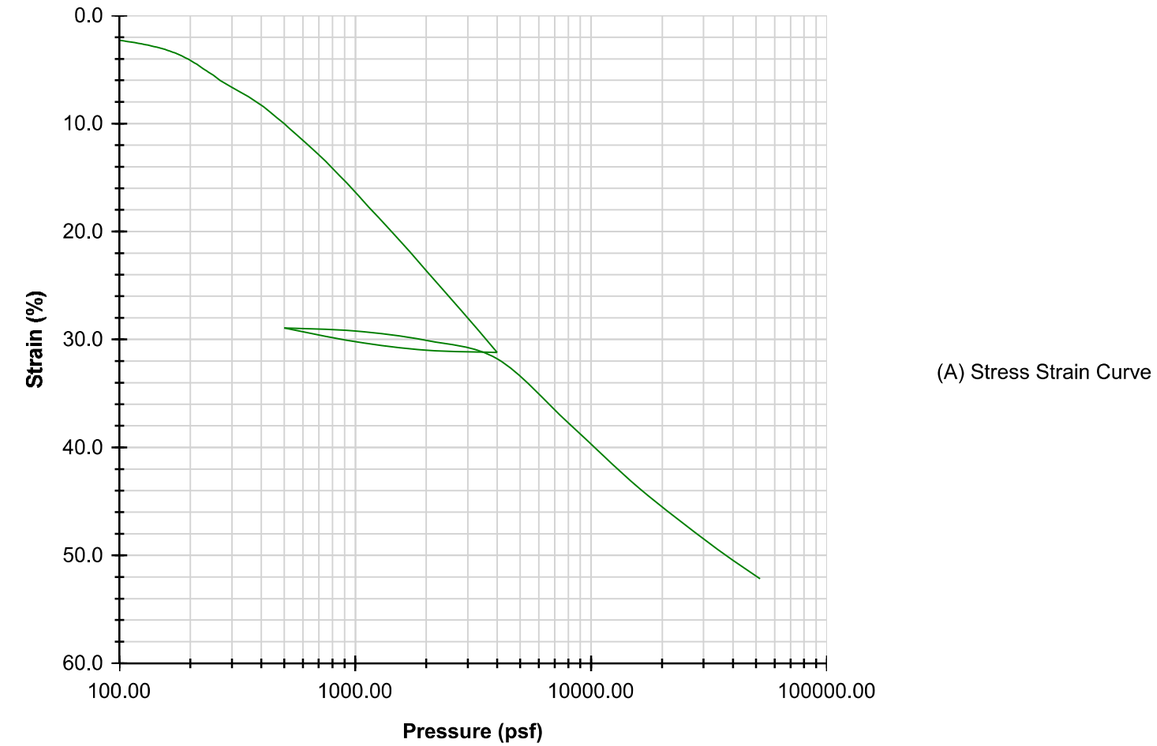
SHEET 331

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/3/2026
Moisture (%)	154.1	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	35.0	129.7			
Saturation (%)	126.5	0.0*			
Void Ratio	2.15	0.00*	**Specific Gravity**	1.763	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-28	**Boring Number**	Y1RPA_2550	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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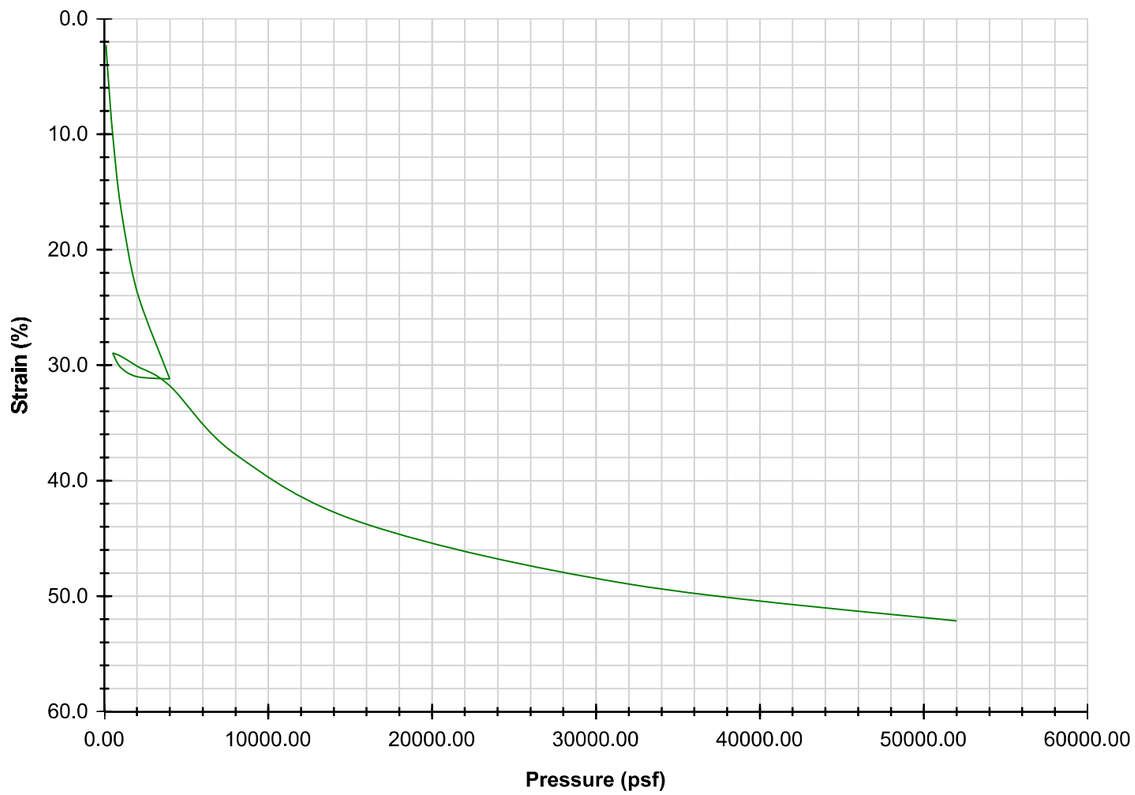
Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/3/2026
Moisture (%)	154.1	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	35.0	129.7			
Saturation (%)	126.5	0.0*			
Void Ratio	2.15	0.00*	**Specific Gravity**	1.763	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-28	**Boring Number**	Y1RPA_2550	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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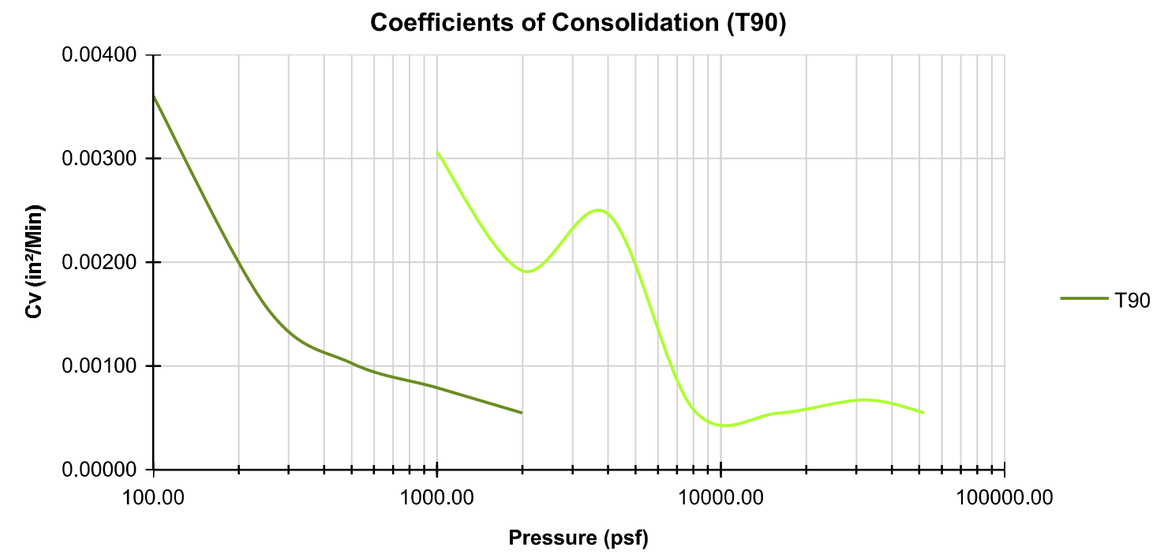
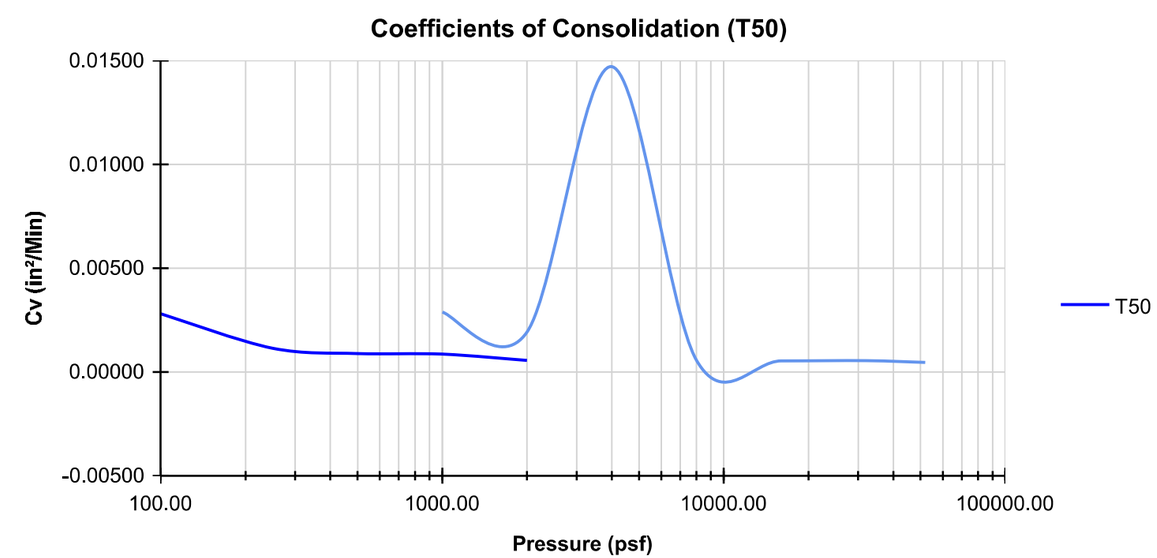
Coefficients of Consolidation

ASTM D2435





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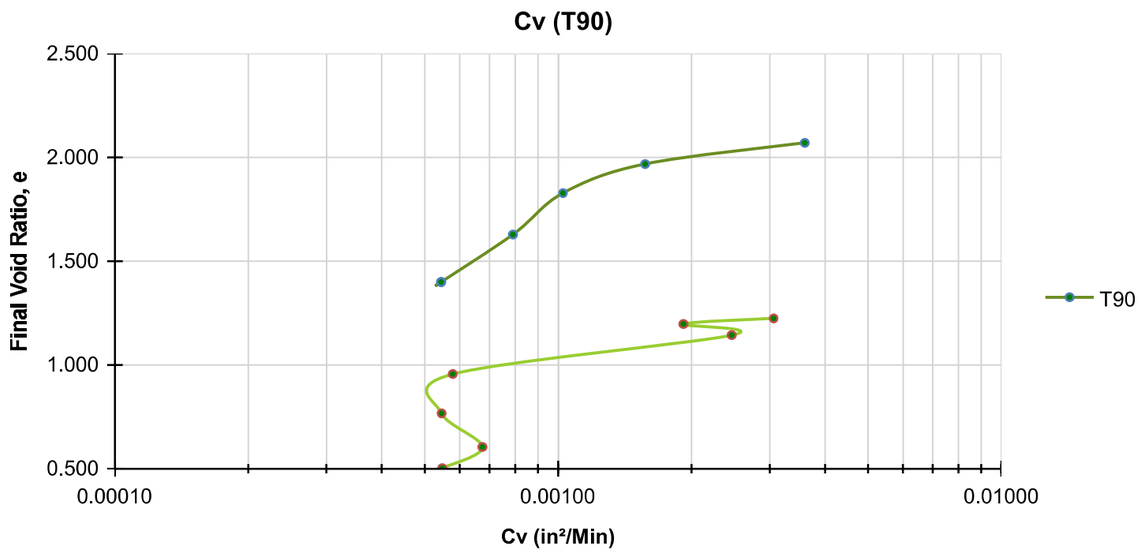
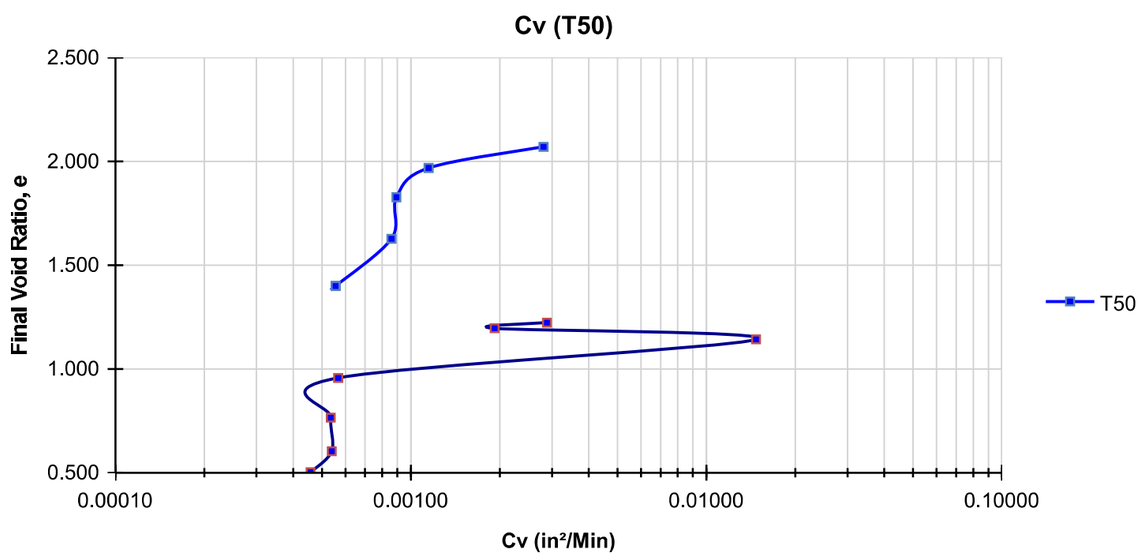
Cv - Void Ratio

ASTM D2435





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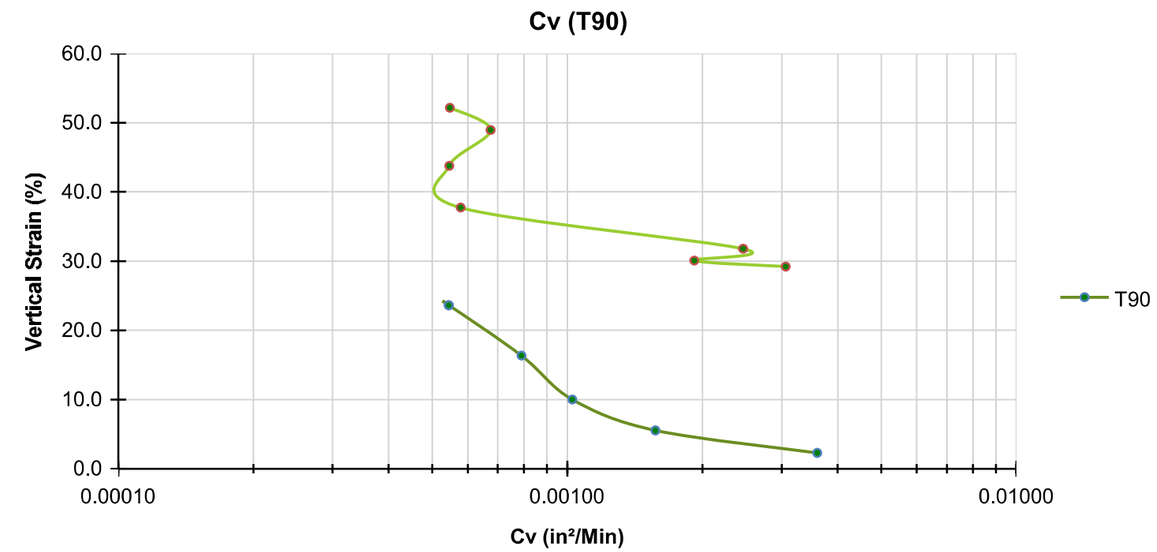
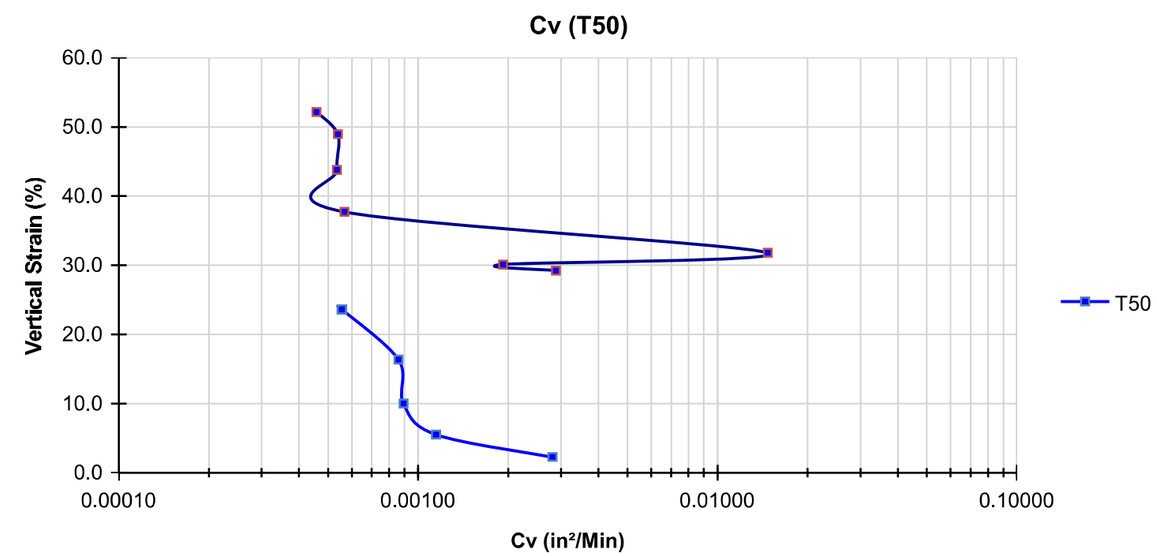
SHEET 333

Cv - Vertical Strain

ASTM D2435





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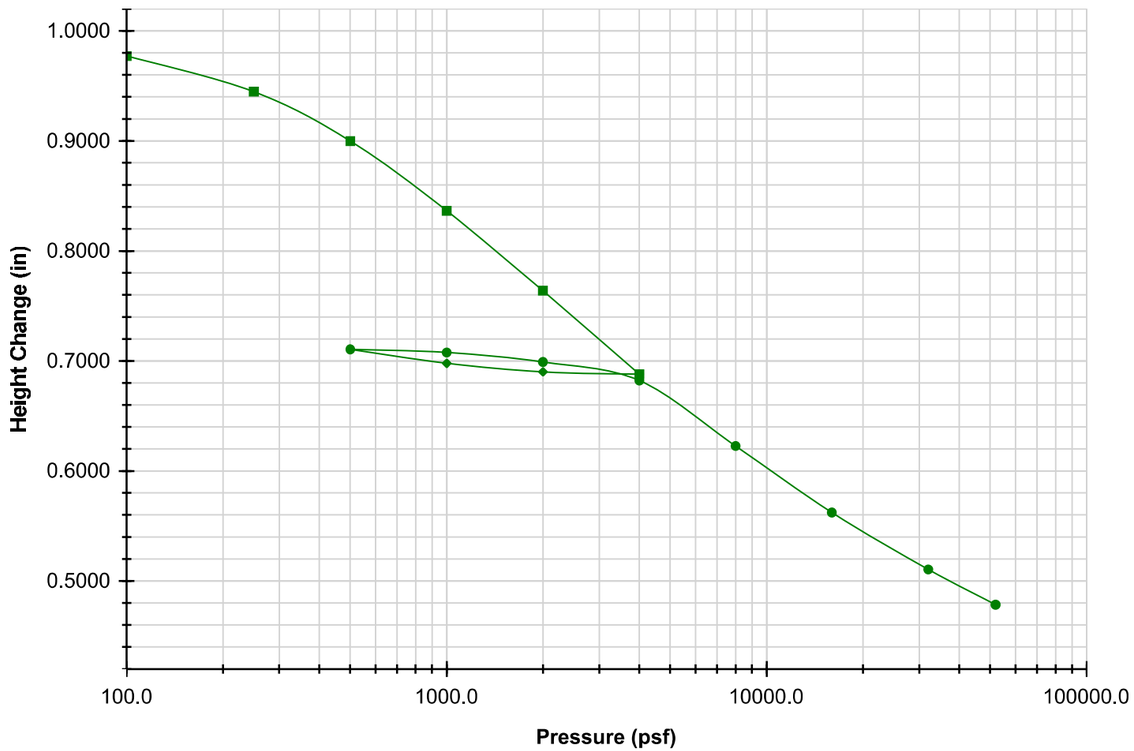
Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/3/2026
Moisture (%)	154.1	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	35.0	129.7			
Saturation (%)	126.5	0.0*			
Void Ratio	2.15	0.00*	**Specific Gravity**	1.763	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-28	**Boring Number**	Y1RPA_2550	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPA			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-28	**Boring Number**	Y1RPA 2550	
Project	*Replace Bridge No. 13 over Cape Fear River on US 421*			
Client				
Location	Alignment Y1RPA			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	1.0000	0.0000	0.0	2.148	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0229	0.9771	0.6589	2.3	2.070	0.936	0.279	0.00360	0.00281	ENABLED
2	250.00	0.0553	0.9447	0.6265	5.5	1.968	2.009	0.639	0.00157	0.00115	ENABLED
3	500.00	0.1001	0.8999	0.5817	10.0	1.828	2.790	0.744	0.00103	0.00089	ENABLED
4	1,000.00	0.1636	0.8364	0.5182	16.4	1.628	3.126	0.668	0.00079	0.00086	ENABLED
5	2,000.00	0.2362	0.7638	0.4455	23.6	1.400	3.787	0.862	0.00054	0.00056	ENABLED
6	4,000.00	0.3120	0.6880	0.3697	31.2	1.162	0.000	0.000	0.00000	0.00000	ENABLED
7	2,000.00	0.3099	0.6901	0.3718	31.0	1.168	0.000	0.000	0.00000	0.00000	ENABLED
8	1,000.00	0.3021	0.6979	0.3797	30.2	1.193	0.000	0.000	0.00000	0.00000	ENABLED
9	500.00	0.2894	0.7106	0.3923	28.9	1.233	0.000	0.000	0.00000	0.00000	ENABLED
10	1,000.00	0.2922	0.7078	0.3895	29.2	1.224	0.578	0.143	0.00306	0.00288	ENABLED
11	2,000.00	0.3009	0.6991	0.3808	30.1	1.197	0.900	0.209	0.00192	0.00192	ENABLED
12	4,000.00	0.3179	0.6821	0.3638	31.8	1.143	0.668	0.026	0.00246	0.01471	ENABLED
13	8,000.00	0.3773	0.6227	0.3045	37.7	0.957	2.369	0.561	0.00058	0.00057	ENABLED
14	16,000.00	0.4378	0.5622	0.2439	43.8	0.766	2.047	0.485	0.00055	0.00054	ENABLED
15	32,000.00	0.4894	0.5106	0.1923	48.9	0.604	1.365	0.397	0.00068	0.00054	ENABLED
16	52,000.00	0.5216	0.4784	0.1601	52.2	0.503	1.477	0.411	0.00055	0.00046	ENABLED

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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	50603.1.1
Job Number:	25-051.05
Test Date:	4/3/2026

Sampling Date:	8/6/2026
Sample Number:	ST-28
Depth (ft)	14-16
Boring Number:	Y1RPA_2550
Location:	Alignment Y1RPA
Client Name:	
Remarks:	

Specific Gravity:	1.763	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	106.3
Sampling Method:	Undisturbed	Soil Classification:	A-4 (0)		
Specimen Description:	Black/Dark Brown Muck				

Parameters	Initial	Final
Height (in)	1.0000	0.4784
Height Source	NA	TEST RESULTS
Diameter (in)	2.5000	NA
Area (in^2)	4.909	NA
Volume (in^3)	4.9087	2.3481
Weight of Container (g)	60.0	0.0*
Weight of Wet Soil + Container (g)	185.0	0.0*
Weight of Dry Soil + Container (g)	109.2	0.0*
Moisture Content (%)	154.1	0.0*
Moist Weight + Ring Weight (g)	220.8	186.3
Dry Density (pcf)	35.0	129.7
Wet Density (pcf)	88.8	129.7
Saturation (%)	126.5	0.0*
Void Ratio	2.1	0.0*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	4/3/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0759
Specimen Description:	Black/Dark Brown Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	29.34

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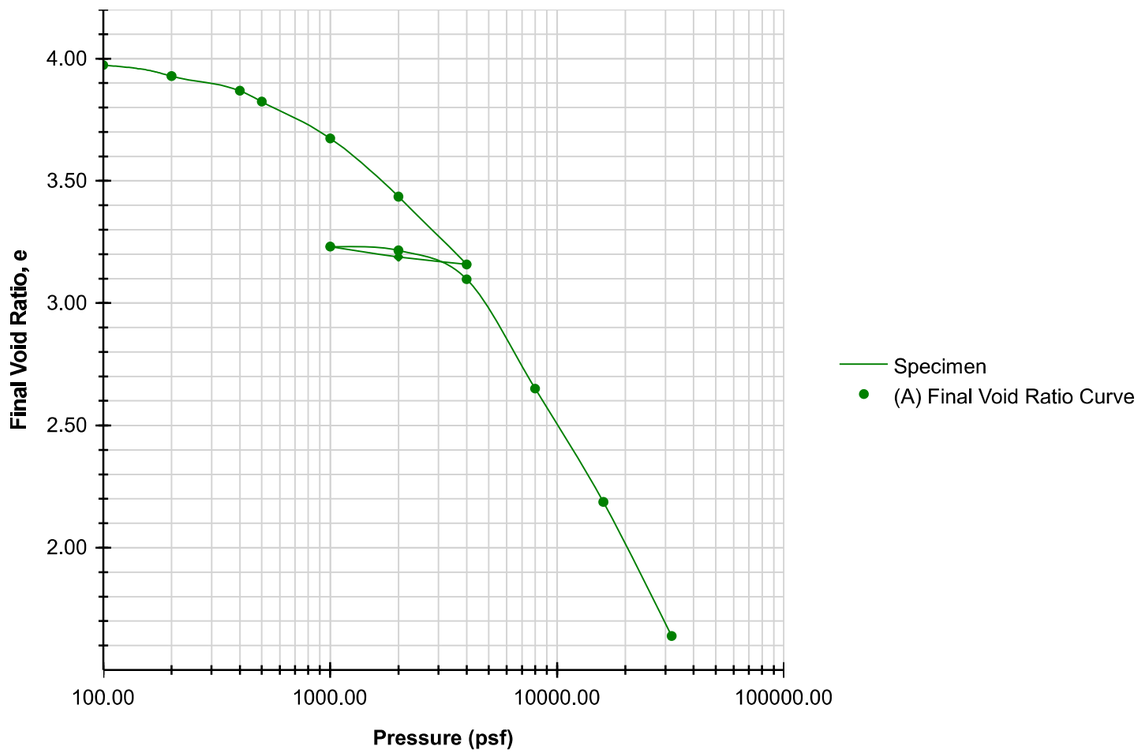
Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/13/2026
Moisture (%)	185.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	28.9	128.2			
Saturation (%)	106.7	0.0*			
Void Ratio	4.07	0.14*	**Specific Gravity**	2.344	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	2-3.7	**Remarks**
Sample Number	ST-05	**Boring Number**	Y1RPB_2750	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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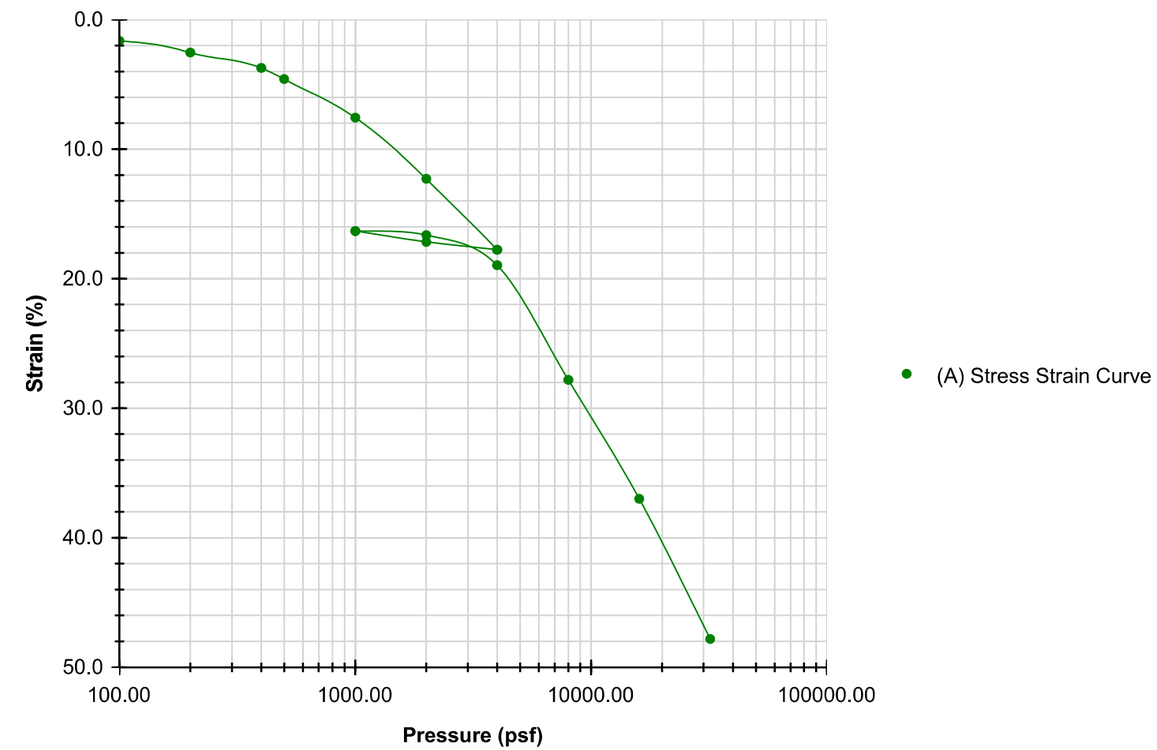
SHEET 336

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/13/2026
Moisture (%)	185.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	28.9	128.2			
Saturation (%)	106.7	0.0*			
Void Ratio	4.07	0.14*	**Specific Gravity**	2.344	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	2-3.7	**Remarks**
Sample Number	ST-05	**Boring Number**	Y1RPB_2750	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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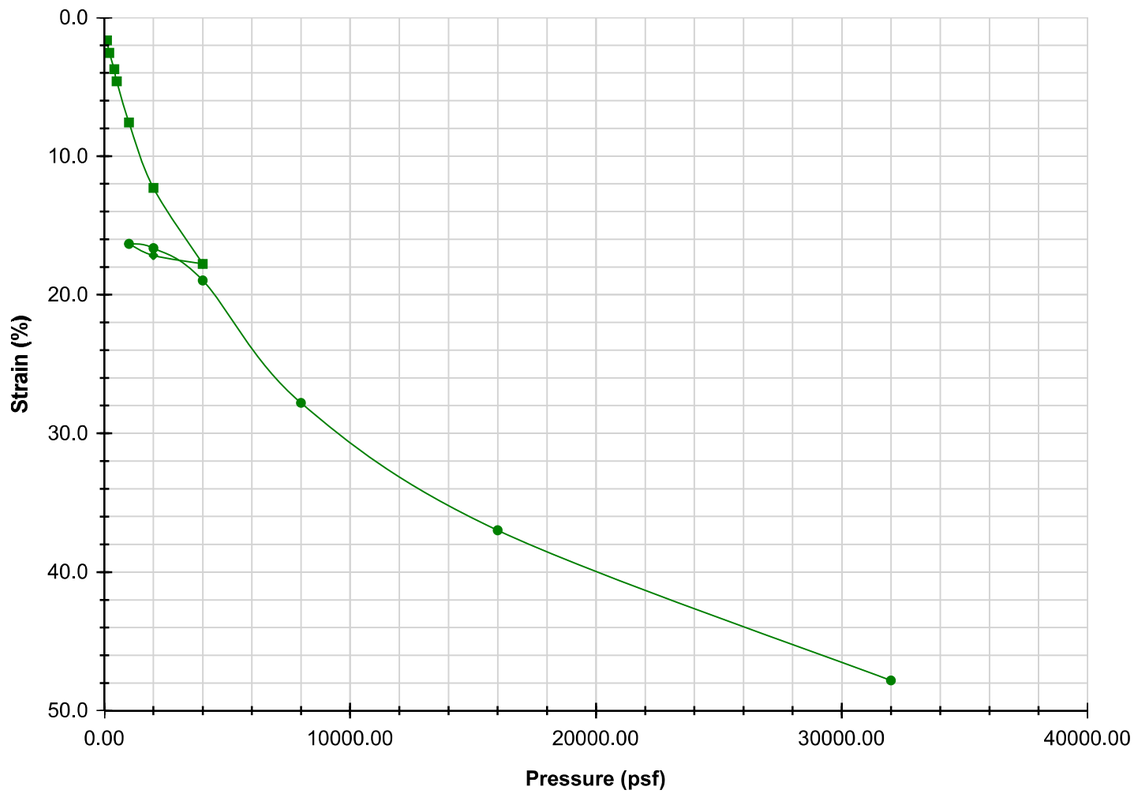
Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/13/2026
Moisture (%)	185.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	28.9	128.2			
Saturation (%)	106.7	0.0*			
Void Ratio	4.07	0.14*	**Specific Gravity**	2.344	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	2-3.7	**Remarks**
Sample Number	ST-05	**Boring Number**	Y1RPB_2750	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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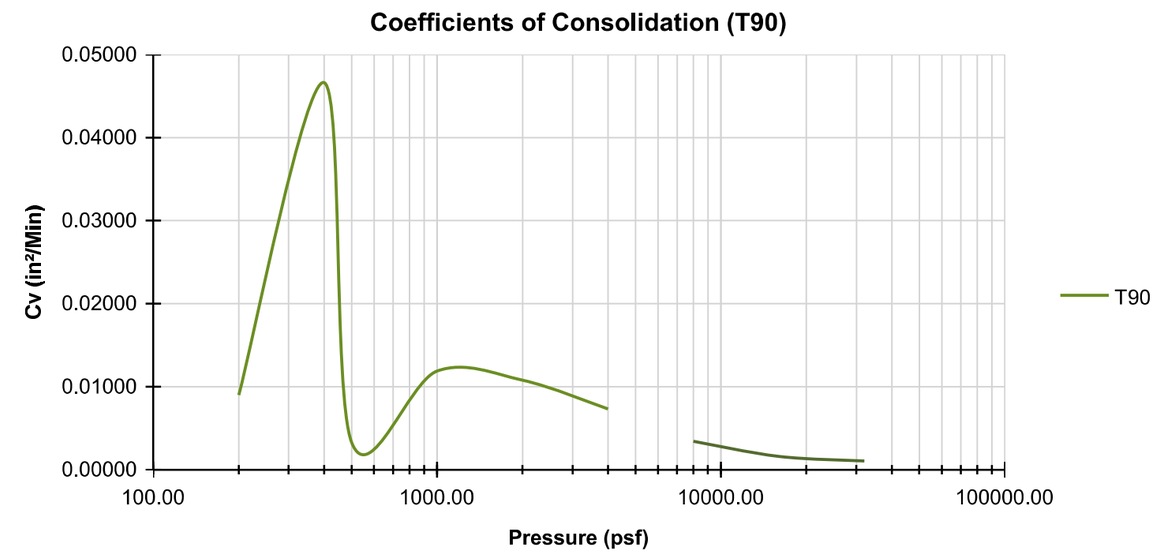
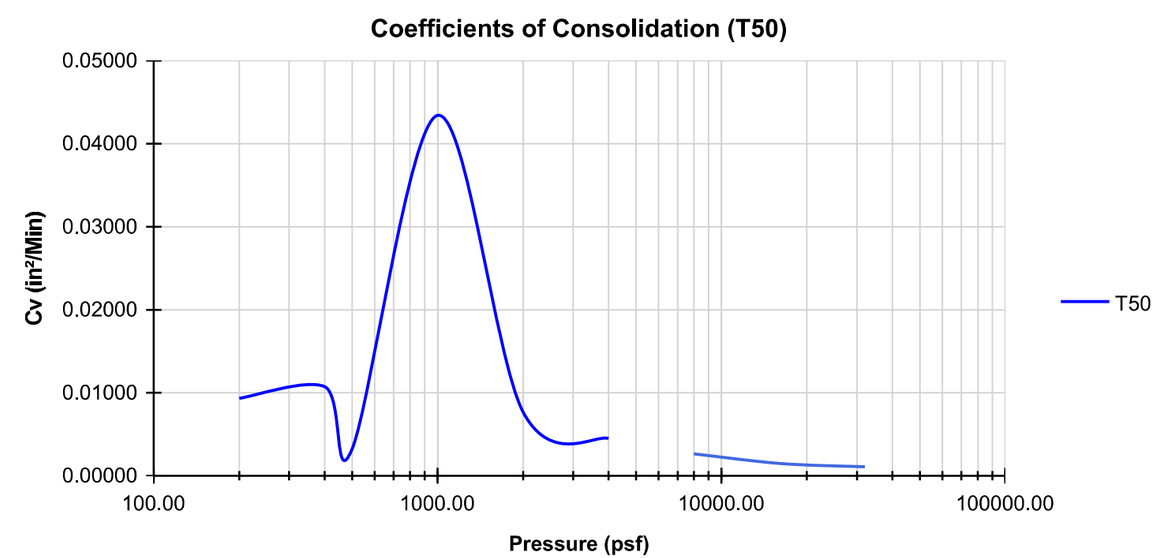
Coefficients of Consolidation

ASTM D2435





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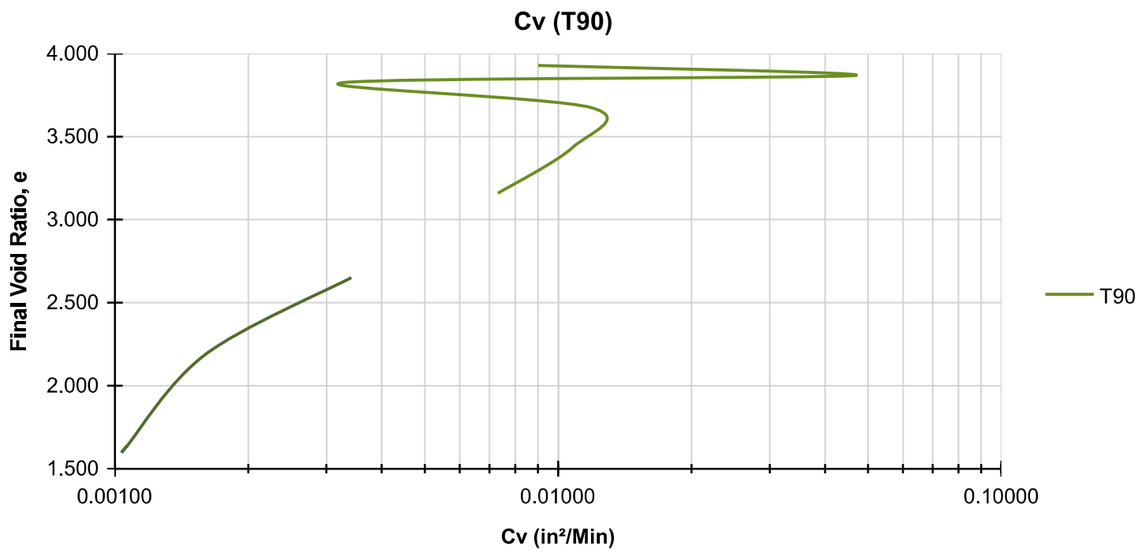
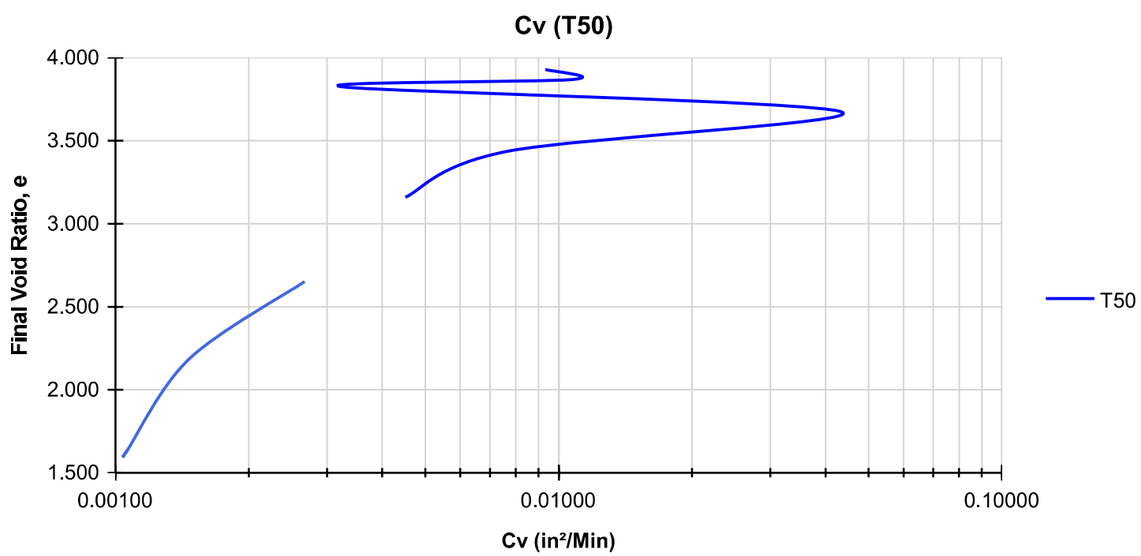
Cv - Void Ratio

ASTM D2435





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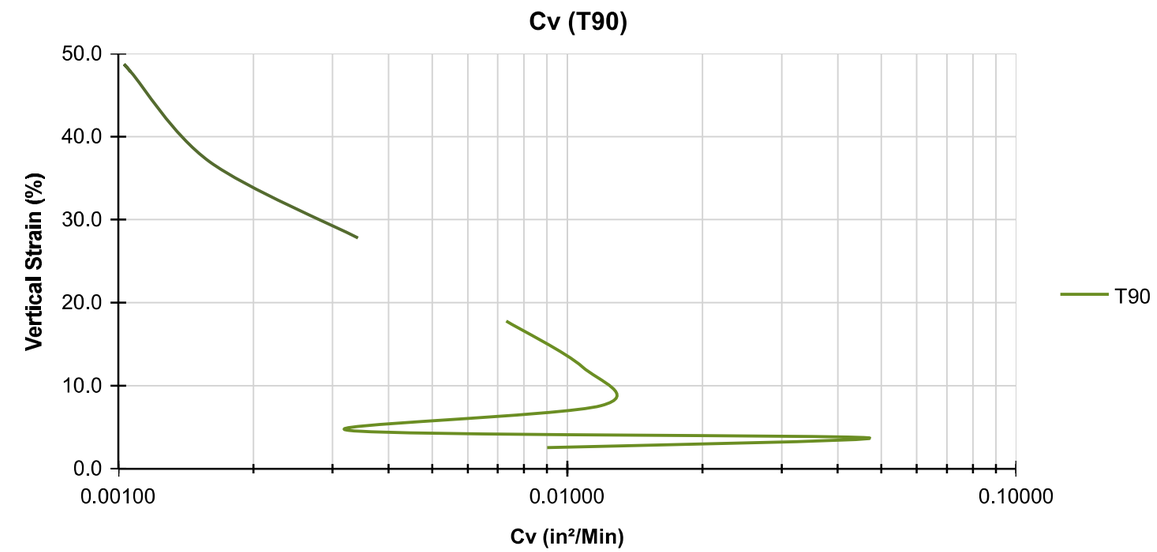
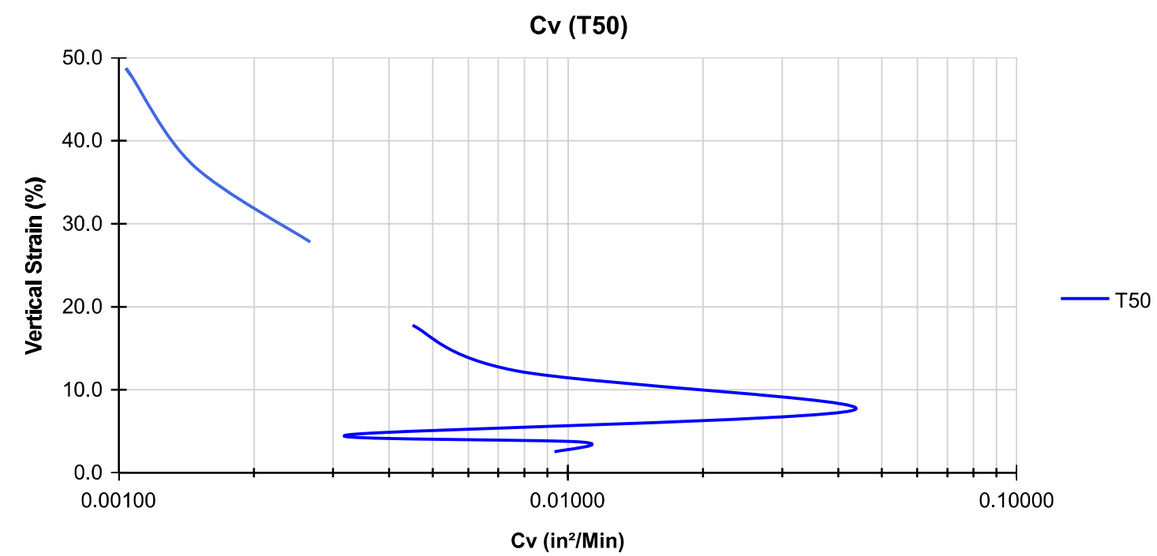
SHEET 338

Cv - Vertical Strain

ASTM D2435





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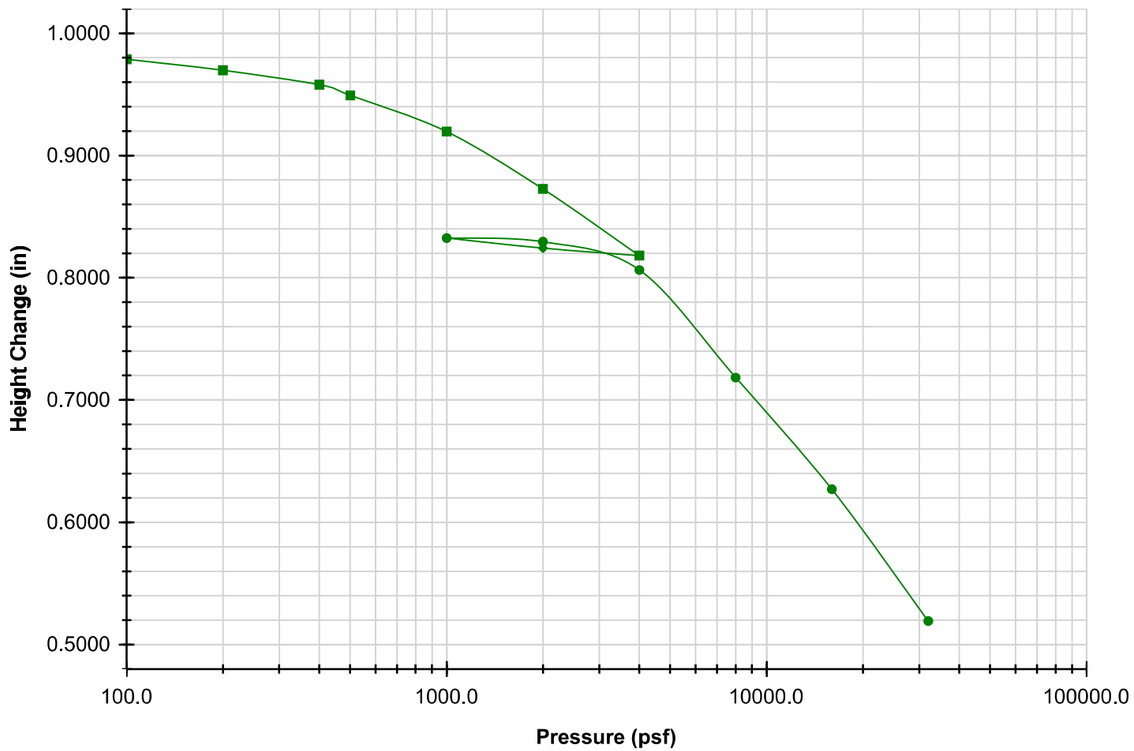
Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	185.2	0.0*	Liquid Limits	NP	Test Date 1/13/2026
Dry Density (pcf)	28.9	128.2	Plastic Limits	NP	
Saturation (%)	106.7	0.0*			
Void Ratio	4.07	0.14*	Specific Gravity	2.344	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	Depth (ft)	2-3.7	Remarks
Sample Number	ST-05	Boring Number	Y1RPB_2750	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	Depth (ft)	2-3.7	Remarks
Sample Number	ST-05	Boring Number	Y1RPB_2750	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	0.9950	0.0000	0.0	4.066	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0163	0.9787	0.7819	1.6	3.974	0.000	0.000	0.00000	0.00000	ENABLED
2	200.00	0.0253	0.9697	0.7730	2.5	3.928	0.369	0.080	0.00901	0.00933	ENABLED
3	400.00	0.0371	0.9579	0.7612	3.7	3.868	0.070	0.070	0.04659	0.01072	ENABLED
4	500.00	0.0458	0.9492	0.7525	4.6	3.824	0.975	0.208	0.00327	0.00326	ENABLED
5	1,000.00	0.0753	0.9197	0.7229	7.6	3.674	0.251	0.016	0.01189	0.04343	ENABLED
6	2,000.00	0.1223	0.8727	0.6760	12.3	3.435	0.249	0.082	0.01080	0.00767	ENABLED
7	4,000.00	0.1767	0.8183	0.6215	17.8	3.159	0.324	0.122	0.00731	0.00451	ENABLED
8	2,000.00	0.1707	0.8243	0.6275	17.2	3.189	0.000	0.000	0.00000	0.00000	ENABLED
9	1,000.00	0.1624	0.8326	0.6358	16.3	3.231	0.000	0.000	0.00000	0.00000	ENABLED
10	2,000.00	0.1655	0.8295	0.6328	16.6	3.216	0.197	0.036	0.01236	0.01016	ENABLED
11	4,000.00	0.1886	0.8064	0.6096	19.0	3.098	0.000	0.000	0.00000	0.00000	ENABLED
12	8,000.00	0.2766	0.7184	0.5216	27.8	2.651	0.534	0.159	0.00342	0.00267	ENABLED
13	16,000.00	0.3680	0.6270	0.4302	37.0	2.186	0.869	0.220	0.00160	0.00147	ENABLED
14	32,000.00	0.4758	0.5192	0.3224	47.8	1.639	0.894	0.208	0.00107	0.00107	ENABLED

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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	50603.1.1
Job Number:	25-051.05
Test Date:	1/13/2026

Sampling Date:	10/2/2025
Sample Number:	ST-05
Depth (ft)	2-3.7
Boring Number:	Y1RPB_2750
Location:	Alignment Y1-RPB
Client Name:	
Remarks:	

Specific Gravity:	2.344	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	105.7
Sampling Method:	Undisturbed	Soil Classification:	A-2-4 (0)		
Specimen Description:	Black/Dark Brown Muck				

Parameters	Initial	Final
Height (in)	0.9950	0.5192
Height Source	NA	TEST RESULTS
Diameter (in)	2.5060	NA
Area (in^2)	4.932	NA
Volume (in^3)	4.9077	2.5608
Weight of Container (g)	61.0	0.0*
Weight of Wet Soil + Container (g)	170.1	0.0*
Weight of Dry Soil + Container (g)	99.3	0.0*
Moisture Content (%)	185.2	0.0*
Moist Weight + Ring Weight (g)	211.8	191.9
Dry Density (pcf)	28.9	128.2
Wet Density (pcf)	82.4	128.2
Saturation (%)	106.7	0.0*
Void Ratio	4.1	0.1*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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SHEET 340

INFRASTRUCTURE
CONSULTING & ENGINEERING

Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	1/13/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0020
Specimen Description:	Black/Dark Brown Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	50.00

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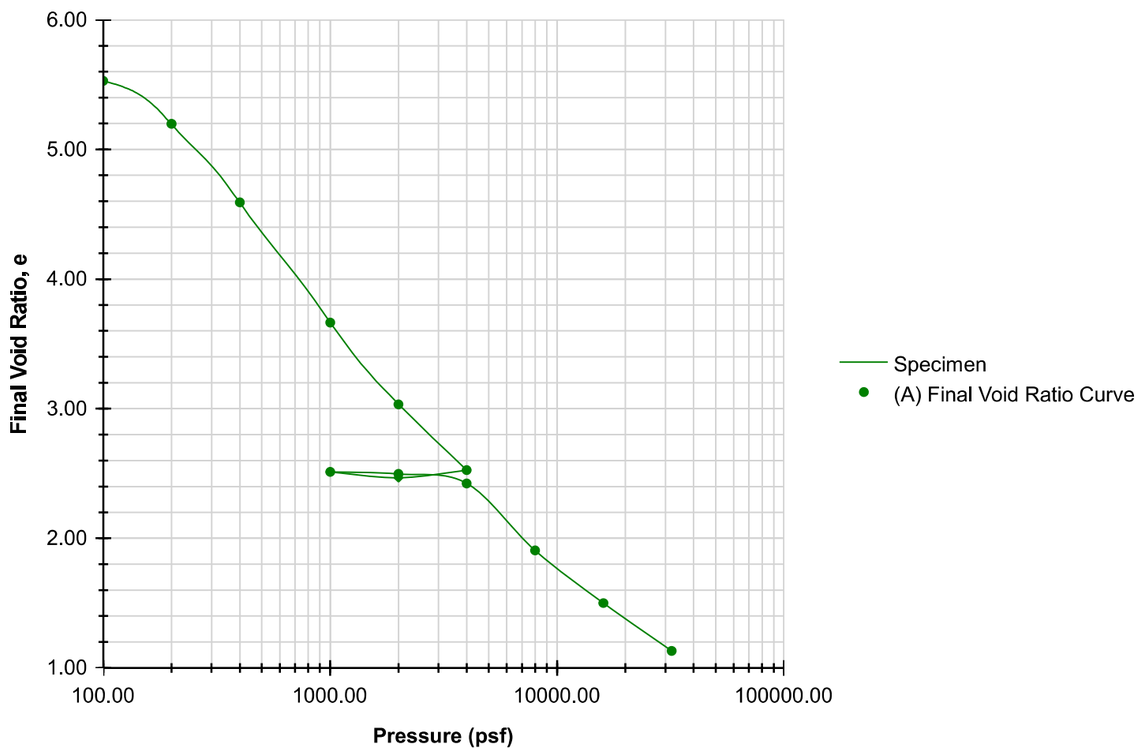
Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/15/2026
Moisture (%)	350.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	15.4	98.8			
Saturation (%)	100.8	0.0*			
Void Ratio	5.91	0.08*	**Specific Gravity**	1.703	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	12.2-14.3	**Remarks**
Sample Number	ST-09	**Boring Number**	Y1RPB_2950	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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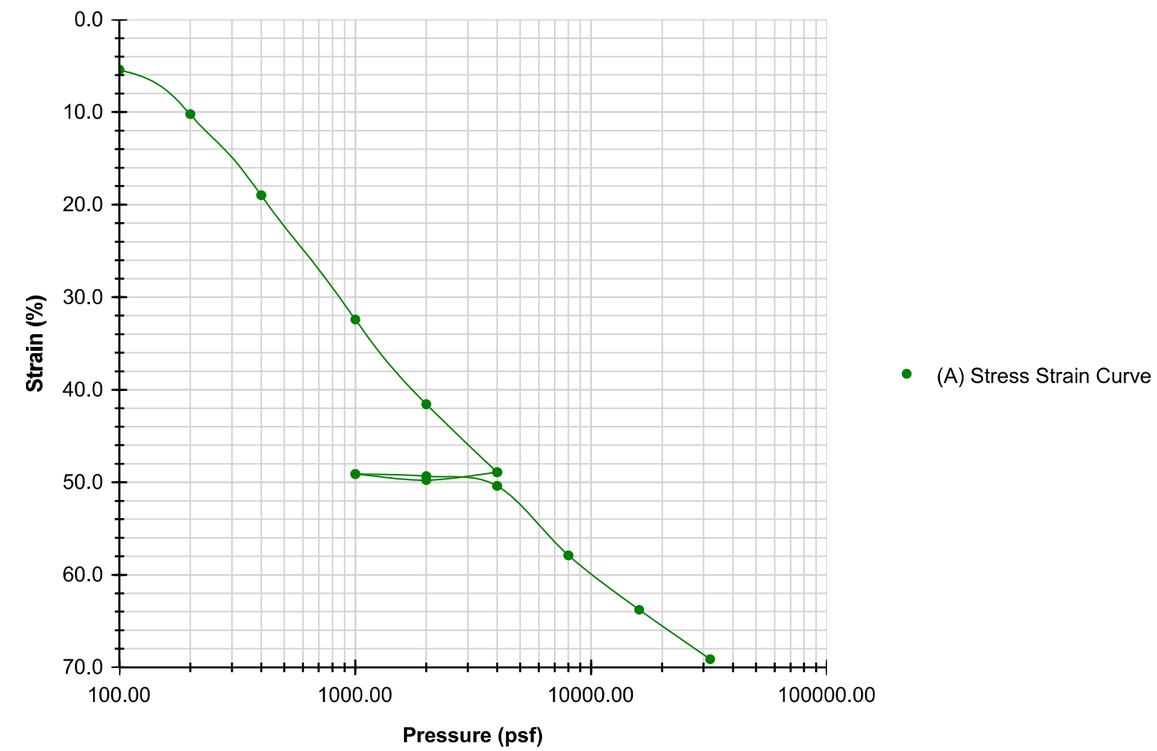
SHEET 341

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/15/2026
Moisture (%)	350.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	15.4	98.8			
Saturation (%)	100.8	0.0*			
Void Ratio	5.91	0.08*	**Specific Gravity**	1.703	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	12.2-14.3	**Remarks**
Sample Number	ST-09	**Boring Number**	Y1RPB_2950	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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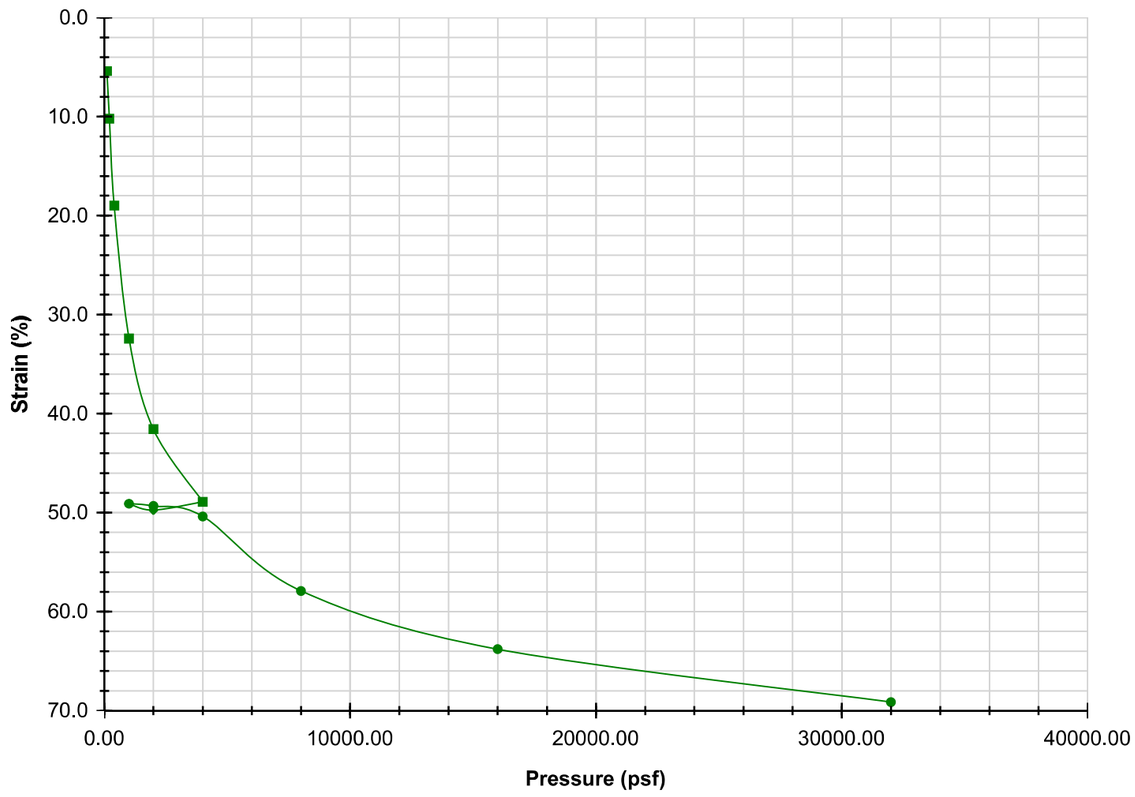
Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 1/15/2026
Moisture (%)	350.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	15.4	98.8			
Saturation (%)	100.8	0.0*			
Void Ratio	5.91	0.08*	**Specific Gravity**	1.703	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	**Depth (ft)**	12.2-14.3	**Remarks**
Sample Number	ST-09	**Boring Number**	Y1RPB_2950	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Coefficients of Consolidation

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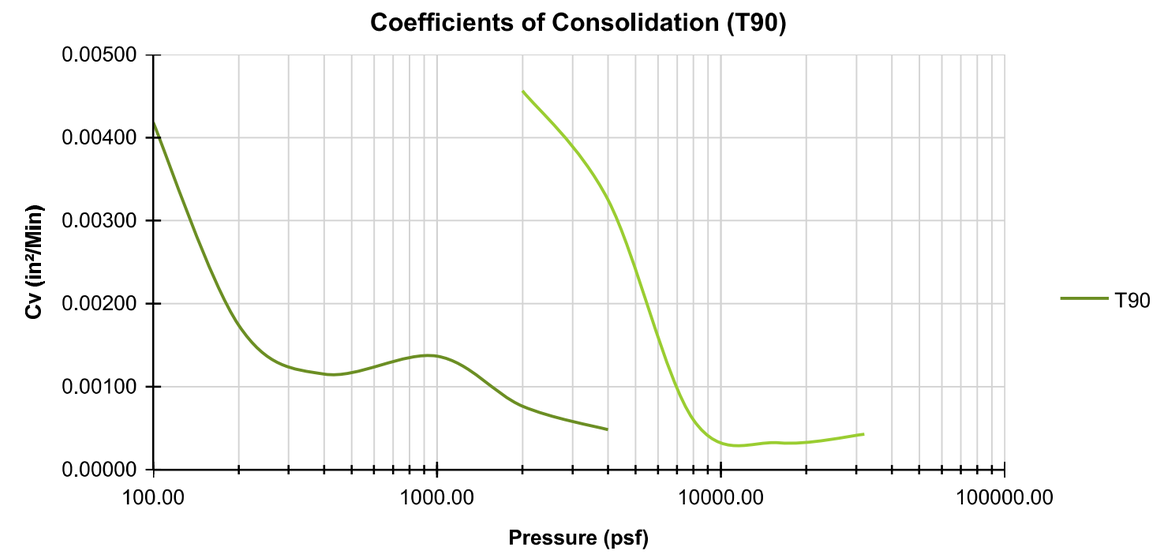

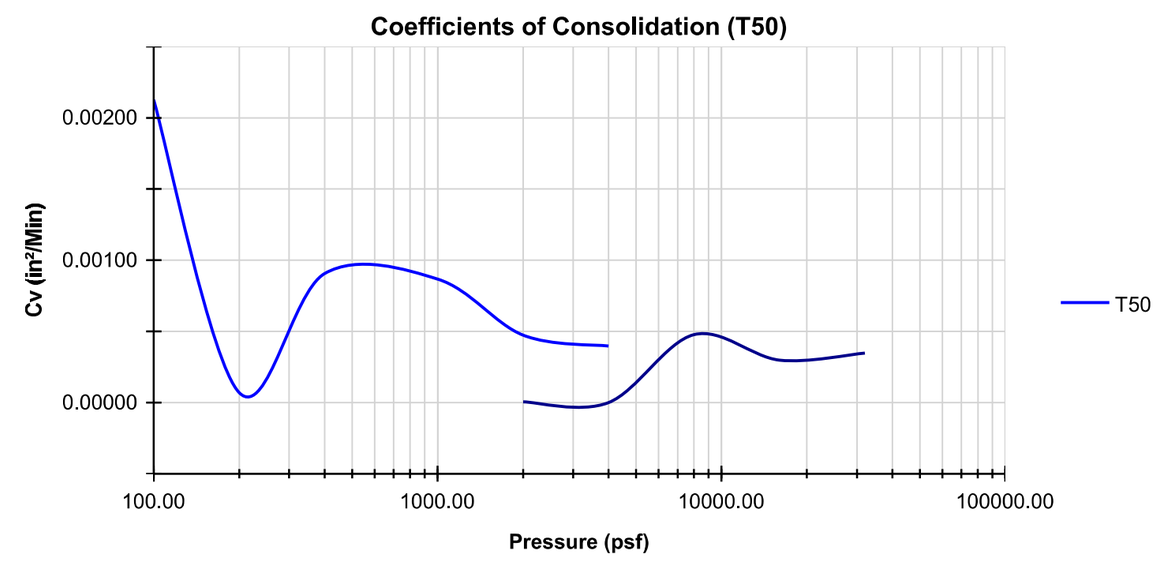

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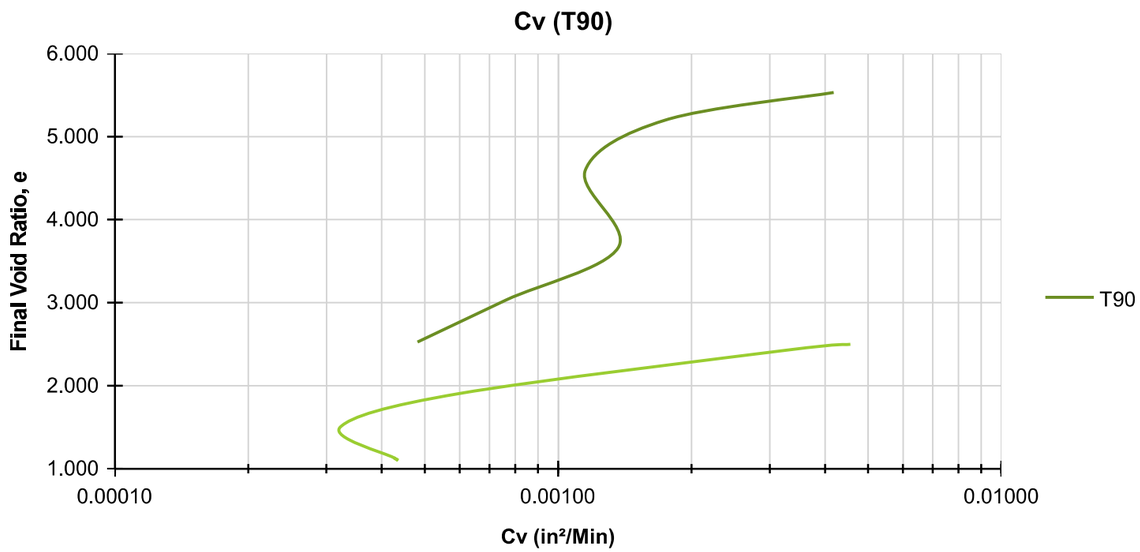
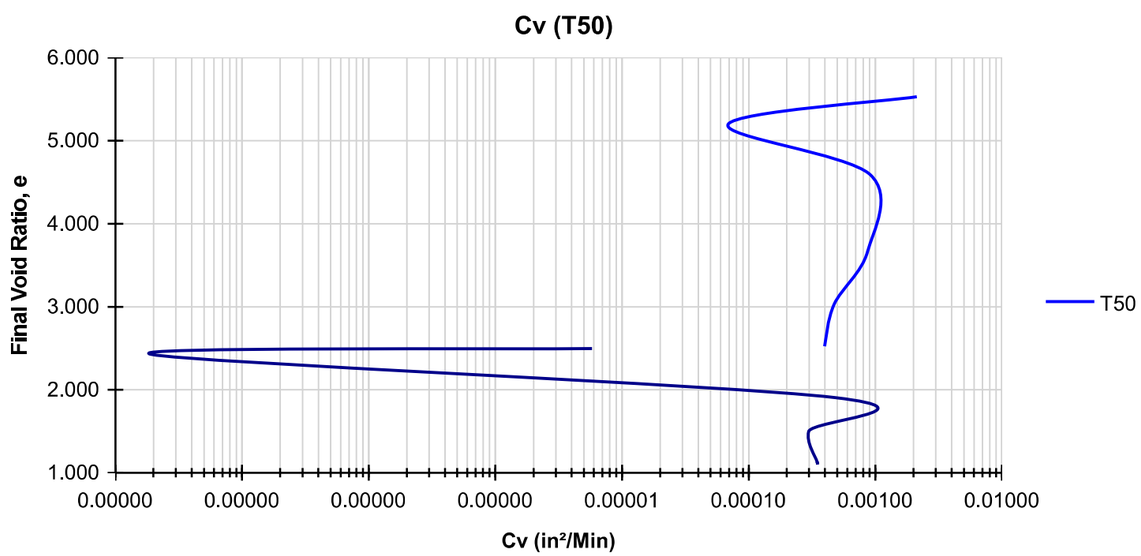
Cv - Void Ratio

ASTM D2435





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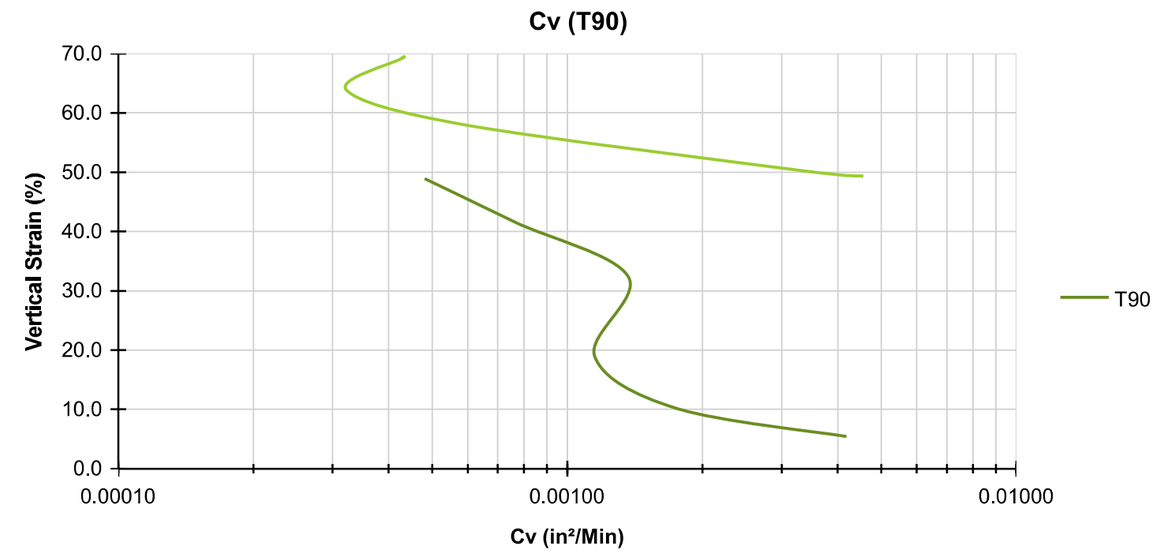
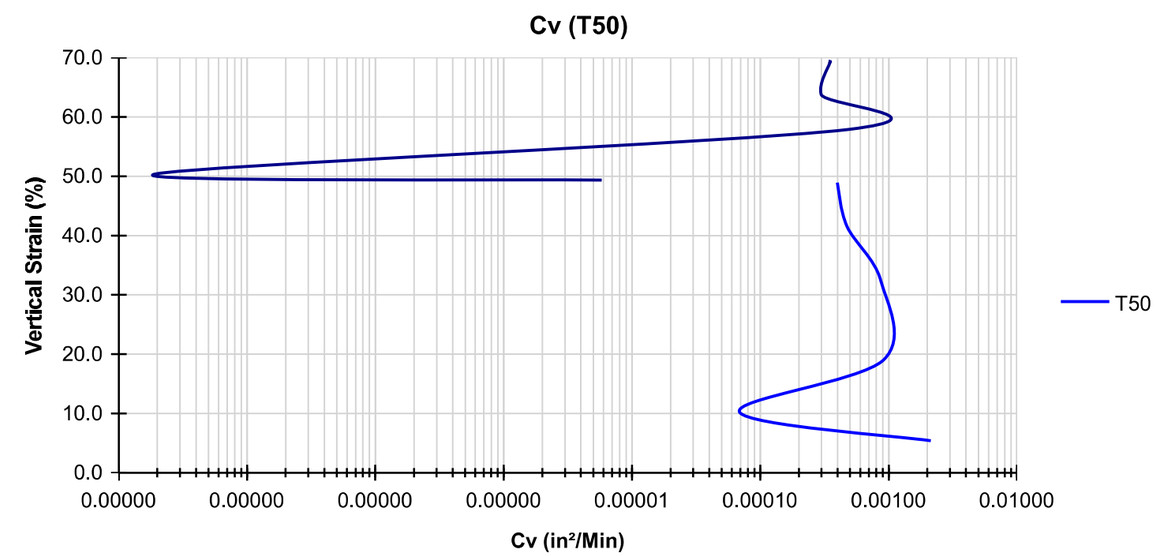
SHEET 343

Cv - Vertical Strain

ASTM D2435





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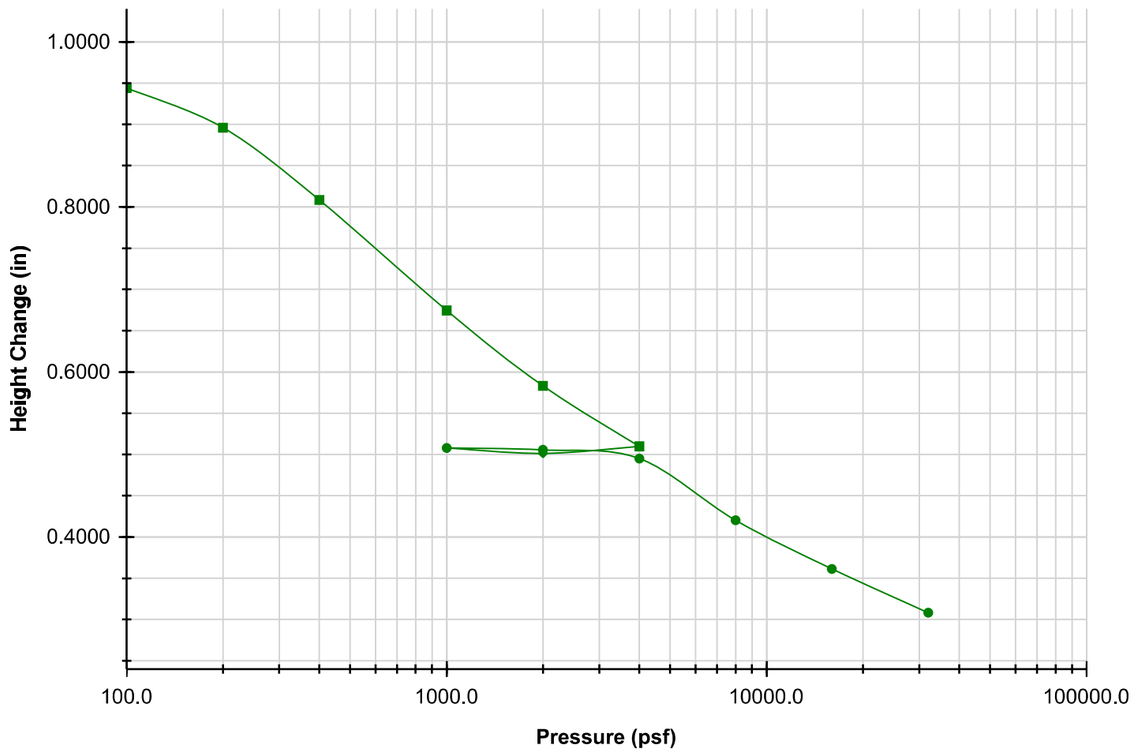
Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	350.2	0.0*	Liquid Limits	NP	Test Date 1/15/2026
Dry Density (pcf)	15.4	98.8	Plastic Limits	NP	
Saturation (%)	100.8	0.0*			
Void Ratio	5.91	0.08*	Specific Gravity	1.703	MEASURED

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	Depth (ft)	12.2-14.3	Remarks
Sample Number	ST-09	Boring Number	Y1RPB_2950	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black/Dark Brown Muck			
Project Number	50603.1.1	Depth (ft)	12.2-14.3	Remarks
Sample Number	ST-09	Boring Number	Y1RPB_2950	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1-RPB			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	0.9980	0.0000	0.0	5.915	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0540	0.9440	0.7994	5.4	5.529	0.753	0.344	0.00418	0.00213	ENABLED
2	200.00	0.1019	0.8961	0.7515	10.2	5.197	1.632	7.745	0.00174	0.00007	ENABLED
3	400.00	0.1896	0.8084	0.6638	19.0	4.591	2.006	0.592	0.00115	0.00091	ENABLED
4	1,000.00	0.3235	0.6745	0.5299	32.4	3.665	1.176	0.430	0.00137	0.00087	ENABLED
5	2,000.00	0.4149	0.5831	0.4385	41.6	3.032	1.572	0.589	0.00076	0.00047	ENABLED
6	4,000.00	0.4881	0.5099	0.3653	48.9	2.526	1.908	0.537	0.00048	0.00040	ENABLED
7	2,000.00	0.4966	0.5014	0.3568	49.8	2.468	0.000	0.000	0.00000	0.00000	ENABLED
8	1,000.00	0.4901	0.5079	0.3633	49.1	2.513	0.000	0.000	0.00000	0.00000	ENABLED
9	2,000.00	0.4924	0.5056	0.3610	49.3	2.497	0.198	0.034	0.00456	0.00001	ENABLED
10	4,000.00	0.5029	0.4951	0.3505	50.4	2.424	0.267	0.049	0.00325	0.00000	ENABLED
11	8,000.00	0.5778	0.4202	0.2756	57.9	1.906	1.042	0.304	0.00060	0.00048	ENABLED
12	16,000.00	0.6366	0.3614	0.2168	63.8	1.499	1.431	0.360	0.00032	0.00030	ENABLED
13	32,000.00	0.6898	0.3082	0.1636	69.1	1.131	0.788	0.225	0.00043	0.00035	ENABLED

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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	50603.1.1
Job Number:	25-051.05
Test Date:	1/15/2026

Sampling Date:	2/27/2026
Sample Number:	ST-09
Depth (ft)	12.2-14.3
Boring Number:	Y1RPB_2950
Location:	Alignment Y1-RPB
Client Name:	
Remarks:	

Specific Gravity:	1.703	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	106.3
Sampling Method:	Undisturbed	Soil Classification:	A-1-a (0)		
Specimen Description:	Black/Dark Brown Muck				

Parameters	Initial	Final
Height (in)	0.9980	0.3082
Height Source	NA	TEST RESULTS
Diameter (in)	2.5070	NA
Area (in^2)	4.936	NA
Volume (in^3)	4.9264	1.5211
Weight of Container (g)	61.0	0.0*
Weight of Wet Soil + Container (g)	191.5	0.0*
Weight of Dry Soil + Container (g)	90.0	0.0*
Moisture Content (%)	350.2	0.0*
Moist Weight + Ring Weight (g)	195.8	145.8
Dry Density (pcf)	15.4	98.8
Wet Density (pcf)	69.2	98.8
Saturation (%)	100.8	0.0*
Void Ratio	5.9	0.1*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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INFRASTRUCTURE
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Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	1/15/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0024
Specimen Description:	Black/Dark Brown Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	50.00

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Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	1.0-3.0
Sample Number	ST-47	Boring Number	Y1RPC_2200
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.1086	0.1145	0.8904	0.109	4.554	10.24	4.7	0.01641	0.008308
2	500	0.2199	0.1146	0.7791	0.220	3.860	20.25	9.7	0.00635	0.003082
3	1000	0.329	0.1147	0.67	0.329	3.179	25	15	0.00381	0.001474
4	2000	0.4471	0.1149	0.5519	0.448	2.443	44.89	23	0.00144	0.000652
5	4000	0.5326	0.1151	0.4664	0.533	1.909	51.84	21	0.00089	0.00051
6	2000	0.5258	0.1149	0.4732	0.526	1.952	-	-	-	-
7	1000	0.5173	0.1147	0.4817	0.518	2.005	-	-	-	-
8	500	0.5031	0.1146	0.4959	0.504	2.093	-	-	-	-
9	1000	0.5088	0.1147	0.4902	0.509	2.058	5.76	-	0.00884	-
10	2000	0.5209	0.1149	0.4781	0.521	1.982	8.41	4	0.00576	0.00281
11	4000	0.5486	0.1152	0.4504	0.549	1.810	12.25	-	0.00351	-
12	8000	0.6052	0.1158	0.3938	0.606	1.457	42.25	21	0.00078	0.00036
13	16000	0.6689	0.1166	0.3301	0.670	1.059	38.44	14	0.00060	0.00038
14	32000	0.722	0.1178	0.277	0.723	0.728	73.96	16	0.00022	0.00024
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/18/2026
Machine Apparatus: 5
Technician: KSB

Sampling Date: 3/25/2026
Sample Number: ST-47
Depth (ft): 1.0-3.0
Boring Number: Y1RPC_2200
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 2.02
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.82

Parameters	Initial	Final
Height (in)	0.999	0.277
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.367
Weight of Container (g)	58.9	61.45
Weight of Wet Soil + Container (g)	216.8	102.99
Weight of Dry Soil + Container (g)	102.7	87.51
Moisture Content (%)	260.50	59.40
Moist Weight + Ring Weight (g)	197.25	144.51
Dry Mass (g)	26.19	26.15
Water Content (calc from spec)	260.50	59.40
Dry Density (pcf)	20.24	72.87
Wet Density (pcf)	72.95	116.15
Volume of Solids (in^3)	0.79	0.79
Height of Solids (in)	0.16	0.16
Void Ratio	5.232	0.728

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Void Ratio vs. Effective Stress

Y1RPC_2200, ST-47, 1.0-3.0 ft

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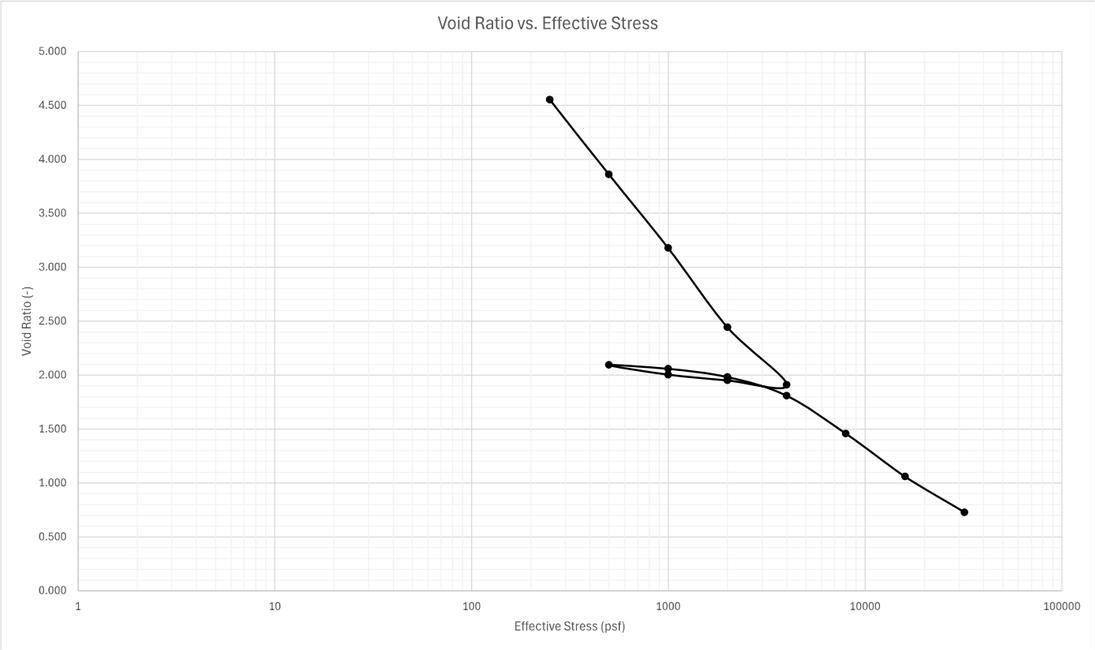

Percent Strain vs. Effective Stress

Y1RPC_2200, ST-47, 1.0-3.0 ft

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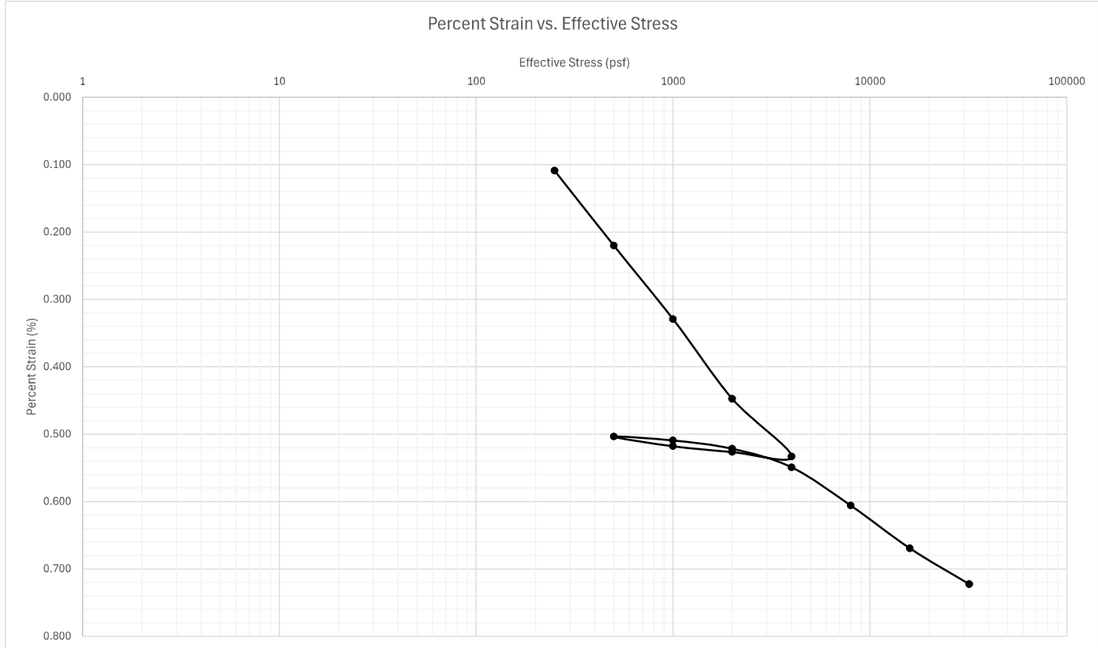

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Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.1193	0	0.999	0	5.232
1			15	0.25	0.5	250	0.1249	0.0056	0.9934	0.560561	5.197
2			30	0.5	0.707106781	250	0.1304	0.0111	0.9879	1.111111	5.163
3		1		1	1	250	0.1372	0.0179	0.9811	1.791792	5.120
4		2		2	1.414213562	250	0.1454	0.0261	0.9729	2.612613	5.069
5		4		4	2	250	0.155	0.0357	0.9633	3.573574	5.009
6		10		10	3.16227766	250	0.1694	0.0501	0.9489	5.015015	4.919
7		15		15	3.872983346	250	0.1762	0.0569	0.9421	5.695696	4.877
8		30		30	5.477225575	250	0.1864	0.0671	0.9319	6.716717	4.813
9	1			60	7.745966692	250	0.1939	0.0746	0.9244	7.467467	4.766
10	2			120	10.95445115	250	0.2007	0.0814	0.9176	8.148148	4.724
11	3	59		239	15.45962483	250	0.2055	0.0862	0.9128	8.628629	4.694
12	6	40		400	20	250	0.2094	0.0901	0.9089	9.019019	4.670
13	22	55		1375	37.08099244	250	0.217	0.0977	0.9013	9.77978	4.622
14	30	20		1820	42.66145802	250	0.2195	0.1002	0.8988	10.03003	4.607
15	94	41		5681	75.37240874	250	0.2274	0.1081	0.8909	10.82082	4.557
16	98	2		5882	76.69419796	250	0.2279	0.1086	0.8904	10.87087	4.554
17											
18											
19											
20											
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31											

Sequence 1: 250 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

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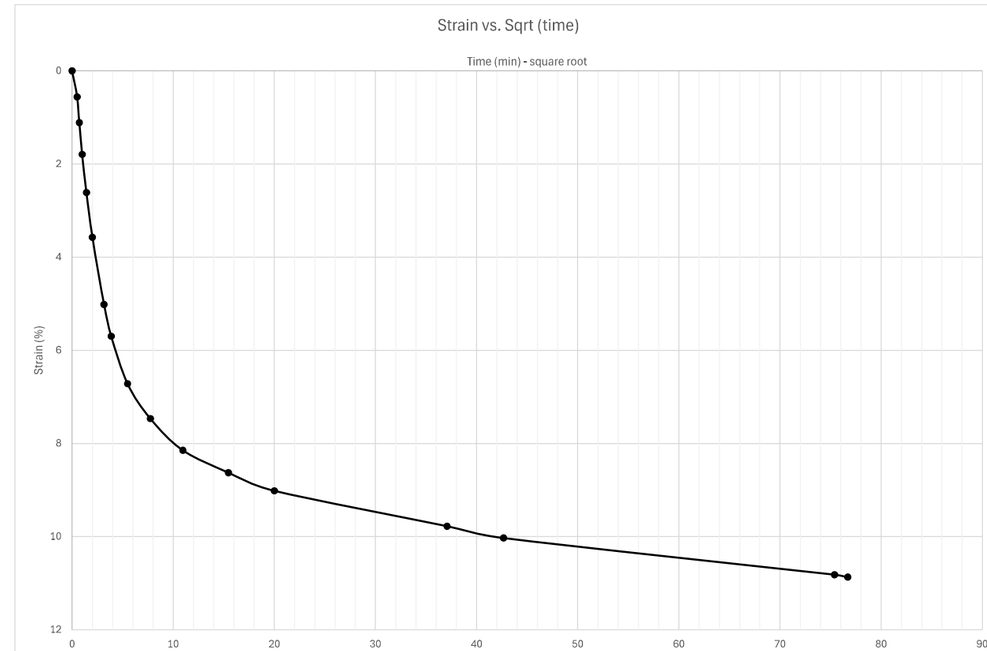

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Sequence 1: 250 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

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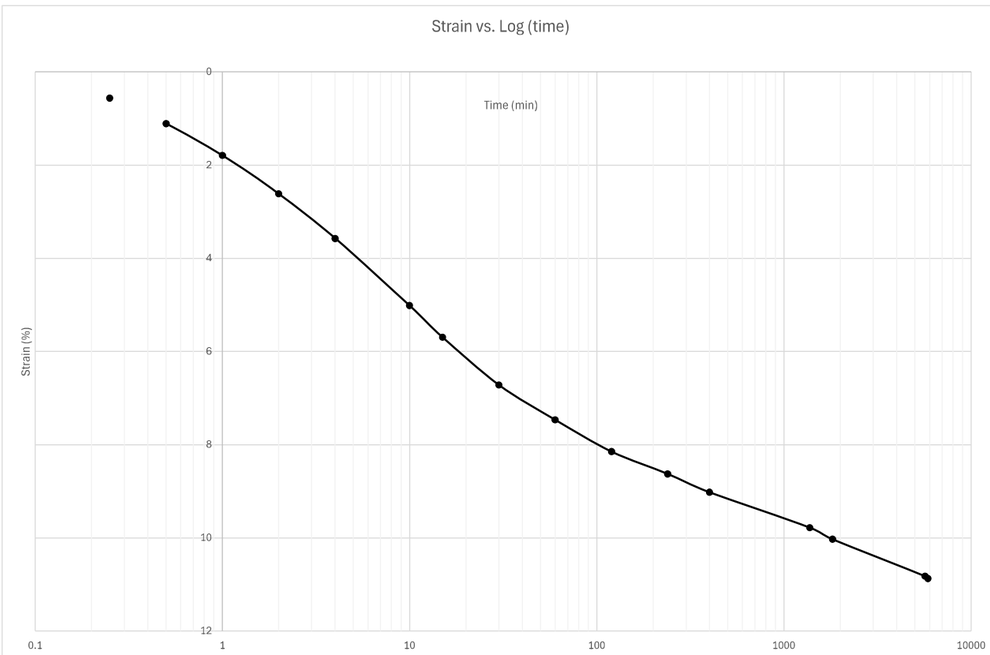

Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.2279	-0.0001	0.8905	-0.01001	4.555
1			6	0.1	0.32	500	0.2368	0.0088	0.8816	0.880881	4.499
2			15	0.25	0.50	500	0.2394	0.0114	0.8790	1.141141	4.483
3			30	0.5	0.71	500	0.2422	0.0142	0.8762	1.421421	4.466
4		1		1	1.00	500	0.2462	0.0182	0.8722	1.821822	4.441
5		2		2	1.41	500	0.2518	0.0238	0.8666	2.382382	4.406
6		4		4	2.00	500	0.2590	0.0310	0.8594	3.103103	4.361
7		8		8	2.83	500	0.2677	0.0397	0.8507	3.973974	4.307
8		16	30	16.5	4.06	500	0.2781	0.0501	0.8403	5.015015	4.242
9		30		30	5.48	500	0.2876	0.0596	0.8308	5.965966	4.183
10	1			60	7.75	500	0.2972	0.0692	0.8212	6.926927	4.123
11	2			120	10.95	500	0.3062	0.0782	0.8122	7.827828	4.067
12	3	58		238	15.43	500	0.3146	0.0866	0.8038	8.668669	4.014
13	5	7		307	17.52	500	0.3177	0.0897	0.8007	8.978979	3.995
14	20	49		1249	35.34	500	0.3312	0.1032	0.7872	10.33033	3.911
15	23	54		1434	37.87	500	0.3329	0.1049	0.7855	10.5005	3.900
16	29	12		1752	41.86	500	0.3356	0.1076	0.7828	10.77077	3.883
17	44	58		2698	51.94	500	0.3393	0.1113	0.7791	11.14114	3.860
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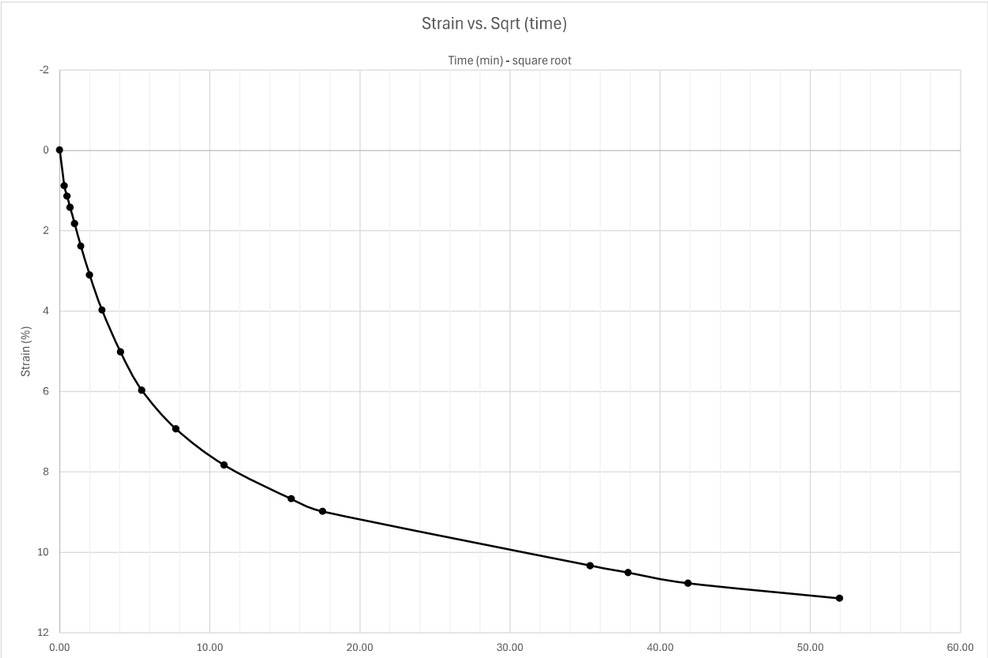
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

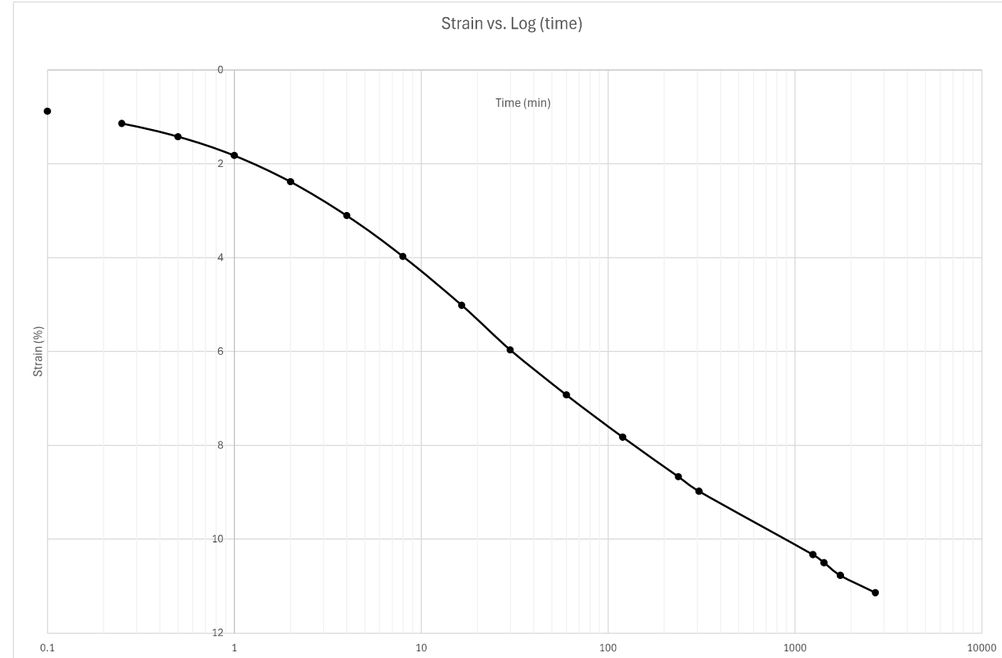
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.3393	-0.0001	0.7792	-0.01001	3.861
1			6	0.10	0.32	1000	0.3484	0.009	0.7701	0.900901	3.804
2			15	0.25	0.50	1000	0.3504	0.011	0.7681	1.101101	3.791
3			30	0.50	0.71	1000	0.3522	0.0128	0.7663	1.281281	3.780
4		1		1.00	1.00	1000	0.3559	0.0165	0.7626	1.651652	3.757
5		2		2.00	1.41	1000	0.3596	0.0202	0.7589	2.022022	3.734
6		4		4.00	2.00	1000	0.3657	0.0263	0.7528	2.632633	3.696
7		8		8.00	2.83	1000	0.374	0.0346	0.7445	3.463463	3.644
8		15		15.00	3.87	1000	0.3837	0.0443	0.7348	4.434434	3.584
9		30		30.00	5.48	1000	0.396	0.0566	0.7225	5.665666	3.507
10		56		56.00	7.48	1000	0.4078	0.0684	0.7107	6.846847	3.433
11	2			120.00	10.95	1000	0.4204	0.081	0.6981	8.108108	3.355
12	3	55		235.00	15.33	1000	0.4288	0.0894	0.6897	8.948949	3.302
13	6	51		411.00	20.27	1000	0.4347	0.0953	0.6838	9.53954	3.266
14	9	16		556.00	23.58	1000	0.4378	0.0984	0.6807	9.84985	3.246
15	23	44		1424.00	37.74	1000	0.4482	0.1088	0.6703	10.89089	3.181
16	24	18		1458.00	38.18	1000	0.4485	0.1091	0.67	10.92092	3.179
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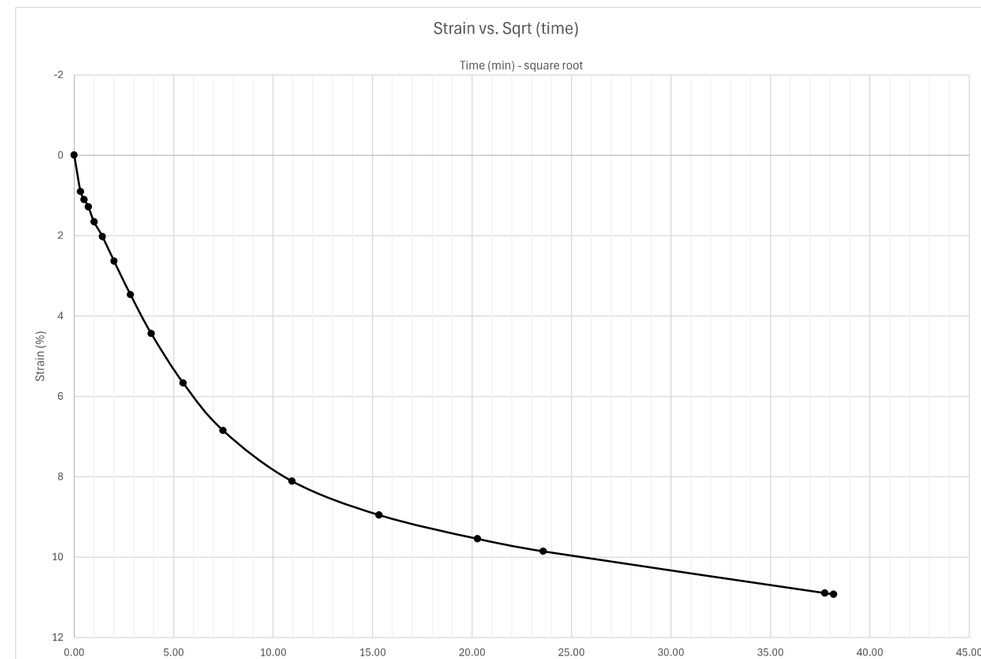
Sequence 3: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

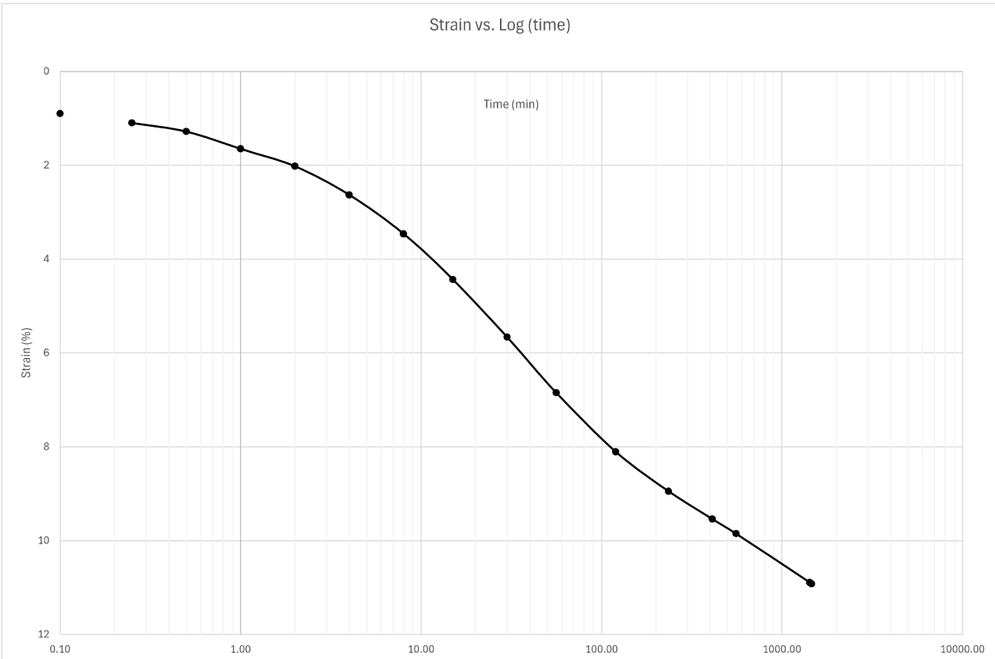


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.4485	-0.0002	0.6702	-0.02002	3.181
1			6	0.10	0.32	2000	0.4558	0.0071	0.6629	0.710711	3.135
2			15	0.25	0.50	2000	0.4579	0.0092	0.6608	0.920921	3.122
3			30	0.50	0.71	2000	0.4599	0.0112	0.6588	1.121121	3.110
4		1		1.00	1.00	2000	0.4629	0.0142	0.6558	1.421421	3.091
5		2		2.00	1.41	2000	0.4666	0.0179	0.6521	1.791792	3.068
6		4		4.00	2.00	2000	0.4723	0.0236	0.6464	2.362362	3.032
7		8		8.00	2.83	2000	0.4803	0.0316	0.6384	3.163163	2.982
8		15		15.00	3.87	2000	0.4898	0.0411	0.6289	4.114114	2.923
9		27	30	27.50	5.24	2000	0.4986	0.0499	0.6201	4.994995	2.868
10		55		55.00	7.42	2000	0.5116	0.0629	0.6071	6.296296	2.787
11	1	49		109.00	10.44	2000	0.5238	0.0751	0.5949	7.517518	2.711
12	3	55		235.00	15.33	2000	0.5347	0.086	0.584	8.608609	2.643
13	7	7		427.00	20.66	2000	0.5418	0.0931	0.5769	9.319319	2.599
14	8	30		510.00	22.58	2000	0.5438	0.0951	0.5749	9.51952	2.586
15	22	51		1371.00	37.03	2000	0.5532	0.1045	0.5655	10.46046	2.528
16	49	49		2989.00	54.67	2000	0.5605	0.1118	0.5582	11.19119	2.482
17	71	50		4310.00	65.65	2000	0.5668	0.1181	0.5519	11.82182	2.443
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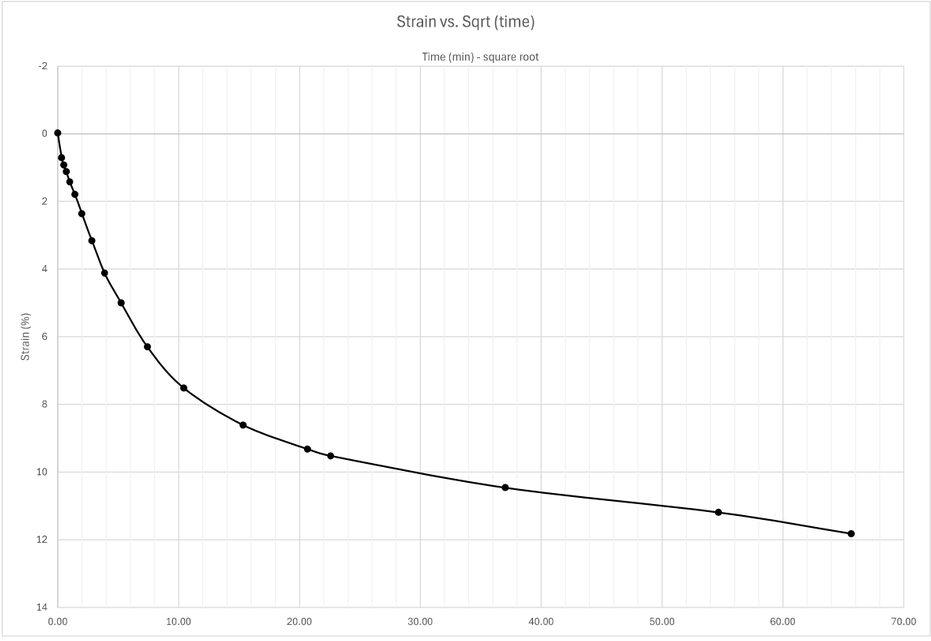
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

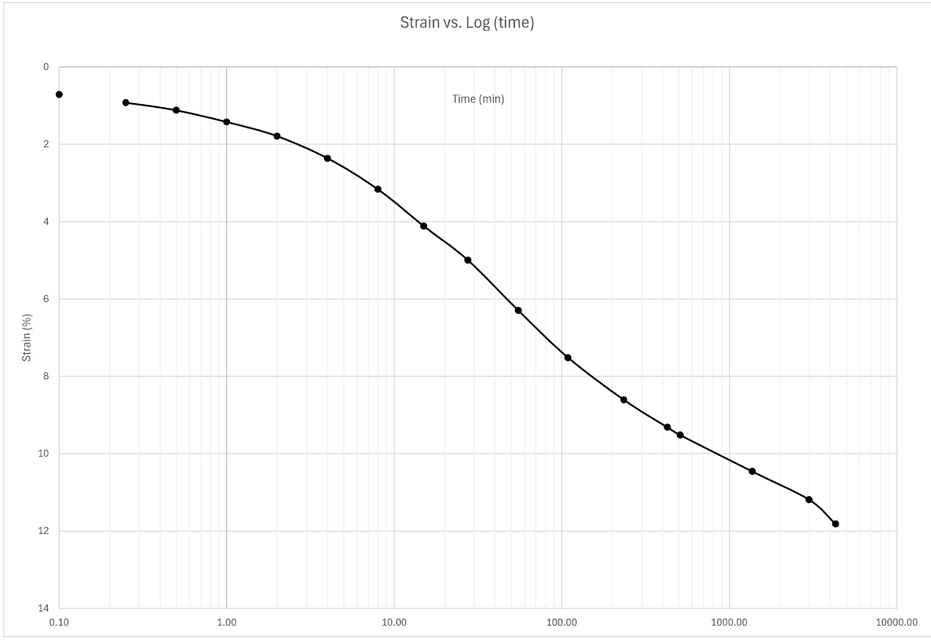
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.5668	-0.0002	0.5521	-0.02002	2.444
1			6	0.10	0.32	4000	0.5738	0.0068	0.5451	0.680681	2.400
2			15	0.25	0.50	4000	0.575	0.008	0.5439	0.800801	2.393
3			30	0.50	0.71	4000	0.5765	0.0095	0.5424	0.950951	2.384
4		1		1.00	1.00	4000	0.5785	0.0115	0.5404	1.151151	2.371
5		2		2.00	1.41	4000	0.5814	0.0144	0.5375	1.441441	2.353
6		4		4.00	2.00	4000	0.5855	0.0185	0.5334	1.851852	2.327
7		8		8.00	2.83	4000	0.5912	0.0242	0.5277	2.422422	2.292
8		15		15.00	3.87	4000	0.5977	0.0307	0.5212	3.073073	2.251
9		30		30.00	5.48	4000	0.6066	0.0396	0.5123	3.963964	2.196
10		53		53.00	7.28	4000	0.6145	0.0475	0.5044	4.754755	2.146
11	1	56		116.00	10.77	4000	0.6246	0.0576	0.4943	5.765766	2.083
12	3	51		231.00	15.20	4000	0.6321	0.0651	0.4868	6.516517	2.037
13	5	54		354.00	18.81	4000	0.6361	0.0691	0.4828	6.916917	2.012
14	21	11		1271.00	35.65	4000	0.6463	0.0793	0.4726	7.937938	1.948
15	24			1440.00	37.95	4000	0.6474	0.0804	0.4715	8.048048	1.941
16	31	54		1914.00	43.75	4000	0.6497	0.0827	0.4692	8.278278	1.927
17	45	56		2756.00	52.50	4000	0.6525	0.0855	0.4664	8.558559	1.909
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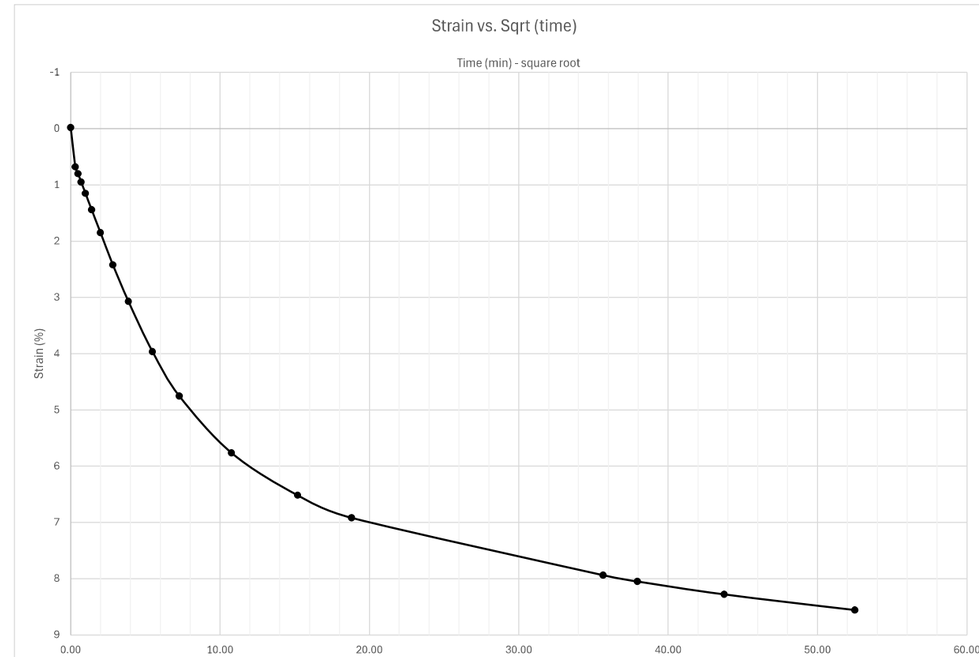
Sequence 5: 4000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

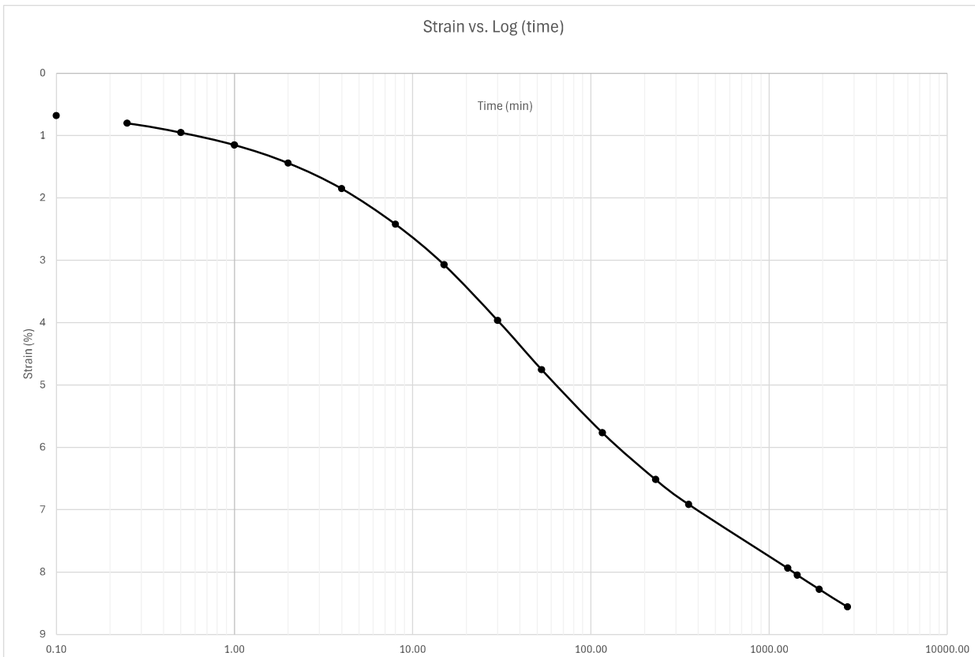


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.6525	0.0002	0.4662	0.02002	1.908
1			6	0.10	0.32	2000	0.6511	-0.0012	0.4676	-0.12012	1.917
2			15	0.25	0.50	2000	0.6508	-0.0015	0.4679	-0.15015	1.919
3			30	0.50	0.71	2000	0.6506	-0.0017	0.4681	-0.17017	1.920
4		1		1.00	1.00	2000	0.6502	-0.0021	0.4685	-0.21021	1.923
5		2		2.00	1.41	2000	0.6498	-0.0025	0.4689	-0.25025	1.925
6		4		4.00	2.00	2000	0.6492	-0.0031	0.4695	-0.31031	1.929
7		8		8.00	2.83	2000	0.6486	-0.0037	0.4701	-0.37037	1.933
8		10	20	10.33	3.21	2000	0.6482	-0.0041	0.4705	-0.41041	1.935
9		17	20	17.33	4.16	2000	0.6479	-0.0044	0.4708	-0.44044	1.937
10		34		34.00	5.83	2000	0.6474	-0.0049	0.4713	-0.49049	1.940
11	1	4		64.00	8.00	2000	0.647	-0.0053	0.4717	-0.530531	1.942
12	2	3		123.00	11.09	2000	0.6466	-0.0057	0.4721	-0.570571	1.945
13	4	7		247.00	15.72	2000	0.6462	-0.0061	0.4725	-0.610611	1.947
14	8	20		500.00	22.36	2000	0.6459	-0.0064	0.4728	-0.640641	1.949
15	23	26		1406.00	37.50	2000	0.6456	-0.0067	0.4731	-0.670671	1.951
16	28	40		1720.00	41.47	2000	0.6456	-0.0067	0.4731	-0.670671	1.951
17	118	39		7119.00	84.37	2000	0.6455	-0.0068	0.4732	-0.680681	1.952
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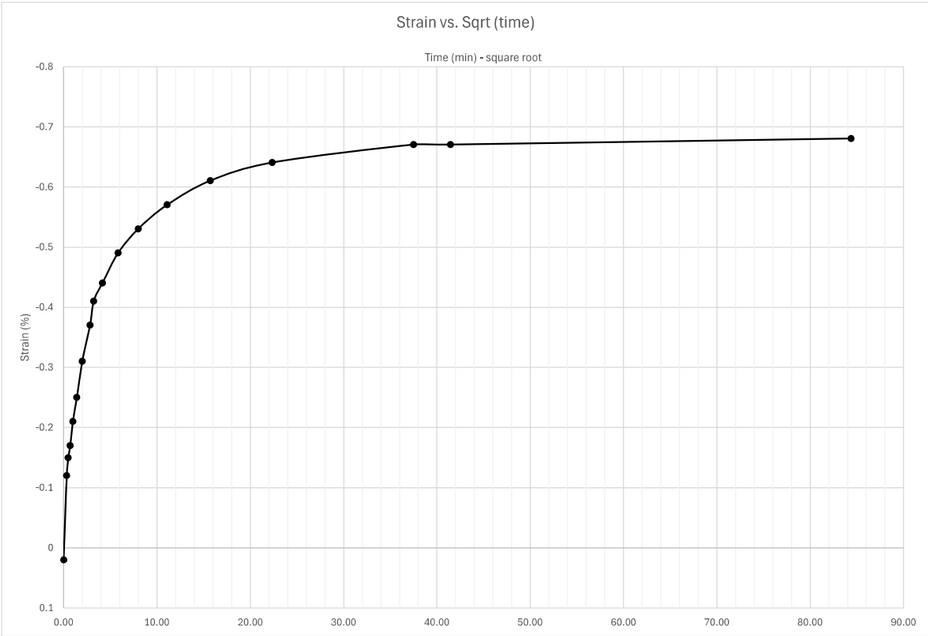
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

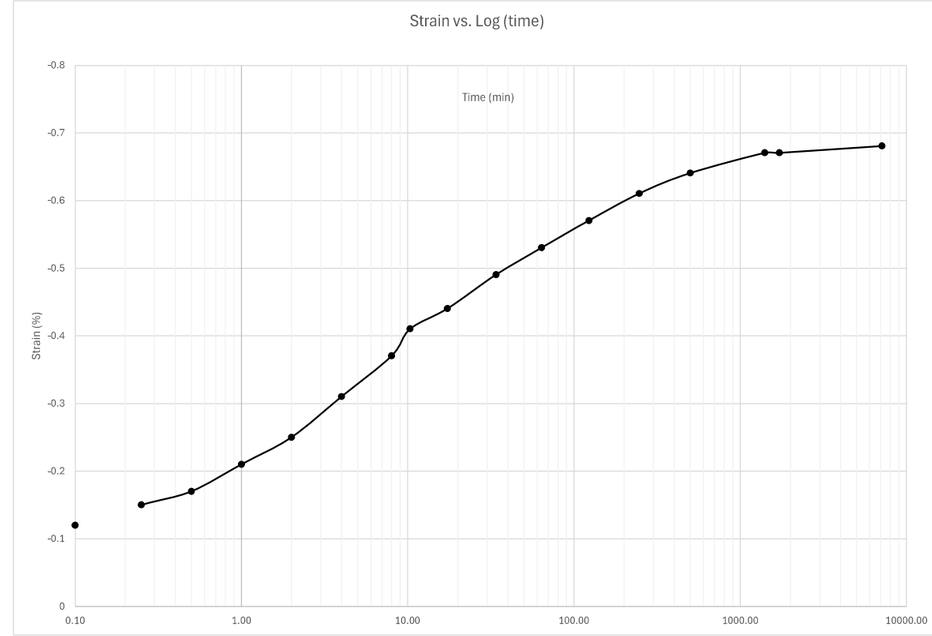
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6455	0.0002	0.473	0.02002	1.951
1			6	0.10	0.32	1000	0.6447	-0.0006	0.4738	-0.06006	1.956
2			15	0.25	0.50	1000	0.6445	-0.0008	0.474	-0.08008	1.957
3		1		1.00	1.00	1000	0.644	-0.0013	0.4745	-0.13013	1.960
4		2		2.00	1.41	1000	0.6436	-0.0017	0.4749	-0.17017	1.962
5		4		4.00	2.00	1000	0.6432	-0.0021	0.4753	-0.21021	1.965
6		8		8.00	2.83	1000	0.6426	-0.0027	0.4759	-0.27027	1.969
7		15		15.00	3.87	1000	0.6421	-0.0032	0.4764	-0.32032	1.972
8		34		34.00	5.83	1000	0.6413	-0.004	0.4772	-0.4004	1.977
9	1	1		61.00	7.81	1000	0.6409	-0.0044	0.4776	-0.44044	1.979
10	2	3		123.00	11.09	1000	0.6403	-0.005	0.4782	-0.500501	1.983
11	4			240.00	15.49	1000	0.6397	-0.0056	0.4788	-0.560561	1.987
12	6	21		381.00	19.52	1000	0.6392	-0.0061	0.4793	-0.610611	1.990
13	8	21		501.00	22.38	1000	0.639	-0.0063	0.4795	-0.630631	1.991
14	23	44		1424.00	37.74	1000	0.6379	-0.0074	0.4806	-0.740741	1.998
15	28	50		1730.00	41.59	1000	0.6377	-0.0076	0.4808	-0.760761	1.999
16	48	10		2890.00	53.76	1000	0.6371	-0.0082	0.4814	-0.820821	2.003
17	54	21		3261.00	57.11	1000	0.637	-0.0083	0.4815	-0.830831	2.004
18	71	30		4290.00	65.50	1000	0.6368	-0.0085	0.4817	-0.850851	2.005
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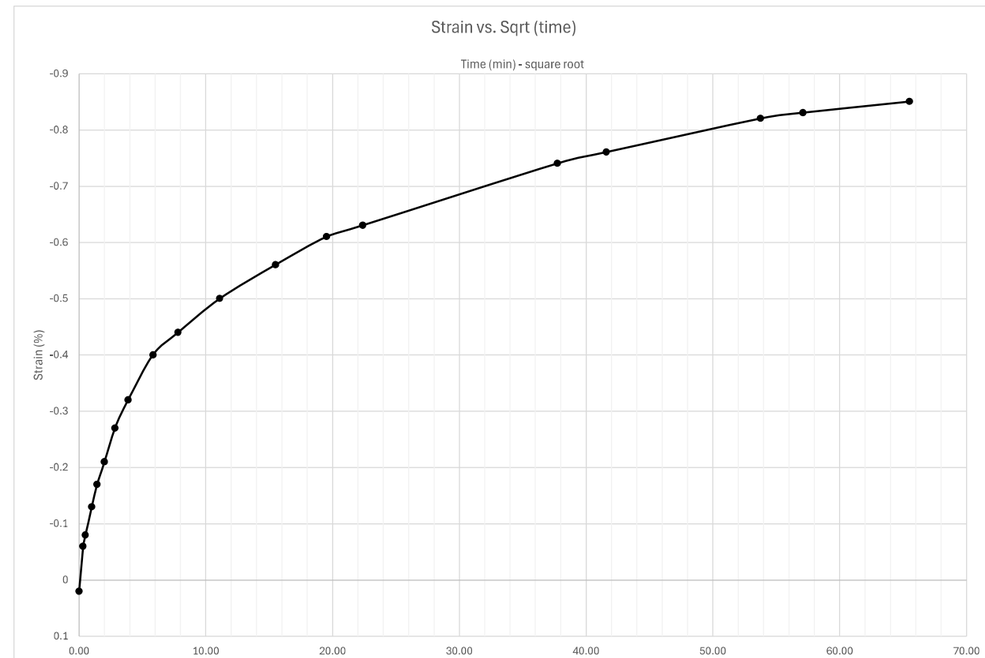
Sequence 7: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

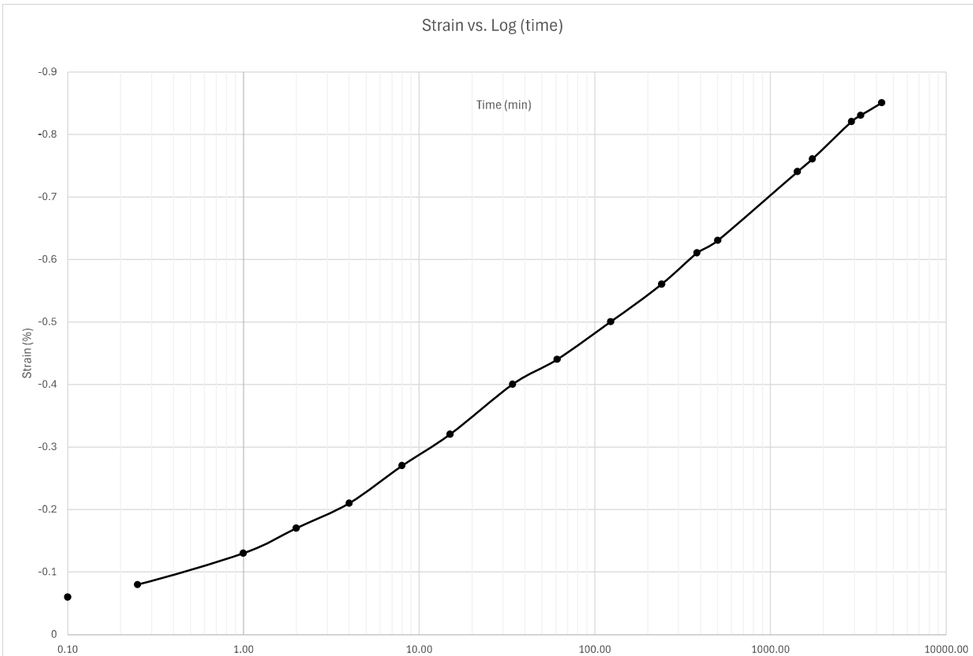


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.6368	0.0001	0.4816	0.01001	2.004
1			6	0.10	0.32	500	0.6359	-0.0008	0.4825	-0.08008	2.010
2			15	0.25	0.50	500	0.6358	-0.0009	0.4826	-0.09009	2.010
3			30	0.50	0.71	500	0.6356	-0.0011	0.4828	-0.11011	2.012
4		1		1.00	1.00	500	0.6354	-0.0013	0.483	-0.13013	2.013
5		2	15	2.25	1.50	500	0.635	-0.0017	0.4834	-0.17017	2.015
6		4		4.00	2.00	500	0.6347	-0.002	0.4837	-0.2002	2.017
7		8		8.00	2.83	500	0.634	-0.0027	0.4844	-0.27027	2.022
8		15	30	15.50	3.94	500	0.6334	-0.0033	0.485	-0.33033	2.025
9		30	0	30.00	5.48	500	0.6325	-0.0042	0.4859	-0.42042	2.031
10		58		58.00	7.62	500	0.6316	-0.0051	0.4868	-0.510511	2.037
11	1	56		116.00	10.77	500	0.6306	-0.0061	0.4878	-0.610611	2.043
12	3	59		239.00	15.46	500	0.6296	-0.0071	0.4888	-0.710711	2.049
13	7	2		422.00	20.54	500	0.6284	-0.0083	0.49	-0.830831	2.057
14	23	45		1425.00	37.75	500	0.6258	-0.0109	0.4926	-1.091091	2.073
15	31	18		1878.00	43.34	500	0.6251	-0.0116	0.4933	-1.161161	2.077
16	50	44		3044.00	55.17	500	0.6242	-0.0125	0.4942	-1.251251	2.083
17	95	21		5721.00	75.64	500	0.6231	-0.0136	0.4953	-1.361361	2.090
18	119	23		7163.00	84.63	500	0.6225	-0.0142	0.4959	-1.421421	2.093
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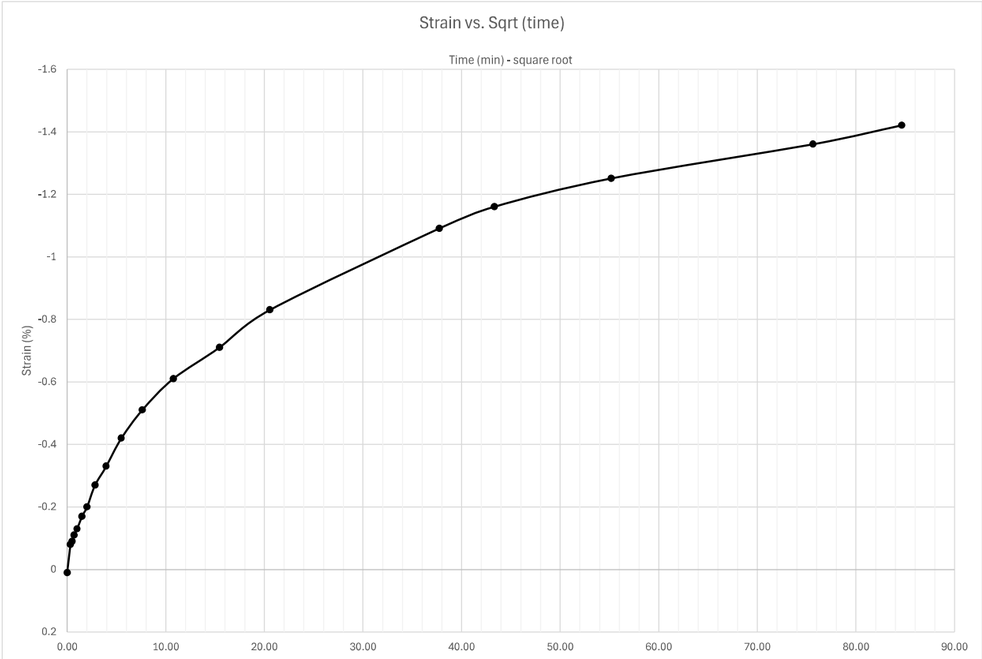
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

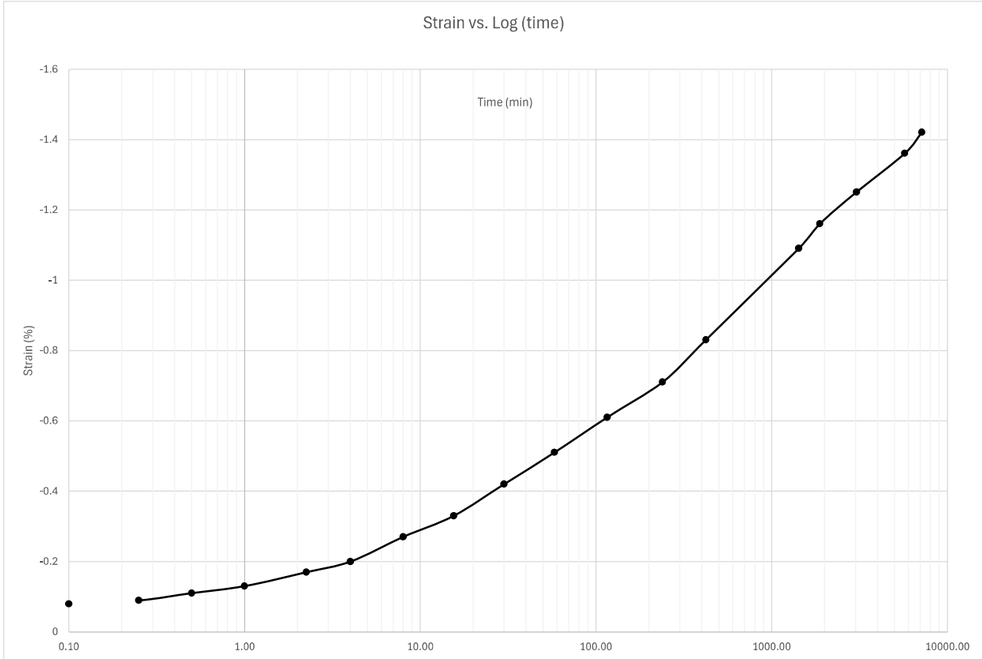
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6225	-0.0001	0.496	-0.01001	2.094
1			6	0.10	0.32	1000	0.6241	0.0015	0.4944	0.15015	2.084
2			15	0.25	0.50	1000	0.6243	0.0017	0.4942	0.17017	2.083
3			30	0.50	0.71	1000	0.6245	0.0019	0.494	0.19019	2.082
4		1		1.00	1.00	1000	0.6248	0.0022	0.4937	0.22022	2.080
5		2		2.00	1.41	1000	0.6251	0.0025	0.4934	0.25025	2.078
6		4		4.00	2.00	1000	0.6254	0.0028	0.4931	0.28028	2.076
7		8		8.00	2.83	1000	0.6258	0.0032	0.4927	0.32032	2.073
8		15		15.00	3.87	1000	0.6262	0.0036	0.4923	0.36036	2.071
9		30		30.00	5.48	1000	0.6266	0.004	0.4919	0.4004	2.068
10		56		56.00	7.48	1000	0.6269	0.0043	0.4916	0.43043	2.067
11	1	54		114.00	10.68	1000	0.6272	0.0046	0.4913	0.46046	2.065
12	3	55		235.00	15.33	1000	0.6275	0.0049	0.491	0.49049	2.063
13	6	13		373.00	19.31	1000	0.6277	0.0051	0.4908	0.510511	2.062
14	22	44		1364.00	36.93	1000	0.6283	0.0057	0.4902	0.570571	2.058
15	24	38		1478.00	38.44	1000	0.6283	0.0057	0.4902	0.570571	2.058
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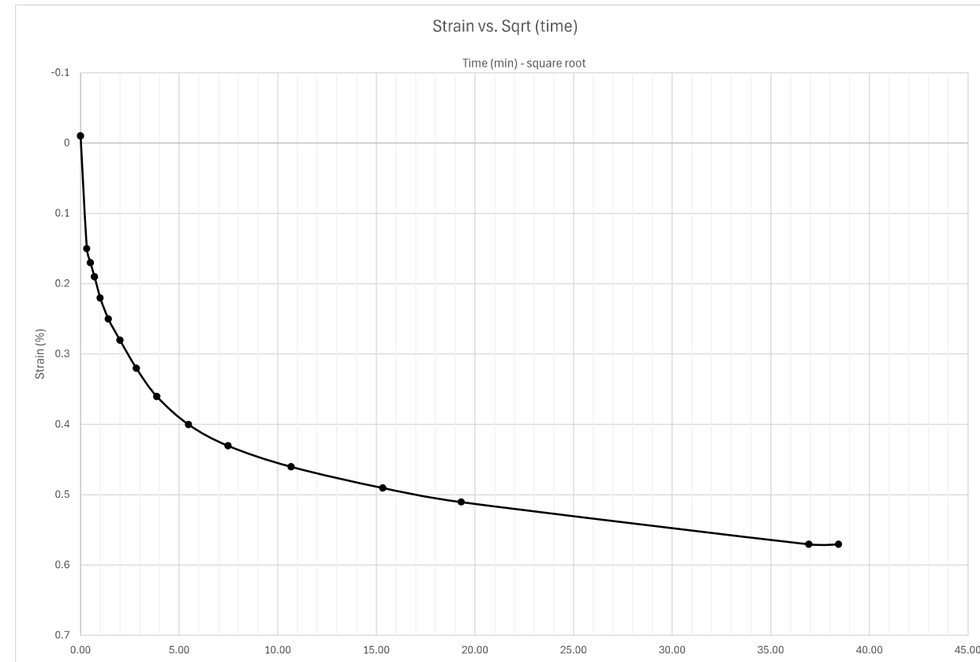
Sequence 9: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

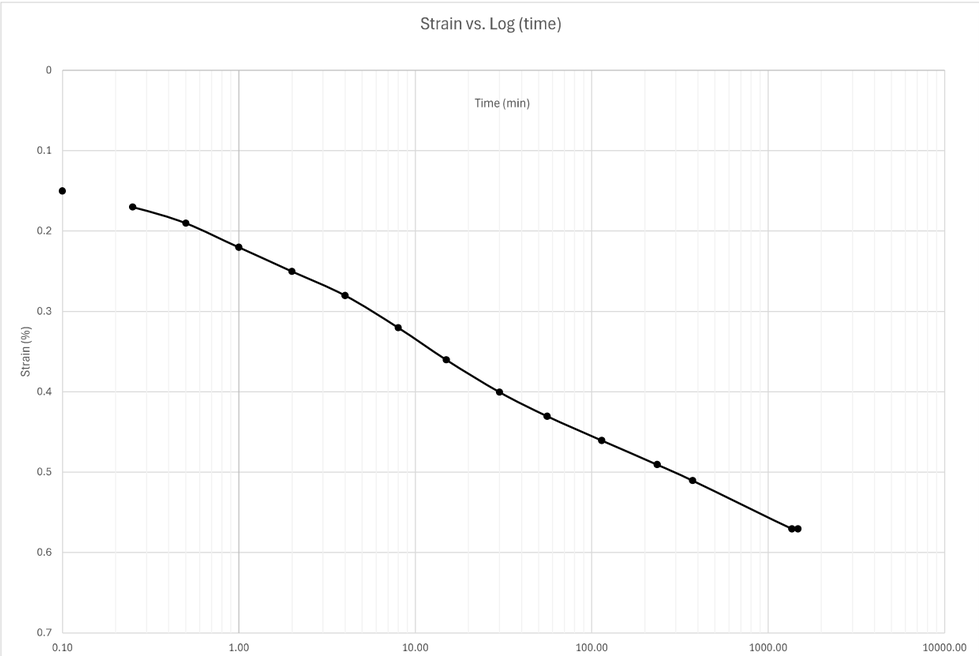


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6283	-0.0002	0.4904	-0.02002	2.059
1			6	0.10	0.32	2000	0.6305	0.002	0.4882	0.2002	2.045
2			15	0.25	0.50	2000	0.631	0.0025	0.4877	0.25025	2.042
3			30	0.50	0.71	2000	0.6315	0.003	0.4872	0.3003	2.039
4		1		1.00	1.00	2000	0.632	0.0035	0.4867	0.35035	2.036
5		2		2.00	1.41	2000	0.6327	0.0042	0.486	0.42042	2.032
6		4		4.00	2.00	2000	0.6336	0.0051	0.4851	0.510511	2.026
7		8		8.00	2.83	2000	0.6346	0.0061	0.4841	0.610611	2.020
8		15		15.00	3.87	2000	0.6355	0.007	0.4832	0.700701	2.014
9		30		30.00	5.48	2000	0.6366	0.0081	0.4821	0.810811	2.007
10		59		59.00	7.68	2000	0.6373	0.0088	0.4814	0.880881	2.003
11	1	52		112.00	10.58	2000	0.638	0.0095	0.4807	0.950951	1.999
12	3	54		234.00	15.30	2000	0.6387	0.0102	0.48	1.021021	1.994
13	5	27		327.00	18.08	2000	0.639	0.0105	0.4797	1.051051	1.992
14	9	27		567.00	23.81	2000	0.6395	0.011	0.4792	1.101101	1.989
15	22	11		1331.00	36.48	2000	0.6404	0.0119	0.4783	1.191191	1.984
16	24	51		1491.00	38.61	2000	0.6406	0.0121	0.4781	1.211211	1.982
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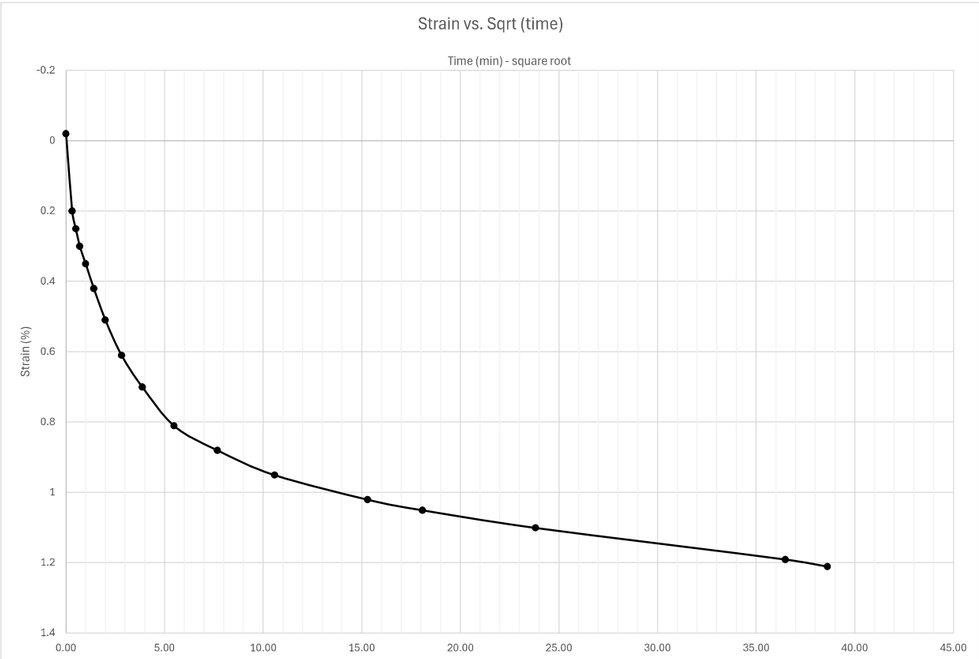
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

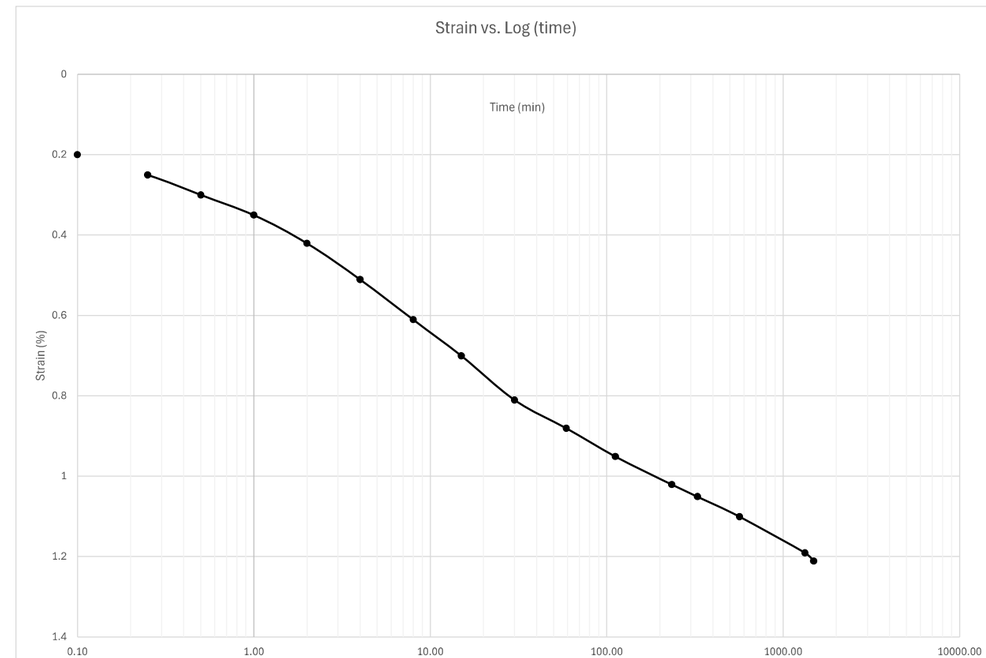
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.6406	-0.0003	0.4784	-0.03003	1.984
1			6	0.10	0.32	4000	0.6438	0.0029	0.4752	0.29029	1.964
2			15	0.25	0.50	4000	0.6447	0.0038	0.4743	0.38038	1.959
3			30	0.50	0.71	4000	0.6454	0.0045	0.4736	0.45045	1.954
4		1		1.00	1.00	4000	0.6464	0.0055	0.4726	0.550551	1.948
5		2		2.00	1.41	4000	0.6475	0.0066	0.4715	0.660661	1.941
6		4		4.00	2.00	4000	0.6488	0.0079	0.4702	0.790791	1.933
7		8		8.00	2.83	4000	0.6504	0.0095	0.4686	0.950951	1.923
8		15		15.00	3.87	4000	0.652	0.0111	0.467	1.111111	1.913
9		29		29.00	5.39	4000	0.6537	0.0128	0.4653	1.281281	1.903
10	1	0		60.00	7.75	4000	0.6555	0.0146	0.4635	1.461461	1.891
11	1	56		116.00	10.77	4000	0.6571	0.0162	0.4619	1.621622	1.881
12	3	47		227.00	15.07	4000	0.6588	0.0179	0.4602	1.791792	1.871
13	7	15		435.00	20.86	4000	0.6605	0.0196	0.4585	1.961962	1.860
14	20	55		1255.00	35.43	4000	0.6636	0.0227	0.4554	2.272272	1.841
15	24	32		1472.00	38.37	4000	0.664	0.0231	0.455	2.312312	1.838
16	92	54		5574.00	74.66	4000	0.6686	0.0277	0.4504	2.772773	1.810
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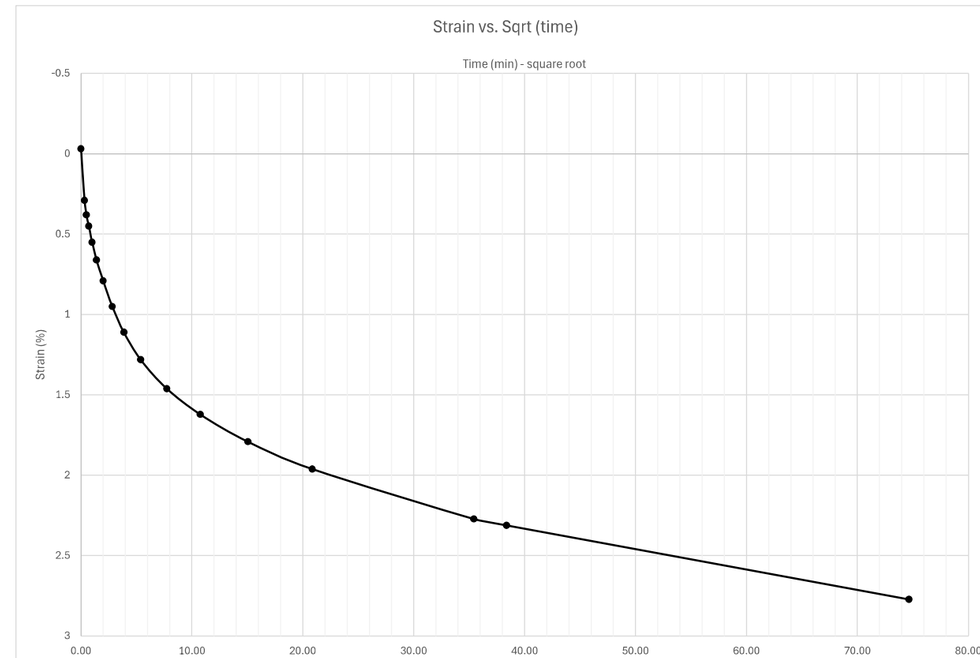
Sequence 11: 4000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

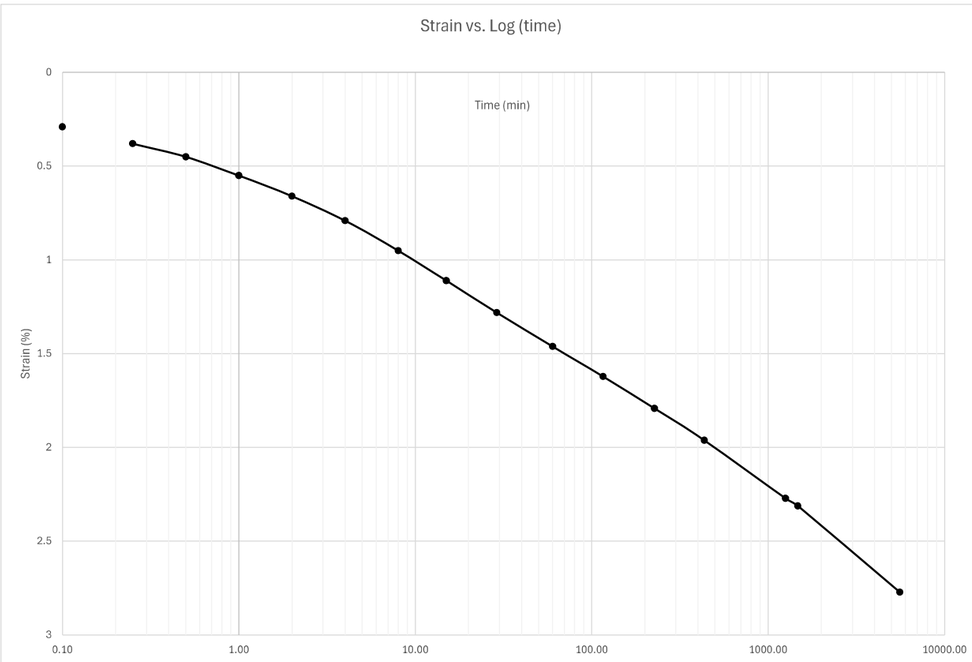


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6686	-0.0006	0.451	-0.06006	1.813
1			6	0.10	0.32	8000	0.6733	0.0041	0.4463	0.41041	1.784
2			15	0.25	0.50	8000	0.6745	0.0053	0.4451	0.530531	1.777
3			30	0.50	0.71	8000	0.6756	0.0064	0.444	0.640641	1.770
4		1		1.00	1.00	8000	0.6771	0.0079	0.4425	0.790791	1.760
5		2		2.00	1.41	8000	0.6791	0.0099	0.4405	0.990991	1.748
6		4		4.00	2.00	8000	0.682	0.0128	0.4376	1.281281	1.730
7		8		8.00	2.83	8000	0.6858	0.0166	0.4338	1.661662	1.706
8		15		15.00	3.87	8000	0.6903	0.0211	0.4293	2.112112	1.678
9		30		30.00	5.48	8000	0.6963	0.0271	0.4233	2.712713	1.641
10	1			60.00	7.75	8000	0.7025	0.0333	0.4171	3.333333	1.602
11	2			120.00	10.95	8000	0.7089	0.0397	0.4107	3.973974	1.562
12	4	20		260.00	16.12	8000	0.7145	0.0453	0.4051	4.534535	1.527
13	7	28		448.00	21.17	8000	0.7185	0.0493	0.4011	4.934935	1.502
14	23	23		1403.00	37.46	8000	0.7251	0.0559	0.3945	5.595596	1.461
15	24	8		1448.00	38.05	8000	0.7258	0.0566	0.3938	5.665666	1.457
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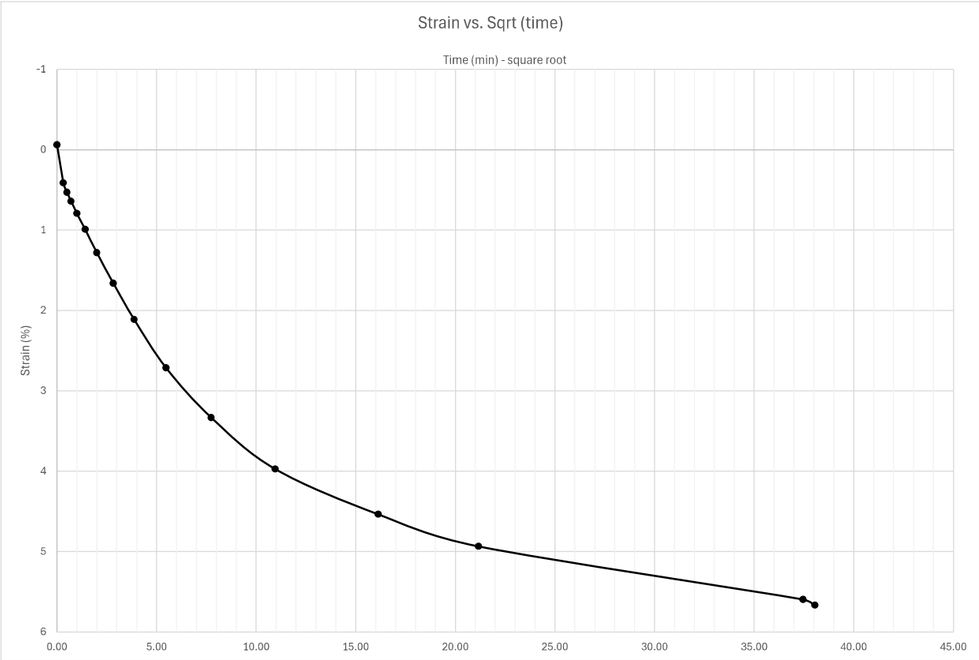
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

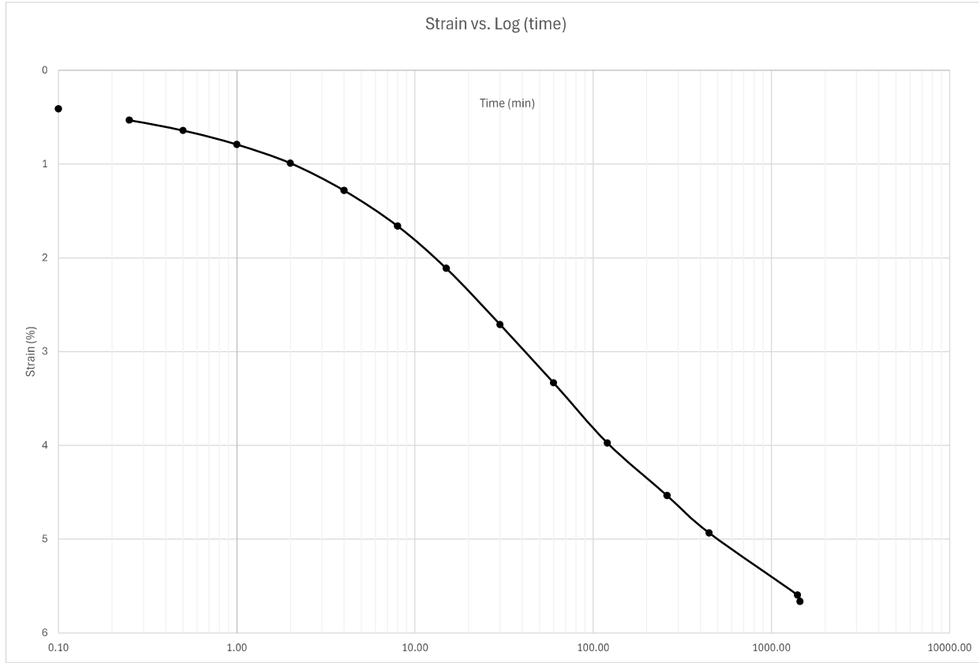
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.7258	-0.0008	0.3946	-0.08008	1.462
1			6	0.10	0.32	16000	0.73	0.0034	0.3904	0.34034	1.435
2			15	0.25	0.50	16000	0.7315	0.0049	0.3889	0.49049	1.426
3			30	0.50	0.71	16000	0.7329	0.0063	0.3875	0.630631	1.417
4		1		1.00	1.00	16000	0.7349	0.0083	0.3855	0.830831	1.405
5		2		2.00	1.41	16000	0.7377	0.0111	0.3827	1.111111	1.387
6		4		4.00	2.00	16000	0.7416	0.015	0.3788	1.501502	1.363
7		8		8.00	2.83	16000	0.7469	0.0203	0.3735	2.032032	1.330
8		15		15.00	3.87	16000	0.753	0.0264	0.3674	2.642643	1.292
9		29		29.00	5.39	16000	0.7605	0.0339	0.3599	3.393393	1.245
10	1	4		64.00	8.00	16000	0.7691	0.0425	0.3513	4.254254	1.191
11	1	55		115.00	10.72	16000	0.7744	0.0478	0.346	4.784785	1.158
12	4	16		256.00	16.00	16000	0.7803	0.0537	0.3401	5.375375	1.122
13	6	18		378.00	19.44	16000	0.7831	0.0565	0.3373	5.655656	1.104
14	24	8		1448.00	38.05	16000	0.79	0.0634	0.3304	6.346346	1.061
15	24	41		1481.00	38.48	16000	0.7903	0.0637	0.3301	6.376376	1.059
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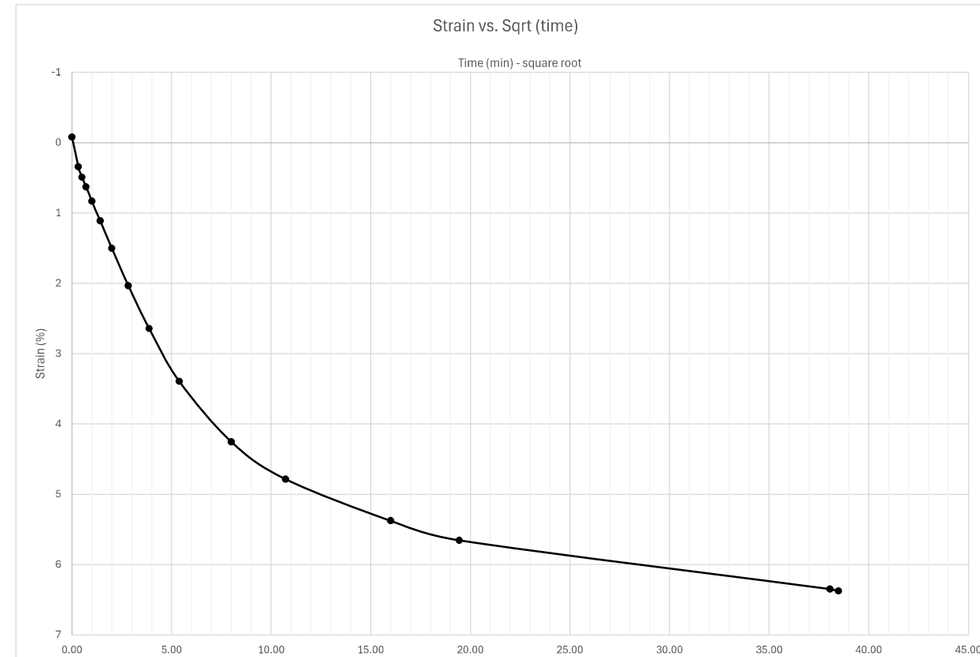
Sequence 13: 16000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

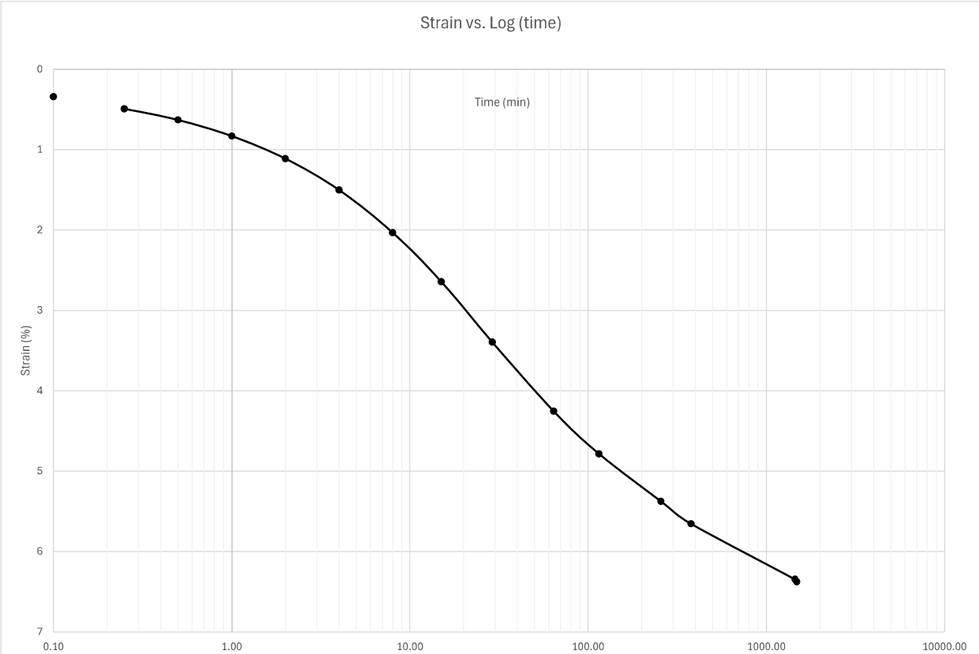


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.7903	-0.0012	0.3313	-0.12012	1.067
1			6	0.10	0.32	32000	0.7947	0.0032	0.3269	0.32032	1.039
2			15	0.25	0.50	32000	0.7952	0.0037	0.3264	0.37037	1.036
3			30	0.50	0.71	32000	0.7963	0.0048	0.3253	0.48048	1.029
4		1		1.00	1.00	32000	0.798	0.0065	0.3236	0.650651	1.019
5		2		2.00	1.41	32000	0.8002	0.0087	0.3214	0.870871	1.005
6		4		4.00	2.00	32000	0.8033	0.0118	0.3183	1.181181	0.986
7		8		8.00	2.83	32000	0.8087	0.0172	0.3129	1.721722	0.952
8		15		15.00	3.87	32000	0.8127	0.0212	0.3089	2.122122	0.927
9		30		30.00	5.48	32000	0.8192	0.0277	0.3024	2.772773	0.886
10		59		59.00	7.68	32000	0.8251	0.0336	0.2965	3.363363	0.850
11	2			120.00	10.95	32000	0.8304	0.0389	0.2912	3.893894	0.817
12	4	14		254.00	15.94	32000	0.835	0.0435	0.2866	4.354354	0.788
13	6	10		370.00	19.24	32000	0.837	0.0455	0.2846	4.554555	0.775
14	22	31		1351.00	36.76	32000	0.842	0.0505	0.2796	5.055055	0.744
15	24	8		1448.00	38.05	32000	0.8423	0.0508	0.2793	5.085085	0.742
16	30	30		1830.00	42.78	32000	0.8432	0.0517	0.2784	5.175175	0.737
17	46	22		2782.00	52.74	32000	0.8446	0.0531	0.277	5.315315	0.728
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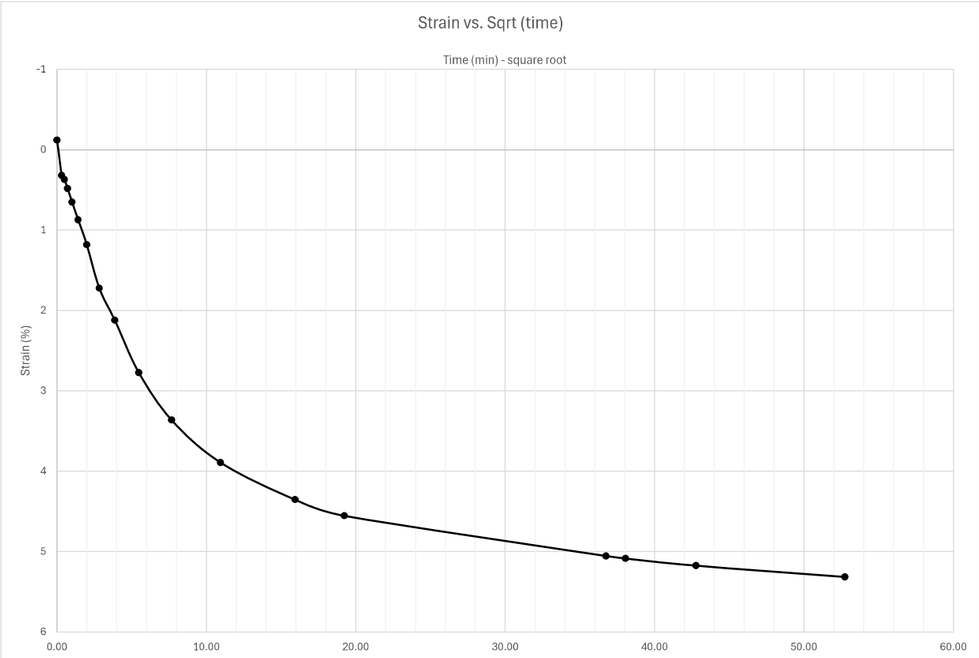
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

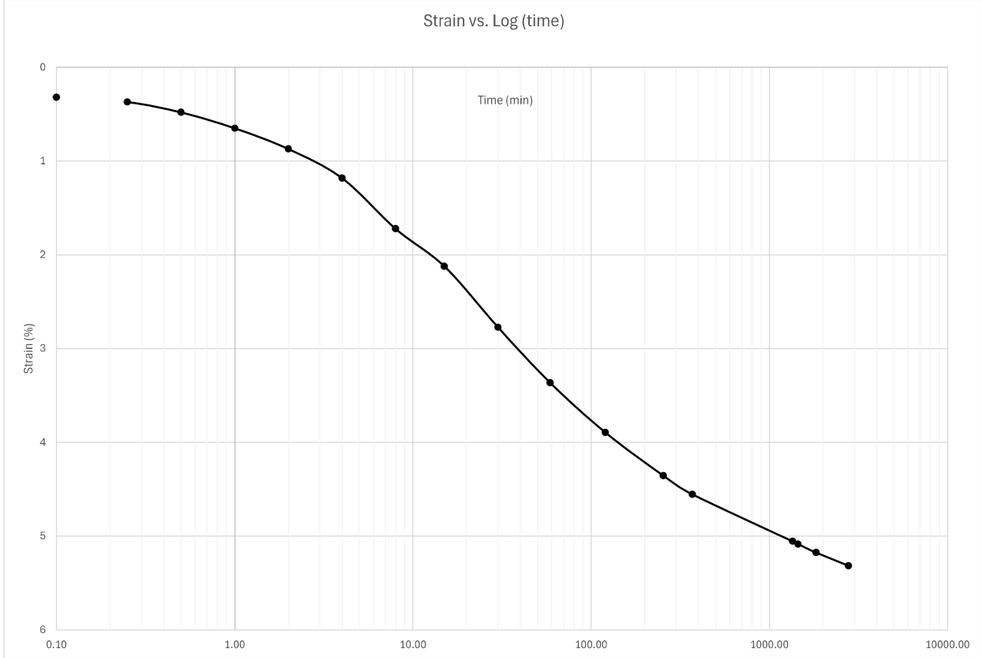
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_2200, ST-47, 1.0-3.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Brown Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	6.0-8.0
Sample Number	ST-48	Boring Number	Y1RPC_2200
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0431	0.1145	0.9559	0.043	8.834	4.84	-	0.04002	-
2	500	0.1884	0.1146	0.8106	0.189	7.339	19.36	5.8	0.00720	0.005579
3	1000	0.3281	0.1147	0.6709	0.328	5.902	13.69	11	0.00697	0.002015
4	2000	0.4596	0.1149	0.5394	0.460	4.549	56.25	15.5	0.00110	0.000924
5	4000	0.5623	0.1151	0.4367	0.563	3.492	59.29	17	0.00068	0.000552
6	2000	0.5549	0.1149	0.4441	0.555	3.569	-	-	-	-
7	1000	0.5472	0.1147	0.4518	0.548	3.648	-	-	-	-
8	500	0.535	0.1146	0.464	0.536	3.773	-	-	-	-
9	1000	0.5393	0.1147	0.4597	0.540	3.729	6.76	-	0.00663	-
10	2000	0.5508	0.1149	0.4482	0.551	3.611	12.25	2.5	0.00348	0.00396
11	4000	0.5809	0.1151	0.4181	0.581	3.301	9	-	0.00412	-
12	8000	0.6457	0.1158	0.3533	0.646	2.634	53.29	20	0.00050	0.00031
13	16000	0.711	0.1166	0.288	0.712	1.963	73.96	19.5	0.00024	0.00021
14	32000	0.7603	0.1178	0.2387	0.761	1.456	70.56	22	0.00017	0.00013
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 6/18/2026
Machine Apparatus: 6
Technician: KSB

Sampling Date: 3/25/2026
Sample Number: ST-48
Depth (ft): 6.0-8.0
Boring Number: Y1RPC_2200
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.95
Sampling Method: Shelby Tube
Specimen Description: Black/Brown Sandy Silt with organics
Soil Classification: A-8 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.22

Parameters	Initial	Final
Height (in)	0.999	0.2387
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.178
Weight of Container (g)	59.8	59.97
Weight of Wet Soil + Container (g)	223.5	88.4
Weight of Dry Soil + Container (g)	90.1	75.07
Moisture Content (%)	440.26	88.28
Moist Weight + Ring Weight (g)	186.06	131.94
Dry Mass (g)	15.33	15.25
Water Content (calc from spec)	440.26	88.28
Dry Density (pcf)	11.85	49.32
Wet Density (pcf)	64.00	92.86
Volume of Solids (in^3)	0.48	0.48
Height of Solids (in)	0.10	0.10
Void Ratio	9.277	1.456

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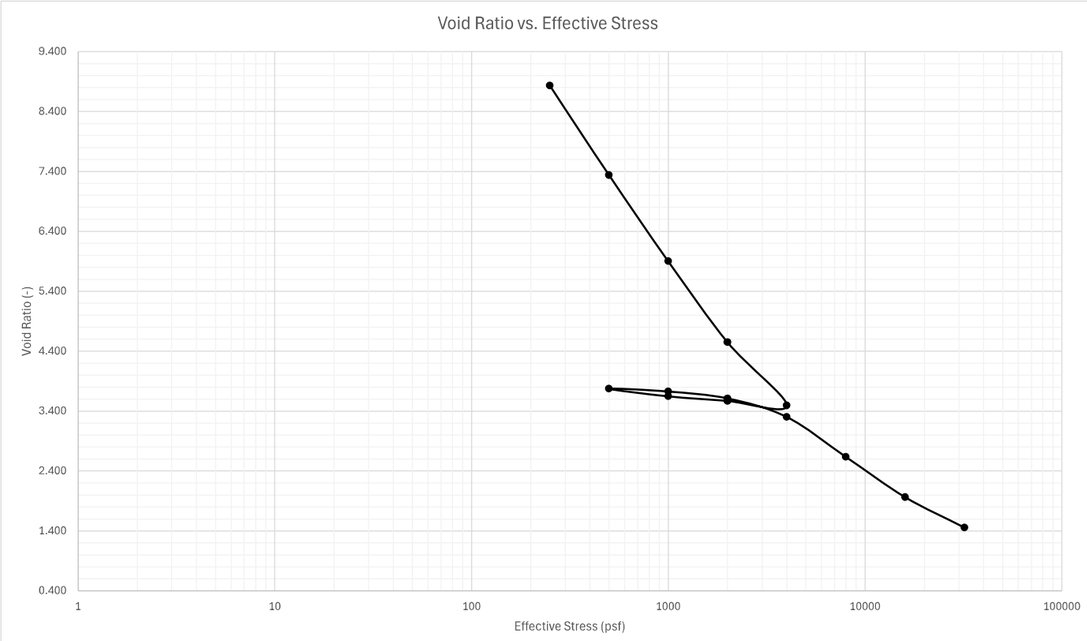
Void Ratio vs. Effective Stress

Y1RPC_2200, ST-48, 6.0-8.0 ft

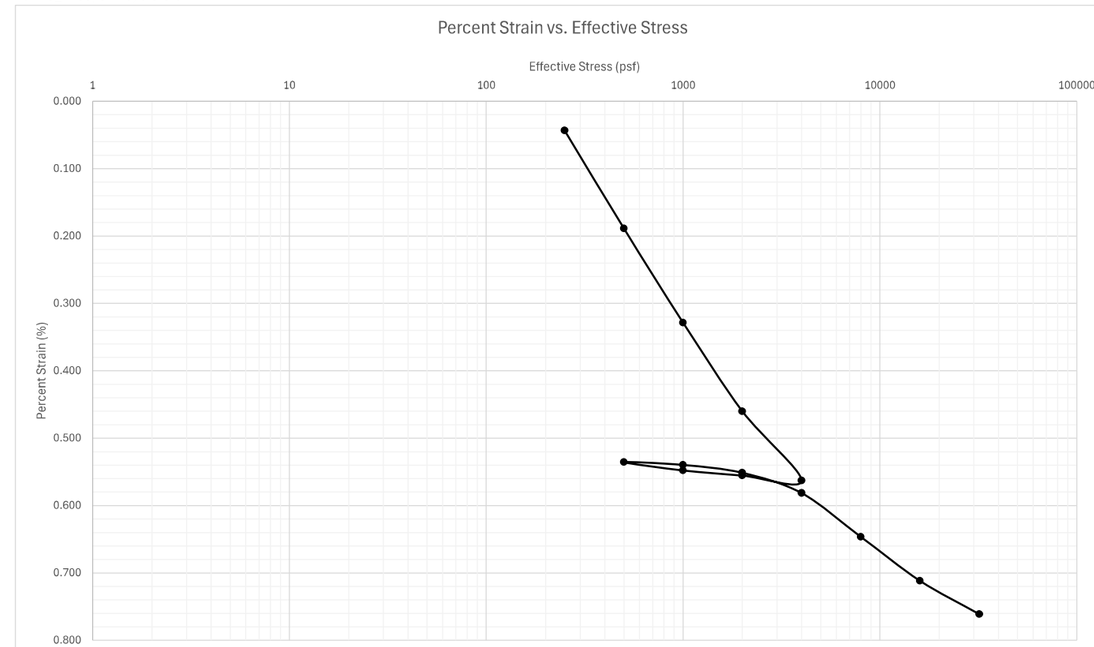
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.048	0	0.999	0	9.277
1			15	0.25	0.5	250	0.0512	0.0032	0.9958	0.32032	9.244
2			30	0.5	0.707106781	250	0.0546	0.0066	0.9924	0.660661	9.209
3		1		1	1	250	0.0587	0.0107	0.9883	1.071071	9.167
4		2		2	1.414213562	250	0.0627	0.0147	0.9843	1.471471	9.126
5		4		4	2	250	0.0667	0.0187	0.9803	1.871872	9.085
6		8		8	2.828427125	250	0.0704	0.0224	0.9766	2.242242	9.047
7		15		15	3.872983346	250	0.0745	0.0265	0.9725	2.652653	9.004
8		30		30	5.477225575	250	0.0766	0.0286	0.9704	2.862863	8.983
9	1	1		61	7.810249676	250	0.078	0.03	0.969	3.003003	8.968
10	2	14		134	11.5758369	250	0.0798	0.0318	0.9672	3.183183	8.950
11	3	53	30	233.5	15.28070679	250	0.0815	0.0335	0.9655	3.353353	8.932
12	4	58		298	17.2626765	250	0.0822	0.0342	0.9648	3.423423	8.925
13	21	11		1271	35.65108694	250	0.0858	0.0378	0.9612	3.783784	8.888
14	28	36		1716	41.42463035	250	0.087	0.039	0.96	3.903904	8.876
15	92	58		5578	74.6860094	250	0.0898	0.0418	0.9572	4.184184	8.847
16	116			6960	83.42661446	250	0.0911	0.0431	0.9559	4.314314	8.834
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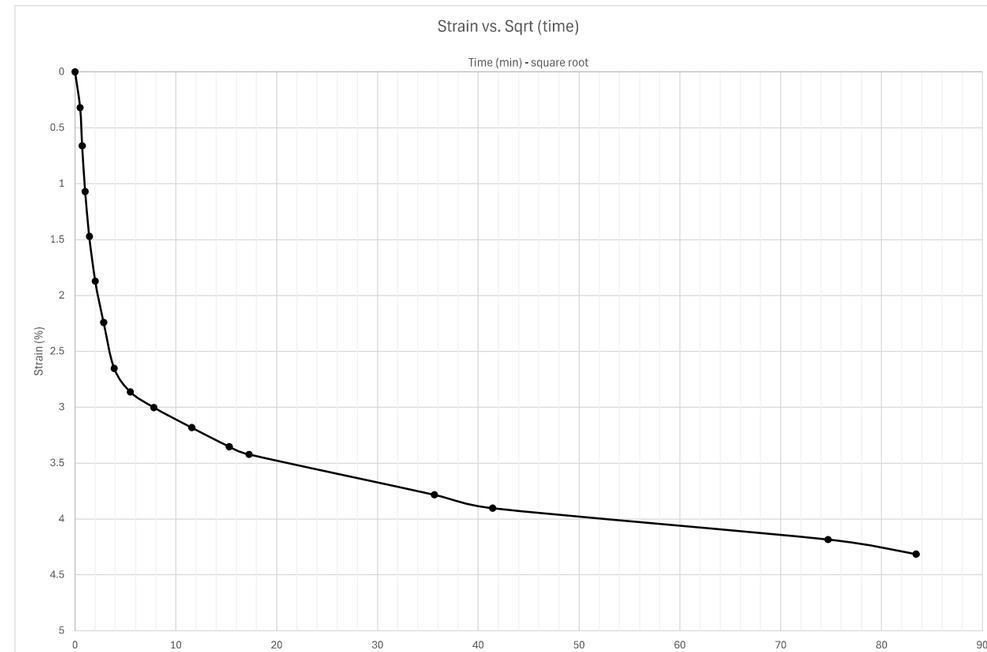
Sequence 1: 250 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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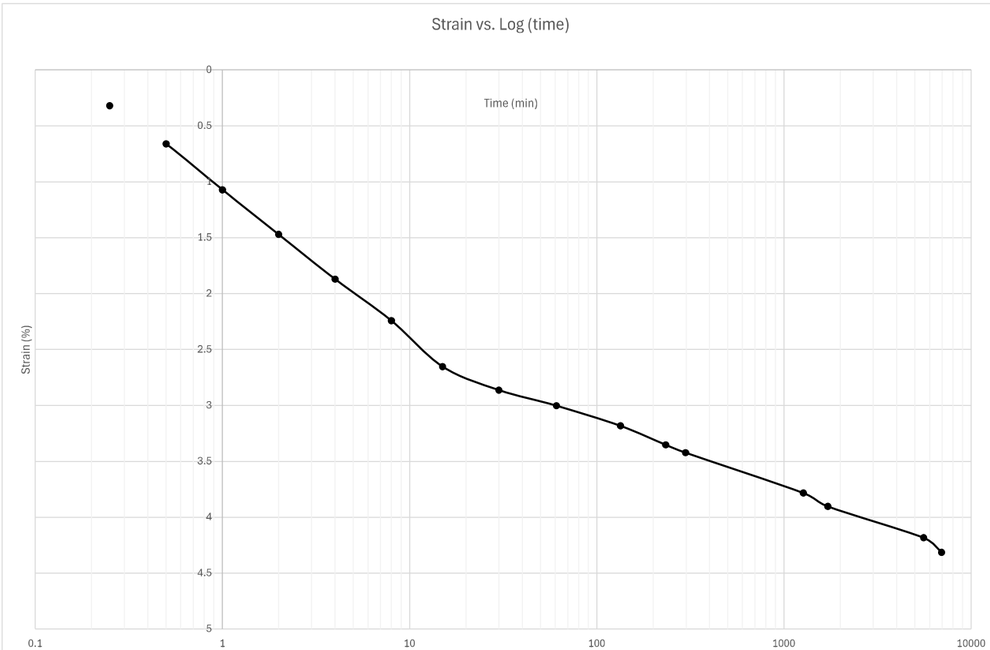
Sequence 1: 250 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0911	-0.0001	0.9560	-0.01001	8.835
1			6	0.1	0.32	500	0.0998	0.0086	0.9473	0.860861	8.745
2			15	0.25	0.50	500	0.1027	0.0115	0.9444	1.151151	8.715
3			30	0.5	0.71	500	0.1054	0.0142	0.9417	1.421421	8.688
4		1		1	1.00	500	0.1103	0.0191	0.9368	1.911912	8.637
5		2		2	1.41	500	0.1190	0.0278	0.9281	2.782783	8.548
6		4		4	2.00	500	0.1352	0.0440	0.9119	4.404404	8.381
7		8		8	2.83	500	0.1529	0.0617	0.8942	6.176176	8.199
8		15		15	3.87	500	0.1680	0.0768	0.8791	7.687688	8.044
9		30		30	5.48	500	0.1821	0.0909	0.8650	9.099099	7.898
10	1			60	7.75	500	0.1935	0.1023	0.8536	10.24024	7.781
11	2			120	10.95	500	0.2037	0.1125	0.8434	11.26126	7.676
12	3	56		236	15.36	500	0.2119	0.1207	0.8352	12.08208	7.592
13	5	5		305	17.46	500	0.2148	0.1236	0.8323	12.37237	7.562
14	20	47		1247	35.31	500	0.2279	0.1367	0.8192	13.68368	7.427
15	23	52		1432	37.84	500	0.2299	0.1387	0.8172	13.88388	7.407
16	29	10		1750	41.83	500	0.2329	0.1417	0.8142	14.18418	7.376
17	45	1		2701	51.97	500	0.2365	0.1453	0.8106	14.54454	7.339
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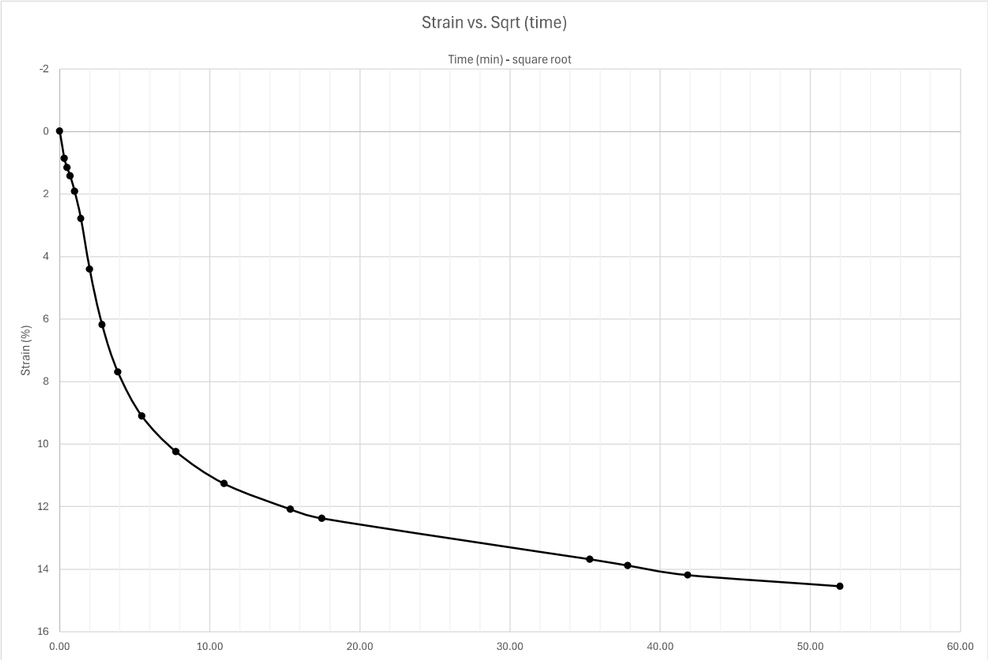
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

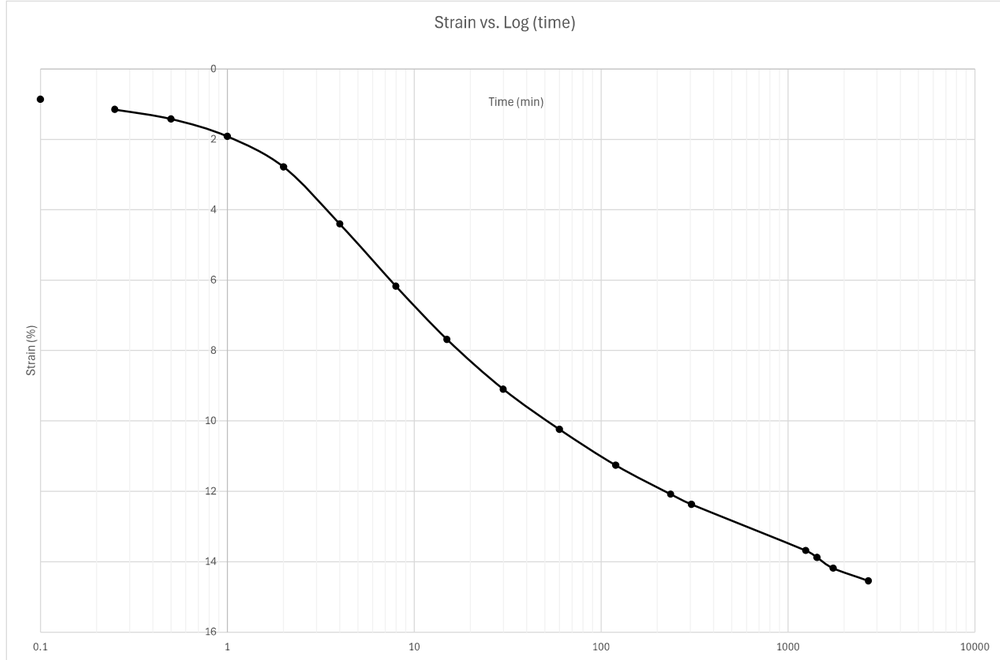
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.2365	-0.0001	0.8107	-0.01001	7.340
1			6	0.10	0.32	1000	0.2446	0.008	0.8026	0.800801	7.257
2			15	0.25	0.50	1000	0.2472	0.0106	0.8	1.061061	7.230
3			30	0.50	0.71	1000	0.2506	0.014	0.7966	1.401401	7.195
4		1		1.00	1.00	1000	0.2554	0.0188	0.7918	1.881882	7.145
5		2		2.00	1.41	1000	0.2623	0.0257	0.7849	2.572573	7.074
6		4		4.00	2.00	1000	0.2721	0.0355	0.7751	3.553554	6.974
7		8		8.00	2.83	1000	0.2845	0.0479	0.7627	4.794795	6.846
8		15	30	15.50	3.94	1000	0.2986	0.062	0.7486	6.206206	6.701
9		27	20	27.33	5.23	1000	0.3111	0.0745	0.7361	7.457457	6.572
10		51	30	51.50	7.18	1000	0.324	0.0874	0.7232	8.748749	6.440
11	1	55		115.00	10.72	1000	0.3379	0.1013	0.7093	10.14014	6.297
12	3	50		230.00	15.17	1000	0.348	0.1114	0.6992	11.15115	6.193
13	6	46		406.00	20.15	1000	0.3554	0.1188	0.6918	11.89189	6.117
14	9	11		551.00	23.47	1000	0.3592	0.1226	0.688	12.27227	6.078
15	23	39		1419.00	37.67	1000	0.3687	0.1321	0.6785	13.22322	5.980
16	26	4		1564.00	39.55	1000	0.37	0.1334	0.6772	13.35335	5.967
17	31	21		1881.00	43.37	1000	0.3723	0.1357	0.6749	13.58358	5.943
18	47	5		2825.00	53.15	1000	0.3763	0.1397	0.6709	13.98398	5.902
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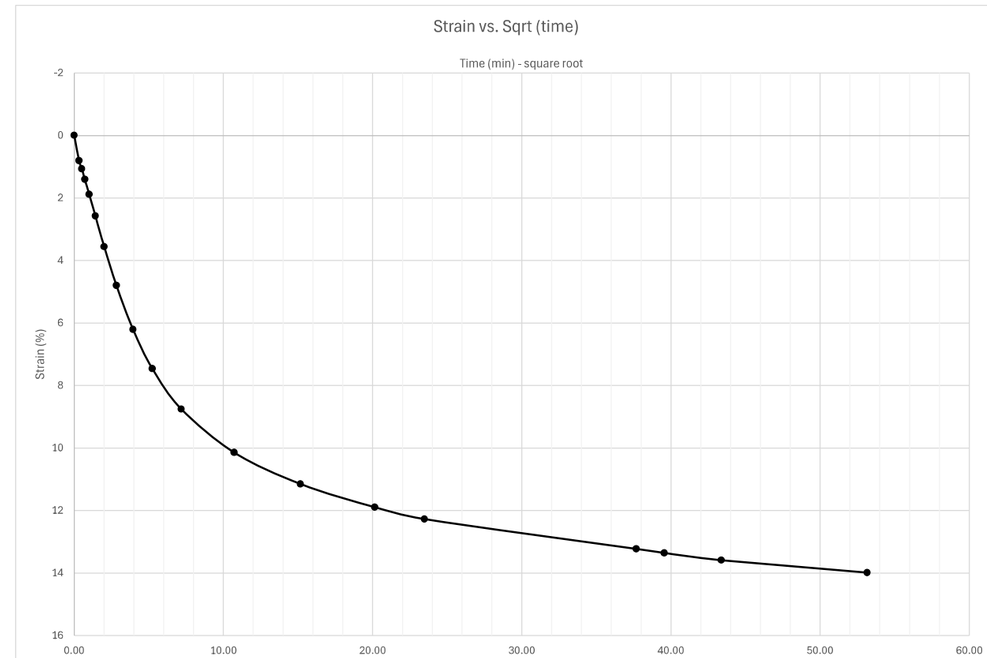
Sequence 3: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

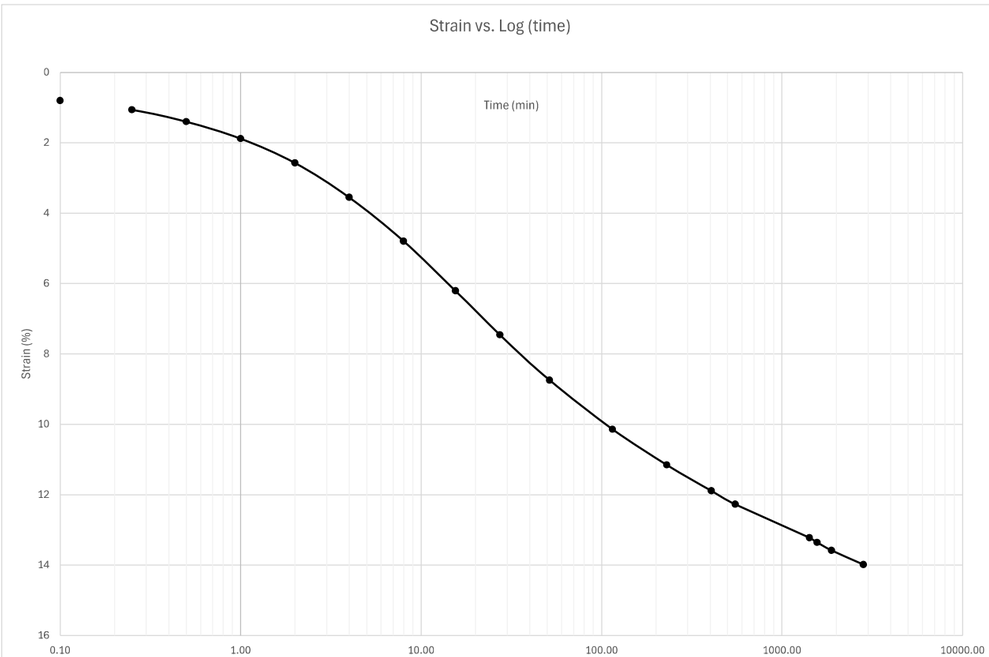


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3763	-0.0002	0.6711	-0.02002	5.904
1			6	0.10	0.32	2000	0.3821	0.0056	0.6653	0.560561	5.844
2			15	0.25	0.50	2000	0.384	0.0075	0.6634	0.750751	5.825
3			30	0.50	0.71	2000	0.3863	0.0098	0.6611	0.980981	5.801
4		1		1.00	1.00	2000	0.3896	0.0131	0.6578	1.311311	5.767
5		2		2.00	1.41	2000	0.3948	0.0183	0.6526	1.831832	5.713
6		4		4.00	2.00	2000	0.4022	0.0257	0.6452	2.572573	5.637
7		8		8.00	2.83	2000	0.4129	0.0364	0.6345	3.643644	5.527
8		15		15.00	3.87	2000	0.4248	0.0483	0.6226	4.834835	5.405
9		30		30.00	5.48	2000	0.4405	0.064	0.6069	6.406406	5.243
10	1	1		61.00	7.81	2000	0.456	0.0795	0.5914	7.957958	5.084
11	2	1		121.00	11.00	2000	0.4683	0.0918	0.5791	9.189189	4.957
12	4	32		272.00	16.49	2000	0.4793	0.1028	0.5681	10.29029	4.844
13	6	45		405.00	20.12	2000	0.4842	0.1077	0.5632	10.78078	4.794
14	26	4		1564.00	39.55	2000	0.4976	0.1211	0.5498	12.12212	4.656
15	71	44		4304.00	65.60	2000	0.508	0.1315	0.5394	13.16316	4.549
16	72	5	30	4325.50	65.77	2000	0.508	0.1315	0.5394	13.16316	4.549
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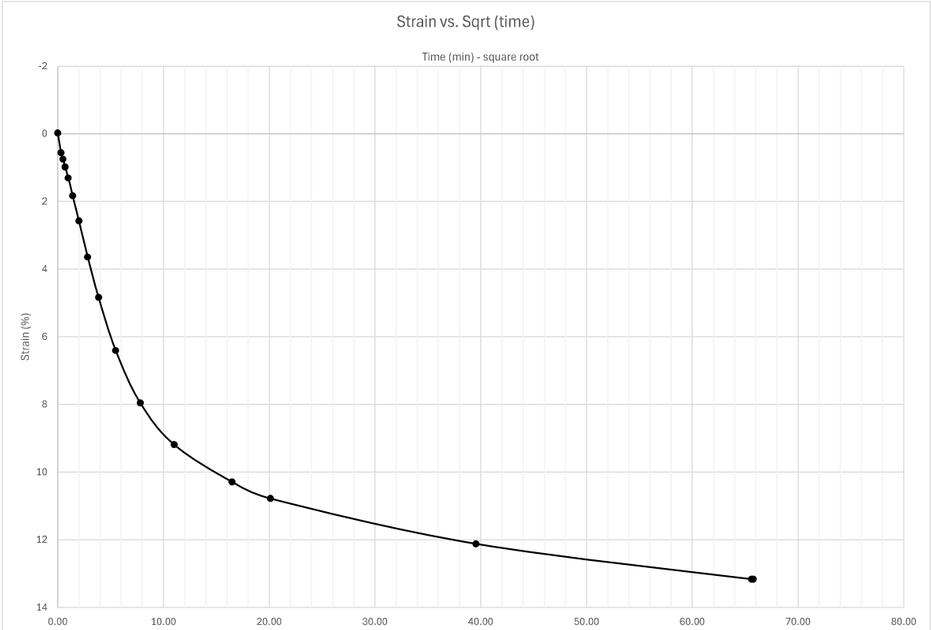
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

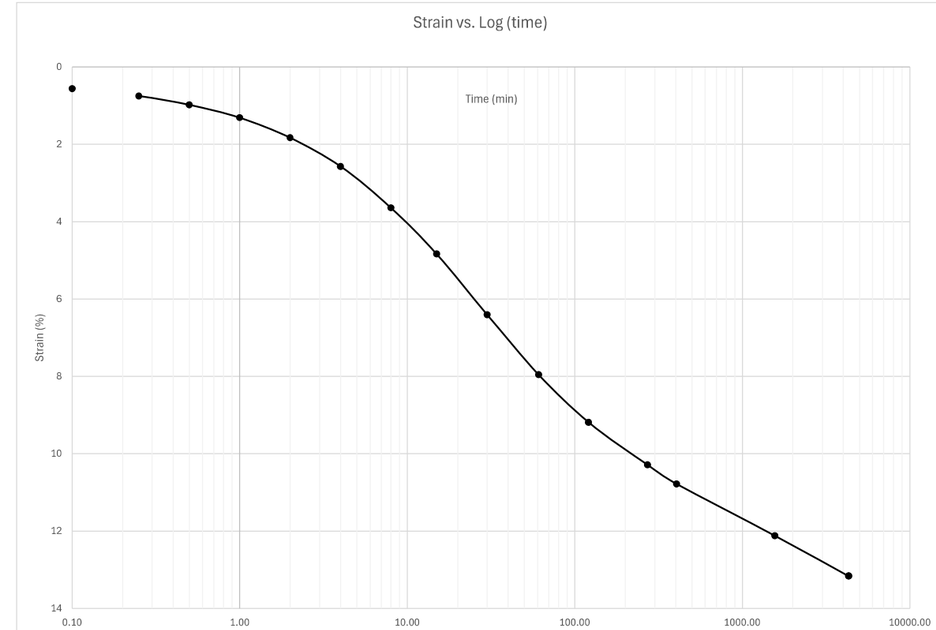
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.508	-0.0002	0.5396	-0.02002	4.551
1			6	0.10	0.32	4000	0.5128	0.0046	0.5348	0.46046	4.502
2			15	0.25	0.50	4000	0.51433	0.00613	0.53327	0.613614	4.486
3			30	0.50	0.71	4000	0.516	0.0078	0.5316	0.780781	4.469
4		1		1.00	1.00	4000	0.5186	0.0104	0.529	1.041041	4.442
5		2		2.00	1.41	4000	0.5225	0.0143	0.5251	1.431431	4.402
6		4		4.00	2.00	4000	0.528	0.0198	0.5196	1.981982	4.345
7		8		8.00	2.83	4000	0.5358	0.0276	0.5118	2.762763	4.265
8		15		15.00	3.87	4000	0.5452	0.037	0.5024	3.703704	4.168
9		30		30.00	5.48	4000	0.5574	0.0492	0.4902	4.924925	4.043
10		51		51.00	7.14	4000	0.5673	0.0591	0.4803	5.915916	3.941
11	1	54		114.00	10.68	4000	0.5801	0.0719	0.4675	7.197197	3.809
12	3	49		229.00	15.13	4000	0.589	0.0808	0.4586	8.088088	3.718
13	5	52		352.00	18.76	4000	0.5937	0.0855	0.4539	8.558559	3.669
14	21	8		1268.00	35.61	4000	0.6046	0.0964	0.443	9.64965	3.557
15	24			1440.00	37.95	4000	0.6056	0.0974	0.442	9.74975	3.547
16	31	52		1912.00	43.73	4000	0.6081	0.0999	0.4395	10	3.521
17	45	54		2754.00	52.48	4000	0.6109	0.1027	0.4367	10.28028	3.492
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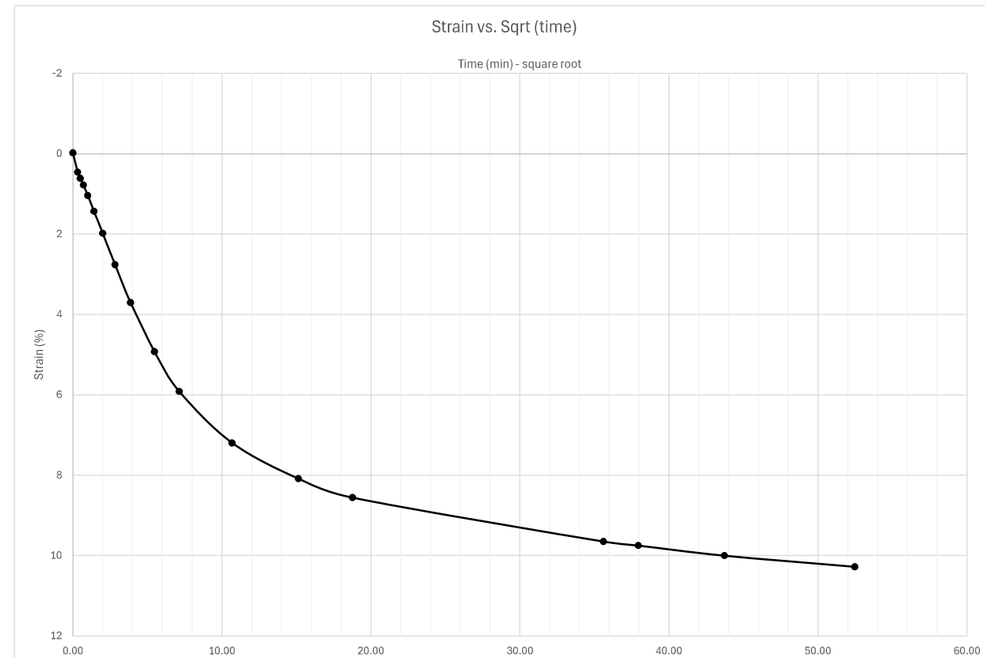
Sequence 5: 4000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

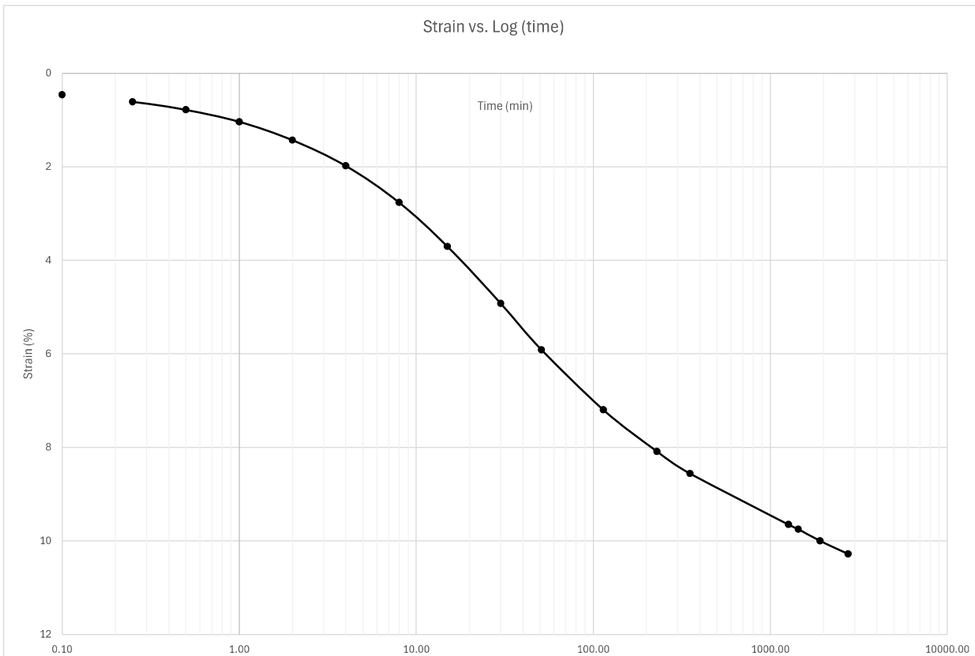


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.6109	0.0002	0.4365	0.02002	3.490
1			6	0.10	0.32	2000	0.6095	-0.0012	0.4379	-0.12012	3.505
2			15	0.25	0.50	2000	0.6092	-0.0015	0.4382	-0.15015	3.508
3			30	0.50	0.71	2000	0.6089	-0.0018	0.4385	-0.18018	3.511
4		1		1.00	1.00	2000	0.6085	-0.0022	0.4389	-0.22022	3.515
5		2		2.00	1.41	2000	0.6079	-0.0028	0.4395	-0.28028	3.521
6		4		4.00	2.00	2000	0.6072	-0.0035	0.4402	-0.35035	3.528
7		8		8.00	2.83	2000	0.6065	-0.0042	0.4409	-0.42042	3.536
8		15		15.00	3.87	2000	0.606	-0.0047	0.4414	-0.47047	3.541
9		32		32.00	5.66	2000	0.6055	-0.0052	0.4419	-0.520521	3.546
10	1	1		61.00	7.81	2000	0.605	-0.0057	0.4424	-0.570571	3.551
11	2			120.00	10.95	2000	0.6046	-0.0061	0.4428	-0.610611	3.555
12	4	5		245.00	15.65	2000	0.6042	-0.0065	0.4432	-0.650651	3.559
13	8	18		498.00	22.32	2000	0.6039	-0.0068	0.4435	-0.680681	3.562
14	23	24		1404.00	37.47	2000	0.6035	-0.0072	0.4439	-0.720721	3.567
15	28	37		1717.00	41.44	2000	0.6033	-0.0074	0.4441	-0.740741	3.569
16	118	37		7117.00	84.36	2000	0.6033	-0.0074	0.4441	-0.740741	3.569
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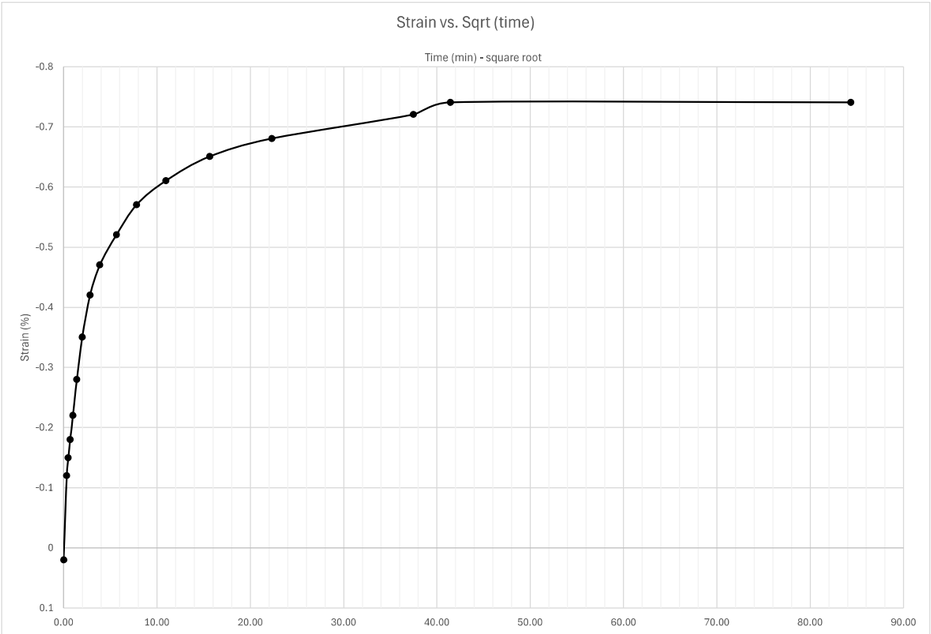
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

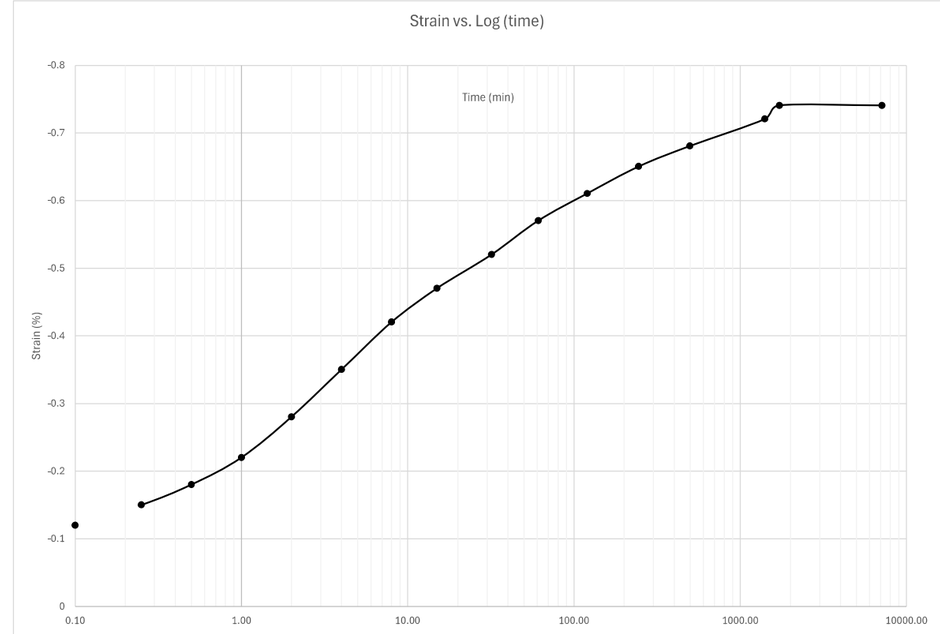
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6033	0.0002	0.4439	0.02002	3.567
1			6	0.10	0.32	1000	0.6026	-0.0005	0.4446	-0.05005	3.574
2			15	0.25	0.50	1000	0.6023	-0.0008	0.4449	-0.08008	3.577
3			30	0.50	0.71	1000	0.6021	-0.001	0.4451	-0.1001	3.579
4		1		1.00	1.00	1000	0.6018	-0.0013	0.4454	-0.13013	3.582
5		2		2.00	1.41	1000	0.6014	-0.0017	0.4458	-0.17017	3.586
6		4		4.00	2.00	1000	0.6009	-0.0022	0.4463	-0.22022	3.591
7		8		8.00	2.83	1000	0.6004	-0.0027	0.4468	-0.27027	3.596
8		15		15.00	3.87	1000	0.6	-0.0031	0.4472	-0.31031	3.600
9		32		32.00	5.66	1000	0.5996	-0.0035	0.4476	-0.35035	3.605
10	1			60.00	7.75	1000	0.5992	-0.0039	0.448	-0.39039	3.609
11	2			120.00	10.95	1000	0.5988	-0.0043	0.4484	-0.43043	3.613
12	3	58		238.00	15.43	1000	0.5983	-0.0048	0.4489	-0.48048	3.618
13	6	19		379.00	19.47	1000	0.5978	-0.0053	0.4494	-0.530531	3.623
14	8	19		499.00	22.34	1000	0.5974	-0.0057	0.4498	-0.570571	3.627
15	23	42		1422.00	37.71	1000	0.5964	-0.0067	0.4508	-0.670671	3.638
16	28	48		1728.00	41.57	1000	0.5963	-0.0068	0.4509	-0.680681	3.639
17	48	7		2887.00	53.73	1000	0.5957	-0.0074	0.4515	-0.740741	3.645
18	54	19		3259.00	57.09	1000	0.5956	-0.0075	0.4516	-0.750751	3.646
19	71	28		4288.00	65.48	1000	0.5954	-0.0077	0.4518	-0.770771	3.648
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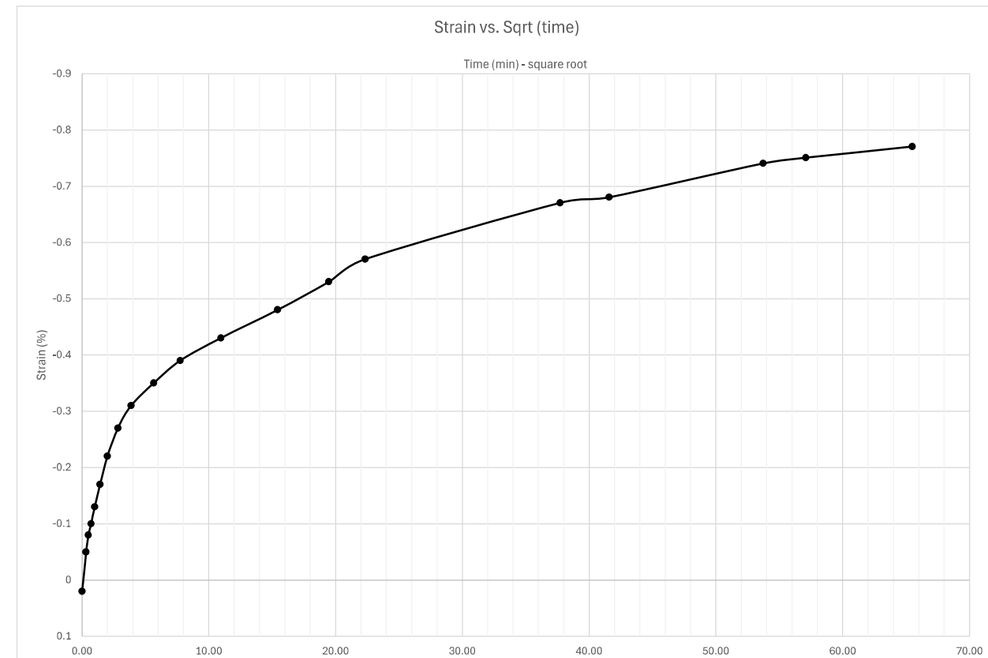
Sequence 7: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

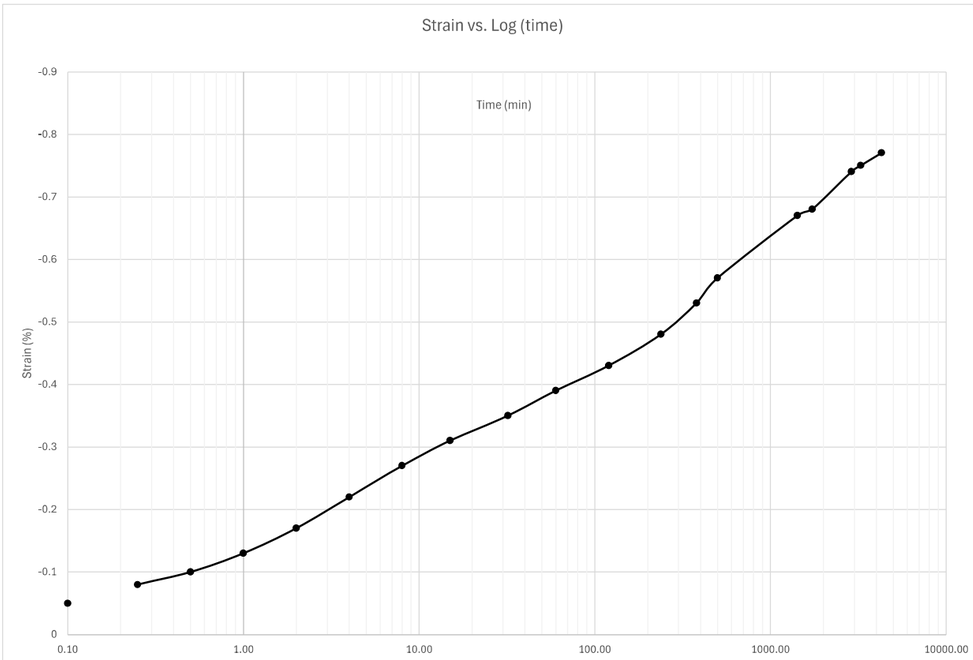


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.5954	0.0001	0.4517	0.01001	3.647
1			6	0.10	0.32	500	0.5947	-0.0006	0.4524	-0.06006	3.654
2			15	0.25	0.50	500	0.5945	-0.0008	0.4526	-0.08008	3.656
3			30	0.50	0.71	500	0.5943	-0.001	0.4528	-0.1001	3.658
4		1		1.00	1.00	500	0.5941	-0.0012	0.453	-0.12012	3.660
5		2		2.00	1.41	500	0.5938	-0.0015	0.4533	-0.15015	3.663
6		4		4.00	2.00	500	0.5932	-0.0021	0.4539	-0.21021	3.669
7		8		8.00	2.83	500	0.5926	-0.0027	0.4545	-0.27027	3.676
8		15		15.00	3.87	500	0.592	-0.0033	0.4551	-0.33033	3.682
9		30	0	30.00	5.48	500	0.5913	-0.004	0.4558	-0.4004	3.689
10		56	30	56.50	7.52	500	0.5907	-0.0046	0.4564	-0.46046	3.695
11	1	55		115.00	10.72	500	0.5899	-0.0054	0.4572	-0.540541	3.703
12	3	58		238.00	15.43	500	0.589	-0.0063	0.4581	-0.630631	3.713
13	7	1		421.00	20.52	500	0.5881	-0.0072	0.459	-0.720721	3.722
14	23	44		1424.00	37.74	500	0.5857	-0.0096	0.4614	-0.960961	3.747
15	31	17		1877.00	43.32	500	0.5852	-0.0101	0.4619	-1.011011	3.752
16	50	43		3043.00	55.16	500	0.5843	-0.011	0.4628	-1.101101	3.761
17	95	20		5720.00	75.63	500	0.5832	-0.0121	0.4639	-1.211211	3.772
18	119	12		7152.00	84.57	500	0.5831	-0.0122	0.464	-1.221221	3.773
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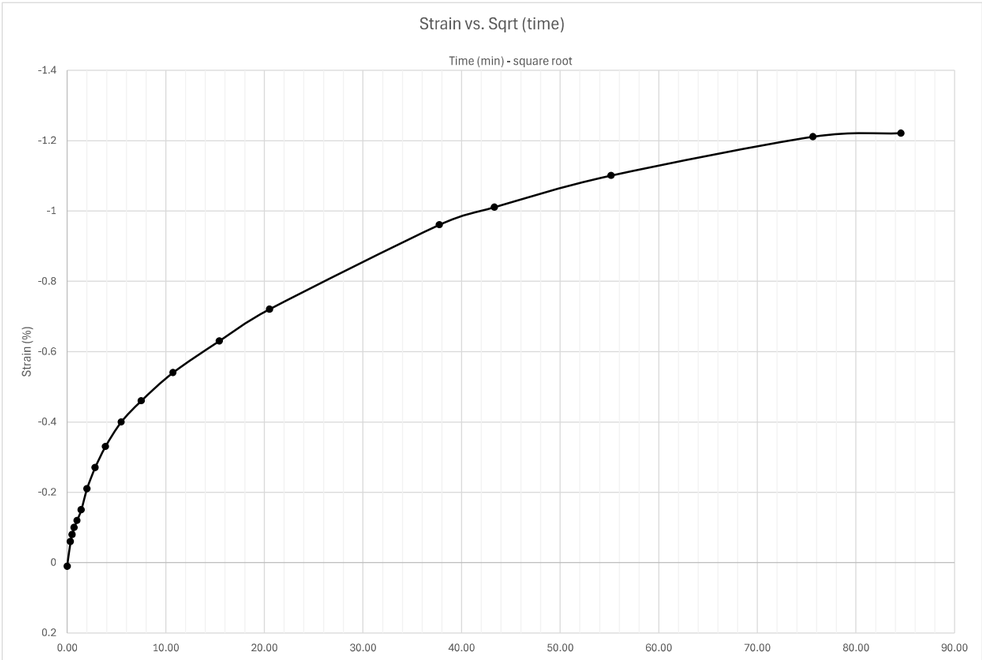
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

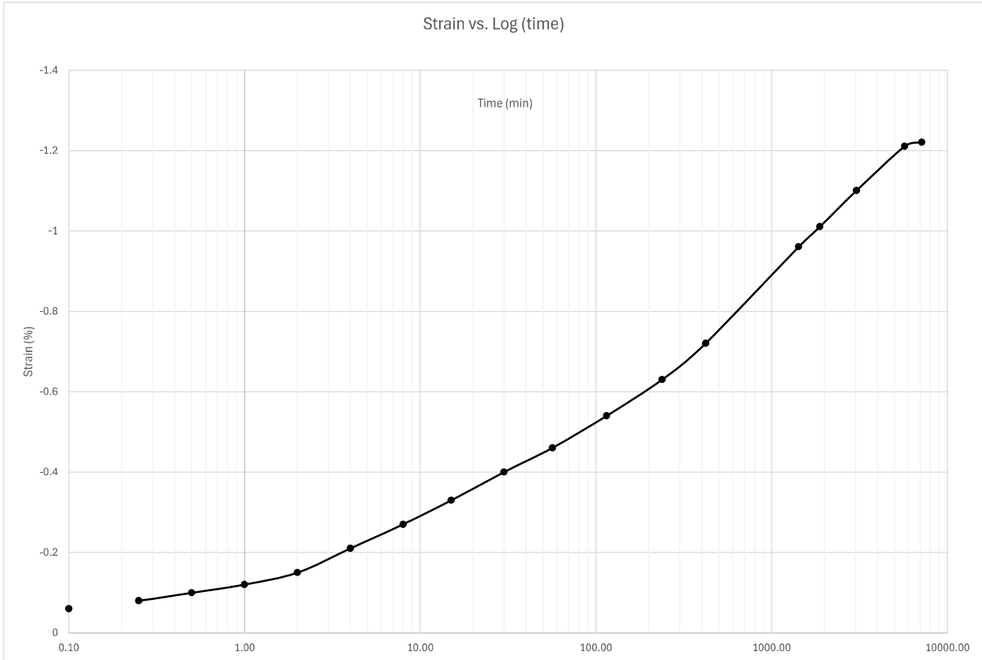
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5831	-0.0001	0.4641	-0.01001	3.774
1			6	0.10	0.32	1000	0.5836	0.0004	0.4636	0.04004	3.769
2			15	0.25	0.50	1000	0.5838	0.0006	0.4634	0.06006	3.767
3			30	0.50	0.71	1000	0.584	0.0008	0.4632	0.08008	3.765
4		1		1.00	1.00	1000	0.5842	0.001	0.463	0.1001	3.763
5		2		2.00	1.41	1000	0.5846	0.0014	0.4626	0.14014	3.759
6		4		4.00	2.00	1000	0.585	0.0018	0.4622	0.18018	3.755
7		8		8.00	2.83	1000	0.5854	0.0022	0.4618	0.22022	3.751
8		15		15.00	3.87	1000	0.5857	0.0025	0.4615	0.25025	3.748
9		30		30.00	5.48	1000	0.586	0.0028	0.4612	0.28028	3.744
10		55		55.00	7.42	1000	0.5862	0.003	0.461	0.3003	3.742
11	1	53		113.00	10.63	1000	0.5864	0.0032	0.4608	0.32032	3.740
12	3	53		233.00	15.26	1000	0.5867	0.0035	0.4605	0.35035	3.737
13	6	13		373.00	19.31	1000	0.5869	0.0037	0.4603	0.37037	3.735
14	22	43		1363.00	36.92	1000	0.5874	0.0042	0.4598	0.42042	3.730
15	24	37		1477.00	38.43	1000	0.5875	0.0043	0.4597	0.43043	3.729
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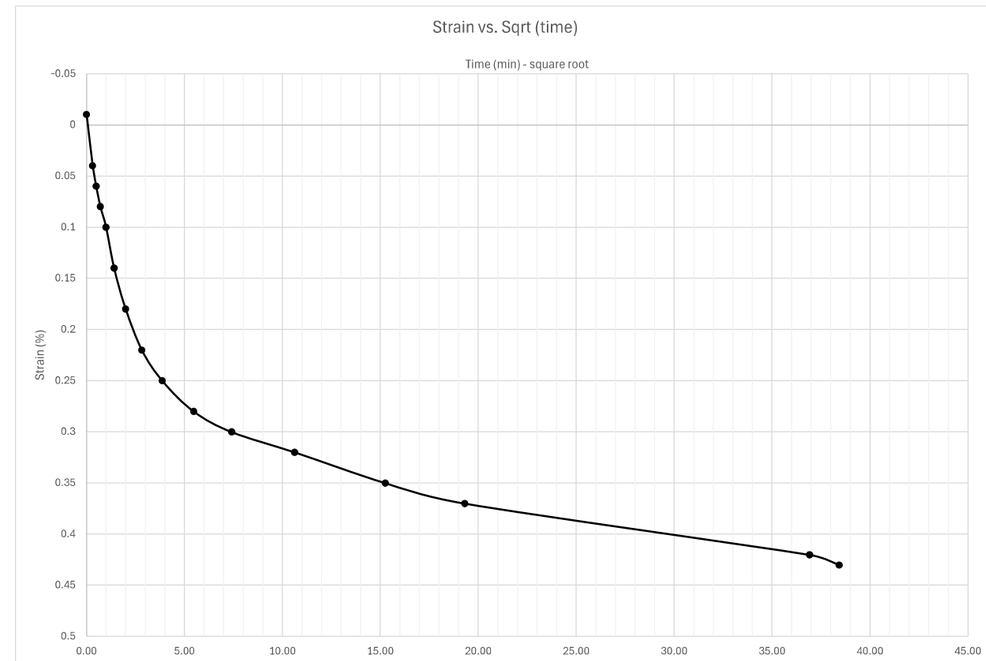
Sequence 9: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.5875	-0.0002	0.4599	-0.02002	3.731
1			6	0.10	0.32	2000	0.589	0.0013	0.4584	0.13013	3.716
2			15	0.25	0.50	2000	0.5894	0.0017	0.458	0.17017	3.712
3			30	0.50	0.71	2000	0.5898	0.0021	0.4576	0.21021	3.707
4		1		1.00	1.00	2000	0.5904	0.0027	0.457	0.27027	3.701
5		2		2.00	1.41	2000	0.5912	0.0035	0.4562	0.35035	3.693
6		4		4.00	2.00	2000	0.5923	0.0046	0.4551	0.46046	3.682
7		8		8.00	2.83	2000	0.5936	0.0059	0.4538	0.590591	3.668
8		15		15.00	3.87	2000	0.5945	0.0068	0.4529	0.680681	3.659
9		29		29.00	5.39	2000	0.5953	0.0076	0.4521	0.760761	3.651
10		58		58.00	7.62	2000	0.5959	0.0082	0.4515	0.820821	3.645
11	1	51		111.00	10.54	2000	0.5965	0.0088	0.4509	0.880881	3.639
12	3	54		234.00	15.30	2000	0.5971	0.0094	0.4503	0.940941	3.632
13	5	25		325.00	18.03	2000	0.5975	0.0098	0.4499	0.980981	3.628
14	9	26		566.00	23.79	2000	0.5981	0.0104	0.4493	1.041041	3.622
15	22	10		1330.00	36.47	2000	0.599	0.0113	0.4484	1.131131	3.613
16	24	50		1490.00	38.60	2000	0.5992	0.0115	0.4482	1.151151	3.611
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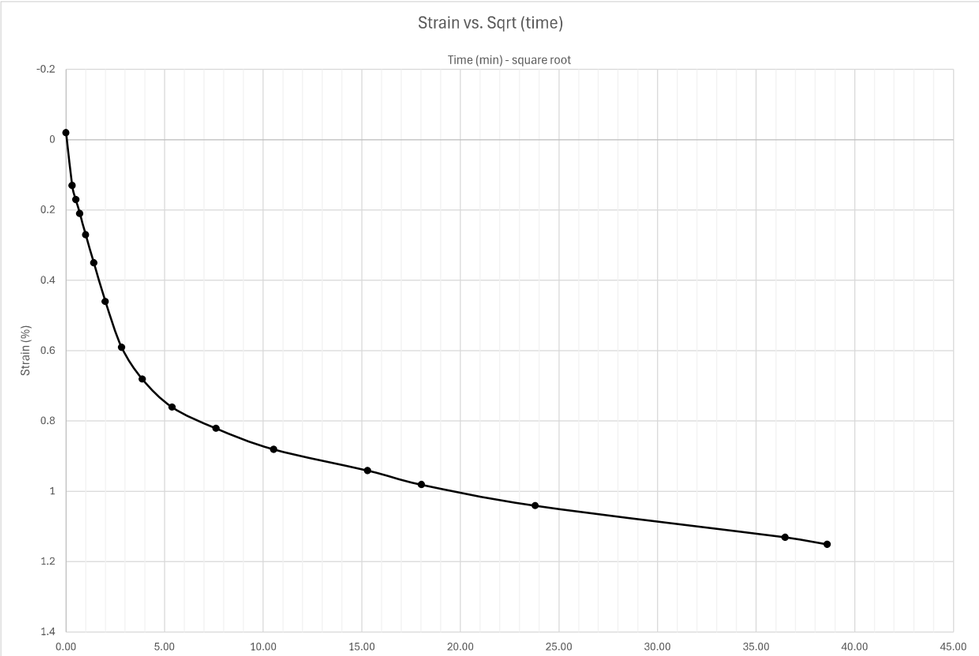
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

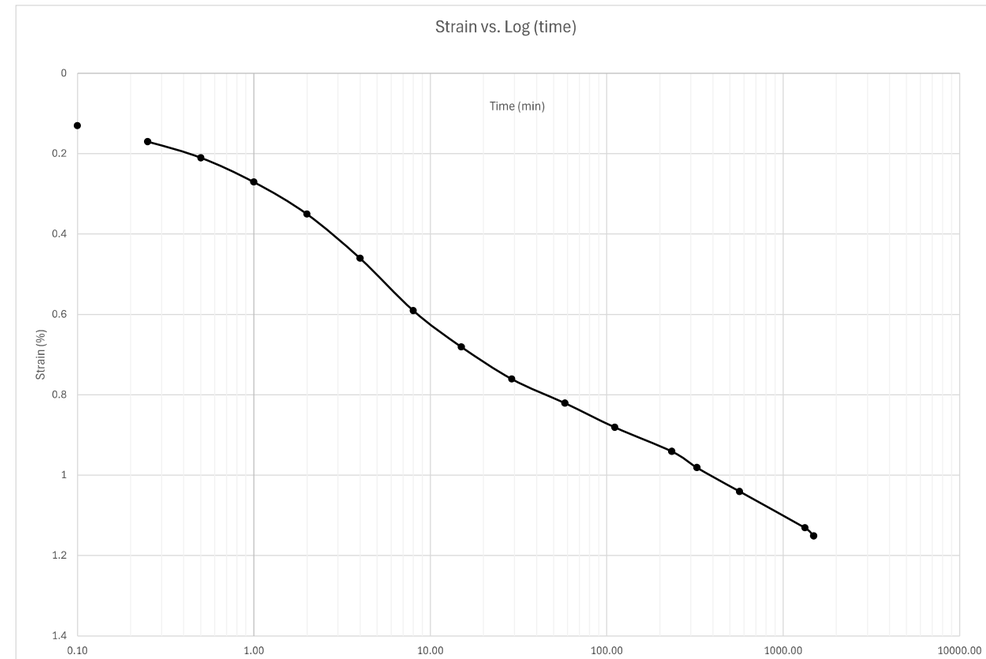
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.5992	-0.0002	0.4484	-0.02002	3.613
1			6	0.10	0.32	4000	0.6017	0.0023	0.4459	0.23023	3.587
2			15	0.25	0.50	4000	0.6023	0.0029	0.4453	0.29029	3.581
3			30	0.50	0.71	4000	0.603	0.0036	0.4446	0.36036	3.574
4		1		1.00	1.00	4000	0.6042	0.0048	0.4434	0.48048	3.561
5		2		2.00	1.41	4000	0.6057	0.0063	0.4419	0.630631	3.546
6		4		4.00	2.00	4000	0.6075	0.0081	0.4401	0.810811	3.527
7		8		8.00	2.83	4000	0.6095	0.0101	0.4381	1.011011	3.507
8		15		15.00	3.87	4000	0.6112	0.0118	0.4364	1.181181	3.489
9		28		28.00	5.29	4000	0.6128	0.0134	0.4348	1.341341	3.473
10		59		59.00	7.68	4000	0.6145	0.0151	0.4331	1.511512	3.455
11	1	55		115.00	10.72	4000	0.6165	0.0171	0.4311	1.711712	3.435
12	3	46		226.00	15.03	4000	0.6177	0.0183	0.4299	1.831832	3.422
13	7	14		434.00	20.83	4000	0.6192	0.0198	0.4284	1.981982	3.407
14	20	54		1254.00	35.41	4000	0.6231	0.0237	0.4245	2.372372	3.367
15	24	31		1471.00	38.35	4000	0.6236	0.0242	0.424	2.422422	3.362
16	92	53		5573.00	74.65	4000	0.6295	0.0301	0.4181	3.013013	3.301
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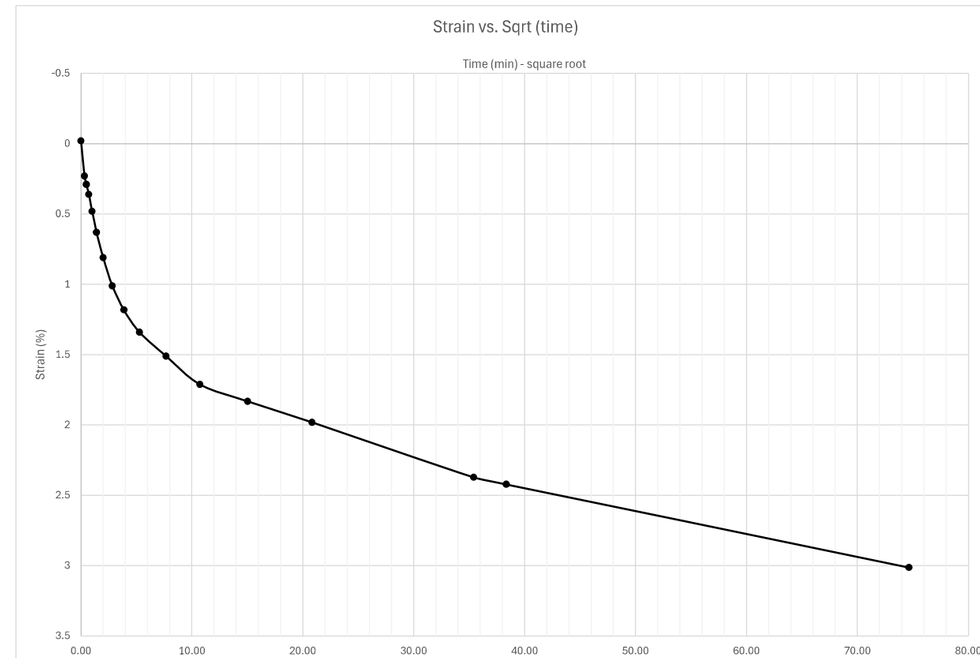
Sequence 11: 4000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

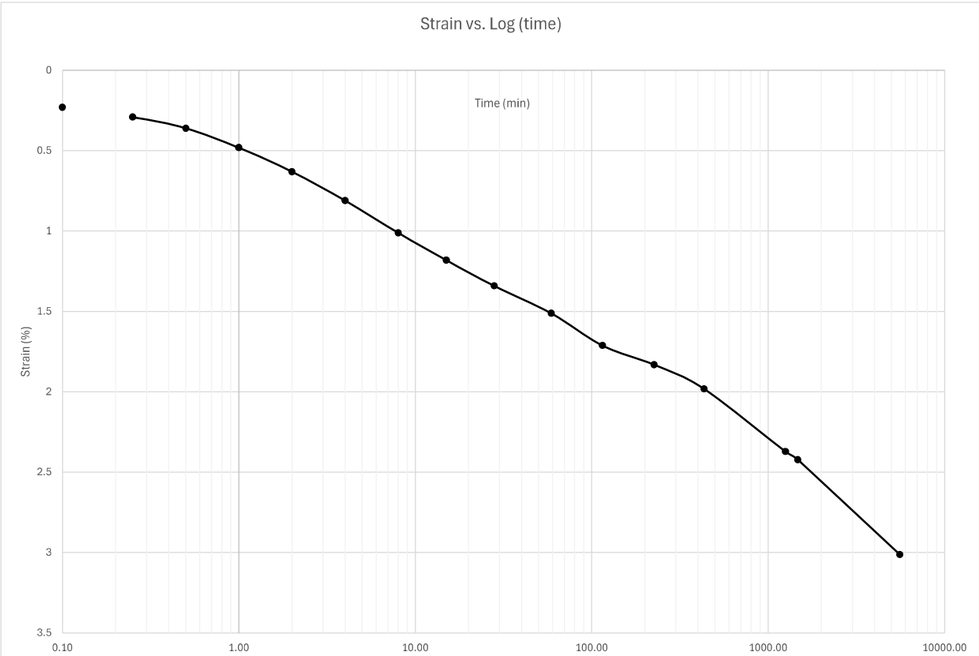


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6295	-0.0007	0.4188	-0.07007	3.308
1			6	0.10	0.32	8000	0.6326	0.0024	0.4157	0.24024	3.276
2			15	0.25	0.50	8000	0.6336	0.0034	0.4147	0.34034	3.266
3			30	0.50	0.71	8000	0.6346	0.0044	0.4137	0.44044	3.256
4		1		1.00	1.00	8000	0.6362	0.006	0.4121	0.600601	3.239
5		2		2.00	1.41	8000	0.6385	0.0083	0.4098	0.830831	3.216
6		4		4.00	2.00	8000	0.6418	0.0116	0.4065	1.161161	3.182
7		8		8.00	2.83	8000	0.6466	0.0164	0.4017	1.641642	3.132
8		15		15.00	3.87	8000	0.6519	0.0217	0.3964	2.172172	3.078
9		30		30.00	5.48	8000	0.6592	0.029	0.3891	2.902903	3.003
10	1			60.00	7.75	8000	0.6669	0.0367	0.3814	3.673674	2.924
11	2			120.00	10.95	8000	0.6741	0.0439	0.3742	4.394394	2.849
12	4	20		260.00	16.12	8000	0.6814	0.0512	0.3669	5.125125	2.774
13	7	28		448.00	21.17	8000	0.6863	0.0561	0.362	5.615616	2.724
14	23	22		1402.00	37.44	8000	0.6948	0.0646	0.3535	6.466466	2.637
15	24	7		1447.00	38.04	8000	0.695	0.0648	0.3533	6.486486	2.634
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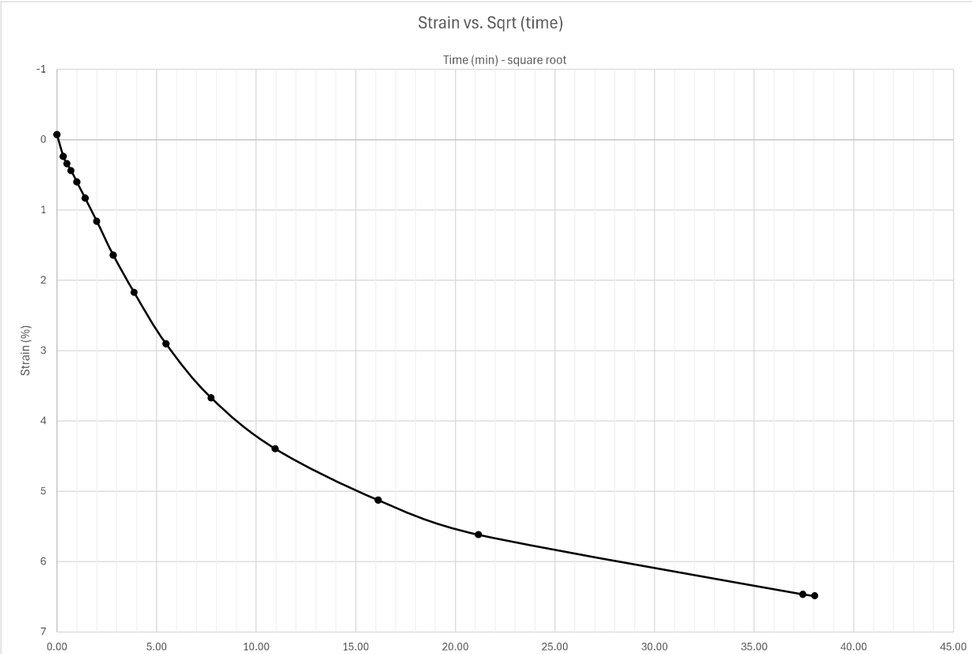
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

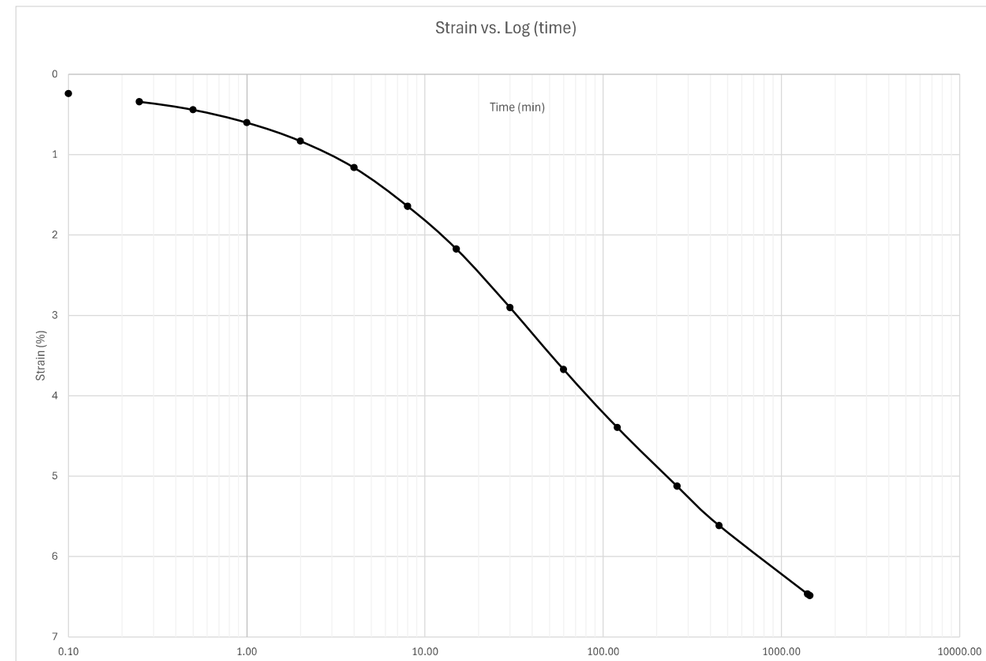
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.695	-0.0008	0.3541	-0.08008	2.643
1			6	0.10	0.32	16000	0.698	0.0022	0.3511	0.22022	2.612
2			15	0.25	0.50	16000	0.6989	0.0031	0.3502	0.31031	2.603
3			30	0.50	0.71	16000	0.7	0.0042	0.3491	0.42042	2.591
4		1		1.00	1.00	16000	0.7018	0.006	0.3473	0.600601	2.573
5		2		2.00	1.41	16000	0.7043	0.0085	0.3448	0.850851	2.547
6		4		4.00	2.00	16000	0.708	0.0122	0.3411	1.221221	2.509
7		8		8.00	2.83	16000	0.7132	0.0174	0.3359	1.741742	2.455
8		15		15.00	3.87	16000	0.7192	0.0234	0.3299	2.342342	2.394
9		29		29.00	5.39	16000	0.7278	0.032	0.3213	3.203203	2.305
10	1	3		63.00	7.94	16000	0.738	0.0422	0.3111	4.224224	2.200
11	1	55		115.00	10.72	16000	0.7444	0.0486	0.3047	4.864865	2.135
12	4	15		255.00	15.97	16000	0.7509	0.0551	0.2982	5.515516	2.068
13	6	18		378.00	19.44	16000	0.7538	0.058	0.2953	5.805806	2.038
14	24	7		1447.00	38.04	16000	0.761	0.0652	0.2881	6.526527	1.964
15	24	41		1481.00	38.48	16000	0.7611	0.0653	0.288	6.536537	1.963
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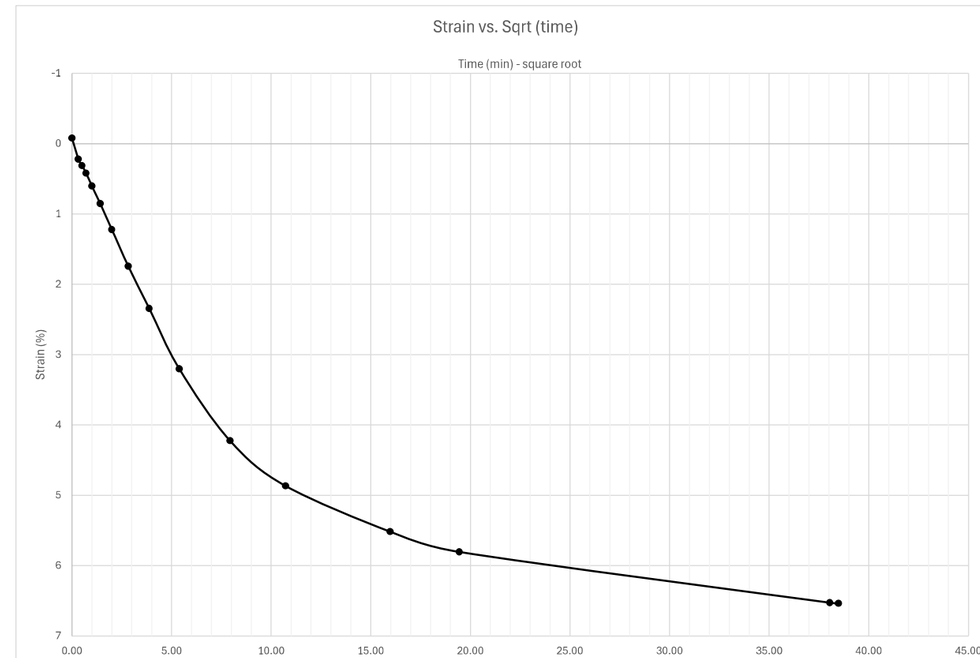
Sequence 13: 16000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

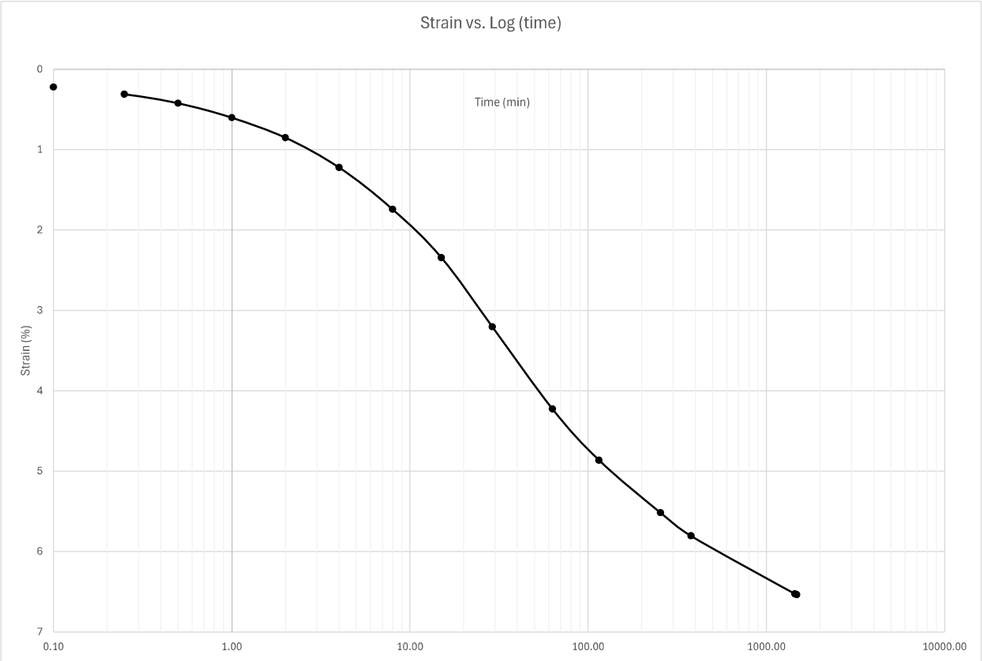


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.7611	-0.0012	0.2892	-0.12012	1.975
1			6	0.10	0.32	32000	0.7639	0.0016	0.2864	0.16016	1.946
2			15	0.25	0.50	32000	0.7646	0.0023	0.2857	0.23023	1.939
3			30	0.50	0.71	32000	0.7654	0.0031	0.2849	0.31031	1.931
4		1		1.00	1.00	32000	0.7666	0.0043	0.2837	0.43043	1.918
5		2		2.00	1.41	32000	0.7685	0.0062	0.2818	0.620621	1.899
6		4		4.00	2.00	32000	0.7712	0.0089	0.2791	0.890891	1.871
7		8		8.00	2.83	32000	0.775	0.0127	0.2753	1.271271	1.832
8		15		15.00	3.87	32000	0.7791	0.0168	0.2712	1.681682	1.790
9		29		29.00	5.39	32000	0.7842	0.0219	0.2661	2.192192	1.737
10		58		58.00	7.62	32000	0.7909	0.0286	0.2594	2.862863	1.669
11	1	59		119.00	10.91	32000	0.7968	0.0345	0.2535	3.453453	1.608
12	4	13		253.00	15.91	32000	0.8016	0.0393	0.2487	3.933934	1.558
13	6	10		370.00	19.24	32000	0.8037	0.0414	0.2466	4.144144	1.537
14	22	30		1350.00	36.74	32000	0.809	0.0467	0.2413	4.674675	1.482
15	23	7		1387.00	37.24	32000	0.8092	0.0469	0.2411	4.694695	1.480
16	30	30		1830.00	42.78	32000	0.8102	0.0479	0.2401	4.794795	1.470
17	46	21		2781.00	52.74	32000	0.8116	0.0493	0.2387	4.934935	1.456
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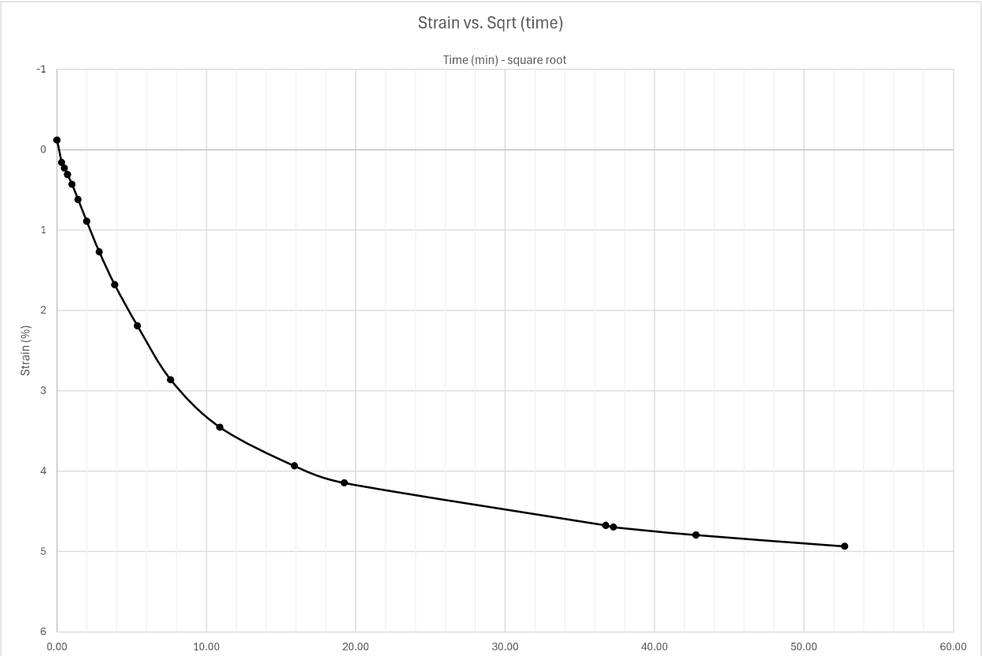
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_2200, ST-48, 6.0-8.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black/Dark Gray Muck		
Project Number	25-051.05	Depth (ft)	3-5
Sample Number	ST-22	Boring Number	Y1RPC_3000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0125	0.0756	0.9865	0.013	2.208	2.56	-	0.08059	-
2	500	0.1059	0.0757	0.8931	0.106	1.904	441	108	0.00038	0.000364
3	1000	0.1833	0.076	0.8157	0.183	1.653	272.25	91	0.00052	0.00036
4	2000	0.2619	0.0763	0.7371	0.262	1.397	272.25	71	0.00042	0.000377
5	4000	0.3461	0.0768	0.6529	0.346	1.123	196	-	0.00046	-
6	8000	0.4123	0.0775	0.5867	0.413	0.908	171.61	42	0.00043	0.00040
7	16000	0.4775	0.0782	0.5215	0.478	0.696	141.61	33	0.00041	0.00041
8	8000	0.4712	0.0776	0.5278	0.472	0.716	-	-	-	-
9	6000	0.4688	0.0775	0.5302	0.469	0.724	-	-	-	-
10	2000	0.4499	0.0768	0.5491	0.450	0.786	-	-	-	-
11	4000	0.4543	0.0771	0.5447	0.455	0.771	29.16	10	0.00216	0.00146
12	8000	0.4652	0.0776	0.5338	0.466	0.736	42.25	10.5	0.00143	0.00134
13	16000	0.4846	0.0784	0.5144	0.485	0.673	42.25	10.2	0.00133	0.00128
14	32000	0.5345	0.0796	0.4645	0.535	0.511	98.01	26.5	0.00047	0.00040
15										
16										
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 2/25/2026
Machine Apparatus: 5
Technician: KSB

Sampling Date: 12/16/2025
Sample Number: ST-23
Depth (ft): 3-5
Boring Number: Y1RPC_3000
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.579
Sampling Method: Shelby Tube
Specimen Description: Black/Dark Gray Muck
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.78

Parameters	Initial	Final
Height (in)	0.999	0.4645
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	2.293
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	124.55	*
Moisture Content (%)	184.24	*
Moist Weight + Ring Weight (g)	214.42	171.29
Dry Mass (g)	39.28	*
Water Content (calc from spec)	184.24	*
Dry Density (pcf)	30.34	*
Wet Density (pcf)	86.25	113.83
Volume of Solids (in^3)	1.52	*
Height of Solids (in)	0.31	*
Void Ratio	2.249	0.511

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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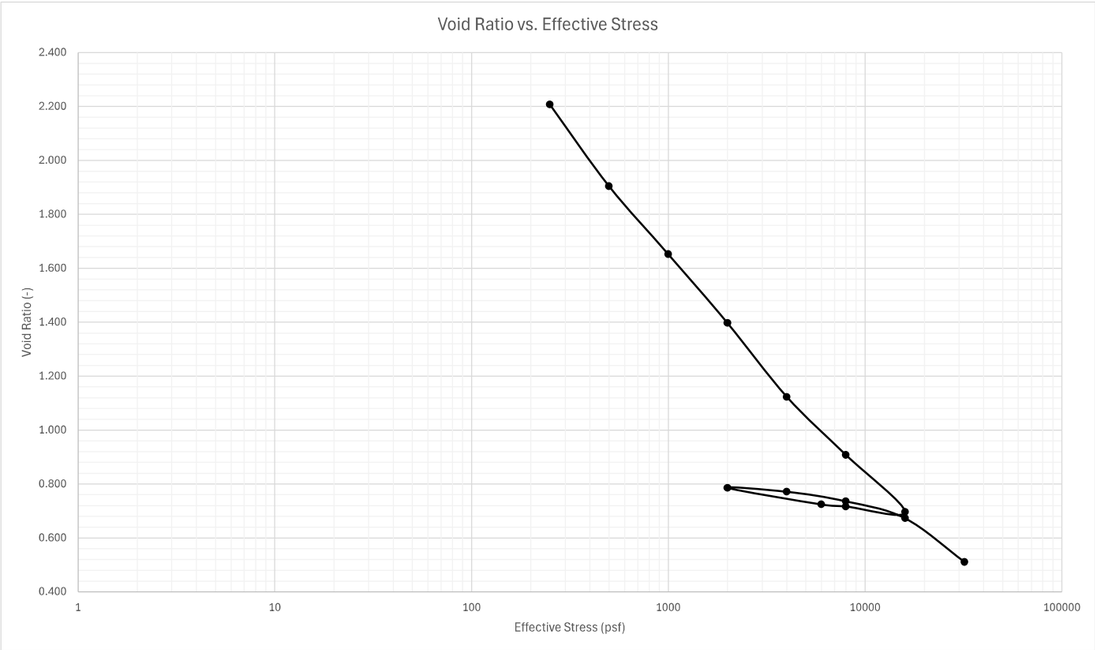
Void Ratio vs. Effective Stress

Y1RPC_3000, ST-22, 3-5 ft

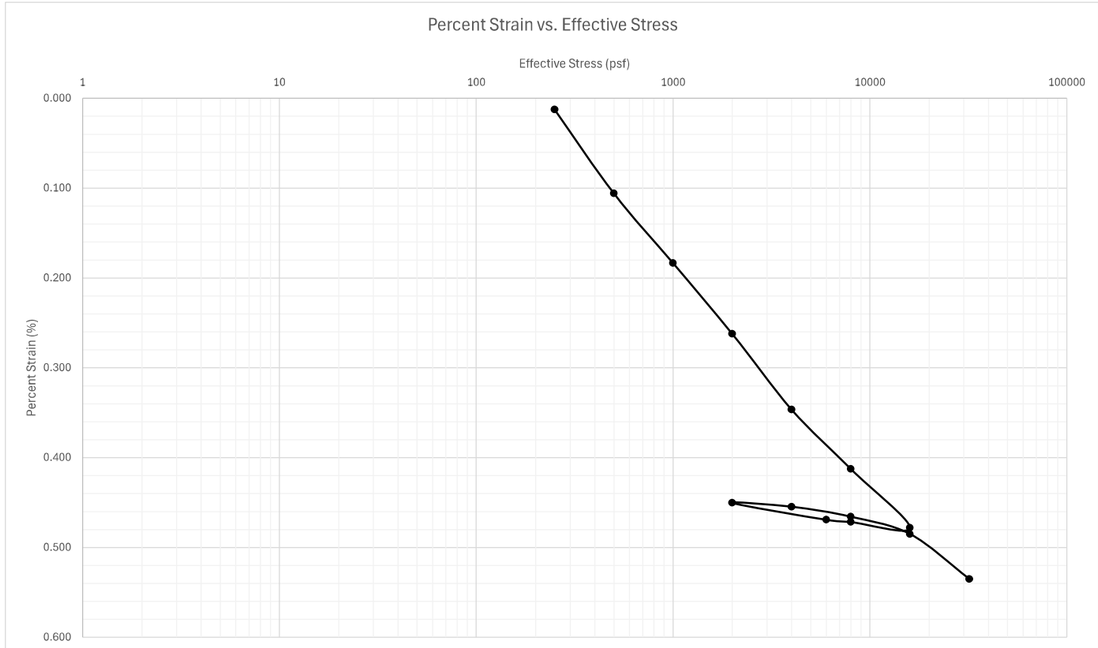
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0	0	250	0.075	0	0.999	0	2.249
1			6	0.1	0.316227766	250	0.0757	0.0007	0.9983	0.07007	2.246
2			15	0.25	0.5	250	0.077	0.002	0.997	0.2002	2.242
3			30	0.5	0.707106781	250	0.0781	0.0031	0.9959	0.31031	2.239
4		1		1	1	250	0.0792	0.0042	0.9948	0.42042	2.235
5		2		2	1.414213562	250	0.0803	0.0053	0.9937	0.530531	2.231
6		4		4	2	250	0.0805	0.0055	0.9935	0.550551	2.231
7		8		8	2.828427125	250	0.0812	0.0062	0.9928	0.620621	2.229
8		15		15	3.872983346	250	0.0817	0.0067	0.9923	0.670671	2.227
9		30		30	5.477225575	250	0.0823	0.0073	0.9917	0.730731	2.225
10	1	2		62	7.874007874	250	0.0828	0.0078	0.9912	0.780781	2.223
11	1	47		107	10.34408043	250	0.0834	0.0084	0.9906	0.840841	2.221
12	4	4		244	15.62049935	250	0.084	0.009	0.99	0.900901	2.219
13	6	15		375	19.36491673	250	0.0848	0.0098	0.9892	0.980981	2.217
14	21	12		1272	35.665109	250	0.0858	0.0108	0.9882	1.081081	2.214
15	23	19		1399	37.40320842	250	0.086	0.011	0.988	1.101101	2.213
16	25	12		1512	38.88444419	250	0.0863	0.0113	0.9877	1.131131	2.212
17	28	26	55	1706.916667	41.31484802	250	0.0864	0.0114	0.9876	1.141141	2.212
18	45	24		2724	52.1919534	250	0.0868	0.0118	0.9872	1.181181	2.210
19	47	25		2845	53.33854141	250	0.0874	0.0124	0.9866	1.241241	2.208
20	51	2		3062	55.33534133	250	0.0875	0.0125	0.9865	1.251251	2.208
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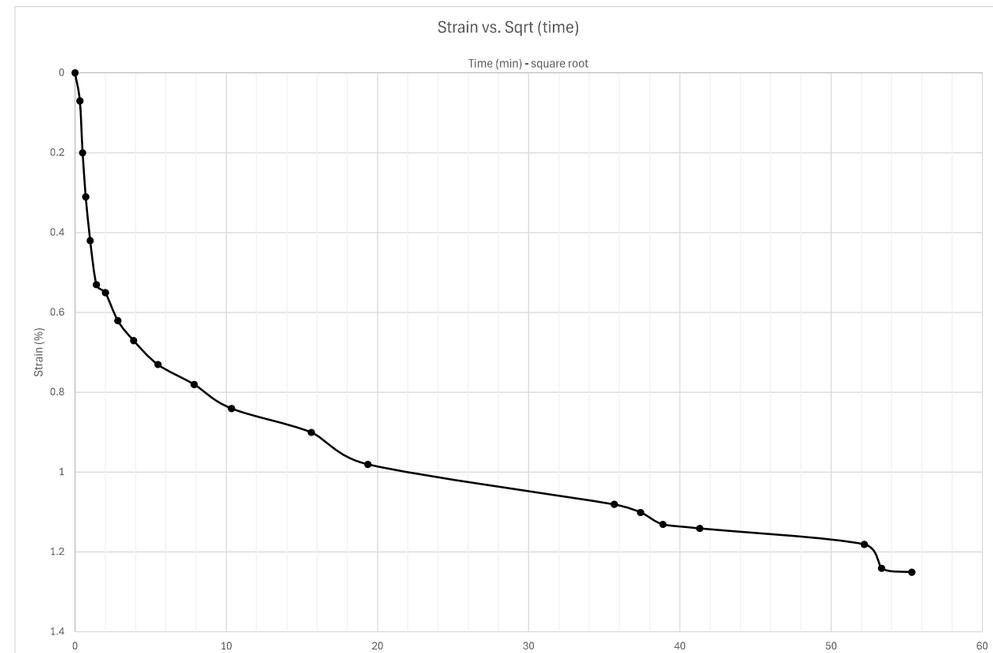
Sequence 1: 250 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

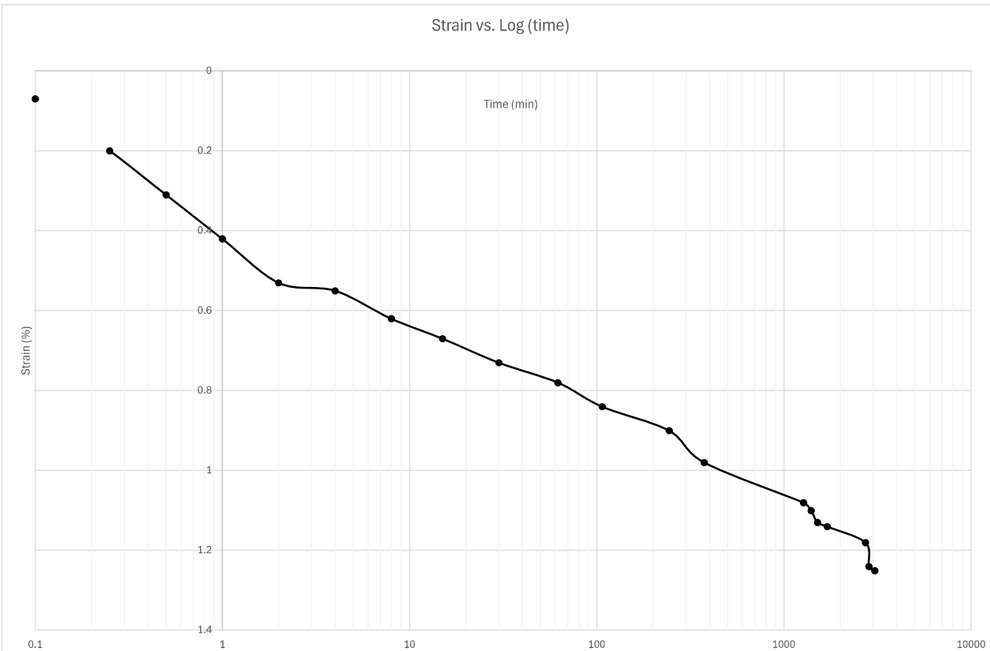


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0875	-0.0001	0.9867	-0.01001	2.209
1			6	0.1	0.32	500	0.1141	0.0265	0.9601	2.652653	2.122
2			15	0.25	0.50	500	0.1145	0.0269	0.9597	2.692693	2.121
3			30	0.5	0.71	500	0.1151	0.0275	0.9591	2.752753	2.119
4		1		1	1.00	500	0.1158	0.0282	0.9584	2.822823	2.117
5		2		2	1.41	500	0.1170	0.0294	0.9572	2.942943	2.113
6		4		4	2.00	500	0.1187	0.0311	0.9555	3.113113	2.107
7		8	25	8.416666667	2.90	500	0.1212	0.0336	0.9530	3.363363	2.099
8		18		18	4.24	500	0.1258	0.0382	0.9484	3.823824	2.084
9		31		31	5.57	500	0.1296	0.0420	0.9446	4.204204	2.072
10	1			60	7.75	500	0.1360	0.0484	0.9382	4.844845	2.051
11	1	55		115	10.72	500	0.1444	0.0568	0.9298	5.685686	2.024
12	4	34		274	16.55	500	0.1590	0.0714	0.9152	7.147147	1.976
13	6	31		391	19.77	500	0.1640	0.0764	0.9102	7.647648	1.960
14	24	7		1447	38.04	500	0.1750	0.0874	0.8992	8.748749	1.924
15	64	29		3869	62.20	500	0.1794	0.0918	0.8948	9.189189	1.910
16	72	7		4327	65.78	500	0.1796	0.0920	0.8946	9.209209	1.909
17	75	52		4552	67.47	500	0.1797	0.0921	0.8945	9.219219	1.909
18	78	32		4712	68.64	500	0.1798	0.0922	0.8944	9.229229	1.909
19	94			5640	75.10	500	0.1804	0.0928	0.8938	9.289289	1.907
20	119	23		7163	84.63	500	0.1811	0.0935	0.8931	9.359359	1.904
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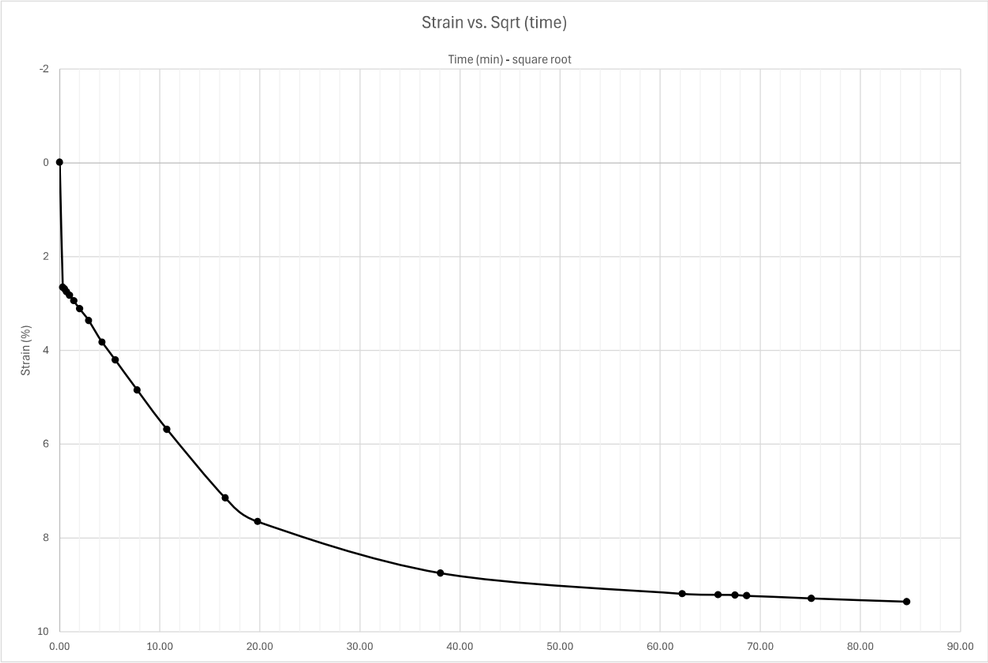
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3000, ST-22, 3-5 ft

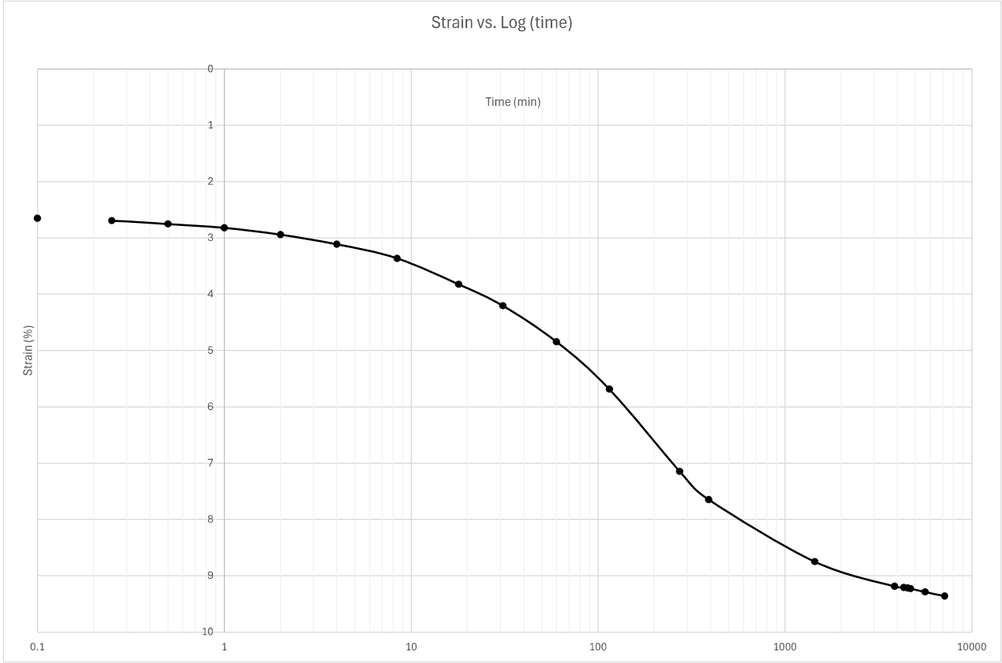
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.1811	-0.0003	0.8934	-0.03003	1.905
1			6	0.10	0.32	1000	0.1829	0.0015	0.8916	0.15015	1.899
2			15	0.25	0.50	1000	0.1835	0.0021	0.891	0.21021	1.897
3			30	0.50	0.71	1000	0.1841	0.0027	0.8904	0.27027	1.896
4		1		1.00	1.00	1000	0.185	0.0036	0.8895	0.36036	1.893
5		2		2.00	1.41	1000	0.1864	0.005	0.8881	0.500501	1.888
6		4		4.00	2.00	1000	0.1883	0.0069	0.8862	0.690691	1.882
7		8		8.00	2.83	1000	0.1911	0.0097	0.8834	0.970971	1.873
8		15		15.00	3.87	1000	0.1947	0.0133	0.8798	1.331331	1.861
9		30		30.00	5.48	1000	0.2004	0.019	0.8741	1.901902	1.843
10	1			60.00	7.75	1000	0.2087	0.0273	0.8658	2.732733	1.816
11	2	2		122.00	11.05	1000	0.2199	0.0385	0.8546	3.853854	1.779
12	4	26		266.00	16.31	1000	0.2337	0.0523	0.8408	5.235235	1.734
13	22	28		1348.00	36.72	1000	0.251	0.0696	0.8235	6.966967	1.678
14	25	33		1533.00	39.15	1000	0.2517	0.0703	0.8228	7.037037	1.676
15	28	21		1701.00	41.24	1000	0.2523	0.0709	0.8222	7.097097	1.674
16	30	37		1837.00	42.86	1000	0.2527	0.0713	0.8218	7.137137	1.672
17	47	17		2837.00	53.26	1000	0.2548	0.0734	0.8197	7.347347	1.666
18	50	59		3059.00	55.31	1000	0.2551	0.0737	0.8194	7.377377	1.665
19	118	40		7120.00	84.38	1000	0.2588	0.0774	0.8157	7.747748	1.653
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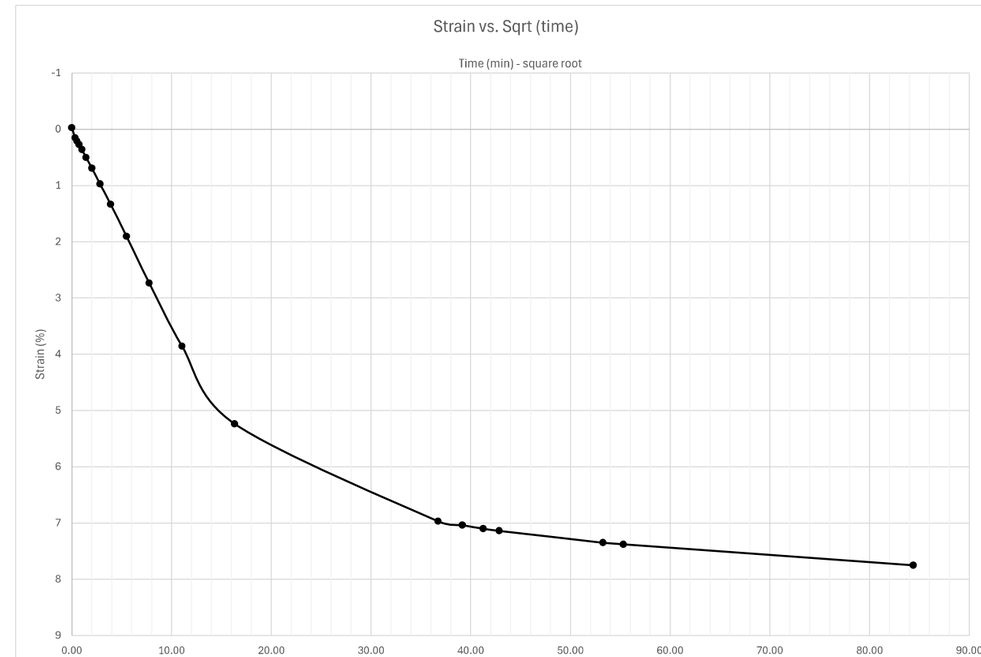
Sequence 3: 1000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

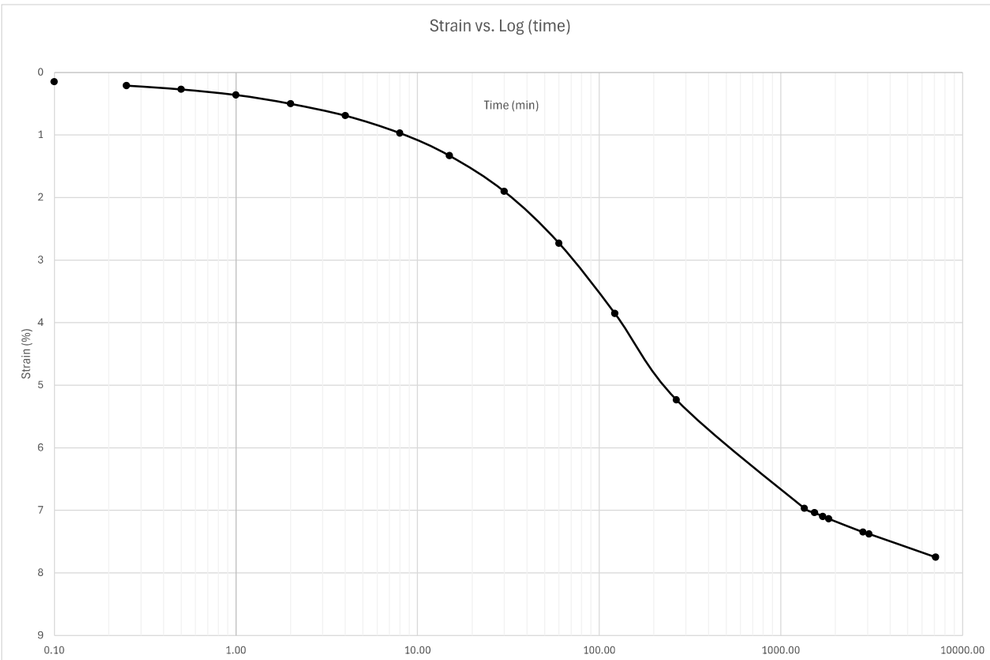


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.2588	-0.0003	0.816	-0.03003	1.654
1			6	0.10	0.32	2000	0.2609	0.0018	0.8139	0.18018	1.647
2			15	0.25	0.50	2000	0.2615	0.0024	0.8133	0.24024	1.645
3			30	0.50	0.71	2000	0.2623	0.0032	0.8125	0.32032	1.642
4		1		1.00	1.00	2000	0.2635	0.0044	0.8113	0.44044	1.638
5		2		2.00	1.41	2000	0.2651	0.006	0.8097	0.600601	1.633
6		4		4.00	2.00	2000	0.2674	0.0083	0.8074	0.830831	1.626
7		8		8.00	2.83	2000	0.2709	0.0118	0.8039	1.181181	1.614
8		15		15.00	3.87	2000	0.2753	0.0162	0.7995	1.621622	1.600
9		30		30.00	5.48	2000	0.282	0.0229	0.7928	2.292292	1.578
10	1	2		62.00	7.87	2000	0.292	0.0329	0.7828	3.293293	1.546
11	2	3		123.00	11.09	2000	0.3039	0.0448	0.7709	4.484484	1.507
12	4	2		242.00	15.56	2000	0.3161	0.057	0.7587	5.705706	1.467
13	6	6		366.00	19.13	2000	0.3223	0.0632	0.7525	6.326326	1.447
14	23	15		1395.00	37.35	2000	0.334	0.0749	0.7408	7.497497	1.409
15	26	2		1562.00	39.52	2000	0.3346	0.0755	0.7402	7.557558	1.407
16	28	59		1739.00	41.70	2000	0.3351	0.076	0.7397	7.607608	1.405
17	47	2		2822.00	53.12	2000	0.3377	0.0786	0.7371	7.867868	1.397
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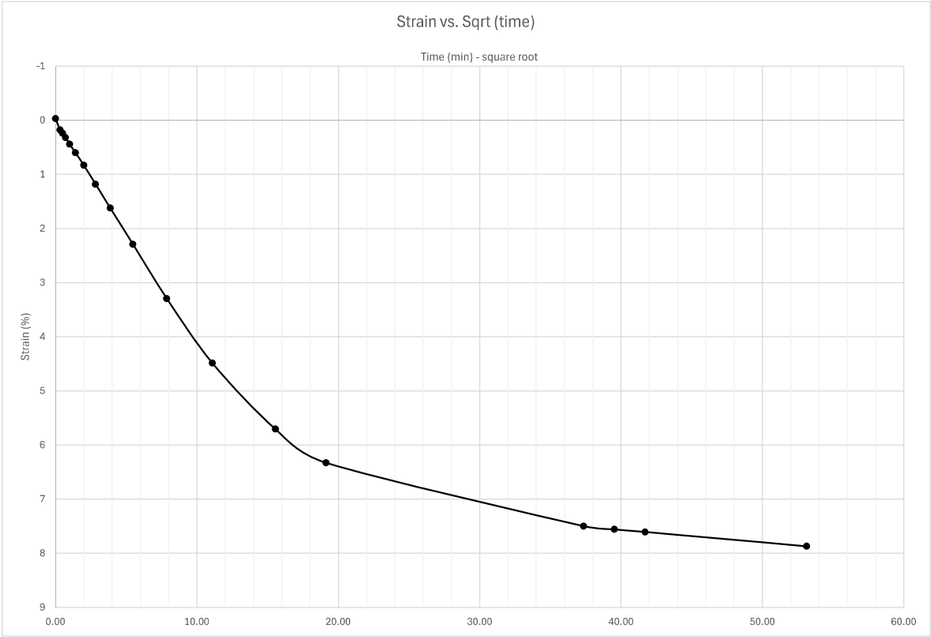
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3000, ST-22, 3-5 ft

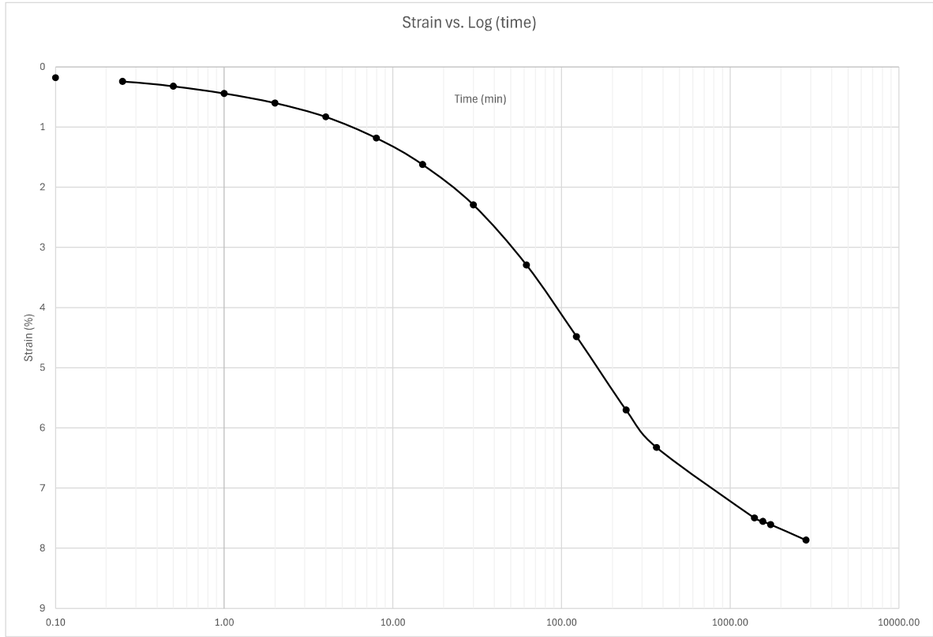
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.3377	-0.0005	0.7376	-0.05005	1.399
1			6	0.10	0.32	4000	0.341	0.0028	0.7343	0.28028	1.388
2			15	0.25	0.50	4000	0.3416	0.0034	0.7337	0.34034	1.386
3			30	0.50	0.71	4000	0.3425	0.0043	0.7328	0.43043	1.383
4		1		1.00	1.00	4000	0.3439	0.0057	0.7314	0.570571	1.378
5		2		2.00	1.41	4000	0.3459	0.0077	0.7294	0.770771	1.372
6		4	30	4.50	2.12	4000	0.3494	0.0112	0.7259	1.121121	1.361
7		8		8.00	2.83	4000	0.3528	0.0146	0.7225	1.461461	1.350
8		15		15.00	3.87	4000	0.3579	0.0197	0.7174	1.971972	1.333
9		30		30.00	5.48	4000	0.3656	0.0274	0.7097	2.742743	1.308
10	1	8		68.00	8.25	4000	0.3784	0.0402	0.6969	4.024024	1.266
11	2	28		148.00	12.17	4000	0.393	0.0548	0.6823	5.485485	1.219
12	18	13		1093.00	33.06	4000	0.4148	0.0766	0.6605	7.667668	1.148
13	20	31		1231.00	35.09	4000	0.4155	0.0773	0.6598	7.737738	1.146
14	22	33		1353.00	36.78	4000	0.4159	0.0777	0.6594	7.777778	1.144
15	26	45		1605.00	40.06	4000	0.4166	0.0784	0.6587	7.847848	1.142
16	44	21		2661.00	51.58	4000	0.4187	0.0805	0.6566	8.058058	1.135
17	115	31		6931.00	83.25	4000	0.4224	0.0842	0.6529	8.428428	1.123
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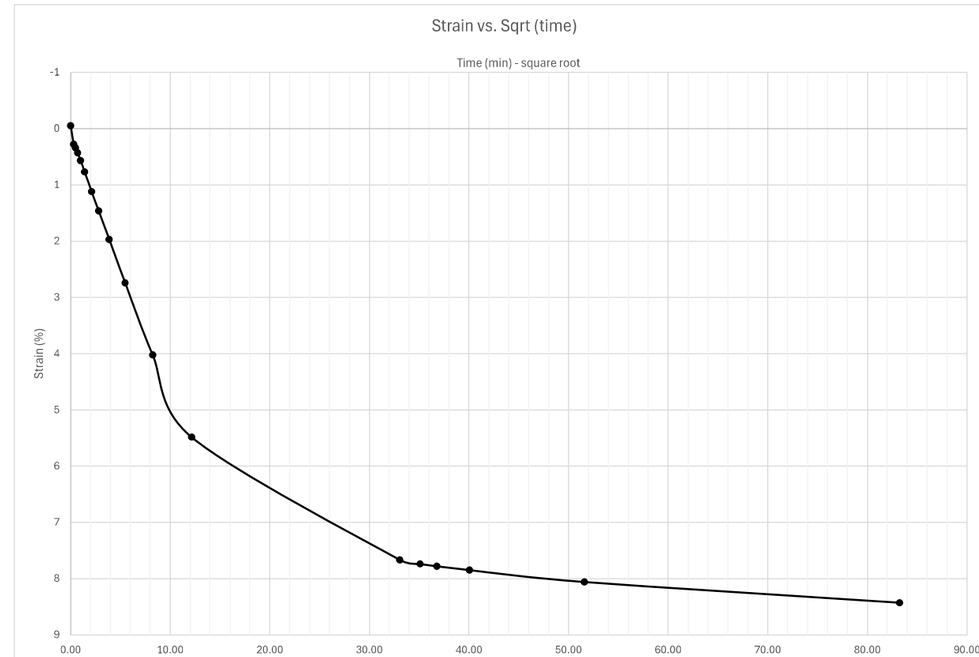
Sequence 5: 4000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

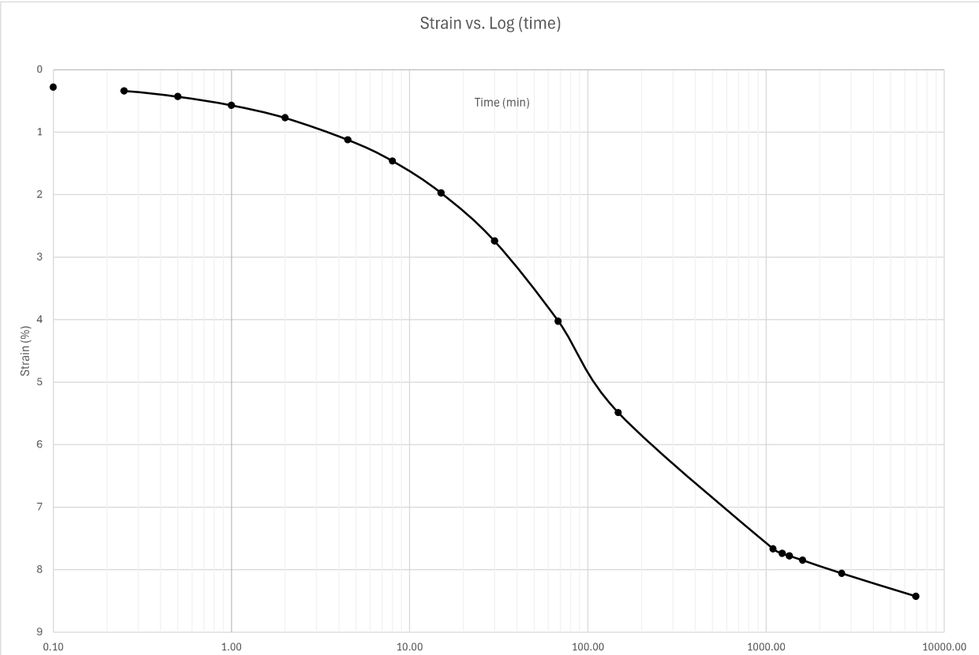


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.4224	-0.0007	0.6536	-0.07007	1.125
1			6	0.10	0.32	8000	0.4254	0.0023	0.6506	0.23023	1.116
2			15	0.25	0.50	8000	0.4262	0.0031	0.6498	0.31031	1.113
3			30	0.50	0.71	8000	0.427	0.0039	0.649	0.39039	1.111
4		1		1.00	1.00	8000	0.4284	0.0053	0.6476	0.530531	1.106
5		2		2.00	1.41	8000	0.4301	0.007	0.6459	0.700701	1.100
6		4		4.00	2.00	8000	0.4327	0.0096	0.6433	0.960961	1.092
7		8		8.00	2.83	8000	0.4365	0.0134	0.6395	1.341341	1.080
8		15		15.00	3.87	8000	0.4413	0.0182	0.6347	1.821822	1.064
9		32		32.00	5.66	8000	0.4495	0.0264	0.6265	2.642643	1.037
10	1	1		61.00	7.81	8000	0.4587	0.0356	0.6173	3.563564	1.007
11	2	5		125.00	11.18	8000	0.4699	0.0468	0.6061	4.684685	0.971
12	4	2		242.00	15.56	8000	0.4787	0.0556	0.5973	5.565566	0.942
13	6	55		415.00	20.37	8000	0.4834	0.0603	0.5926	6.036036	0.927
14	22	35		1355.00	36.81	8000	0.4891	0.066	0.5869	6.606607	0.909
15	24	5		1445.00	38.01	8000	0.4893	0.0662	0.5867	6.626627	0.908
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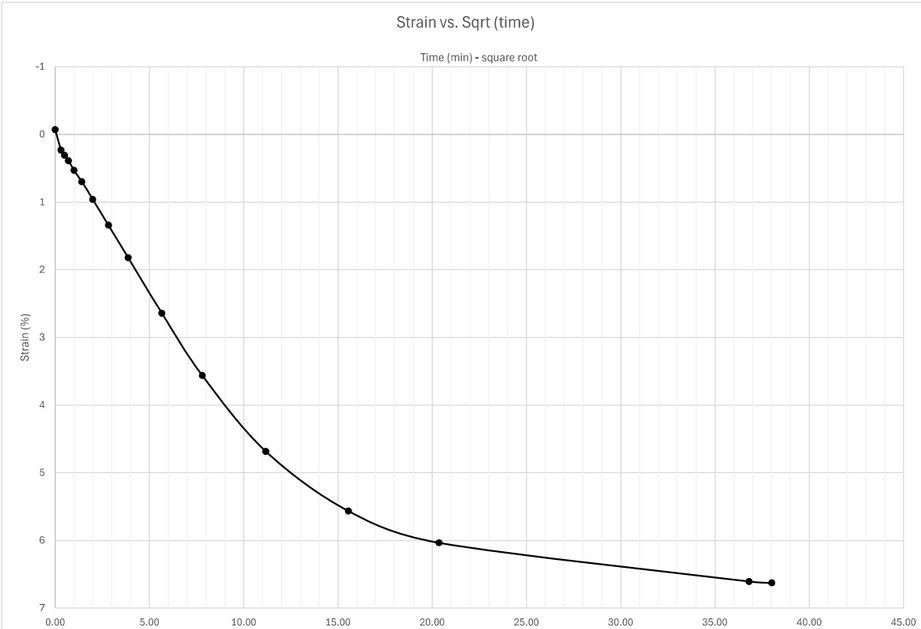
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3000, ST-22, 3-5 ft

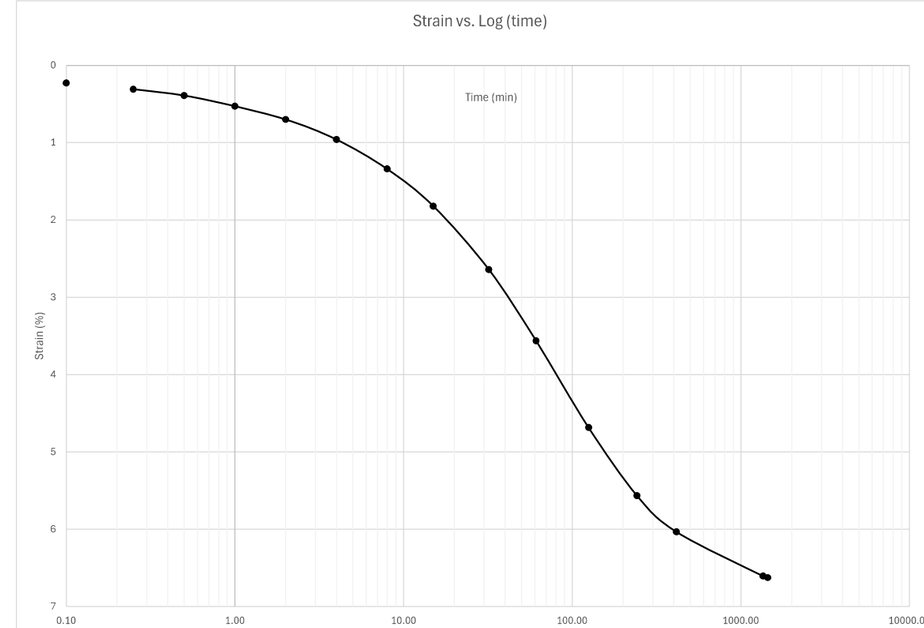
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.4893	-0.0007	0.5874	-0.07007	0.910
1			6	0.10	0.32	16000	0.4933	0.0033	0.5834	0.33033	0.897
2			15	0.25	0.50	16000	0.4936	0.0036	0.5831	0.36036	0.896
3			30	0.50	0.71	16000	0.4946	0.0046	0.5821	0.46046	0.893
4		1		1.00	1.00	16000	0.496	0.006	0.5807	0.600601	0.888
5		2		2.00	1.41	16000	0.498	0.008	0.5787	0.800801	0.882
6		4		4.00	2.00	16000	0.5008	0.0108	0.5759	1.081081	0.873
7		8		8.00	2.83	16000	0.5051	0.0151	0.5716	1.511512	0.859
8		15		15.00	3.87	16000	0.5103	0.0203	0.5664	2.032032	0.842
9		32		32.00	5.66	16000	0.519	0.029	0.5577	2.902903	0.814
10	1	8		68.00	8.25	16000	0.5305	0.0405	0.5462	4.054054	0.776
11	2	4		124.00	11.14	16000	0.5393	0.0493	0.5374	4.934935	0.748
12	4	1		241.00	15.52	16000	0.5467	0.0567	0.53	5.675676	0.724
13	5	59		359.00	18.95	16000	0.5494	0.0594	0.5273	5.945946	0.715
14	21	4		1264.00	35.55	16000	0.5546	0.0646	0.5221	6.466466	0.698
15	24	33		1473.00	38.38	16000	0.5551	0.0651	0.5216	6.516517	0.696
16	25	51		1551.00	39.38	16000	0.5552	0.0652	0.5215	6.526527	0.696
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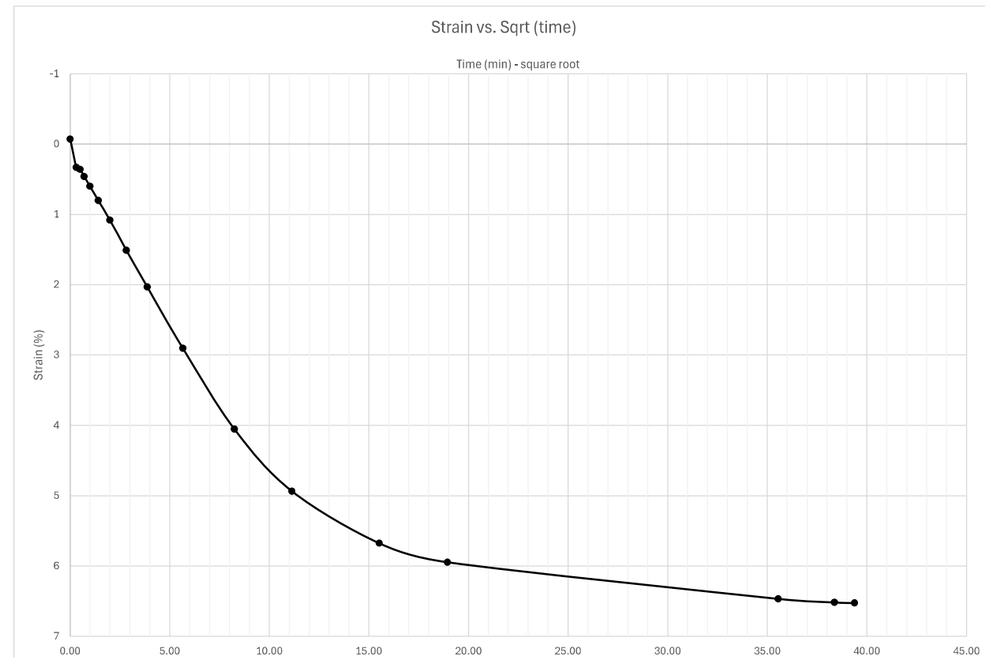
Sequence 7: 16000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

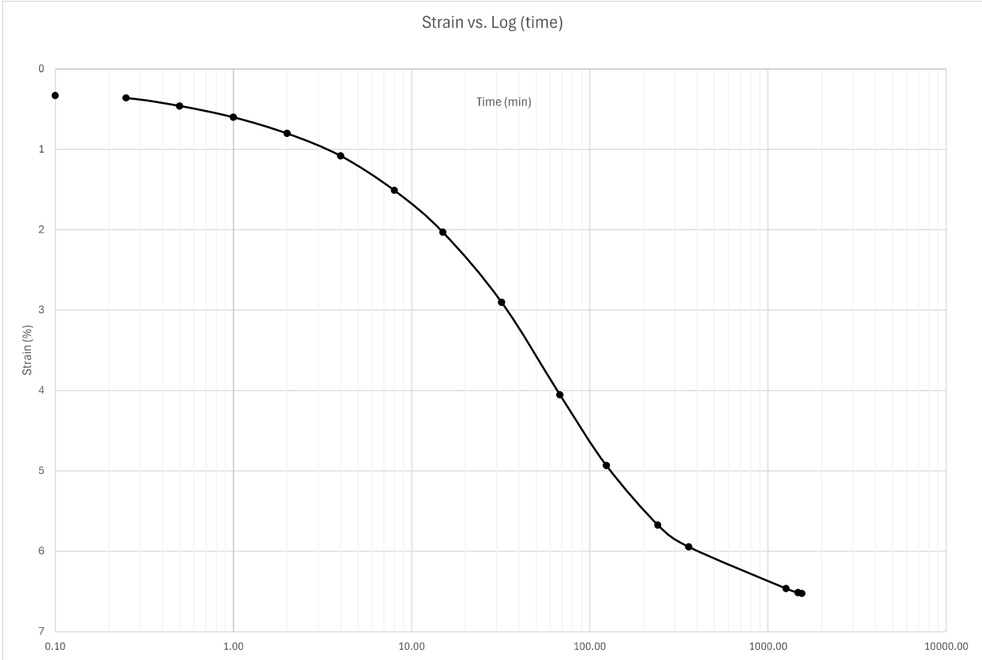


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.5552	0.0006	0.5209	0.06006	0.694
1			6	0.10	0.32	8000	0.5536	-0.001	0.5226	-0.1001	0.699
2			15	0.25	0.50	8000	0.5534	-0.0012	0.5228	-0.12012	0.700
3			30	0.50	0.71	8000	0.5532	-0.0014	0.523	-0.14014	0.701
4		1		1.00	1.00	8000	0.5529	-0.0017	0.5233	-0.17017	0.702
5		2		2.00	1.41	8000	0.5525	-0.0021	0.5237	-0.21021	0.703
6		4		4.00	2.00	8000	0.552	-0.0026	0.5242	-0.26026	0.705
7		8		8.00	2.83	8000	0.5513	-0.0033	0.5249	-0.33033	0.707
8		18		18.00	4.24	8000	0.5505	-0.0041	0.5257	-0.41041	0.710
9		28		28.00	5.29	8000	0.55	-0.0046	0.5262	-0.46046	0.711
10		56		56.00	7.48	8000	0.5495	-0.0051	0.5267	-0.510511	0.713
11	2	6		126.00	11.22	8000	0.5491	-0.0055	0.5271	-0.550551	0.714
12	3	54		234.00	15.30	8000	0.5489	-0.0057	0.5273	-0.570571	0.715
13	19	20	24	1160.40	34.06	8000	0.5485	-0.0061	0.5277	-0.610611	0.716
14	24	27		1467.00	38.30	8000	0.5485	-0.0061	0.5277	-0.610611	0.716
15	27	51		1671.00	40.88	8000	0.5484	-0.0062	0.5278	-0.620621	0.716
16	44	9		2649.00	51.47	8000	0.5484	-0.0062	0.5278	-0.620621	0.716
17	50	50		3050.00	55.23	8000	0.5484	-0.0062	0.5278	-0.620621	0.716
18	115	55		6955.00	83.40	8000	0.5484	-0.0062	0.5278	-0.620621	0.716
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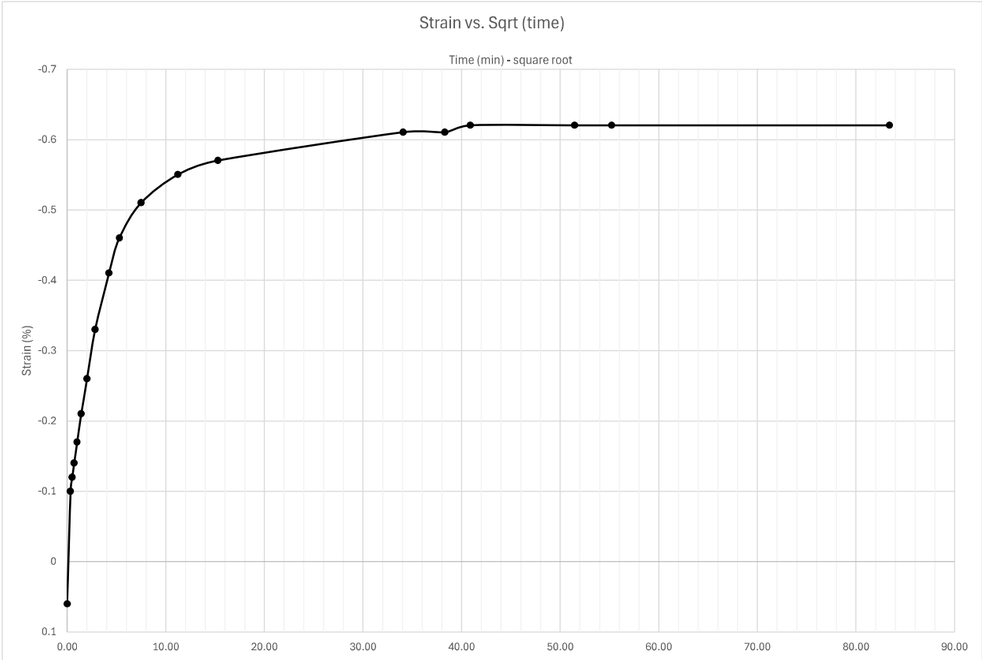
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3000, ST-22, 3-5 ft

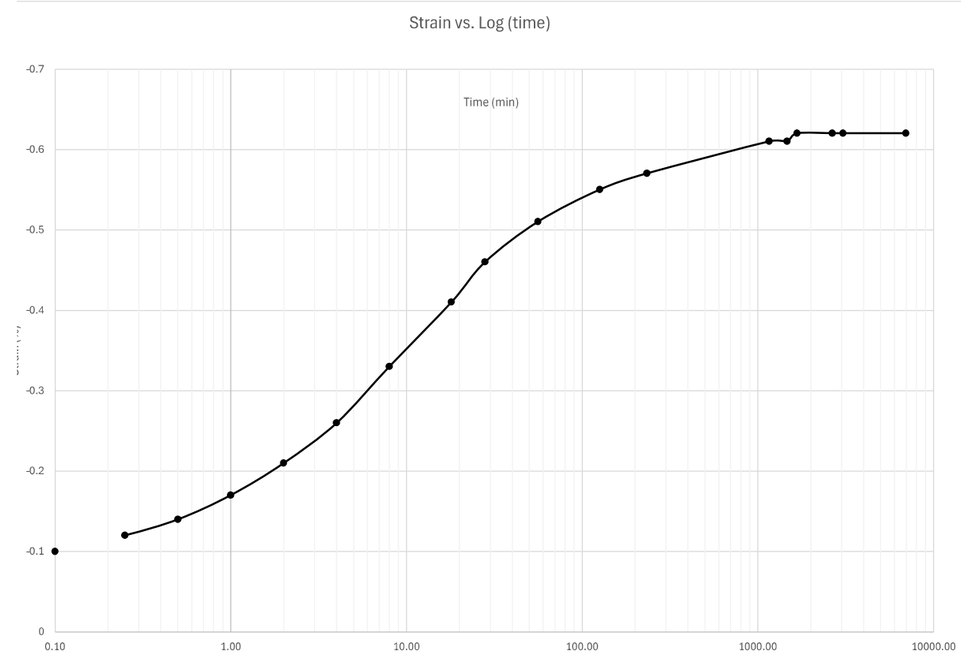
INFRASTRUCTURE CONSULTING & ENGINEERING



ence 8: 8000 psf

00, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 6000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	6000	0.5484	0.0001	0.5277	0.01001	0.716
1			6	0.10	0.32	6000	0.5479	-0.0004	0.5282	-0.04004	0.718
2			15	0.25	0.50	6000	0.5478	-0.0005	0.5283	-0.05005	0.718
3			30	0.50	0.71	6000	0.5478	-0.0005	0.5283	-0.05005	0.718
4		1		1.00	1.00	6000	0.5477	-0.0006	0.5284	-0.06006	0.718
5		2		2.00	1.41	6000	0.5476	-0.0007	0.5285	-0.07007	0.719
6		4		4.00	2.00	6000	0.5475	-0.0008	0.5286	-0.08008	0.719
7		8		8.00	2.83	6000	0.5474	-0.0009	0.5287	-0.09009	0.719
8		15		15.00	3.87	6000	0.5471	-0.0012	0.529	-0.12012	0.720
9		30		30.00	5.48	6000	0.547	-0.0013	0.5291	-0.13013	0.721
10	1			60.00	7.75	6000	0.5469	-0.0014	0.5292	-0.14014	0.721
11	2			120.00	10.95	6000	0.5468	-0.0015	0.5293	-0.15015	0.721
12	4			240.00	15.49	6000	0.5466	-0.0017	0.5295	-0.17017	0.722
13	8			480.00	21.91	6000	0.5465	-0.0018	0.5296	-0.18018	0.722
14	23	29		1409.00	37.54	6000	0.5461	-0.0022	0.53	-0.22022	0.724
15	25	59		1559.00	39.48	6000	0.546	-0.0023	0.5301	-0.23023	0.724
16	31	30		1890.00	43.47	6000	0.546	-0.0023	0.5301	-0.23023	0.724
17	47	6		2826.00	53.16	6000	0.5459	-0.0024	0.5302	-0.24024	0.724
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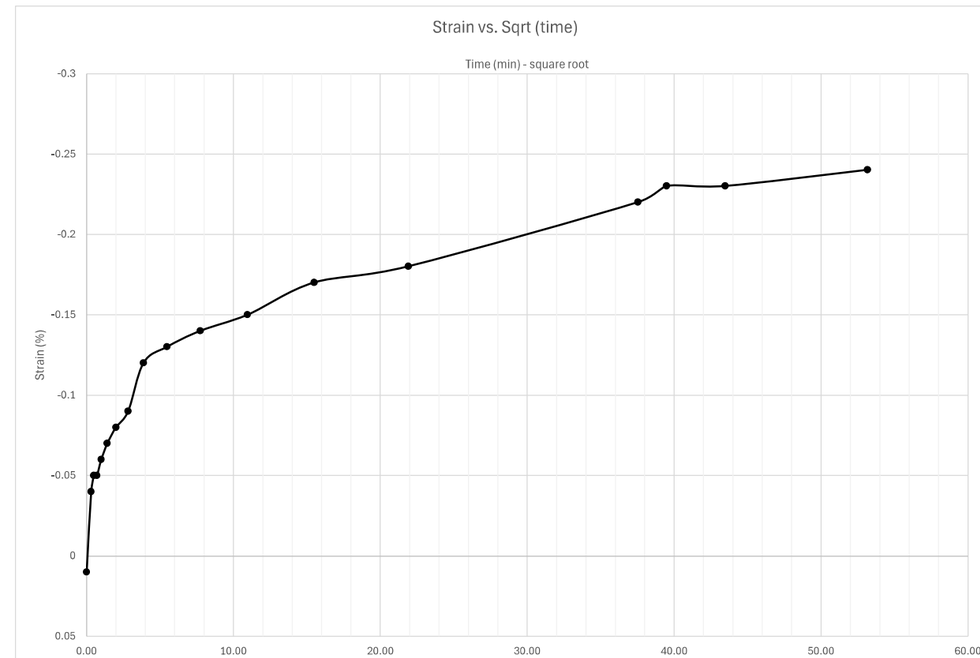
Sequence 9: 6000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

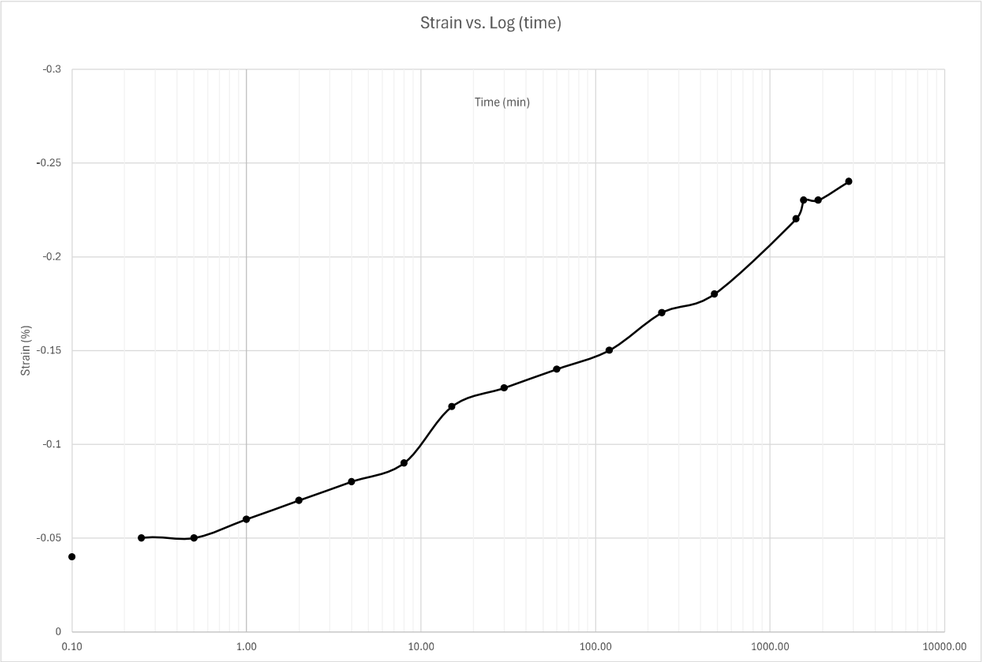


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 6000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5459	0.0007	0.5295	0.07007	0.722
1			6	0.10	0.32	2000	0.5443	-0.0009	0.5311	-0.09009	0.727
2			15	0.25	0.50	2000	0.544	-0.0012	0.5314	-0.12012	0.728
3			30	0.50	0.71	2000	0.5438	-0.0014	0.5316	-0.14014	0.729
4		1		1.00	1.00	2000	0.5434	-0.0018	0.532	-0.18018	0.730
5		2		2.00	1.41	2000	0.5429	-0.0023	0.5325	-0.23023	0.732
6		4		4.00	2.00	2000	0.5421	-0.0031	0.5333	-0.31031	0.734
7		8		8.00	2.83	2000	0.541	-0.0042	0.5344	-0.42042	0.738
8		23		23.00	4.80	2000	0.5385	-0.0067	0.5369	-0.670671	0.746
9	1	15		75.00	8.66	2000	0.5344	-0.0108	0.541	-1.081081	0.759
10	2			120.00	10.95	2000	0.5327	-0.0125	0.5427	-1.251251	0.765
11	4	21		261.00	16.16	2000	0.5305	-0.0147	0.5449	-1.471471	0.772
12	7			420.00	20.49	2000	0.5294	-0.0158	0.546	-1.581582	0.776
13	22	50		1370.00	37.01	2000	0.5281	-0.0171	0.5473	-1.711712	0.780
14	26	34		1594.00	39.92	2000	0.5276	-0.0176	0.5478	-1.761762	0.781
15	52	29		3149.00	56.12	2000	0.5269	-0.0183	0.5485	-1.831832	0.784
16	55	12		3312.00	57.55	2000	0.5268	-0.0184	0.5486	-1.841842	0.784
17	71			4260.00	65.27	2000	0.5263	-0.0189	0.5491	-1.891892	0.786
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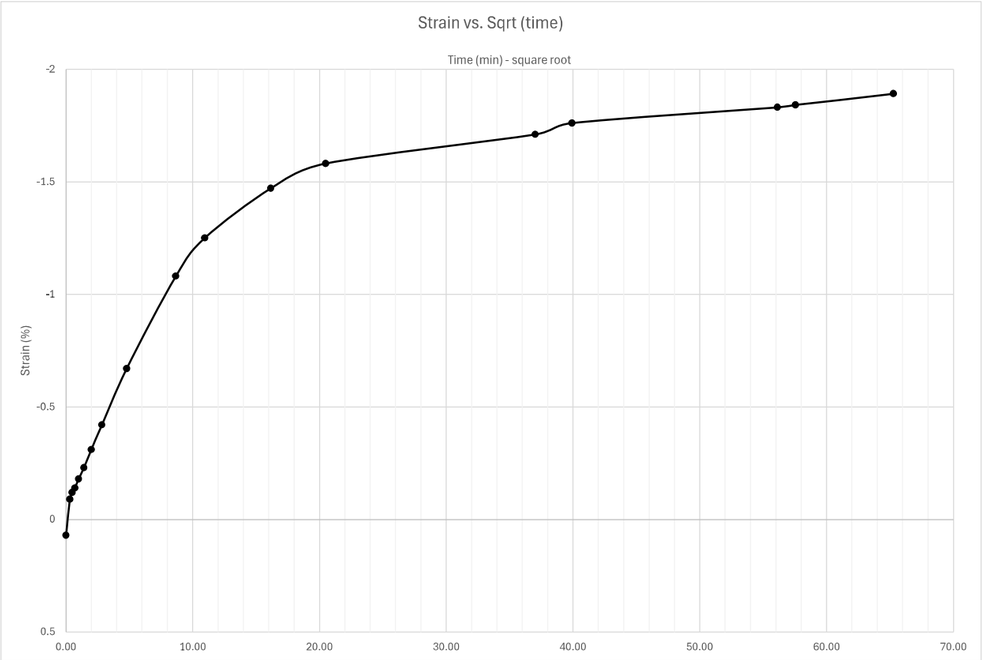
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3000, ST-22, 3-5 ft

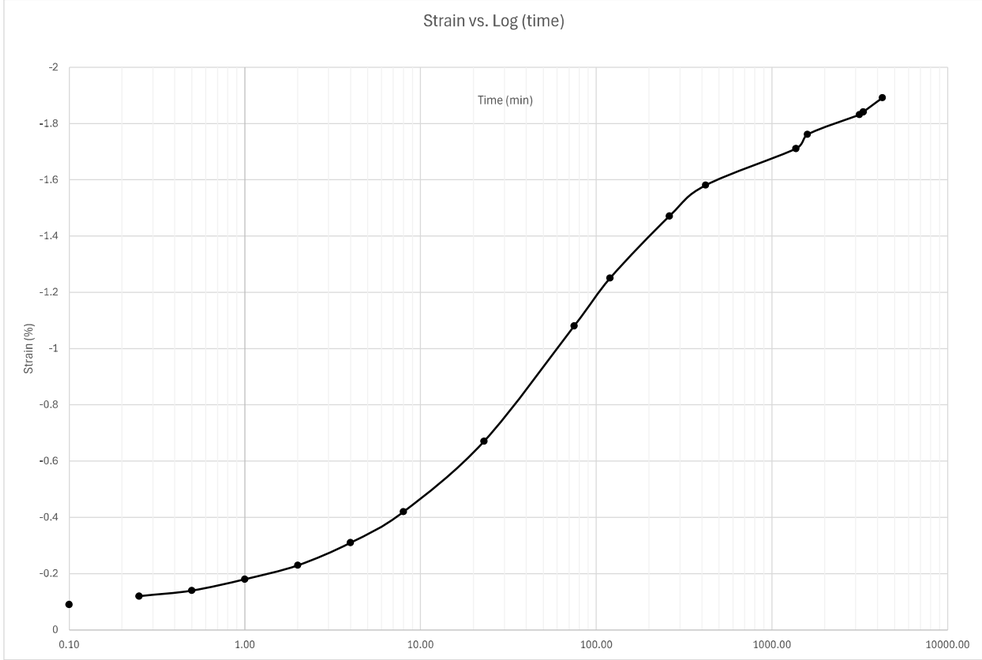
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.5263	-0.0003	0.5494	-0.03003	0.787
1			6	0.10	0.32	4000	0.527	0.0004	0.5487	0.04004	0.784
2			15	0.25	0.50	4000	0.5271	0.0005	0.5486	0.05005	0.784
3			30	0.50	0.71	4000	0.5272	0.0006	0.5485	0.06006	0.784
4		1		1.00	1.00	4000	0.5274	0.0008	0.5483	0.08008	0.783
5		2		2.00	1.41	4000	0.5276	0.001	0.5481	0.1001	0.782
6		4		4.00	2.00	4000	0.5279	0.0013	0.5478	0.13013	0.781
7		8		8.00	2.83	4000	0.5284	0.0018	0.5473	0.18018	0.780
8		16		16.00	4.00	4000	0.5289	0.0023	0.5468	0.23023	0.778
9		34		34.00	5.83	4000	0.5295	0.0029	0.5462	0.29029	0.776
10	1			60.00	7.75	4000	0.5299	0.0033	0.5458	0.33033	0.775
11	2	42		162.00	12.73	4000	0.5303	0.0037	0.5454	0.37037	0.774
12	4	9		249.00	15.78	4000	0.5305	0.0039	0.5452	0.39039	0.773
13	6	9		369.00	19.21	4000	0.5306	0.004	0.5451	0.4004	0.773
14	30	58		1858.00	43.10	4000	0.531	0.0044	0.5447	0.44044	0.771
15	71	49		4309.00	65.64	4000	0.531	0.0044	0.5447	0.44044	0.771
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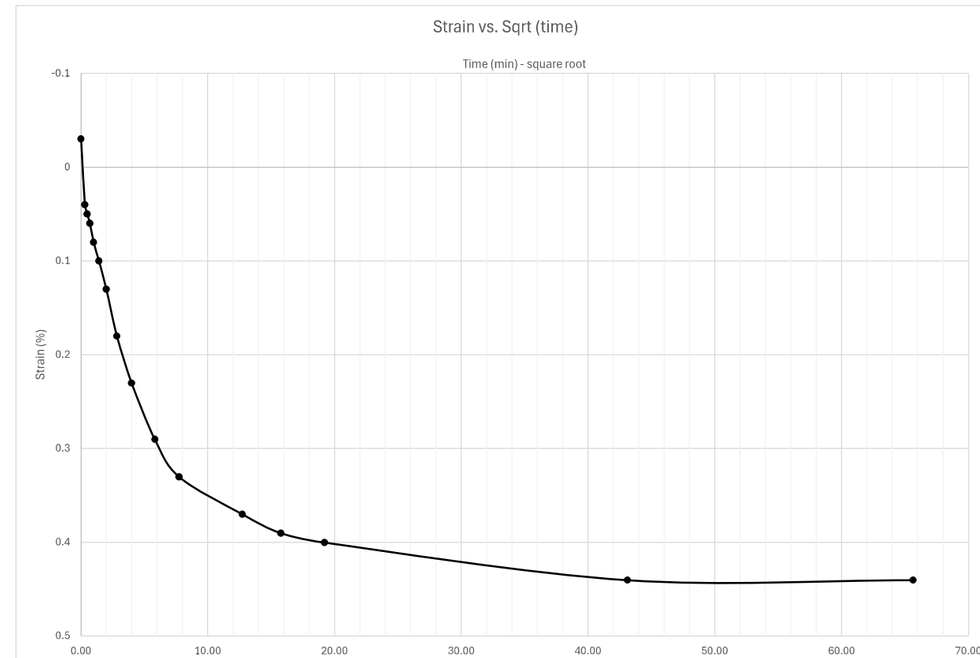
Sequence 11: 4000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

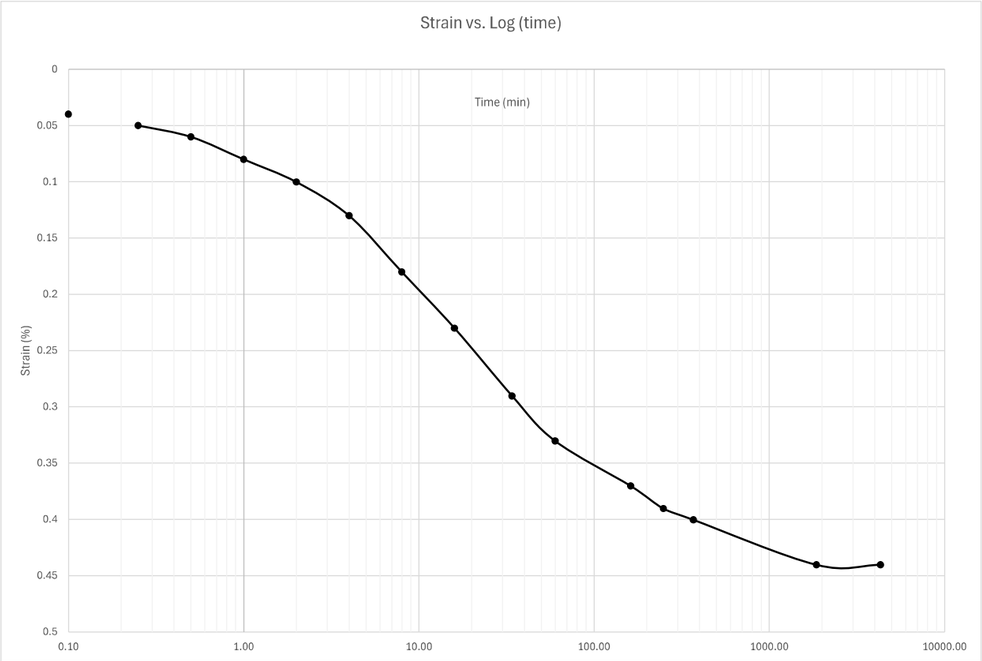


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.531	-0.0005	0.5452	-0.05005	0.773
1			6	0.10	0.32	8000	0.5327	0.0012	0.5435	0.12012	0.767
2			15	0.25	0.50	8000	0.533	0.0015	0.5432	0.15015	0.766
3			30	0.50	0.71	8000	0.5332	0.0017	0.543	0.17017	0.766
4		1		1.00	1.00	8000	0.5336	0.0021	0.5426	0.21021	0.765
5		2		2.00	1.41	8000	0.5341	0.0026	0.5421	0.26026	0.763
6		4		4.00	2.00	8000	0.5348	0.0033	0.5414	0.33033	0.761
7		8		8.00	2.83	8000	0.5357	0.0042	0.5405	0.42042	0.758
8		17		17.00	4.12	8000	0.5372	0.0057	0.539	0.570571	0.753
9		25		25.00	5.00	8000	0.5381	0.0066	0.5381	0.660661	0.750
10	1	3		63.00	7.94	8000	0.5396	0.0081	0.5366	0.810811	0.745
11	2	2		122.00	11.05	8000	0.5403	0.0088	0.5359	0.880881	0.743
12	4	7		247.00	15.72	8000	0.5407	0.0092	0.5355	0.920921	0.741
13	9	7		547.00	23.39	8000	0.5414	0.0099	0.5348	0.990991	0.739
14	23	12		1392.00	37.31	8000	0.542	0.0105	0.5342	1.051051	0.737
15	25	47		1547.00	39.33	8000	0.542	0.0105	0.5342	1.051051	0.737
16	47	38		2858.00	53.46	8000	0.5424	0.0109	0.5338	1.091091	0.736
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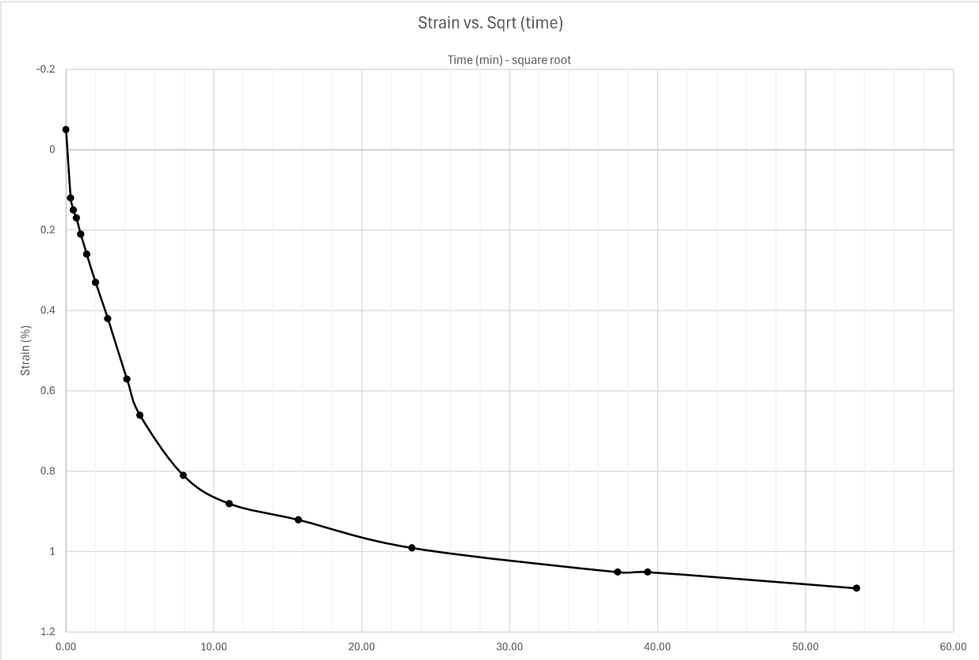
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3000, ST-22, 3-5 ft

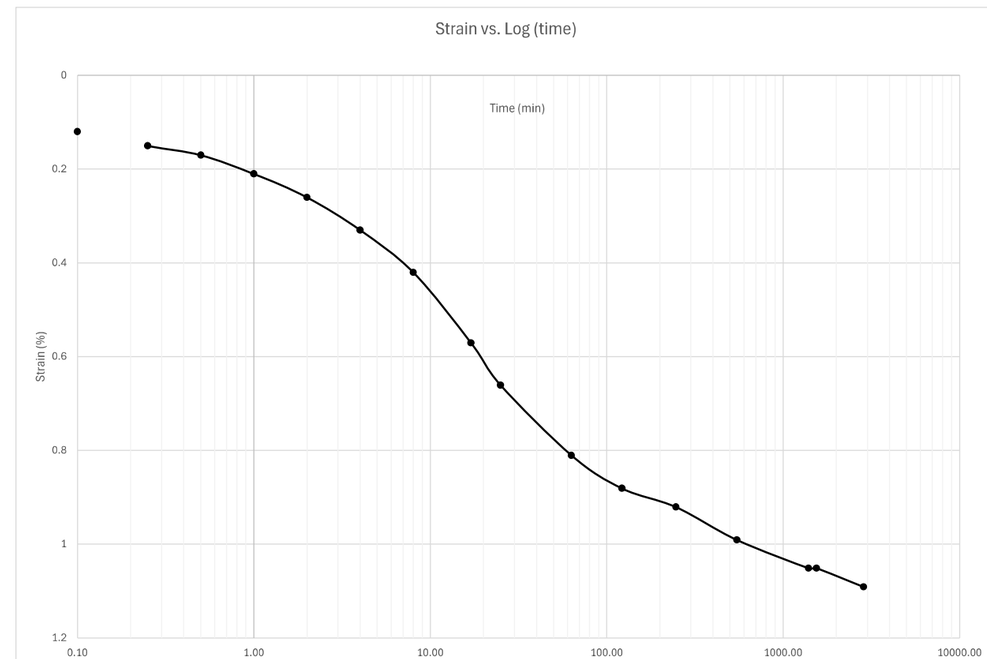
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.5424	-0.0008	0.5346	-0.08008	0.738
1			6	0.10	0.32	16000	0.5446	0.0014	0.5324	0.14014	0.731
2			15	0.25	0.50	16000	0.5451	0.0019	0.5319	0.19019	0.730
3			30	0.50	0.71	16000	0.5455	0.0023	0.5315	0.23023	0.728
4		1		1.00	1.00	16000	0.5461	0.0029	0.5309	0.29029	0.726
5		2		2.00	1.41	16000	0.547	0.0038	0.53	0.38038	0.724
6		4		4.00	2.00	16000	0.5482	0.005	0.5288	0.500501	0.720
7		8		8.00	2.83	16000	0.5499	0.0067	0.5271	0.670671	0.714
8		15		15.00	3.87	16000	0.552	0.0088	0.525	0.880881	0.707
9		30		30.00	5.48	16000	0.5543	0.0111	0.5227	1.111111	0.700
10	1			60.00	7.75	16000	0.5564	0.0132	0.5206	1.321321	0.693
11	2			120.00	10.95	16000	0.5578	0.0146	0.5192	1.461461	0.688
12	4	53		293.00	17.12	16000	0.5593	0.0161	0.5177	1.611612	0.684
13	6	36		396.00	19.90	16000	0.5597	0.0165	0.5173	1.651652	0.682
14	22	45		1365.00	36.95	16000	0.5617	0.0185	0.5153	1.851852	0.676
15	24	44		1484.00	38.52	16000	0.5618	0.0186	0.5152	1.861862	0.675
16	27	53		1673.00	40.90	16000	0.5619	0.0187	0.5151	1.871872	0.675
17	31	4		1864.00	43.17	16000	0.5621	0.0189	0.5149	1.891892	0.674
18	46	56		2816.00	53.07	16000	0.5626	0.0194	0.5144	1.941942	0.673
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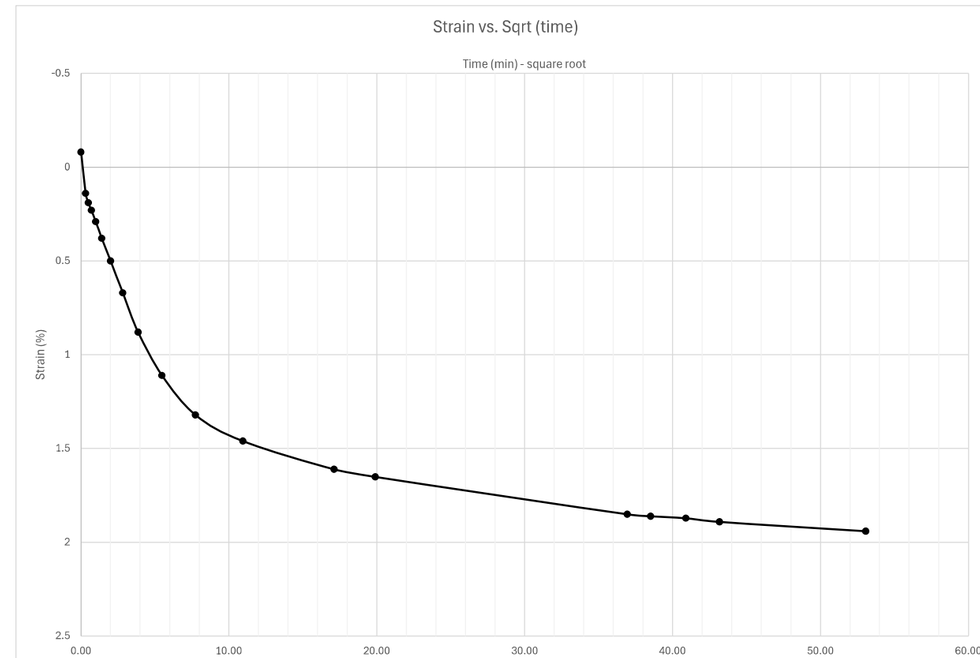
Sequence 13: 16000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

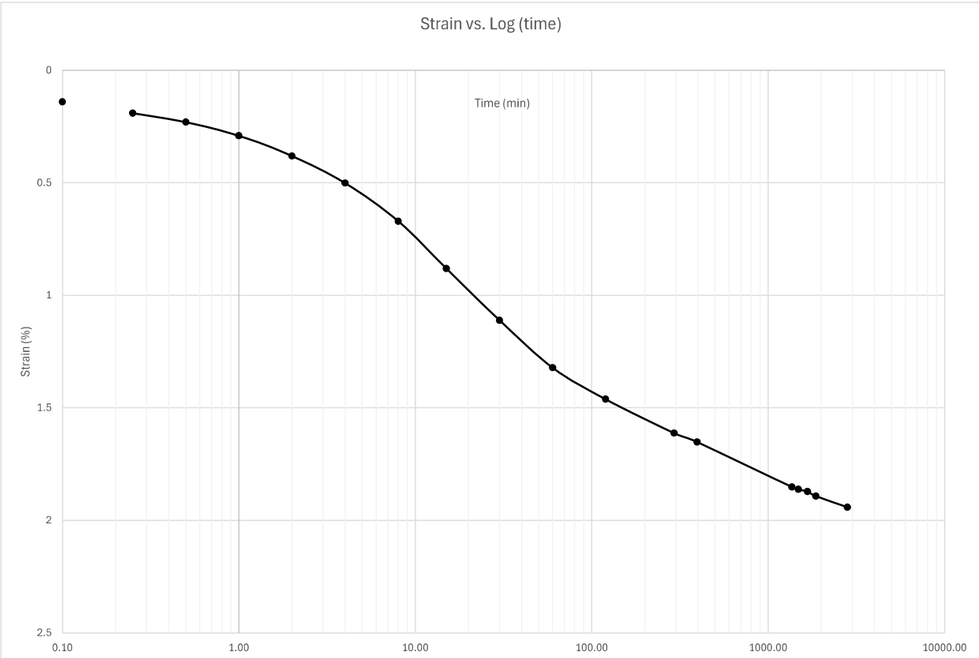


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	32000	0.5626	-0.0012	0.5156	-0.12012	0.677
1			6	0.10	0.32	32000	0.5664	0.0026	0.5118	0.26026	0.664
2			15	0.25	0.50	32000	0.5671	0.0033	0.5111	0.33033	0.662
3			30	0.50	0.71	32000	0.5679	0.0041	0.5103	0.41041	0.659
4		1		1.00	1.00	32000	0.569	0.0052	0.5092	0.520521	0.656
5		2		2.00	1.41	32000	0.5707	0.0069	0.5075	0.690691	0.650
6		4		4.00	2.00	32000	0.573	0.0092	0.5052	0.920921	0.643
7		8		8.00	2.83	32000	0.5764	0.0126	0.5018	1.261261	0.632
8		15		15.00	3.87	32000	0.5806	0.0168	0.4976	1.681682	0.618
9		30		30.00	5.48	32000	0.5867	0.0229	0.4915	2.292292	0.598
10	1			60.00	7.75	32000	0.5937	0.0299	0.4845	2.992993	0.576
11	2			120.00	10.95	32000	0.6002	0.0364	0.478	3.643644	0.554
12	4			240.00	15.49	32000	0.6047	0.0409	0.4735	4.094094	0.540
13	5	22		322.00	17.94	32000	0.6061	0.0423	0.4721	4.234234	0.535
14	31	7		1867.00	43.21	32000	0.6113	0.0475	0.4669	4.754755	0.518
15	71	24		4284.00	65.45	32000	0.6132	0.0494	0.465	4.944945	0.512
16	74			4440.00	66.63	32000	0.6132	0.0494	0.465	4.944945	0.512
17	78	39		4719.00	68.69	32000	0.6134	0.0496	0.4648	4.964965	0.512
18	94	55		5695.00	75.47	32000	0.6137	0.0499	0.4645	4.994995	0.511
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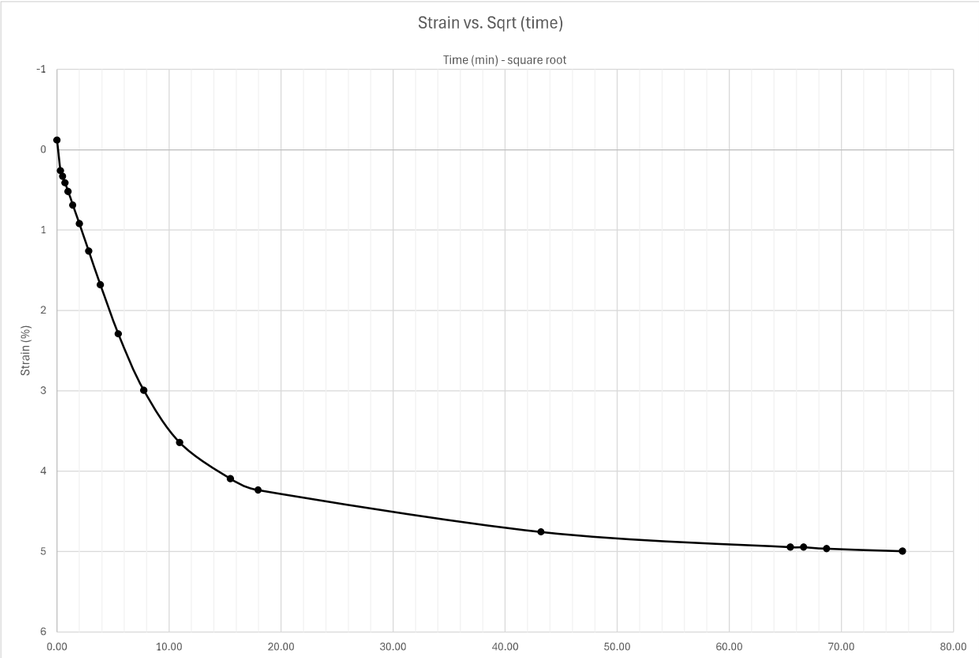
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3000, ST-22, 3-5 ft

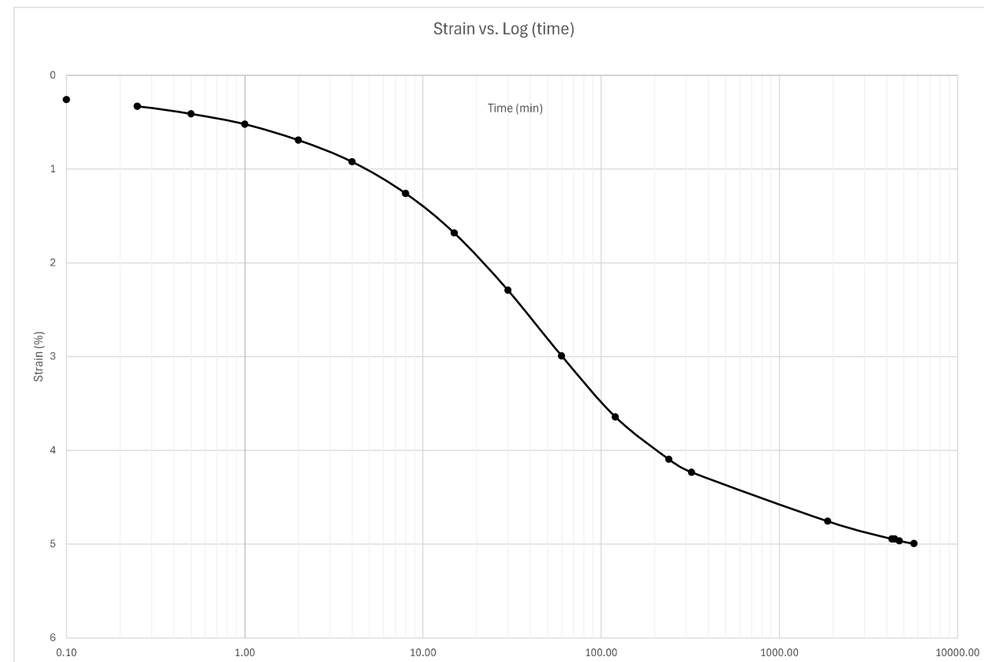
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3000, ST-22, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Muck		
Project Number	25-051.05	Depth (ft)	8-10
Sample Number	ST-24	Boring Number	Y1RPC_3000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0094	0.137	0.9896	0.009	10.379	1	-	0.20761	-
2	500	0.0431	0.1372	0.9559	0.043	9.991	2.56	-	0.07567	-
3	1000	0.1841	0.1375	0.8149	0.184	8.370	6.76	-	0.02083	-
4	2000	0.3505	0.1379	0.6485	0.351	6.457	23.04	6.5	0.00387	0.003186
5	4000	0.4962	0.1386	0.5028	0.497	4.781	36	10.5	0.00149	0.001186
6	8000	0.5825	0.1394	0.4165	0.583	3.789	37.21	17	0.00099	0.00050
7	16000	0.6649	0.1403	0.3341	0.666	2.842	50.41	15.5	0.00047	0.00035
8	8000	0.6579	0.1397	0.3411	0.659	2.922	-	-	-	-
9	6000	0.6562	0.1396	0.3428	0.657	2.942	-	-	-	-
10	2000	0.642	0.1388	0.357	0.643	3.105	-	-	-	-
11	4000	0.6463	0.1392	0.3527	0.647	3.055	36	-	0.00073	-
12	8000	0.6547	0.1397	0.3443	0.655	2.959	9.61	-	0.00262	-
13	16000	0.6757	0.1403	0.3233	0.676	2.717	14.44	-	0.00153	-
14	32000	0.7324	0.1415	0.2666	0.733	2.065	60.84	26.5	0.00025	0.00013
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 2/25/2026
Machine Apparatus: 6
Technician: KSB

Sampling Date: 12/16/2025
Sample Number: ST-24
Depth (ft): 8-10
Boring Number: Y1RPC_3000
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.671
Sampling Method: Shelby Tube
Specimen Description: Black Muck
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.25

Parameters	Initial	Final
Height (in)	0.999	0.2666
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.316
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	86.336	*
Moisture Content (%)	602.22	*
Moist Weight + Ring Weight (g)	185.8	132.15
Dry Mass (g)	11.76	*
Water Content (calc from spec)	602.22	*
Dry Density (pcf)	9.08	*
Wet Density (pcf)	63.77	83.66
Volume of Solids (in^3)	0.43	*
Height of Solids (in)	0.09	*
Void Ratio	10.487	2.065

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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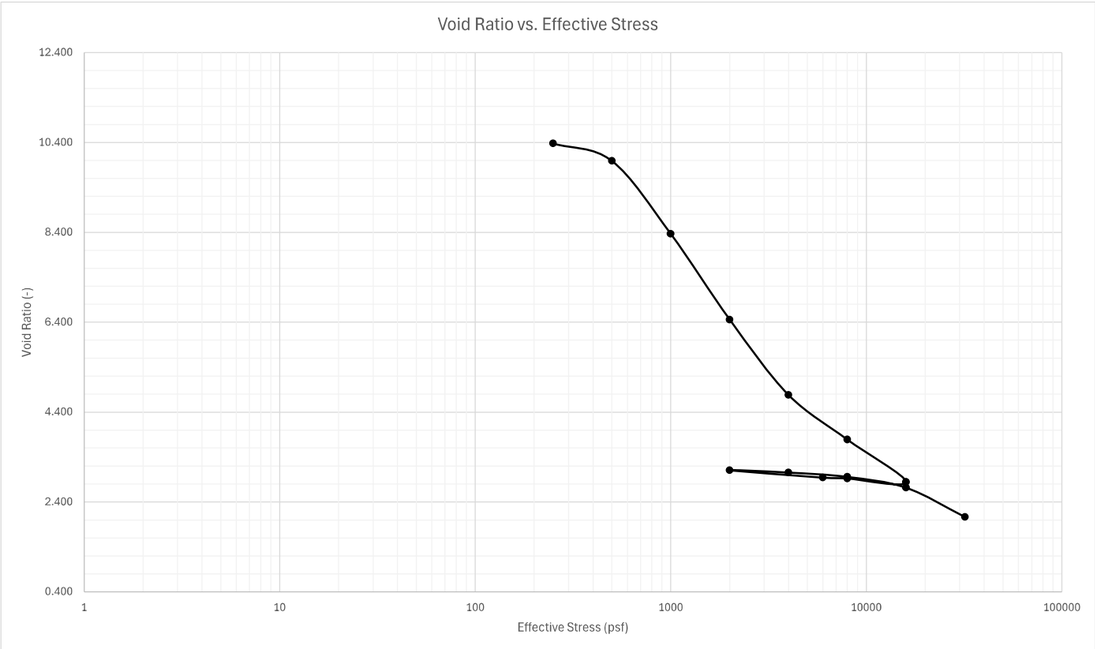
Void Ratio vs. Effective Stress

Y1RPC_3000, ST-24, 8-10 ft

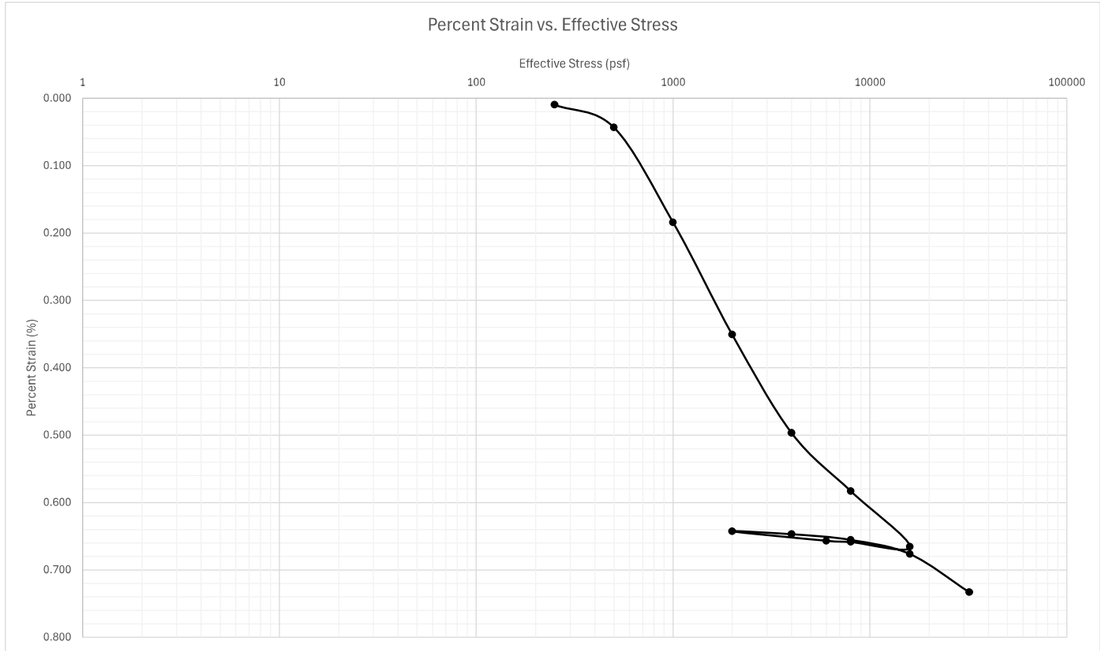
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0	0	250	0.029	0	0.999	0	10.487
1			6	0.1	0.316227766	250	0.0308	0.0018	0.9972	0.18018	10.466
2			15	0.25	0.5	250	0.032	0.003	0.996	0.3003	10.452
3			30	0.5	0.707106781	250	0.033	0.004	0.995	0.4004	10.441
4		1		1	1	250	0.0338	0.0048	0.9942	0.48048	10.432
5		2		2	1.414213562	250	0.0341	0.0051	0.9939	0.510511	10.428
6		4		4	2	250	0.0348	0.0058	0.9932	0.580581	10.420
7		13		13	3.605551275	250	0.0354	0.0064	0.9926	0.640641	10.413
8		30		30	5.477225575	250	0.0358	0.0068	0.9922	0.680681	10.409
9		55		55	7.416198487	250	0.036	0.007	0.992	0.700701	10.406
10	1	53		113	10.63014581	250	0.0369	0.0079	0.9911	0.790791	10.396
11	5			300	17.32050808	250	0.0378	0.0088	0.9902	0.880881	10.386
12	23			1380	37.14835124	250	0.0379	0.0089	0.9901	0.890891	10.385
13	24	59		1499	38.71692137	250	0.038	0.009	0.99	0.900901	10.383
14	47			2820	53.10367219	250	0.0384	0.0094	0.9896	0.940941	10.379
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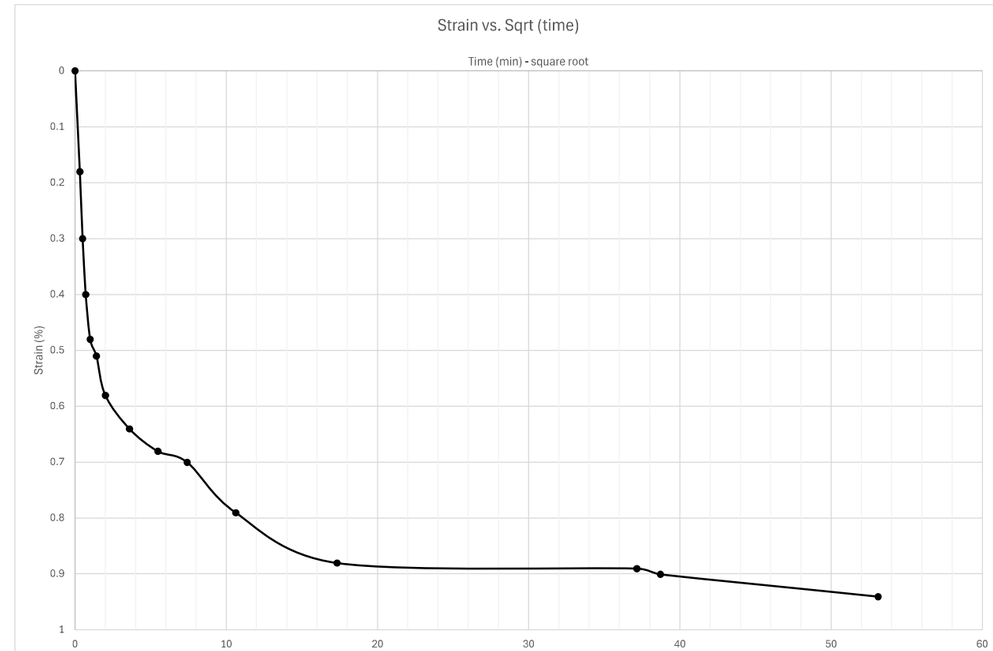
Sequence 1: 250 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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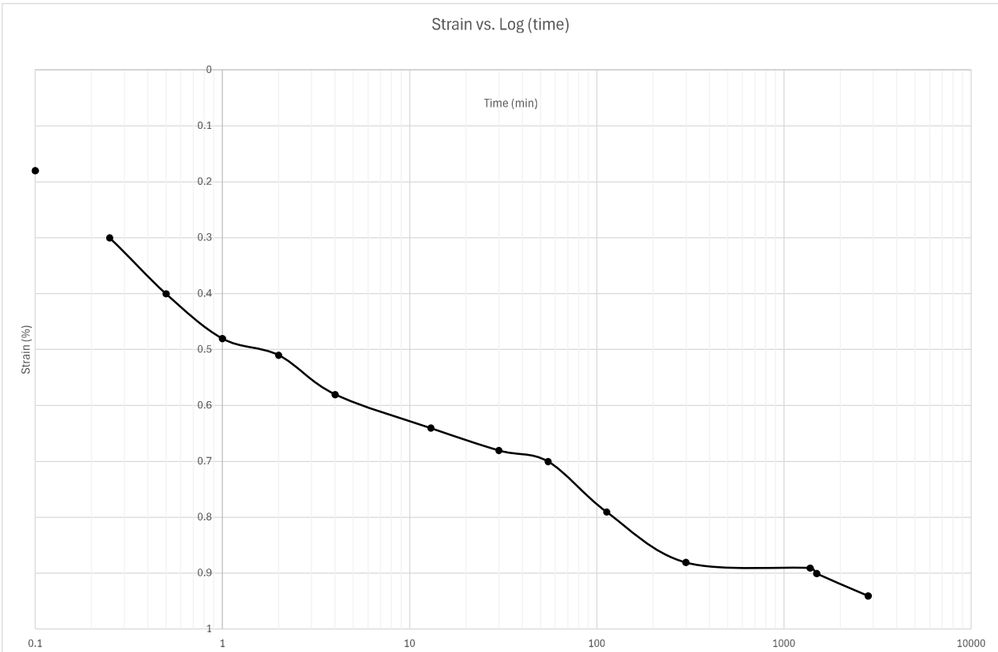
Sequence 1: 250 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0384	-0.0002	0.9898	-0.02002	10.381
1			6	0.1	0.32	500	0.0452	0.0066	0.9830	0.660661	10.303
2			15	0.25	0.50	500	0.0484	0.0098	0.9798	0.980981	10.266
3			30	0.5	0.71	500	0.0507	0.0121	0.9775	1.211211	10.240
4		1		1	1.00	500	0.0530	0.0144	0.9752	1.441441	10.213
5		2		2	1.41	500	0.0557	0.0171	0.9725	1.711712	10.182
6		4		4	2.00	500	0.0566	0.0180	0.9716	1.801802	10.172
7		7		7	2.65	500	0.0577	0.0191	0.9705	1.911912	10.159
8		15	16	15.26666667	3.91	500	0.0589	0.0203	0.9693	2.032032	10.145
9		27		27	5.20	500	0.0599	0.0213	0.9683	2.132132	10.134
10		57		57	7.55	500	0.0610	0.0224	0.9672	2.242242	10.121
11	2			120	10.95	500	0.0622	0.0236	0.9660	2.362362	10.107
12	4	30		270	16.43	500	0.0638	0.0252	0.9644	2.522523	10.089
13	6	27		387	19.67	500	0.0645	0.0259	0.9637	2.592593	10.081
14	24	2		1442	37.97	500	0.0677	0.0291	0.9605	2.912913	10.044
15	70	25		4225	65.00	500	0.0705	0.0319	0.9577	3.193193	10.012
16	75	48		4548	67.44	500	0.0707	0.0321	0.9575	3.213213	10.010
17	78	28		4708	68.61	500	0.0709	0.0323	0.9573	3.233233	10.007
18	93	55		5635	75.07	500	0.0713	0.0327	0.9569	3.273273	10.003
19	119	20		7160	84.62	500	0.0723	0.0337	0.9559	3.373373	9.991
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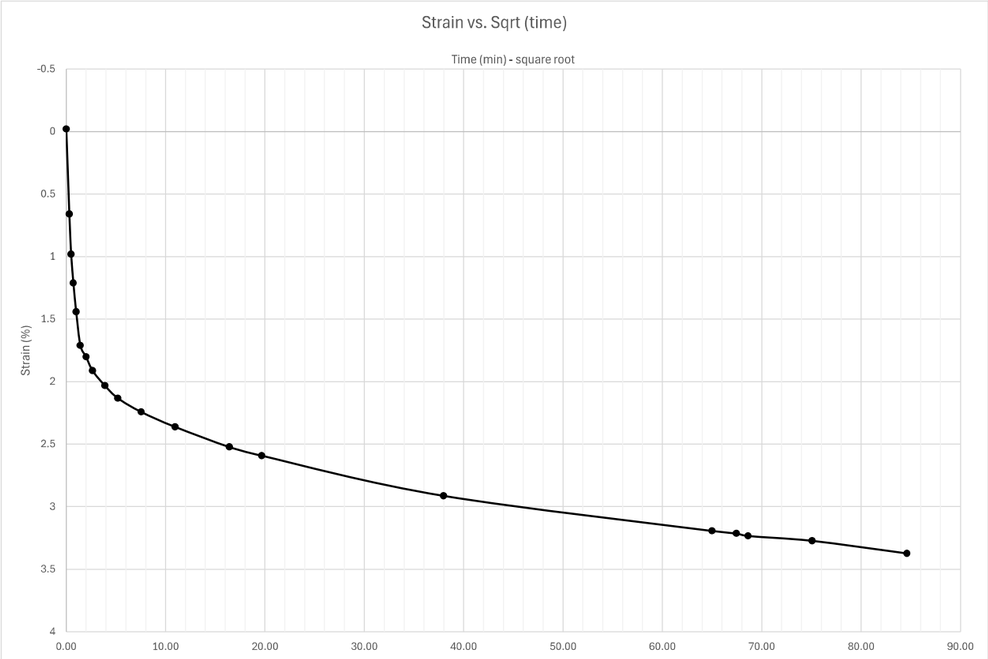
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3000, ST-24, 8-10 ft

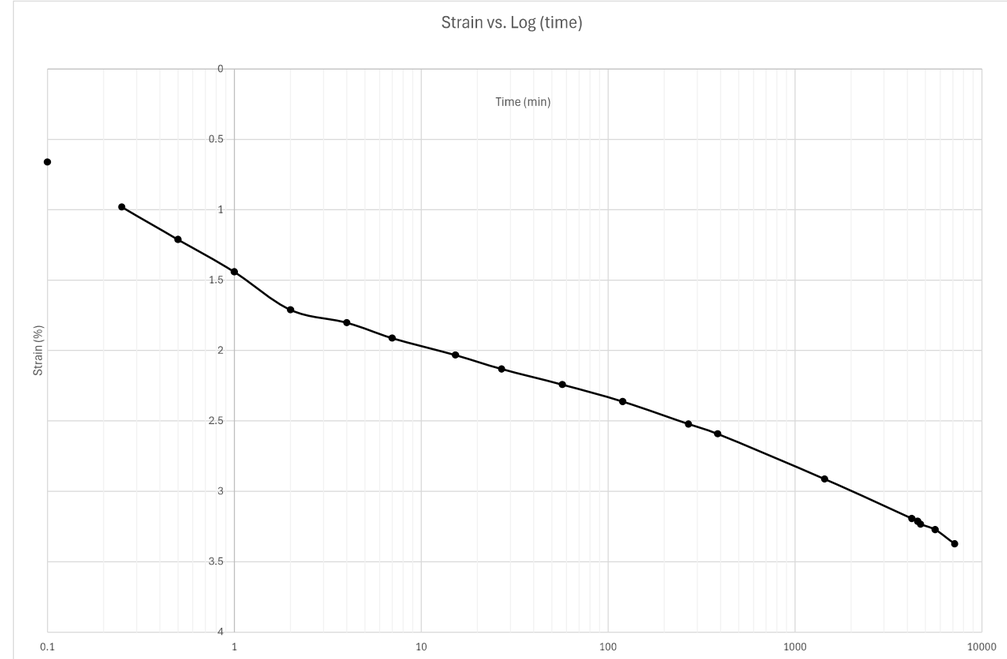
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.0723	-0.0003	0.9562	-0.03003	9.995
1			6	0.10	0.32	1000	0.083	0.0104	0.9455	1.041041	9.872
2			15	0.25	0.50	1000	0.0877	0.0151	0.9408	1.511512	9.818
3			30	0.50	0.71	1000	0.093	0.0204	0.9355	2.042042	9.757
4		1		1.00	1.00	1000	0.1	0.0274	0.9285	2.742743	9.676
5		2		2.00	1.41	1000	0.1089	0.0363	0.9196	3.633634	9.574
6		4		4.00	2.00	1000	0.1192	0.0466	0.9093	4.664665	9.455
7		8	24	8.40	2.90	1000	0.13	0.0574	0.8985	5.745746	9.331
8		15		15.00	3.87	1000	0.1384	0.0658	0.8901	6.586587	9.235
9		27		27.00	5.20	1000	0.1462	0.0736	0.8823	7.367367	9.145
10		56		56.00	7.48	1000	0.1557	0.0831	0.8728	8.318318	9.036
11	1	58		118.00	10.86	1000	0.1648	0.0922	0.8637	9.229229	8.931
12	4	22		262.00	16.19	1000	0.174	0.1014	0.8545	10.15015	8.825
13	22	24		1344.00	36.66	1000	0.1932	0.1206	0.8353	12.07207	8.605
14	25	29		1529.00	39.10	1000	0.1946	0.122	0.8339	12.21221	8.588
15	30	34		1834.00	42.83	1000	0.1965	0.1239	0.832	12.4024	8.567
16	47	14		2834.00	53.24	1000	0.202	0.1294	0.8265	12.95295	8.503
17	50	55		3055.00	55.27	1000	0.2029	0.1303	0.8256	13.04304	8.493
18	118	36		7116.00	84.36	1000	0.2136	0.141	0.8149	14.11411	8.370
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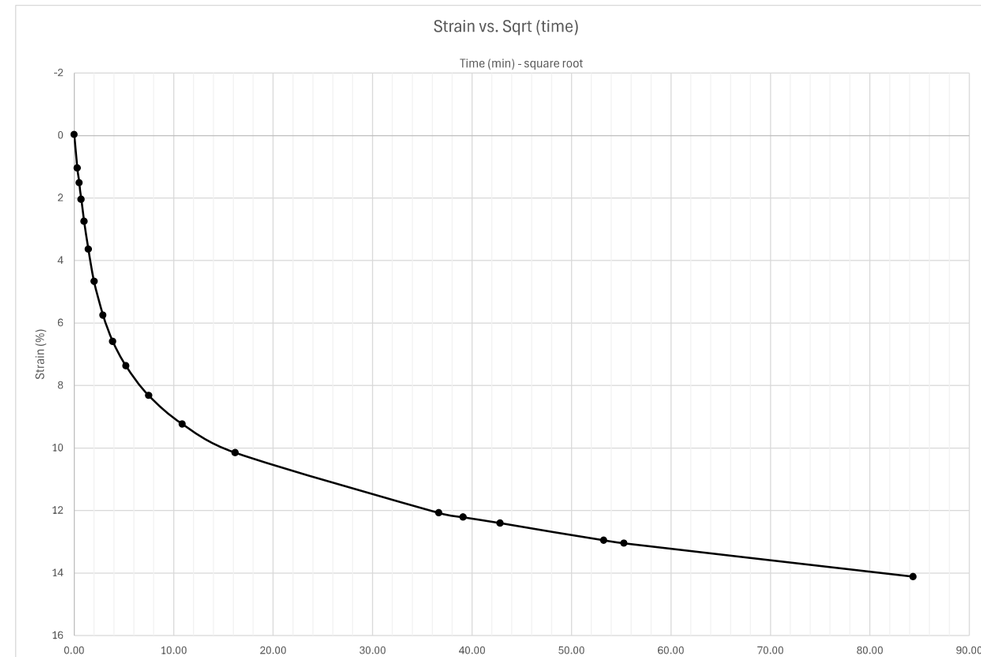
Sequence 3: 1000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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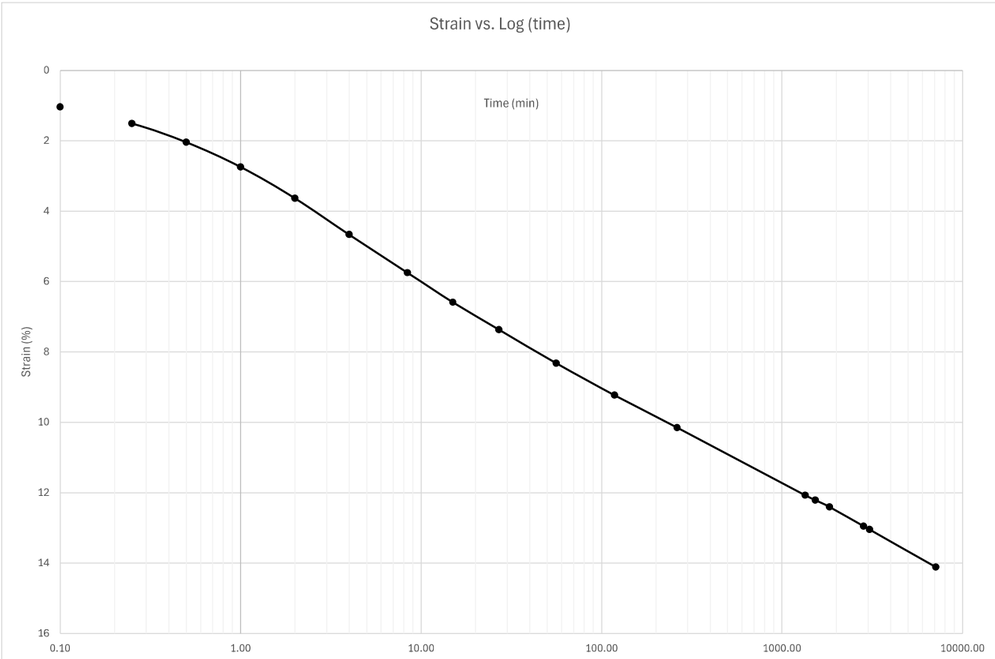
Sequence 3: 1000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.2136	-0.0004	0.8153	-0.04004	8.375
1			6	0.10	0.32	2000	0.2226	0.0086	0.8063	0.860861	8.271
2			15	0.25	0.50	2000	0.2261	0.0121	0.8028	1.211211	8.231
3			30	0.50	0.71	2000	0.2307	0.0167	0.7982	1.671672	8.178
4		1		1.00	1.00	2000	0.2375	0.0235	0.7914	2.352352	8.100
5		2		2.00	1.41	2000	0.2472	0.0332	0.7817	3.323323	7.988
6		4		4.00	2.00	2000	0.2605	0.0465	0.7684	4.654655	7.835
7		8		8.00	2.83	2000	0.2774	0.0634	0.7515	6.346346	7.641
8		15		15.00	3.87	2000	0.2945	0.0805	0.7344	8.058058	7.444
9		30		30.00	5.48	2000	0.3129	0.0989	0.716	9.8999	7.233
10	1			60.00	7.75	2000	0.328	0.114	0.7009	11.41141	7.059
11	2	1		121.00	11.00	2000	0.3395	0.1255	0.6894	12.56256	6.927
12	4			240.00	15.49	2000	0.3486	0.1346	0.6803	13.47347	6.822
13	6	4		364.00	19.08	2000	0.3539	0.1399	0.675	14.004	6.761
14	23	14		1394.00	37.34	2000	0.3705	0.1565	0.6584	15.66567	6.571
15	26			1560.00	39.50	2000	0.3717	0.1577	0.6572	15.78579	6.557
16	28	57		1737.00	41.68	2000	0.3731	0.1591	0.6558	15.92593	6.541
17	47			2820.00	53.10	2000	0.3791	0.1651	0.6498	16.52653	6.472
18	52	43		3163.00	56.24	2000	0.3804	0.1664	0.6485	16.65666	6.457
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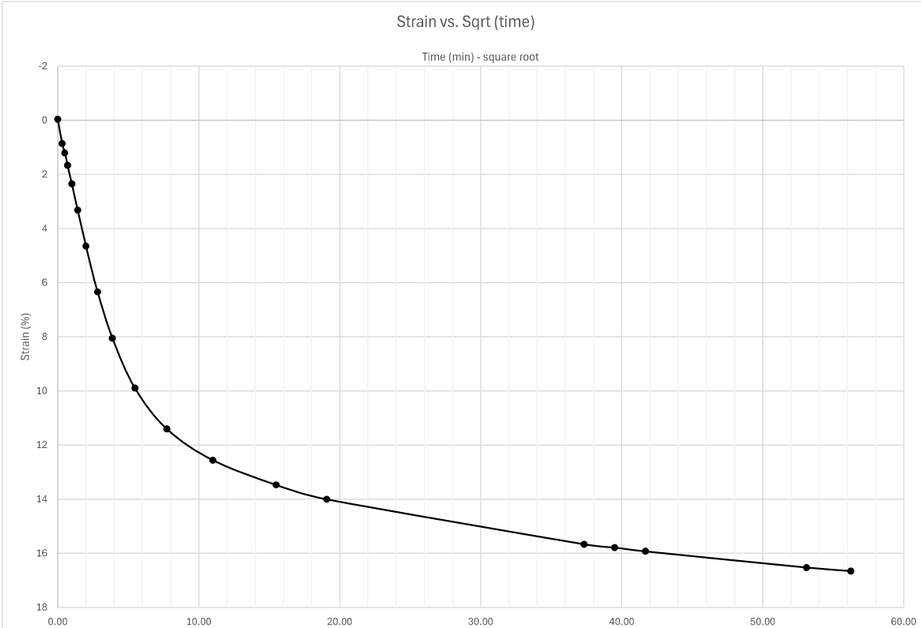
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3000, ST-24, 8-10 ft

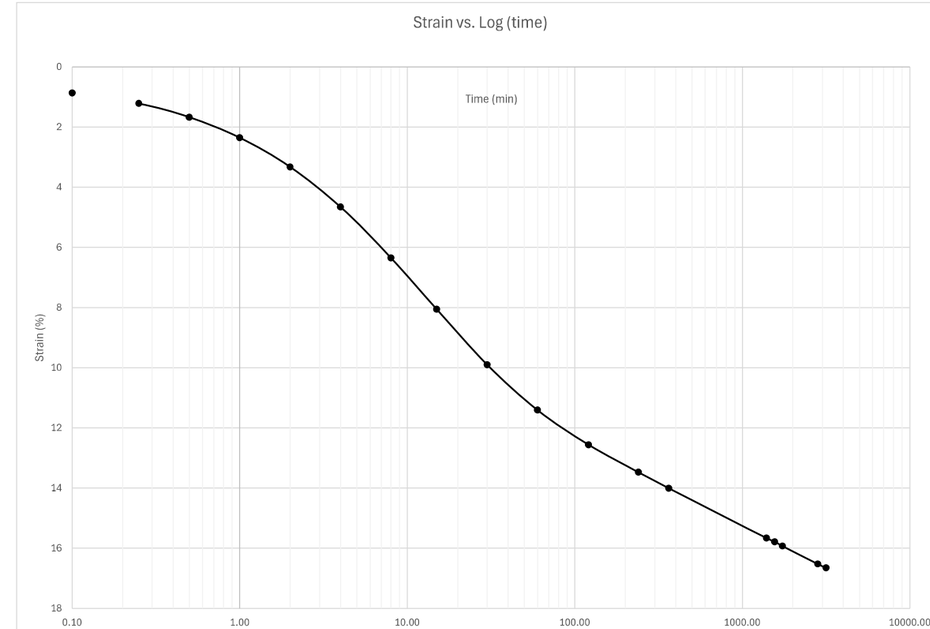
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.3804	-0.0007	0.6492	-0.07007	6.465
1			6	0.10	0.32	4000	0.3866	0.0055	0.643	0.550551	6.393
2			15	0.25	0.50	4000	0.3892	0.0081	0.6404	0.810811	6.364
3			30	0.50	0.71	4000	0.3928	0.0117	0.6368	1.171171	6.322
4		1		1.00	1.00	4000	0.3964	0.0153	0.6332	1.531532	6.281
5		2		2.00	1.41	4000	0.4035	0.0224	0.6261	2.242242	6.199
6		4		4.00	2.00	4000	0.4134	0.0323	0.6162	3.233233	6.085
7		8		8.00	2.83	4000	0.4251	0.044	0.6045	4.404404	5.951
8		15		15.00	3.87	4000	0.4491	0.068	0.5805	6.806807	5.675
9		37		37.00	6.08	4000	0.4611	0.08	0.5685	8.008008	5.537
10	1			60.00	7.75	4000	0.4711	0.09	0.5585	9.009009	5.422
11	2	19		139.00	11.79	4000	0.4856	0.1045	0.544	10.46046	5.255
12	10			600.00	24.49	4000	0.5	0.1189	0.5296	11.9019	5.090
13	18	15		1095.00	33.09	4000	0.506	0.1249	0.5236	12.5025	5.021
14	20	23		1223.00	34.97	4000	0.5093	0.1282	0.5203	12.83283	4.983
15	22	24		1344.00	36.66	4000	0.5107	0.1296	0.5189	12.97297	4.966
16	26	37		1597.00	39.96	4000	0.5129	0.1318	0.5167	13.19319	4.941
17	44	12		2652.00	51.50	4000	0.5179	0.1368	0.5117	13.69369	4.884
18	115	23		6923.00	83.20	4000	0.5268	0.1457	0.5028	14.58458	4.781
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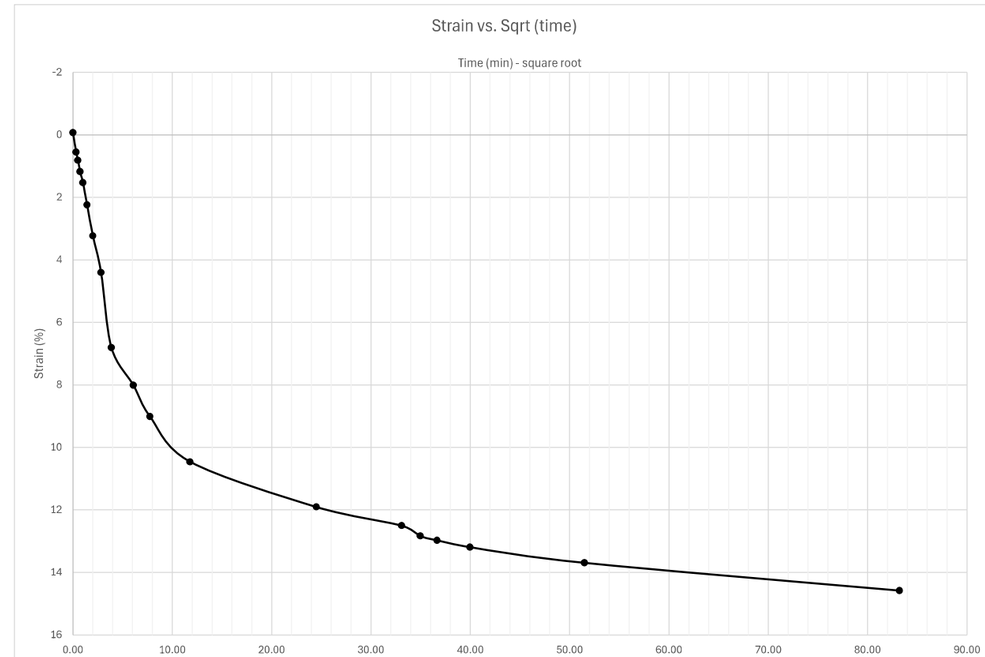
Sequence 5: 4000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

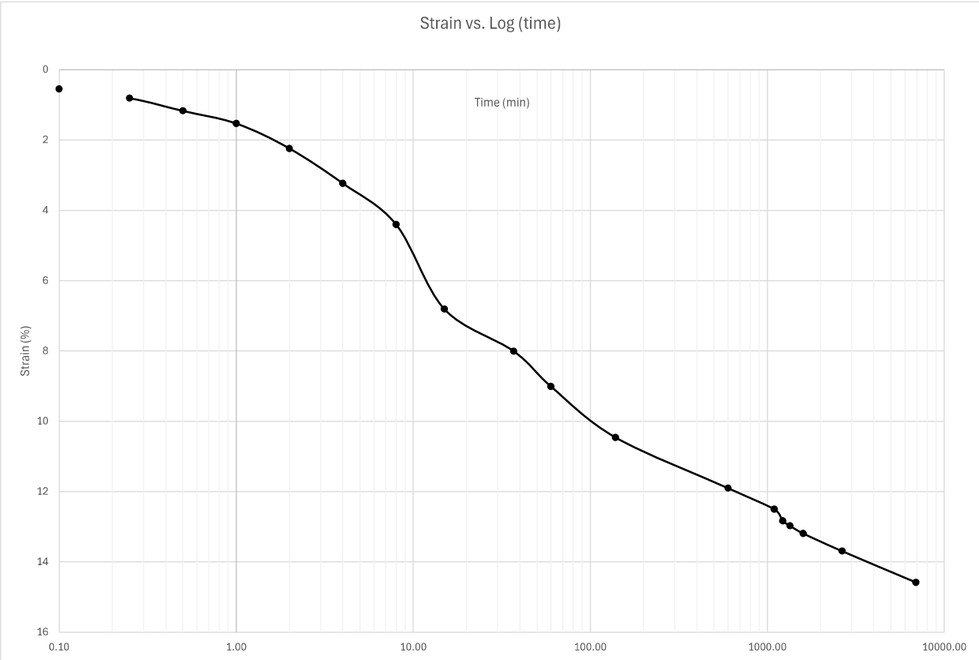


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.5268	-0.0008	0.5036	-0.08008	4.791
1			6	0.10	0.32	8000	0.5309	0.0033	0.4995	0.33033	4.743
2			15	0.25	0.50	8000	0.5323	0.0047	0.4981	0.47047	4.727
3			30	0.50	0.71	8000	0.534	0.0064	0.4964	0.640641	4.708
4		1		1.00	1.00	8000	0.5366	0.009	0.4938	0.900901	4.678
5		2		2.00	1.41	8000	0.5404	0.0128	0.49	1.281281	4.634
6		4		4.00	2.00	8000	0.5456	0.018	0.4848	1.801802	4.574
7		8		8.00	2.83	8000	0.5527	0.0251	0.4777	2.512513	4.493
8		15		15.00	3.87	8000	0.561	0.0334	0.4694	3.343343	4.397
9		30		30.00	5.48	8000	0.5715	0.0439	0.4589	4.394394	4.277
10	1			60.00	7.75	8000	0.5818	0.0542	0.4486	5.425425	4.158
11	2	3		123.00	11.09	8000	0.5917	0.0641	0.4387	6.416416	4.044
12	4			240.00	15.49	8000	0.5991	0.0715	0.4313	7.157157	3.959
13	6	53		413.00	20.32	8000	0.6042	0.0766	0.4262	7.667668	3.901
14	22	32		1352.00	36.77	8000	0.6135	0.0859	0.4169	8.598599	3.794
15	24	3		1443.00	37.99	8000	0.6139	0.0863	0.4165	8.638639	3.789
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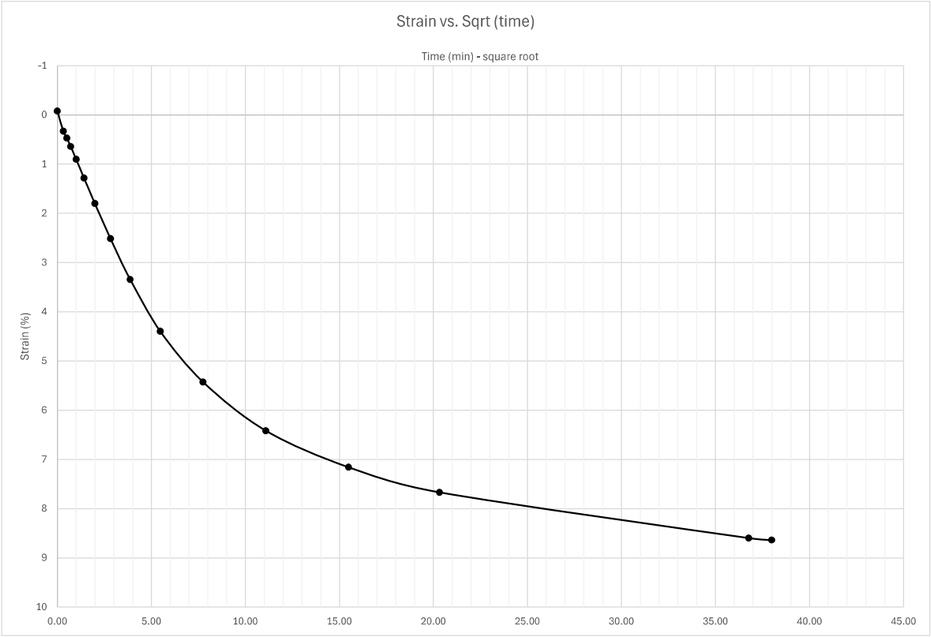
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

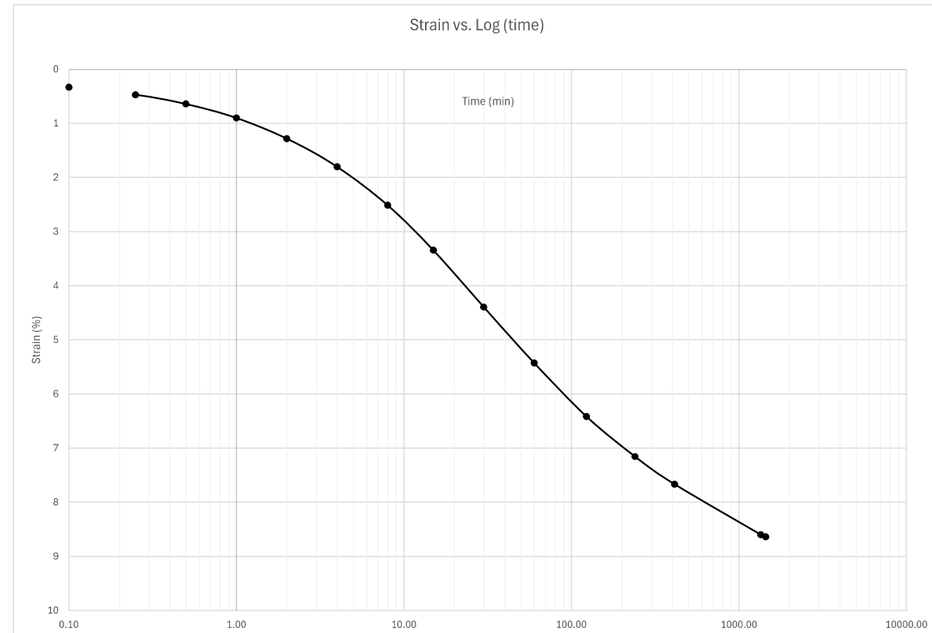
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.6139	-0.0009	0.4174	-0.09009	3.799
1			6	0.10	0.32	16000	0.6184	0.0036	0.4129	0.36036	3.748
2			15	0.25	0.50	16000	0.6197	0.0049	0.4116	0.49049	3.733
3			30	0.50	0.71	16000	0.6213	0.0065	0.41	0.650651	3.714
4		1		1.00	1.00	16000	0.6237	0.0089	0.4076	0.890891	3.687
5		2		2.00	1.41	16000	0.6272	0.0124	0.4041	1.241241	3.646
6		4		4.00	2.00	16000	0.6319	0.0171	0.3994	1.711712	3.592
7		15		15.00	3.87	16000	0.6475	0.0327	0.3838	3.273273	3.413
8		30		30.00	5.48	16000	0.657	0.0422	0.3743	4.224224	3.304
9	1	2		62.00	7.87	16000	0.6688	0.054	0.3625	5.405405	3.168
10	1	59		119.00	10.91	16000	0.6771	0.0623	0.3542	6.236236	3.073
11	3	57		237.00	15.39	16000	0.684	0.0692	0.3473	6.926927	2.993
12	5	53		353.00	18.79	16000	0.6873	0.0725	0.344	7.257257	2.955
13	20	59		1259.00	35.48	16000	0.696	0.0812	0.3353	8.128128	2.855
14	24	27		1467.00	38.30	16000	0.6969	0.0821	0.3344	8.218218	2.845
15	25	45		1545.00	39.31	16000	0.6972	0.0824	0.3341	8.248248	2.842
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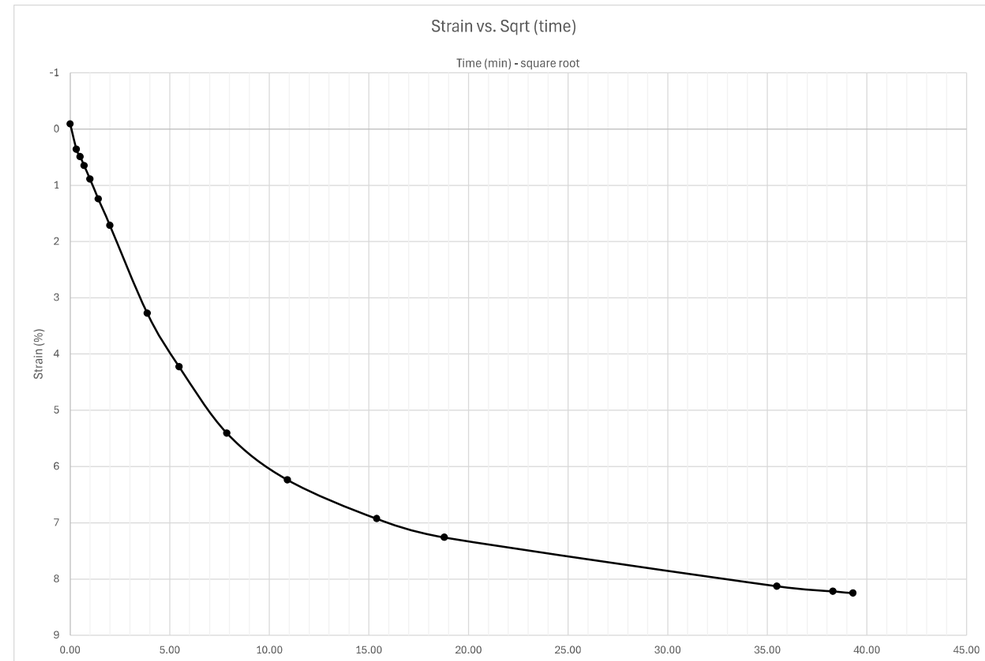
Sequence 7: 16000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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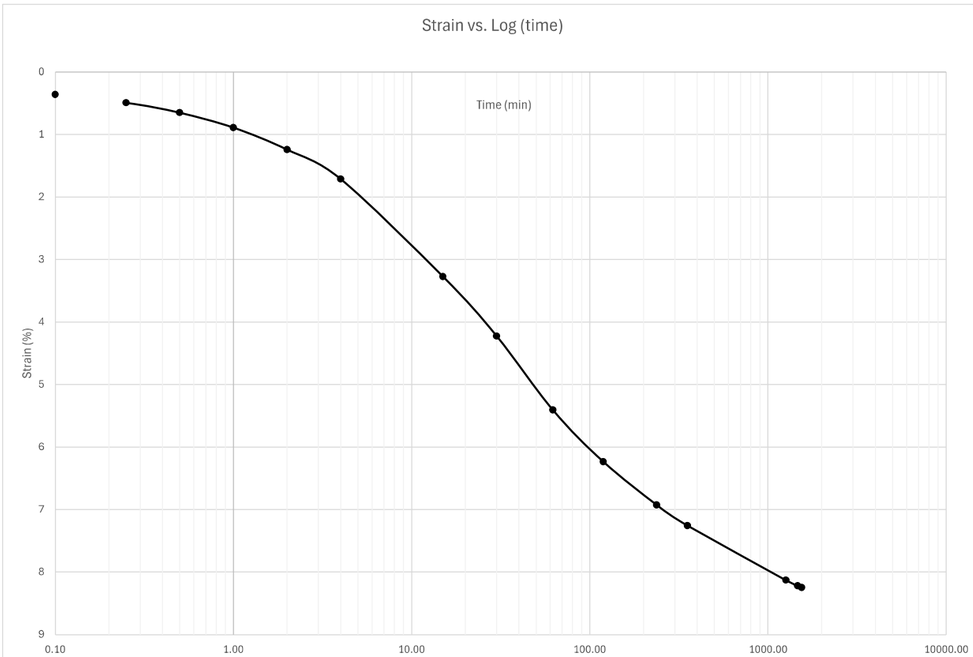
Sequence 7: 16000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6972	0.0006	0.3335	0.06006	2.835
1			6	0.10	0.32	8000	0.6956	-0.001	0.3351	-0.1001	2.853
2			15	0.25	0.50	8000	0.6953	-0.0013	0.3354	-0.13013	2.857
3			30	0.50	0.71	8000	0.695	-0.0016	0.3357	-0.16016	2.860
4		1		1.00	1.00	8000	0.6946	-0.002	0.3361	-0.2002	2.865
5		2		2.00	1.41	8000	0.6942	-0.0024	0.3365	-0.24024	2.869
6		4		4.00	2.00	8000	0.6936	-0.003	0.3371	-0.3003	2.876
7		8		8.00	2.83	8000	0.6929	-0.0037	0.3378	-0.37037	2.884
8		16		16.00	4.00	8000	0.6923	-0.0043	0.3384	-0.43043	2.891
9		26		26.00	5.10	8000	0.6919	-0.0047	0.3388	-0.47047	2.896
10		57		57.00	7.55	8000	0.6912	-0.0054	0.3395	-0.540541	2.904
11	2	4		124.00	11.14	8000	0.6907	-0.0059	0.34	-0.590591	2.909
12	3	52		232.00	15.23	8000	0.6903	-0.0063	0.3404	-0.630631	2.914
13	19	18		1158.00	34.03	8000	0.6897	-0.0069	0.341	-0.690691	2.921
14	24	25		1465.00	38.28	8000	0.6897	-0.0069	0.341	-0.690691	2.921
15	27	50		1670.00	40.87	8000	0.6896	-0.007	0.3411	-0.700701	2.922
16	44	5		2645.00	51.43	8000	0.6896	-0.007	0.3411	-0.700701	2.922
17	50	48		3048.00	55.21	8000	0.6896	-0.007	0.3411	-0.700701	2.922
18	115	53		6953.00	83.38	8000	0.6896	-0.007	0.3411	-0.700701	2.922
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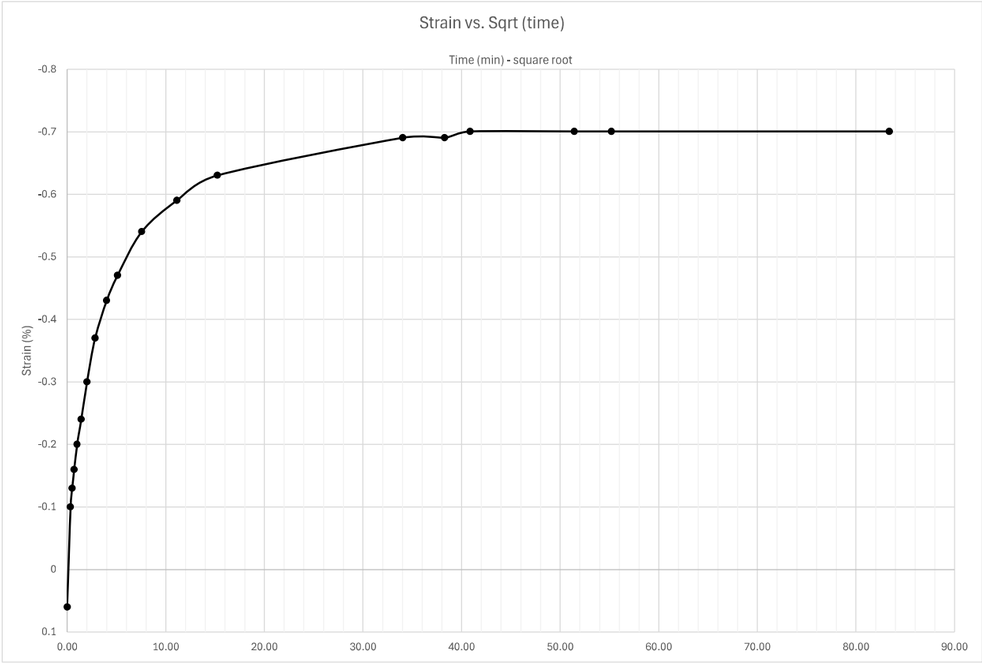
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

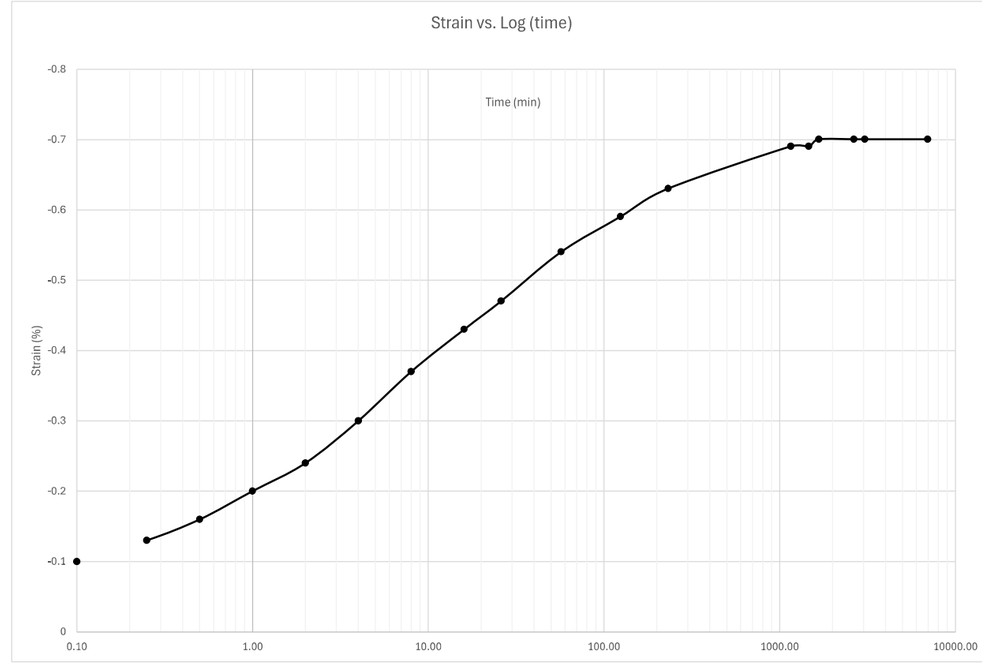
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 6000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	6000	0.6896	1E-04	0.341	0.01001	2.921
1			6	0.10	0.32	6000	0.6894	-1E-04	0.3412	-0.01001	2.923
2			15	0.25	0.50	6000	0.6893	-0.0002	0.3413	-0.02002	2.924
3			30	0.50	0.71	6000	0.6893	-0.0002	0.3413	-0.02002	2.924
4		1		1.00	1.00	6000	0.6892	-0.0003	0.3414	-0.03003	2.926
5		2		2.00	1.41	6000	0.689	-0.0005	0.3416	-0.05005	2.928
6		4		4.00	2.00	6000	0.6889	-0.0006	0.3417	-0.06006	2.929
7		8		8.00	2.83	6000	0.6887	-0.0008	0.3419	-0.08008	2.931
8		15		15.00	3.87	6000	0.6886	-0.0009	0.342	-0.09009	2.932
9		30		30.00	5.48	6000	0.6885	-0.001	0.3421	-0.1001	2.934
10	1			60.00	7.75	6000	0.6885	-0.001	0.3421	-0.1001	2.934
11	2			120.00	10.95	6000	0.6884	-0.0011	0.3422	-0.11011	2.935
12	4			240.00	15.49	6000	0.6883	-0.0012	0.3423	-0.12012	2.936
13	8			480.00	21.91	6000	0.6882	-0.0013	0.3424	-0.13013	2.937
14	23	38		1418.00	37.66	6000	0.6879	-0.0016	0.3427	-0.16016	2.940
15	25	58		1558.00	39.47	6000	0.6878	-0.0017	0.3428	-0.17017	2.942
16	31	28		1888.00	43.45	6000	0.6878	-0.0017	0.3428	-0.17017	2.942
17	47	4		2824.00	53.14	6000	0.6878	-0.0017	0.3428	-0.17017	2.942
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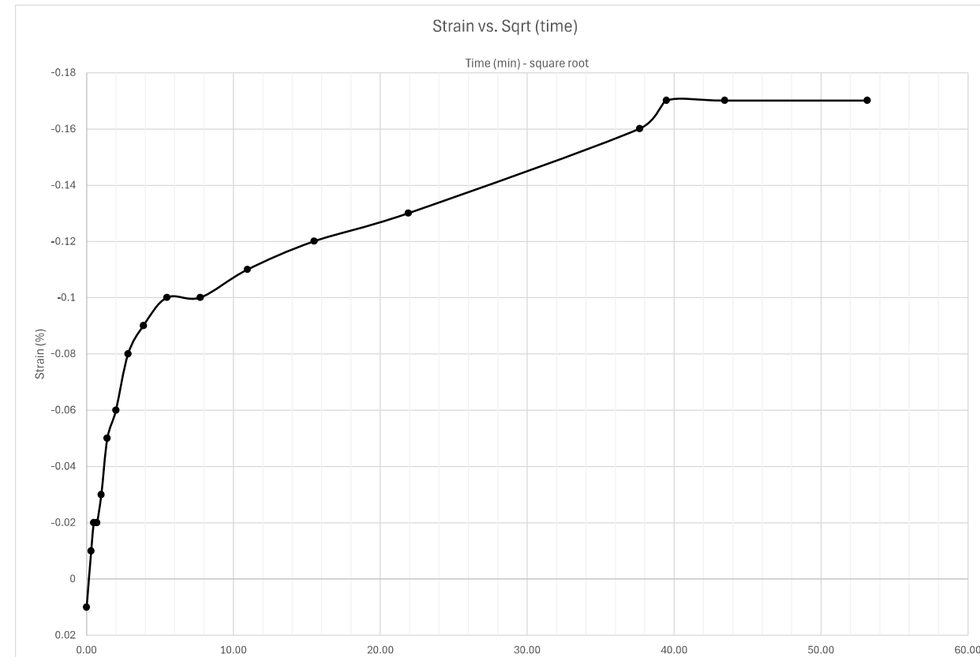
Sequence 9: 6000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

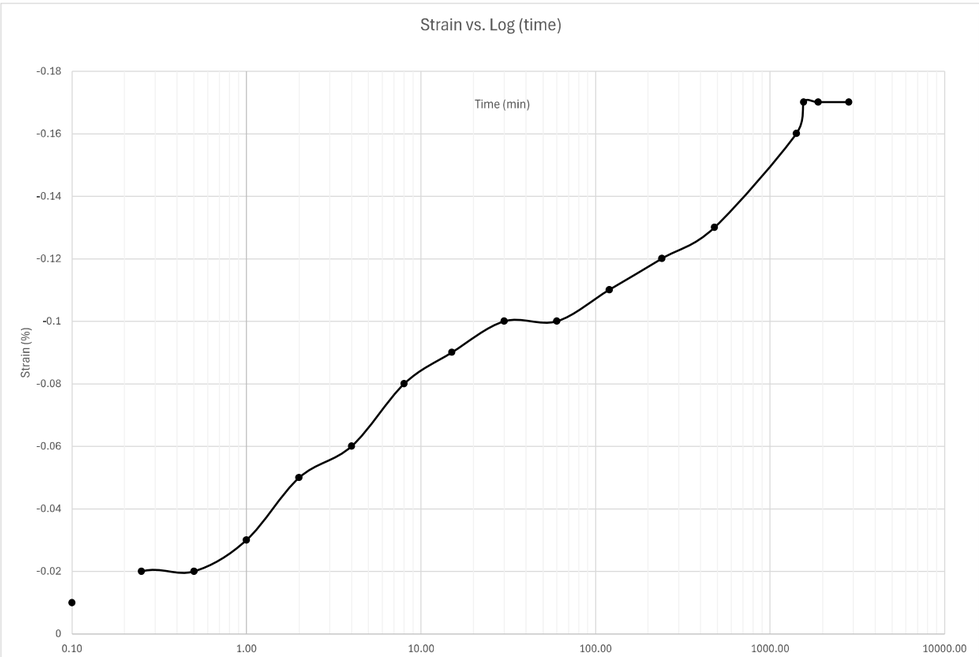


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 6000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6878	0.0008	0.342	0.08008	2.932
1			6	0.10	0.32	2000	0.686	-0.001	0.3438	-0.1001	2.953
2			15	0.25	0.50	2000	0.6857	-0.0013	0.3441	-0.13013	2.957
3			30	0.50	0.71	2000	0.6854	-0.0016	0.3444	-0.16016	2.960
4		1		1.00	1.00	2000	0.685	-0.002	0.3448	-0.2002	2.965
5		2		2.00	1.41	2000	0.6845	-0.0025	0.3453	-0.25025	2.970
6		4		4.00	2.00	2000	0.684	-0.003	0.3458	-0.3003	2.976
7		8		8.00	2.83	2000	0.6832	-0.0038	0.3466	-0.38038	2.985
8		21		21.00	4.58	2000	0.6821	-0.0049	0.3477	-0.49049	2.998
9	1	13		73.00	8.54	2000	0.6807	-0.0063	0.3491	-0.630631	3.014
10	2			120.00	10.95	2000	0.6801	-0.0069	0.3497	-0.690691	3.021
11	4	19		259.00	16.09	2000	0.679	-0.008	0.3508	-0.800801	3.034
12	7			420.00	20.49	2000	0.6782	-0.0088	0.3516	-0.880881	3.043
13	22	49		1369.00	37.00	2000	0.6756	-0.0114	0.3542	-1.141141	3.073
14	26	32		1592.00	39.90	2000	0.6754	-0.0116	0.3544	-1.161161	3.075
15	28	27		1707.00	41.32	2000	0.6751	-0.0119	0.3547	-1.191191	3.078
16	31	10		1870.00	43.24	2000	0.675	-0.012	0.3548	-1.201201	3.080
17	47			2820.00	53.10	2000	0.674	-0.013	0.3558	-1.301301	3.091
18	48	45		2925.00	54.08	2000	0.6738	-0.0132	0.356	-1.321321	3.093
19	53	55		3235.00	56.88	2000	0.6736	-0.0134	0.3562	-1.341341	3.096
20	78	40		4720.00	68.70	2000	0.6729	-0.0141	0.3569	-1.411411	3.104
21	121	29		7289.00	85.38	2000	0.6728	-0.0142	0.357	-1.421421	3.105
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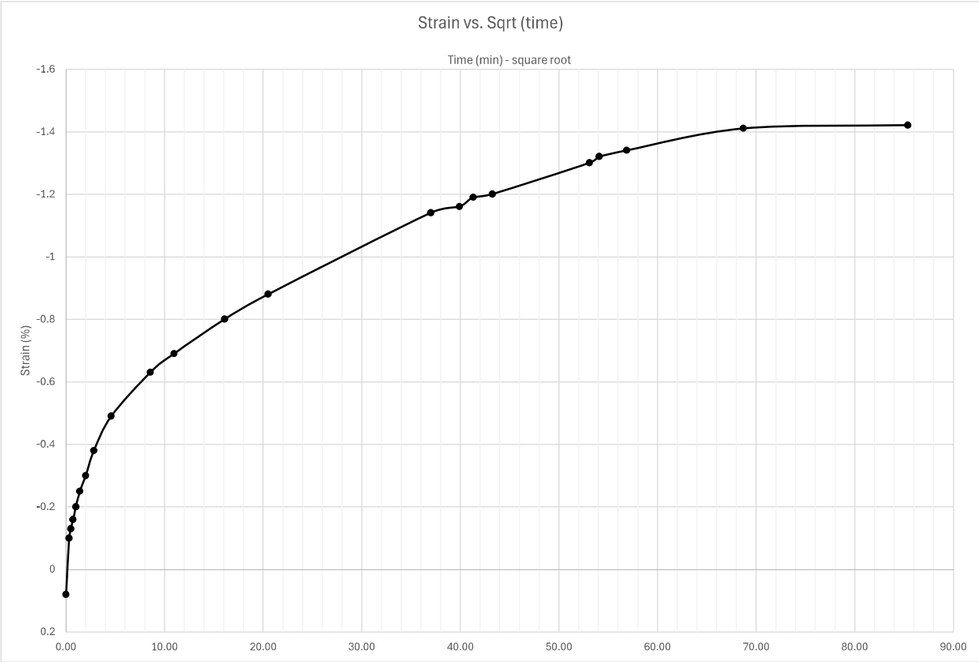
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3000, ST-24, 8-10 ft

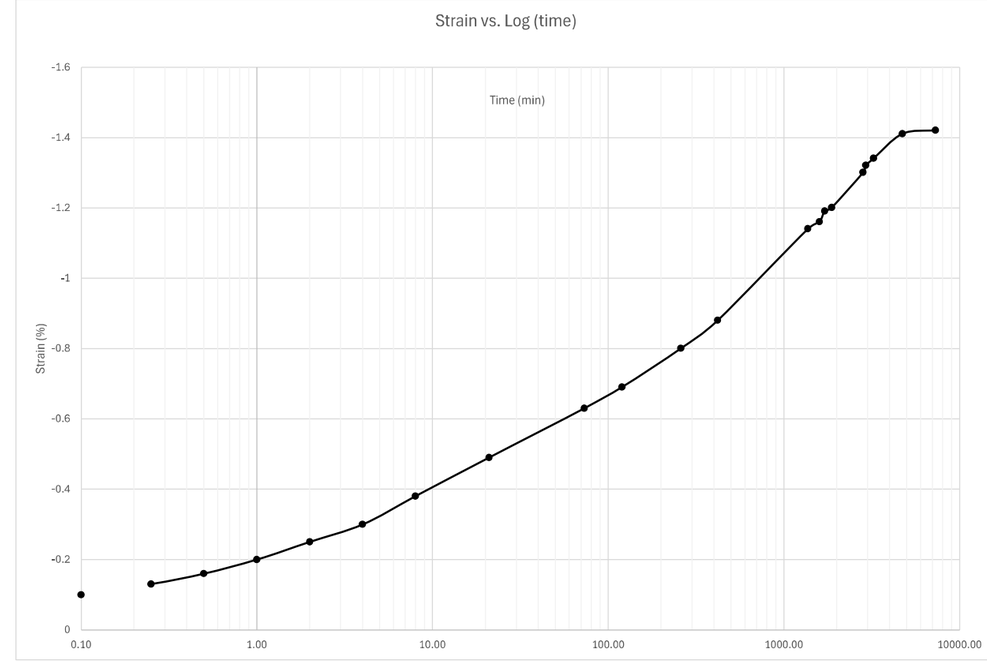
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.6728	-0.0004	0.3574	-0.04004	3.110
1			6	0.10	0.32	4000	0.6726	-0.0006	0.3564	-0.06006	3.098
2			15	0.25	0.50	4000	0.6728	-0.0004	0.3562	-0.04004	3.096
3			30	0.50	0.71	4000	0.6729	-0.0003	0.3561	-0.03003	3.095
4		1		1.00	1.00	4000	0.6731	-0.0001	0.3559	-0.01001	3.092
5		2		2.00	1.41	4000	0.6734	0.0002	0.3556	0.02002	3.089
6		4		4.00	2.00	4000	0.6738	0.0006	0.3552	0.06006	3.084
7		8		8.00	2.83	4000	0.6742	0.001	0.3548	0.1001	3.080
8		25		25.00	5.00	4000	0.6747	0.0015	0.3543	0.15015	3.074
9		59		59.00	7.68	4000	0.675	0.0018	0.354	0.18018	3.070
10	1	56		116.00	10.77	4000	0.6752	0.002	0.3538	0.2002	3.068
11	4			240.00	15.49	4000	0.6753	0.0021	0.3537	0.21021	3.067
12	7	28		448.00	21.17	4000	0.6755	0.0023	0.3535	0.23023	3.065
13	21	35		1295.00	35.99	4000	0.676	0.0028	0.353	0.28028	3.059
14	24	11		1451.00	38.09	4000	0.676	0.0028	0.353	0.28028	3.059
15	46			2760.00	52.54	4000	0.6763	0.0031	0.3527	0.31031	3.055
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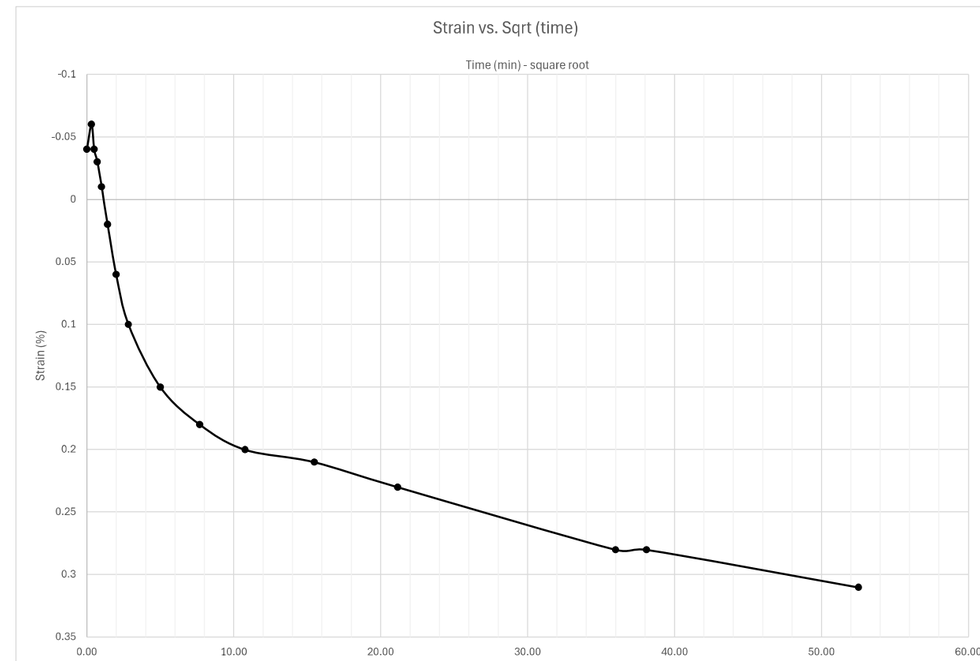
Sequence 11: 4000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

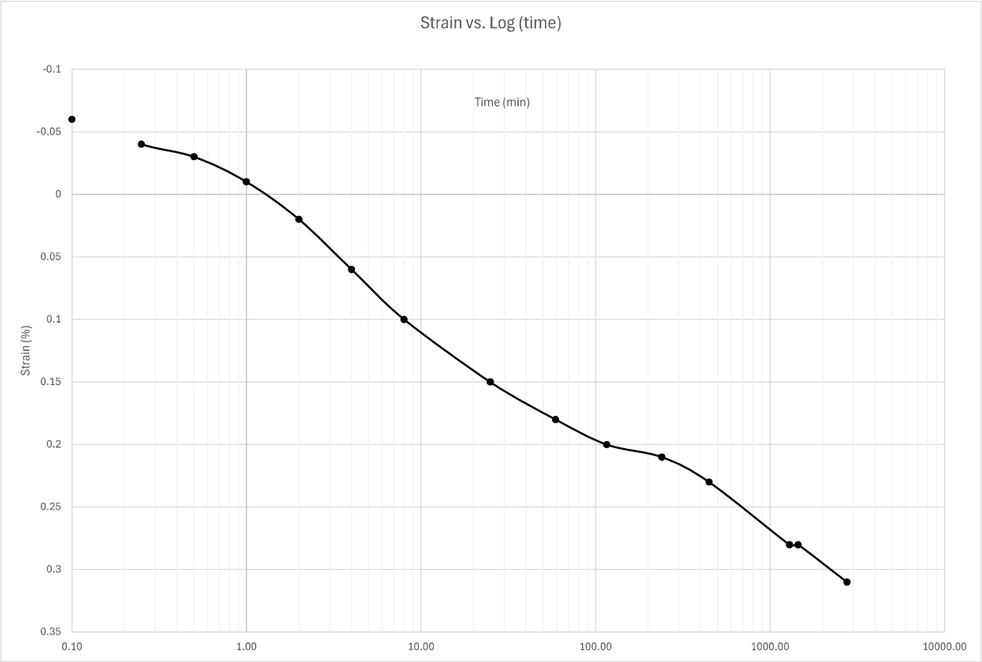


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6763	-0.0005	0.3532	-0.05005	3.061
1			6	0.10	0.32	8000	0.6777	0.0009	0.3518	0.09009	3.045
2			15	0.25	0.50	8000	0.678	0.0012	0.3515	0.12012	3.042
3			30	0.50	0.71	8000	0.6783	0.0015	0.3512	0.15015	3.038
4		1		1.00	1.00	8000	0.6787	0.0019	0.3508	0.19019	3.034
5		2		2.00	1.41	8000	0.6792	0.0024	0.3503	0.24024	3.028
6		4		4.00	2.00	8000	0.6799	0.0031	0.3496	0.31031	3.020
7		8		8.00	2.83	8000	0.6807	0.0039	0.3488	0.39039	3.011
8		15		15.00	3.87	8000	0.6812	0.0044	0.3483	0.44044	3.005
9		30		30.00	5.48	8000	0.6817	0.0049	0.3478	0.49049	2.999
10	1			60.00	7.75	8000	0.6822	0.0054	0.3473	0.540541	2.993
11	2			120.00	10.95	8000	0.6826	0.0058	0.3469	0.580581	2.989
12	4	51		291.00	17.06	8000	0.6833	0.0065	0.3462	0.650651	2.981
13	6	35		395.00	19.87	8000	0.6835	0.0067	0.346	0.670671	2.978
14	22	43		1363.00	36.92	8000	0.6846	0.0078	0.3449	0.780781	2.966
15	24	42		1482.00	38.50	8000	0.6847	0.0079	0.3448	0.790791	2.965
16	27	51		1671.00	40.88	8000	0.6848	0.008	0.3447	0.800801	2.963
17	31	2		1862.00	43.15	8000	0.6849	0.0081	0.3446	0.810811	2.962
18	46	54		2814.00	53.05	8000	0.6852	0.0084	0.3443	0.840841	2.959
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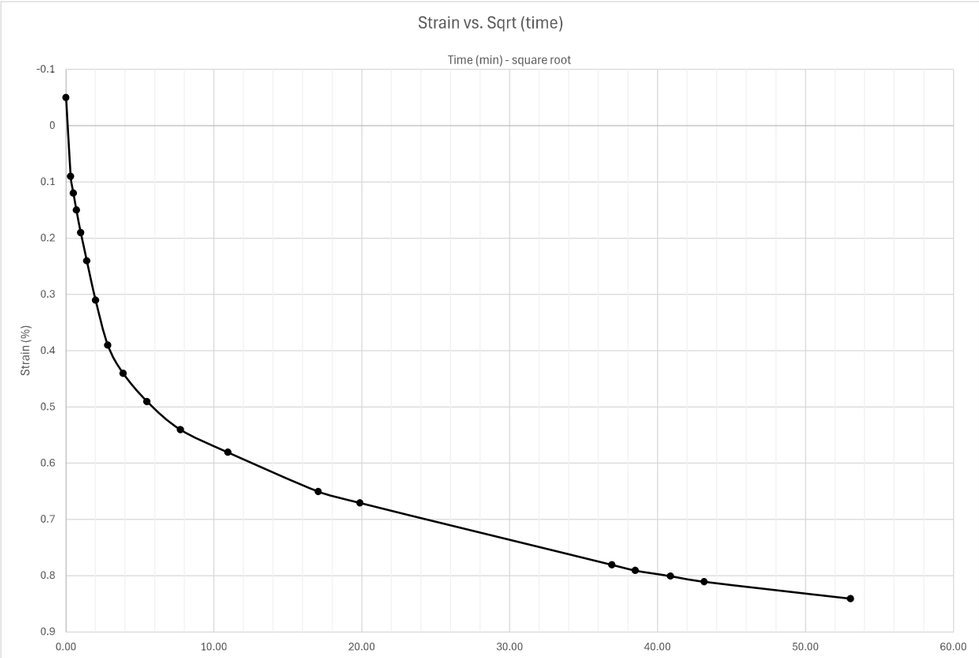
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

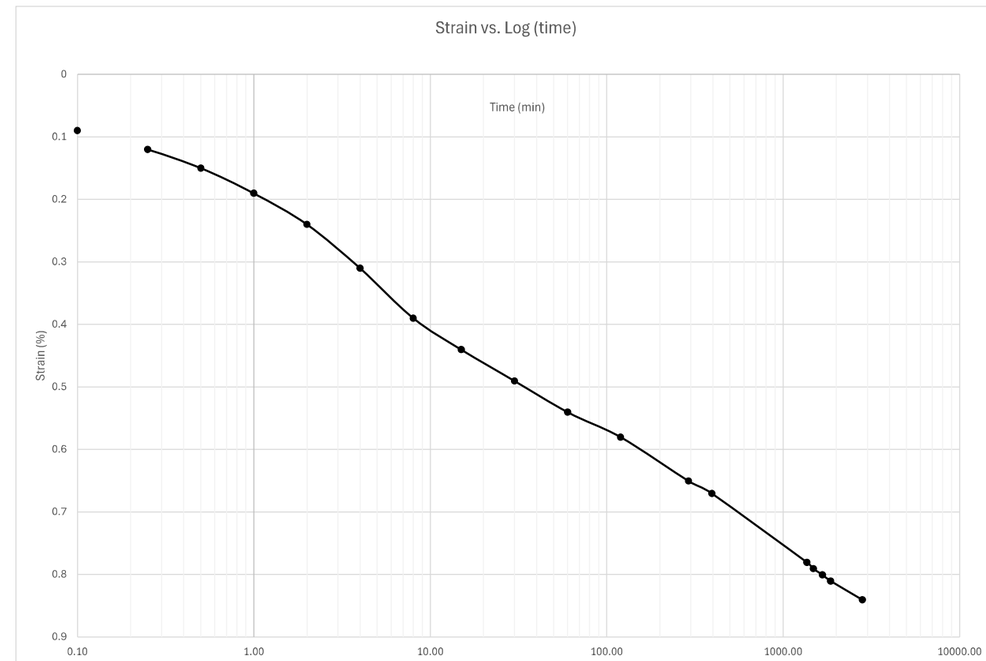
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6852	-0.0006	0.3449	-0.06006	2.966
1			6	0.10	0.32	16000	0.6872	0.0014	0.3429	0.14014	2.943
2			15	0.25	0.50	16000	0.6876	0.0018	0.3425	0.18018	2.938
3			30	0.50	0.71	16000	0.6881	0.0023	0.342	0.23023	2.932
4		1		1.00	1.00	16000	0.6888	0.003	0.3413	0.3003	2.924
5		2		2.00	1.41	16000	0.6897	0.0039	0.3404	0.39039	2.914
6		4		4.00	2.00	16000	0.6909	0.0051	0.3392	0.510511	2.900
7		8		8.00	2.83	16000	0.6923	0.0065	0.3378	0.650651	2.884
8		15		15.00	3.87	16000	0.6935	0.0077	0.3366	0.770771	2.870
9		30		30.00	5.48	16000	0.6948	0.009	0.3353	0.900901	2.855
10	1			60.00	7.75	16000	0.6959	0.0101	0.3342	1.011011	2.843
11	2			120.00	10.95	16000	0.697	0.0112	0.3331	1.121121	2.830
12	4			240.00	15.49	16000	0.6983	0.0125	0.3318	1.251251	2.815
13	5	20		320.00	17.89	16000	0.6989	0.0131	0.3312	1.311311	2.808
14	31	5		1865.00	43.19	16000	0.7032	0.0174	0.3269	1.741742	2.759
15	71	21		4281.00	65.43	16000	0.7058	0.02	0.3243	2.002002	2.729
16	73	58		4438.00	66.62	16000	0.7059	0.0201	0.3242	2.012012	2.728
17	78	38		4718.00	68.69	16000	0.7061	0.0203	0.324	2.032032	2.725
18	94	53		5693.00	75.45	16000	0.7068	0.021	0.3233	2.102102	2.717
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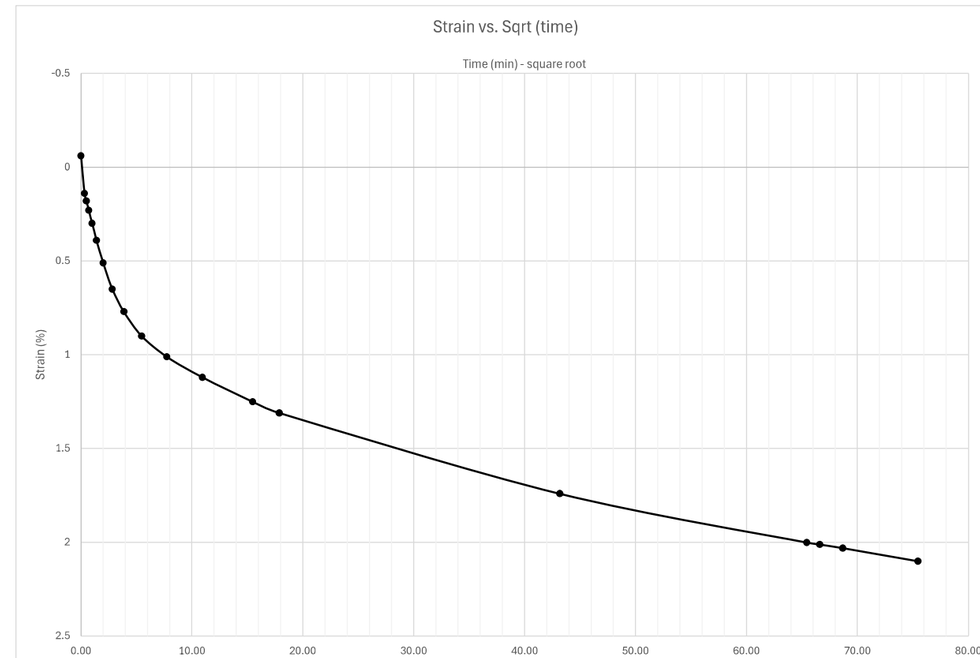
Sequence 13: 16000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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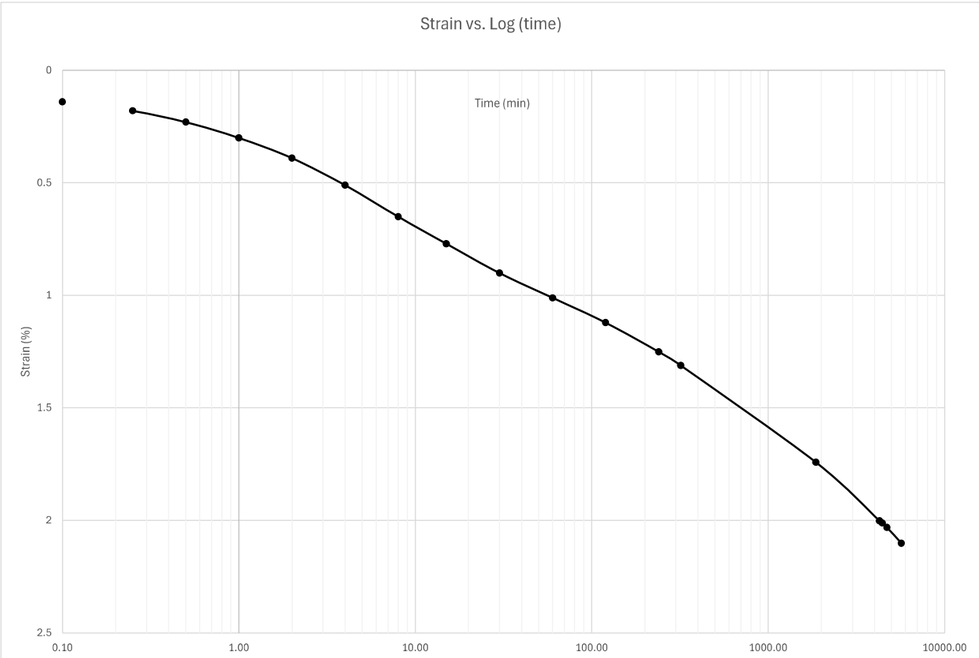
Sequence 13: 16000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.7068	-0.0012	0.3245	-0.12012	2.731
1			6	0.10	0.32	32000	0.7095	0.0015	0.3218	0.15015	2.700
2			15	0.25	0.50	32000	0.7102	0.0022	0.3211	0.22022	2.692
3			30	0.50	0.71	32000	0.711	0.003	0.3203	0.3003	2.683
4		1		1.00	1.00	32000	0.7122	0.0042	0.3191	0.42042	2.669
5		2		2.00	1.41	32000	0.7141	0.0061	0.3172	0.610611	2.647
6		4		4.00	2.00	32000	0.7164	0.0084	0.3149	0.840841	2.621
7		8		8.00	2.83	32000	0.7197	0.0117	0.3116	1.171171	2.583
8		15		15.00	3.87	32000	0.7236	0.0156	0.3077	1.561562	2.538
9		30		30.00	5.48	32000	0.7291	0.0211	0.3022	2.112112	2.475
10	1			60.00	7.75	32000	0.7351	0.0271	0.2962	2.712713	2.406
11	2			120.00	10.95	32000	0.741	0.033	0.2903	3.303303	2.338
12	4	5		245.00	15.65	32000	0.7463	0.0383	0.285	3.833834	2.277
13	8	3		483.00	21.98	32000	0.7505	0.0425	0.2808	4.254254	2.229
14	31	20		1880.00	43.36	32000	0.7576	0.0496	0.2737	4.964965	2.147
15	47	43		2863.00	53.51	32000	0.7594	0.0514	0.2719	5.145145	2.126
16	56	9		3369.00	58.04	32000	0.7601	0.0521	0.2712	5.215215	2.118
17	72			4320.00	65.73	32000	0.7612	0.0532	0.2701	5.325325	2.106
18	77	36		4656.00	68.23	32000	0.7617	0.0537	0.2696	5.375375	2.100
19	124	55		7495.00	86.57	32000	0.7647	0.0567	0.2666	5.675676	2.065
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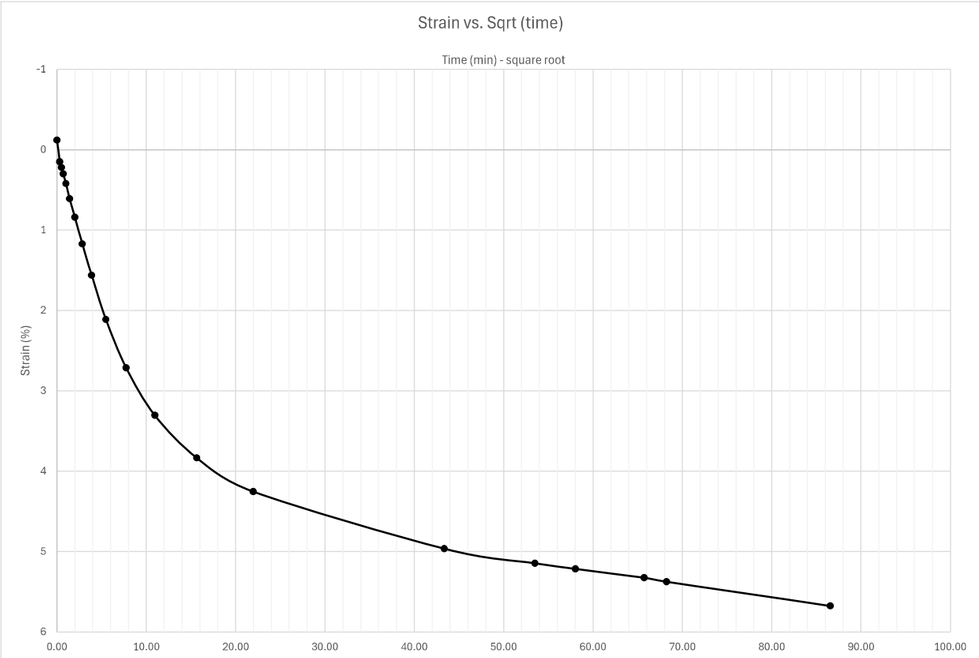
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3000, ST-24, 8-10 ft

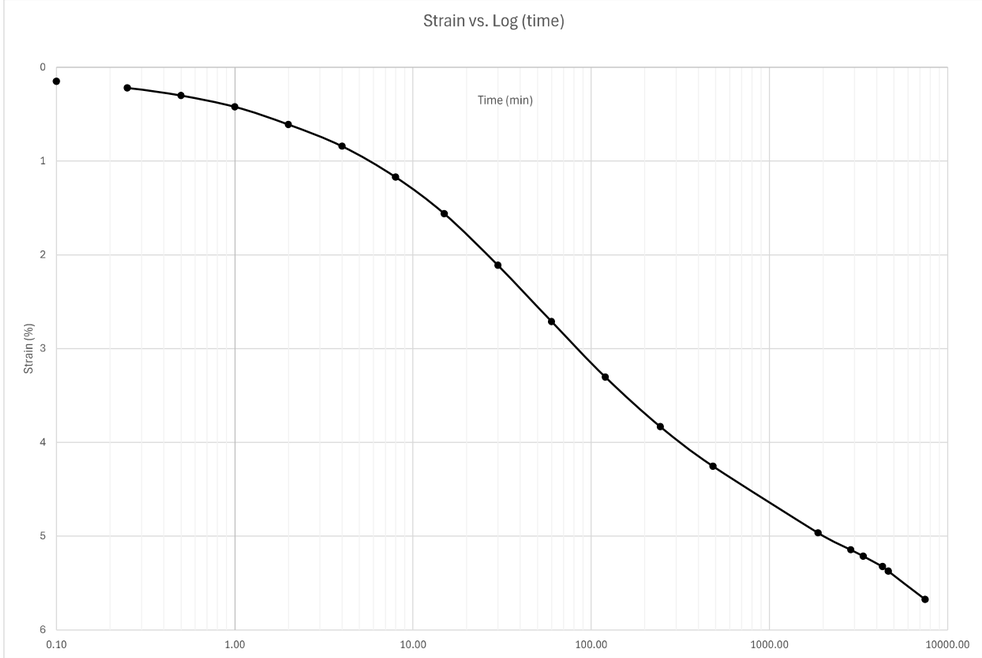
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3000, ST-24, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

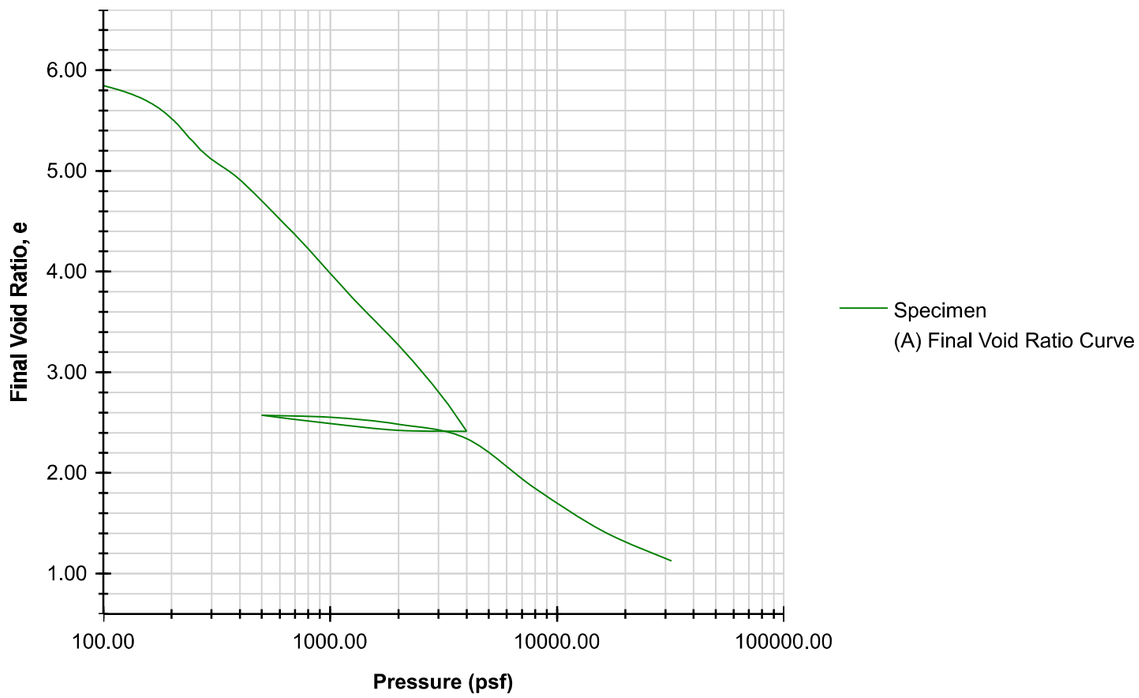


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
CONSULTING & ENGINEERING

Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/1/2026
Moisture (%)	302.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	18.1	56.8			
Saturation (%)	101.4	0.0*			
Void Ratio	6.31	1.33*	**Specific Gravity**	2.117	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	13-15	**Remarks**
Sample Number	ST-25	**Boring Number**	Y1RPC_3000	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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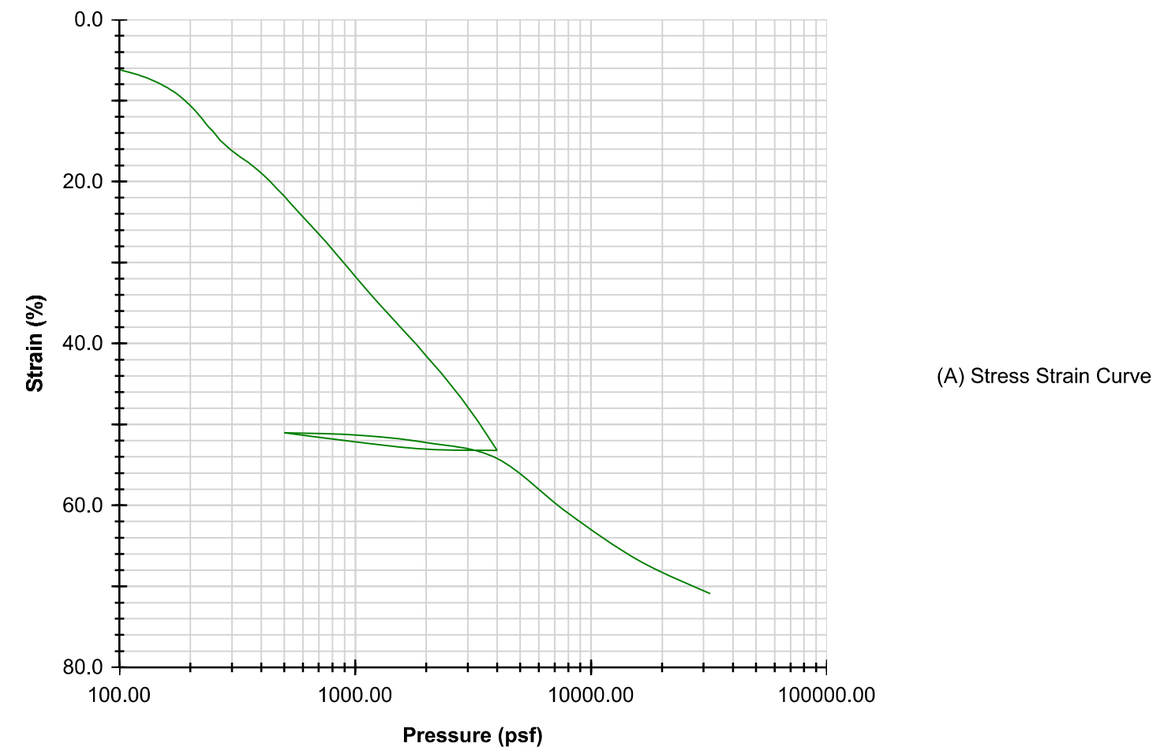
INFRASTRUCTURE
CONSULTING & ENGINEERING

SHEET 438

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 4/1/2026
Moisture (%)	302.2	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	18.1	56.8			
Saturation (%)	101.4	0.0*			
Void Ratio	6.31	1.33*	**Specific Gravity**	2.117	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	13-15	**Remarks**
Sample Number	ST-25	**Boring Number**	Y1RPC_3000	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
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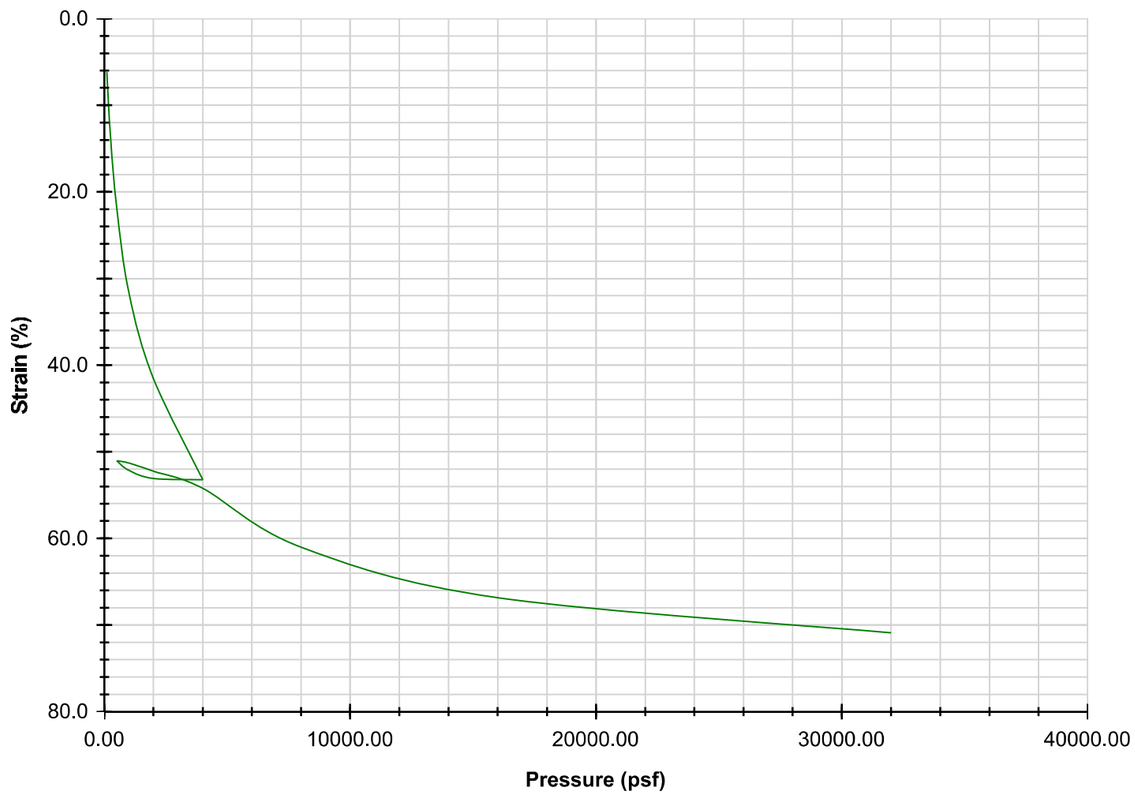
Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	Test Date 4/1/2026
Moisture (%)	302.2	0.0*	Plastic Limits	NP	
Dry Density (pcf)	18.1	56.8			
Saturation (%)	101.4	0.0*			
Void Ratio	6.31	1.33*	Specific Gravity	2.117	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	13-15	Remarks
Sample Number	ST-25	Boring Number	Y1RPC_3000	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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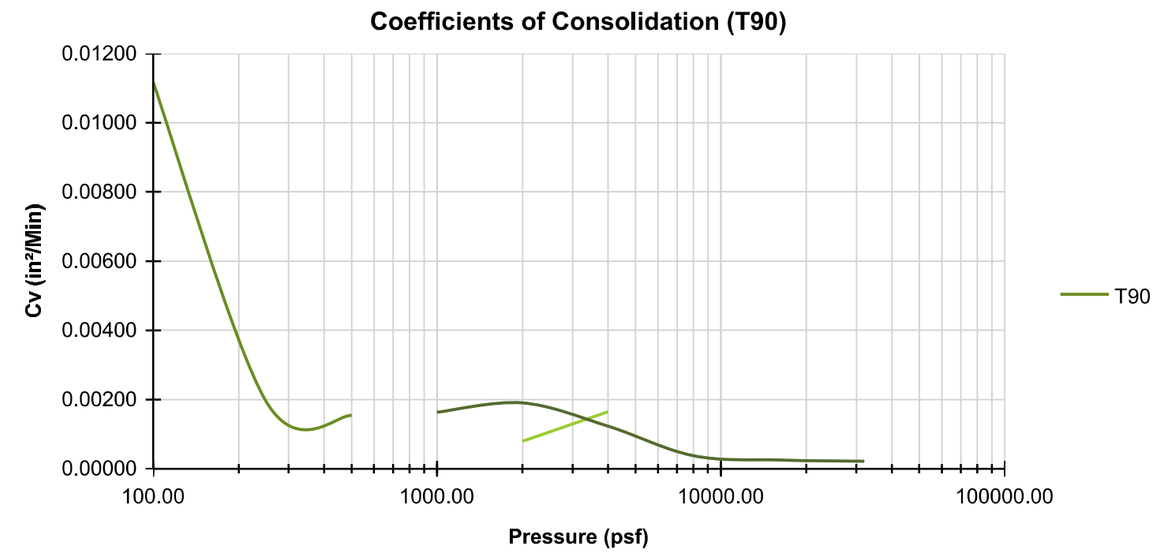
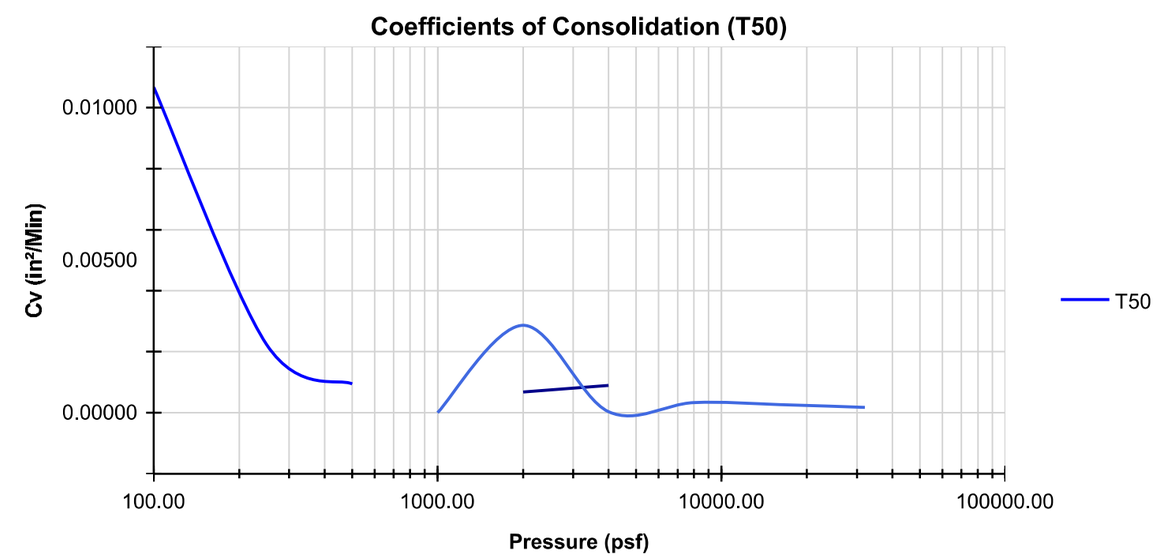
Coefficients of Consolidation

ASTM D2435





Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
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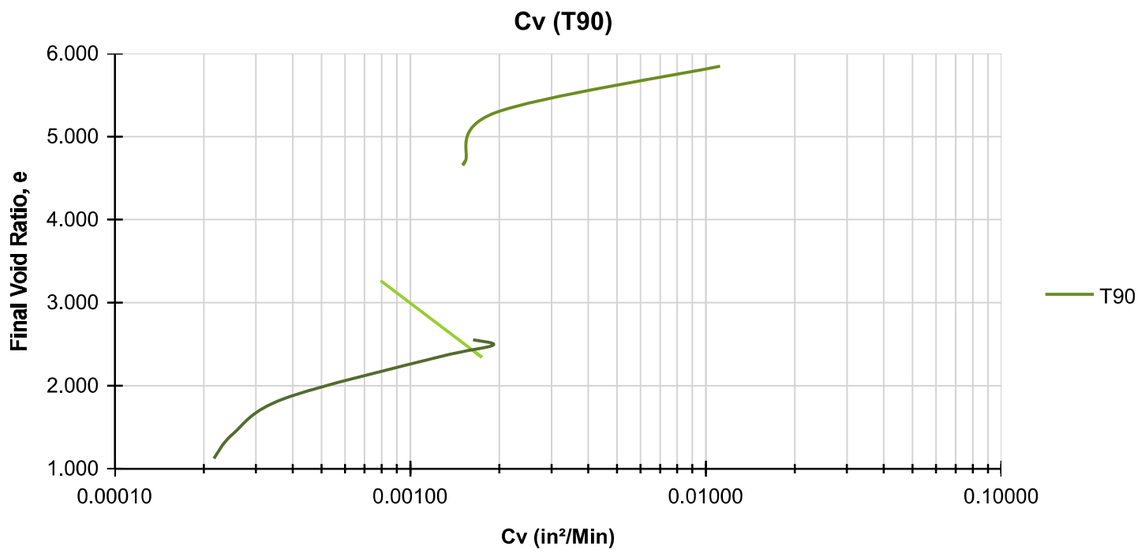
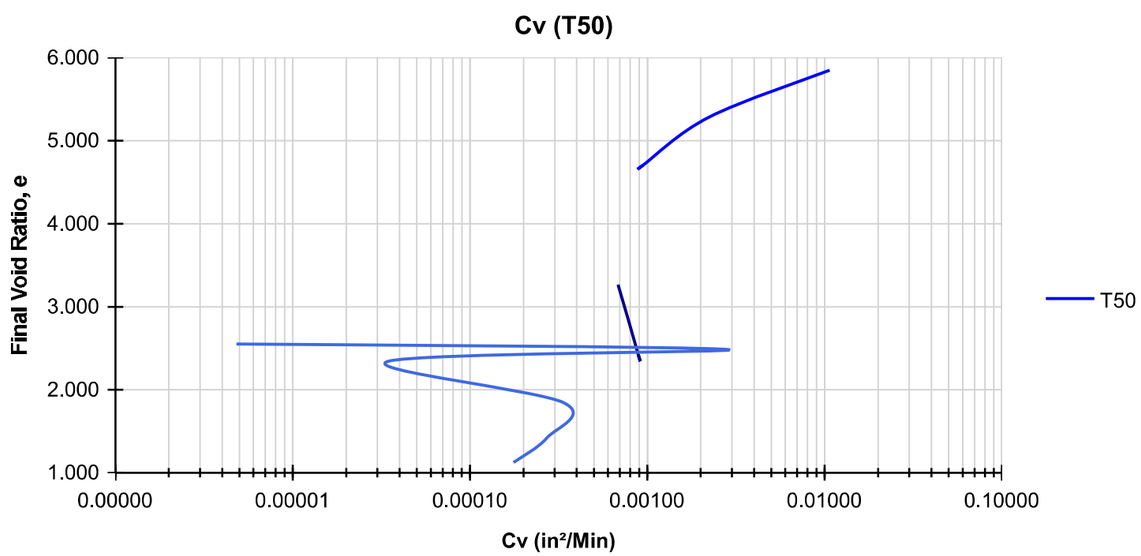
Cv - Void Ratio

ASTM D2435





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INFRASTRUCTURE
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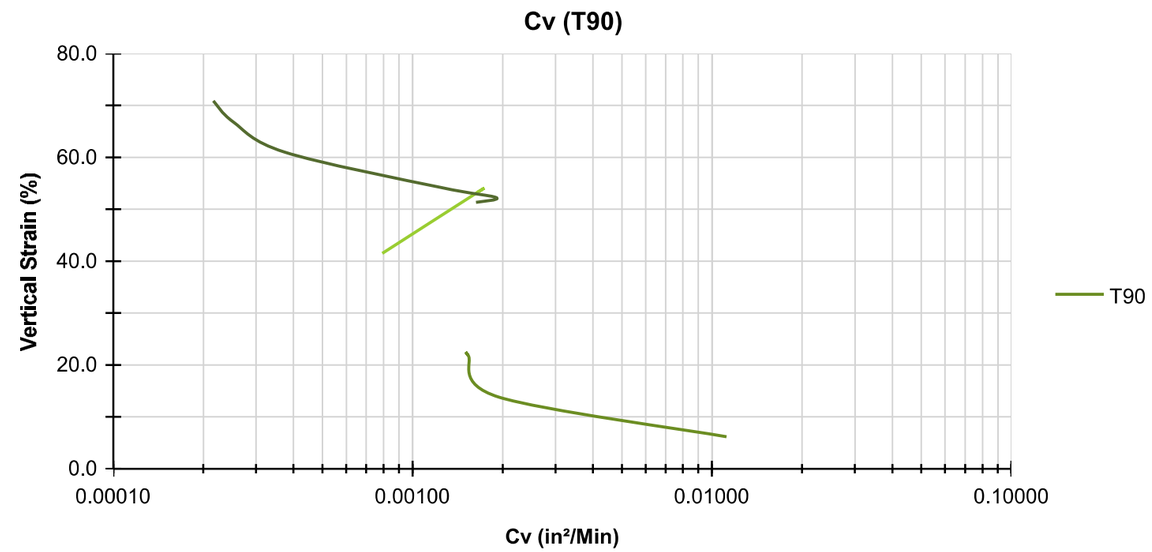
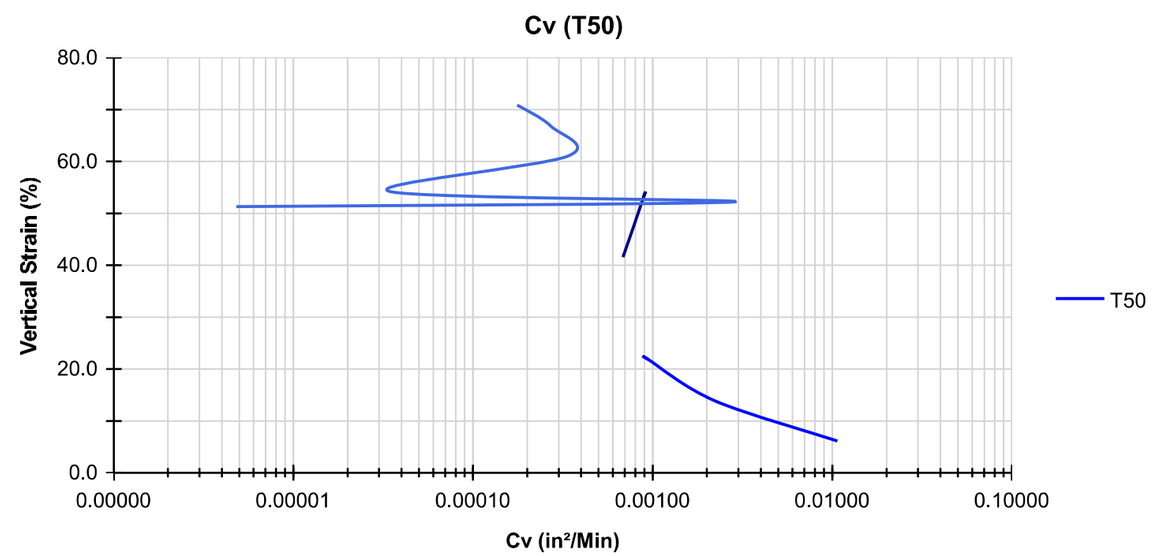
SHEET 440

Cv - Vertical Strain

ASTM D2435



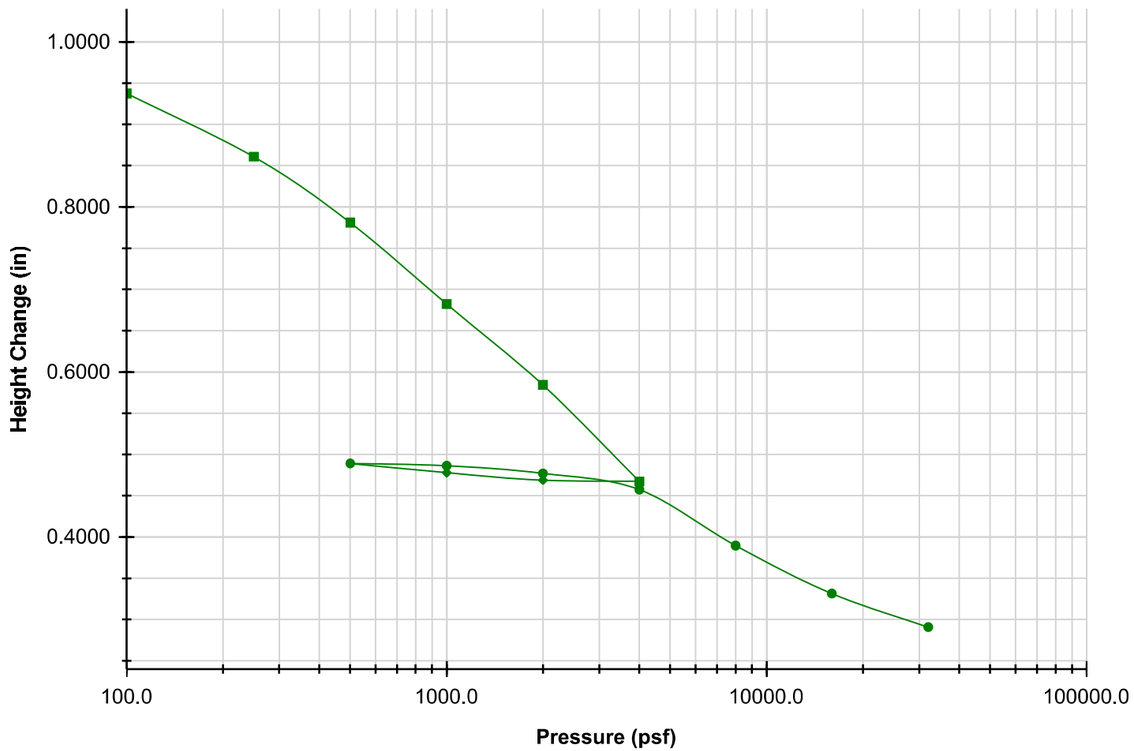


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE CONSULTING & ENGINEERING

Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	302.2	0.0*	Liquid Limits	NP	Test Date 4/1/2026
Dry Density (pcf)	18.1	56.8	Plastic Limits	NP	
Saturation (%)	101.4	0.0*			
Void Ratio	6.31	1.33*	Specific Gravity	2.117	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	13-15	Remarks
Sample Number	ST-25	Boring Number	Y1RPC_3000	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black Muck			
Project Number	25-051.05	Depth (ft)	13-15	Remarks
Sample Number	ST-25	Boring Number	Y1RPC_3000	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	0.9990	0.0000	0.0	6.310	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0616	0.9374	0.8005	6.2	5.847	0.278	0.068	0.01117	0.01067	ENABLED
2	250.00	0.1382	0.8608	0.7239	13.8	5.288	1.350	0.272	0.00194	0.00224	ENABLED
3	500.00	0.2180	0.7810	0.6441	21.8	4.705	1.406	0.531	0.00153	0.00094	ENABLED
4	1,000.00	0.3168	0.6822	0.5453	31.7	3.983	0.000	0.000	0.00000	0.00000	ENABLED
5	2,000.00	0.4148	0.5842	0.4473	41.5	3.267	1.521	0.410	0.00079	0.00068	ENABLED
6	4,000.00	0.5316	0.4674	0.3305	53.2	2.414	0.469	0.201	0.00164	0.00089	ENABLED
7	2,000.00	0.5301	0.4689	0.3320	53.1	2.425	0.000	0.000	0.00000	0.00000	ENABLED
8	1,000.00	0.5210	0.4780	0.3411	52.2	2.491	0.000	0.000	0.00000	0.00000	ENABLED
9	500.00	0.5098	0.4892	0.3523	51.0	2.573	0.000	0.000	0.00000	0.00000	ENABLED
10	1,000.00	0.5125	0.4865	0.3496	51.3	2.553	0.513	0.101	0.00163	0.00000	ENABLED
11	2,000.00	0.5218	0.4772	0.3403	52.2	2.485	0.423	0.065	0.00190	0.00287	ENABLED
12	4,000.00	0.5416	0.4574	0.3205	54.2	2.341	0.601	0.122	0.00123	0.00003	ENABLED
13	8,000.00	0.6094	0.3896	0.2527	61.0	1.846	1.434	0.370	0.00037	0.00034	ENABLED
14	16,000.00	0.6677	0.3313	0.1944	66.8	1.420	1.544	0.333	0.00025	0.00027	ENABLED
15	32,000.00	0.7082	0.2908	0.1539	70.9	1.124	1.382	0.394	0.00022	0.00018	ENABLED

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	25-051.05
Job Number:	
Test Date:	4/1/2026

Sampling Date:	5/8/2026
Sample Number:	ST-25
Depth (ft)	13-15
Boring Number:	Y1RPC_3000
Location:	Alignment Y1RPC
Client Name:	
Remarks:	

Specific Gravity:	2.117	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	102.7
Sampling Method:	Undisturbed	Soil Classification:	A-2-4 (0)		
Specimen Description:	Black Muck				

Parameters	Initial	Final
Height (in)	0.9990	0.2908
Height Source	NA	TEST RESULTS
Diameter (in)	2.5000	NA
Area (in²)	4.909	NA
Volume (in³)	4.9038	2.8435
Weight of Container (g)	60.0	0.0*
Weight of Wet Soil + Container (g)	300.0	0.0*
Weight of Dry Soil + Container (g)	119.7	0.0*
Moisture Content (%)	302.2	0.0*
Moist Weight + Ring Weight (g)	196.3	145.0
Dry Density (pcf)	18.1	56.8
Wet Density (pcf)	72.7	56.8
Saturation (%)	101.4	0.0*
Void Ratio	6.3	1.3*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Infrastructure Consulting & Engineering

SHEET 442

INFRASTRUCTURE
CONSULTING & ENGINEERING

Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	4/1/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0803
Specimen Description:	Black Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	29.34

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Muck		
Project Number	25-051.05	Depth (ft)	3-5
Sample Number	ST-21	Boring Number	Y1RPC_3200
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0453	0.1158	0.9537	0.045	5.689	17.64	5	0.01093	0.008959
2	500	0.1452	0.1158	0.8538	0.145	4.988	56.25	14.5	0.00275	0.002476
3	1000	0.2655	0.1161	0.7335	0.266	4.145	88.36	24	0.00129	0.001104
4	2000	0.396	0.1163	0.603	0.396	3.229	225	-	0.00034	-
5	4000	0.4947	0.1168	0.5043	0.495	2.537	81	26	0.00067	0.000482
6	8000	0.5858	0.1175	0.4132	0.586	1.898	79.21	28	0.00046	0.00030
7	16000	0.6449	0.1185	0.3541	0.646	1.484	81	25	0.00033	0.00025
8	8000	0.6388	0.1176	0.3602	0.639	1.526	-	-	-	-
9	4000	0.6302	0.117	0.3688	0.631	1.587	-	-	-	-
10	2000	0.6208	0.1167	0.3782	0.621	1.653	-	-	-	-
11	4000	0.6245	0.117	0.3745	0.625	1.627	13.69	-	0.00217	-
12	8000	0.6331	0.1176	0.3659	0.634	1.566	12.25	3.2	0.00232	0.00206
13	16000	0.653	0.1185	0.346	0.654	1.427	19.36	-	0.00131	-
14	32000	0.7068	0.1198	0.2922	0.708	1.049	67.24	24	0.00027	0.00018
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 2/23/2026
Machine Apparatus: 3
Technician: KSB

Sampling Date: 12/17/2025
Sample Number: ST-21
Depth (ft): 3-5
Boring Number: Y1RPC_3200
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.848
Sampling Method: Shelby Tube
Specimen Description: Black Muck
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.92

Parameters	Initial	Final
Height (in)	0.999	0.2922
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.442
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	102.8	*
Moisture Content (%)	329.87	*
Moist Weight + Ring Weight (g)	194.54	141.99
Dry Mass (g)	21.31	*
Water Content (calc from spec)	329.87	*
Dry Density (pcf)	16.47	*
Wet Density (pcf)	70.78	103.19
Volume of Solids (in^3)	0.70	*
Height of Solids (in)	0.14	*
Void Ratio	6.007	1.049

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Void Ratio vs. Effective Stress

Y1RPC_3200, ST-21, 3-5 ft

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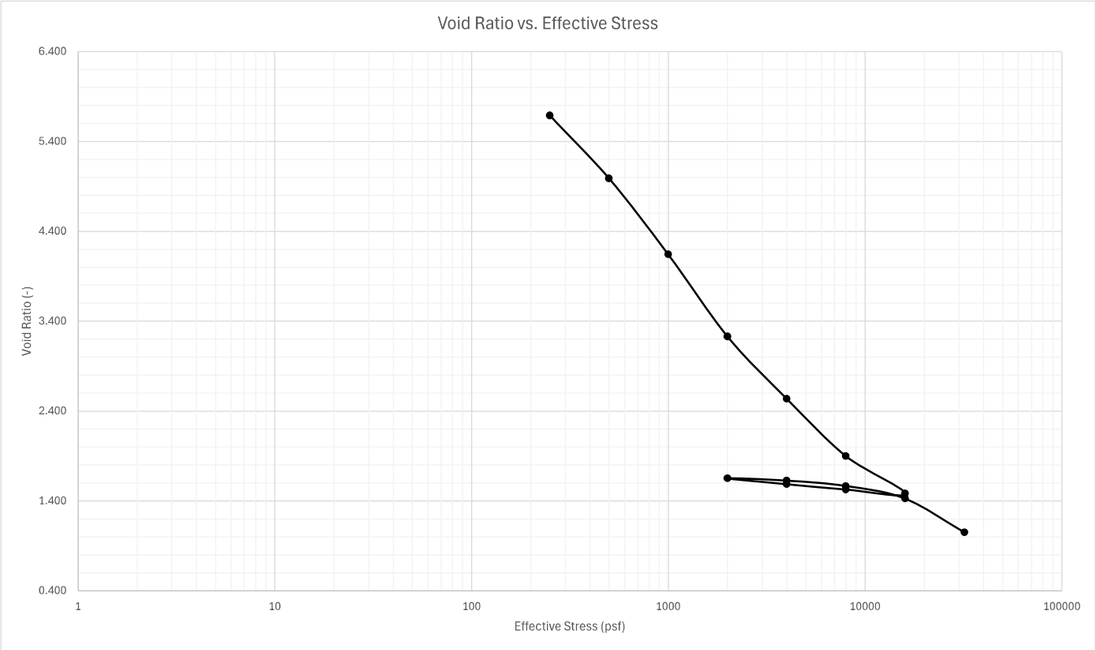

Percent Strain vs. Effective Stress

Y1RPC_3200, ST-21, 3-5 ft

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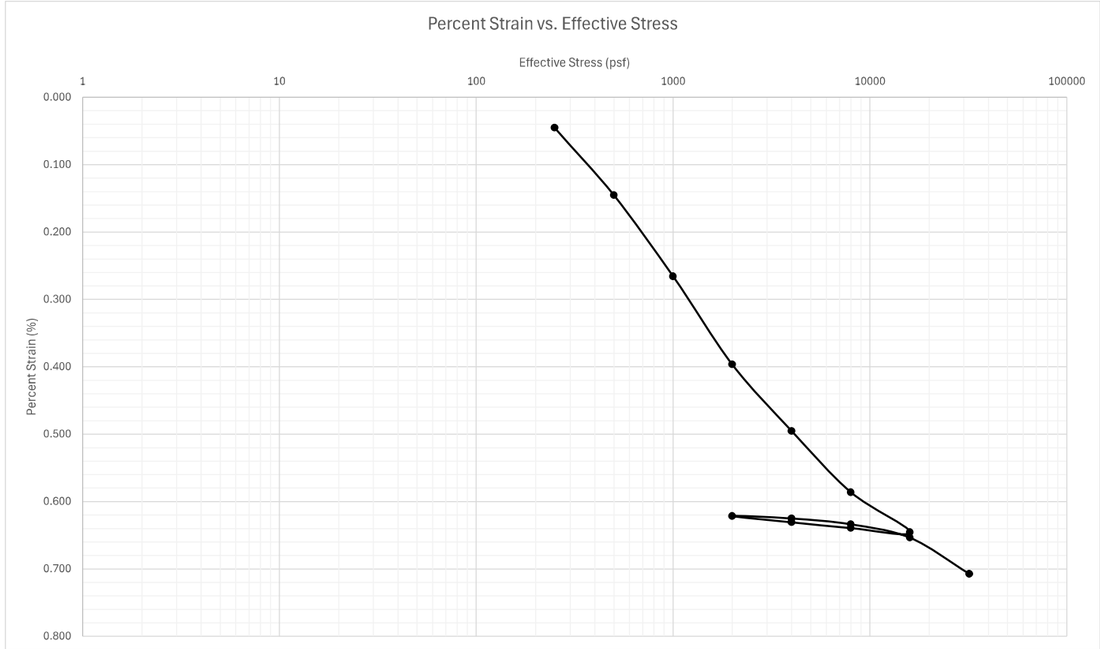

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Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0	0	250	0.043	0	0.999	0	6.007
1			6	0.1	0.316227766	250	0.0436	0.0006	0.9984	0.06006	6.003
2			15	0.25	0.5	250	0.0455	0.0025	0.9965	0.25025	5.989
3			30	0.5	0.707106781	250	0.047	0.004	0.995	0.4004	5.979
4		1		1	1	250	0.0498	0.0068	0.9922	0.680681	5.959
5		2		2	1.414213562	250	0.0533	0.0103	0.9887	1.031031	5.934
6		4		4	2	250	0.0577	0.0147	0.9843	1.471471	5.904
7		8		8	2.828427125	250	0.0629	0.0199	0.9791	1.991992	5.867
8		17		17	4.123105626	250	0.0689	0.0259	0.9731	2.592593	5.825
9		30		30	5.477225575	250	0.0726	0.0296	0.9694	2.962963	5.799
10	1			60	7.745966692	250	0.0755	0.0325	0.9665	3.253253	5.779
11	1	33		93	9.643650761	250	0.077	0.034	0.965	3.403403	5.768
12	6	26		386	19.6468827	250	0.0799	0.0369	0.9621	3.693694	5.748
13	17	13		1033	32.14031736	250	0.0818	0.0388	0.9602	3.883884	5.735
14	20	52		1252	35.38361203	250	0.0832	0.0402	0.9588	4.024024	5.725
15	23	54		1434	37.86819246	250	0.0837	0.0407	0.9583	4.074074	5.721
16	26	3		1563	39.5347948	250	0.0844	0.0414	0.9576	4.144144	5.716
17	41	2		2462	49.61854492	250	0.0855	0.0425	0.9565	4.254254	5.709
18	43	8		2588	50.87238937	250	0.0856	0.0426	0.9564	4.264264	5.708
19	45	1	44	2701.733333	51.97820056	250	0.0858	0.0428	0.9562	4.284284	5.707
20	48	16		2896	53.81449619	250	0.0861	0.0431	0.9559	4.314314	5.704
21	65	14		3914	62.56196928	250	0.0868	0.0438	0.9552	4.384384	5.700
22	67	18		4038	63.54525946	250	0.0874	0.0444	0.9546	4.444444	5.695
23	70	51		4251	65.19969325	250	0.0882	0.0452	0.9538	4.524525	5.690
24	71	49		4309	65.64297373	250	0.0883	0.0453	0.9537	4.534535	5.689
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Sequence 1: 250 psf

Y1RPC_3200, ST-21, 3-5 ft

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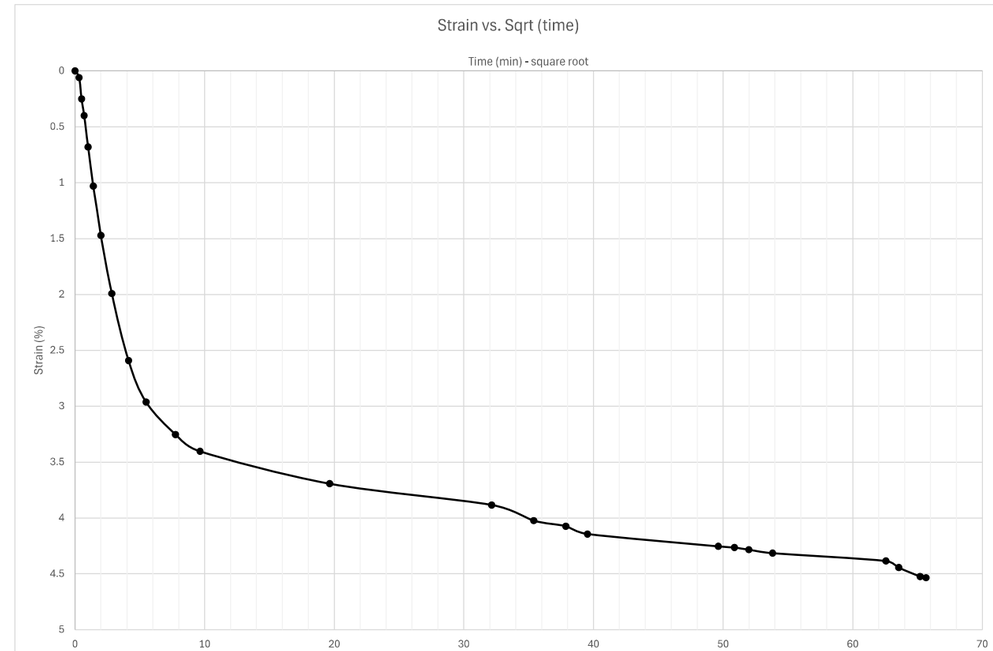

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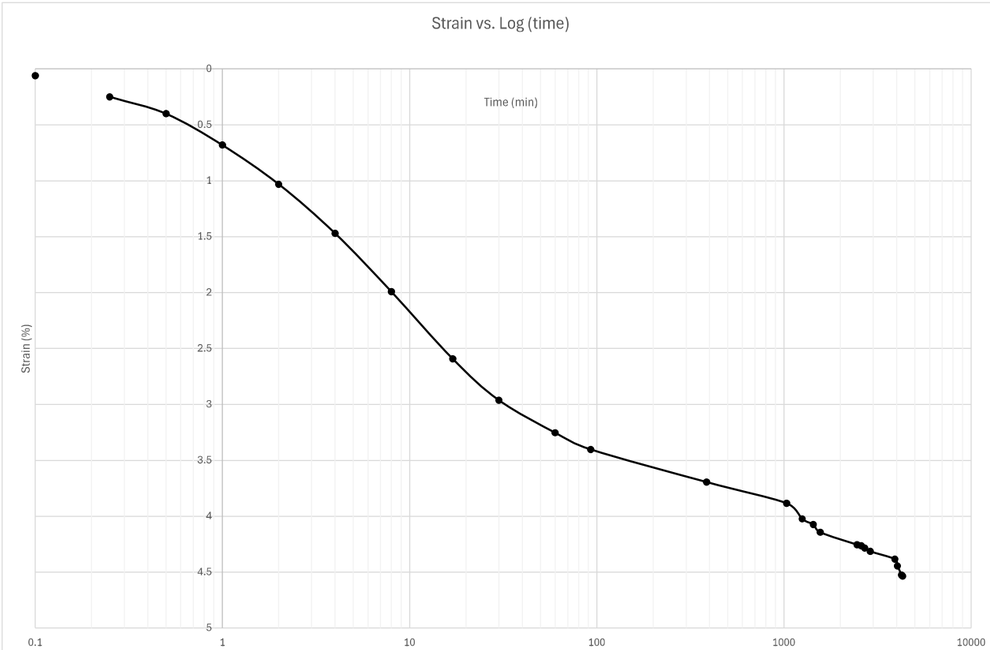
Sequence 1: 250 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0883	0.0000	0.9537	0	5.689
1			6	0.1	0.32	500	0.0915	0.0032	0.9505	0.32032	5.667
2			15	0.25	0.50	500	0.0927	0.0044	0.9493	0.44044	5.658
3			30	0.5	0.71	500	0.0939	0.0056	0.9481	0.560561	5.650
4		1		1	1.00	500	0.0958	0.0075	0.9462	0.750751	5.636
5		2		2	1.41	500	0.1006	0.0123	0.9414	1.231231	5.603
6		4		4	2.00	500	0.1065	0.0182	0.9355	1.821822	5.561
7		8		8	2.83	500	0.1145	0.0262	0.9275	2.622623	5.505
8		17		17	4.12	500	0.1257	0.0374	0.9163	3.743744	5.427
9		29		29	5.39	500	0.1340	0.0457	0.9080	4.574575	5.368
10	1			60	7.75	500	0.1459	0.0576	0.8961	5.765766	5.285
11	1	55		115	10.72	500	0.1552	0.0669	0.8868	6.696697	5.220
12	17	4		1024	32.00	500	0.1748	0.0865	0.8672	8.658659	5.082
13	20	52		1252	35.38	500	0.1760	0.0877	0.8660	8.778779	5.074
14	23	35		1415	37.62	500	0.1767	0.0884	0.8653	8.848849	5.069
15	25	31		1531	39.13	500	0.1770	0.0887	0.8650	8.878879	5.067
16	43	8		2588	50.87	500	0.1826	0.0943	0.8594	9.439439	5.028
17	99	27		5967	77.25	500	0.1882	0.0999	0.8538	10	4.988
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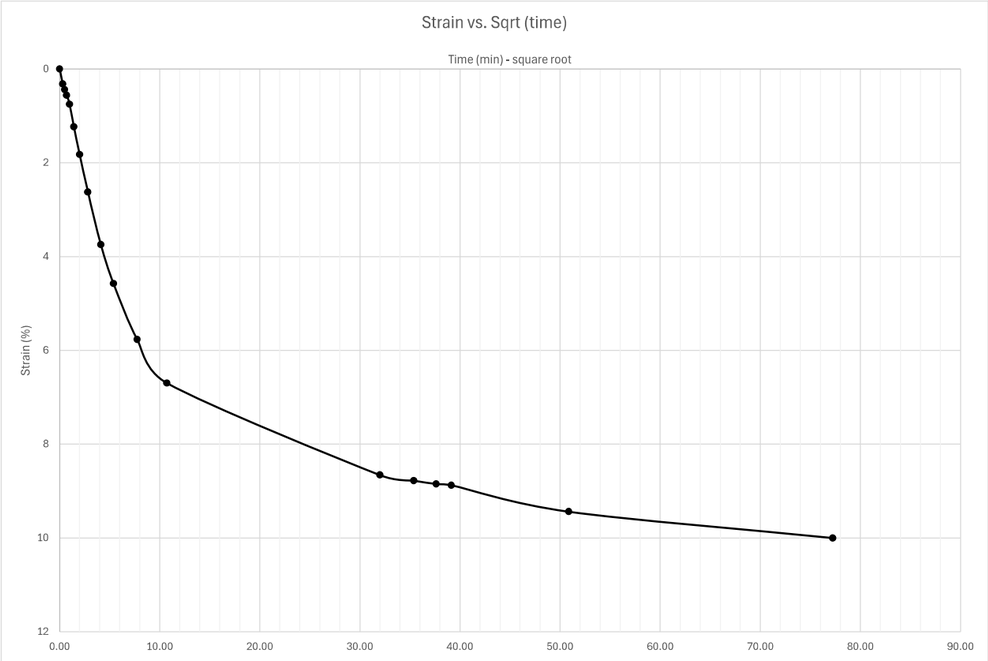
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3200, ST-21, 3-5 ft

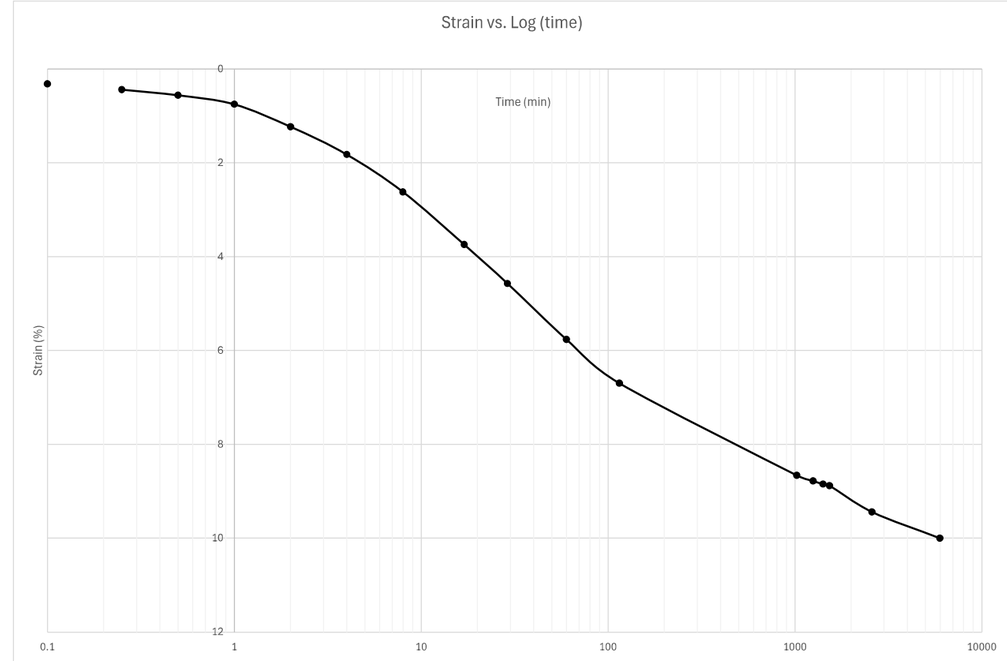
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.1748	-0.0003	0.8675	-0.03003	5.084
1			6	0.10	0.32	1000	0.1932	0.0181	0.8491	1.811812	4.955
2			15	0.25	0.50	1000	0.1937	0.0186	0.8486	1.861862	4.952
3			30	0.50	0.71	1000	0.1954	0.0203	0.8469	2.032032	4.940
4		1		1.00	1.00	1000	0.1979	0.0228	0.8444	2.282282	4.922
5		2		2.00	1.41	1000	0.2017	0.0266	0.8406	2.662663	4.896
6		4		4.00	2.00	1000	0.2069	0.0318	0.8354	3.183183	4.859
7		8		8.00	2.83	1000	0.2153	0.0402	0.827	4.024024	4.800
8		15		15.00	3.87	1000	0.225	0.0499	0.8173	4.994995	4.732
9		30		30.00	5.48	1000	0.2392	0.0641	0.8031	6.416416	4.633
10	1	37		97.00	9.85	1000	0.2656	0.0905	0.7767	9.059059	4.448
11	4			240.00	15.49	1000	0.282	0.1069	0.7603	10.7007	4.333
12	7	5		425.00	20.62	1000	0.289	0.1139	0.7533	11.4014	4.283
13	25	46		1546.00	39.32	1000	0.3027	0.1276	0.7396	12.77277	4.187
14	28	58		1738.00	41.69	1000	0.3039	0.1288	0.7384	12.89289	4.179
15	30	37		1837.00	42.86	1000	0.3045	0.1294	0.7378	12.95295	4.175
16	46	37		2797.00	52.89	1000	0.3088	0.1337	0.7335	13.38338	4.145
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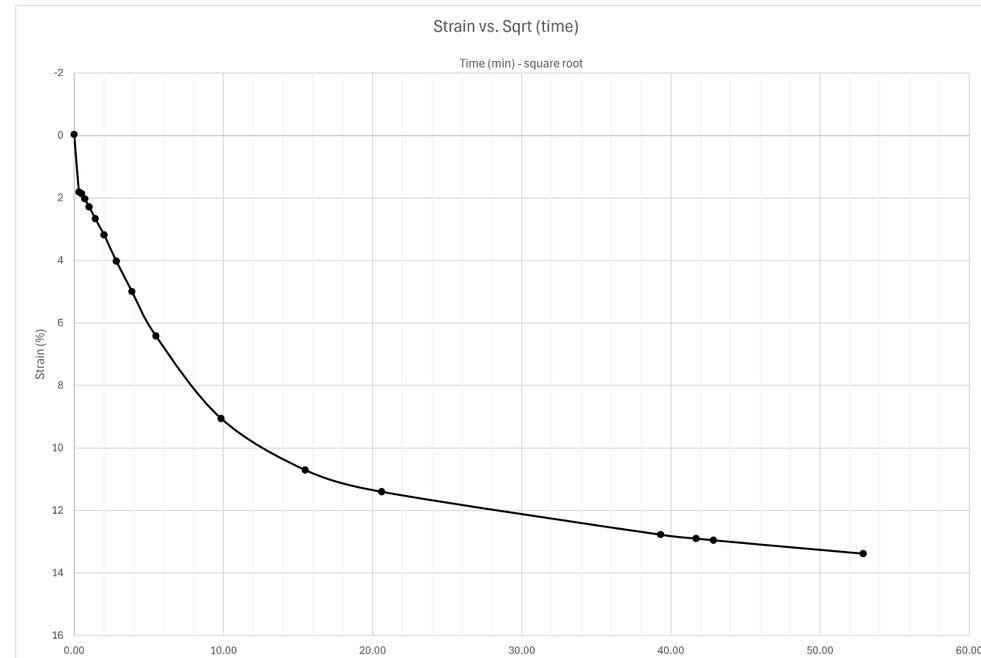
Sequence 3: 1000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

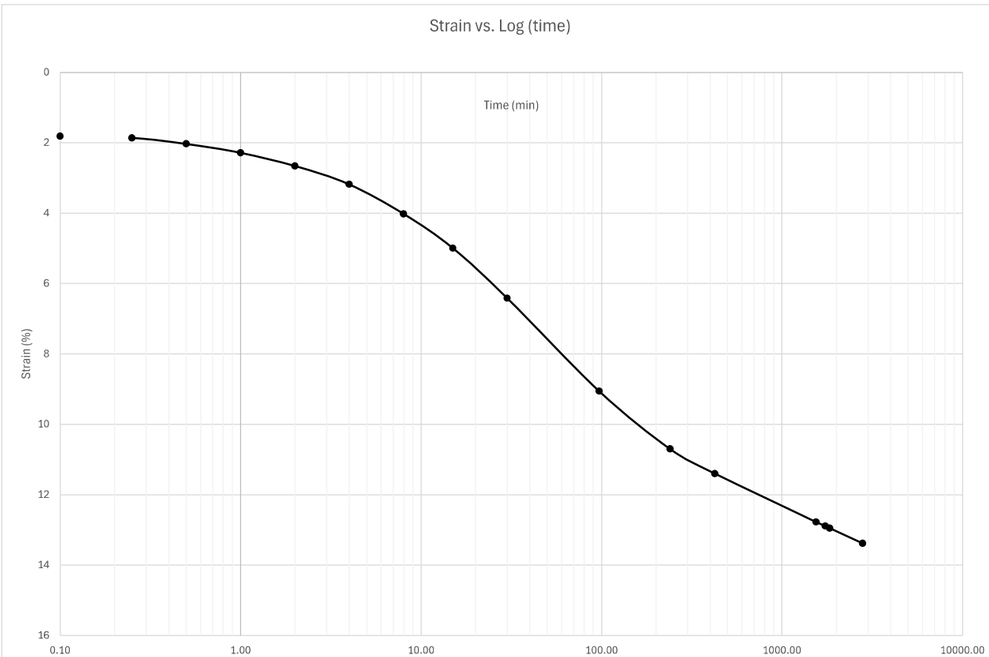


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3088	-0.0002	0.7337	-0.02002	4.146
1			6	0.10	0.32	2000	0.3142	0.0052	0.7283	0.520521	4.108
2			15	0.25	0.50	2000	0.3157	0.0067	0.7268	0.670671	4.098
3			30	0.50	0.71	2000	0.3179	0.0089	0.7246	0.890891	4.082
4		1		1.00	1.00	2000	0.32	0.011	0.7225	1.101101	4.067
5		2		2.00	1.41	2000	0.3235	0.0145	0.719	1.451451	4.043
6		4		4.00	2.00	2000	0.3289	0.0199	0.7136	1.991992	4.005
7		8		8.00	2.83	2000	0.3364	0.0274	0.7061	2.742743	3.952
8		15		15.00	3.87	2000	0.3459	0.0369	0.6966	3.693694	3.886
9		30		30.00	5.48	2000	0.3593	0.0503	0.6832	5.035035	3.792
10	1	38		98.00	9.90	2000	0.3874	0.0784	0.6551	7.847848	3.595
11	2	23		143.00	11.96	2000	0.3948	0.0858	0.6477	8.588589	3.543
12	18	2		1082.00	32.89	2000	0.4225	0.1135	0.62	11.36136	3.349
13	21	11		1271.00	35.65	2000	0.4241	0.1151	0.6184	11.52152	3.337
14	24			1440.00	37.95	2000	0.4252	0.1162	0.6173	11.63163	3.330
15	26	15		1575.00	39.69	2000	0.4259	0.1169	0.6166	11.7017	3.325
16	42	53		2573.00	50.72	2000	0.4307	0.1217	0.6118	12.18218	3.291
17	46	36		2796.00	52.88	2000	0.4314	0.1224	0.6111	12.25225	3.286
18	114	17		6857.00	82.81	2000	0.4395	0.1305	0.603	13.06306	3.229
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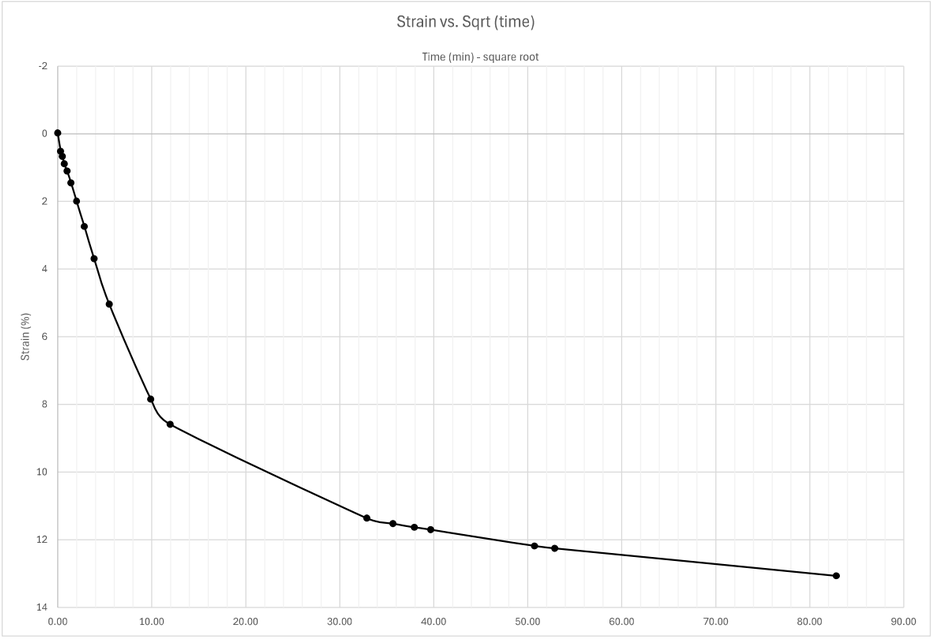
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3200, ST-21, 3-5 ft

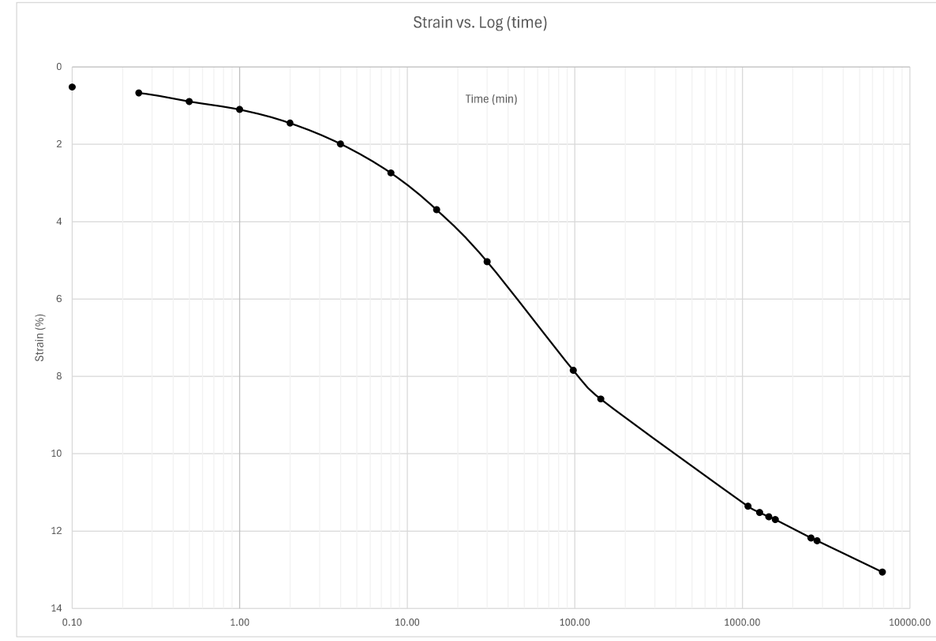
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4395	-0.0005	0.6035	-0.05005	3.233
1			6	0.10	0.32	4000	0.4438	0.0038	0.5992	0.38038	3.203
2			15	0.25	0.50	4000	0.445	0.005	0.598	0.500501	3.194
3			30	0.50	0.71	4000	0.4463	0.0063	0.5967	0.630631	3.185
4		1		1.00	1.00	4000	0.4483	0.0083	0.5947	0.830831	3.171
5		2		2.00	1.41	4000	0.4512	0.0112	0.5918	1.121121	3.151
6		4		4.00	2.00	4000	0.4553	0.0153	0.5877	1.531532	3.122
7		8		8.00	2.83	4000	0.4614	0.0214	0.5816	2.142142	3.079
8		15		15.00	3.87	4000	0.4686	0.0286	0.5744	2.862863	3.029
9		30		30.00	5.48	4000	0.4794	0.0394	0.5636	3.943944	2.953
10	1	6		66.00	8.12	4000	0.4933	0.0533	0.5497	5.335335	2.855
11	2	7		127.00	11.27	4000	0.5044	0.0644	0.5386	6.446446	2.778
12	4	6		246.00	15.68	4000	0.5138	0.0738	0.5292	7.387387	2.712
13	6	10		370.00	19.24	4000	0.5185	0.0785	0.5245	7.857858	2.679
14	23	20		1400.00	37.42	4000	0.5317	0.0917	0.5113	9.179179	2.586
15	26	6		1566.00	39.57	4000	0.5326	0.0926	0.5104	9.269269	2.580
16	29	2		1742.00	41.74	4000	0.5335	0.0935	0.5095	9.359359	2.573
17	47	6		2826.00	53.16	4000	0.5378	0.0978	0.5052	9.78979	2.543
18	52	21		3141.00	56.04	4000	0.5387	0.0987	0.5043	9.87988	2.537
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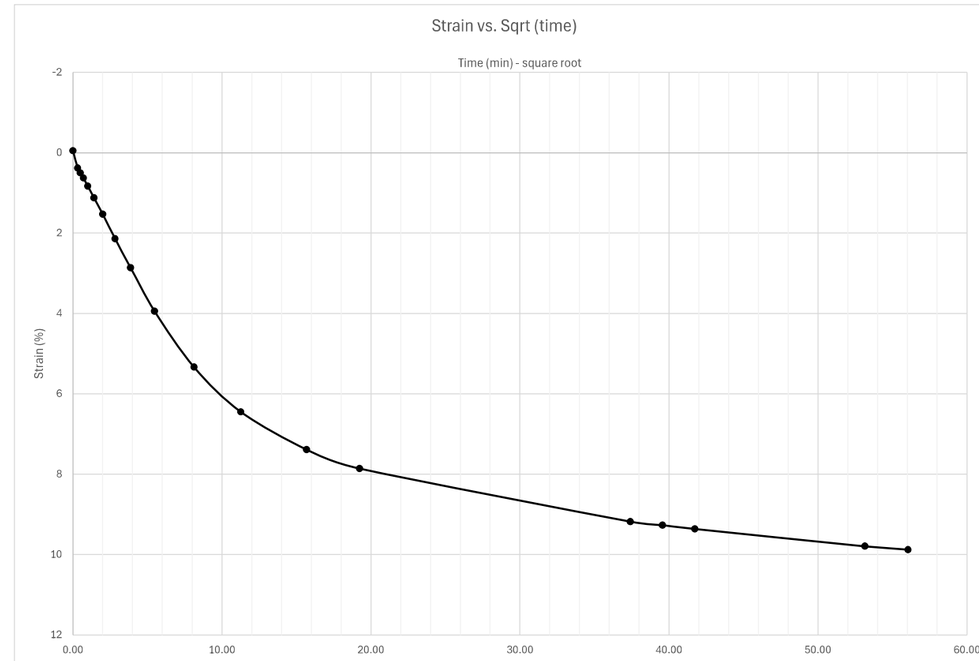
Sequence 5: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

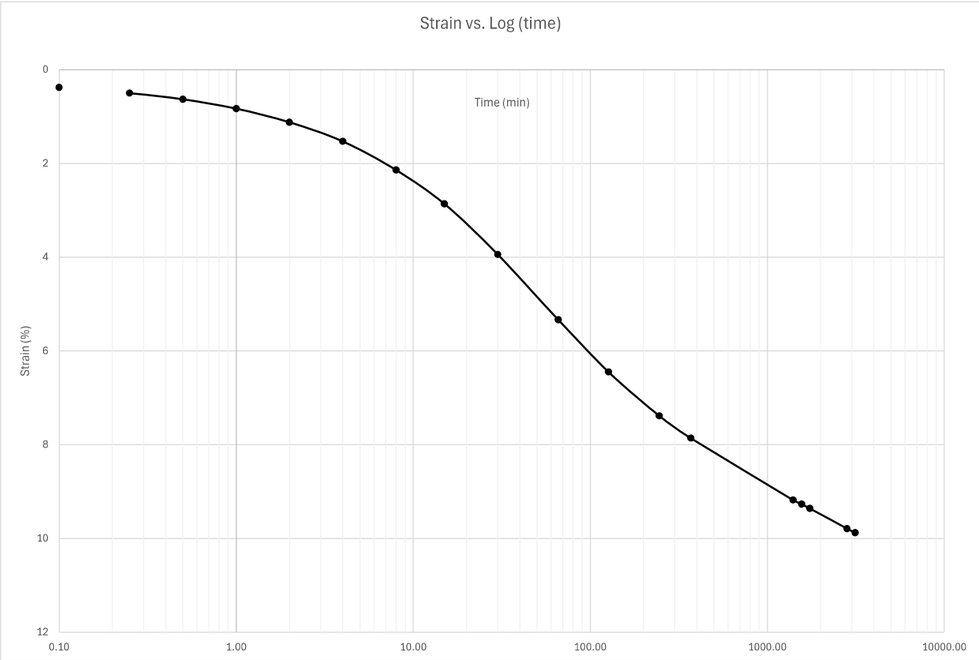


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.5387	-0.0007	0.505	-0.07007	2.542
1			6	0.10	0.32	8000	0.5425	0.0031	0.5012	0.31031	2.515
2			15	0.25	0.50	8000	0.5434	0.004	0.5003	0.4004	2.509
3			30	0.50	0.71	8000	0.5446	0.0052	0.4991	0.520521	2.501
4		1		1.00	1.00	8000	0.5466	0.0072	0.4971	0.720721	2.487
5		2		2.00	1.41	8000	0.5492	0.0098	0.4945	0.980981	2.468
6		4		4.00	2.00	8000	0.5531	0.0137	0.4906	1.371371	2.441
7		8		8.00	2.83	8000	0.5589	0.0195	0.4848	1.951952	2.400
8		15		15.00	3.87	8000	0.5658	0.0264	0.4779	2.642643	2.352
9		30		30.00	5.48	8000	0.5757	0.0363	0.468	3.633634	2.282
10	1	2		62.00	7.87	8000	0.5878	0.0484	0.4559	4.844845	2.198
11	1	57		117.00	10.82	8000	0.5973	0.0579	0.4464	5.795796	2.131
12	2	47		167.00	12.92	8000	0.602	0.0626	0.4417	6.266266	2.098
13	18	29		1109.00	33.30	8000	0.6191	0.0797	0.4246	7.977978	1.978
14	20	47		1247.00	35.31	8000	0.6199	0.0805	0.4238	8.058058	1.972
15	22	50		1370.00	37.01	8000	0.6205	0.0811	0.4232	8.118118	1.968
16	27	1		1621.00	40.26	8000	0.6216	0.0822	0.4221	8.228228	1.960
17	44	39		2679.00	51.76	8000	0.6244	0.085	0.4193	8.508509	1.941
18	115	48		6948.00	83.35	8000	0.6305	0.0911	0.4132	9.119119	1.898
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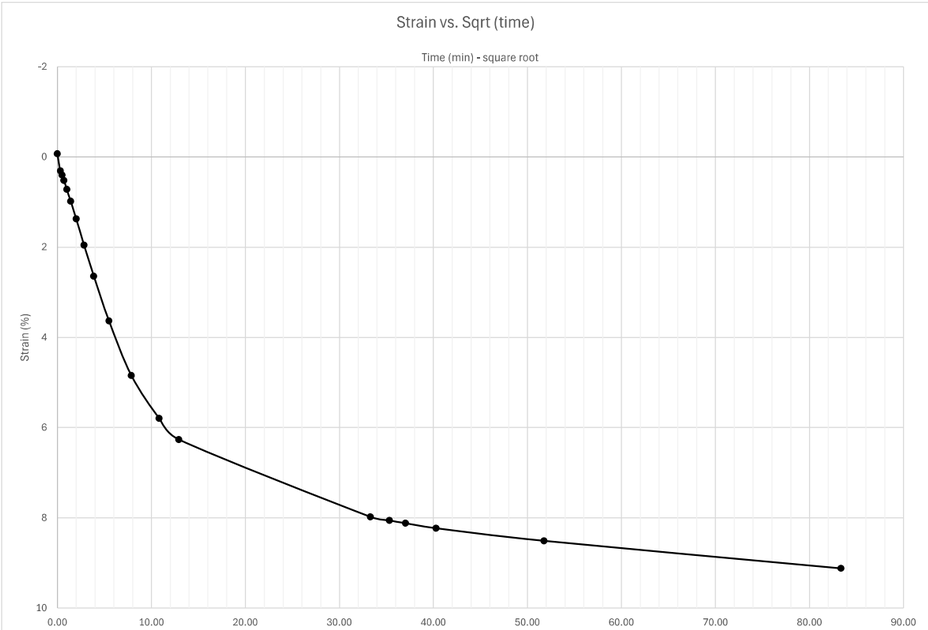
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

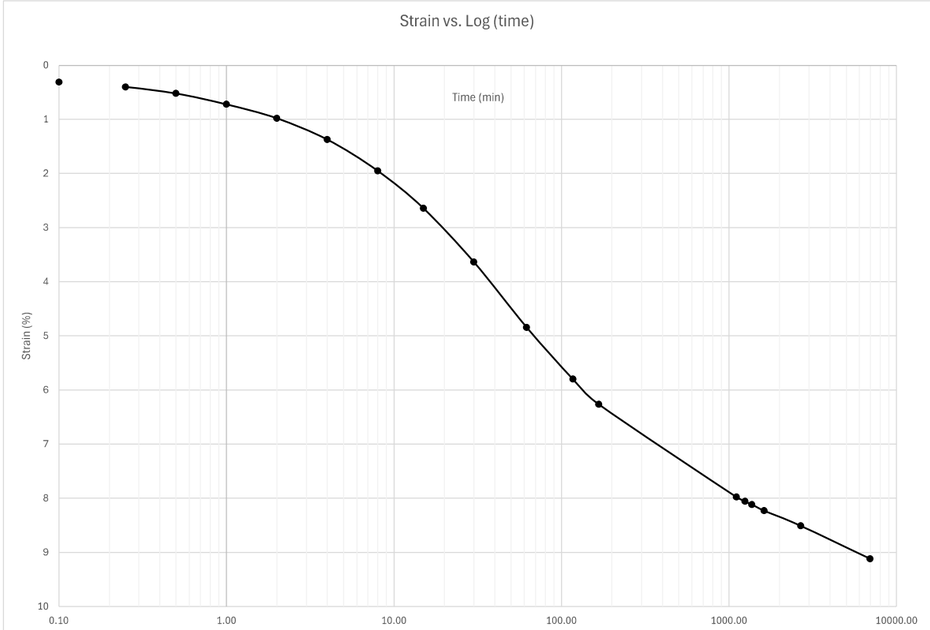
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.6305	-0.001	0.4142	-0.1001	1.905
1			6	0.10	0.32	16000	0.6337	0.0022	0.411	0.22022	1.883
2			15	0.25	0.50	16000	0.6347	0.0032	0.41	0.32032	1.876
3			30	0.50	0.71	16000	0.6356	0.0041	0.4091	0.41041	1.869
4		1		1.00	1.00	16000	0.6371	0.0056	0.4076	0.560561	1.859
5		2		2.00	1.41	16000	0.6392	0.0077	0.4055	0.770771	1.844
6		4		4.00	2.00	16000	0.6422	0.0107	0.4025	1.071071	1.823
7		8		8.00	2.83	16000	0.6464	0.0149	0.3983	1.491491	1.794
8		15		15.00	3.87	16000	0.6515	0.02	0.3932	2.002002	1.758
9		30		30.00	5.48	16000	0.6583	0.0268	0.3864	2.682683	1.710
10	1			60.00	7.75	16000	0.6663	0.0348	0.3784	3.483483	1.654
11	2	1		121.00	11.00	16000	0.6733	0.0418	0.3714	4.184184	1.605
12	4	1		241.00	15.52	16000	0.6799	0.0484	0.3648	4.844845	1.559
13	7	3		423.00	20.57	16000	0.6838	0.0523	0.3609	5.235235	1.531
14	22	43		1363.00	36.92	16000	0.6903	0.0588	0.3544	5.885886	1.486
15	24	14		1454.00	38.13	16000	0.6906	0.0591	0.3541	5.915916	1.484
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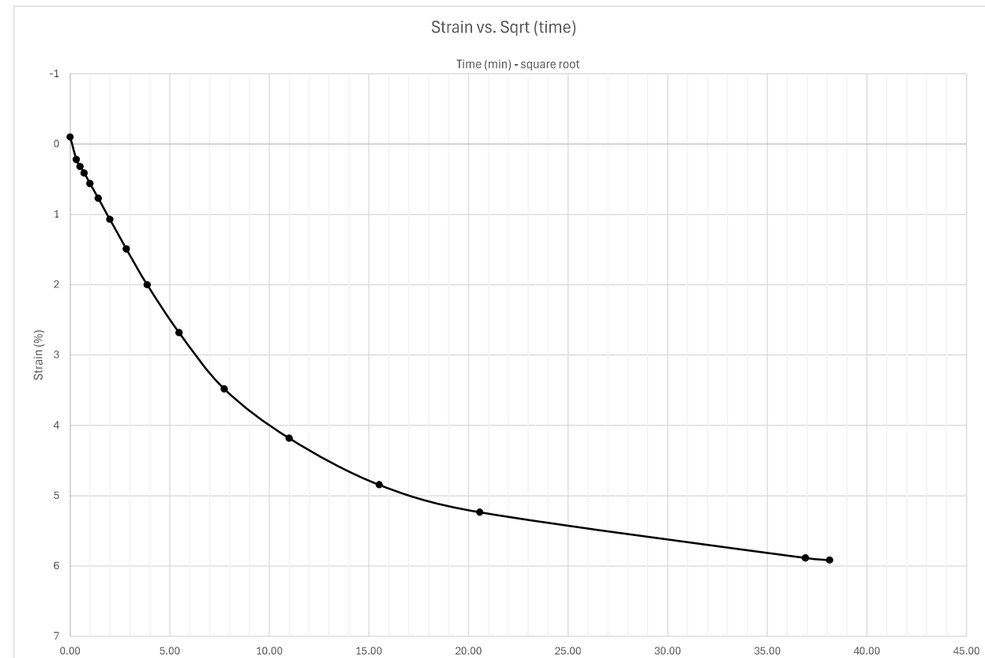
Sequence 7: 16000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

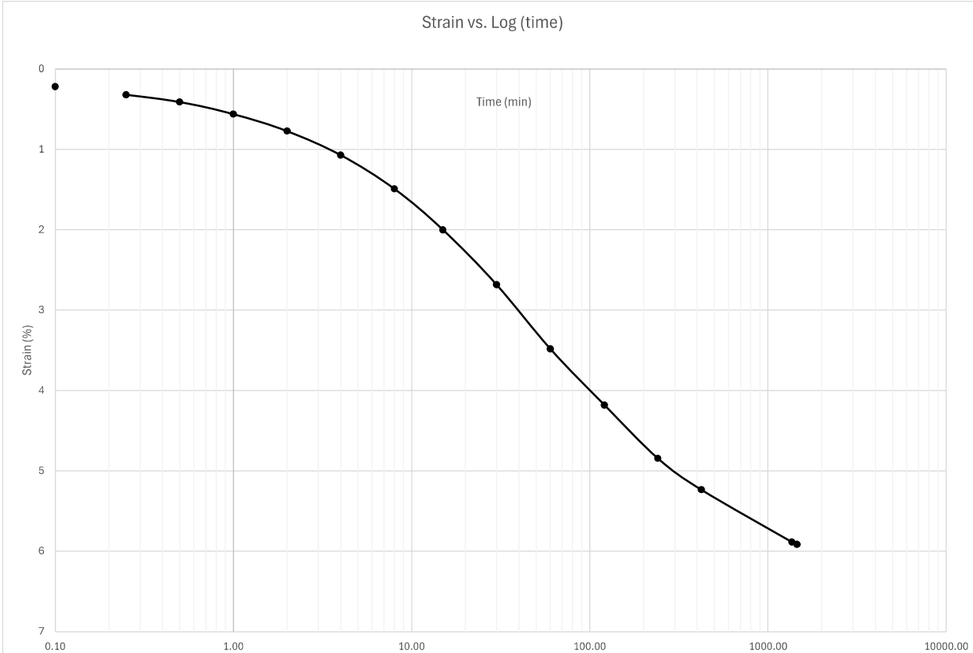


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.6906	0.0009	0.3532	0.09009	1.477
1			6	0.10	0.32	8000	0.6889	-0.0008	0.3549	-0.08008	1.489
2			15	0.25	0.50	8000	0.6887	-0.001	0.3551	-0.1001	1.491
3			30	0.50	0.71	8000	0.6883	-0.0014	0.3555	-0.14014	1.493
4		1		1.00	1.00	8000	0.6881	-0.0016	0.3557	-0.16016	1.495
5		2		2.00	1.41	8000	0.6874	-0.0023	0.3564	-0.23023	1.500
6		4		4.00	2.00	8000	0.6871	-0.0026	0.3567	-0.26026	1.502
7		8		8.00	2.83	8000	0.6864	-0.0033	0.3574	-0.33033	1.507
8		15		15.00	3.87	8000	0.6859	-0.0038	0.3579	-0.38038	1.510
9		30		30.00	5.48	8000	0.6854	-0.0043	0.3584	-0.43043	1.514
10	1			60.00	7.75	8000	0.685	-0.0047	0.3588	-0.47047	1.517
11	2			120.00	10.95	8000	0.6846	-0.0051	0.3592	-0.510511	1.519
12	4	3		243.00	15.59	8000	0.6842	-0.0055	0.3596	-0.550551	1.522
13	6	23		383.00	19.57	8000	0.6841	-0.0056	0.3597	-0.560561	1.523
14	21	28		1288.00	35.89	8000	0.6837	-0.006	0.3601	-0.600601	1.526
15	24	57		1497.00	38.69	8000	0.6836	-0.0061	0.3602	-0.610611	1.526
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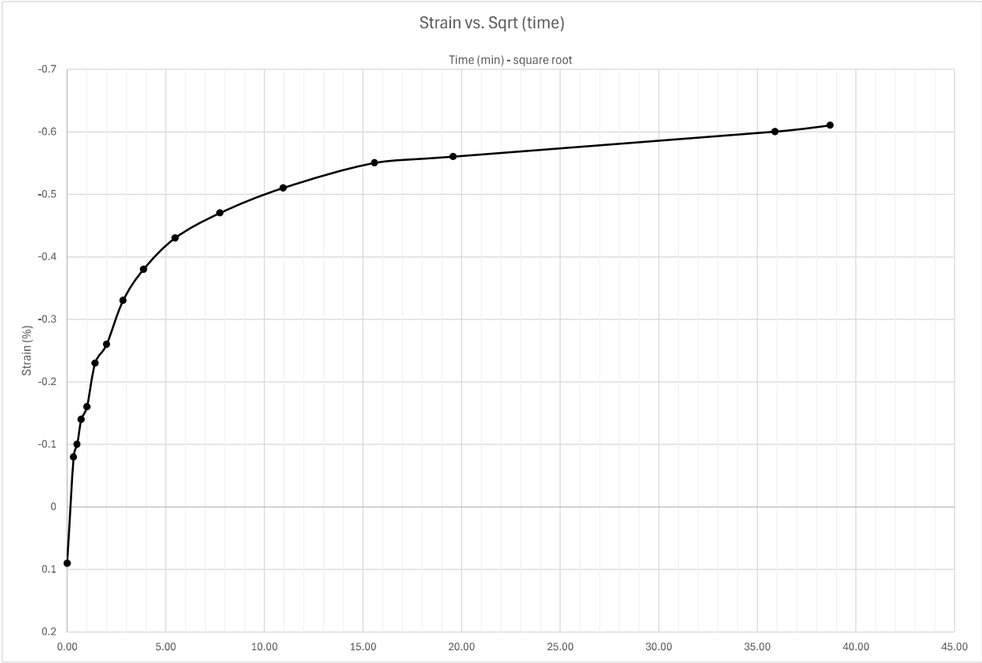
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

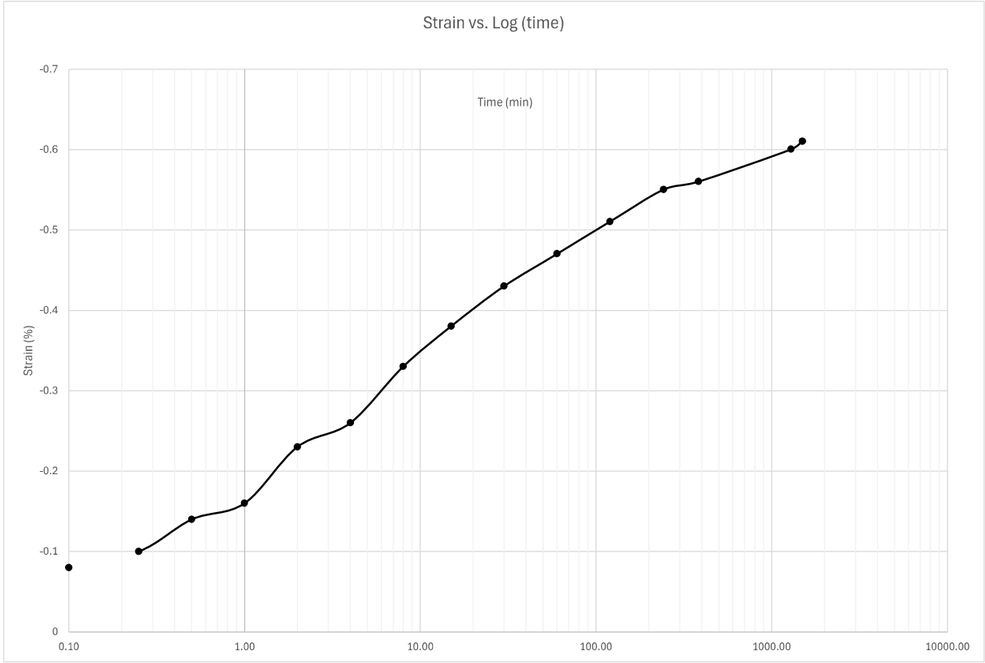
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.6836	0.0006	0.3596	0.06006	1.522
1			6	0.10	0.32	4000	0.6824	-0.0006	0.3608	-0.06006	1.531
2			15	0.25	0.50	4000	0.6822	-0.0008	0.361	-0.08008	1.532
3			30	0.50	0.71	4000	0.682	-0.001	0.3612	-0.1001	1.533
4		1		1.00	1.00	4000	0.6818	-0.0012	0.3614	-0.12012	1.535
5		2		2.00	1.41	4000	0.6815	-0.0015	0.3617	-0.15015	1.537
6		4		4.00	2.00	4000	0.6811	-0.0019	0.3621	-0.19019	1.540
7		8		8.00	2.83	4000	0.6806	-0.0024	0.3626	-0.24024	1.543
8		15	0	15.00	3.87	4000	0.6799	-0.0031	0.3633	-0.31031	1.548
9		30		30.00	5.48	4000	0.6793	-0.0037	0.3639	-0.37037	1.552
10		58		58.00	7.62	4000	0.6787	-0.0043	0.3645	-0.43043	1.557
11	2	6		126.00	11.22	4000	0.678	-0.005	0.3652	-0.500501	1.561
12	4	39		279.00	16.70	4000	0.6772	-0.0058	0.366	-0.580581	1.567
13	8	4		484.00	22.00	4000	0.6766	-0.0064	0.3666	-0.640641	1.571
14	24		24	1440.40	37.95	4000	0.6755	-0.0075	0.3677	-0.750751	1.579
15	31	2		1862.00	43.15	4000	0.6753	-0.0077	0.3679	-0.770771	1.580
16	96		7	5760.12	75.90	4000	0.6744	-0.0086	0.3688	-0.860861	1.587
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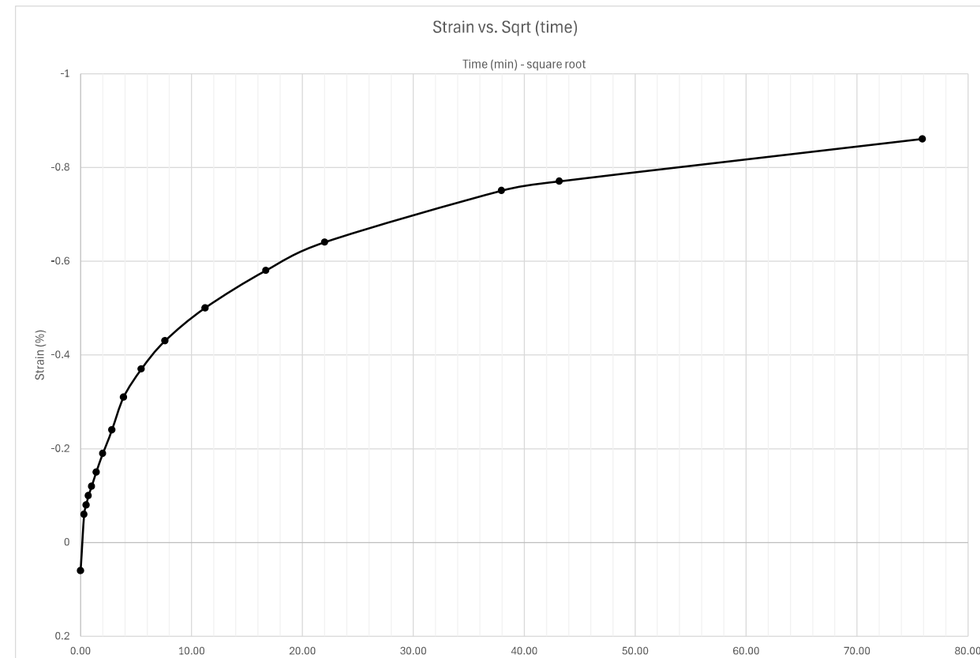
Sequence 9: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

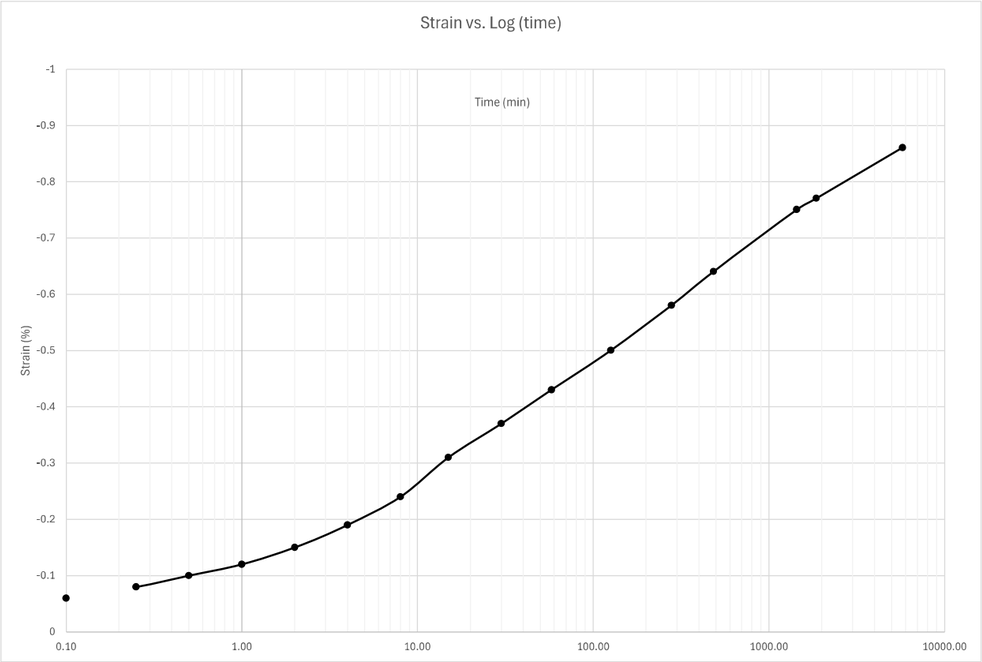


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.6744	0.0003	0.3685	0.03003	1.585
1			6	0.10	0.32	2000	0.6736	-0.0005	0.3693	-0.05005	1.590
2			15	0.25	0.50	2000	0.6734	-0.0007	0.3695	-0.07007	1.592
3			30	0.50	0.71	2000	0.6733	-0.0008	0.3696	-0.08008	1.592
4		1		1.00	1.00	2000	0.6732	-0.0009	0.3697	-0.09009	1.593
5		2		2.00	1.41	2000	0.6729	-0.0012	0.37	-0.12012	1.595
6		4		4.00	2.00	2000	0.6725	-0.0016	0.3704	-0.16016	1.598
7		8		8.00	2.83	2000	0.6721	-0.002	0.3708	-0.2002	1.601
8		15		15.00	3.87	2000	0.6716	-0.0025	0.3713	-0.25025	1.604
9		30		30.00	5.48	2000	0.671	-0.0031	0.3719	-0.31031	1.608
10	1			60.00	7.75	2000	0.6704	-0.0037	0.3725	-0.37037	1.613
11	2			120.00	10.95	2000	0.6698	-0.0043	0.3731	-0.43043	1.617
12	4			240.00	15.49	2000	0.669	-0.0051	0.3739	-0.510511	1.622
13	8			480.00	21.91	2000	0.6681	-0.006	0.3748	-0.600601	1.629
14	23	33		1413.00	37.59	2000	0.6666	-0.0075	0.3763	-0.750751	1.639
15	26	2		1562.00	39.52	2000	0.6663	-0.0078	0.3766	-0.780781	1.641
16	31	34		1894.00	43.52	2000	0.666	-0.0081	0.3769	-0.810811	1.643
17	47	10		2830.00	53.20	2000	0.6653	-0.0088	0.3776	-0.880881	1.648
18	52	6		3126.00	55.91	2000	0.6652	-0.0089	0.3777	-0.890891	1.649
19	55	48		3348.00	57.86	2000	0.6651	-0.009	0.3778	-0.900901	1.650
20	71	38		4298.00	65.56	2000	0.6647	-0.0094	0.3782	-0.940941	1.653
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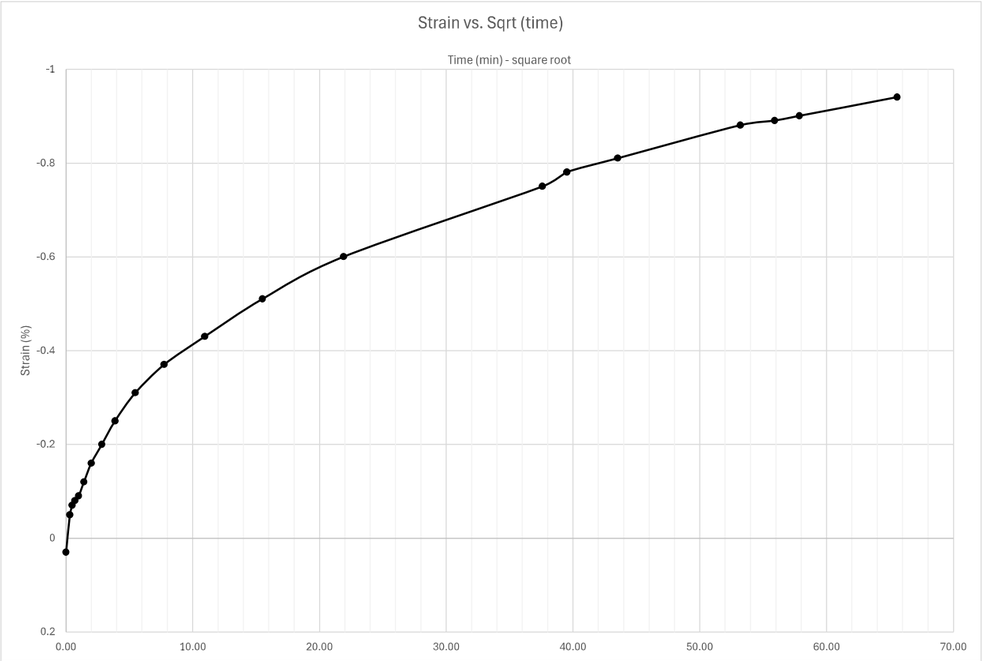
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3200, ST-21, 3-5 ft

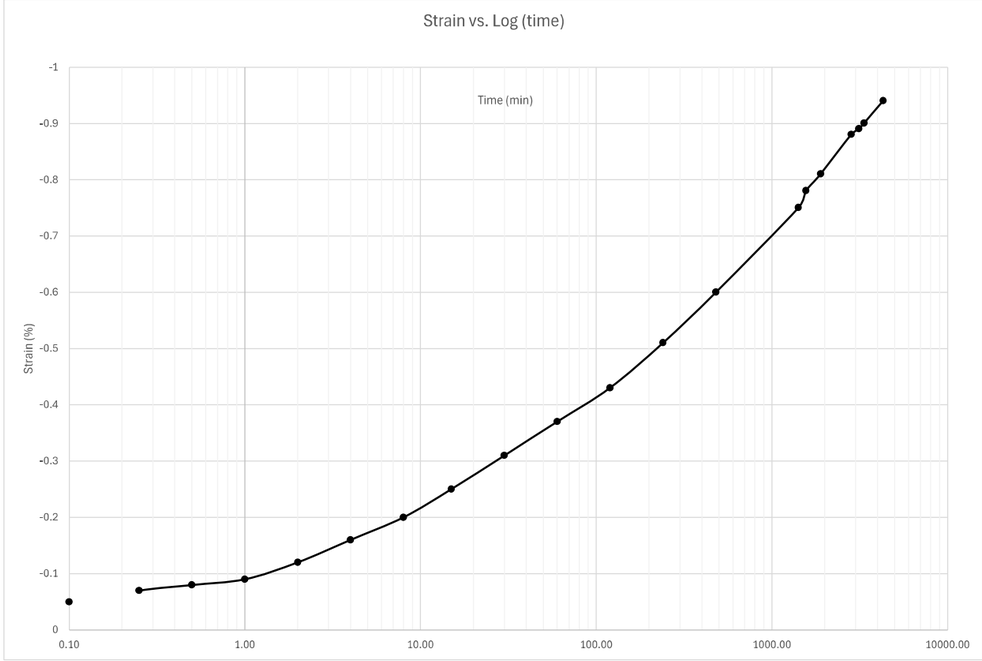
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.6647	-0.0003	0.3785	-0.03003	1.655
1			6	0.10	0.32	4000	0.6654	0.0004	0.3778	0.04004	1.650
2			15	0.25	0.50	4000	0.6655	0.0005	0.3777	0.05005	1.649
3			30	0.50	0.71	4000	0.6657	0.0007	0.3775	0.07007	1.648
4		1		1.00	1.00	4000	0.6658	0.0008	0.3774	0.08008	1.647
5		2		2.00	1.41	4000	0.6661	0.0011	0.3771	0.11011	1.645
6		4		4.00	2.00	4000	0.6664	0.0014	0.3768	0.14014	1.643
7		8		8.00	2.83	4000	0.6667	0.0017	0.3765	0.17017	1.641
8		15		15.00	3.87	4000	0.667	0.002	0.3762	0.2002	1.639
9		30		30.00	5.48	4000	0.6672	0.0022	0.376	0.22022	1.637
10	1			60.00	7.75	4000	0.6674	0.0024	0.3758	0.24024	1.636
11	2	13		133.00	11.53	4000	0.6676	0.0026	0.3756	0.26026	1.634
12	4	5		245.00	15.65	4000	0.6679	0.0029	0.3753	0.29029	1.632
13	6	51		411.00	20.27	4000	0.6681	0.0031	0.3751	0.31031	1.631
14	22	40		1360.00	36.88	4000	0.6684	0.0034	0.3748	0.34034	1.629
15	24	27		1467.00	38.30	4000	0.6684	0.0034	0.3748	0.34034	1.629
16	28	54		1734.00	41.64	4000	0.6684	0.0034	0.3748	0.34034	1.629
17	54	22		3262.00	57.11	4000	0.6686	0.0036	0.3746	0.36036	1.627
18	95	26		5726.00	75.67	4000	0.6687	0.0037	0.3745	0.37037	1.627
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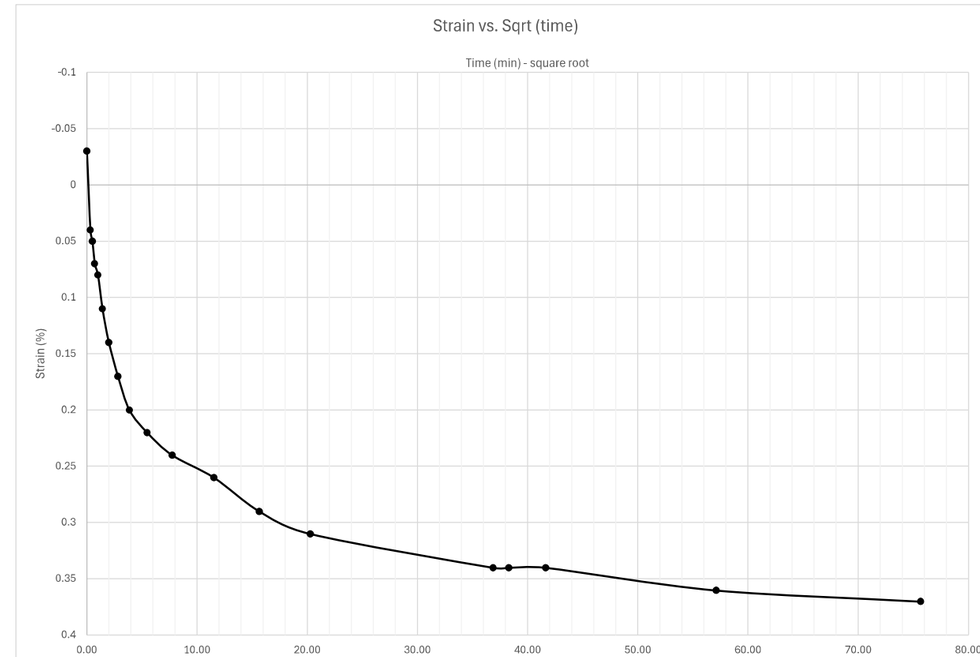
Sequence 11: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

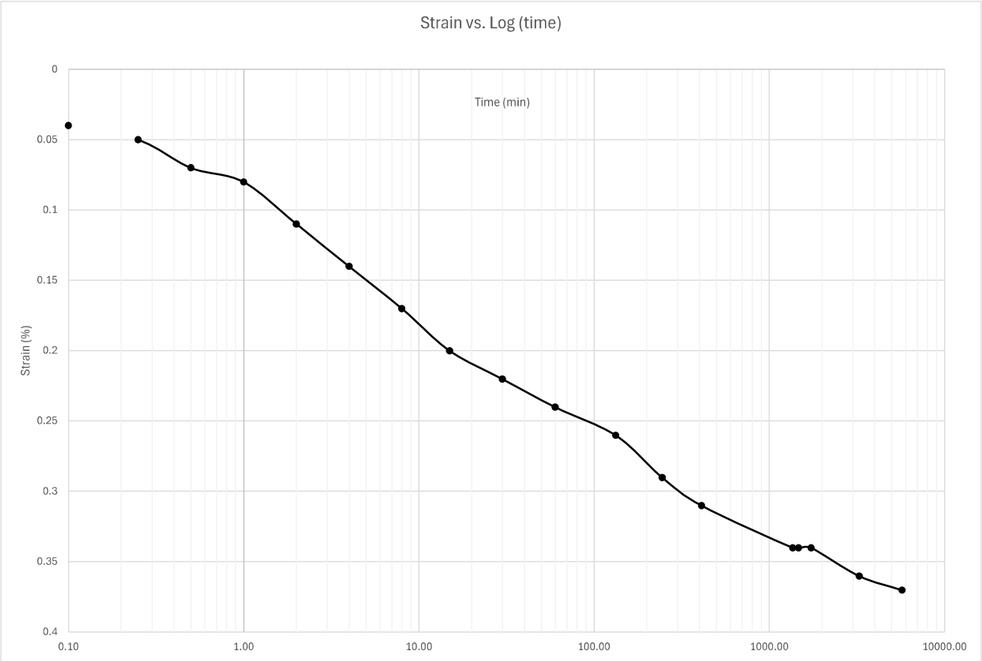


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.6687	-0.0006	0.3751	-0.06006	1.631
1			6	0.10	0.32	8000	0.6702	0.0009	0.3736	0.09009	1.620
2			15	0.25	0.50	8000	0.6705	0.0012	0.3733	0.12012	1.618
3			30	0.50	0.71	8000	0.6708	0.0015	0.373	0.15015	1.616
4		1		1.00	1.00	8000	0.6711	0.0018	0.3727	0.18018	1.614
5		2		2.00	1.41	8000	0.6717	0.0024	0.3721	0.24024	1.610
6		4		4.00	2.00	8000	0.6724	0.0031	0.3714	0.31031	1.605
7		8		8.00	2.83	8000	0.6733	0.004	0.3705	0.4004	1.599
8		15		15.00	3.87	8000	0.6739	0.0046	0.3699	0.46046	1.594
9		25		25.00	5.00	8000	0.6744	0.0051	0.3694	0.510511	1.591
10	1	12		72.00	8.49	8000	0.6752	0.0059	0.3686	0.590591	1.585
11	2	3		123.00	11.09	8000	0.6755	0.0062	0.3683	0.620621	1.583
12	4	14		254.00	15.94	8000	0.676	0.0067	0.3678	0.670671	1.580
13	6	59		419.00	20.47	8000	0.6763	0.007	0.3675	0.700701	1.578
14	9	14		554.00	23.54	8000	0.6765	0.0072	0.3673	0.720721	1.576
15	23	18		1398.00	37.39	8000	0.6772	0.0079	0.3666	0.790791	1.571
16	25	54		1554.00	39.42	8000	0.6773	0.008	0.3665	0.800801	1.571
17	47	44		2864.00	53.52	8000	0.6779	0.0086	0.3659	0.860861	1.566
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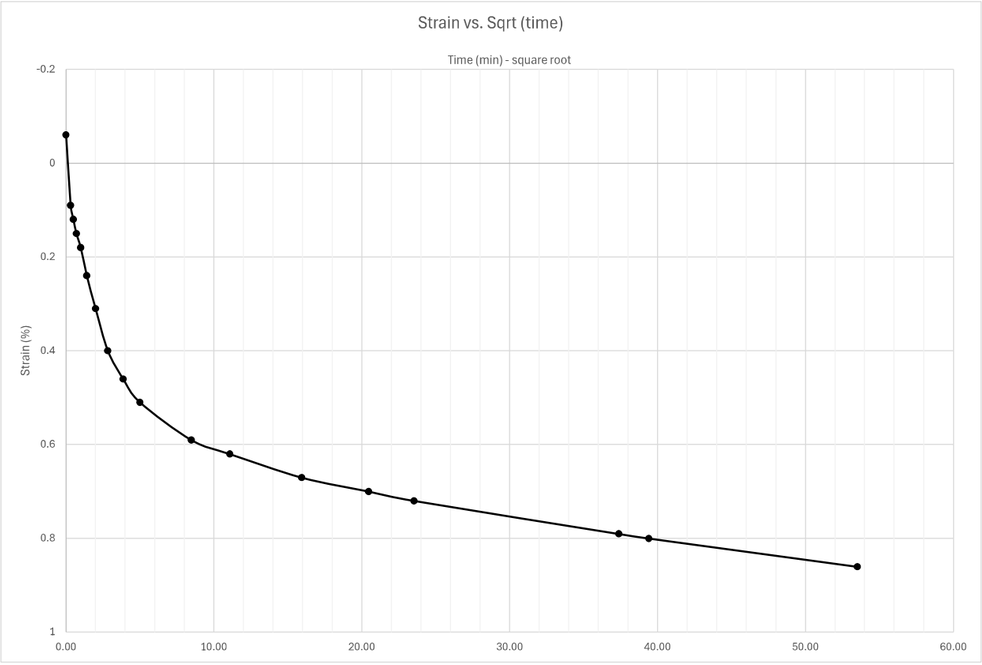
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

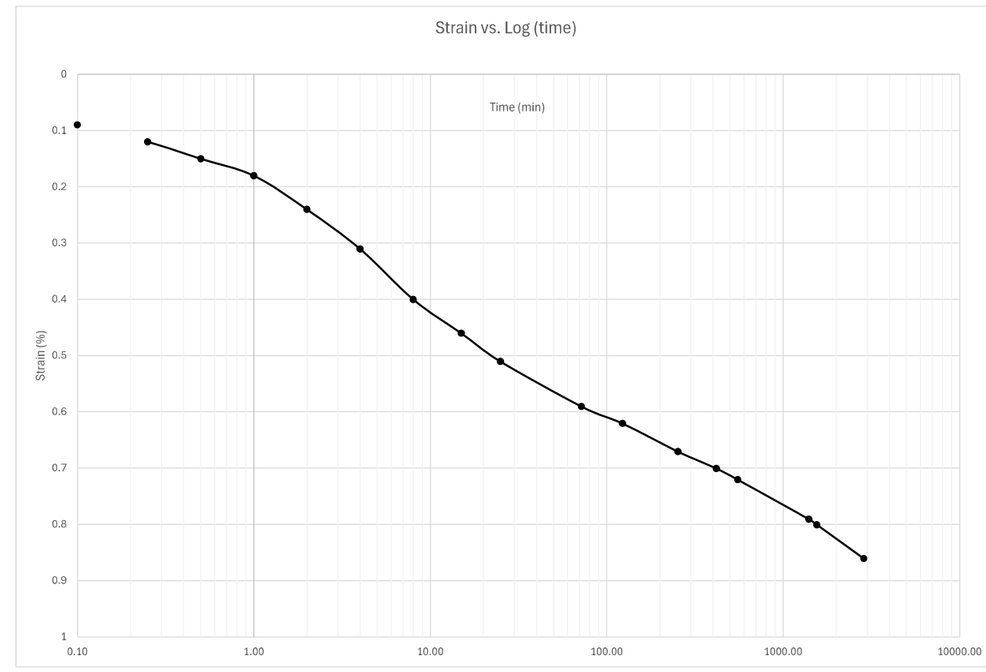
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.6779	-0.0009	0.3668	-0.09009	1.573
1			6	0.10	0.32	16000	0.6803	0.0015	0.3644	0.15015	1.556
2			15	0.25	0.50	16000	0.6807	0.0019	0.364	0.19019	1.553
3			30	0.50	0.71	16000	0.6812	0.0024	0.3635	0.24024	1.549
4		1		1.00	1.00	16000	0.6818	0.003	0.3629	0.3003	1.545
5		2		2.00	1.41	16000	0.6827	0.0039	0.362	0.39039	1.539
6		4		4.00	2.00	16000	0.6839	0.0051	0.3608	0.510511	1.531
7		8	10	8.17	2.86	16000	0.6856	0.0068	0.3591	0.680681	1.519
8		15		15.00	3.87	16000	0.6872	0.0084	0.3575	0.840841	1.507
9		30		30.00	5.48	16000	0.6888	0.01	0.3559	1.001001	1.496
10	1			60.00	7.75	16000	0.6901	0.0113	0.3546	1.131131	1.487
11	2			120.00	10.95	16000	0.6914	0.0126	0.3533	1.261261	1.478
12	4	57		297.00	17.23	16000	0.6932	0.0144	0.3515	1.441441	1.465
13	6	40		400.00	20.00	16000	0.6937	0.0149	0.351	1.491491	1.462
14	22	50		1370.00	37.01	16000	0.6968	0.018	0.3479	1.801802	1.440
15	24	48		1488.00	38.57	16000	0.697	0.0182	0.3477	1.821822	1.439
16	27	57		1677.00	40.95	16000	0.6973	0.0185	0.3474	1.851852	1.437
17	31	8		1868.00	43.22	16000	0.6975	0.0187	0.3472	1.871872	1.435
18	47			2820.00	53.10	16000	0.6987	0.0199	0.346	1.991992	1.427
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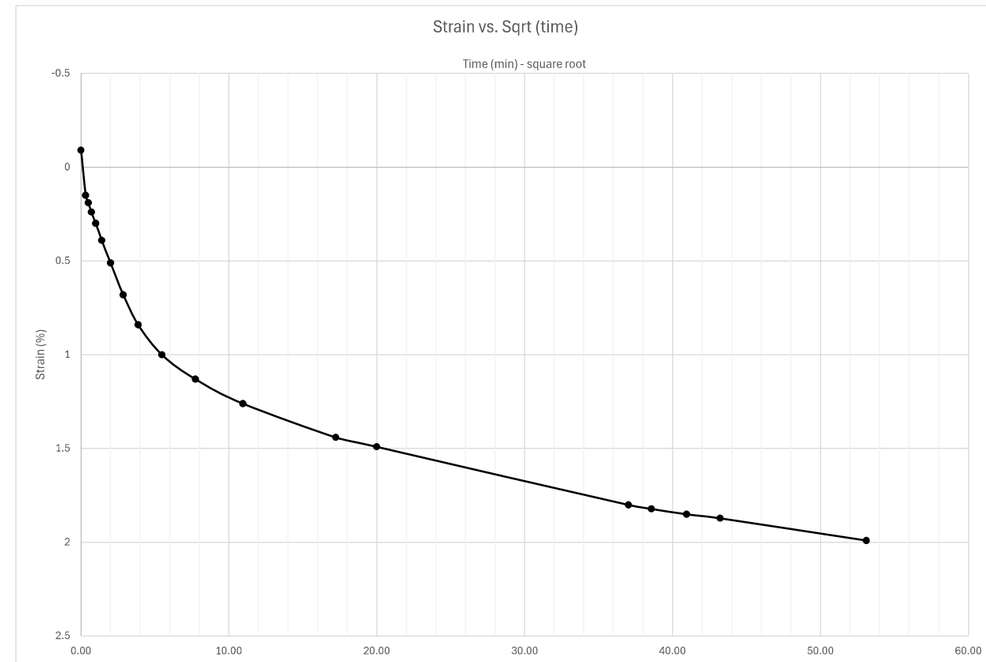
Sequence 13: 16000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

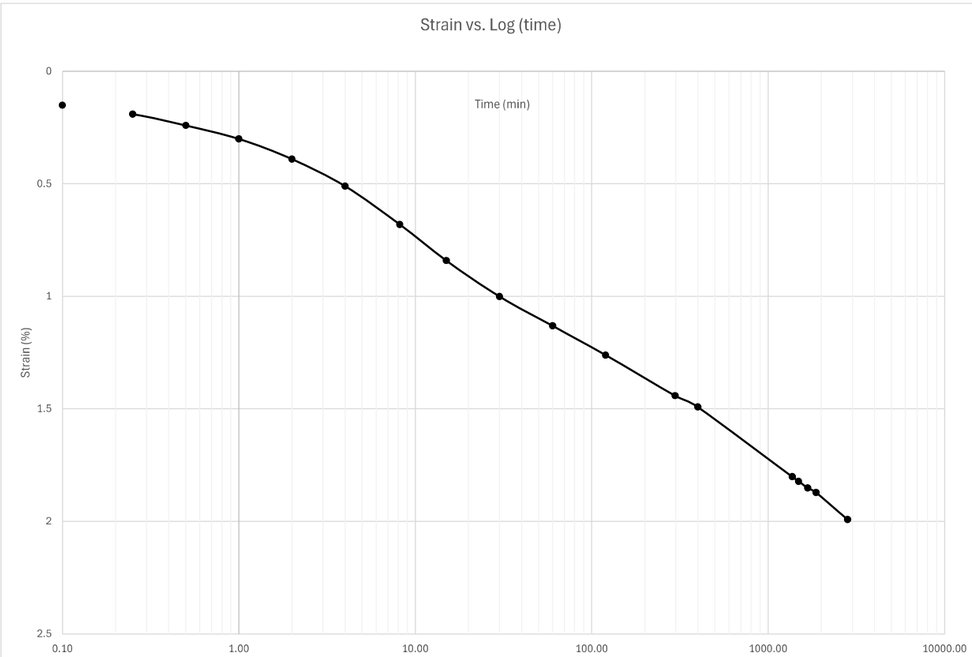


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	32000	0.6987	-0.0013	0.3473	-0.13013	1.436
1			6	0.10	0.32	32000	0.7021	0.0021	0.3439	0.21021	1.412
2			15	0.25	0.50	32000	0.7028	0.0028	0.3432	0.28028	1.407
3			30	0.50	0.71	32000	0.7036	0.0036	0.3424	0.36036	1.402
4		1		1.00	1.00	32000	0.7048	0.0048	0.3412	0.48048	1.393
5		2		2.00	1.41	32000	0.7066	0.0066	0.3394	0.660661	1.380
6		4		4.00	2.00	32000	0.7091	0.0091	0.3369	0.910911	1.363
7		8		8.00	2.83	32000	0.7127	0.0127	0.3333	1.271271	1.338
8		15		15.00	3.87	32000	0.7169	0.0169	0.3291	1.691692	1.308
9		30		30.00	5.48	32000	0.7228	0.0228	0.3232	2.282282	1.267
10	1			60.00	7.75	32000	0.7293	0.0293	0.3167	2.932933	1.221
11	2			120.00	10.95	32000	0.7351	0.0351	0.3109	3.513514	1.181
12	4			240.00	15.49	32000	0.7401	0.0401	0.3059	4.014014	1.145
13	5	26		326.00	18.06	32000	0.7418	0.0418	0.3042	4.184184	1.134
14	31	11		1871.00	43.26	32000	0.7499	0.0499	0.2961	4.994995	1.077
15	71	29		4289.00	65.49	32000	0.7529	0.0529	0.2931	5.295295	1.056
16	74	3		4443.00	66.66	32000	0.753	0.053	0.293	5.305305	1.055
17	78	44		4724.00	68.73	32000	0.7532	0.0532	0.2928	5.325325	1.054
18	94	59		5699.00	75.49	32000	0.7538	0.0538	0.2922	5.385385	1.049
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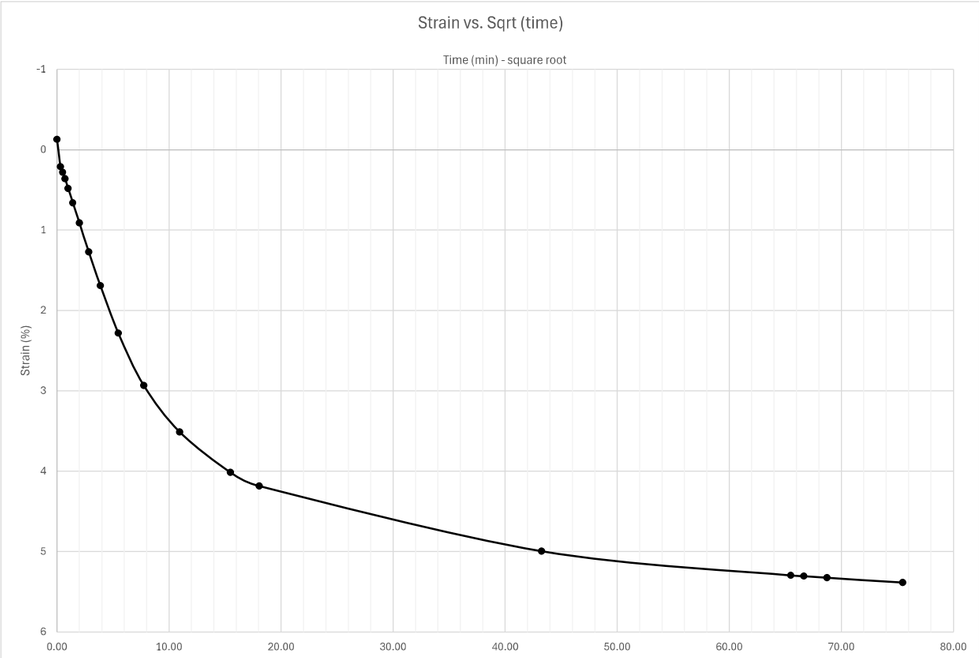
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3200, ST-21, 3-5 ft

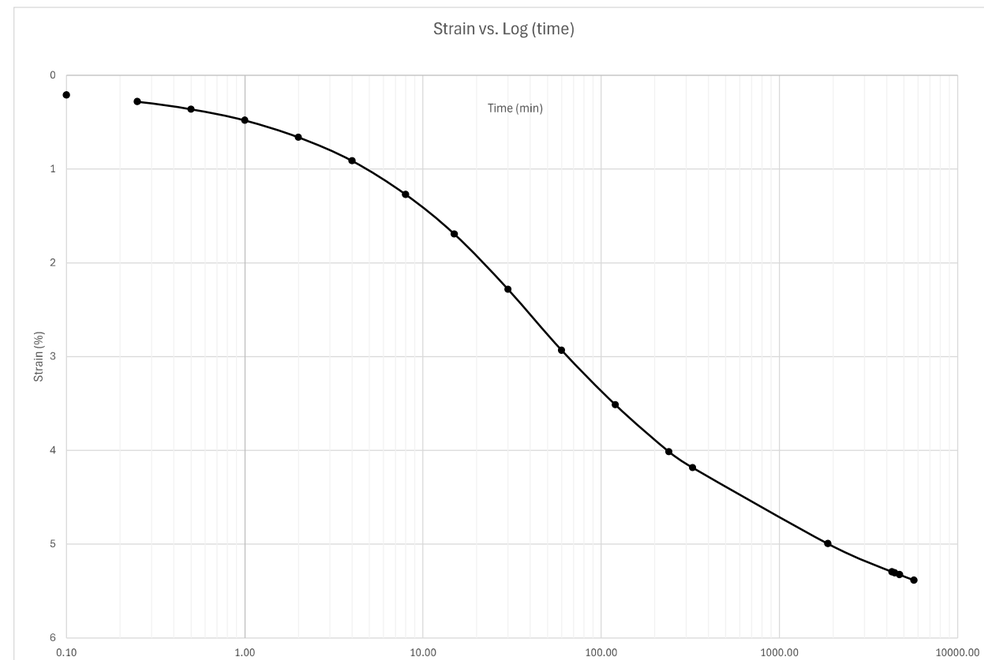
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3200, ST-21, 3-5 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Muck		
Project Number	25-051.05	Depth (ft)	8-10
Sample Number	ST-22	Boring Number	Y1RPC_3200
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0128	0.1317	0.9862	0.013	10.379	3.24	-	0.06364	-
2	500	0.0394	0.1318	0.9596	0.039	10.072	1.21	-	0.16134	-
3	1000	0.2138	0.1319	0.7852	0.214	8.060	19.36	3.95	0.00675	0.007687
4	2000	0.3783	0.1321	0.6207	0.379	6.162	19.36	5.75	0.00422	0.0033
5	4000	0.502	0.1323	0.497	0.503	4.735	-	13.5	-	0.000901
6	8000	0.6148	0.1329	0.3842	0.615	3.433	49	17	0.00064	0.00043
7	16000	0.6765	0.1336	0.3225	0.677	2.721	72.25	23	0.00031	0.00022
8	8000	0.6698	0.133	0.3292	0.670	2.798	-	-	-	-
9	4000	0.6604	0.133	0.3386	0.661	2.907	-	-	-	-
10	2000	0.6522	0.1323	0.3468	0.653	3.001	-	-	-	-
11	4000	0.656	0.1326	0.343	0.657	2.958	9.61	-	0.00260	-
12	8000	0.6643	0.133	0.3347	0.665	2.862	14.44	-	0.00164	-
13	16000	0.685	0.1336	0.314	0.686	2.623	17.64	-	0.00118	-
14	32000	0.7409	0.1345	0.2581	0.742	1.978	70.56	30	0.00020	0.00011
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project:	Replace Bridge No. 13 over the Cape Fear River		
Project Number:	25-051.05	Machine Apparatus:	4
Test Start Date:	2/24/2026	Technician:	KSB
Sampling Date:	12/17/2025	Testing Procedure:	ASTM D2435
Sample Number:	ST-22	Preparation:	Cutting Shoe
Depth (ft):	8-10	Test Condition:	Inundated
Boring Number:	Y1RPC_3200		
Location:	Alignment Y1RPC		
Specific Gravity:	1.669	Plastic Limit:	NP
Sampling Method:	Shelby Tube	Liquid Limit:	NP
Specimen Description:	Black Muck		
Soil Classification:	A-1-a (0)		
Weight of Ring (g):	102.84		

Parameters	Initial	Final
Height (in)	0.999	0.2581
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.274
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	87.16	*
Moisture Content (%)	580.64	*
Moist Weight + Ring Weight (g)	182.48	130.8
Dry Mass (g)	11.70	*
Water Content (calc from spec)	580.64	*
Dry Density (pcf)	9.04	*
Wet Density (pcf)	61.52	83.60
Volume of Solids (in^3)	0.43	*
Height of Solids (in)	0.09	*
Void Ratio	10.527	1.978

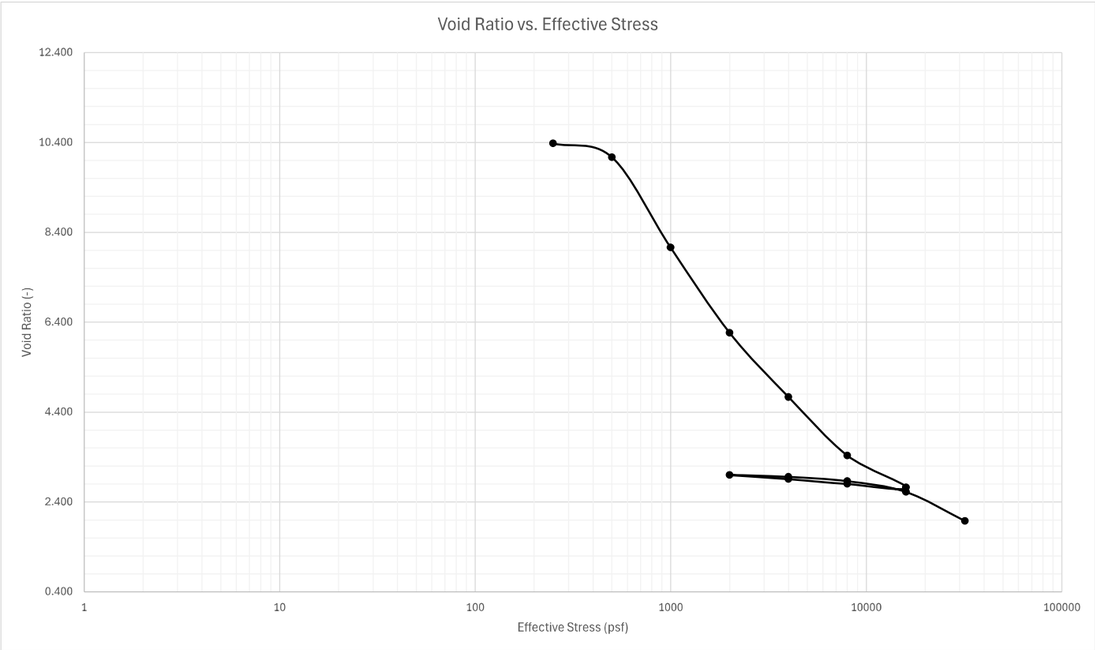
*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

Y1RPC_3200, ST-22, 8-10 ft

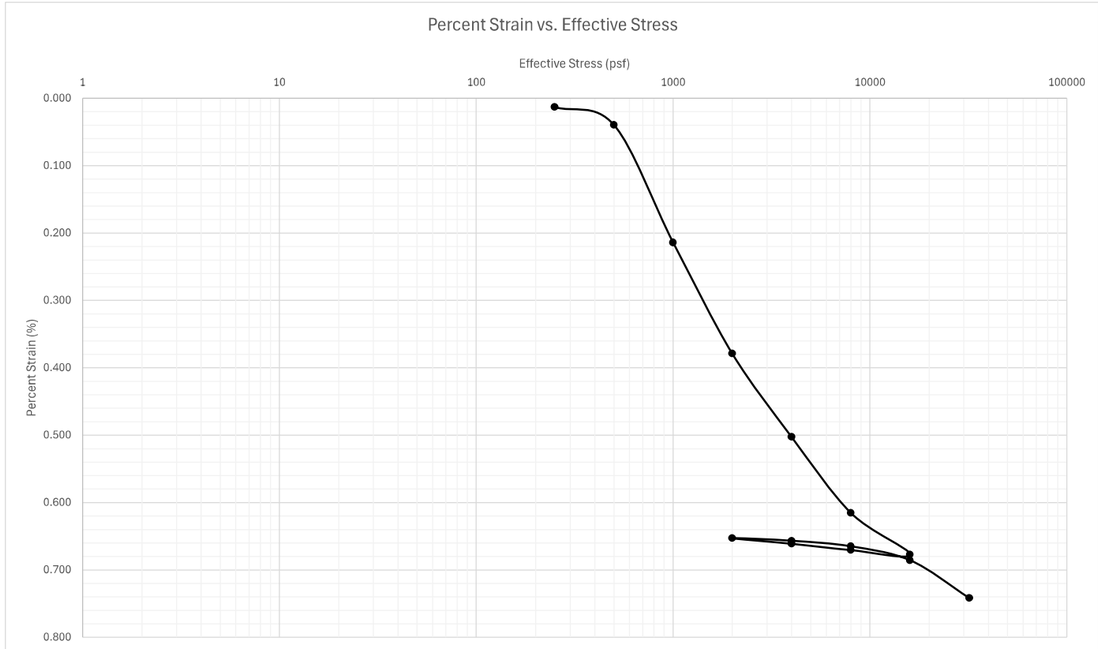
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0	0	250	0.075	0	0.999	0	10.527
1			6	0.1	0.316227766	250	0.0757	0.0007	0.9983	0.07007	10.519
2			15	0.25	0.5	250	0.077	0.002	0.997	0.2002	10.504
3			30	0.5	0.707106781	250	0.0781	0.0031	0.9959	0.31031	10.491
4		1		1	1	250	0.0792	0.0042	0.9948	0.42042	10.478
5		2		2	1.414213562	250	0.0803	0.0053	0.9937	0.530531	10.466
6		4		4	2	250	0.0805	0.0055	0.9935	0.550551	10.463
7		8		8	2.828427125	250	0.0812	0.0062	0.9928	0.620621	10.455
8		15		15	3.872983346	250	0.0817	0.0067	0.9923	0.670671	10.449
9		30		30	5.477225575	250	0.0823	0.0073	0.9917	0.730731	10.443
10	1	2		62	7.874007874	250	0.0828	0.0078	0.9912	0.780781	10.437
11	1	47		107	10.34408043	250	0.0834	0.0084	0.9906	0.840841	10.430
12	4	4		244	15.62049935	250	0.084	0.009	0.99	0.900901	10.423
13	6	15		375	19.36491673	250	0.0848	0.0098	0.9892	0.980981	10.414
14	21	12		1272	35.665109	250	0.0858	0.0108	0.9882	1.081081	10.402
15	23	19		1399	37.40320842	250	0.086	0.011	0.988	1.101101	10.400
16	25	12		1512	38.88444419	250	0.0863	0.0113	0.9877	1.131131	10.396
17	28	26	55	1706.916667	41.31484802	250	0.0864	0.0114	0.9876	1.141141	10.395
18	45	24		2724	52.1919534	250	0.0868	0.0118	0.9872	1.181181	10.391
19	47	25		2845	53.33854141	250	0.0874	0.0124	0.9866	1.241241	10.384
20	51	2		3062	55.33534133	250	0.0875	0.0125	0.9865	1.251251	10.383
21	52			3120	55.85696018	250	0.0878	0.0128	0.9862	1.281281	10.379
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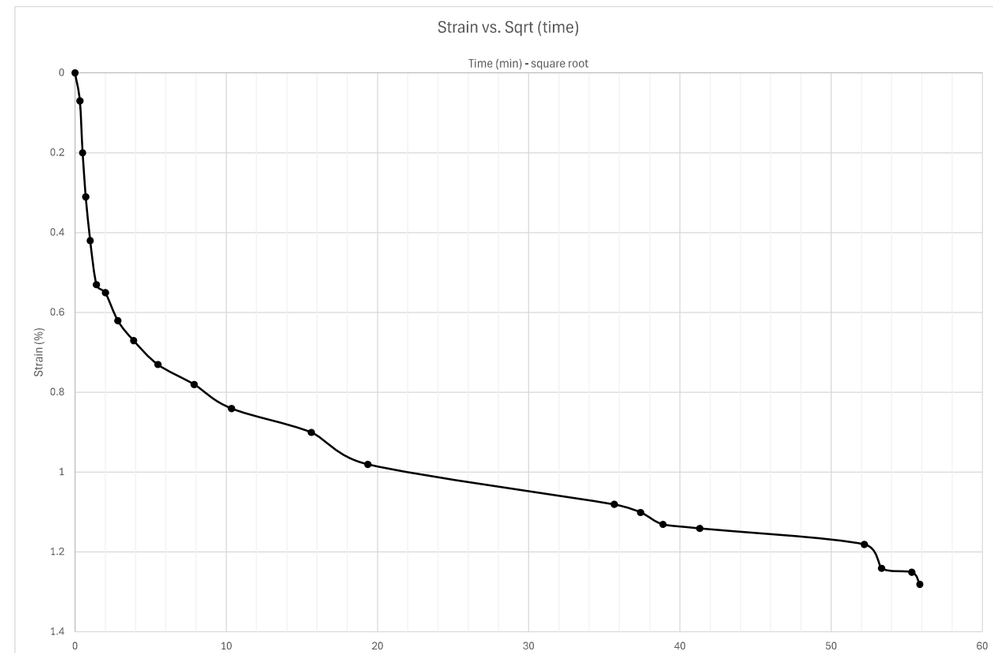
Sequence 1: 250 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

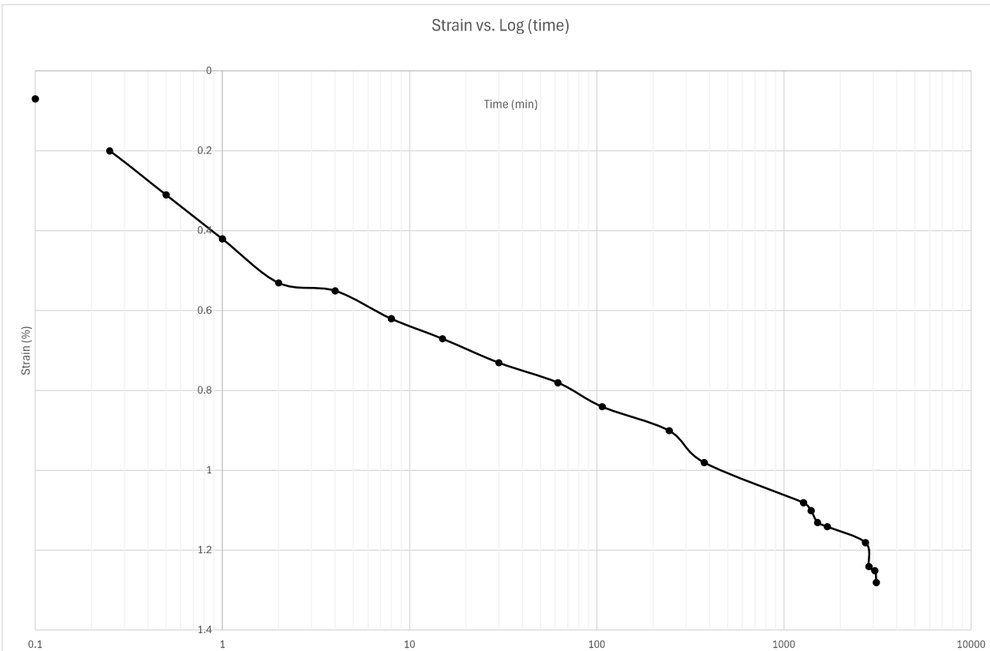


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0878	-0.0001	0.9863	-0.01001	10.380
1			6	0.1	0.32	500	0.0961	0.0082	0.9780	0.820821	10.284
2			15	0.25	0.50	500	0.0985	0.0106	0.9756	1.061061	10.257
3			30	0.5	0.71	500	0.1005	0.0126	0.9736	1.261261	10.234
4		1		1	1.00	500	0.1024	0.0145	0.9717	1.451451	10.212
5		2		2	1.41	500	0.1033	0.0154	0.9708	1.541542	10.201
6		4		4	2.00	500	0.1040	0.0161	0.9701	1.611612	10.193
7		9		9	3.00	500	0.1048	0.0169	0.9693	1.691692	10.184
8		15		15	3.87	500	0.1052	0.0173	0.9689	1.731732	10.179
9		52		52	7.21	500	0.1072	0.0193	0.9669	1.931932	10.156
10	1	47		107	10.34	500	0.1078	0.0199	0.9663	1.991992	10.149
11	16	56		1016	31.87	500	0.1099	0.0220	0.9642	2.202202	10.125
12	20	44		1244	35.27	500	0.1108	0.0229	0.9633	2.292292	10.115
13	23	27		1407	37.51	500	0.1112	0.0233	0.9629	2.332332	10.110
14	25	22		1522	39.01	500	0.1119	0.0240	0.9622	2.402402	10.102
15	42	59		2579	50.78	500	0.1126	0.0247	0.9615	2.472472	10.094
16	89	20		5360	73.21	500	0.1145	0.0266	0.9596	2.662663	10.072
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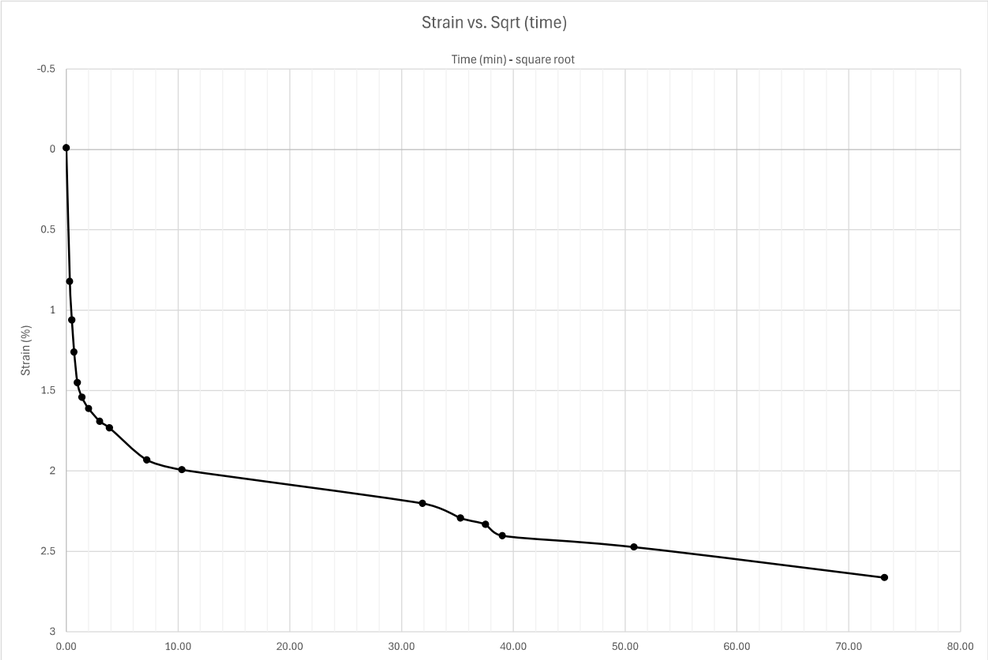
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3200, ST-22, 8-10 ft

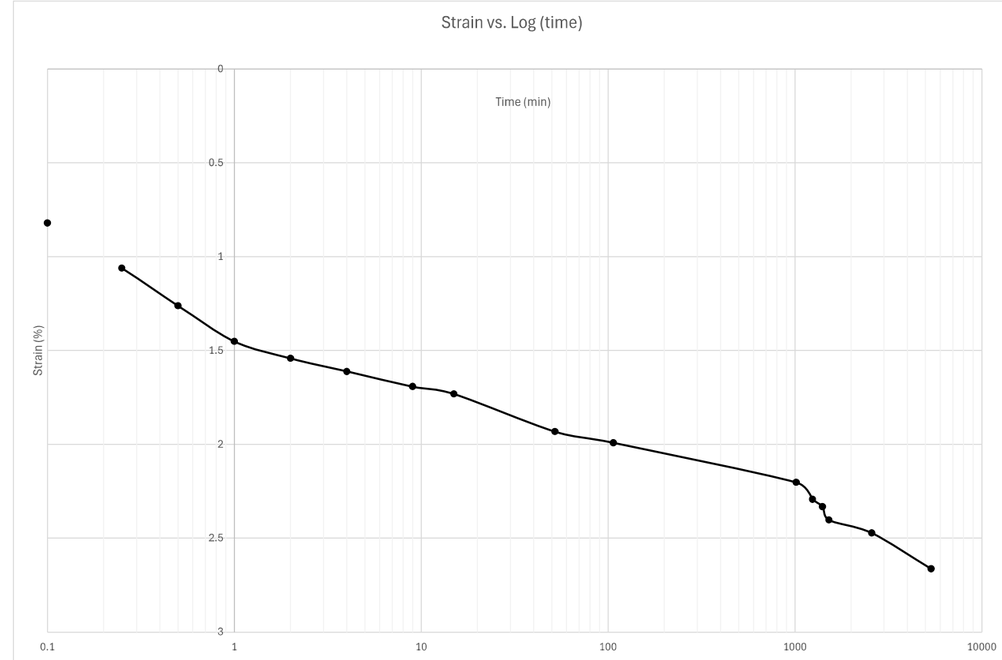
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.1099	-1E-04	0.9643	-0.01001	10.126
1			6	0.10	0.32	1000	0.1289	0.0189	0.9453	1.891892	9.907
2			15	0.25	0.50	1000	0.134	0.024	0.9402	2.402402	9.848
3			30	0.50	0.71	1000	0.139	0.029	0.9352	2.902903	9.791
4		1		1.00	1.00	1000	0.1475	0.0375	0.9267	3.753754	9.693
5		2		2.00	1.41	1000	0.1602	0.0502	0.914	5.025025	9.546
6		4		4.00	2.00	1000	0.1754	0.0654	0.8988	6.546547	9.371
7		8		8.00	2.83	1000	0.1956	0.0856	0.8786	8.568569	9.138
8		17		17.00	4.12	1000	0.2181	0.1081	0.8561	10.82082	8.878
9		38		38.00	6.16	1000	0.233	0.123	0.8412	12.31231	8.706
10	1	25		85.00	9.22	1000	0.2453	0.1353	0.8289	13.54354	8.564
11	3	45		225.00	15.00	1000	0.2576	0.1476	0.8166	14.77477	8.422
12	6	54		414.00	20.35	1000	0.2654	0.1554	0.8088	15.55556	8.332
13	25	33		1533.00	39.15	1000	0.2803	0.1703	0.7939	17.04705	8.160
14	28	47		1727.00	41.56	1000	0.282	0.172	0.7922	17.21722	8.141
15	30	23		1823.00	42.70	1000	0.2827	0.1727	0.7915	17.28729	8.133
16	46	25		2785.00	52.77	1000	0.2883	0.1783	0.7859	17.84785	8.068
17	49			2940.00	54.22	1000	0.289	0.179	0.7852	17.91792	8.060
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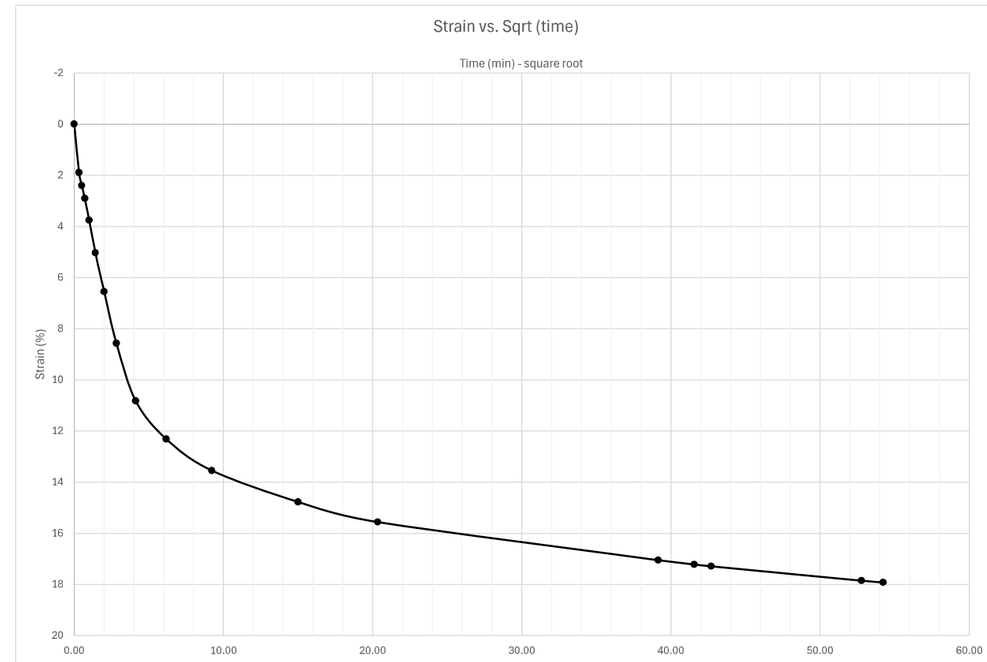
Sequence 3: 1000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

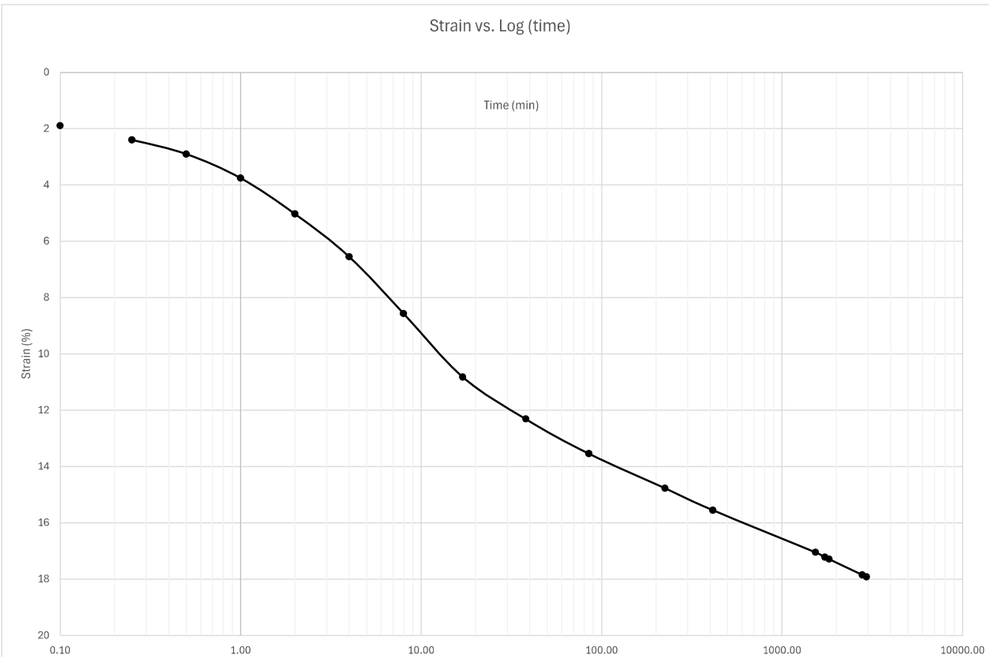


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.289	-0.0002	0.7854	-0.02002	8.062
1			6	0.10	0.32	2000	0.3015	0.0123	0.7729	1.231231	7.918
2			15	0.25	0.50	2000	0.3065	0.0173	0.7679	1.731732	7.860
3			30	0.50	0.71	2000	0.3117	0.0225	0.7627	2.252252	7.800
4		1		1.00	1.00	2000	0.3178	0.0286	0.7566	2.862863	7.730
5		2		2.00	1.41	2000	0.3262	0.037	0.7482	3.703704	7.633
6		4		4.00	2.00	2000	0.337	0.0478	0.7374	4.784785	7.508
7		8		8.00	2.83	2000	0.35	0.0608	0.7244	6.086086	7.358
8		15		15.00	3.87	2000	0.3644	0.0752	0.71	7.527528	7.192
9		29		29.00	5.39	2000	0.3784	0.0892	0.696	8.928929	7.031
10	1	35		95.00	9.75	2000	0.398	0.1088	0.6764	10.89089	6.805
11	2	20		140.00	11.83	2000	0.4038	0.1146	0.6706	11.47147	6.738
12	18			1080.00	32.86	2000	0.4311	0.1419	0.6433	14.2042	6.423
13	21	6	32	1266.53	35.59	2000	0.4329	0.1437	0.6415	14.38438	6.402
14	23	55		1435.00	37.88	2000	0.4344	0.1452	0.64	14.53453	6.385
15	26	10		1570.00	39.62	2000	0.4354	0.1462	0.639	14.63463	6.373
16	42	50		2570.00	50.70	2000	0.4416	0.1524	0.6328	15.25526	6.301
17	46	31		2791.00	52.83	2000	0.4423	0.1531	0.6321	15.32533	6.293
18	114	13		6853.00	82.78	2000	0.4537	0.1645	0.6207	16.46647	6.162
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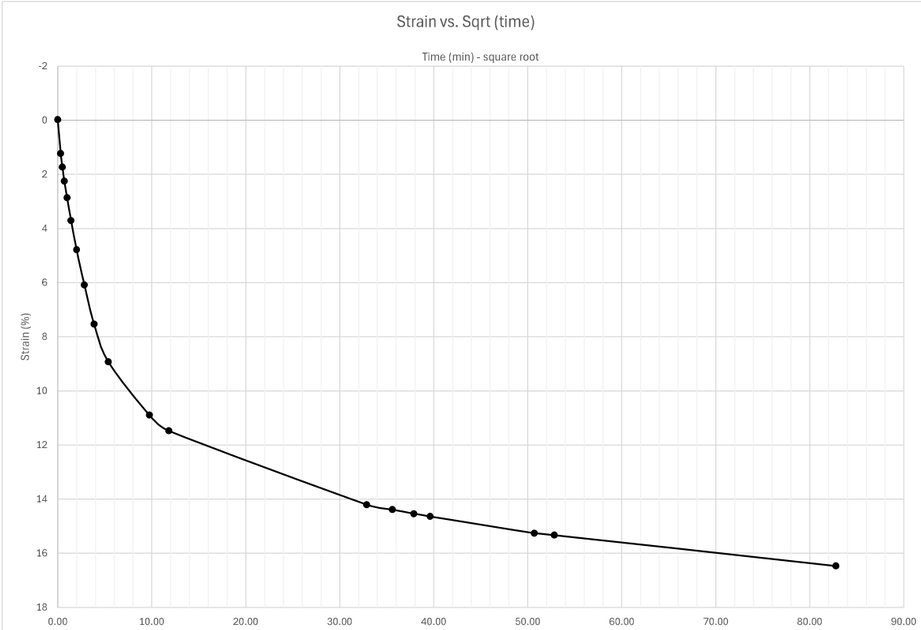
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3200, ST-22, 8-10 ft

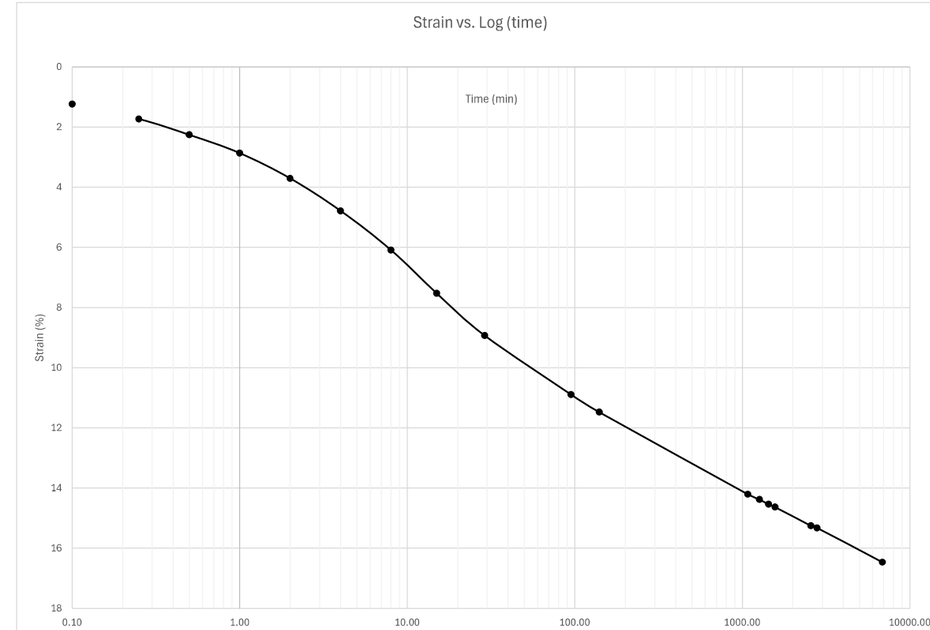
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4537	-0.0002	0.6209	-0.02002	6.164
1			6	0.10	0.32	4000	0.4617	0.0078	0.6129	0.780781	6.072
2			15	0.25	0.50	4000	0.4639	0.01	0.6107	1.001001	6.046
3			30	0.50	0.71	4000	0.4663	0.0124	0.6083	1.241241	6.019
4		1		1.00	1.00	4000	0.4699	0.016	0.6047	1.601602	5.977
5		2	0	2.00	1.41	4000	0.4746	0.0207	0.6	2.072072	5.923
6		4		4.00	2.00	4000	0.4815	0.0276	0.5931	2.762763	5.843
7		8		8.00	2.83	4000	0.4902	0.0363	0.5844	3.633634	5.743
8		15		15.00	3.87	4000	0.5001	0.0462	0.5745	4.624625	5.629
9		30		30.00	5.48	4000	0.5127	0.0588	0.5619	5.885886	5.483
10	1	4		64.00	8.00	4000	0.5269	0.073	0.5477	7.307307	5.320
11	2	5		125.00	11.18	4000	0.5375	0.0836	0.5371	8.368368	5.197
12	4	4		244.00	15.62	4000	0.5468	0.0929	0.5278	9.299299	5.090
13	6	8		368.00	19.18	4000	0.552	0.0981	0.5226	9.81982	5.030
14	23	17		1397.00	37.38	4000	0.5681	0.1142	0.5065	11.43143	4.844
15	26	4		1564.00	39.55	4000	0.5693	0.1154	0.5053	11.55155	4.830
16	29	0		1740.00	41.71	4000	0.5704	0.1165	0.5042	11.66166	4.818
17	47	4		2824.00	53.14	4000	0.5764	0.1225	0.4982	12.26226	4.748
18	52	29		3149.00	56.12	4000	0.5776	0.1237	0.497	12.38238	4.735
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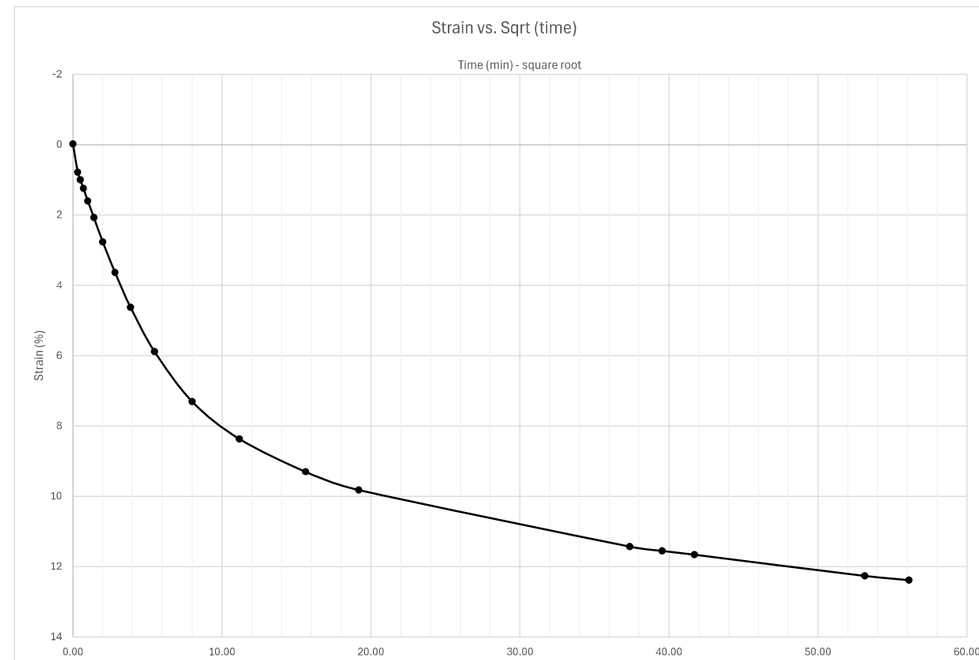
Sequence 5: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

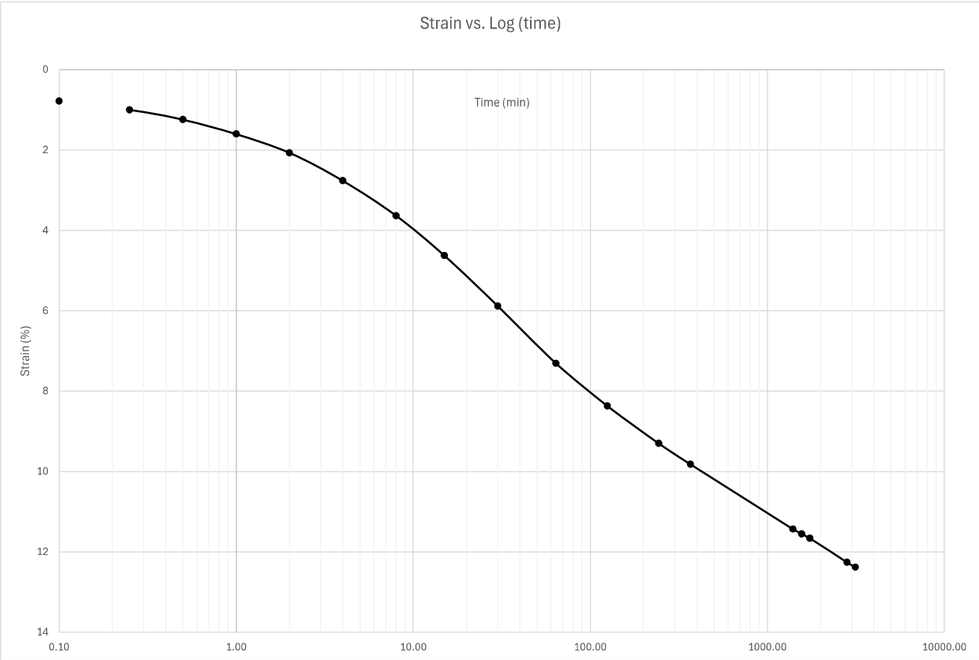


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.5776	-0.0006	0.4976	-0.06006	4.741
1			6	0.10	0.32	8000	0.5829	0.0047	0.4923	0.47047	4.680
2			15	0.25	0.50	8000	0.5846	0.0064	0.4906	0.640641	4.661
3			30	0.50	0.71	8000	0.5866	0.0084	0.4886	0.840841	4.638
4		1		1.00	1.00	8000	0.5895	0.0113	0.4857	1.131131	4.604
5		2		2.00	1.41	8000	0.5942	0.016	0.481	1.601602	4.550
6		4		4.00	2.00	8000	0.6005	0.0223	0.4747	2.232232	4.477
7		8		8.00	2.83	8000	0.6091	0.0309	0.4661	3.093093	4.378
8		15		15.00	3.87	8000	0.6187	0.0405	0.4565	4.054054	4.267
9		39		39.00	6.24	8000	0.6358	0.0576	0.4394	5.765766	4.070
10		58		58.00	7.62	8000	0.6426	0.0644	0.4326	6.446446	3.991
11	2	37		157.00	12.53	8000	0.6569	0.0787	0.4183	7.877878	3.826
12	18	21		1101.00	33.18	8000	0.6764	0.0982	0.3988	9.82983	3.601
13	20	40		1240.00	35.21	8000	0.6774	0.0992	0.3978	9.92993	3.590
14	22	42		1362.00	36.91	8000	0.6782	0.1	0.397	10.01001	3.581
15	26	53		1613.00	40.16	8000	0.6795	0.1013	0.3957	10.14014	3.566
16	44	30		2670.00	51.67	8000	0.6833	0.1051	0.3919	10.52052	3.522
17	115	40		6940.00	83.31	8000	0.691	0.1128	0.3842	11.29129	3.433
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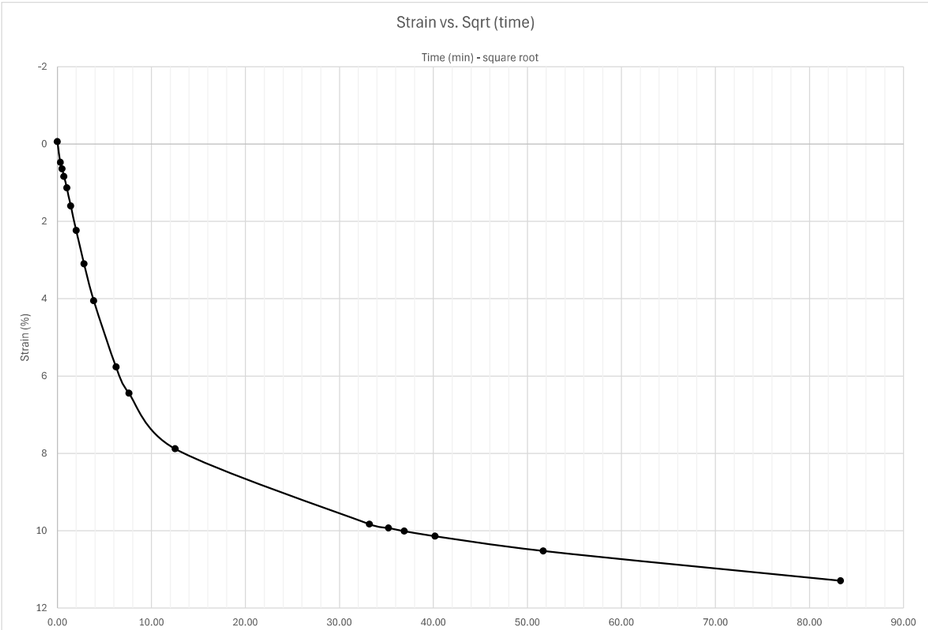
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

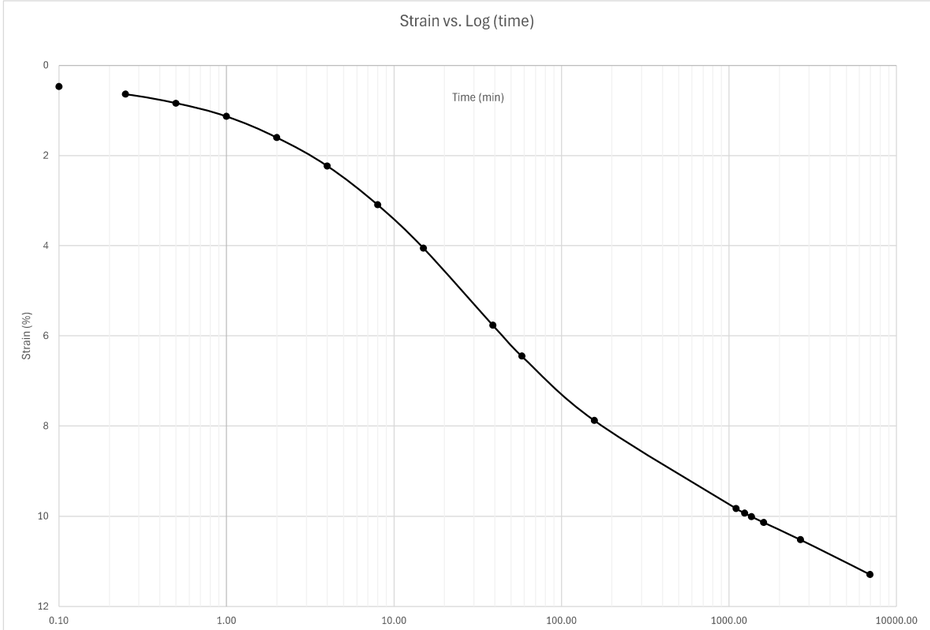
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.691	-0.0007	0.3849	-0.07007	3.441
1			6	0.10	0.32	16000	0.6945	0.0028	0.3814	0.28028	3.401
2			15	0.25	0.50	16000	0.6956	0.0039	0.3803	0.39039	3.388
3			30	0.50	0.71	16000	0.6966	0.0049	0.3793	0.49049	3.376
4		1		1.00	1.00	16000	0.6976	0.0059	0.3783	0.590591	3.365
5		2		2.00	1.41	16000	0.7004	0.0087	0.3755	0.870871	3.333
6		4		4.00	2.00	16000	0.7036	0.0119	0.3723	1.191191	3.296
7		8		8.00	2.83	16000	0.7081	0.0164	0.3678	1.641642	3.244
8		15		15.00	3.87	16000	0.7134	0.0217	0.3625	2.172172	3.183
9		35	11	35.18	5.93	16000	0.7222	0.0305	0.3537	3.053053	3.081
10	1			60.00	7.75	16000	0.7278	0.0361	0.3481	3.613614	3.016
11	1	58		118.00	10.86	16000	0.7348	0.0431	0.3411	4.314314	2.936
12	3	57		237.00	15.39	16000	0.7412	0.0495	0.3347	4.954955	2.862
13	6	58		418.00	20.45	16000	0.7456	0.0539	0.3303	5.395395	2.811
14	22	38		1358.00	36.85	16000	0.7531	0.0614	0.3228	6.146146	2.725
15	24	8		1448.00	38.05	16000	0.7534	0.0617	0.3225	6.176176	2.721
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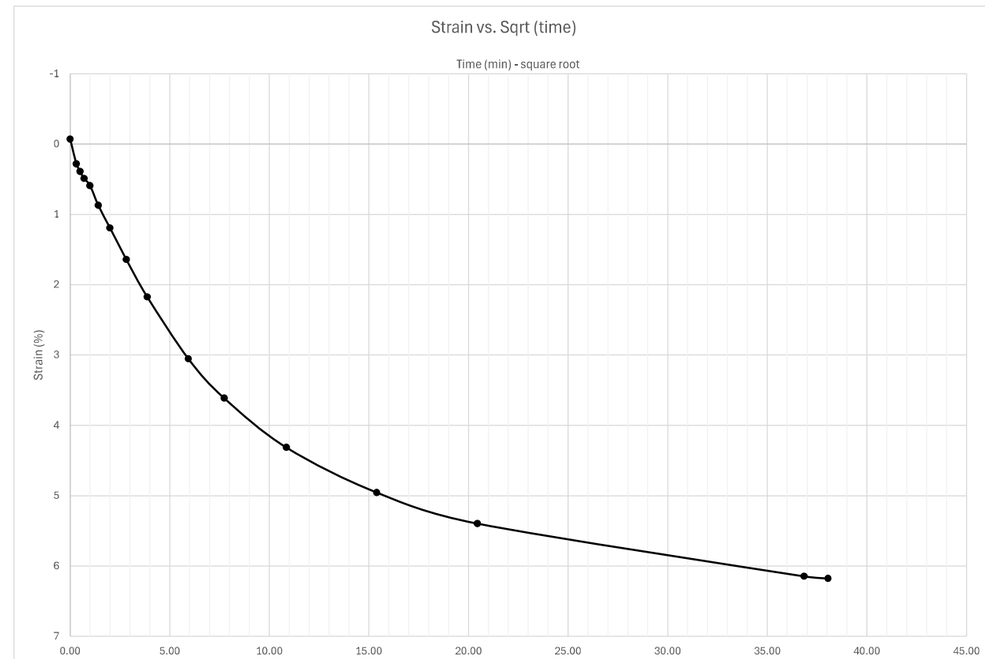
Sequence 7: 16000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

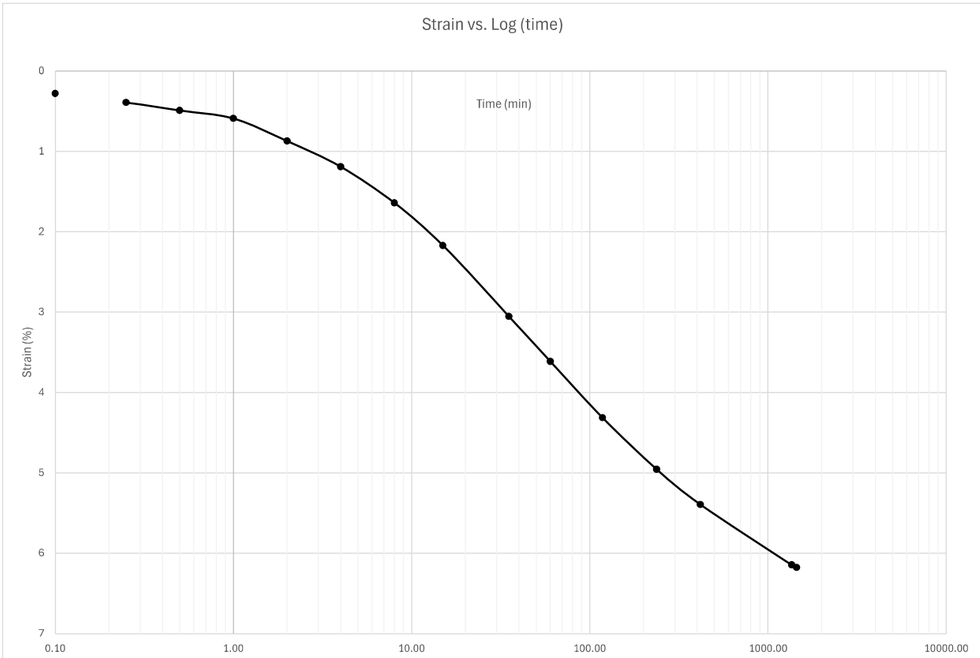


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.7534	0.0006	0.3219	0.06006	2.714
1			6	0.10	0.32	8000	0.7519	-0.0009	0.3234	-0.09009	2.731
2			15	0.25	0.50	8000	0.7516	-0.0012	0.3237	-0.12012	2.735
3			30	0.50	0.71	8000	0.7514	-0.0014	0.3239	-0.14014	2.737
4		1		1.00	1.00	8000	0.751	-0.0018	0.3243	-0.18018	2.742
5		2		2.00	1.41	8000	0.7505	-0.0023	0.3248	-0.23023	2.748
6		4		4.00	2.00	8000	0.7499	-0.0029	0.3254	-0.29029	2.755
7		8		8.00	2.83	8000	0.7493	-0.0035	0.326	-0.35035	2.761
8		15		15.00	3.87	8000	0.7488	-0.004	0.3265	-0.4004	2.767
9		30		30.00	5.48	8000	0.7482	-0.0046	0.3271	-0.46046	2.774
10		55		55.00	7.42	8000	0.7477	-0.0051	0.3276	-0.510511	2.780
11	1	57		117.00	10.82	8000	0.7473	-0.0055	0.328	-0.550551	2.785
12	3	58		238.00	15.43	8000	0.747	-0.0058	0.3283	-0.580581	2.788
13	6	19		379.00	19.47	8000	0.7465	-0.0063	0.3288	-0.630631	2.794
14	21	24		1284.00	35.83	8000	0.7461	-0.0067	0.3292	-0.670671	2.798
15	24	53		1493.00	38.64	8000	0.7461	-0.0067	0.3292	-0.670671	2.798
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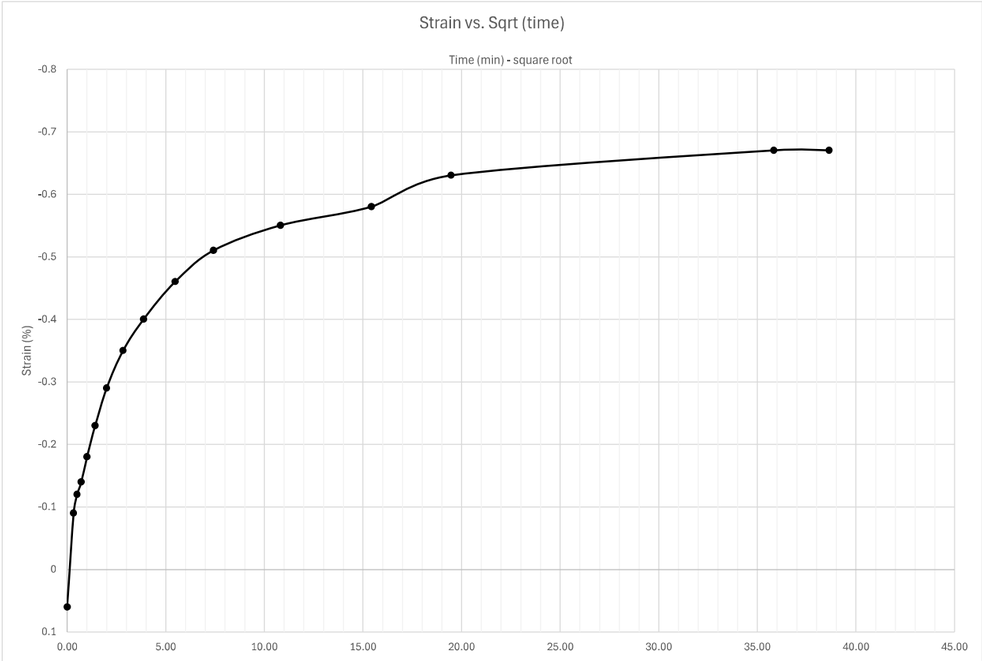
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

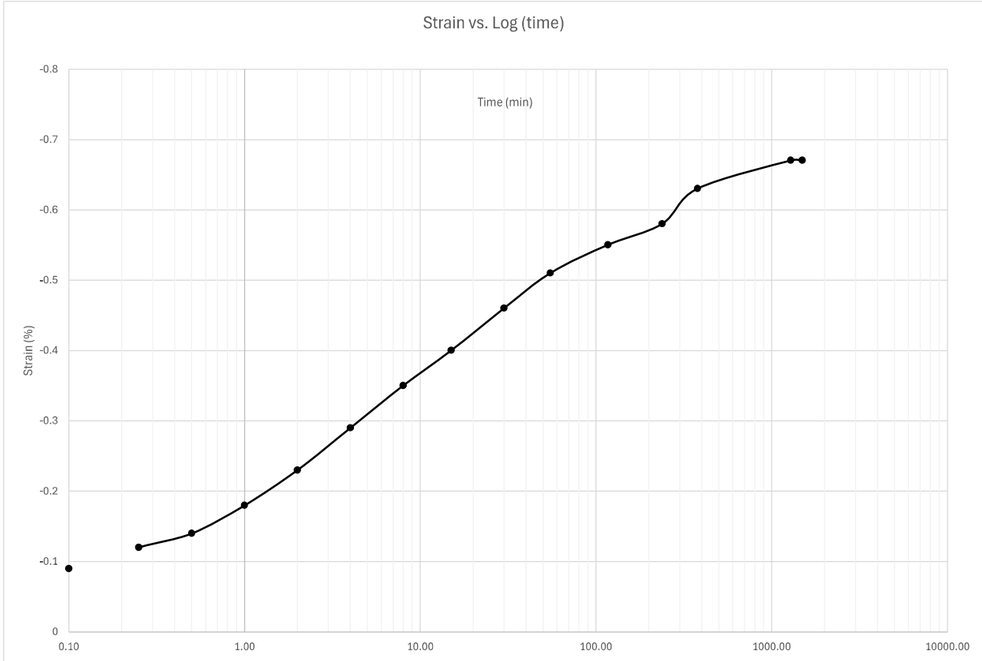
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.7461	0	0.3292	0	2.798
1			6	0.10	0.32	4000	0.7451	-0.001	0.3302	-0.1001	2.810
2			15	0.25	0.50	4000	0.7448	-0.0013	0.3305	-0.13013	2.813
3			30	0.50	0.71	4000	0.7446	-0.0015	0.3307	-0.15015	2.816
4		1		1.00	1.00	4000	0.7444	-0.0017	0.3309	-0.17017	2.818
5		2		2.00	1.41	4000	0.744	-0.0021	0.3313	-0.21021	2.823
6		4		4.00	2.00	4000	0.7437	-0.0024	0.3316	-0.24024	2.826
7		8		8.00	2.83	4000	0.7432	-0.0029	0.3321	-0.29029	2.832
8		15		15.00	3.87	4000	0.7427	-0.0034	0.3326	-0.34034	2.838
9		30		30.00	5.48	4000	0.7422	-0.0039	0.3331	-0.39039	2.843
10		59		59.00	7.68	4000	0.7417	-0.0044	0.3336	-0.44044	2.849
11	2	1		121.00	11.00	4000	0.7412	-0.0049	0.3341	-0.49049	2.855
12	4	34		274.00	16.55	4000	0.7405	-0.0056	0.3348	-0.560561	2.863
13	7	58		478.00	21.86	4000	0.7396	-0.0065	0.3357	-0.650651	2.873
14	24		18	1440.30	37.95	4000	0.7383	-0.0078	0.337	-0.780781	2.888
15	30	57		1857.00	43.09	4000	0.738	-0.0081	0.3373	-0.810811	2.892
16	96		1	5760.02	75.89	4000	0.7367	-0.0094	0.3386	-0.940941	2.907
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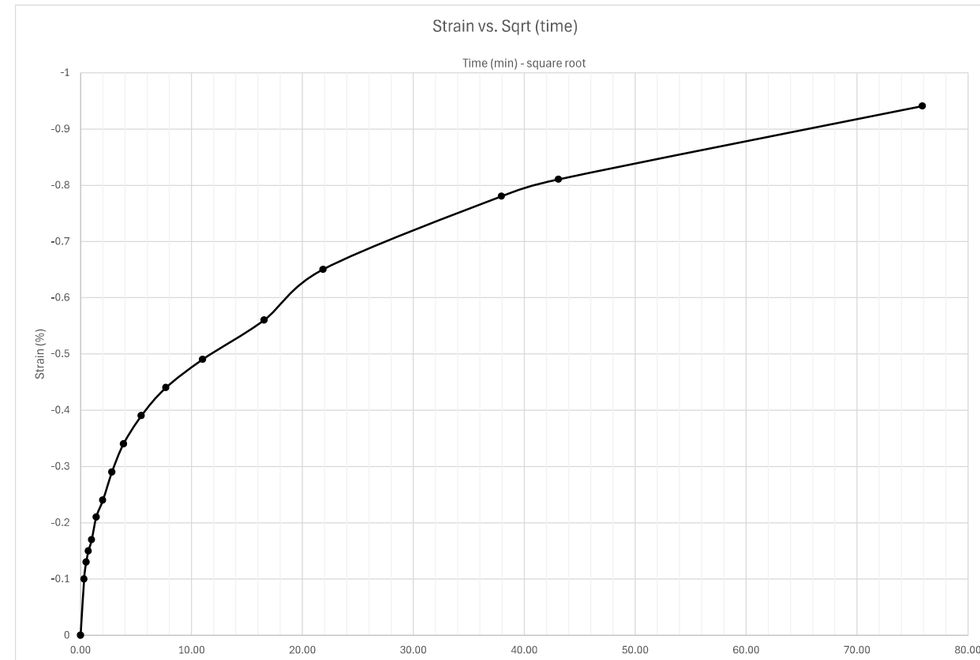
Sequence 9: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

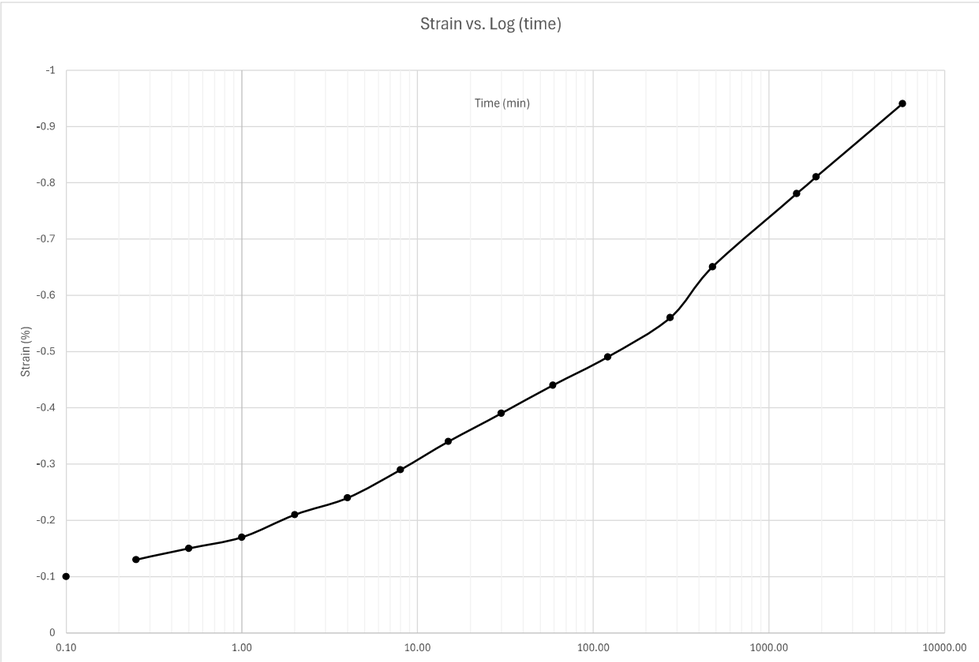


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.7367	0.0007	0.3379	0.07007	2.899
1			6	0.10	0.32	2000	0.736	-2.77556E-17	0.3386	-2.78E-15	2.907
2			15	0.25	0.50	2000	0.7359	-0.0001	0.3387	-0.01001	2.908
3			30	0.50	0.71	2000	0.7358	-0.0002	0.3388	-0.02002	2.909
4		1		1.00	1.00	2000	0.7356	-0.0004	0.339	-0.04004	2.911
5		2		2.00	1.41	2000	0.7355	-0.0005	0.3391	-0.05005	2.913
6		4		4.00	2.00	2000	0.735	-0.001	0.3396	-0.1001	2.918
7		8		8.00	2.83	2000	0.7346	-0.0014	0.34	-0.14014	2.923
8		15		15.00	3.87	2000	0.7343	-0.0017	0.3403	-0.17017	2.926
9		30		30.00	5.48	2000	0.7339	-0.0021	0.3407	-0.21021	2.931
10	1			60.00	7.75	2000	0.7334	-0.0026	0.3412	-0.26026	2.937
11	2			120.00	10.95	2000	0.733	-0.003	0.3416	-0.3003	2.941
12	4			240.00	15.49	2000	0.7324	-0.0036	0.3422	-0.36036	2.948
13	8			480.00	21.91	2000	0.7315	-0.0045	0.3431	-0.45045	2.959
14	23	31		1411.00	37.56	2000	0.7299	-0.0061	0.3447	-0.610611	2.977
15	26			1560.00	39.50	2000	0.7297	-0.0063	0.3449	-0.630631	2.980
16	31	32		1892.00	43.50	2000	0.7294	-0.0066	0.3452	-0.660661	2.983
17	47	8		2828.00	53.18	2000	0.7286	-0.0074	0.346	-0.740741	2.992
18	52	4		3124.00	55.89	2000	0.7285	-0.0075	0.3461	-0.750751	2.993
19	55	46		3346.00	57.84	2000	0.7284	-0.0076	0.3462	-0.760761	2.995
20	71	36		4296.00	65.54	2000	0.7278	-0.0082	0.3468	-0.820821	3.001
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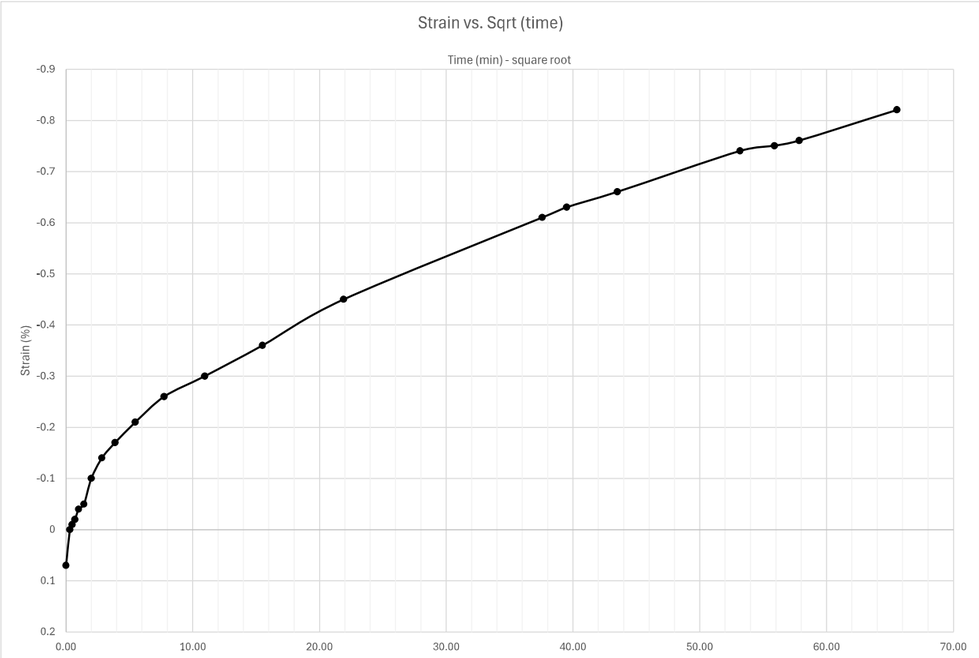
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3200, ST-22, 8-10 ft

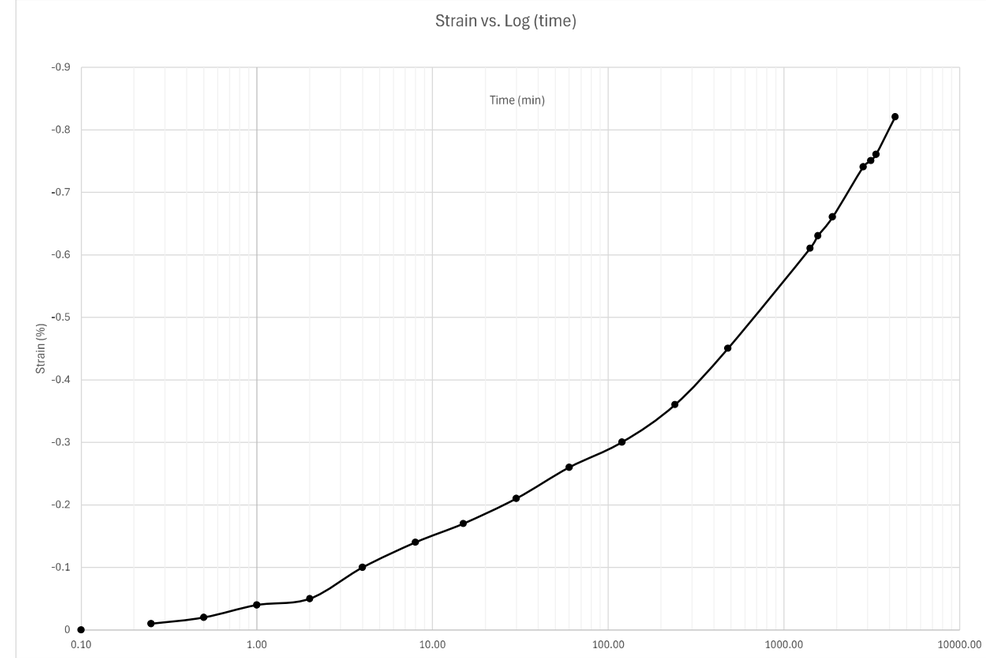
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.7278	-0.0003	0.3471	-0.03003	3.005
1			6	0.10	0.32	4000	0.7285	0.0004	0.3464	0.04004	2.997
2			15	0.25	0.50	4000	0.7286	0.0005	0.3463	0.05005	2.996
3			30	0.50	0.71	4000	0.7287	0.0006	0.3462	0.06006	2.995
4		1		1.00	1.00	4000	0.729	0.0009	0.3459	0.09009	2.991
5		2		2.00	1.41	4000	0.7292	0.0011	0.3457	0.11011	2.989
6		4		4.00	2.00	4000	0.7296	0.0015	0.3453	0.15015	2.984
7		8		8.00	2.83	4000	0.7299	0.0018	0.345	0.18018	2.981
8		15		15.00	3.87	4000	0.7301	0.002	0.3448	0.2002	2.978
9		30		30.00	5.48	4000	0.7304	0.0023	0.3445	0.23023	2.975
10	1			60.00	7.75	4000	0.7305	0.0024	0.3444	0.24024	2.974
11	2	11		131.00	11.45	4000	0.7307	0.0026	0.3442	0.26026	2.971
12	4	3		243.00	15.59	4000	0.731	0.0029	0.3439	0.29029	2.968
13	6	49		409.00	20.22	4000	0.7311	0.003	0.3438	0.3003	2.967
14	22	38		1358.00	36.85	4000	0.7314	0.0033	0.3435	0.33033	2.963
15	24	25		1465.00	38.28	4000	0.7315	0.0034	0.3434	0.34034	2.962
16	28	52		1732.00	41.62	4000	0.7315	0.0034	0.3434	0.34034	2.962
17	54	20		3260.00	57.10	4000	0.7316	0.0035	0.3433	0.35035	2.961
18	95	29		5729.00	75.69	4000	0.7319	0.0038	0.343	0.38038	2.958
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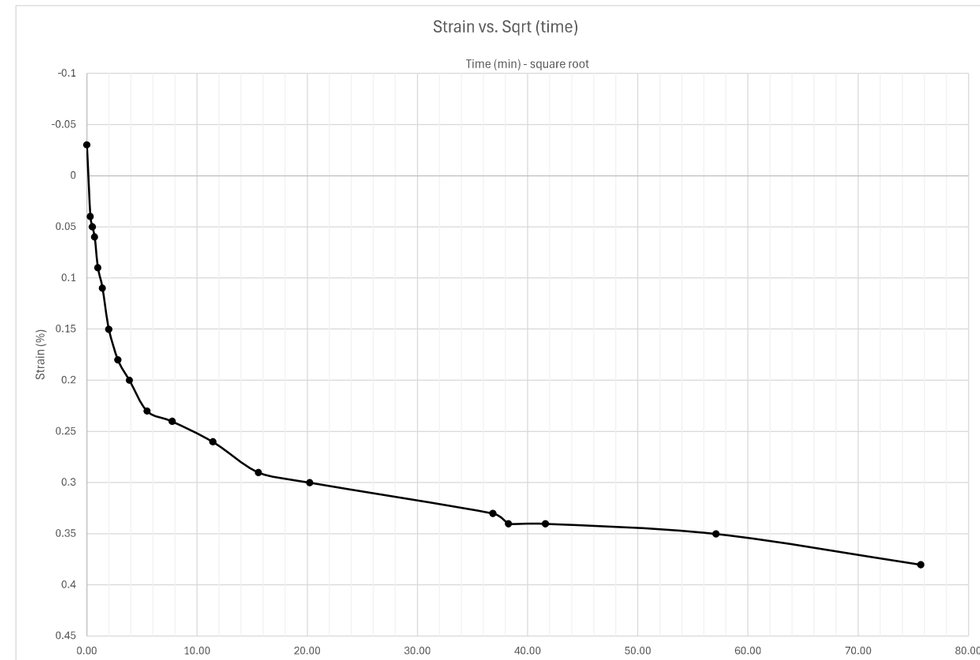
Sequence 11: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

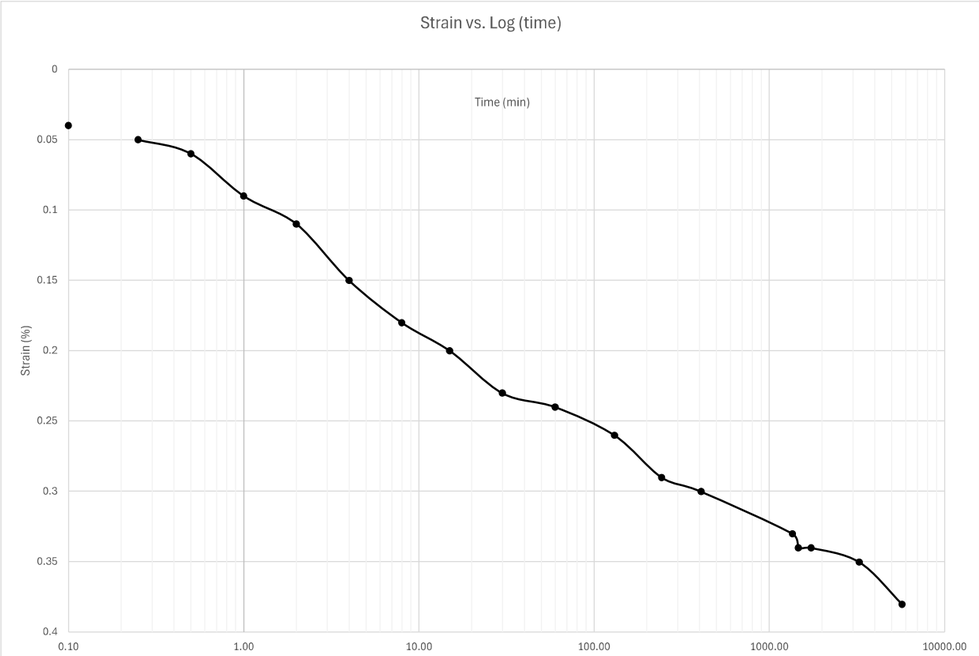


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.7319	-0.0004	0.3434	-0.04004	2.962
1			6	0.10	0.32	8000	0.733	0.0007	0.3423	0.07007	2.950
2			15	0.25	0.50	8000	0.7333	0.001	0.342	0.1001	2.946
3			30	0.50	0.71	8000	0.7336	0.0013	0.3417	0.13013	2.943
4		1		1.00	1.00	8000	0.7345	0.0022	0.3408	0.22022	2.932
5		2		2.00	1.41	8000	0.7347	0.0024	0.3406	0.24024	2.930
6		4		4.00	2.00	8000	0.7352	0.0029	0.3401	0.29029	2.924
7		8		8.00	2.83	8000	0.7359	0.0036	0.3394	0.36036	2.916
8		15		15.00	3.87	8000	0.7366	0.0043	0.3387	0.43043	2.908
9		27		27.00	5.20	8000	0.7369	0.0046	0.3384	0.46046	2.905
10	1	8		68.00	8.25	8000	0.7375	0.0052	0.3378	0.520521	2.898
11	2			120.00	10.95	8000	0.7379	0.0056	0.3374	0.560561	2.893
12	4	11		251.00	15.84	8000	0.7383	0.006	0.337	0.600601	2.888
13	9	10		550.00	23.45	8000	0.7389	0.0066	0.3364	0.660661	2.881
14	23	15		1395.00	37.35	8000	0.7398	0.0075	0.3355	0.750751	2.871
15	25	51		1551.00	39.38	8000	0.7399	0.0076	0.3354	0.760761	2.870
16	47	41		2861.00	53.49	8000	0.7406	0.0083	0.3347	0.830831	2.862
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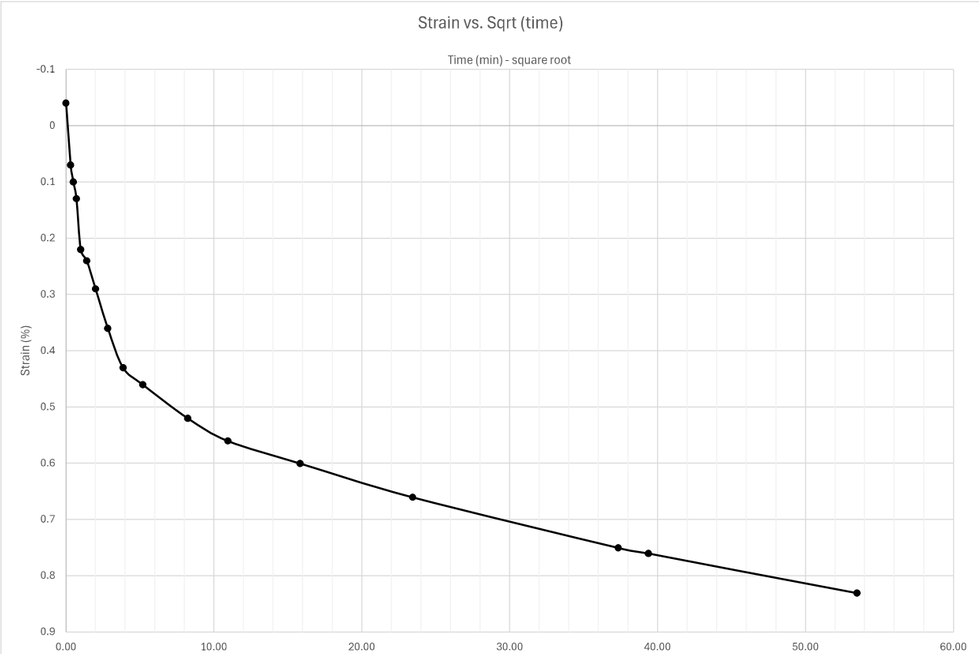
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

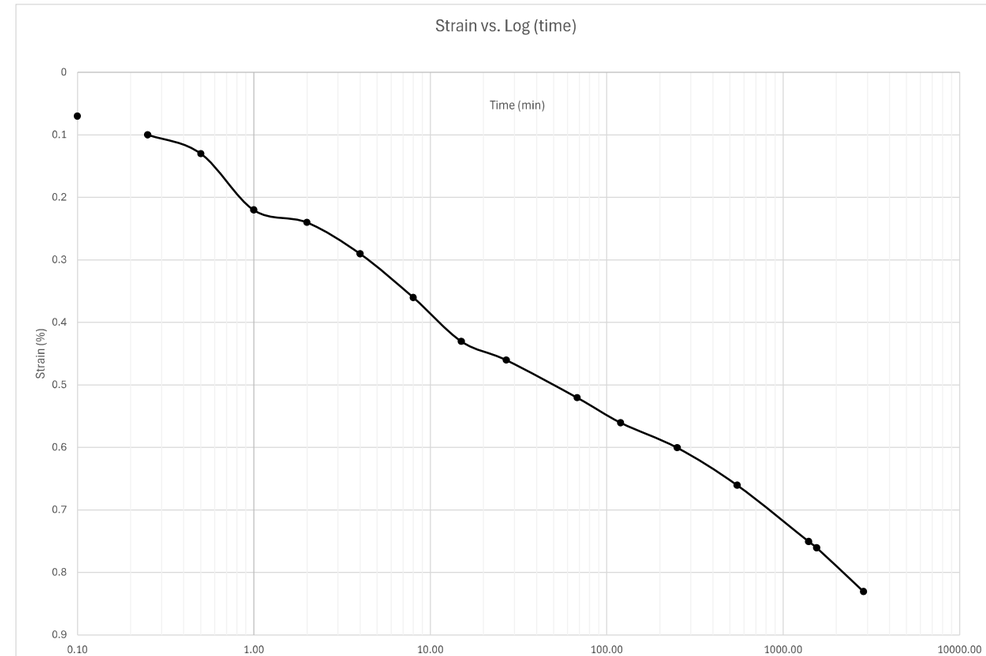
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.7406	-0.0006	0.3353	-0.06006	2.869
1			6	0.10	0.32	16000	0.7427	0.0015	0.3332	0.15015	2.845
2			15	0.25	0.50	16000	0.7431	0.0019	0.3328	0.19019	2.840
3			30	0.50	0.71	16000	0.7435	0.0023	0.3324	0.23023	2.835
4		1		1.00	1.00	16000	0.7443	0.0031	0.3316	0.31031	2.826
5		2		2.00	1.41	16000	0.7452	0.004	0.3307	0.4004	2.816
6		4		4.00	2.00	16000	0.7464	0.0052	0.3295	0.520521	2.802
7		8		8.00	2.83	16000	0.7478	0.0066	0.3281	0.660661	2.786
8		15		15.00	3.87	16000	0.7491	0.0079	0.3268	0.790791	2.771
9		30		30.00	5.48	16000	0.7505	0.0093	0.3254	0.930931	2.755
10	1			60.00	7.75	16000	0.7517	0.0105	0.3242	1.051051	2.741
11	2			120.00	10.95	16000	0.753	0.0118	0.3229	1.181181	2.726
12	4	55		295.00	17.18	16000	0.755	0.0138	0.3209	1.381381	2.703
13	6	38		398.00	19.95	16000	0.7556	0.0144	0.3203	1.441441	2.696
14	22	48		1368.00	36.99	16000	0.7595	0.0183	0.3164	1.831832	2.651
15	24	46		1486.00	38.55	16000	0.7597	0.0185	0.3162	1.851852	2.648
16	27	55		1675.00	40.93	16000	0.76	0.0188	0.3159	1.881882	2.645
17	31	6		1866.00	43.20	16000	0.7604	0.0192	0.3155	1.921922	2.640
18	46	58		2818.00	53.08	16000	0.7619	0.0207	0.314	2.072072	2.623
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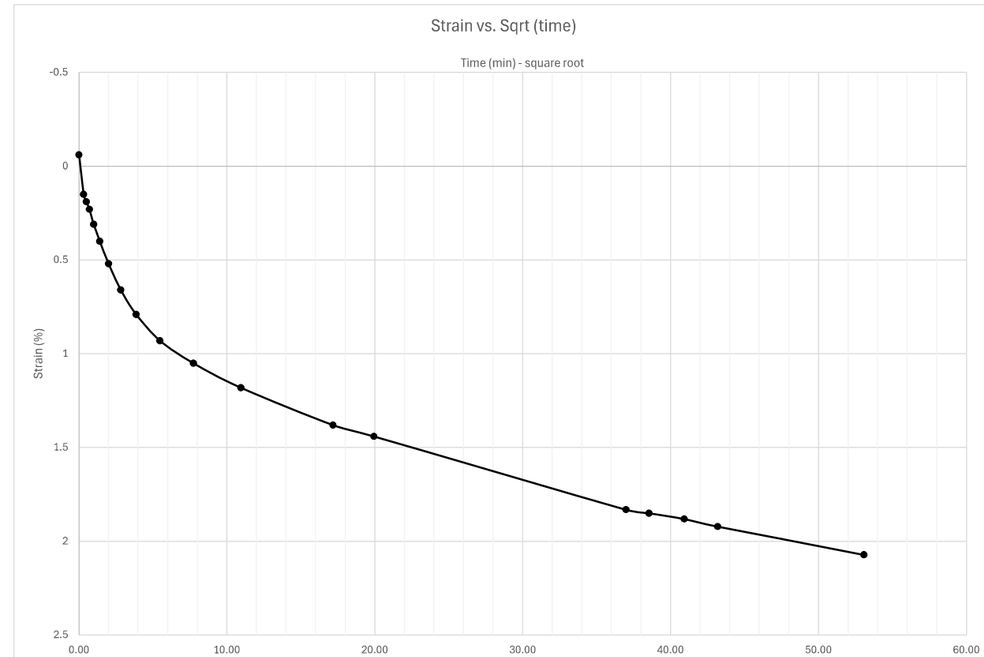
Sequence 13: 16000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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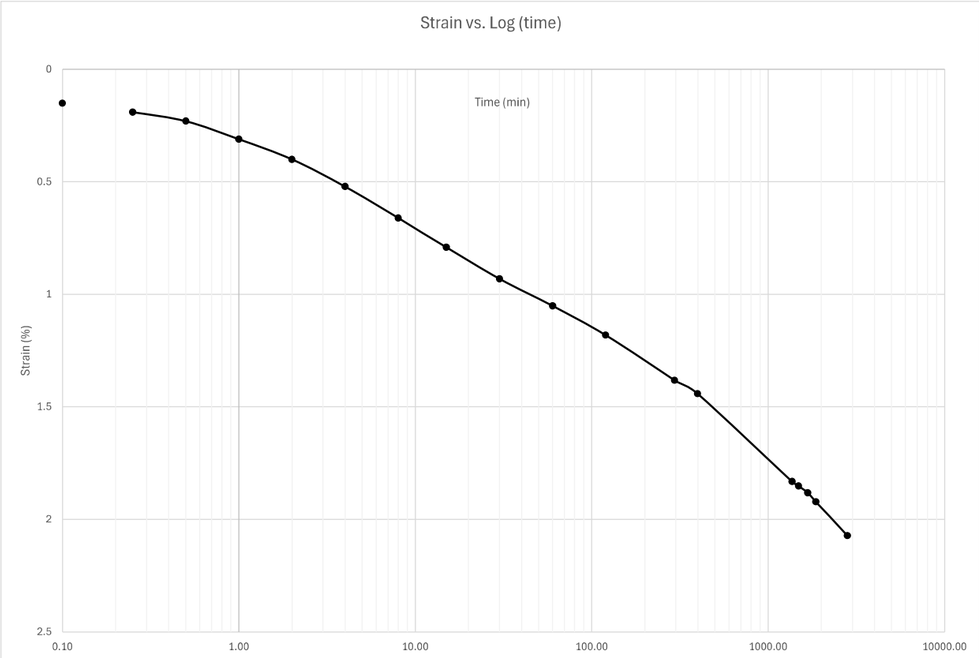
Sequence 13: 16000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	32000	0.7619	-0.0009	0.3149	-0.09009	2.633
1			6	0.10	0.32	32000	0.765	0.0022	0.3118	0.22022	2.598
2			15	0.25	0.50	32000	0.7657	0.0029	0.3111	0.29029	2.590
3			30	0.50	0.71	32000	0.7665	0.0037	0.3103	0.37037	2.580
4		1		1.00	1.00	32000	0.7678	0.005	0.309	0.500501	2.565
5		2		2.00	1.41	32000	0.7696	0.0068	0.3072	0.680681	2.545
6		4		4.00	2.00	32000	0.772	0.0092	0.3048	0.920921	2.517
7		8		8.00	2.83	32000	0.7752	0.0124	0.3016	1.241241	2.480
8		15		15.00	3.87	32000	0.7792	0.0164	0.2976	1.641642	2.434
9		30		30.00	5.48	32000	0.7847	0.0219	0.2921	2.192192	2.370
10	1			60.00	7.75	32000	0.7908	0.028	0.286	2.802803	2.300
11	2			120.00	10.95	32000	0.797	0.0342	0.2798	3.423423	2.228
12	4			240.00	15.49	32000	0.802	0.0392	0.2748	3.923924	2.171
13	5	24		324.00	18.00	32000	0.8039	0.0411	0.2729	4.114114	2.149
14	31	10		1870.00	43.24	32000	0.8139	0.0511	0.2629	5.115115	2.033
15	71	26		4286.00	65.47	32000	0.8175	0.0547	0.2593	5.475475	1.992
16	74	1		4441.00	66.64	32000	0.8177	0.0549	0.2591	5.495495	1.990
17	78	41		4721.00	68.71	32000	0.8179	0.0551	0.2589	5.515516	1.987
18	94	57		5697.00	75.48	32000	0.8187	0.0559	0.2581	5.595596	1.978
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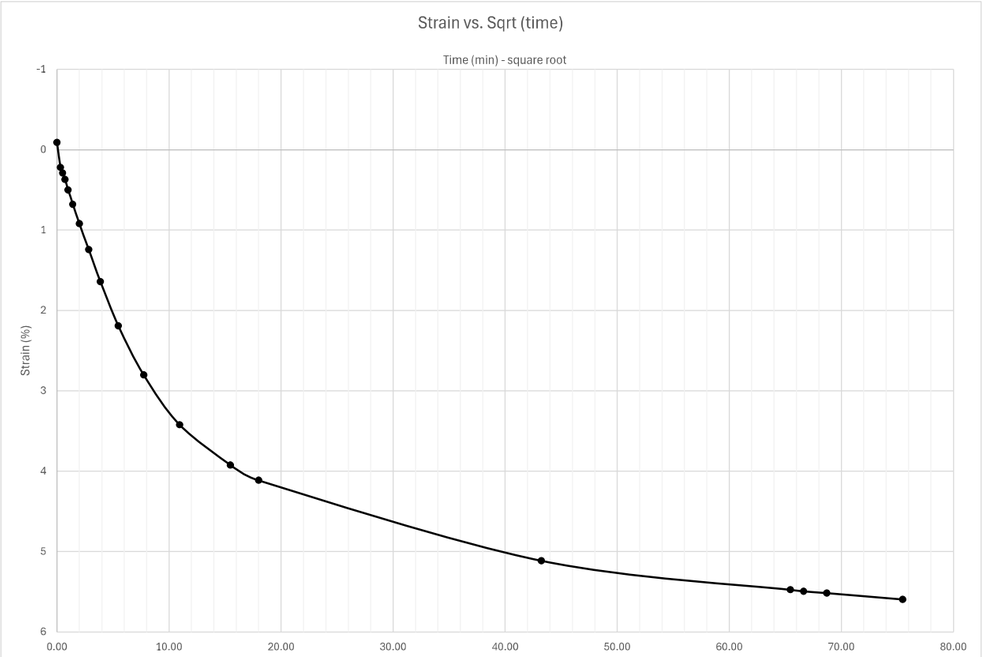
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3200, ST-22, 8-10 ft

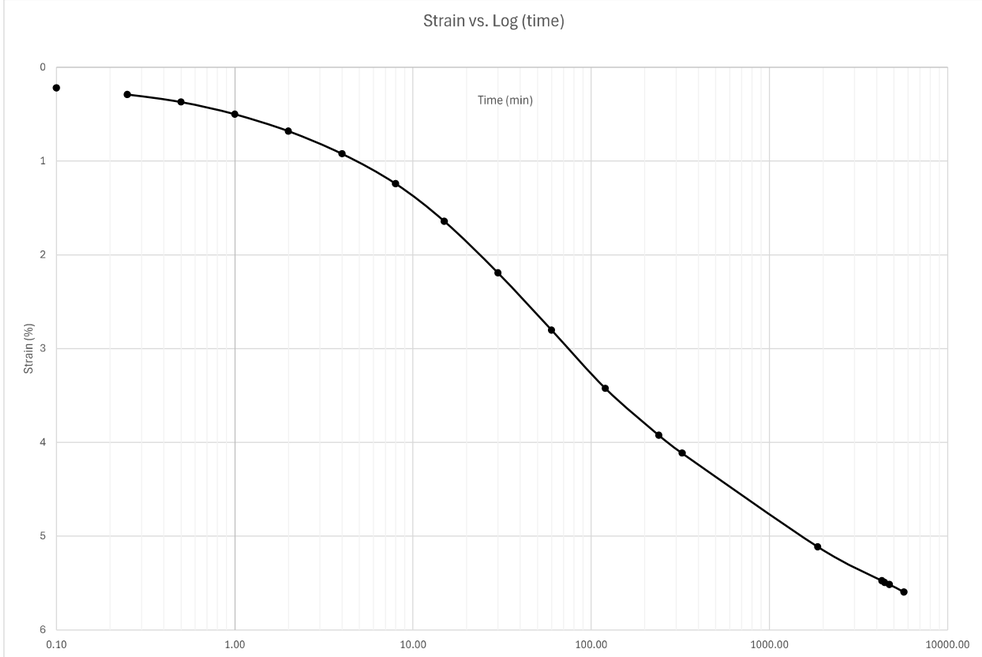
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3200, ST-22, 8-10 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	10.0-12.0
Sample Number	ST-19	Boring Number	Y1RPC_3400
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0456	0.1145	0.9534	0.046	9.514	18.49	4	0.01042	0.011192
2	500	0.1234	0.1146	0.8756	0.124	8.656	18.49	5.2	0.00879	0.007261
3	1000	0.2629	0.1147	0.7361	0.263	7.117	39.69	16.5	0.00289	0.001617
4	2000	0.3957	0.1149	0.6033	0.396	5.653	81	23.5	0.00095	0.000763
5	4000	0.4935	0.1151	0.5055	0.494	4.574	70.56	22.5	0.00077	0.000559
6	8000	0.5818	0.1156	0.4172	0.582	3.601	92.16	22	0.00040	0.00039
7	16000	0.6385	0.1165	0.3605	0.639	2.975	81	20	0.00034	0.00032
8	8000	0.6331	0.1158	0.3659	0.634	3.035	-	-	-	-
9	4000	0.6262	0.1154	0.3728	0.627	3.111	-	-	-	-
10	2000	0.6191	0.1151	0.3799	0.620	3.189	-	-	-	-
11	4000	0.6221	0.1152	0.3769	0.623	3.156	6.76	2.8	0.00445	0.00250
12	8000	0.6289	0.1158	0.3701	0.630	3.081	12.96	-	0.00224	-
13	16000	0.6449	0.1166	0.3541	0.646	2.905	16	-	0.00166	-
14	32000	0.695	0.1178	0.304	0.696	2.352	73.96	20	0.00026	0.00023
15										
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 2/23/2026
Machine Apparatus: 1
Technician: KSB

Sampling Date: 12/17/2025
Sample Number: ST-19
Depth (ft): 10.0-12.0
Boring Number: Y1RPC_3400
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.986
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 105.69

Parameters	Initial	Final
Height (in)	0.999	0.304
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.501
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	90.48	*
Moisture Content (%)	505.64	*
Moist Weight + Ring Weight (g)	193.92	141.44
Dry Mass (g)	14.57	*
Water Content (calc from spec)	505.64	*
Dry Density (pcf)	11.25	*
Wet Density (pcf)	68.16	90.76
Volume of Solids (in^3)	0.45	*
Height of Solids (in)	0.09	*
Void Ratio	10.017	2.352

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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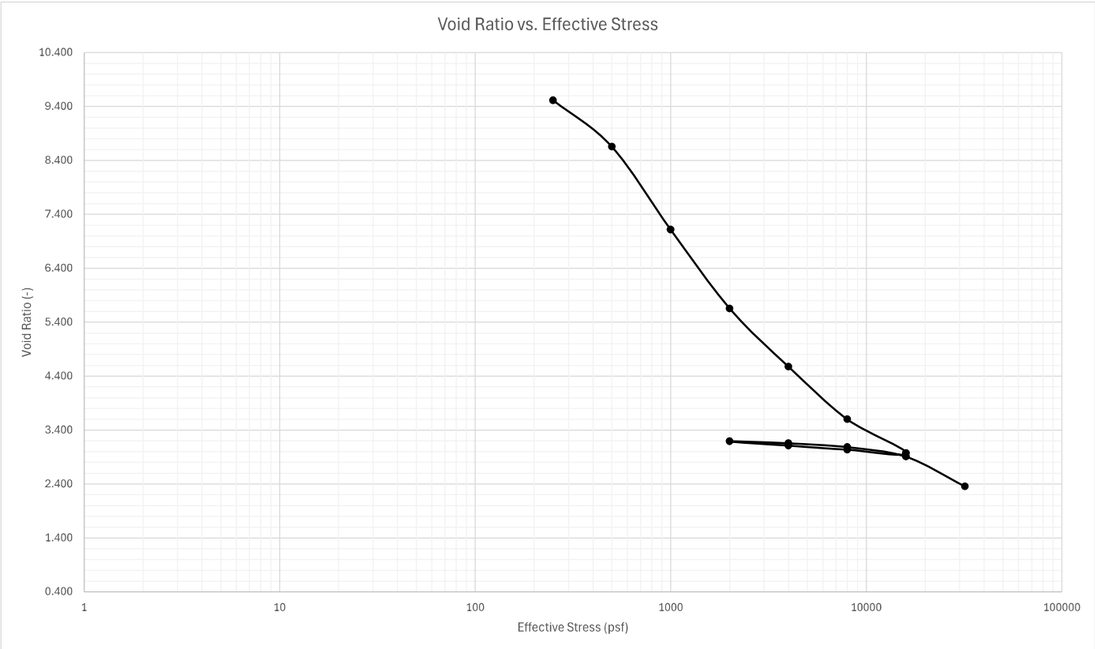
Void Ratio vs. Effective Stress

Y1RPC_3400, ST-19, 10.0-12.0 ft

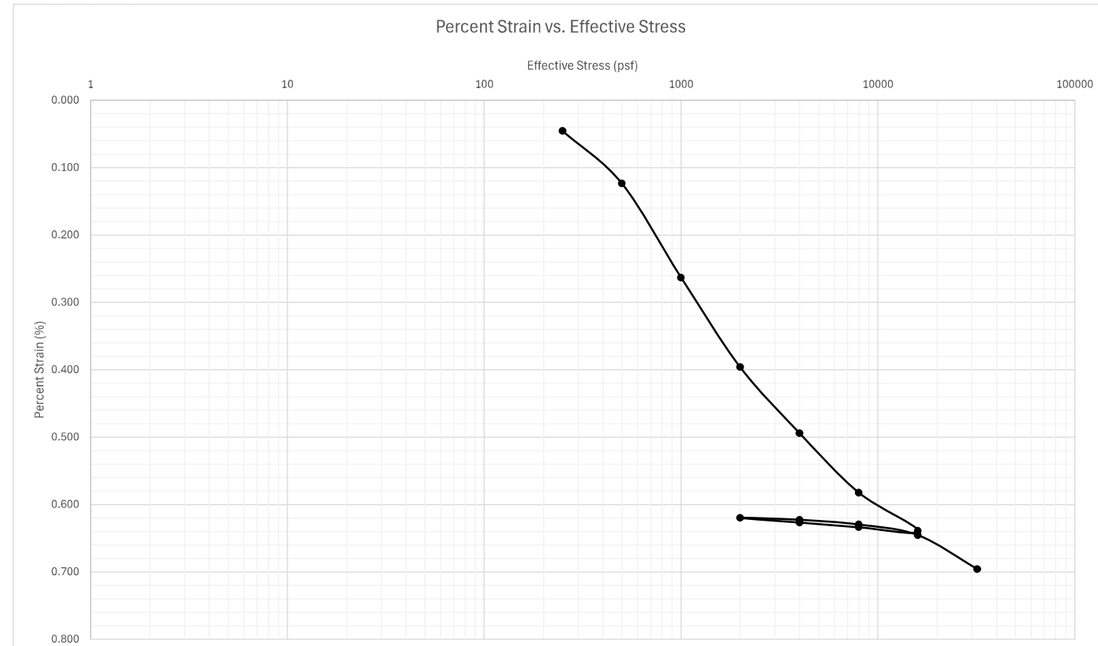
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0375	0	0.999	0	10.017
1			15	0.25	0.5	250	0.0392	0.0017	0.9973	0.17017	9.998
2			30	0.5	0.707106781	250	0.0419	0.0044	0.9946	0.44044	9.968
3		1		1	1	250	0.0438	0.0063	0.9927	0.630631	9.947
4		2		2	1.414213562	250	0.0478	0.0103	0.9887	1.031031	9.903
5		4		4	2	250	0.0526	0.0151	0.9839	1.511512	9.850
6		8		8	2.828427125	250	0.0581	0.0206	0.9784	2.062062	9.789
7		15		15	3.872983346	250	0.0628	0.0253	0.9737	2.532533	9.738
8		30		30	5.477225575	250	0.0669	0.0294	0.9696	2.942943	9.692
9	1	0	0	60	7.745966692	250	0.0698	0.0323	0.9667	3.233233	9.660
10	2			120	10.95445115	250	0.072	0.0345	0.9645	3.453453	9.636
11	4			240	15.49193338	250	0.0747	0.0372	0.9618	3.723724	9.606
12	9	22		562	23.70653918	250	0.0766	0.0391	0.9599	3.913914	9.585
13	20	10	45	1210.75	34.79583308	250	0.0782	0.0407	0.9583	4.074074	9.568
14	23	50	0	1430	37.8153408	250	0.0788	0.0413	0.9577	4.134134	9.561
15	26	51	42	1611.7	40.14598361	250	0.0793	0.0418	0.9572	4.184184	9.556
16	29			1740	41.71330723	250	0.0795	0.042	0.957	4.204204	9.553
17	44			2640	51.38093031	250	0.0806	0.0431	0.9559	4.314314	9.541
18	46	4		2764	52.57375771	250	0.081	0.0435	0.9555	4.354354	9.537
19	48			2880	53.66563146	250	0.0814	0.0439	0.9551	4.394394	9.532
20	51	14		3074	55.4436651	250	0.0816	0.0441	0.9549	4.414414	9.530
21	68	10		4090	63.95310782	250	0.0822	0.0447	0.9543	4.474474	9.524
22	70	10		4210	64.88451279	250	0.0825	0.045	0.954	4.504505	9.520
23	73	47		4427	66.5357047	250	0.0829	0.0454	0.9536	4.544545	9.516
24	74	45	30	4485.5	66.9738755	250	0.0831	0.0456	0.9534	4.564565	9.514
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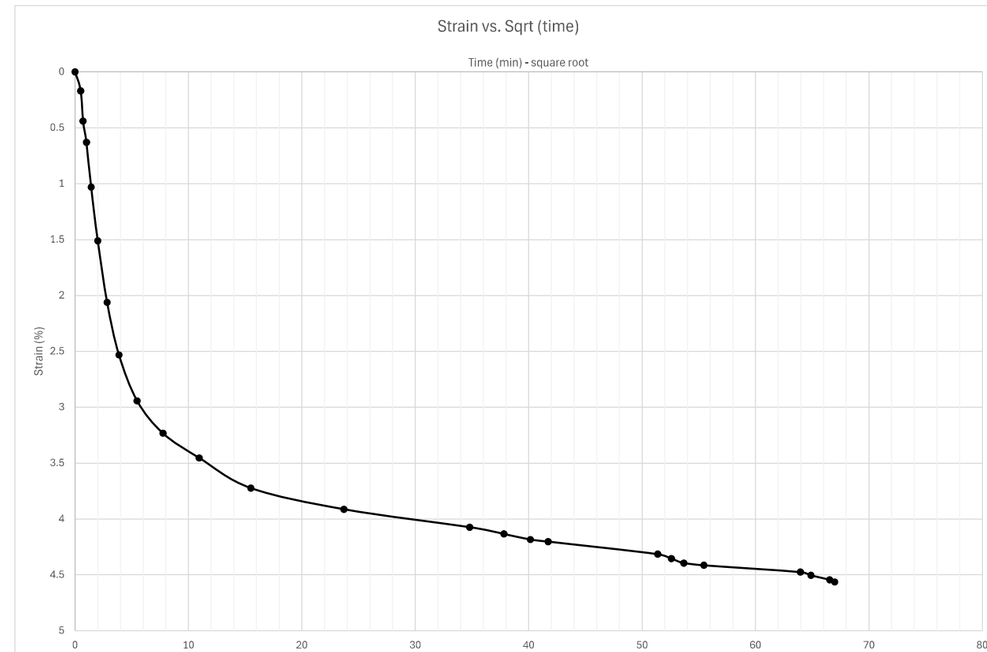
Sequence 1: 250 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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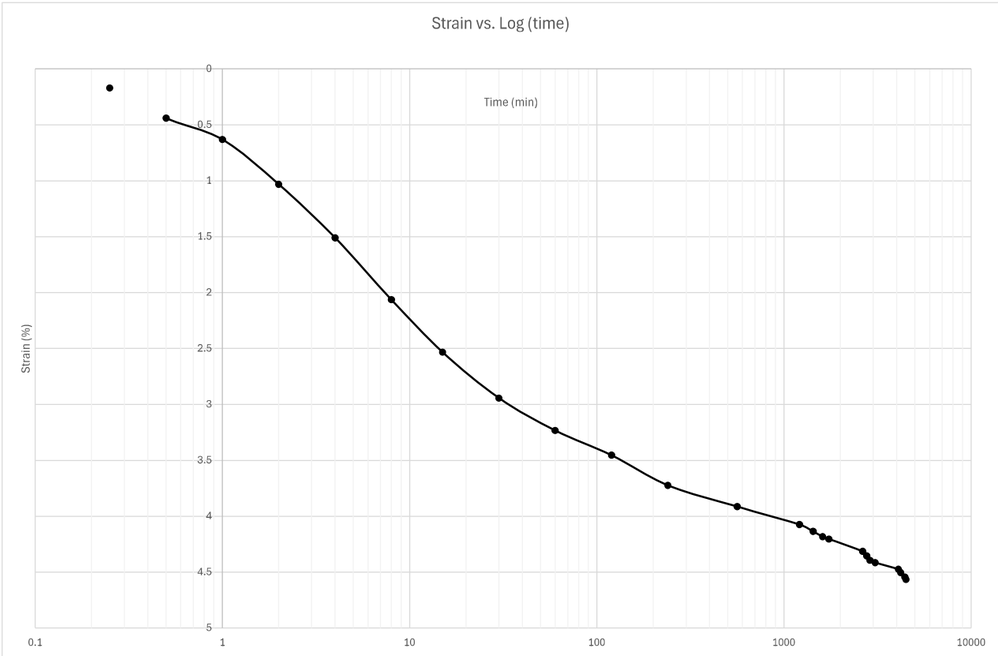
Sequence 1: 250 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0831	-0.0001	0.9535	-0.01001	9.515
1			6	0.1	0.32	500	0.0876	0.0044	0.9490	0.44044	9.465
2			15	0.25	0.50	500	0.0899	0.0067	0.9467	0.670671	9.440
3			30	0.5	0.71	500	0.0922	0.0090	0.9444	0.900901	9.414
4		1		1	1.00	500	0.0960	0.0128	0.9406	1.281281	9.373
5		2		2	1.41	500	0.1016	0.0184	0.9350	1.841842	9.311
6		4		4	2.00	500	0.1091	0.0259	0.9275	2.592593	9.228
7		8		8	2.83	500	0.1183	0.0351	0.9183	3.513514	9.127
8		15		15	3.87	500	0.1274	0.0442	0.9092	4.424424	9.026
9		30		30	5.48	500	0.1360	0.0528	0.9006	5.285285	8.931
10		58		58	7.62	500	0.1420	0.0588	0.8946	5.885886	8.865
11	2	2		122	11.05	500	0.1474	0.0642	0.8892	6.426426	8.806
12	17	13		1033	32.14	500	0.1610	0.0778	0.8756	7.787788	8.656
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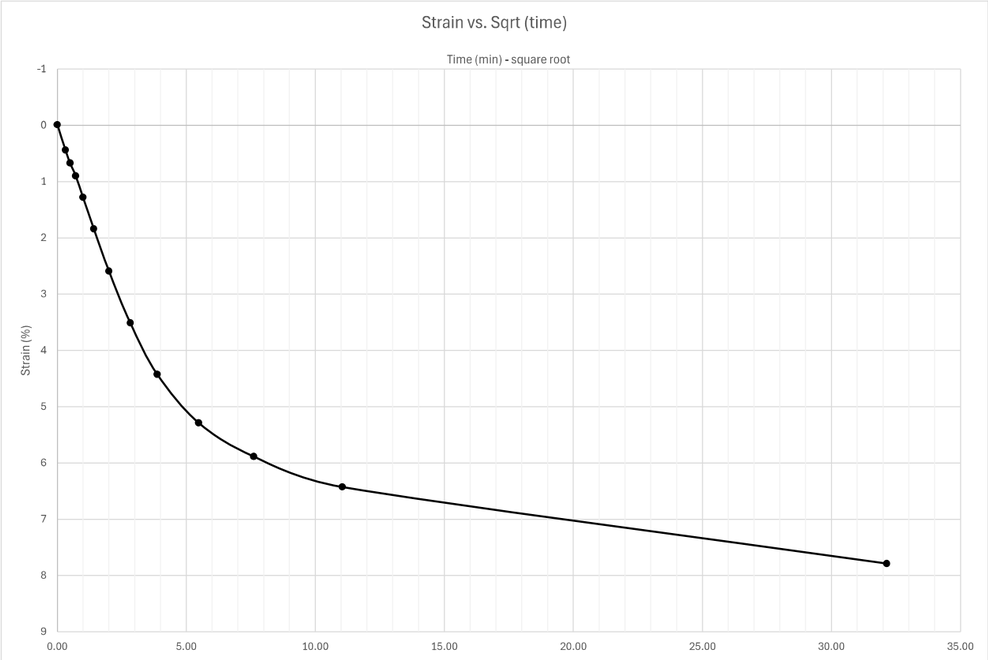
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

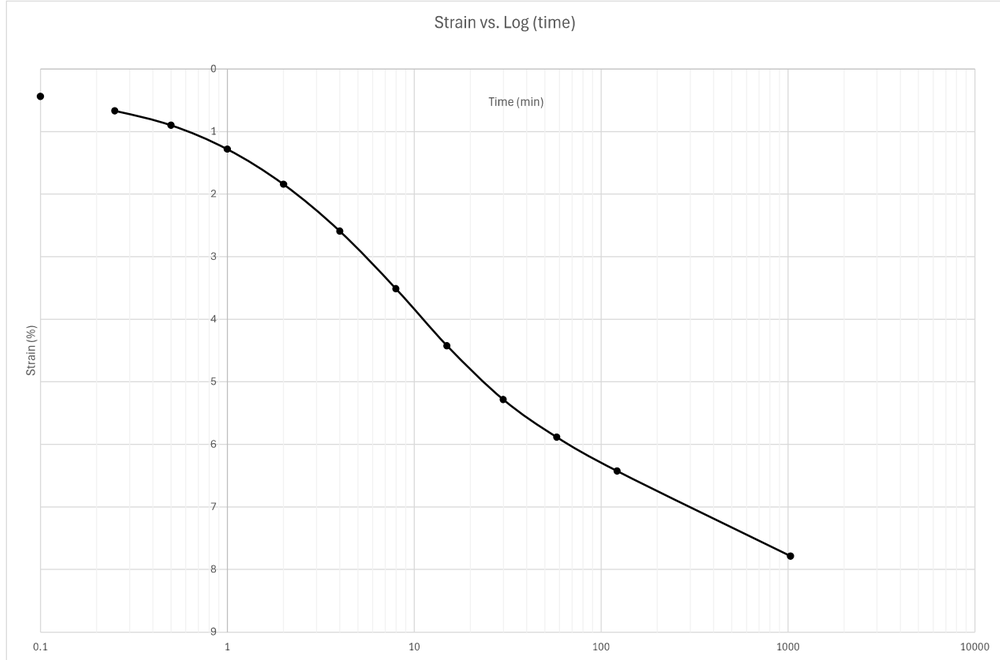
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.161	-0.0001	0.8757	-0.01001	8.657
1			6	0.10	0.32	1000	0.1717	0.0106	0.865	1.061061	8.539
2			15	0.25	0.50	1000	0.179	0.0179	0.8577	1.791792	8.458
3			30	0.50	0.71	1000	0.1811	0.02	0.8556	2.002002	8.435
4		1		1.00	1.00	1000	0.1849	0.0238	0.8518	2.382382	8.393
5		2		2.00	1.41	1000	0.1899	0.0288	0.8468	2.882883	8.338
6		4		4.00	2.00	1000	0.1971	0.036	0.8396	3.603604	8.259
7		10		10.00	3.16	1000	0.202	0.0409	0.8347	4.094094	8.205
8		15		15.00	3.87	1000	0.2193	0.0582	0.8174	5.825826	8.014
9		29		29.00	5.39	1000	0.235	0.0739	0.8017	7.397397	7.841
10		57		57.00	7.55	1000	0.2508	0.0897	0.7859	8.978979	7.667
11	2	3		123.00	11.09	1000	0.2653	0.1042	0.7714	10.43043	7.507
12	4	23		263.00	16.22	1000	0.2767	0.1156	0.76	11.57157	7.381
13	7	31		451.00	21.24	1000	0.283	0.1219	0.7537	12.2022	7.311
14	24	3		1443.00	37.99	1000	0.2941	0.133	0.7426	13.31331	7.189
15	26	11		1571.00	39.64	1000	0.2948	0.1337	0.7419	13.38338	7.181
16	29	23		1763.00	41.99	1000	0.2959	0.1348	0.7408	13.49349	7.169
17	31	2		1862.00	43.15	1000	0.2964	0.1353	0.7403	13.54354	7.164
18	47	2		2822.00	53.12	1000	0.2999	0.1388	0.7368	13.89389	7.125
19	49	36		2976.00	54.55	1000	0.3006	0.1395	0.7361	13.96396	7.117
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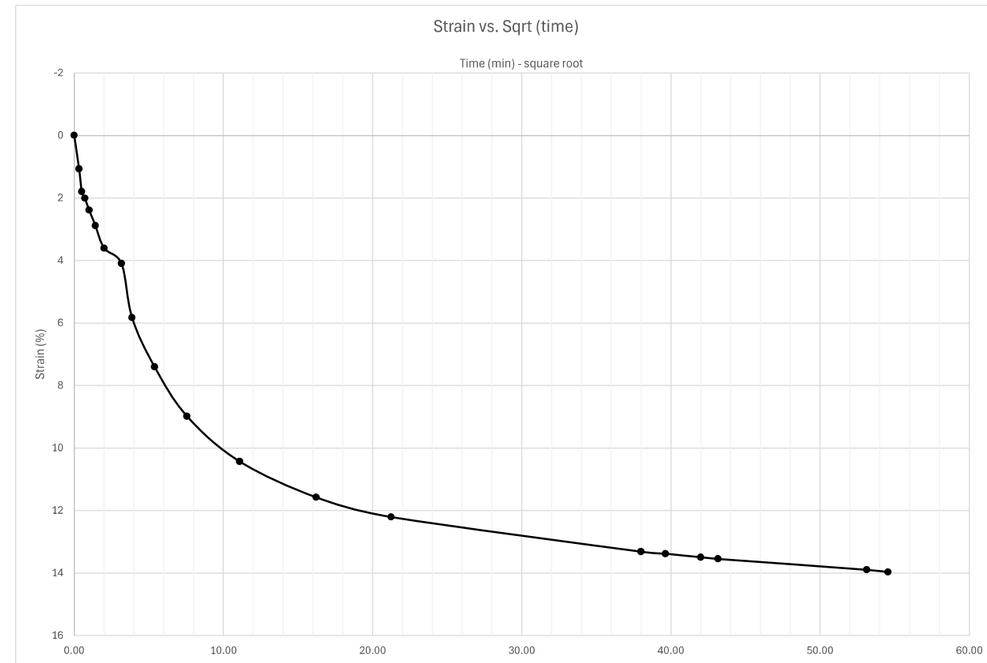
Sequence 3: 1000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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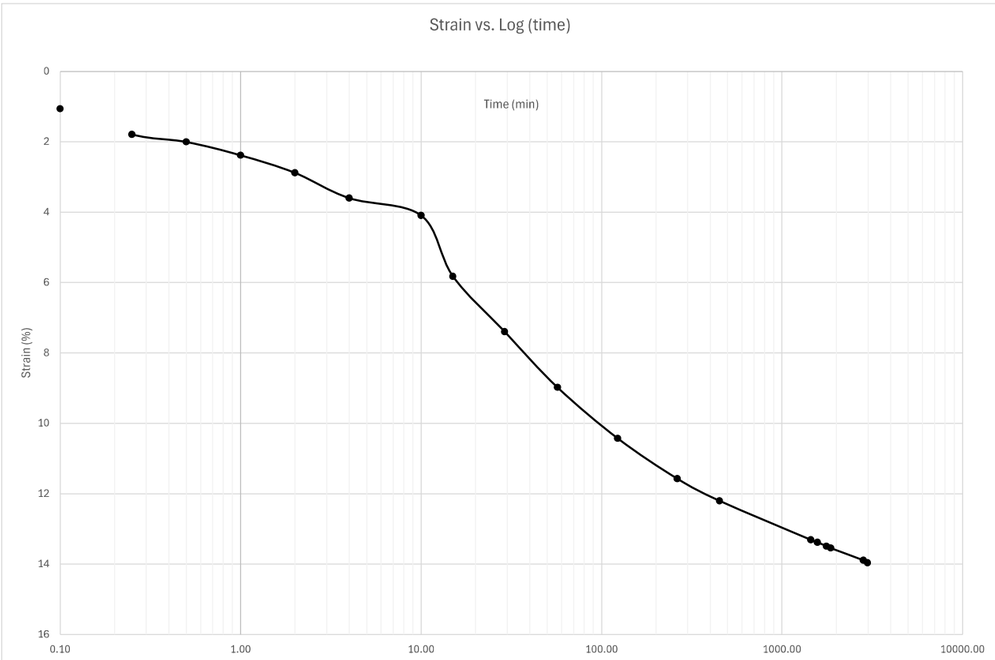
Sequence 3: 1000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3006	-0.0002	0.7363	-0.02002	7.120
1			6	0.10	0.32	2000	0.304	0.0032	0.7329	0.32032	7.082
2			15	0.25	0.50	2000	0.3065	0.0057	0.7304	0.570571	7.055
3			30	0.50	0.71	2000	0.3084	0.0076	0.7285	0.760761	7.034
4		1		1.00	1.00	2000	0.3115	0.0107	0.7254	1.071071	6.999
5		2		2.00	1.41	2000	0.3154	0.0146	0.7215	1.461461	6.956
6		4		4.00	2.00	2000	0.3222	0.0214	0.7147	2.142142	6.881
7		8		8.00	2.83	2000	0.3325	0.0317	0.7044	3.173173	6.768
8		21	38	21.63	4.65	2000	0.3508	0.05	0.6861	5.005005	6.566
9	1	36		96.00	9.80	2000	0.3868	0.086	0.6501	8.608609	6.169
10	3	15		195.00	13.96	2000	0.3945	0.0937	0.6424	9.379379	6.084
11	4	1		241.00	15.52	2000	0.4026	0.1018	0.6343	10.19019	5.995
12	19	42		1182.00	34.38	2000	0.4194	0.1186	0.6175	11.87187	5.810
13	22	48		1368.00	36.99	2000	0.4206	0.1198	0.6163	11.99199	5.796
14	25	37		1537.00	39.20	2000	0.4215	0.1207	0.6154	12.08208	5.786
15	27	52		1672.00	40.89	2000	0.4222	0.1214	0.6147	12.15215	5.779
16	44	30		2670.00	51.67	2000	0.4262	0.1254	0.6107	12.55255	5.735
17	48	12		2892.00	53.78	2000	0.4267	0.1259	0.6102	12.6026	5.729
18	115	54		6954.00	83.39	2000	0.4336	0.1328	0.6033	13.29329	5.653
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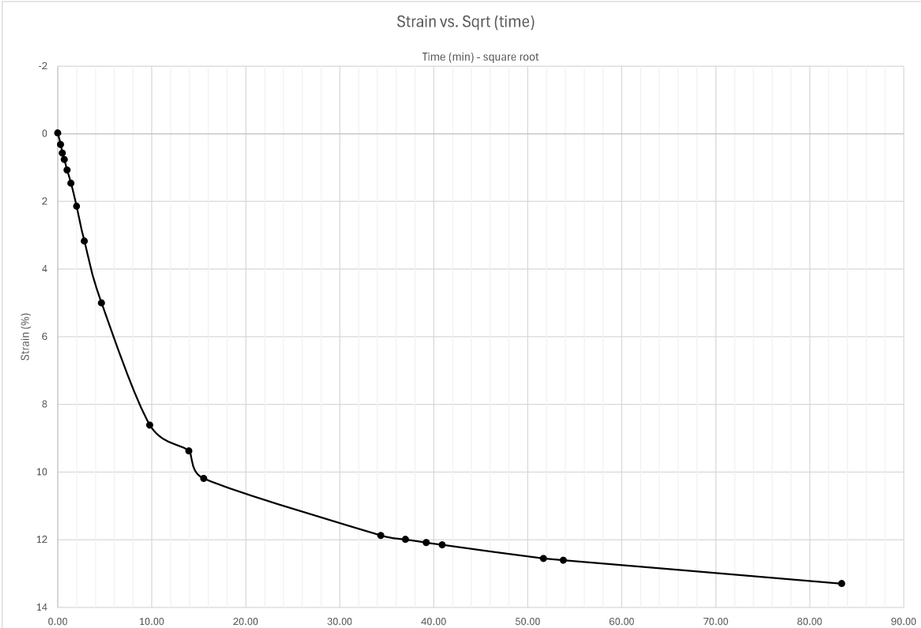
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

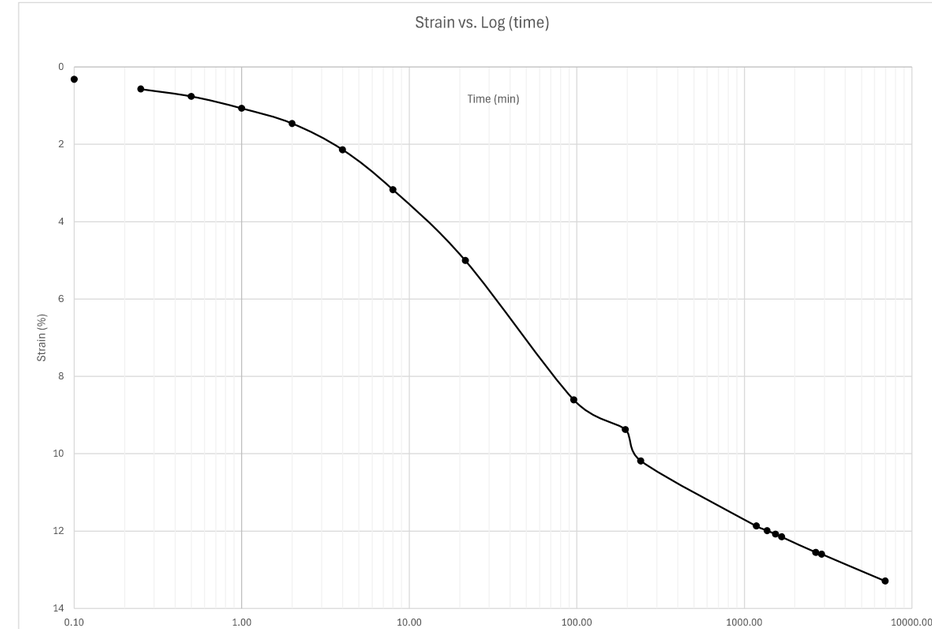
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4336	-0.0002	0.6035	-0.02002	5.655
1			6	0.10	0.32	4000	0.438	0.0042	0.5991	0.42042	5.607
2			15	0.25	0.50	4000	0.4391	0.0053	0.598	0.530531	5.594
3			30	0.50	0.71	4000	0.4405	0.0067	0.5966	0.670671	5.579
4		1		1.00	1.00	4000	0.4428	0.009	0.5943	0.900901	5.554
5		2		2.00	1.41	4000	0.446	0.0122	0.5911	1.221221	5.518
6		4		4.00	2.00	4000	0.4506	0.0168	0.5865	1.681682	5.468
7		8		8.00	2.83	4000	0.4575	0.0237	0.5796	2.372372	5.392
8		15		15.00	3.87	4000	0.4657	0.0319	0.5714	3.193193	5.301
9		30		30.00	5.48	4000	0.4775	0.0437	0.5596	4.374374	5.171
10	1	10		70.00	8.37	4000	0.4926	0.0588	0.5445	5.885886	5.004
11	2	11		131.00	11.45	4000	0.5037	0.0699	0.5334	6.996997	4.882
12	4	10		250.00	15.81	4000	0.5114	0.0776	0.5257	7.767768	4.797
13	6	14		374.00	19.34	4000	0.5153	0.0815	0.5218	8.158158	4.754
14	23	23		1403.00	37.46	4000	0.5258	0.092	0.5113	9.209209	4.638
15	26	10		1570.00	39.62	4000	0.5266	0.0928	0.5105	9.289289	4.630
16	29	6		1746.00	41.79	4000	0.5273	0.0935	0.5098	9.359359	4.622
17	47			2820.00	53.10	4000	0.5308	0.097	0.5063	9.70971	4.583
18	50	4		3004.00	54.81	4000	0.5314	0.0976	0.5057	9.76977	4.577
19	52	10		3130.00	55.95	4000	0.5316	0.0978	0.5055	9.78979	4.574
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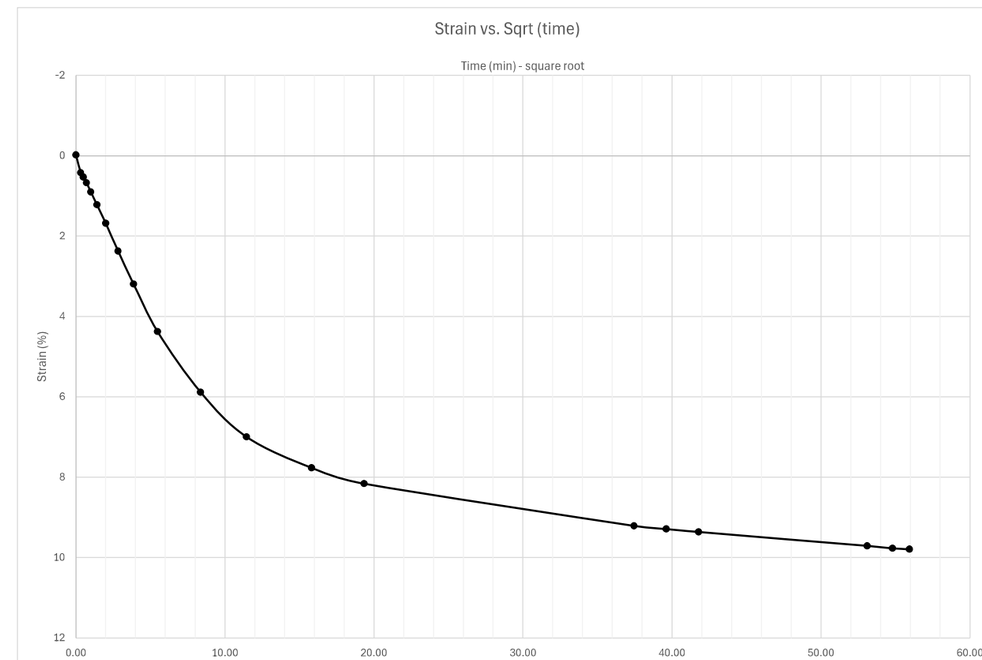
Sequence 5: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

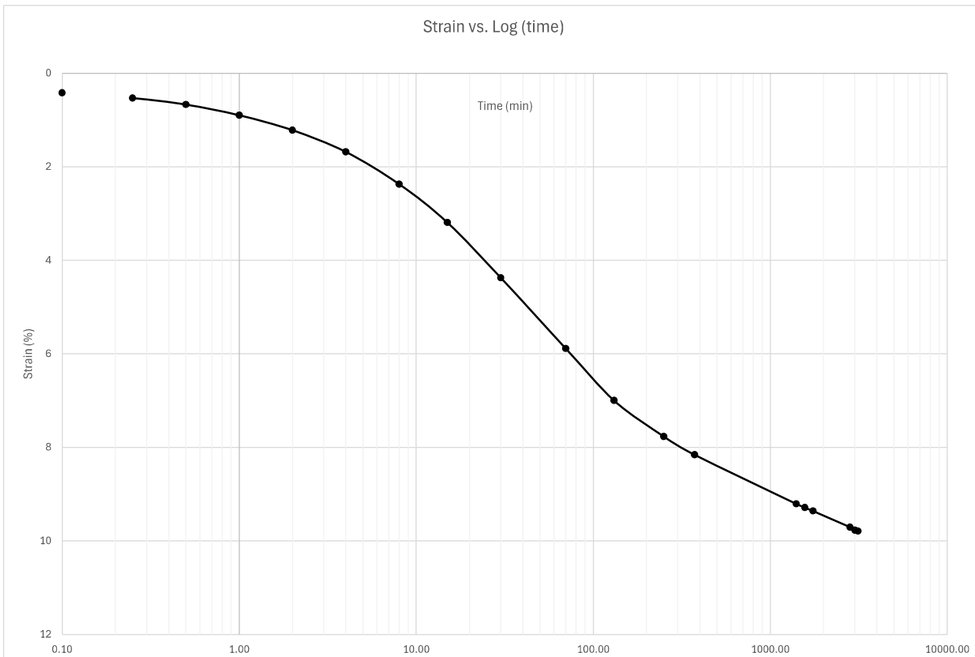


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.5316	-0.0005	0.506	-0.05005	4.580
1			6	0.10	0.32	8000	0.5353	0.0032	0.5023	0.32032	4.539
2			15	0.25	0.50	8000	0.5365	0.0044	0.5011	0.44044	4.526
3			30	0.50	0.71	8000	0.5376	0.0055	0.5	0.550551	4.514
4		1		1.00	1.00	8000	0.5398	0.0077	0.4978	0.770771	4.490
5		2		2.00	1.41	8000	0.5427	0.0106	0.4949	1.061061	4.458
6		4		4.00	2.00	8000	0.5471	0.015	0.4905	1.501502	4.409
7		8		8.00	2.83	8000	0.551	0.0189	0.4866	1.891892	4.366
8		16	30	16.50	4.06	8000	0.5625	0.0304	0.4751	3.043043	4.239
9		30		30.00	5.48	8000	0.5716	0.0395	0.466	3.953954	4.139
10	1			60.00	7.75	8000	0.5836	0.0515	0.454	5.155155	4.007
11	2	9		129.00	11.36	8000	0.5942	0.0621	0.4434	6.216216	3.890
12	18	42		1122.00	33.50	8000	0.611	0.0789	0.4266	7.897898	3.704
13	21			1260.00	35.50	8000	0.6117	0.0796	0.4259	7.967968	3.697
14	23	6		1386.00	37.23	8000	0.6121	0.08	0.4255	8.008008	3.692
15	27	15		1635.00	40.44	8000	0.613	0.0809	0.4246	8.098098	3.682
16	44	54		2694.00	51.90	8000	0.6155	0.0834	0.4221	8.348348	3.655
17	116			6960.00	83.43	8000	0.6204	0.0883	0.4172	8.838839	3.601
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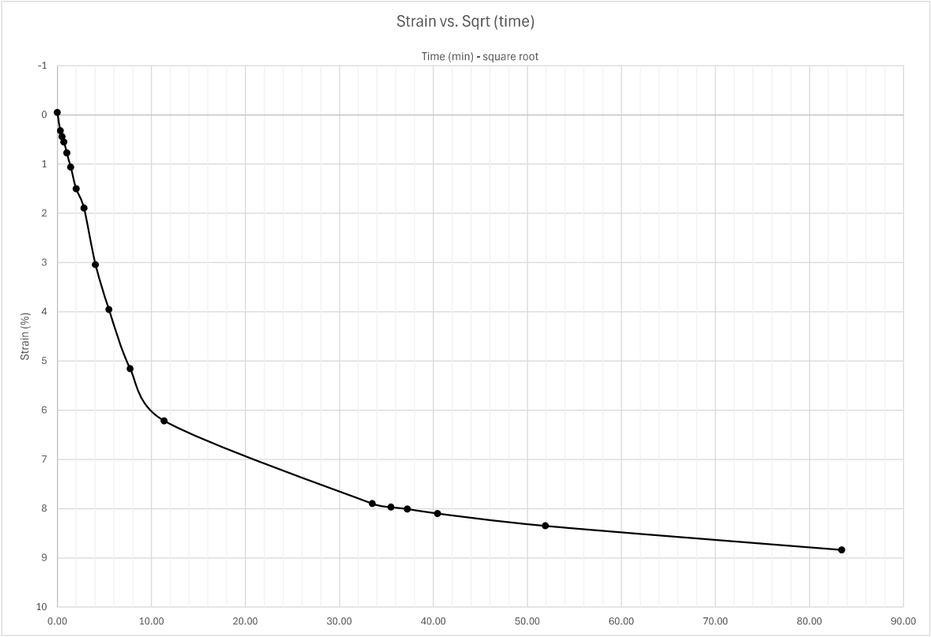
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

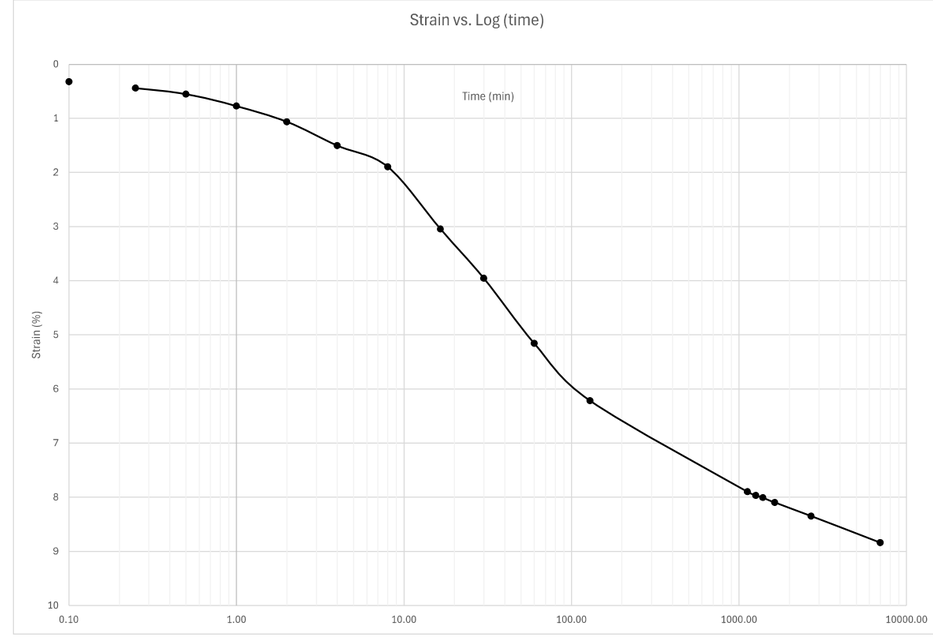
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.6204	-0.0009	0.4181	-0.09009	3.611
1			6	0.10	0.32	16000	0.6209	-0.0004	0.4176	-0.04004	3.605
2			15	0.25	0.50	16000	0.6245	0.0032	0.414	0.32032	3.565
3			30	0.50	0.71	16000	0.6256	0.0043	0.4129	0.43043	3.553
4		1		1.00	1.00	16000	0.627	0.0057	0.4115	0.570571	3.538
5		2		2.00	1.41	16000	0.6291	0.0078	0.4094	0.780781	3.515
6		4		4.00	2.00	16000	0.6321	0.0108	0.4064	1.081081	3.482
7		8		8.00	2.83	16000	0.6364	0.0151	0.4021	1.511512	3.434
8		17		17.00	4.12	16000	0.6435	0.0222	0.395	2.222222	3.356
9		30		30.00	5.48	16000	0.6491	0.0278	0.3894	2.782783	3.294
10	1	4		64.00	8.00	16000	0.6579	0.0366	0.3806	3.663664	3.197
11	2	6		126.00	11.22	16000	0.6645	0.0432	0.374	4.324324	3.124
12	4			240.00	15.49	16000	0.6692	0.0479	0.3693	4.794795	3.072
13	7	7		427.00	20.66	16000	0.6725	0.0512	0.366	5.125125	3.036
14	22	48		1368.00	36.99	16000	0.6777	0.0564	0.3608	5.645646	2.979
15	24	18		1458.00	38.18	16000	0.678	0.0567	0.3605	5.675676	2.975
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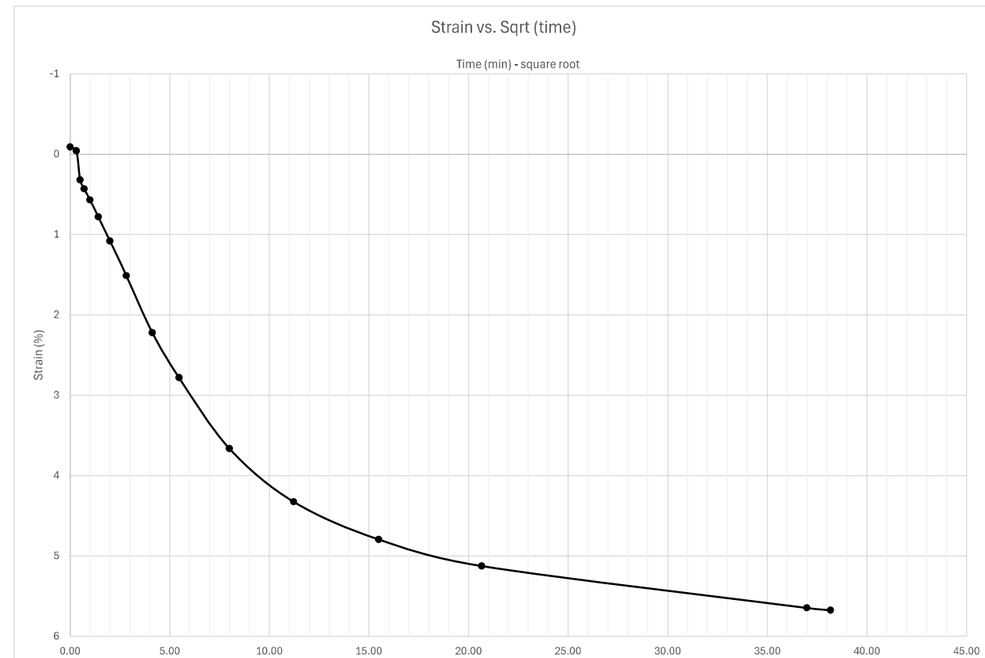
Sequence 7: 16000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

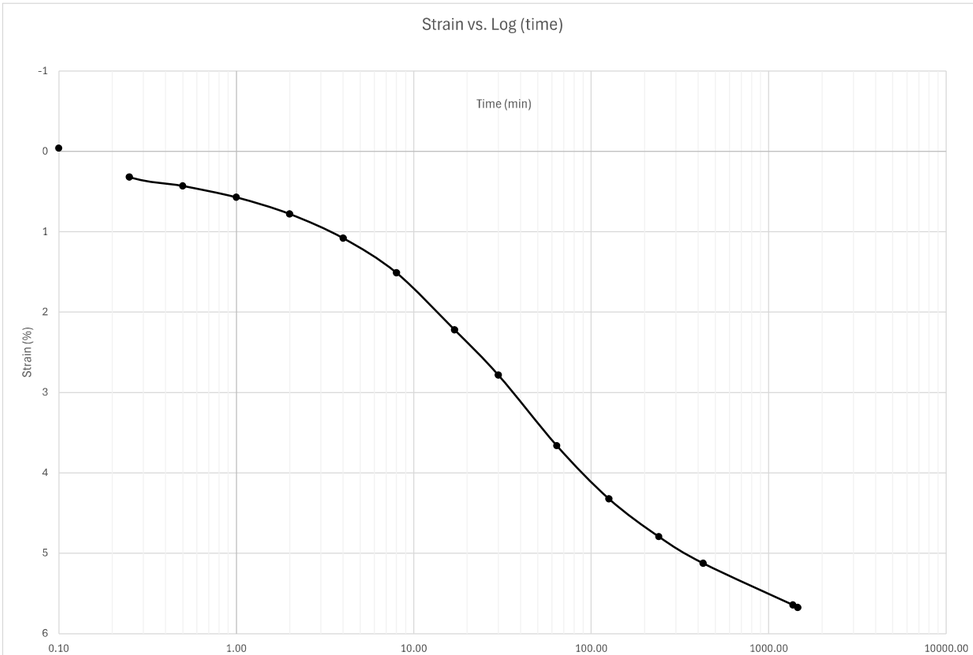


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.678	0.0007	0.3598	0.07007	2.968
1			6	0.10	0.32	8000	0.6764	-0.0009	0.3614	-0.09009	2.985
2			15	0.25	0.50	8000	0.6761	-0.0012	0.3617	-0.12012	2.989
3			30	0.50	0.71	8000	0.6759	-0.0014	0.3619	-0.14014	2.991
4		1		1.00	1.00	8000	0.6756	-0.0017	0.3622	-0.17017	2.994
5		2		2.00	1.41	8000	0.6751	-0.0022	0.3627	-0.22022	3.000
6		4		4.00	2.00	8000	0.6747	-0.0026	0.3631	-0.26026	3.004
7		8		8.00	2.83	8000	0.6743	-0.003	0.3635	-0.3003	3.009
8		15		15.00	3.87	8000	0.6738	-0.0035	0.364	-0.35035	3.014
9		30		30.00	5.48	8000	0.6734	-0.0039	0.3644	-0.39039	3.018
10	1			60.00	7.75	8000	0.6729	-0.0044	0.3649	-0.44044	3.024
11	2	6		126.00	11.22	8000	0.6726	-0.0047	0.3652	-0.47047	3.027
12	4	8		248.00	15.75	8000	0.6724	-0.0049	0.3654	-0.49049	3.029
13	6	28		388.00	19.70	8000	0.6722	-0.0051	0.3656	-0.510511	3.032
14	21	35		1295.00	35.99	8000	0.672	-0.0053	0.3658	-0.530531	3.034
15	25	2		1502.00	38.76	8000	0.6719	-0.0054	0.3659	-0.540541	3.035
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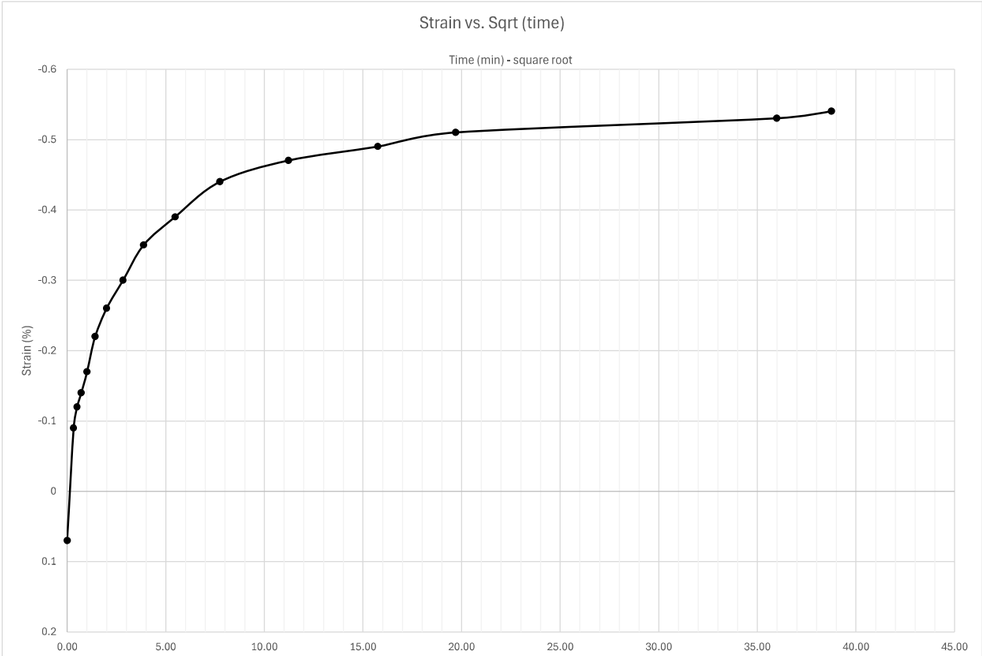
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

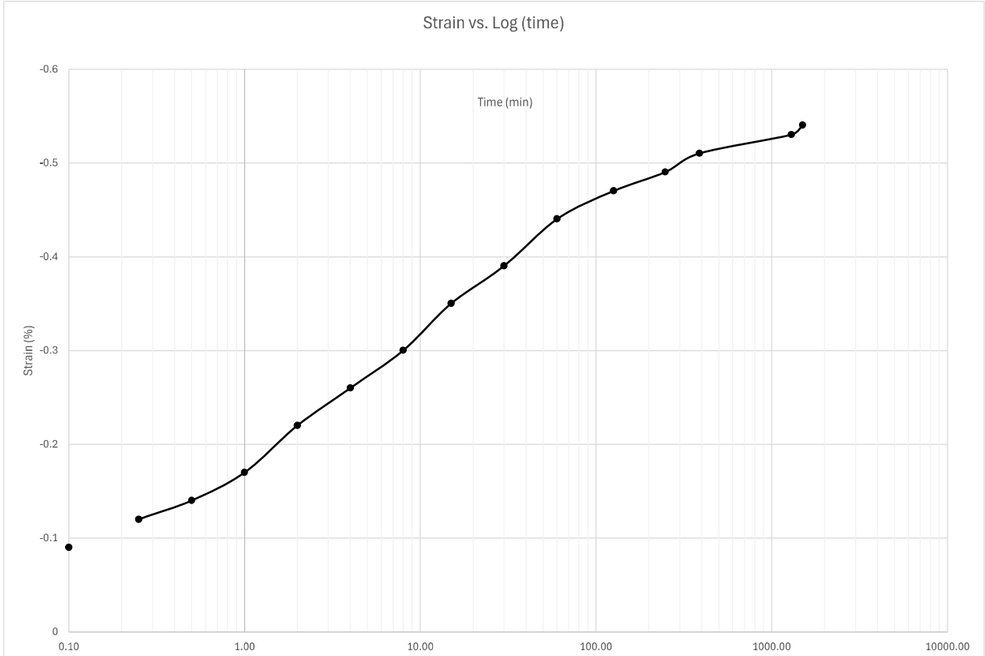
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.6719	0.0004	0.3655	0.04004	3.031
1			6	0.10	0.32	4000	0.6708	-0.0007	0.3666	-0.07007	3.043
2			15	0.25	0.50	4000	0.6707	-0.0008	0.3667	-0.08008	3.044
3			30	0.50	0.71	4000	0.6705	-0.001	0.3669	-0.1001	3.046
4		1		1.00	1.00	4000	0.6703	-0.0012	0.3671	-0.12012	3.048
5		2		2.00	1.41	4000	0.67	-0.0015	0.3674	-0.15015	3.052
6		4		4.00	2.00	4000	0.6696	-0.0019	0.3678	-0.19019	3.056
7		8		8.00	2.83	4000	0.6692	-0.0023	0.3682	-0.23023	3.060
8		15		15.00	3.87	4000	0.6688	-0.0027	0.3686	-0.27027	3.065
9		30		30.00	5.48	4000	0.6684	-0.0031	0.369	-0.31031	3.069
10	1			60.00	7.75	4000	0.6679	-0.0036	0.3695	-0.36036	3.075
11	2	11		131.00	11.45	4000	0.6675	-0.004	0.3699	-0.4004	3.079
12	4	44		284.00	16.85	4000	0.6668	-0.0047	0.3706	-0.47047	3.087
13	8	8		488.00	22.09	4000	0.6664	-0.0051	0.371	-0.510511	3.091
14	24		32	1440.53	37.95	4000	0.6655	-0.006	0.3719	-0.600601	3.101
15	24	7	5	1447.08	38.04	4000	0.6654	-0.0061	0.372	-0.610611	3.102
16	96	11		5771.00	75.97	4000	0.6646	-0.0069	0.3728	-0.690691	3.111
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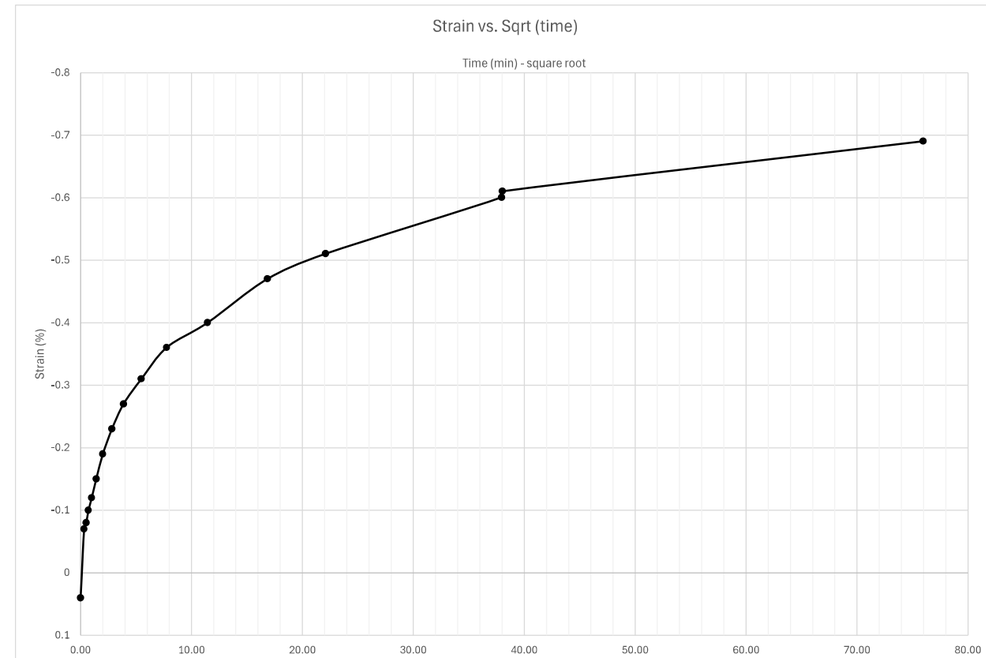
Sequence 9: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

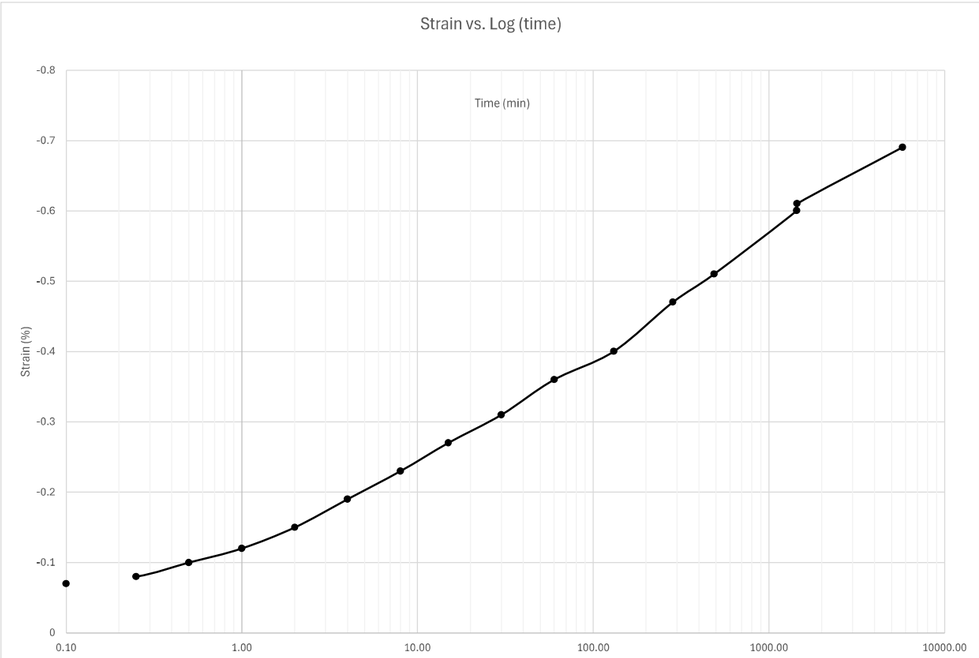


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6646	0.0003	0.3725	0.03003	3.108
1			6	0.10	0.32	2000	0.664	-0.0003	0.3731	-0.03003	3.114
2			15	0.25	0.50	2000	0.6639	-0.0004	0.3732	-0.04004	3.115
3			30	0.50	0.71	2000	0.6637	-0.0006	0.3734	-0.06006	3.118
4		1		1.00	1.00	2000	0.6636	-0.0007	0.3735	-0.07007	3.119
5		2		2.00	1.41	2000	0.6633	-0.001	0.3738	-0.1001	3.122
6		4		4.00	2.00	2000	0.663	-0.0013	0.3741	-0.13013	3.125
7		8		8.00	2.83	2000	0.6627	-0.0016	0.3744	-0.16016	3.129
8		15		15.00	3.87	2000	0.6623	-0.002	0.3748	-0.2002	3.133
9		30		30.00	5.48	2000	0.6618	-0.0025	0.3753	-0.25025	3.139
10	1			60.00	7.75	2000	0.6617	-0.0026	0.3754	-0.26026	3.140
11	2			120.00	10.95	2000	0.6611	-0.0032	0.376	-0.32032	3.146
12	4			240.00	15.49	2000	0.6608	-0.0035	0.3763	-0.35035	3.150
13	8			480.00	21.91	2000	0.6598	-0.0045	0.3773	-0.45045	3.161
14	23	37		1417.00	37.64	2000	0.6586	-0.0057	0.3785	-0.570571	3.174
15	26	6		1566.00	39.57	2000	0.6584	-0.0059	0.3787	-0.590591	3.176
16	31	38		1898.00	43.57	2000	0.6582	-0.0061	0.3789	-0.610611	3.178
17	47	13		2833.00	53.23	2000	0.6579	-0.0064	0.3792	-0.640641	3.182
18	52	11		3131.00	55.96	2000	0.6577	-0.0066	0.3794	-0.660661	3.184
19	55	53		3353.00	57.91	2000	0.6576	-0.0067	0.3795	-0.670671	3.185
20	71	41		4301.00	65.58	2000	0.6572	-0.0071	0.3799	-0.710711	3.189
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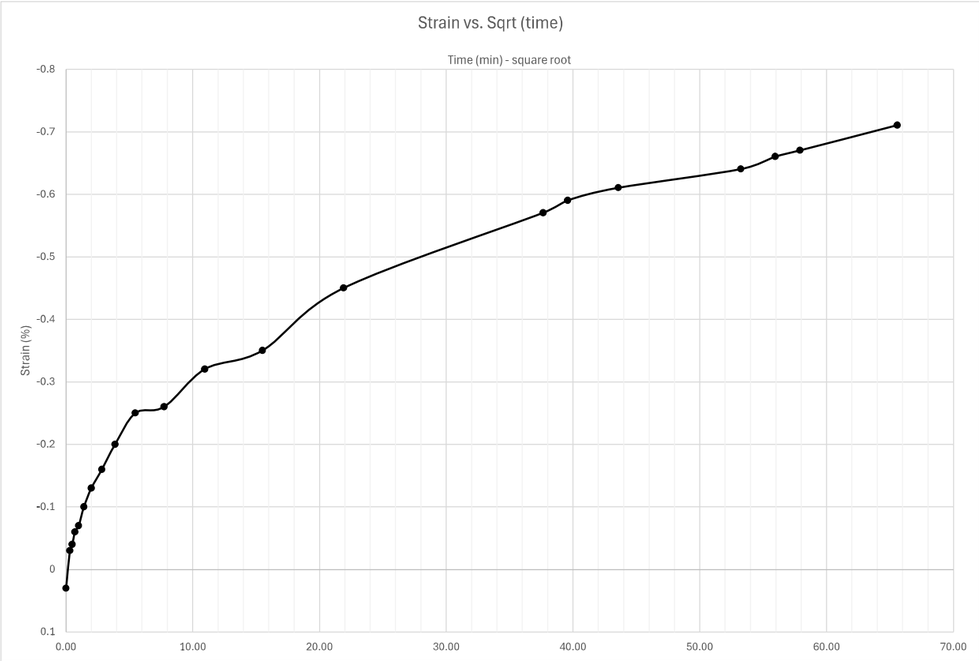
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

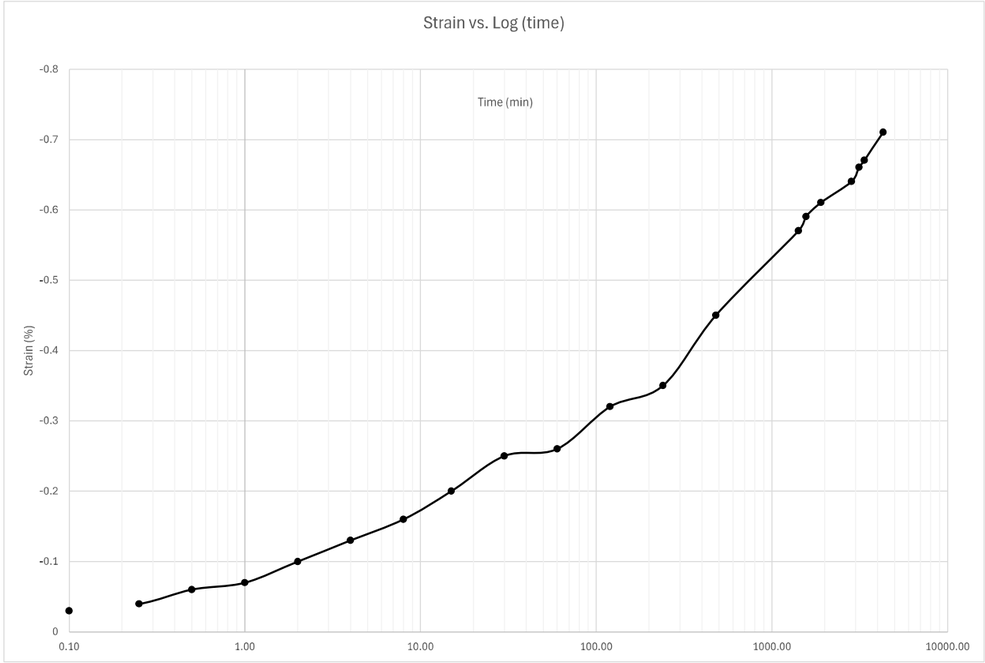
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.6572	-0.0001	0.38	-0.01001	3.190
1			6	0.10	0.32	4000	0.6579	0.0006	0.3793	0.06006	3.183
2			15	0.25	0.50	4000	0.658	0.0007	0.3792	0.07007	3.182
3			30	0.50	0.71	4000	0.6581	0.0008	0.3791	0.08008	3.181
4		1		1.00	1.00	4000	0.6583	0.001	0.3789	0.1001	3.178
5		2		2.00	1.41	4000	0.6585	0.0012	0.3787	0.12012	3.176
6		4		4.00	2.00	4000	0.6588	0.0015	0.3784	0.15015	3.173
7		8		8.00	2.83	4000	0.659	0.0017	0.3782	0.17017	3.171
8		15		15.00	3.87	4000	0.6592	0.0019	0.378	0.19019	3.168
9		30		30.00	5.48	4000	0.6594	0.0021	0.3778	0.21021	3.166
10	1			60.00	7.75	4000	0.6595	0.0022	0.3777	0.22022	3.165
11	2	17		137.00	11.70	4000	0.6596	0.0023	0.3776	0.23023	3.164
12	4	8		248.00	15.75	4000	0.6598	0.0025	0.3774	0.25025	3.162
13	6	55		415.00	20.37	4000	0.6599	0.0026	0.3773	0.26026	3.161
14	22	44		1364.00	36.93	4000	0.6602	0.0029	0.377	0.29029	3.157
15	24	30		1470.00	38.34	4000	0.6602	0.0029	0.377	0.29029	3.157
16	28	59		1739.00	41.70	4000	0.6602	0.0029	0.377	0.29029	3.157
17	54	26		3266.00	57.15	4000	0.6603	0.003	0.3769	0.3003	3.156
18	95	26		5726.00	75.67	4000	0.6603	0.003	0.3769	0.3003	3.156
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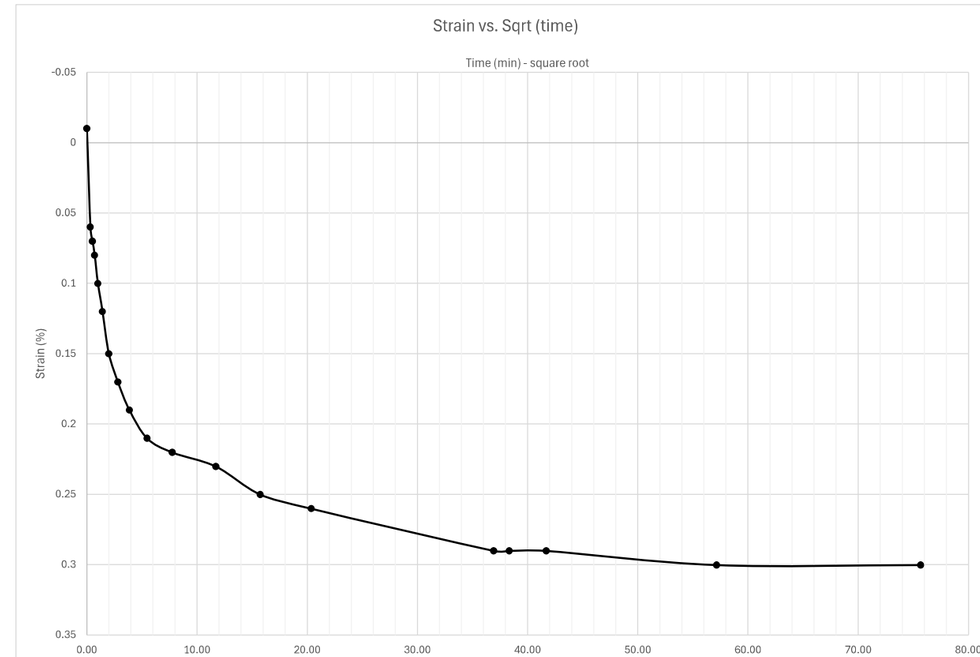
Sequence 11: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

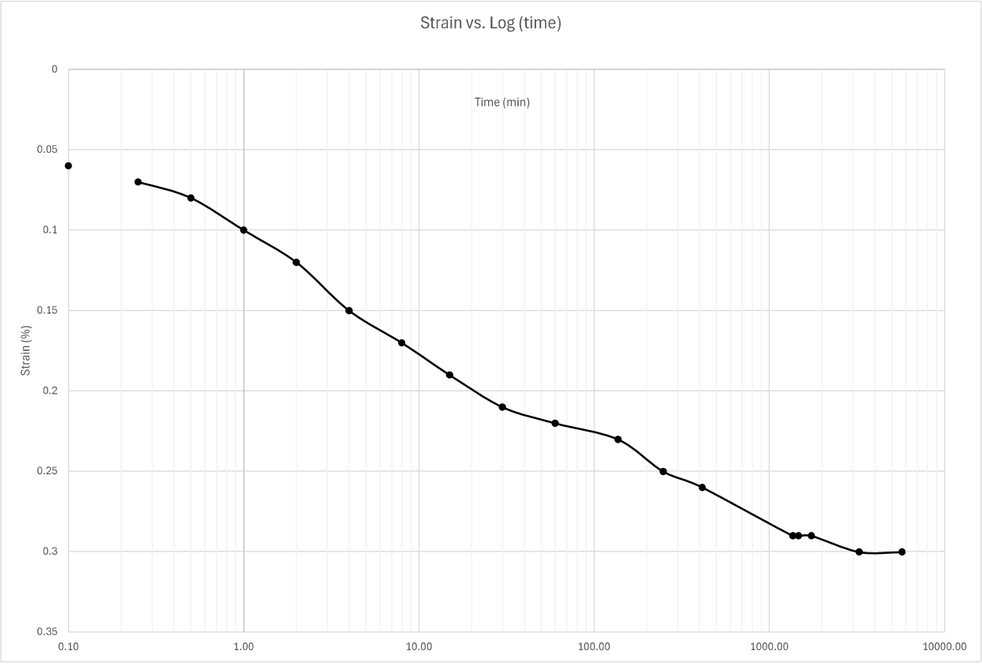


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6603	-0.0006	0.3775	-0.06006	3.163
1			6	0.10	0.32	8000	0.6617	0.0008	0.3761	0.08008	3.147
2			15	0.25	0.50	8000	0.6619	0.001	0.3759	0.1001	3.145
3			30	0.50	0.71	8000	0.6621	0.0012	0.3757	0.12012	3.143
4		1		1.00	1.00	8000	0.6625	0.0016	0.3753	0.16016	3.139
5		2		2.00	1.41	8000	0.6629	0.002	0.3749	0.2002	3.134
6		4		4.00	2.00	8000	0.6635	0.0026	0.3743	0.26026	3.128
7		8		8.00	2.83	8000	0.6642	0.0033	0.3736	0.33033	3.120
8		15		15.00	3.87	8000	0.6646	0.0037	0.3732	0.37037	3.115
9		30		30.00	5.48	8000	0.6651	0.0042	0.3727	0.42042	3.110
10	1	19		79.00	8.89	8000	0.6656	0.0047	0.3722	0.47047	3.104
11	2	1		121.00	11.00	8000	0.6658	0.0049	0.372	0.49049	3.102
12	4	20		260.00	16.12	8000	0.6662	0.0053	0.3716	0.530531	3.098
13	7	4		424.00	20.59	8000	0.6666	0.0057	0.3712	0.570571	3.093
14	9	20		560.00	23.66	8000	0.6667	0.0058	0.3711	0.580581	3.092
15	23	23		1403.00	37.46	8000	0.6672	0.0063	0.3706	0.630631	3.087
16	25	59		1559.00	39.48	8000	0.6673	0.0064	0.3705	0.640641	3.086
17	47	49		2869.00	53.56	8000	0.6677	0.0068	0.3701	0.680681	3.081
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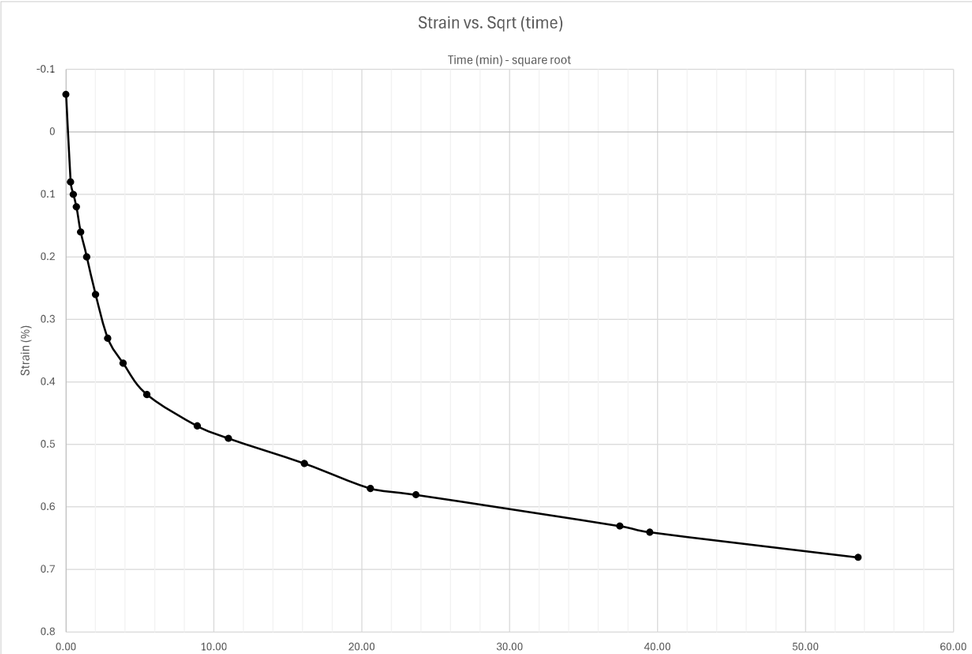
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

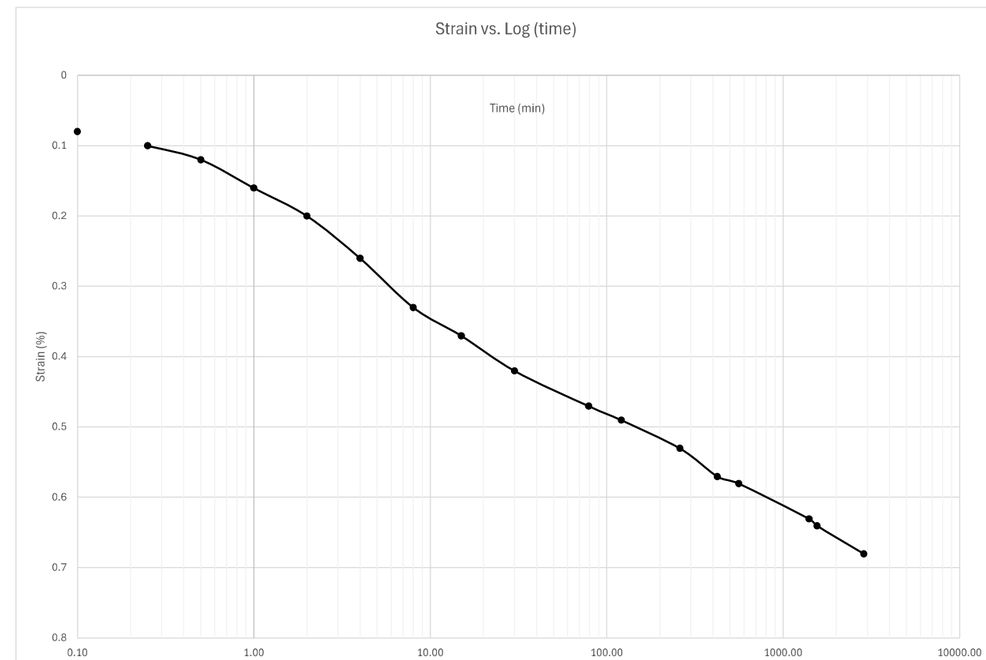
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6677	-0.0008	0.3709	-0.08008	3.090
1			6	0.10	0.32	16000	0.6698	0.0013	0.3688	0.13013	3.067
2			15	0.25	0.50	16000	0.6701	0.0016	0.3685	0.16016	3.064
3			30	0.50	0.71	16000	0.6705	0.002	0.3681	0.2002	3.059
4		1		1.00	1.00	16000	0.6711	0.0026	0.3675	0.26026	3.053
5		2		2.00	1.41	16000	0.672	0.0035	0.3666	0.35035	3.043
6		4		4.00	2.00	16000	0.6731	0.0046	0.3655	0.46046	3.031
7		8		8.00	2.83	16000	0.6745	0.006	0.3641	0.600601	3.015
8		15		15.00	3.87	16000	0.6757	0.0072	0.3629	0.720721	3.002
9		30		30.00	5.48	16000	0.6769	0.0084	0.3617	0.840841	2.989
10	1			60.00	7.75	16000	0.6779	0.0094	0.3607	0.940941	2.978
11	2			120.00	10.95	16000	0.6789	0.0104	0.3597	1.041041	2.967
12	5			300.00	17.32	16000	0.6803	0.0118	0.3583	1.181181	2.951
13	6	44		404.00	20.10	16000	0.6807	0.0122	0.3579	1.221221	2.947
14	22	53		1373.00	37.05	16000	0.6831	0.0146	0.3555	1.461461	2.920
15	24	52		1492.00	38.63	16000	0.6833	0.0148	0.3553	1.481481	2.918
16	28			1680.00	40.99	16000	0.6835	0.015	0.3551	1.501502	2.916
17	31	12		1872.00	43.27	16000	0.6837	0.0152	0.3549	1.521522	2.914
18	47	4		2824.00	53.14	16000	0.6845	0.016	0.3541	1.601602	2.905
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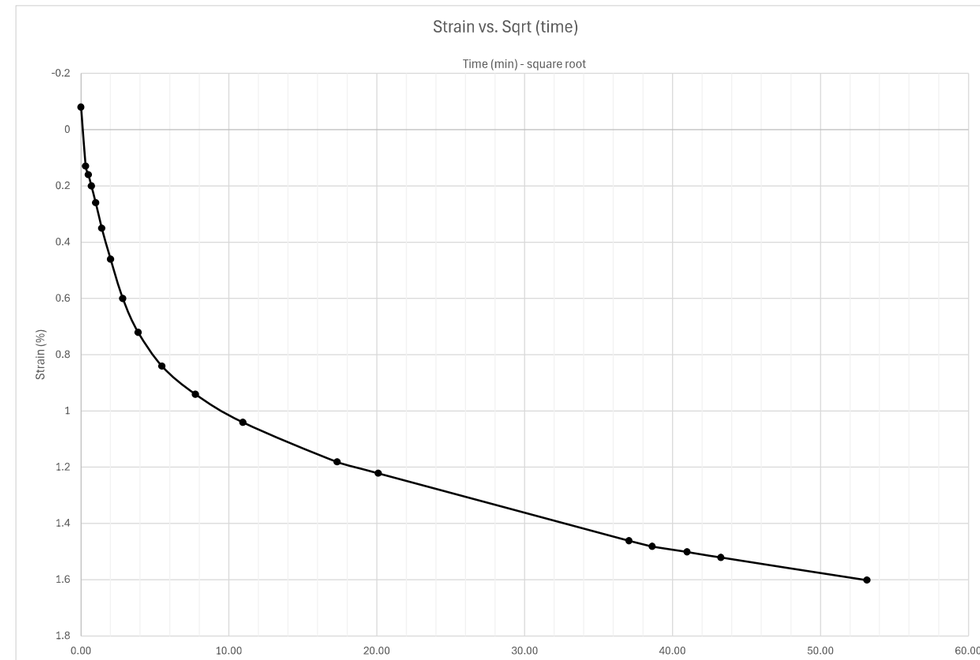
Sequence 13: 16000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

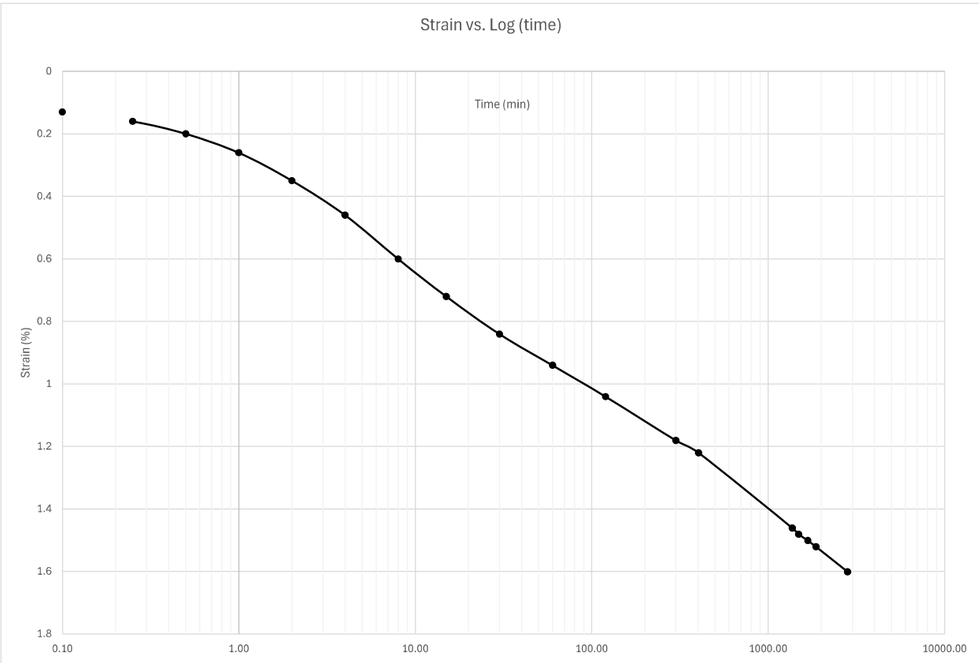


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.6845	-0.0012	0.3553	-0.12012	2.918
1			6	0.10	0.32	32000	0.6876	0.0019	0.3522	0.19019	2.884
2			15	0.25	0.50	32000	0.6882	0.0025	0.3516	0.25025	2.877
3			30	0.50	0.71	32000	0.6891	0.0034	0.3507	0.34034	2.867
4		1		1.00	1.00	32000	0.6903	0.0046	0.3495	0.46046	2.854
5		2		2.00	1.41	32000	0.6921	0.0064	0.3477	0.640641	2.834
6		4		4.00	2.00	32000	0.6947	0.009	0.3451	0.900901	2.806
7		8		8.00	2.83	32000	0.6983	0.0126	0.3415	1.261261	2.766
8		15		15.00	3.87	32000	0.7027	0.017	0.3371	1.701702	2.717
9		30		30.00	5.48	32000	0.7088	0.0231	0.331	2.312312	2.650
10	1			60.00	7.75	32000	0.7151	0.0294	0.3247	2.942943	2.581
11	2			120.00	10.95	32000	0.7202	0.0345	0.3196	3.453453	2.524
12	4			240.00	15.49	32000	0.7243	0.0386	0.3155	3.863864	2.479
13	5	30		330.00	18.17	32000	0.7258	0.0401	0.314	4.014014	2.463
14	31	16		1876.00	43.31	32000	0.7325	0.0468	0.3073	4.684685	2.389
15	71	34		4294.00	65.53	32000	0.7349	0.0492	0.3049	4.924925	2.362
16	74	7		4447.00	66.69	32000	0.7352	0.0495	0.3046	4.954955	2.359
17	78	48		4728.00	68.76	32000	0.7354	0.0497	0.3044	4.974975	2.357
18	95	3		5703.00	75.52	32000	0.7358	0.0501	0.304	5.015015	2.352
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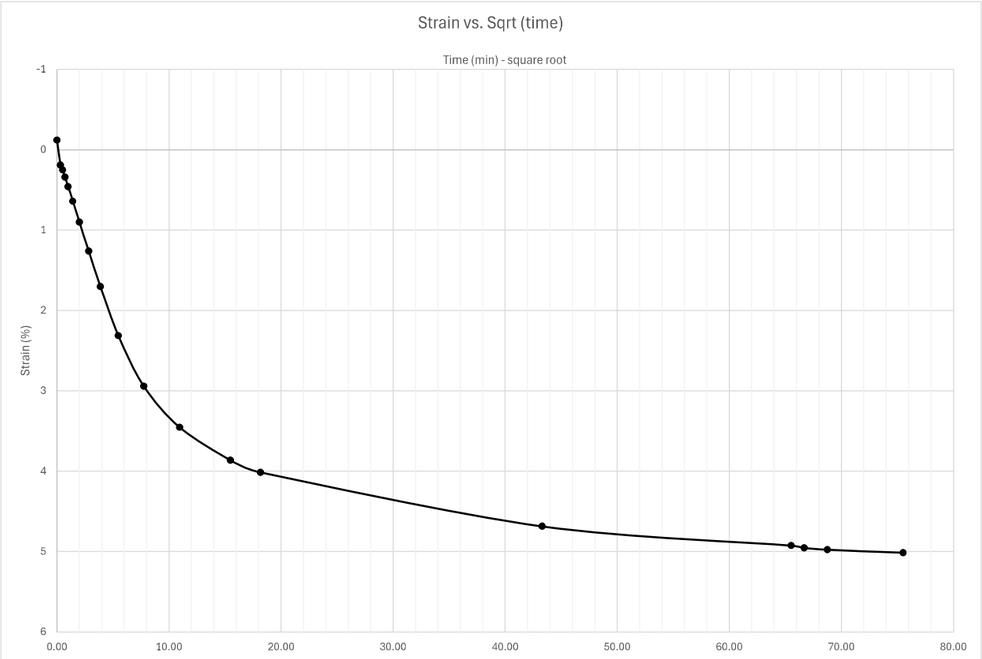
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

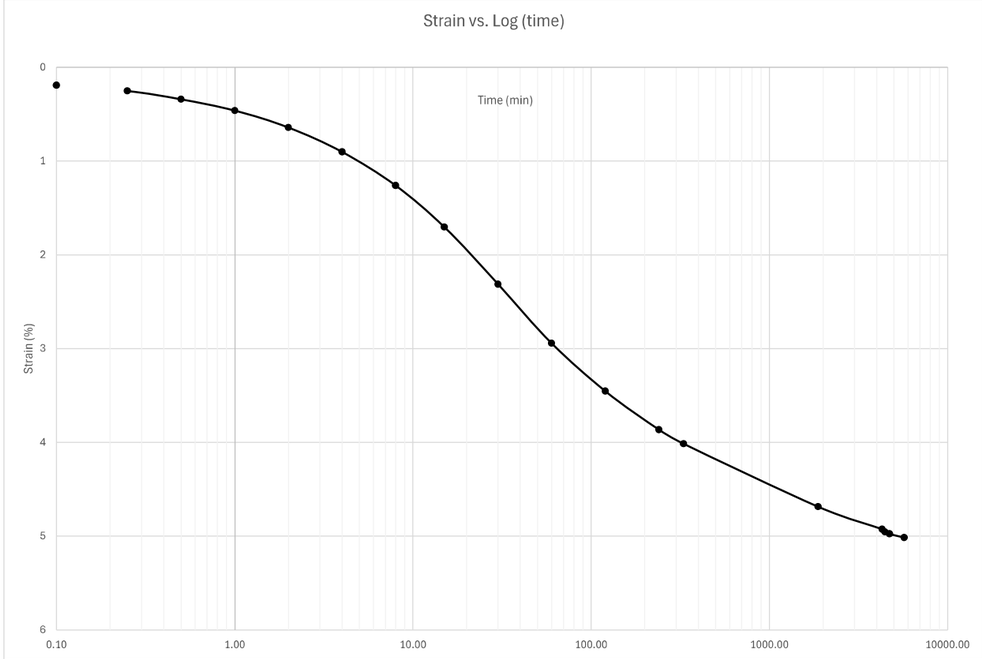
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3400, ST-19, 10.0-12.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Muck		
Project Number	25-051.05	Depth (ft)	10-12
Sample Number	ST-20	Boring Number	Y1RPC_3400
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0331	0.1398	0.9659	0.033	6.220	5.76	-	0.03434	-
2	500	0.162	0.1398	0.837	0.162	5.257	16	6	0.00928	0.005751
3	1000	0.3252	0.1399	0.6738	0.326	4.037	49	11	0.00196	0.002033
4	2000	0.4607	0.14	0.5383	0.461	3.024	46.24	14	0.00133	0.001019
5	4000	0.5491	0.1404	0.4499	0.550	2.363	62.41	16	0.00069	0.000623
6	8000	0.6287	0.1408	0.3703	0.629	1.768	57.76	19	0.00050	0.00036
7	16000	0.6788	0.1414	0.3202	0.679	1.394	36	25	0.00060	0.00020
8	8000	0.6744	0.141	0.3246	0.675	1.426	-	-	-	-
9	4000	0.6677	0.1406	0.3313	0.668	1.476	-	-	-	-
10	2000	0.6604	0.1404	0.3386	0.661	1.531	65.61	76	0.00037	0.00007
11	4000	0.6638	0.1405	0.3352	0.664	1.506	11.56	-	0.00206	-
12	8000	0.6705	0.1409	0.3285	0.671	1.456	7.84	-	0.00292	-
13	16000	0.6853	0.1415	0.3137	0.686	1.345	14.44	-	0.00144	-
14	32000	0.7302	0.1425	0.2688	0.731	1.009	40.96	13.8	0.00037	0.00026
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 2/20/2026
Machine Apparatus: 2
Technician: KSB

Sampling Date: 12/17/2026
Sample Number: ST-20
Depth (ft): 10-12
Boring Number: Y1RPC_3400
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.986
Sampling Method: Shelby Tube
Specimen Description: Black Muck
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.4

Parameters	Initial	Final
Height (in)	0.999	0.2688
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.327
Weight of Container (g)	60.35	*
Weight of Wet Soil + Container (g)	242.83	*
Weight of Dry Soil + Container (g)	102.83	*
Moisture Content (%)	329.57	*
Moist Weight + Ring Weight (g)	195.72	140.36
Dry Mass (g)	21.49	*
Water Content (calc from spec)	329.57	*
Dry Density (pcf)	16.60	*
Wet Density (pcf)	71.32	106.12
Volume of Solids (in^3)	0.66	*
Height of Solids (in)	0.13	*
Void Ratio	6.468	1.009

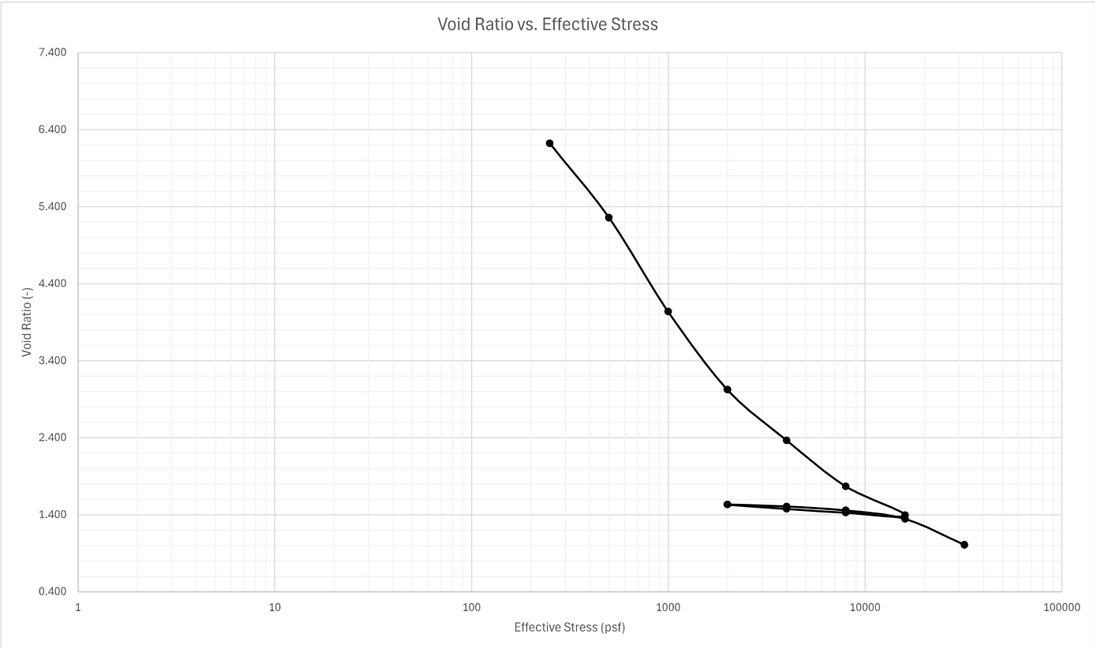
*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

Y1RPC_3400, ST-20, 10-12 ft

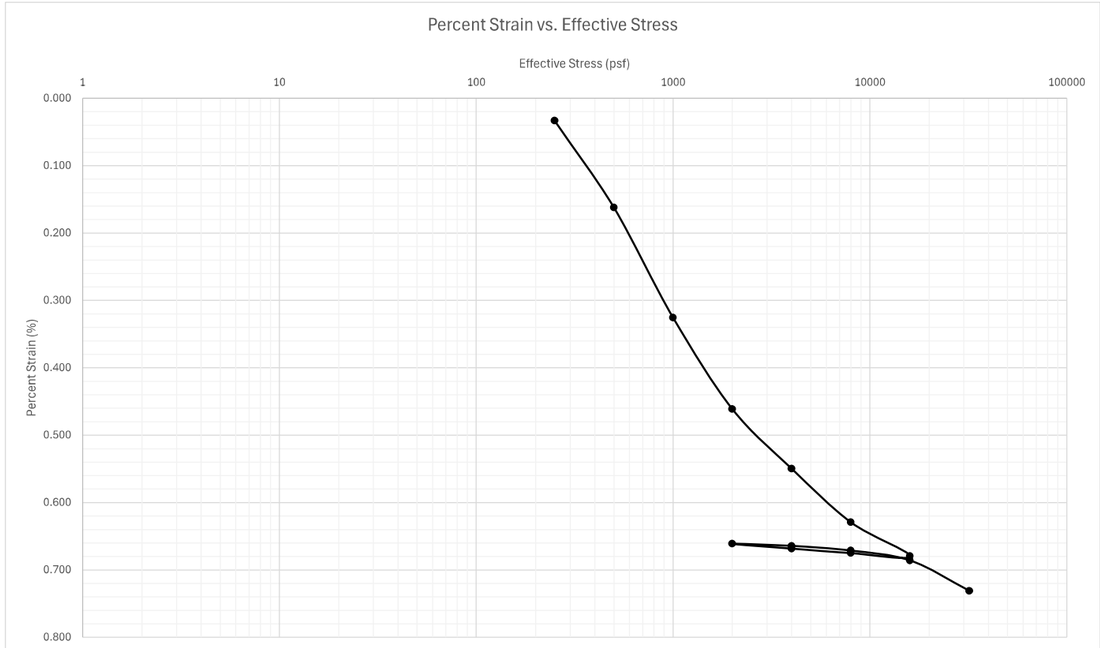
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0	0	250	0.036	0	0.999	0	6.468
1			6	0.1	0.316227766	250	0.0364	0.0004	0.9986	0.04004	6.465
2			15	0.25	0.5	250	0.0381	0.0021	0.9969	0.21021	6.452
3			30	0.5	0.707106781	250	0.0399	0.0039	0.9951	0.39039	6.438
4		1		1	1	250	0.0424	0.0064	0.9926	0.640641	6.420
5		2		2	1.414213562	250	0.0449	0.0089	0.9901	0.890891	6.401
6		4		4	2	250	0.049	0.013	0.986	1.301301	6.370
7		8		8	2.828427125	250	0.0507	0.0147	0.9843	1.471471	6.358
8		15		15	3.872983346	250	0.0529	0.0169	0.9821	1.691692	6.341
9		30		30	5.477225575	250	0.0548	0.0188	0.9802	1.881882	6.327
10	1			60	7.745966692	250	0.0565	0.0205	0.9785	2.052052	6.314
11	2	16		136	11.66190379	250	0.0583	0.0223	0.9767	2.232232	6.301
12	7	8		428	20.68816087	250	0.061	0.025	0.974	2.502503	6.281
13	17	56		1076	32.80243893	250	0.0632	0.0272	0.9718	2.722723	6.264
14	21	35		1295	35.98610843	250	0.0641	0.0281	0.9709	2.812813	6.258
15	24	37	37	1477.616667	38.43977974	250	0.0644	0.0284	0.9706	2.842843	6.255
16	26	47		1607	40.08740451	250	0.0647	0.0287	0.9703	2.872873	6.253
17	41	45		2505	50.04997502	250	0.0661	0.0301	0.9689	3.013013	6.243
18	43	51		2631	51.29327441	250	0.0665	0.0305	0.9685	3.053053	6.240
19	45	45		2745	52.39274759	250	0.0668	0.0308	0.9682	3.083083	6.237
20	49			2940	54.22176685	250	0.0671	0.0311	0.9679	3.113113	6.235
21	65	56		3956	62.89674077	250	0.068	0.032	0.967	3.203203	6.228
22	67	55		4075	63.83572667	250	0.0684	0.0324	0.9666	3.243243	6.225
23	71	34		4294	65.5286197	250	0.0688	0.0328	0.9662	3.283283	6.222
24	72	32		4352	65.96969001	250	0.0691	0.0331	0.9659	3.313313	6.220
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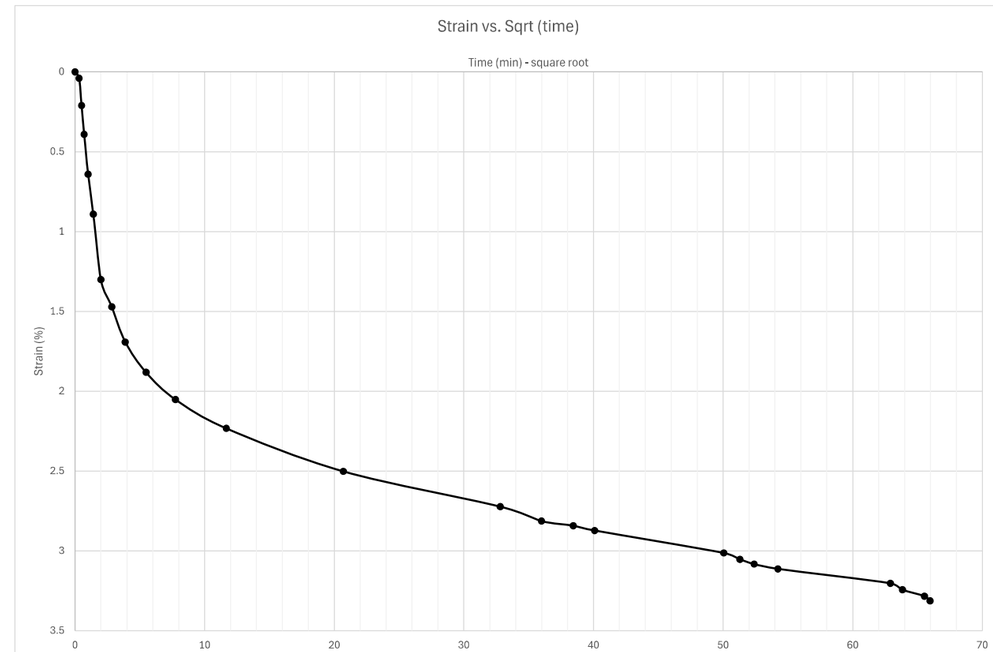
Sequence 1: 250 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

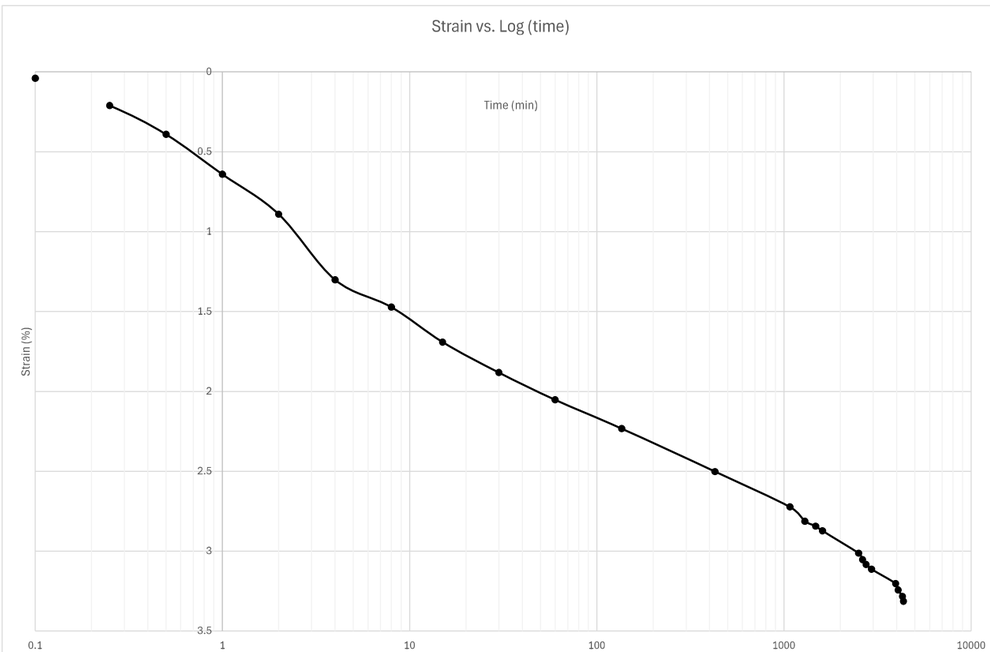


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0691	0.0000	0.9659	0	6.220
1			6	0.1	0.32	500	0.0770	0.0079	0.9580	0.790791	6.161
2			15	0.25	0.50	500	0.0816	0.0125	0.9534	1.251251	6.127
3			30	0.5	0.71	500	0.0855	0.0164	0.9495	1.641642	6.098
4		1		1	1.00	500	0.0924	0.0233	0.9426	2.332332	6.046
5		2		2	1.41	500	0.1017	0.0326	0.9333	3.263263	5.976
6		4		4	2.00	500	0.1140	0.0449	0.9210	4.494494	5.885
7		8		8	2.83	500	0.1259	0.0568	0.9091	5.685686	5.796
8		15		15	3.87	500	0.1403	0.0712	0.8947	7.127127	5.688
9		28		28	5.29	500	0.1533	0.0842	0.8817	8.428428	5.591
10		55		55	7.42	500	0.1676	0.0985	0.8674	9.85986	5.484
11	1	58		118	10.86	500	0.1782	0.1091	0.8568	10.92092	5.405
12	17	8		1028	32.06	500	0.1980	0.1289	0.8370	12.9029	5.257
13	20	56		1256	35.44	500	0.1999	0.1308	0.8351	13.09309	5.242
14	23	40		1420	37.68	500	0.2014	0.1323	0.8336	13.24324	5.231
15	25	35		1535	39.18	500	0.2023	0.1332	0.8327	13.33333	5.224
16	43	13		2593	50.92	500	0.2072	0.1381	0.8278	13.82382	5.188
17	99	32		5972	77.28	500	0.2139	0.1448	0.8211	14.49449	5.138
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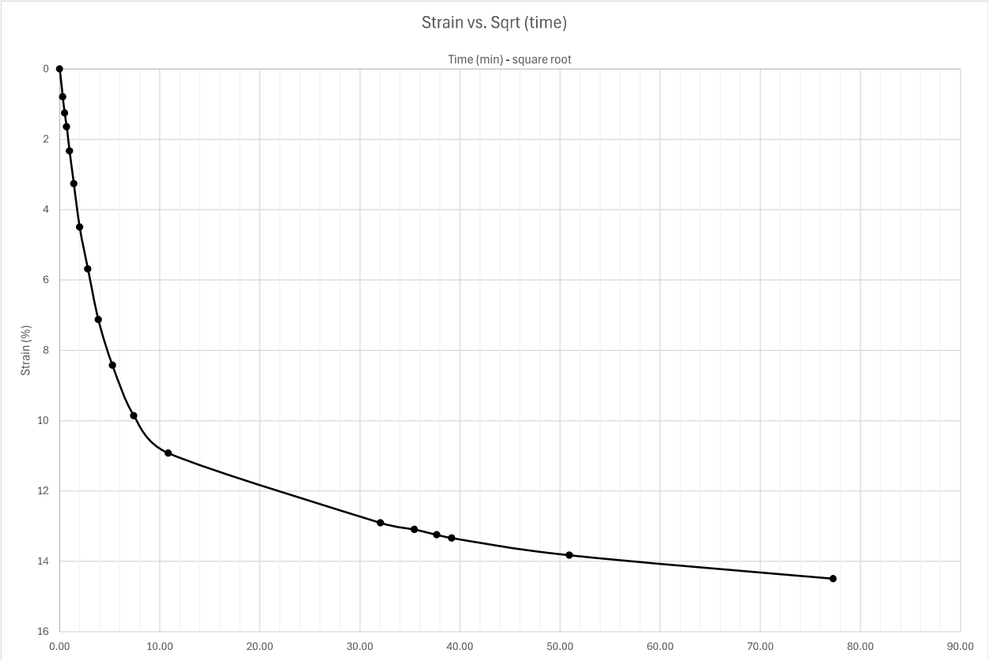
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_3400, ST-20, 10-12 ft

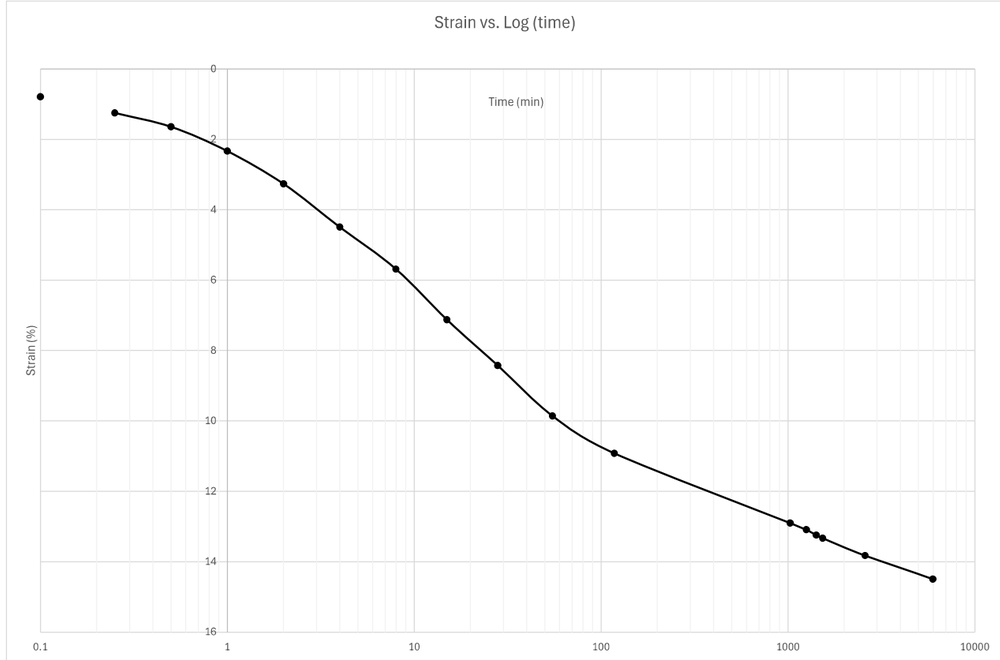
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.198	-1E-04	0.8371	-0.01001	5.257
1			6	0.10	0.32	1000	0.22	0.0219	0.8151	2.192192	5.093
2			15	0.25	0.50	1000	0.223	0.0249	0.8121	2.492492	5.070
3			30	0.50	0.71	1000	0.226	0.0279	0.8091	2.792793	5.048
4		1		1.00	1.00	1000	0.234	0.0359	0.8011	3.593594	4.988
5		2		2.00	1.41	1000	0.239	0.0409	0.7961	4.094094	4.951
6		4		4.00	2.00	1000	0.2497	0.0516	0.7854	5.165165	4.871
7		8		8.00	2.83	1000	0.2638	0.0657	0.7713	6.576577	4.766
8		15		15.00	3.87	1000	0.2792	0.0811	0.7559	8.118118	4.650
9		29		29.00	5.39	1000	0.2964	0.0983	0.7387	9.83984	4.522
10	1			60.00	7.75	1000	0.3141	0.116	0.721	11.61161	4.390
11	4	7		247.00	15.72	1000	0.3362	0.1381	0.6989	13.82382	4.224
12	7	15		435.00	20.86	1000	0.343	0.1449	0.6921	14.5045	4.173
13	23	48		1428.00	37.79	1000	0.3543	0.1562	0.6808	15.63564	4.089
14	25	55		1555.00	39.43	1000	0.355	0.1569	0.6801	15.70571	4.084
15	29	7		1747.00	41.80	1000	0.3561	0.158	0.679	15.81582	4.076
16	30	46		1846.00	42.97	1000	0.3566	0.1585	0.6785	15.86587	4.072
17	46	46		2806.00	52.97	1000	0.3608	0.1627	0.6743	16.28629	4.040
18	49	20		2960.00	54.41	1000	0.3613	0.1632	0.6738	16.33634	4.037
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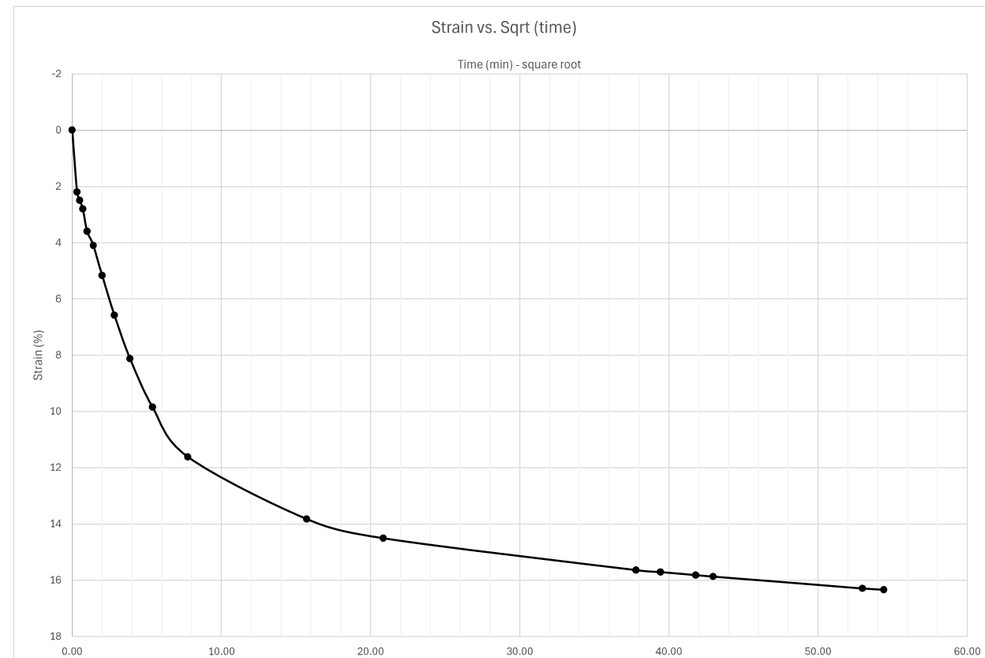
Sequence 3: 1000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

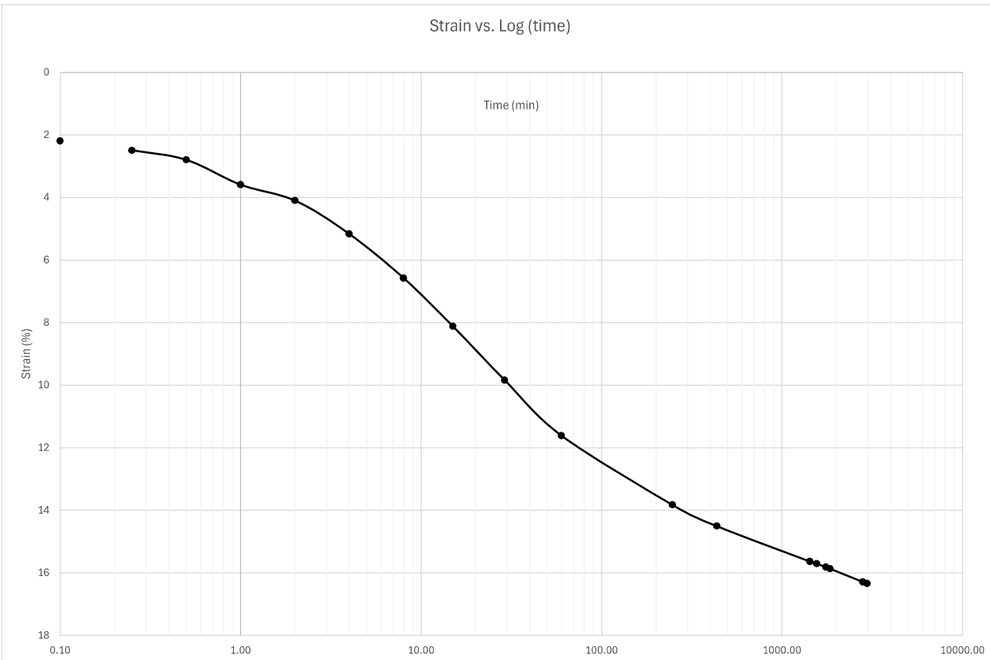


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3613	-0.0001	0.6739	-0.01001	4.037
1			6	0.10	0.32	2000	0.3667	0.0053	0.6685	0.530531	3.997
2			15	0.25	0.50	2000	0.3691	0.0077	0.6661	0.770771	3.979
3			30	0.50	0.71	2000	0.372	0.0106	0.6632	1.061061	3.957
4		1		1.00	1.00	2000	0.3755	0.0141	0.6597	1.411411	3.931
5		2		2.00	1.41	2000	0.3813	0.0199	0.6539	1.991992	3.888
6		4		4.00	2.00	2000	0.3899	0.0285	0.6453	2.852853	3.824
7		8		8.00	2.83	2000	0.4005	0.0391	0.6347	3.913914	3.744
8		19	31	19.52	4.42	2000	0.4198	0.0584	0.6154	5.845846	3.600
9	1	33		93.00	9.64	2000	0.4537	0.0923	0.5815	9.239239	3.347
10	3	13		193.00	13.89	2000	0.4643	0.1029	0.5709	10.3003	3.268
11	4			240.00	15.49	2000	0.467	0.1056	0.5682	10.57057	3.247
12	19	41		1181.00	34.37	2000	0.4823	0.1209	0.5529	12.1021	3.133
13	22	46		1366.00	36.96	2000	0.4835	0.1221	0.5517	12.22222	3.124
14	25	34		1534.00	39.17	2000	0.4844	0.123	0.5508	12.31231	3.117
15	27	30		1650.00	40.62	2000	0.4851	0.1237	0.5501	12.38238	3.112
16	44	28		2668.00	51.65	2000	0.4889	0.1275	0.5463	12.76276	3.084
17	48	10		2890.00	53.76	2000	0.4894	0.128	0.5458	12.81281	3.080
18	49	55		2995.00	54.73	2000	0.4897	0.1283	0.5455	12.84284	3.078
19	115	52		6952.00	83.38	2000	0.4969	0.1355	0.5383	13.56356	3.024
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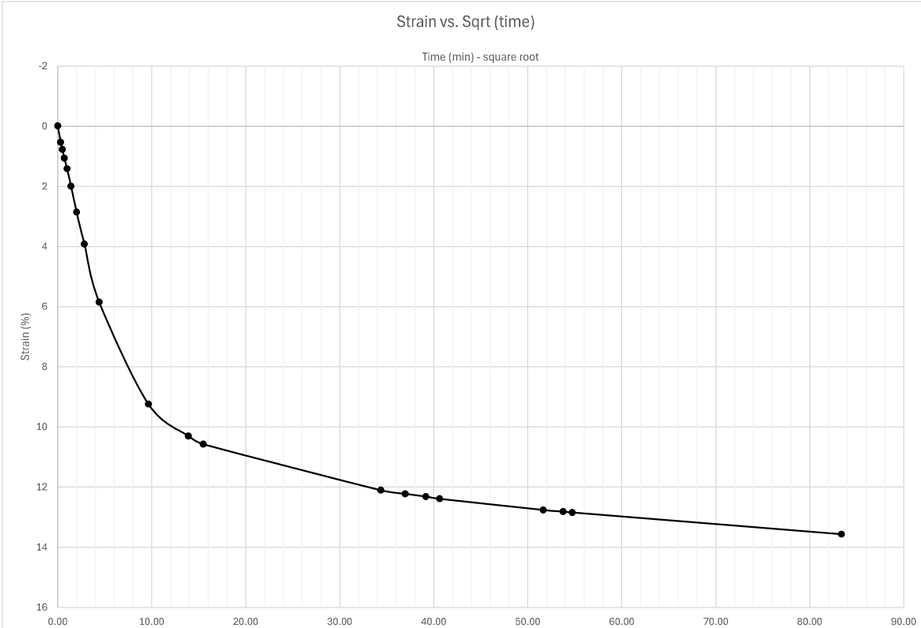
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_3400, ST-20, 10-12 ft

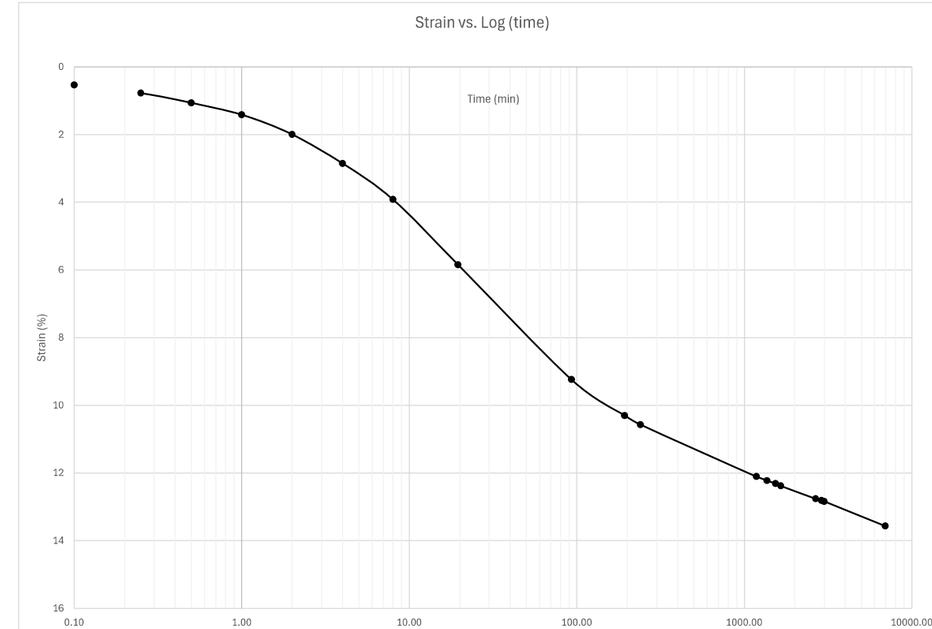
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4969	-0.0004	0.5387	-0.04004	3.027
1			6	0.10	0.32	4000	0.5009	0.0036	0.5347	0.36036	2.997
2			15	0.25	0.50	4000	0.5015	0.0042	0.5341	0.42042	2.992
3			30	0.50	0.71	4000	0.5036	0.0063	0.532	0.630631	2.977
4		1		1.00	1.00	4000	0.5059	0.0086	0.5297	0.860861	2.960
5		2	0	2.00	1.41	4000	0.5094	0.0121	0.5262	1.211211	2.933
6		4		4.00	2.00	4000	0.5144	0.0171	0.5212	1.711712	2.896
7		8		8.00	2.83	4000	0.5216	0.0243	0.514	2.432432	2.842
8		15		15.00	3.87	4000	0.5299	0.0326	0.5057	3.263263	2.780
9		30		30.00	5.48	4000	0.5407	0.0434	0.4949	4.344344	2.699
10	1	8		68.00	8.25	4000	0.5538	0.0565	0.4818	5.655656	2.601
11	2	9		129.00	11.36	4000	0.5618	0.0645	0.4738	6.456456	2.542
12	4	8		248.00	15.75	4000	0.5682	0.0709	0.4674	7.097097	2.494
13	6	12		372.00	19.29	4000	0.5715	0.0742	0.4641	7.427427	2.469
14	23	21		1401.00	37.43	4000	0.5812	0.0839	0.4544	8.398398	2.397
15	26	8		1568.00	39.60	4000	0.5818	0.0845	0.4538	8.458458	2.392
16	47	8		2828.00	53.18	4000	0.5825	0.0852	0.4531	8.528529	2.387
17	52	8		3128.00	55.93	4000	0.5857	0.0884	0.4499	8.848849	2.363
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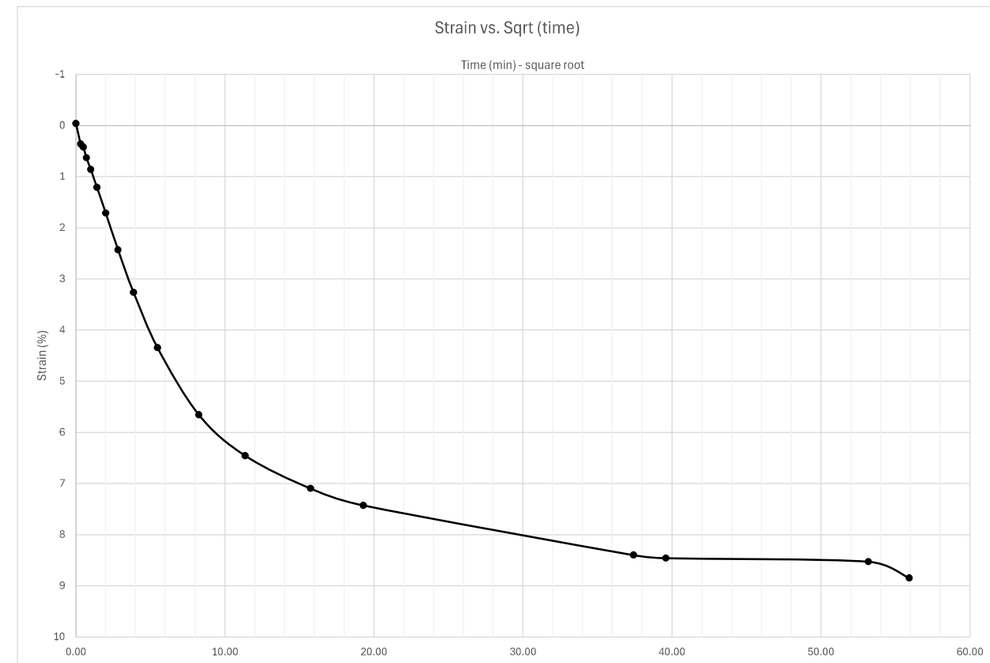
Sequence 5: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

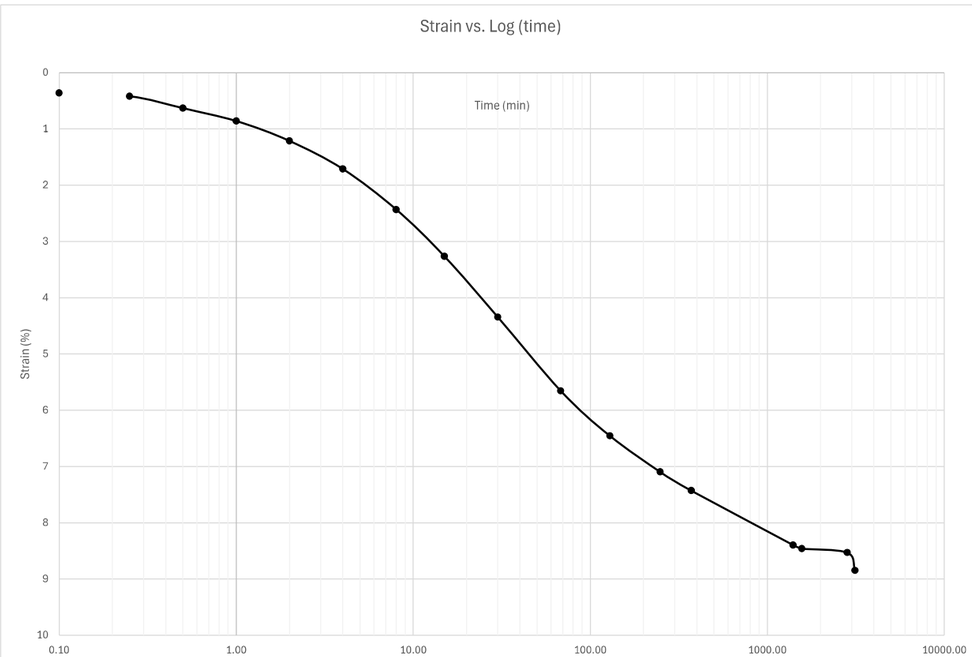


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.5857	-0.0004	0.4503	-0.04004	2.366
1			6	0.10	0.32	8000	0.5898	0.0037	0.4462	0.37037	2.335
2			15	0.25	0.50	8000	0.5913	0.0052	0.4447	0.520521	2.324
3			30	0.50	0.71	8000	0.5925	0.0064	0.4435	0.640641	2.315
4		1		1.00	1.00	8000	0.5947	0.0086	0.4413	0.860861	2.299
5		2		2.00	1.41	8000	0.5981	0.012	0.4379	1.201201	2.273
6		4		4.00	2.00	8000	0.6023	0.0162	0.4337	1.621622	2.242
7		8		8.00	2.83	8000	0.6084	0.0223	0.4276	2.232232	2.196
8		15		15.00	3.87	8000	0.6155	0.0294	0.4205	2.942943	2.143
9		30		30.00	5.48	8000	0.6252	0.0391	0.4108	3.913914	2.071
10		58		58.00	7.62	8000	0.6343	0.0482	0.4017	4.824825	2.003
11	2	4		124.00	11.14	8000	0.6431	0.057	0.3929	5.705706	1.937
12	18	39		1119.00	33.45	8000	0.6575	0.0714	0.3785	7.147147	1.829
13	20	57		1257.00	35.45	8000	0.6581	0.072	0.3779	7.207207	1.825
14	23			1380.00	37.15	8000	0.6585	0.0724	0.3775	7.247247	1.822
15	27	10		1630.00	40.37	8000	0.6593	0.0732	0.3767	7.327327	1.816
16	44	48		2688.00	51.85	8000	0.6614	0.0753	0.3746	7.537538	1.800
17	115	54		6954.00	83.39	8000	0.6657	0.0796	0.3703	7.967968	1.768
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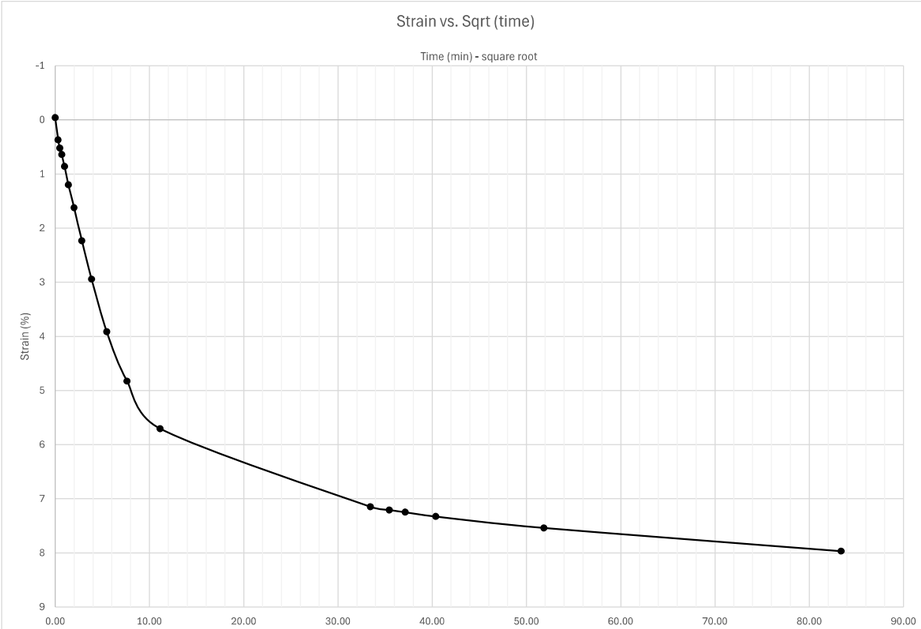
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

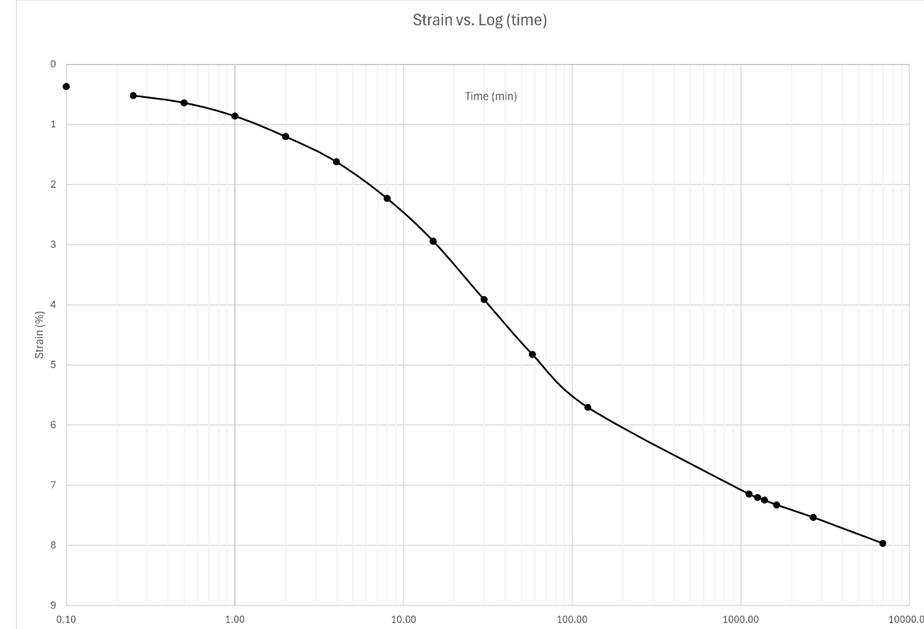
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.6657	-0.0006	0.3709	-0.06006	1.772
1			6	0.10	0.32	16000	0.6687	0.0024	0.3679	0.24024	1.750
2			15	0.25	0.50	16000	0.6697	0.0034	0.3669	0.34034	1.743
3			30	0.50	0.71	16000	0.6708	0.0045	0.3658	0.45045	1.734
4		1		1.00	1.00	16000	0.6725	0.0062	0.3641	0.620621	1.722
5		2		2.00	1.41	16000	0.6748	0.0085	0.3618	0.850851	1.704
6		4		4.00	2.00	16000	0.6782	0.0119	0.3584	1.191191	1.679
7		8		8.00	2.83	16000	0.6826	0.0163	0.354	1.631632	1.646
8		16		16.00	4.00	16000	0.6881	0.0218	0.3485	2.182182	1.605
9		30		30.00	5.48	16000	0.6936	0.0273	0.343	2.732733	1.564
10	1	1		61.00	7.81	16000	0.7005	0.0342	0.3361	3.423423	1.512
11	2	3		123.00	11.09	16000	0.7055	0.0392	0.3311	3.923924	1.475
12	3	58		238.00	15.43	16000	0.7092	0.0429	0.3274	4.294294	1.447
13	7	5		425.00	20.62	16000	0.7119	0.0456	0.3247	4.564565	1.427
14	22	46		1366.00	36.96	16000	0.7162	0.0499	0.3204	4.994995	1.395
15	24	16		1456.00	38.16	16000	0.7164	0.0501	0.3202	5.015015	1.394
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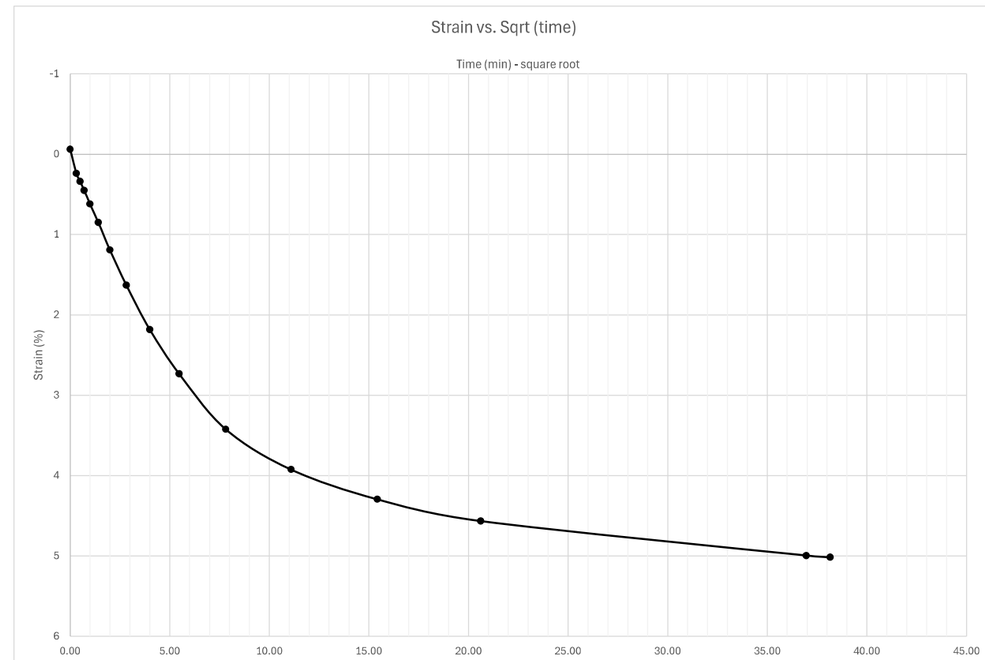
Sequence 7: 16000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

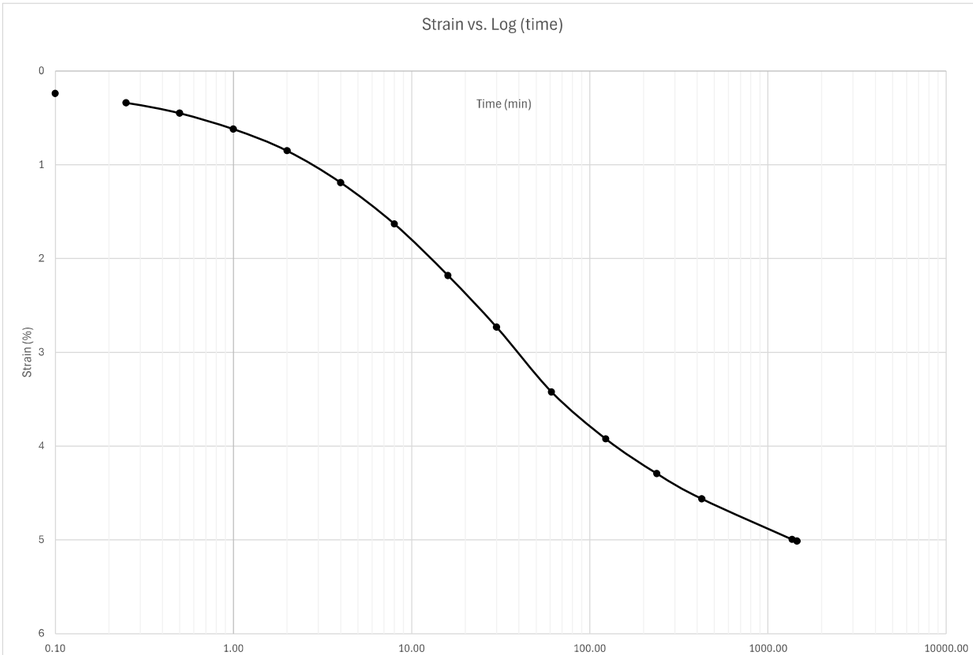


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 16000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.7164	0.0004	0.3198	0.04004	1.391
1			6	0.10	0.32	8000	0.7148	-0.0012	0.3214	-0.12012	1.402
2			15	0.25	0.50	8000	0.7147	-0.0013	0.3215	-0.13013	1.403
3			30	0.50	0.71	8000	0.7145	-0.0015	0.3217	-0.15015	1.405
4		1		1.00	1.00	8000	0.7143	-0.0017	0.3219	-0.17017	1.406
5		2		2.00	1.41	8000	0.714	-0.002	0.3222	-0.2002	1.408
6		4		4.00	2.00	8000	0.7136	-0.0024	0.3226	-0.24024	1.411
7		8		8.00	2.83	8000	0.7133	-0.0027	0.3229	-0.27027	1.414
8		15		15.00	3.87	8000	0.713	-0.003	0.3232	-0.3003	1.416
9		30		30.00	5.48	8000	0.7128	-0.0032	0.3234	-0.32032	1.417
10	1			60.00	7.75	8000	0.7124	-0.0036	0.3238	-0.36036	1.420
11	2	2		122.00	11.05	8000	0.7122	-0.0038	0.324	-0.38038	1.422
12	4	4		244.00	15.62	8000	0.712	-0.004	0.3242	-0.4004	1.423
13	6	25		385.00	19.62	8000	0.7119	-0.0041	0.3243	-0.41041	1.424
14	21	30		1290.00	35.92	8000	0.7117	-0.0043	0.3245	-0.43043	1.426
15	24	59		1499.00	38.72	8000	0.7116	-0.0044	0.3246	-0.44044	1.426
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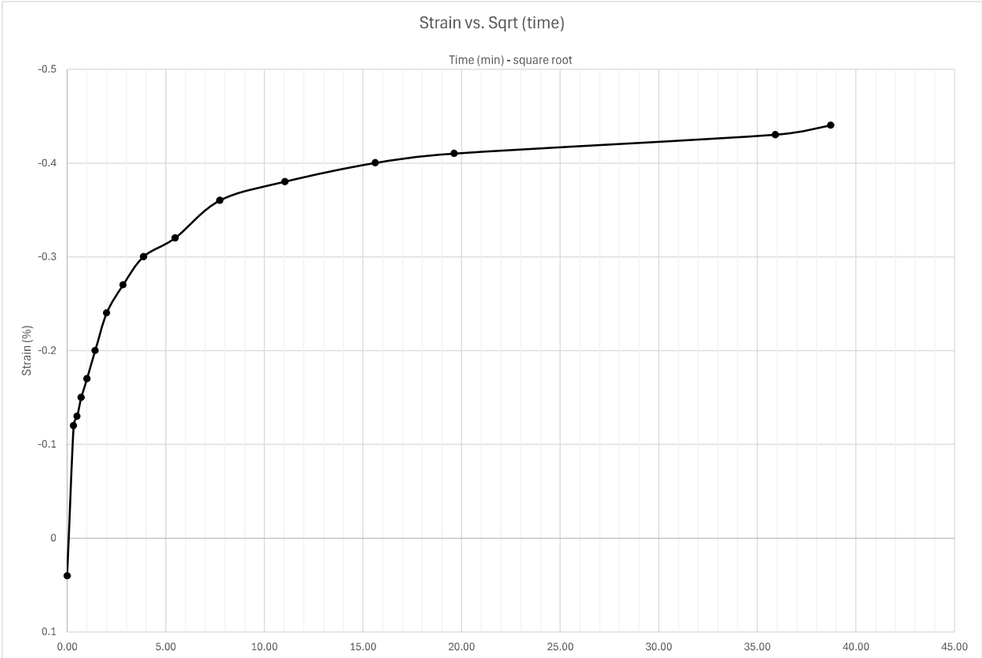
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

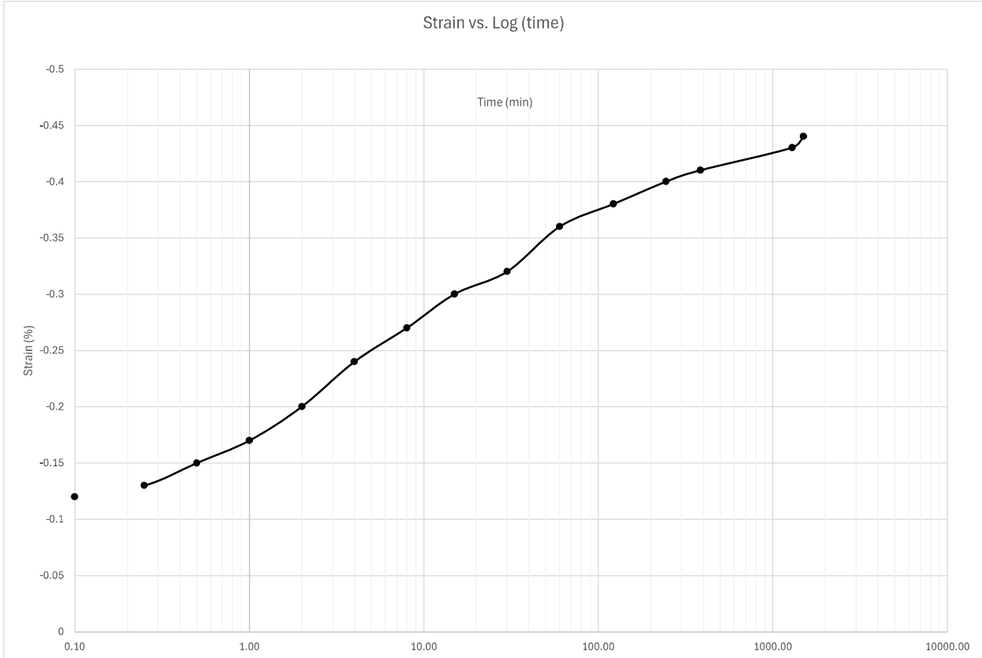
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.7116	0.0004	0.3242	0.04004	1.423
1			6	0.10	0.32	4000	0.7104	-0.0008	0.3254	-0.08008	1.432
2			15	0.25	0.50	4000	0.7103	-0.0009	0.3255	-0.09009	1.433
3			30	0.50	0.71	4000	0.7101	-0.0011	0.3257	-0.11011	1.435
4		1		1.00	1.00	4000	0.7098	-0.0014	0.326	-0.14014	1.437
5		2		2.00	1.41	4000	0.7095	-0.0017	0.3263	-0.17017	1.439
6		4		4.00	2.00	4000	0.7091	-0.0021	0.3267	-0.21021	1.442
7		8		8.00	2.83	4000	0.7087	-0.0025	0.3271	-0.25025	1.445
8		15		15.00	3.87	4000	0.7082	-0.003	0.3276	-0.3003	1.449
9		30		30.00	5.48	4000	0.7079	-0.0033	0.3279	-0.33033	1.451
10		59		59.00	7.68	4000	0.7075	-0.0037	0.3283	-0.37037	1.454
11	2	9		129.00	11.36	4000	0.707	-0.0042	0.3288	-0.42042	1.458
12	4	42		282.00	16.79	4000	0.7065	-0.0047	0.3293	-0.47047	1.462
13	8	6		486.00	22.05	4000	0.7061	-0.0051	0.3297	-0.510511	1.465
14	24		29	1440.48	37.95	4000	0.7053	-0.0059	0.3305	-0.590591	1.471
15	24	7	4	1447.07	38.04	4000	0.7051	-0.0061	0.3307	-0.610611	1.472
16	96	10		5770.00	75.96	4000	0.7045	-0.0067	0.3313	-0.670671	1.476
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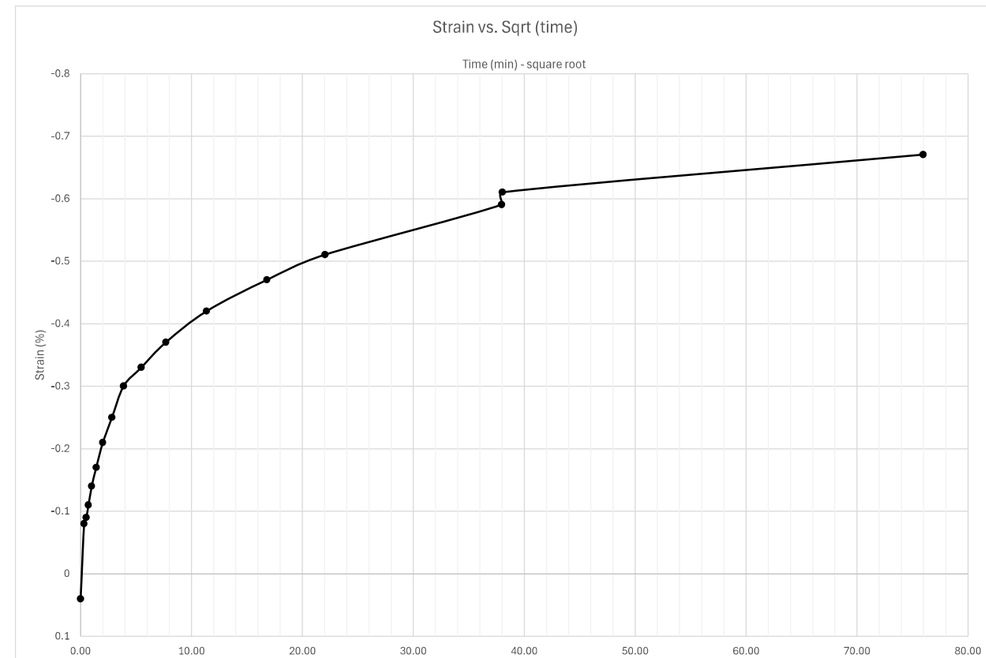
Sequence 9: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

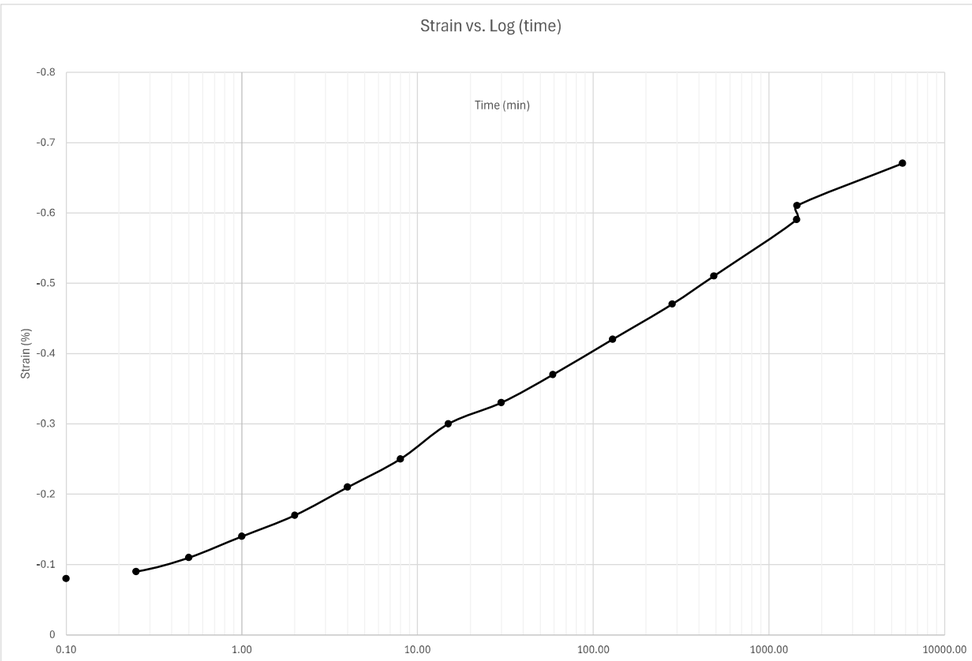


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.7045	0.0002	0.3311	0.02002	1.475
1			6	0.10	0.32	2000	0.7039	-0.0004	0.3317	-0.04004	1.479
2			15	0.25	0.50	2000	0.7038	-0.0005	0.3318	-0.05005	1.480
3			30	0.50	0.71	2000	0.7037	-0.0006	0.3319	-0.06006	1.481
4		1		1.00	1.00	2000	0.7033	-0.001	0.3323	-0.1001	1.484
5		2		2.00	1.41	2000	0.7032	-0.0011	0.3324	-0.11011	1.485
6		4		4.00	2.00	2000	0.703	-0.0013	0.3326	-0.13013	1.486
7		8		8.00	2.83	2000	0.7026	-0.0017	0.333	-0.17017	1.489
8		15		15.00	3.87	2000	0.7023	-0.002	0.3333	-0.2002	1.491
9		30		30.00	5.48	2000	0.7017	-0.0026	0.3339	-0.26026	1.496
10	1			60.00	7.75	2000	0.7014	-0.0029	0.3342	-0.29029	1.498
11	2			120.00	10.95	2000	0.7009	-0.0034	0.3347	-0.34034	1.502
12	4			240.00	15.49	2000	0.7004	-0.0039	0.3352	-0.39039	1.506
13	8			480.00	21.91	2000	0.6997	-0.0046	0.3359	-0.46046	1.511
14	23	35		1415.00	37.62	2000	0.6983	-0.006	0.3373	-0.600601	1.521
15	26	4		1564.00	39.55	2000	0.6982	-0.0061	0.3374	-0.610611	1.522
16	31	36		1896.00	43.54	2000	0.698	-0.0063	0.3376	-0.630631	1.524
17	47	12		2832.00	53.22	2000	0.6975	-0.0068	0.3381	-0.680681	1.527
18	52	9		3129.00	55.94	2000	0.6975	-0.0068	0.3381	-0.680681	1.527
19	55	51		3351.00	57.89	2000	0.6974	-0.0069	0.3382	-0.690691	1.528
20	71	39		4299.00	65.57	2000	0.697	-0.0073	0.3386	-0.730731	1.531
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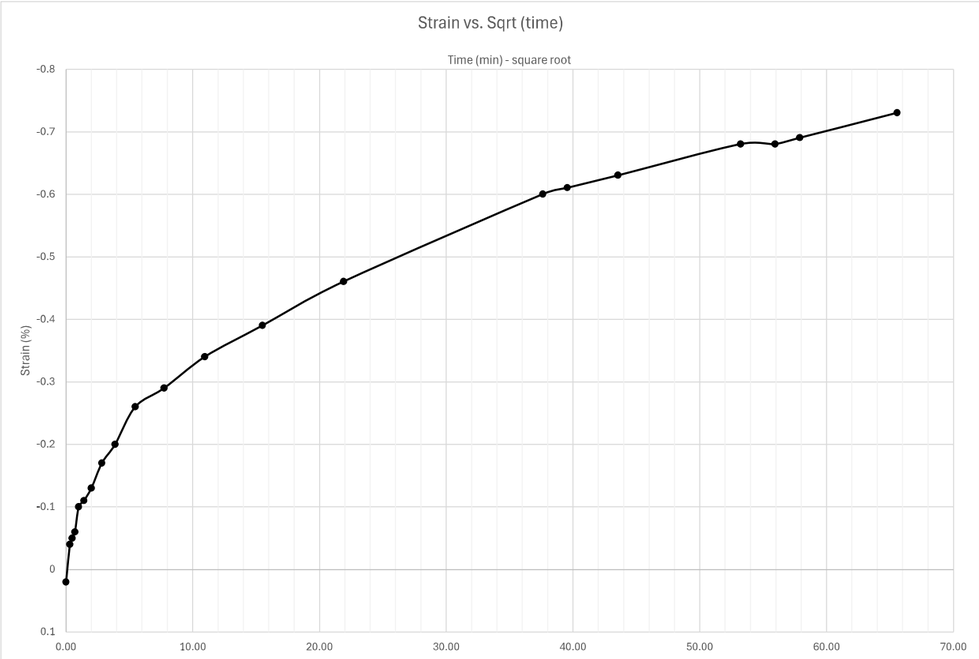
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_3400, ST-20, 10-12 ft

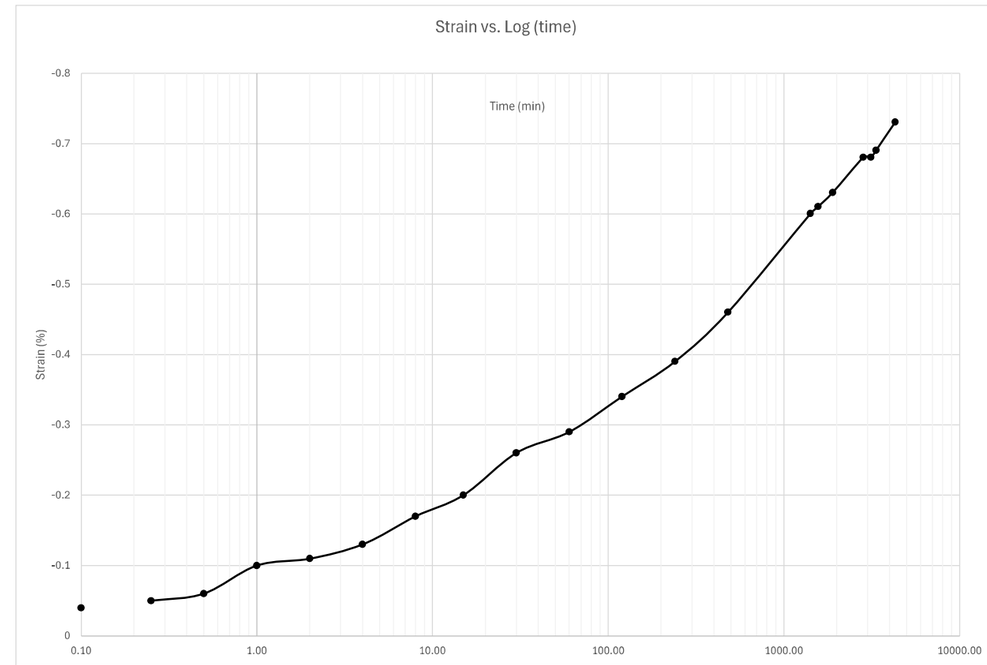
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.697	-0.0001	0.3387	-0.01001	1.532
1			6	0.10	0.32	4000	0.6976	0.0005	0.3381	0.05005	1.527
2			15	0.25	0.50	4000	0.6977	0.0006	0.338	0.06006	1.527
3			30	0.50	0.71	4000	0.6979	0.0008	0.3378	0.08008	1.525
4		1		1.00	1.00	4000	0.6981	0.001	0.3376	0.1001	1.524
5		2		2.00	1.41	4000	0.6983	0.0012	0.3374	0.12012	1.522
6		4		4.00	2.00	4000	0.6986	0.0015	0.3371	0.15015	1.520
7		8		8.00	2.83	4000	0.6989	0.0018	0.3368	0.18018	1.518
8		15		15.00	3.87	4000	0.6991	0.002	0.3366	0.2002	1.516
9		30		30.00	5.48	4000	0.6993	0.0022	0.3364	0.22022	1.515
10	1			60.00	7.75	4000	0.6994	0.0023	0.3363	0.23023	1.514
11	2	15		135.00	11.62	4000	0.6997	0.0026	0.336	0.26026	1.512
12	4	6		246.00	15.68	4000	0.6998	0.0027	0.3359	0.27027	1.511
13	6	53		413.00	20.32	4000	0.6999	0.0028	0.3358	0.28028	1.510
14	22	42		1362.00	36.91	4000	0.7003	0.0032	0.3354	0.32032	1.507
15	24	29		1469.00	38.33	4000	0.7003	0.0032	0.3354	0.32032	1.507
16	28	56		1736.00	41.67	4000	0.7003	0.0032	0.3354	0.32032	1.507
17	54	24		3264.00	57.13	4000	0.7004	0.0033	0.3353	0.33033	1.506
18	95	26		5726.00	75.67	4000	0.7005	0.0034	0.3352	0.34034	1.506
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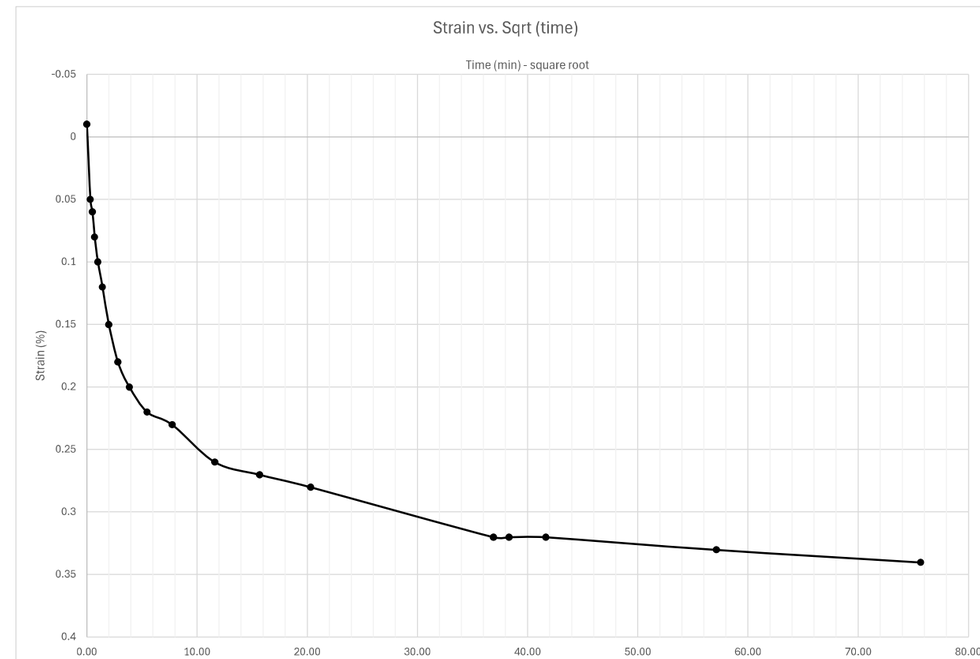
Sequence 11: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

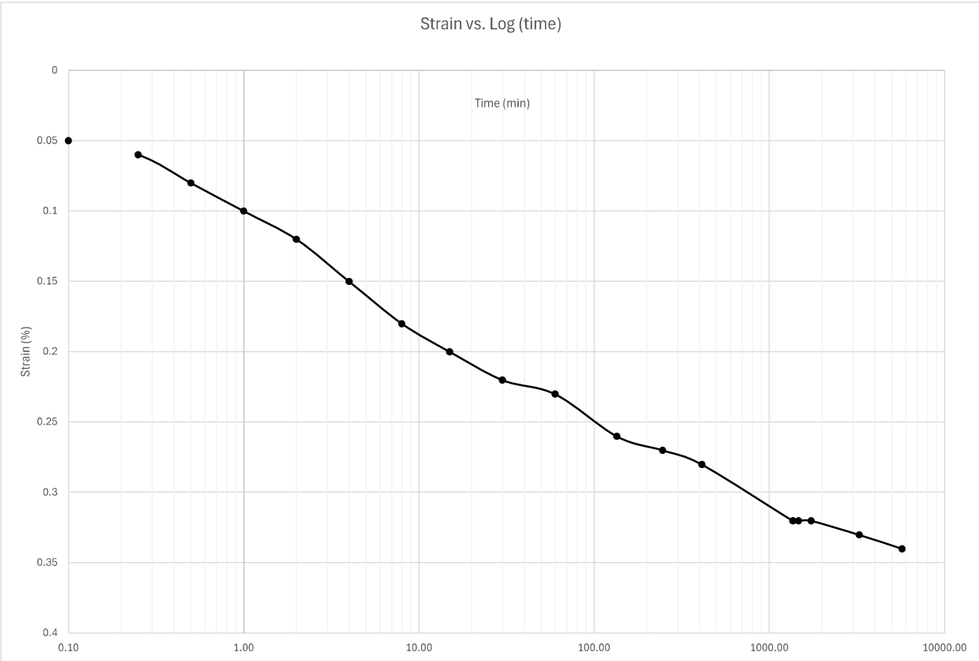


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	8000	0.7005	-0.0004	0.3356	-0.04004	1.509
1			6	0.10	0.32	8000	0.7008	-1E-04	0.3353	-0.01001	1.506
2			15	0.25	0.50	8000	0.7011	0.0002	0.335	0.02002	1.504
3			30	0.50	0.71	8000	0.7013	0.0004	0.3348	0.04004	1.503
4		1		1.00	1.00	8000	0.7022	0.0013	0.3339	0.13013	1.496
5		2		2.00	1.41	8000	0.7032	0.0023	0.3329	0.23023	1.488
6		4		4.00	2.00	8000	0.7038	0.0029	0.3323	0.29029	1.484
7		8		8.00	2.83	8000	0.7044	0.0035	0.3317	0.35035	1.479
8		15		15.00	3.87	8000	0.7049	0.004	0.3312	0.4004	1.476
9		28		28.00	5.29	8000	0.7054	0.0045	0.3307	0.45045	1.472
10	1	16		76.00	8.72	8000	0.7057	0.0048	0.3304	0.48048	1.470
11	1	59		119.00	10.91	8000	0.7058	0.0049	0.3303	0.49049	1.469
12	4	16		256.00	16.00	8000	0.7062	0.0053	0.3299	0.530531	1.466
13	7	2		422.00	20.54	8000	0.7064	0.0055	0.3297	0.550551	1.465
14	9	17		557.00	23.60	8000	0.7066	0.0057	0.3295	0.570571	1.463
15	23	21		1401.00	37.43	8000	0.7071	0.0062	0.329	0.620621	1.459
16	25	56		1556.00	39.45	8000	0.7072	0.0063	0.3289	0.630631	1.459
17	47	47		2867.00	53.54	8000	0.7076	0.0067	0.3285	0.670671	1.456
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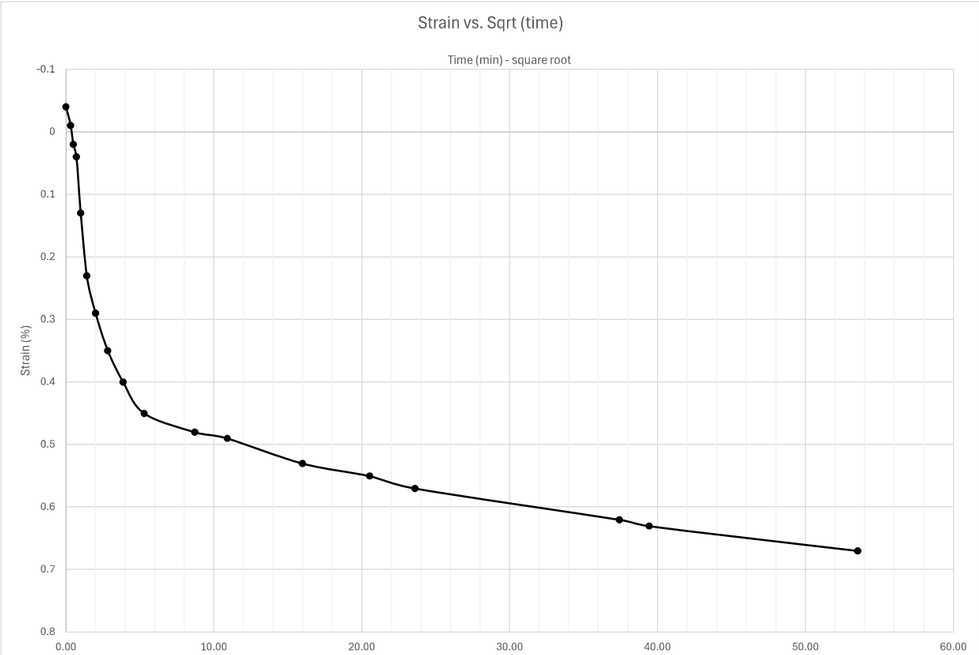
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

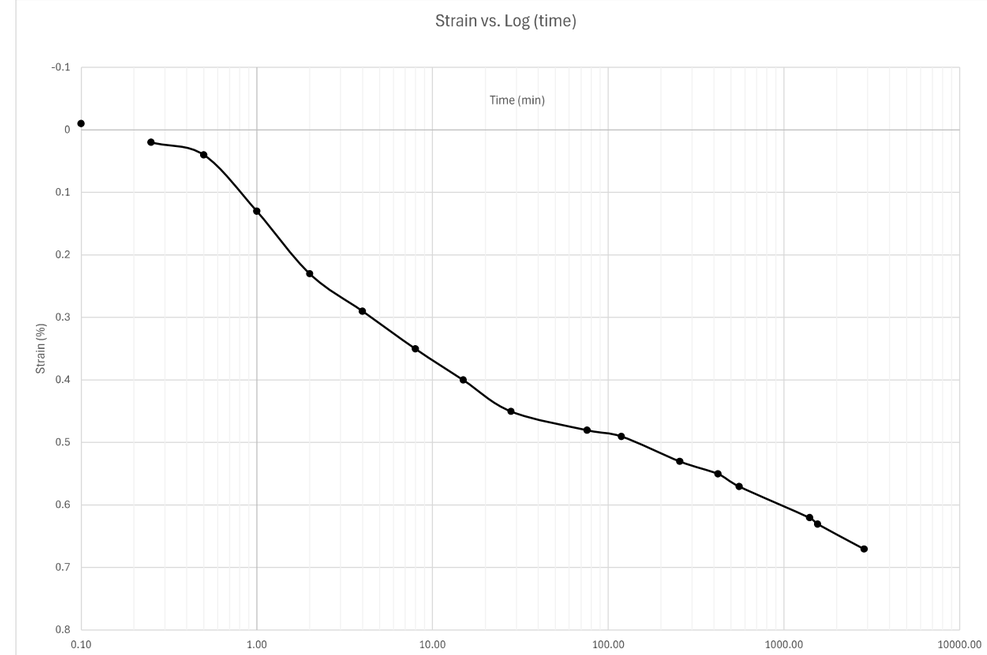
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	16000	0.7076	-0.0006	0.3291	-0.06006	1.460
1			6	0.10	0.32	16000	0.7097	0.0015	0.327	0.15015	1.444
2			15	0.25	0.50	16000	0.7101	0.0019	0.3266	0.19019	1.441
3			30	0.50	0.71	16000	0.7105	0.0023	0.3262	0.23023	1.438
4		1		1.00	1.00	16000	0.7112	0.003	0.3255	0.3003	1.433
5		2		2.00	1.41	16000	0.712	0.0038	0.3247	0.38038	1.427
6		4		4.00	2.00	16000	0.713	0.0048	0.3237	0.48048	1.420
7		8		8.00	2.83	16000	0.7141	0.0059	0.3226	0.590591	1.411
8		15		15.00	3.87	16000	0.7151	0.0069	0.3216	0.690691	1.404
9		30		30.00	5.48	16000	0.7161	0.0079	0.3206	0.790791	1.396
10	1			60.00	7.75	16000	0.717	0.0088	0.3197	0.880881	1.390
11	2			120.00	10.95	16000	0.7179	0.0097	0.3188	0.970971	1.383
12	4	59		299.00	17.29	16000	0.7191	0.0109	0.3176	1.091091	1.374
13	6	42		402.00	20.05	16000	0.7195	0.0113	0.3172	1.131131	1.371
14	22	51		1371.00	37.03	16000	0.7218	0.0136	0.3149	1.361361	1.354
15	24	50		1490.00	38.60	16000	0.7219	0.0137	0.3148	1.371371	1.353
16	27	59		1679.00	40.98	16000	0.7221	0.0139	0.3146	1.391391	1.352
17	31	10		1870.00	43.24	16000	0.7223	0.0141	0.3144	1.411411	1.350
18	47	2		2822.00	53.12	16000	0.723	0.0148	0.3137	1.481481	1.345
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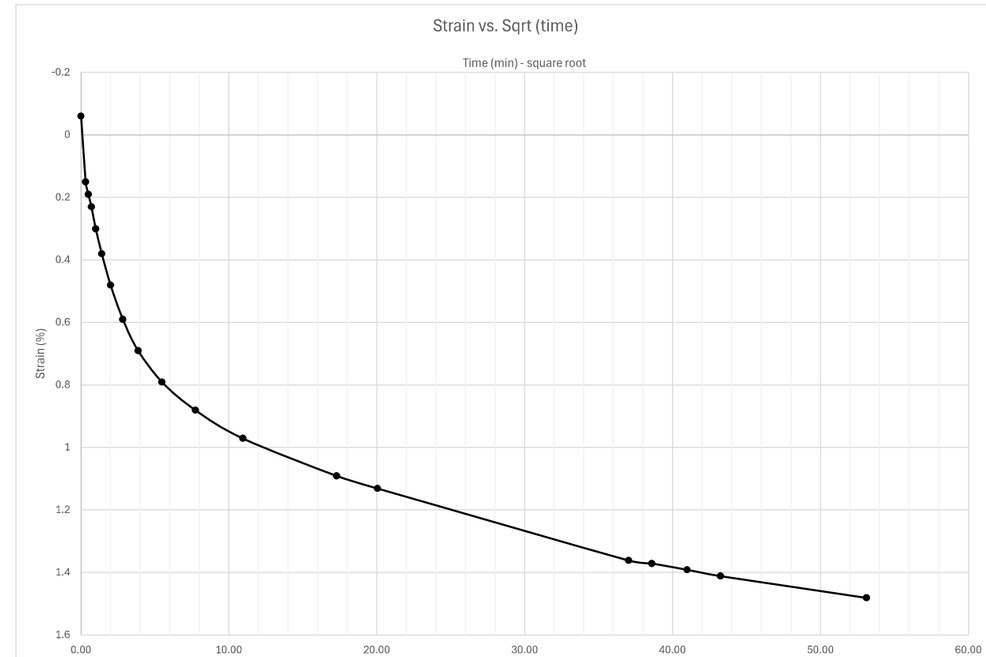
Sequence 13: 16000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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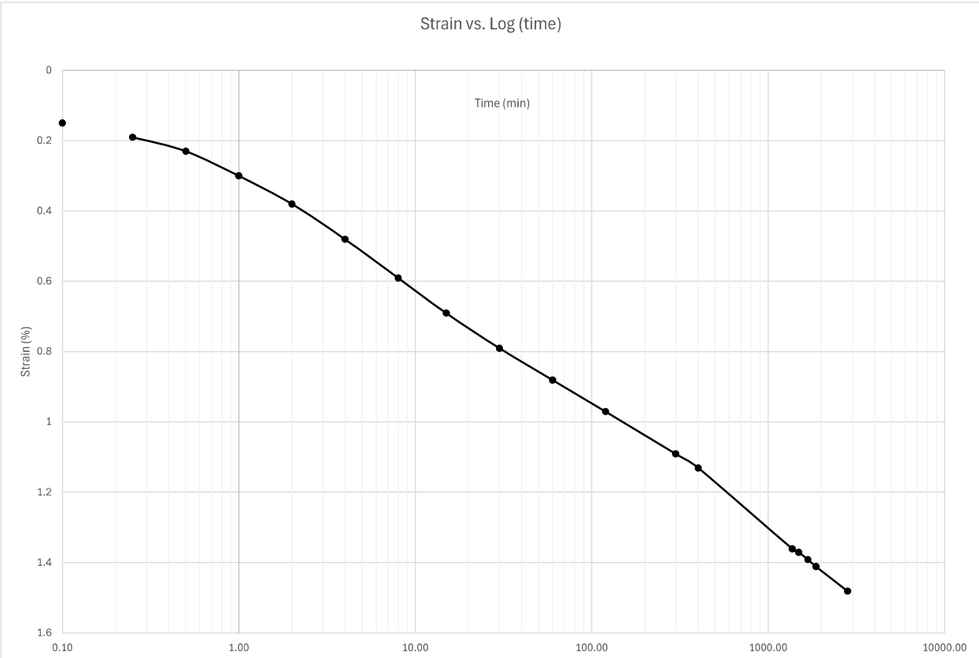
Sequence 13: 16000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	32000	0.723	-0.001	0.3147	-0.1001	1.352
1			6	0.10	0.32	32000	0.7265	0.0025	0.3112	0.25025	1.326
2			15	0.25	0.50	32000	0.7273	0.0033	0.3104	0.33033	1.320
3			30	0.50	0.71	32000	0.7282	0.0042	0.3095	0.42042	1.314
4		1		1.00	1.00	32000	0.7296	0.0056	0.3081	0.560561	1.303
5		2		2.00	1.41	32000	0.7315	0.0075	0.3062	0.750751	1.289
6		4		4.00	2.00	32000	0.7342	0.0102	0.3035	1.021021	1.269
7		8		8.00	2.83	32000	0.7377	0.0137	0.3	1.371371	1.243
8		15		15.00	3.87	32000	0.7418	0.0178	0.2959	1.781782	1.212
9		30		30.00	5.48	32000	0.7468	0.0228	0.2909	2.282282	1.174
10	1			60.00	7.75	32000	0.7518	0.0278	0.2859	2.782783	1.137
11	2			120.00	10.95	32000	0.7557	0.0317	0.282	3.173173	1.108
12	4			240.00	15.49	32000	0.7589	0.0349	0.2788	3.493493	1.084
13	5	28		328.00	18.11	32000	0.7601	0.0361	0.2776	3.613614	1.075
14	31	13		1873.00	43.28	32000	0.7657	0.0417	0.272	4.174174	1.033
15	71	32		4292.00	65.51	32000	0.7681	0.0441	0.2696	4.414414	1.015
16	74	5		4445.00	66.67	32000	0.7683	0.0443	0.2694	4.434434	1.014
17	78	46		4726.00	68.75	32000	0.7685	0.0445	0.2692	4.454454	1.012
18	95			5700.00	75.50	32000	0.7689	0.0449	0.2688	4.494494	1.009
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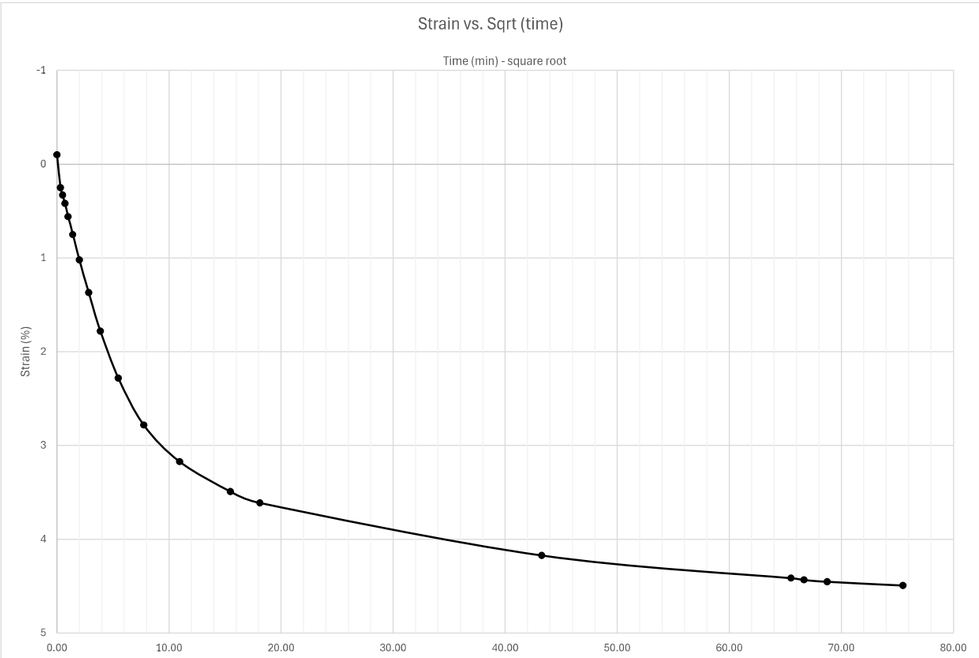
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_3400, ST-20, 10-12 ft

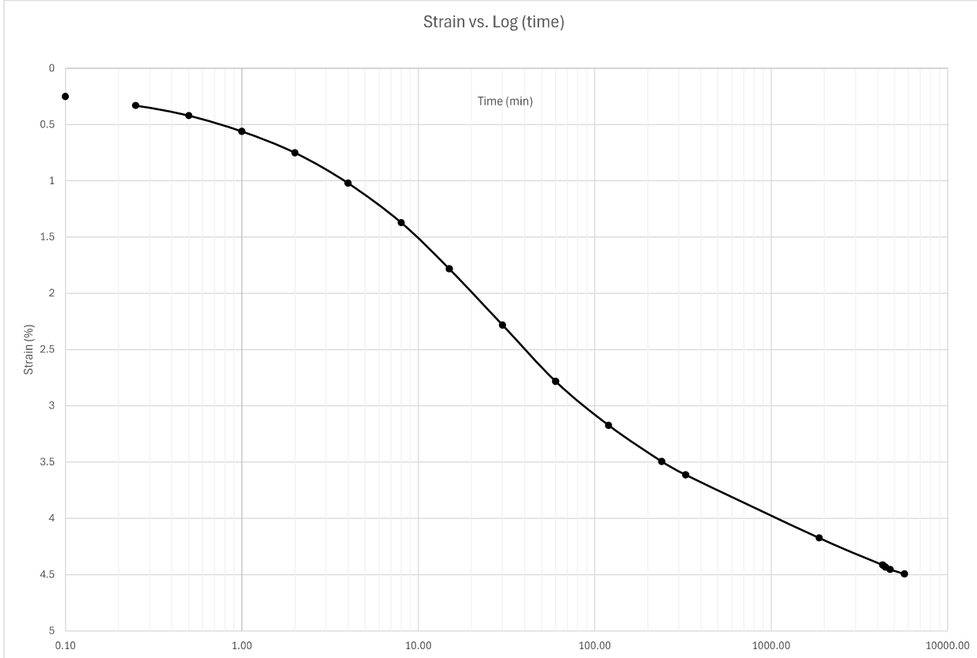
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_3400, ST-20, 10-12 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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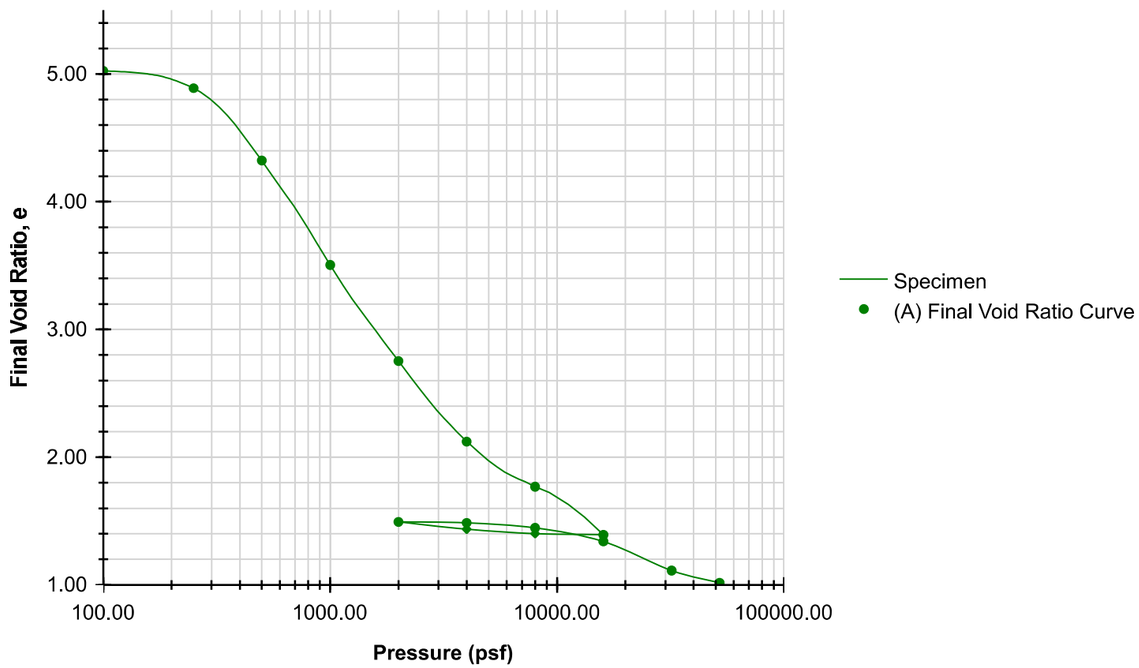
Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 2/20/2026
Moisture (%)	244.0	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	19.5	77.2			
Saturation (%)	89.8	0.0*			
Void Ratio	5.58	0.66*	**Specific Gravity**	2.054	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-17	**Boring Number**	Y1RPC_3600	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC_3600			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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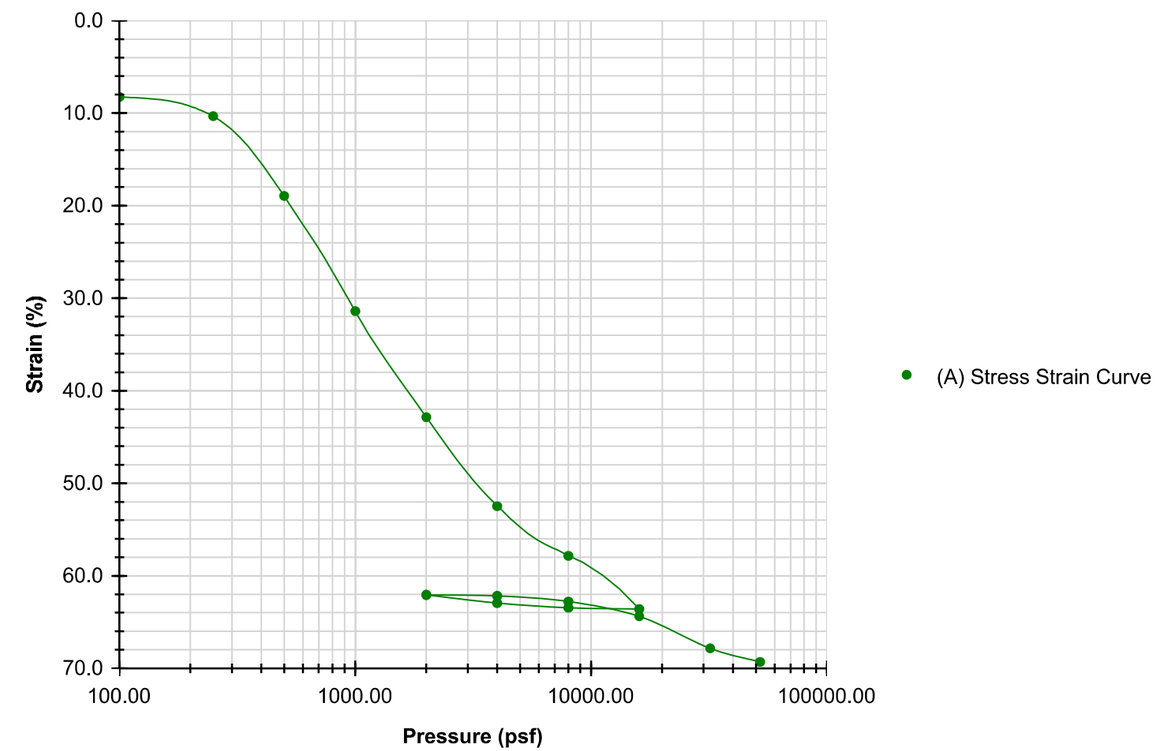
SHEET 535

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 2/20/2026
Moisture (%)	244.0	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	19.5	77.2			
Saturation (%)	89.8	0.0*			
Void Ratio	5.58	0.66*	**Specific Gravity**	2.054	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-17	**Boring Number**	Y1RPC_3600	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC_3600			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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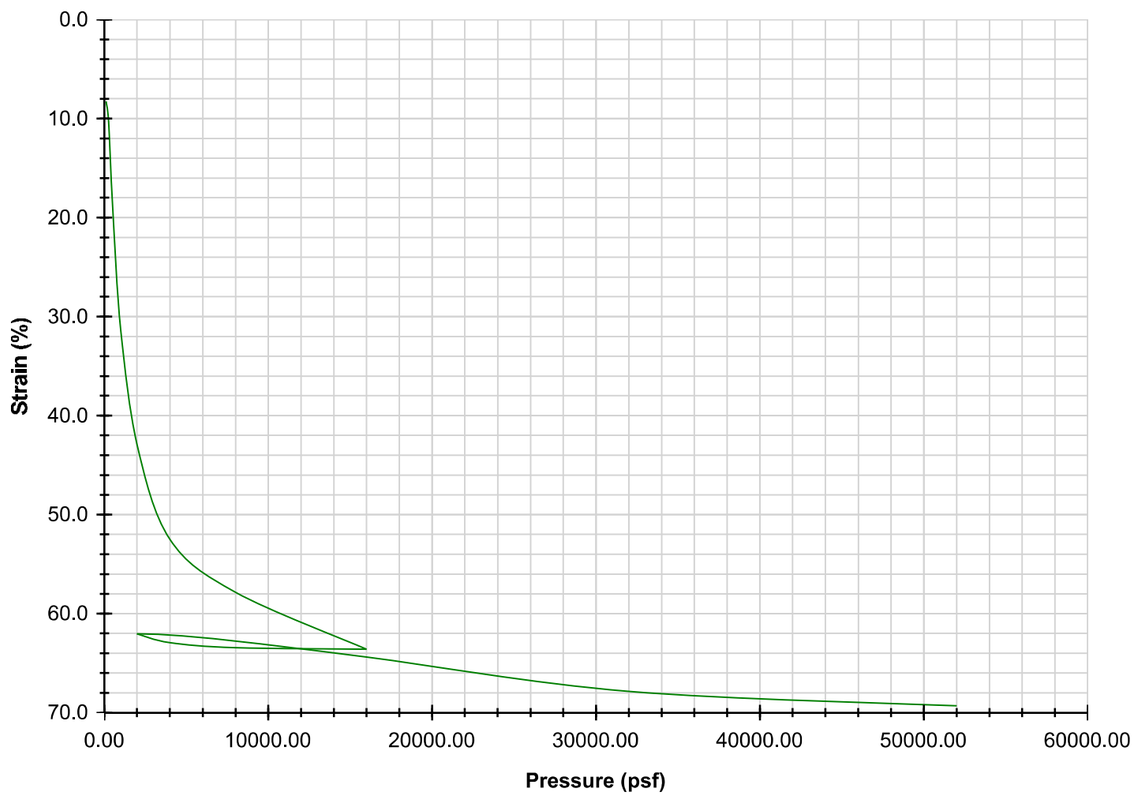
Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 2/20/2026
Moisture (%)	244.0	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	19.5	77.2			
Saturation (%)	89.8	0.0*			
Void Ratio	5.58	0.66*	**Specific Gravity**	2.054	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-17	**Boring Number**	Y1RPC_3600	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC_3600			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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Coefficients of Consolidation

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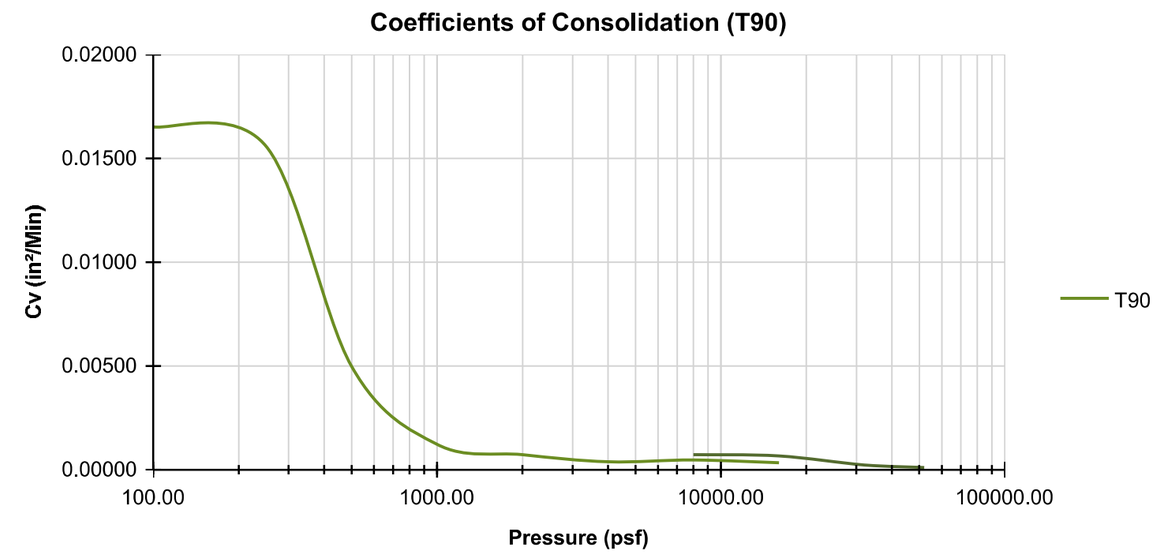

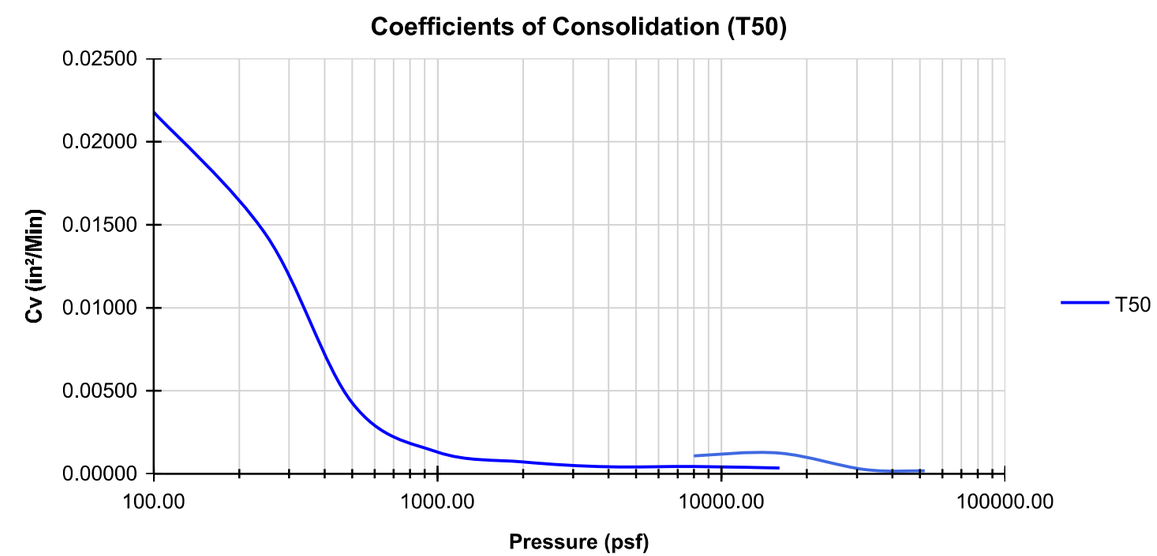

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

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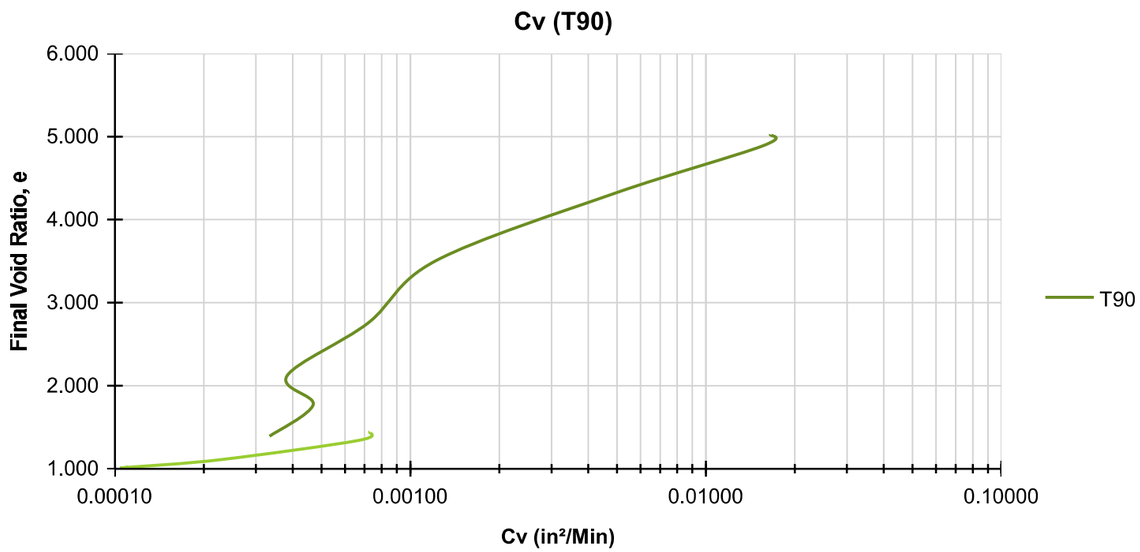
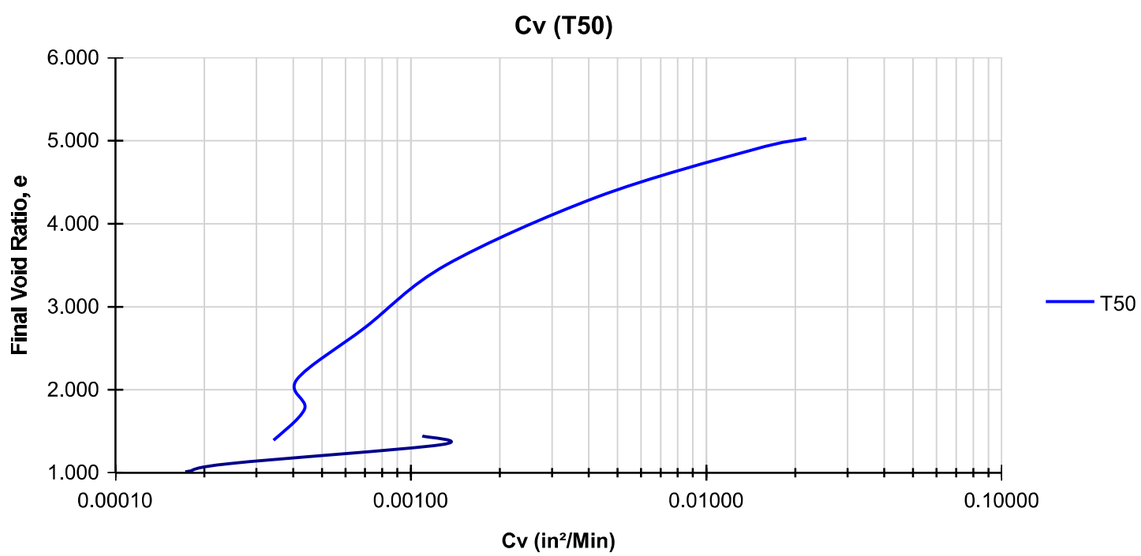
SHEET 537

Cv - Void Ratio

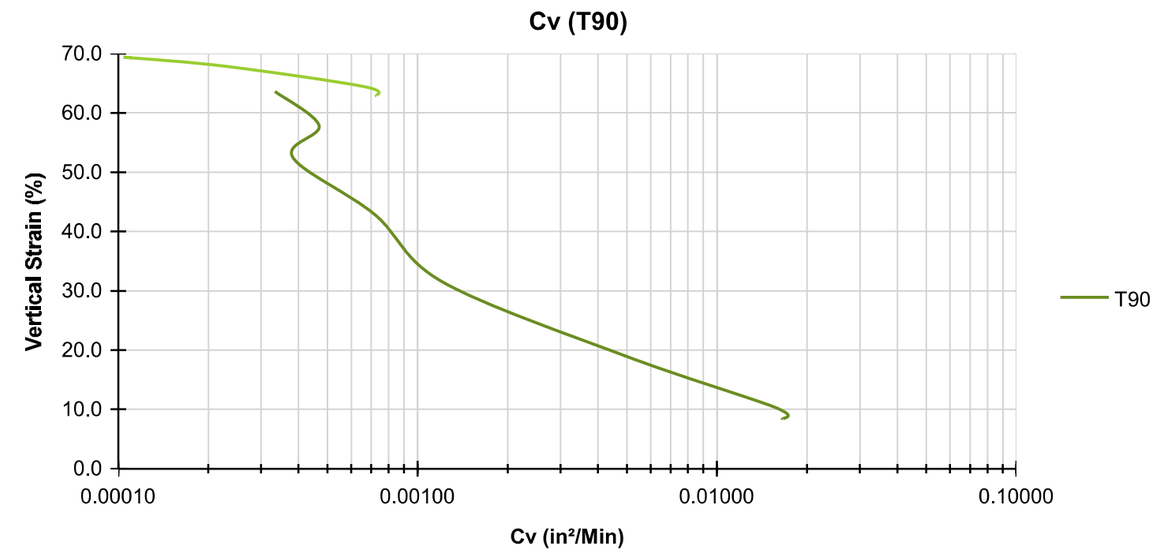
ASTM D2435

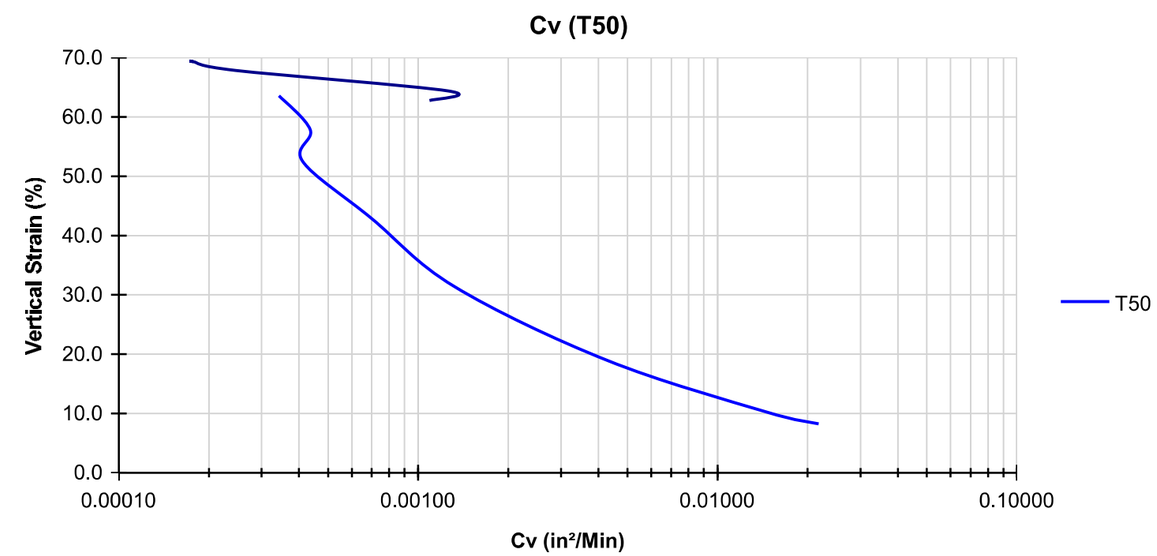




Cv - Vertical Strain

ASTM D2435





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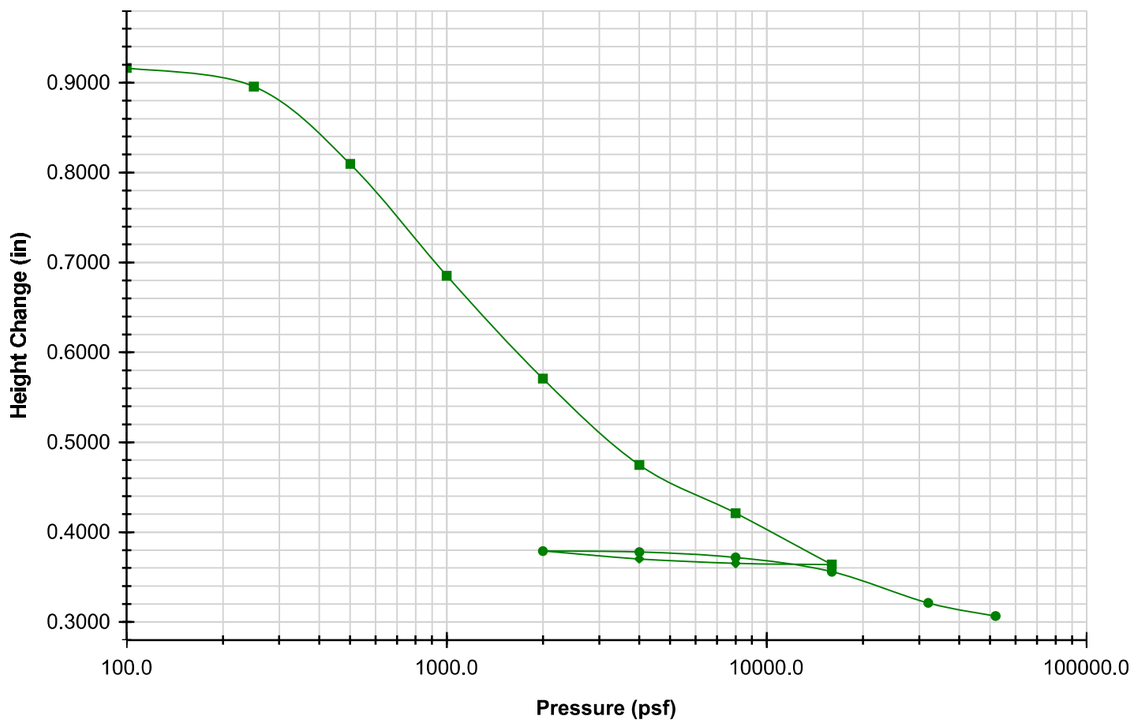
SHEET 538

Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 2/20/2026
Moisture (%)	244.0	0.0*	**Plastic Limits**	NP	
Dry Density (pcf)	19.5	77.2			
Saturation (%)	89.8	0.0*			
Void Ratio	5.58	0.66*	**Specific Gravity**	2.054	MEASURED

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-17	**Boring Number**	Y1RPC_3600	
Project	Replace Bridge No. 13 over Cape Fear River on US 421			
Client				
Location	Alignment Y1RPC_3600			

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

Summary

ASTM D2435

Sample Description	Black Muck			
Project Number	25-051.05	**Depth (ft)**	14-16	**Remarks**
Sample Number	ST-17	**Boring Number**	Y1RPC_3600	
Project	*Replace Bridge No. 13 over Cape Fear River on US 421*			
Client				
Location	Alignment Y1RPC_3600			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	0.9990	0.0000	0.0	5.580	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0826	0.9164	0.7643	8.3	5.026	0.180	0.031	0.01652	0.02178	ENABLED
2	250.00	0.1032	0.8958	0.7437	10.3	4.890	0.182	0.037	0.01558	0.01435	ENABLED
3	500.00	0.1894	0.8096	0.6575	19.0	4.323	0.466	0.090	0.00497	0.00427	ENABLED
4	1,000.00	0.3138	0.6852	0.5331	31.4	3.505	1.361	0.292	0.00122	0.00132	ENABLED
5	2,000.00	0.4283	0.5707	0.4186	42.9	2.753	1.601	0.382	0.00072	0.00070	ENABLED
6	4,000.00	0.5243	0.4747	0.3226	52.5	2.121	2.080	0.450	0.00038	0.00041	ENABLED
7	8,000.00	0.5779	0.4211	0.2690	57.8	1.769	1.338	0.334	0.00047	0.00044	ENABLED
8	16,000.00	0.6352	0.3638	0.2117	63.6	1.392	1.401	0.316	0.00033	0.00034	ENABLED
9	8,000.00	0.6338	0.3652	0.2131	63.4	1.401	0.000	0.000	0.00000	0.00000	ENABLED
10	4,000.00	0.6287	0.3703	0.2182	62.9	1.435	0.000	0.000	0.00000	0.00000	ENABLED
11	2,000.00	0.6199	0.3791	0.2270	62.1	1.493	0.000	0.000	0.00000	0.00000	ENABLED
12	4,000.00	0.6210	0.3780	0.2259	62.2	1.485	0.000	0.000	0.00000	0.00000	ENABLED
13	8,000.00	0.6271	0.3719	0.2198	62.8	1.445	0.671	0.104	0.00073	0.00109	ENABLED
14	16,000.00	0.6432	0.3558	0.2037	64.4	1.339	0.673	0.083	0.00066	0.00126	ENABLED
15	32,000.00	0.6778	0.3212	0.1691	67.8	1.112	1.579	0.345	0.00023	0.00025	ENABLED
16	52,000.00	0.6923	0.3067	0.1546	69.3	1.016	2.999	0.648	0.00011	0.00018	ENABLED

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INFRASTRUCTURE
CONSULTING & ENGINEERING

Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over Cape Fear River on US 421
Project Number:	25-051.05
Job Number:	
Test Date:	2/20/2026

Sampling Date:	5/5/2026
Sample Number:	ST-17
Depth (ft)	14-16
Boring Number:	Y1RPC_3600
Location:	Alignment Y1RPC_3600
Client Name:	
Remarks:	

Specific Gravity:	2.054	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	106.3
Sampling Method:	Undisturbed	Soil Classification:	A-1-a (0)		
Specimen Description:	Black Muck				

Parameters	Initial	Final
Height (in)	0.9990	0.3067
Height Source	NA	TEST RESULTS
Diameter (in)	2.5080	NA
Area (in^2)	4.940	NA
Volume (in^3)	4.9353	1.5150
Weight of Container (g)	60.4	0.0*
Weight of Wet Soil + Container (g)	222.0	0.0*
Weight of Dry Soil + Container (g)	107.4	0.0*
Moisture Content (%)	244.0	0.0*
Moist Weight + Ring Weight (g)	193.2	137.0
Dry Density (pcf)	19.5	77.2
Wet Density (pcf)	67.0	77.2
Saturation (%)	89.8	0.0*
Void Ratio	5.6	0.7*

*consolidation test sample was used to perform additional testing (organic content and specific gravity); therefore, final moisture content not obtained

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SHEET 539

INFRASTRUCTURE
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Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation Test		
Other Associated Tests:	Classification, Organic Content, Unit Weight, Specific Gravity		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	2/20/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0562
Specimen Description:	Black Muck		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	50.00

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	3.0-5.0
Sample Number	ST-39	Boring Number	Y1RPC_4000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0176	0.1145	0.9814	0.018	4.901	15.21	-	0.01342	-
2	500	0.0984	0.1146	0.9006	0.098	4.415	42.25	32	0.00407	0.001248
3	1000	0.2463	0.1147	0.7527	0.247	3.526	201.64	50	0.00060	0.000558
4	2000	0.3658	0.1149	0.6332	0.366	2.808	198.81	50	0.00043	0.000395
5	4000	0.4674	0.1151	0.5316	0.468	2.197	156.25	39.5	0.00038	0.000352
6	2000	0.4611	0.1149	0.5379	0.462	2.234	-	-	-	-
7	1000	0.4493	0.1147	0.5497	0.450	2.305	-	-	-	-
8	500	0.4294	0.1146	0.5696	0.430	2.425	-	-	-	-
9	1000	0.4361	0.1147	0.5629	0.437	2.385	37.21	10	0.00181	0.00156
10	2000	0.451	0.1149	0.548	0.451	2.295	38.44	12.5	0.00166	0.00118
11	4000	0.4798	0.1152	0.5192	0.480	2.122	33.64	12.2	0.00170	0.00109
12	8000	0.5436	0.1158	0.4554	0.544	1.738	110.25	32	0.00040	0.00032
13	16000	0.611	0.1166	0.388	0.612	1.333	100	28	0.00032	0.00026
14	32000	0.6656	0.1178	0.3334	0.666	1.005	96.04	26.5	0.00025	0.00021
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 4/20/2026
Machine Apparatus: 4
Technician: KSB

Sampling Date: 4/14/2026
Sample Number: ST-39
Depth (ft): 3.0-5.0
Boring Number: Y1RPC_4000
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 2.342
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-4 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.84

Parameters	Initial	Final
Height (in)	0.999	0.3334
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.646
Weight of Container (g)	60.35	59.61
Weight of Wet Soil + Container (g)	242.83	115.16
Weight of Dry Soil + Container (g)	120	89.86
Moisture Content (%)	205.92	83.64
Moist Weight + Ring Weight (g)	199.22	159.02
Dry Mass (g)	31.51	30.59
Water Content (calc from spec)	205.92	83.64
Dry Density (pcf)	24.34	70.82
Wet Density (pcf)	74.46	130.05
Volume of Solids (in^3)	0.82	0.80
Height of Solids (in)	0.17	0.16
Void Ratio	5.007	1.005

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

Y1RPC_4000, ST-39, 3.0-5.0 ft

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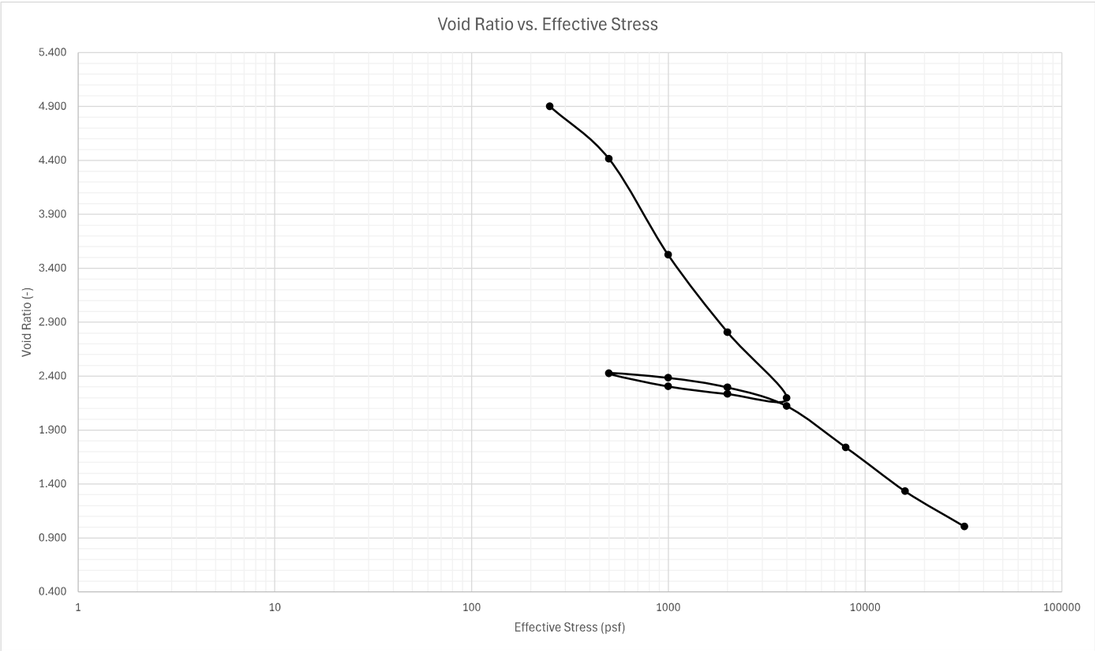
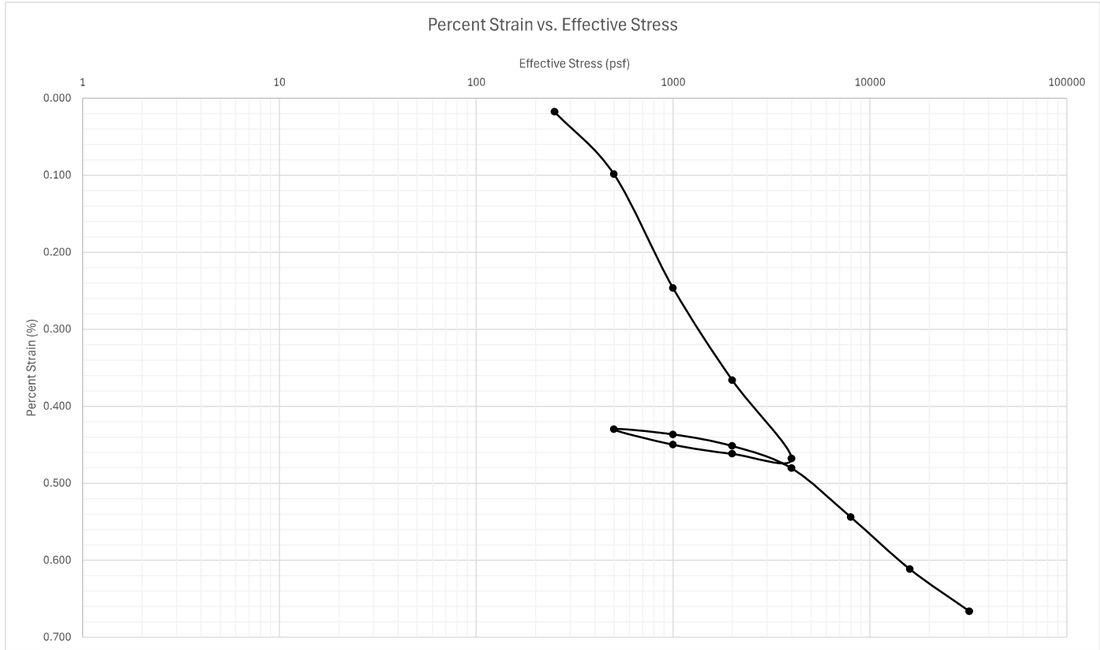


Percent Strain vs. Effective Stress

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0684	0	0.999	0	5.007
1			15	0.25	0.5	250	0.0693	0.0009	0.9981	0.09009	5.002
2			30	0.5	0.707106781	250	0.0704	0.002	0.997	0.2002	4.995
3		1		1	1	250	0.0716	0.0032	0.9958	0.32032	4.988
4		2		2	1.414213562	250	0.0729	0.0045	0.9945	0.45045	4.980
5		4		4	2	250	0.0745	0.0061	0.9929	0.610611	4.970
6		8		8	2.828427125	250	0.0765	0.0081	0.9909	0.810811	4.958
7		15		15	3.872983346	250	0.0782	0.0098	0.9892	0.980981	4.948
8		28		28	5.291502622	250	0.0798	0.0114	0.9876	1.141141	4.939
9	1	44		104	10.19803903	250	0.0817	0.0133	0.9857	1.331331	4.927
10	4	42		282	16.79285562	250	0.0831	0.0147	0.9843	1.471471	4.919
11	20	3		1203	34.68429039	250	0.0846	0.0162	0.9828	1.621622	4.910
12	23	55		1435	37.88139385	250	0.0851	0.0167	0.9823	1.671672	4.907
13	25	39		1539	39.23009049	250	0.0852	0.0168	0.9822	1.681682	4.906
14	45	10		2710	52.05766034	250	0.0858	0.0174	0.9816	1.741742	4.903
15	46	49		2809	53	250	0.086	0.0176	0.9814	1.761762	4.901
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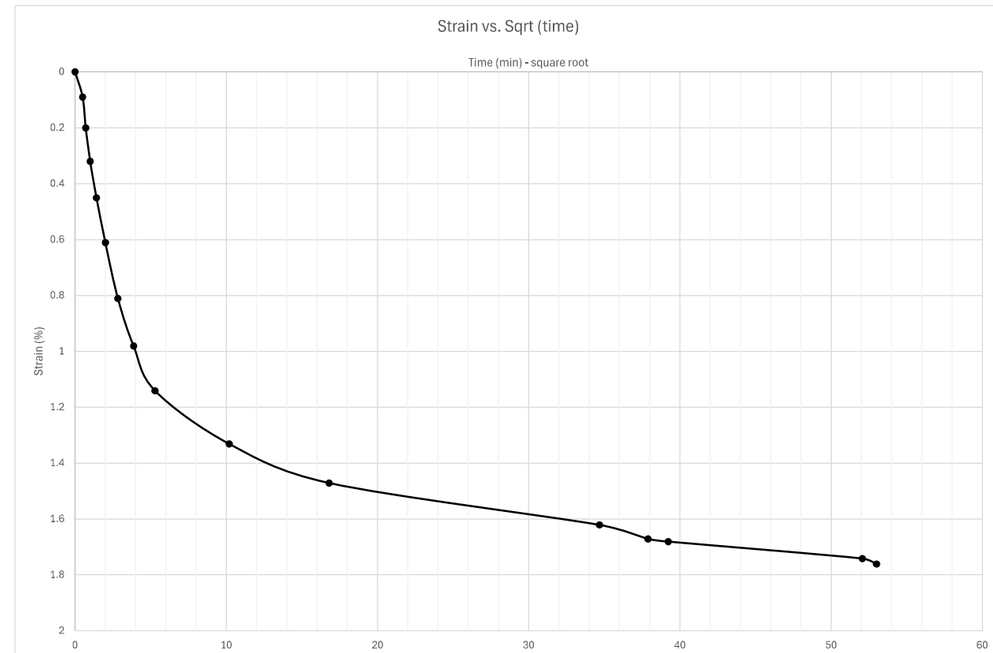
Sequence 1: 250 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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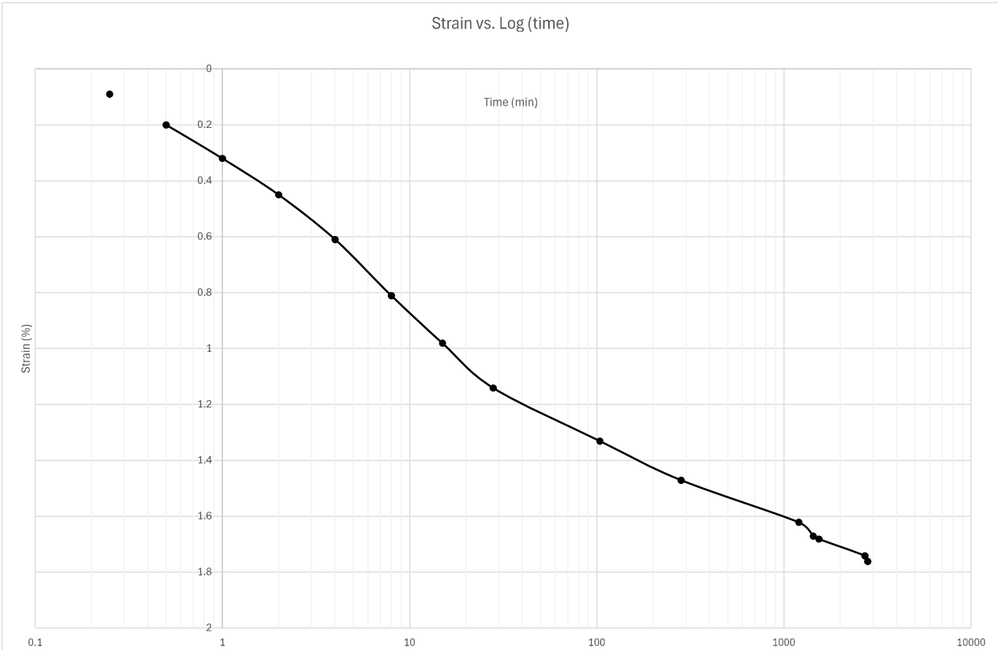
Sequence 1: 250 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0860	-0.0001	0.9815	-0.01001	4.902
1			6	0.1	0.32	500	0.0904	0.0043	0.9771	0.43043	4.875
2			15	0.25	0.50	500	0.0915	0.0054	0.9760	0.540541	4.869
3			30	0.5	0.71	500	0.0928	0.0067	0.9747	0.670671	4.861
4		1		1	1.00	500	0.0949	0.0088	0.9726	0.880881	4.848
5		2		2	1.41	500	0.0975	0.0114	0.9700	1.141141	4.833
6		4		4	2.00	500	0.1010	0.0149	0.9665	1.491491	4.812
7		8		8	2.83	500	0.1059	0.0198	0.9616	1.981982	4.782
8		15		15	3.87	500	0.1115	0.0254	0.9560	2.542543	4.749
9		30		30	5.48	500	0.1187	0.0326	0.9488	3.263263	4.705
10	1			60	7.75	500	0.1269	0.0408	0.9406	4.084084	4.656
11	2			120	10.95	500	0.1353	0.0492	0.9322	4.924925	4.605
12	3	56		236	15.36	500	0.1431	0.0570	0.9244	5.705706	4.559
13	6	12		372	19.29	500	0.1482	0.0621	0.9193	6.216216	4.528
14	22	26		1346	36.69	500	0.1600	0.0739	0.9075	7.397397	4.457
15	24	3		1443	37.99	500	0.1607	0.0746	0.9068	7.467467	4.453
16	29	56		1796	42.38	500	0.1630	0.0769	0.9045	7.697698	4.439
17	46	25		2785	52.77	500	0.1669	0.0808	0.9006	8.088088	4.415
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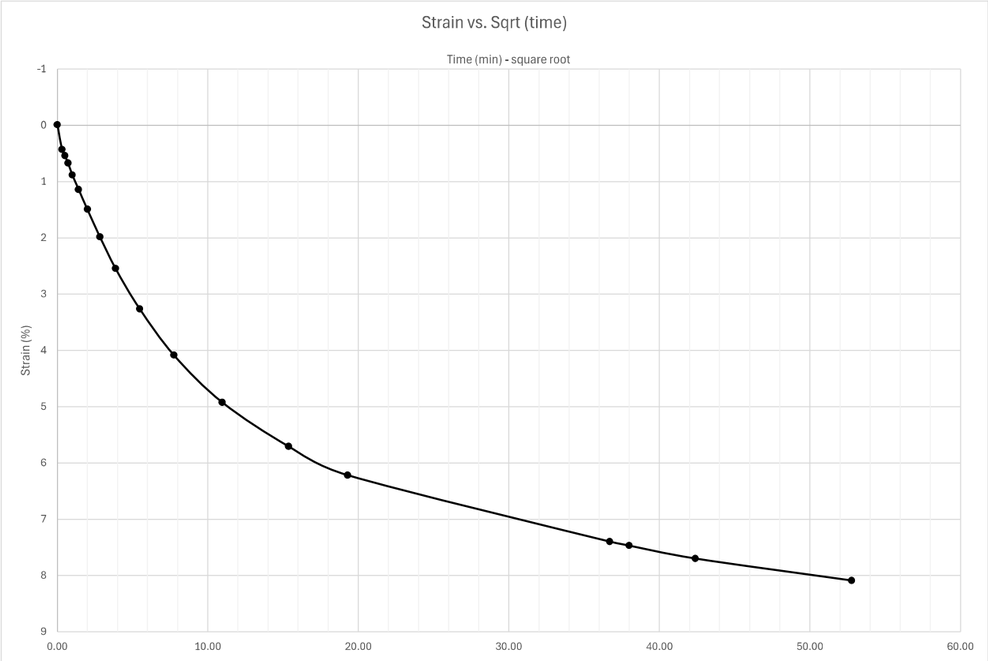
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

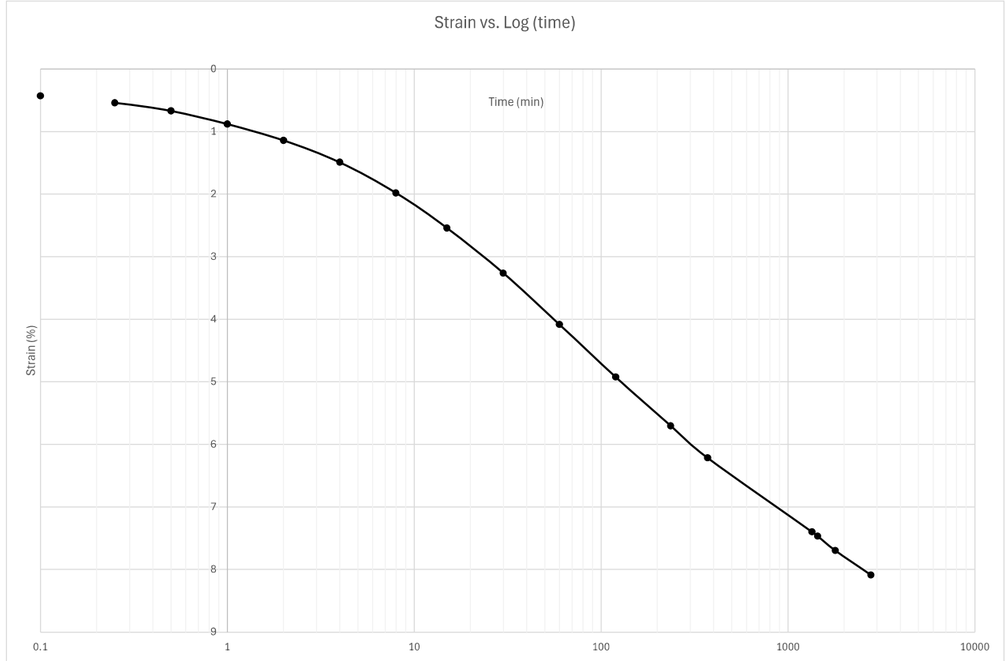
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.1669	-0.0001	0.9007	-0.01001	4.416
1			6	0.10	0.32	1000	0.1707	0.0037	0.8969	0.37037	4.393
2			15	0.25	0.50	1000	0.1717	0.0047	0.8959	0.47047	4.387
3			30	0.50	0.71	1000	0.1728	0.0058	0.8948	0.580581	4.381
4		1		1.00	1.00	1000	0.1747	0.0077	0.8929	0.770771	4.369
5		2		2.00	1.41	1000	0.1778	0.0108	0.8898	1.081081	4.351
6		4		4.00	2.00	1000	0.1824	0.0154	0.8852	1.541542	4.323
7		8		8.00	2.83	1000	0.1892	0.0222	0.8784	2.222222	4.282
8		15		15.00	3.87	1000	0.1984	0.0314	0.8692	3.143143	4.227
9	1	12		72.00	8.49	1000	0.2382	0.0712	0.8294	7.127127	3.987
10	2	2		122.00	11.05	1000	0.255	0.088	0.8126	8.808809	3.886
11	4	5		245.00	15.65	1000	0.2751	0.1081	0.7925	10.82082	3.765
12	6	28		388.00	19.70	1000	0.2857	0.1187	0.7819	11.88188	3.702
13	24	25		1465.00	38.28	1000	0.3045	0.1375	0.7631	13.76376	3.589
14	71	29		4289.00	65.49	1000	0.3149	0.1479	0.7527	14.8048	3.526
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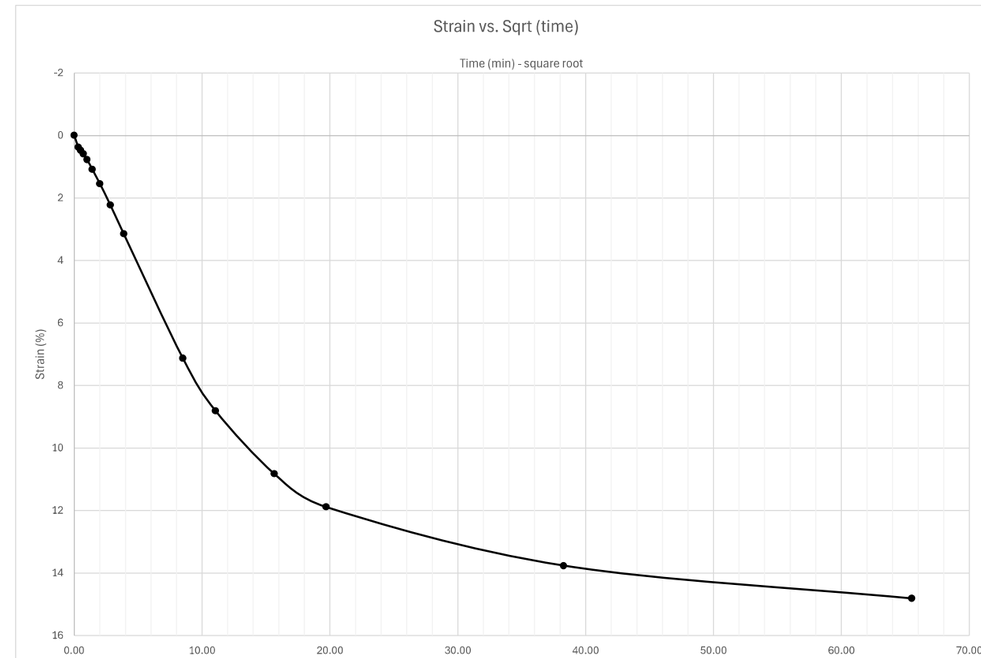
Sequence 3: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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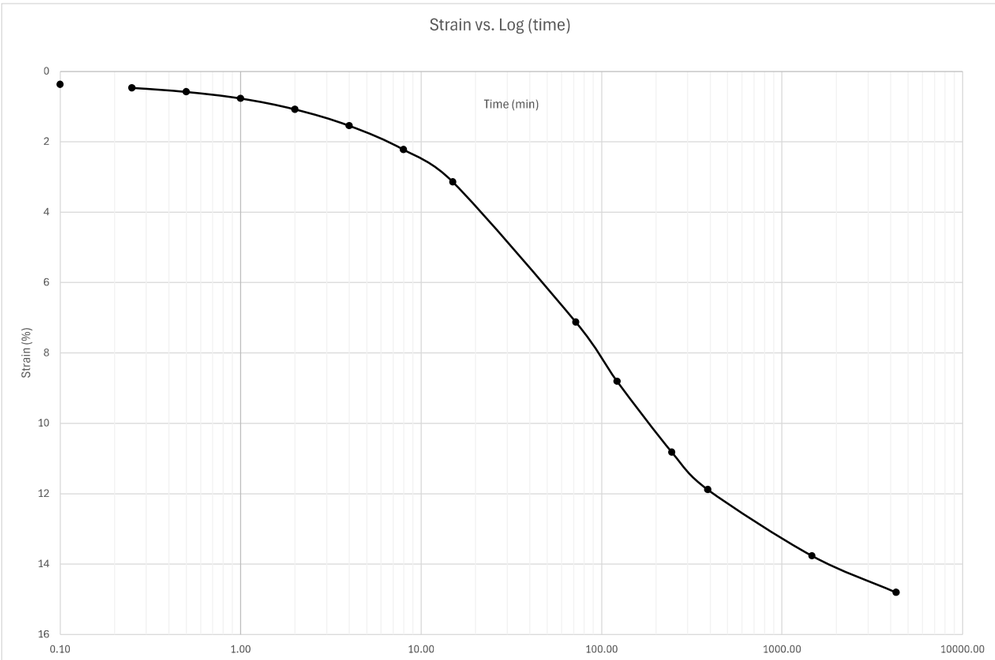
Sequence 3: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3149	-0.0002	0.7529	-0.02002	3.527
1			6	0.10	0.32	2000	0.3184	0.0033	0.7494	0.33033	3.506
2			15	0.25	0.50	2000	0.3194	0.0043	0.7484	0.43043	3.500
3			30	0.50	0.71	2000	0.3205	0.0054	0.7473	0.540541	3.494
4		1		1.00	1.00	2000	0.3222	0.0071	0.7456	0.710711	3.483
5		2		2.00	1.41	2000	0.3248	0.0097	0.743	0.970971	3.468
6		4		4.00	2.00	2000	0.3287	0.0136	0.7391	1.361361	3.444
7		8	5	8.08	2.84	2000	0.3348	0.0197	0.733	1.971972	3.408
8		15		15.00	3.87	2000	0.342	0.0269	0.7258	2.692693	3.364
9		26		26.00	5.10	2000	0.3511	0.036	0.7167	3.603604	3.310
10		42		42.00	6.48	2000	0.361	0.0459	0.7068	4.594595	3.250
11	1	12		72.00	8.49	2000	0.3746	0.0595	0.6932	5.955956	3.168
12	2	14		134.00	11.58	2000	0.3911	0.076	0.6767	7.607608	3.069
13	4	10		250.00	15.81	2000	0.4058	0.0907	0.662	9.079079	2.981
14	7	12		432.00	20.78	2000	0.4155	0.1004	0.6523	10.05005	2.922
15	22	44		1364.00	36.93	2000	0.4284	0.1133	0.6394	11.34134	2.845
16	29	33		1773.00	42.11	2000	0.4308	0.1157	0.637	11.58158	2.830
17	31	4		1864.00	43.17	2000	0.4313	0.1162	0.6365	11.63163	2.827
18	46	24		2784.00	52.76	2000	0.4346	0.1195	0.6332	11.96196	2.808
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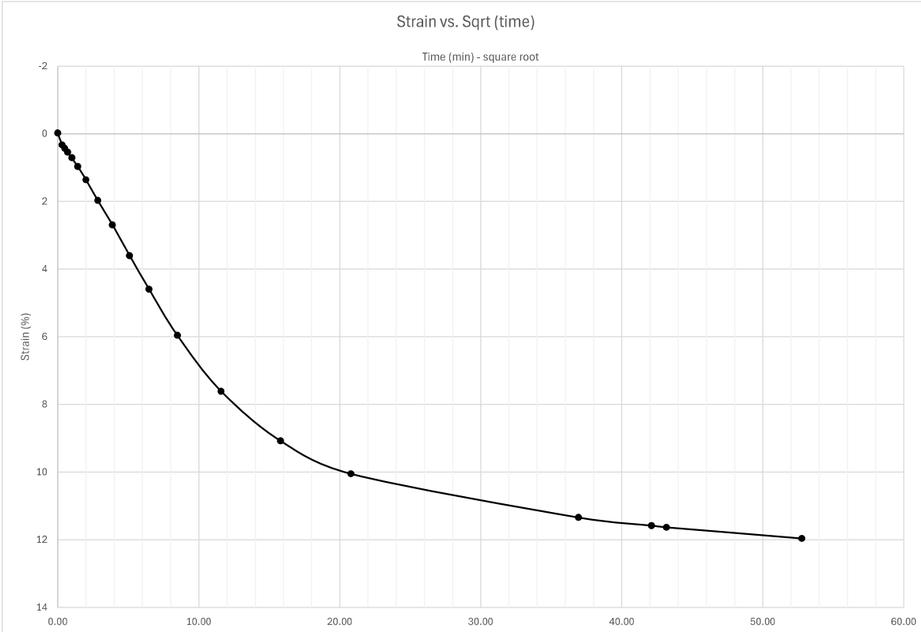
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

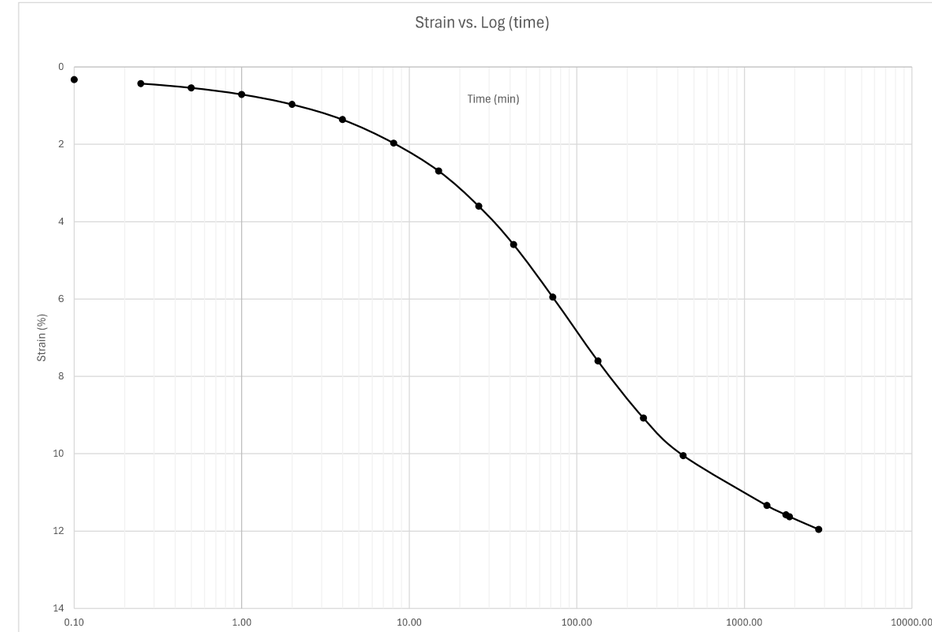
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4346	-0.0002	0.6334	-0.02002	2.809
1			6	0.10	0.32	4000	0.438	0.0032	0.63	0.32032	2.788
2			15	0.25	0.50	4000	0.4391	0.0043	0.6289	0.43043	2.782
3			30	0.50	0.71	4000	0.4403	0.0055	0.6277	0.550551	2.774
4		1		1.00	1.00	4000	0.4421	0.0073	0.6259	0.730731	2.764
5		2		2.00	1.41	4000	0.4448	0.01	0.6232	1.001001	2.747
6		4		4.00	2.00	4000	0.4483	0.0135	0.6197	1.351351	2.726
7		8		8.00	2.83	4000	0.454	0.0192	0.614	1.921922	2.692
8		14	30	14.50	3.81	4000	0.4608	0.026	0.6072	2.602603	2.651
9		28		28.00	5.29	4000	0.4708	0.036	0.5972	3.603604	2.591
10	1	24		84.00	9.17	4000	0.4942	0.0594	0.5738	5.945946	2.450
11	3	11		191.00	13.82	4000	0.5109	0.0761	0.5571	7.617618	2.350
12	7	17		437.00	20.90	4000	0.5225	0.0877	0.5455	8.778779	2.280
13	23	15		1395.00	37.35	4000	0.5319	0.0971	0.5361	9.71972	2.224
14	30	51		1851.00	43.02	4000	0.5339	0.0991	0.5341	9.91992	2.212
15	46	32		2792.00	52.84	4000	0.5364	0.1016	0.5316	10.17017	2.197
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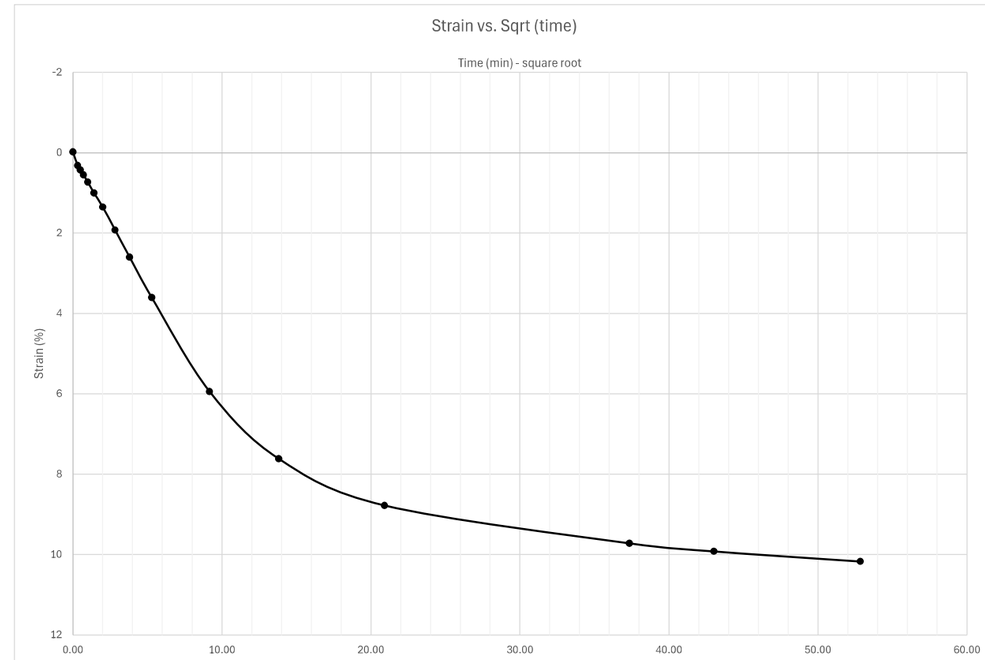
Sequence 5: 4000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

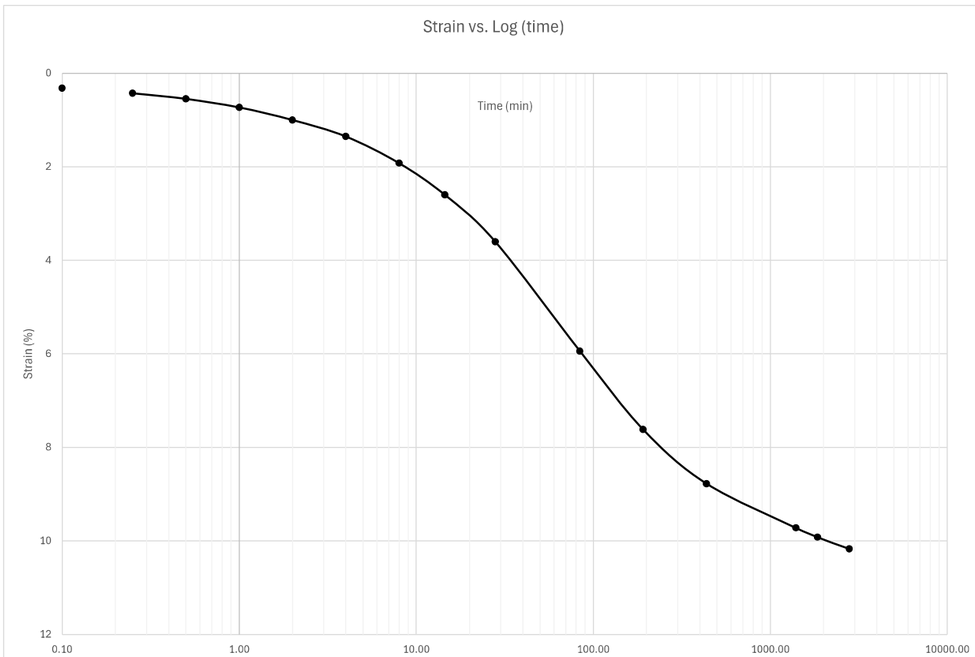


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5364	0.0002	0.5314	0.02002	2.195
1			6	0.10	0.32	2000	0.5359	-0.0003	0.5319	-0.03003	2.198
2			15	0.25	0.50	2000	0.5356	-0.0006	0.5322	-0.06006	2.200
3			30	0.50	0.71	2000	0.5354	-0.0008	0.5324	-0.08008	2.201
4		1		1.00	1.00	2000	0.5351	-0.0011	0.5327	-0.11011	2.203
5		2		2.00	1.41	2000	0.5347	-0.0015	0.5331	-0.15015	2.206
6		4		4.00	2.00	2000	0.5341	-0.0021	0.5337	-0.21021	2.209
7		8		8.00	2.83	2000	0.5334	-0.0028	0.5344	-0.28028	2.213
8		14		14.00	3.74	2000	0.5327	-0.0035	0.5351	-0.35035	2.218
9		30		30.00	5.48	2000	0.532	-0.0042	0.5358	-0.42042	2.222
10	2			120.00	10.95	2000	0.5311	-0.0051	0.5367	-0.510511	2.227
11	3	13		193.00	13.89	2000	0.5309	-0.0053	0.5369	-0.530531	2.228
12	23	42		1422.00	37.71	2000	0.5302	-0.006	0.5376	-0.600601	2.233
13	48	15		2895.00	53.81	2000	0.53	-0.0062	0.5378	-0.620621	2.234
14	70	24		4224.00	64.99	2000	0.5299	-0.0063	0.5379	-0.630631	2.234
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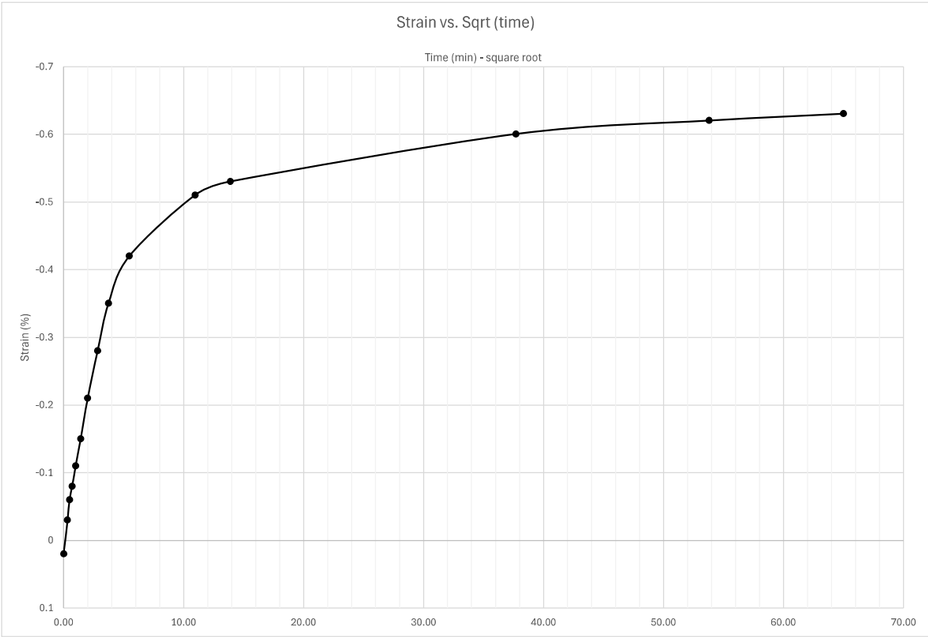
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

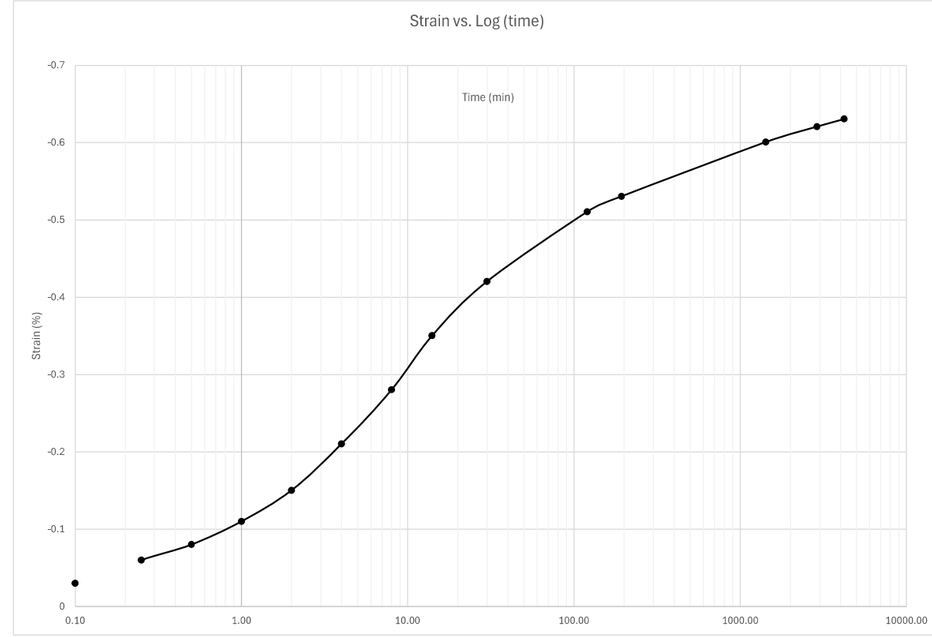
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5299	0.0002	0.5377	0.02002	2.233
1			6	0.10	0.32	1000	0.5291	-0.0006	0.5385	-0.06006	2.238
2			15	0.25	0.50	1000	0.529	-0.0007	0.5386	-0.07007	2.239
3			30	0.50	0.71	1000	0.5287	-0.001	0.5389	-0.1001	2.241
4		1		1.00	1.00	1000	0.5284	-0.0013	0.5392	-0.13013	2.242
5		2		2.00	1.41	1000	0.528	-0.0017	0.5396	-0.17017	2.245
6		5		5.00	2.24	1000	0.5271	-0.0026	0.5405	-0.26026	2.250
7		10		10.00	3.16	1000	0.5263	-0.0034	0.5413	-0.34034	2.255
8		16		16.00	4.00	1000	0.5257	-0.004	0.5419	-0.4004	2.259
9		32		32.00	5.66	1000	0.5244	-0.0053	0.5432	-0.530531	2.266
10		58		58.00	7.62	1000	0.5234	-0.0063	0.5442	-0.630631	2.272
11	2	55		175.00	13.23	1000	0.5215	-0.0082	0.5461	-0.820821	2.284
12	8	33		513.00	22.65	1000	0.52	-0.0097	0.5476	-0.970971	2.293
13	18	41		1121.00	33.48	1000	0.5192	-0.0105	0.5484	-1.051051	2.298
14	23	36		1416.00	37.63	1000	0.5188	-0.0109	0.5488	-1.091091	2.300
15	26	35		1595.00	39.94	1000	0.5186	-0.0111	0.549	-1.111111	2.301
16	43	15		2595.00	50.94	1000	0.5181	-0.0116	0.5495	-1.161161	2.304
17	47	51		2871.00	53.58	1000	0.5179	-0.0118	0.5497	-1.181181	2.305
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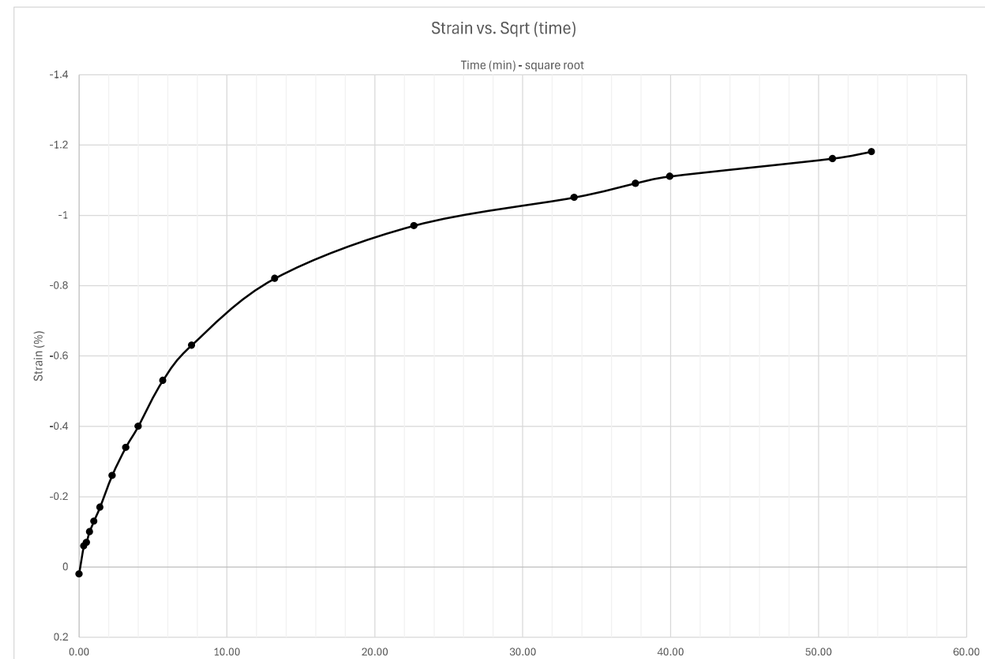
Sequence 7: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

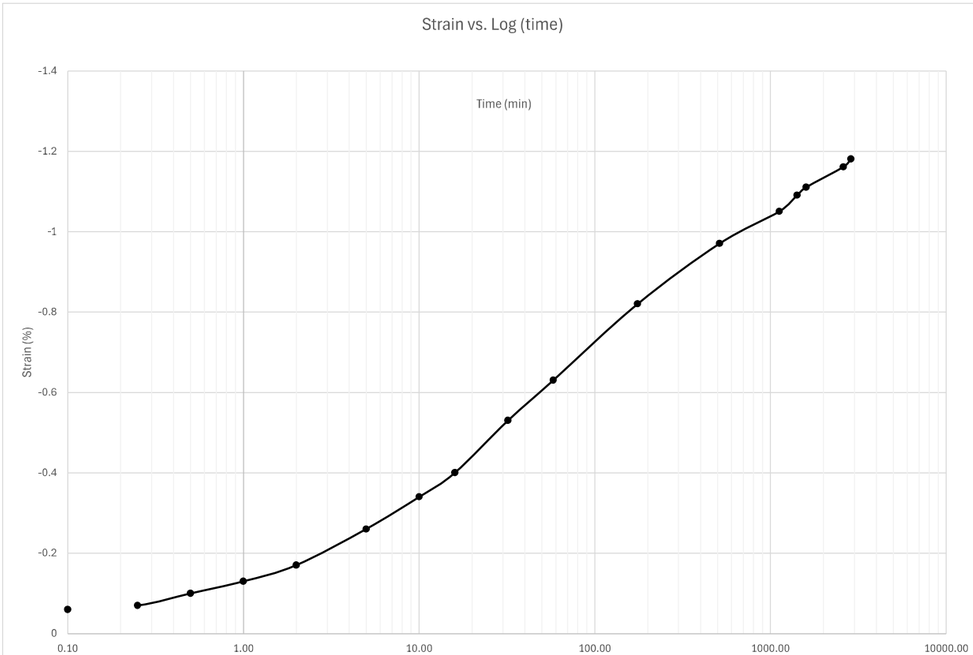


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.5179	0.0001	0.5496	0.01001	2.305
1			6	0.10	0.32	500	0.517	-0.0008	0.5505	-0.08008	2.310
2			15	0.25	0.50	500	0.5169	-0.0009	0.5506	-0.09009	2.311
3			30	0.50	0.71	500	0.5165	-0.0013	0.551	-0.13013	2.313
4		1		1.00	1.00	500	0.5164	-0.0014	0.5511	-0.14014	2.314
5		2		2.00	1.41	500	0.5162	-0.0016	0.5513	-0.16016	2.315
6		4		4.00	2.00	500	0.5156	-0.0022	0.5519	-0.22022	2.319
7		8		8.00	2.83	500	0.5151	-0.0027	0.5524	-0.27027	2.322
8		15		15.00	3.87	500	0.5142	-0.0036	0.5533	-0.36036	2.327
9		36		36.00	6.00	500	0.5122	-0.0056	0.5553	-0.560561	2.339
10	1			60.00	7.75	500	0.5108	-0.007	0.5567	-0.700701	2.348
11	2	9		129.00	11.36	500	0.5084	-0.0094	0.5591	-0.940941	2.362
12	5	7		307.00	17.52	500	0.5057	-0.0121	0.5618	-1.211211	2.378
13	7	16		436.00	20.88	500	0.5045	-0.0133	0.563	-1.331331	2.385
14	24	4		1444.00	38.00	500	0.5013	-0.0165	0.5662	-1.651652	2.405
15	95	19		5719.00	75.62	500	0.4979	-0.0199	0.5696	-1.991992	2.425
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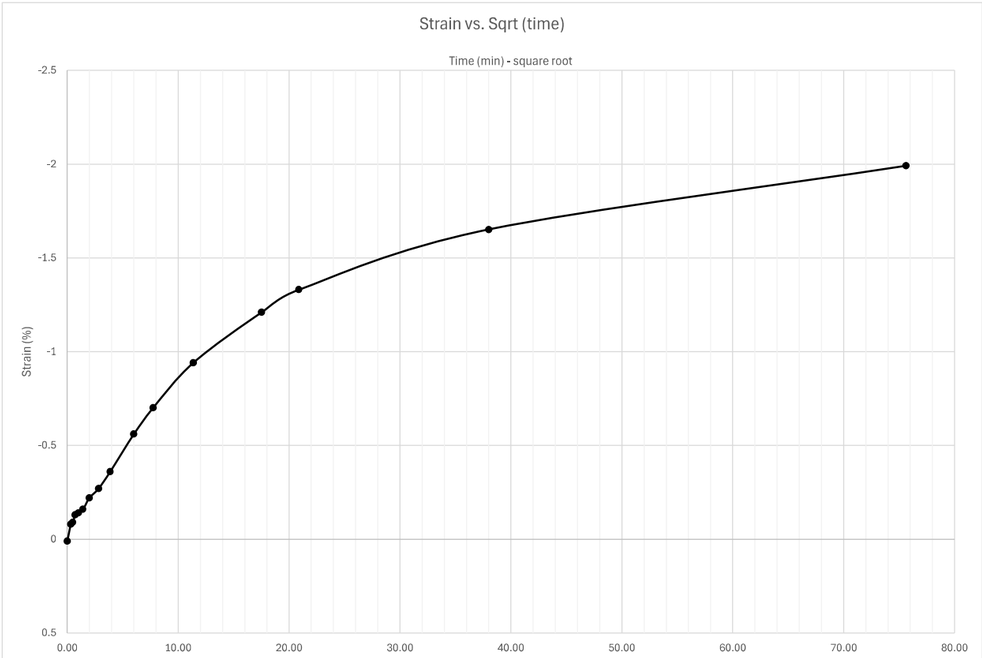
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

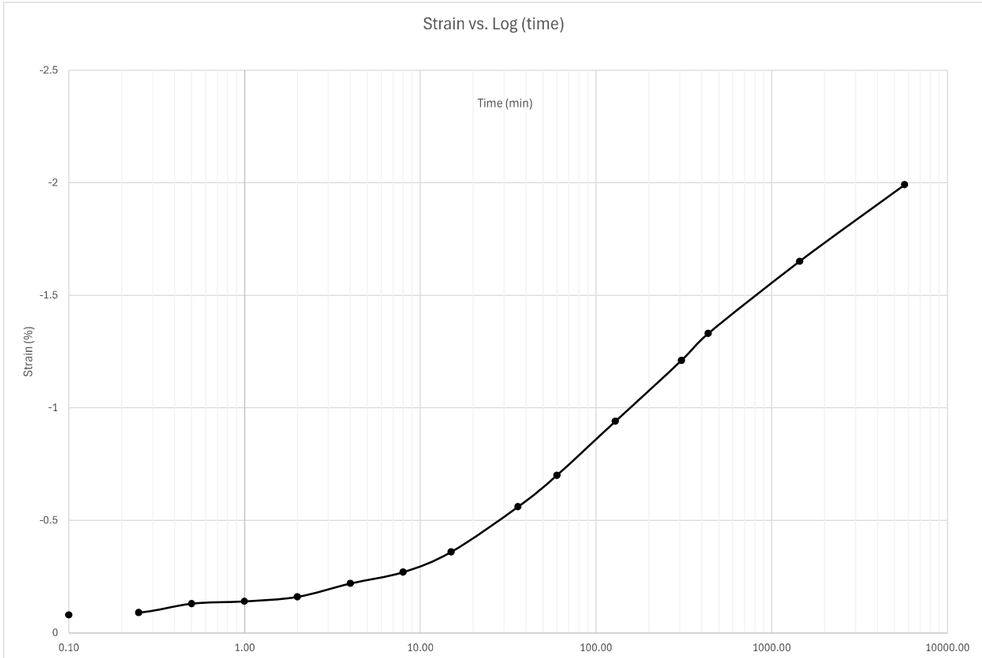
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4979	-0.0001	0.5697	-0.01001	2.426
1			6	0.10	0.32	1000	0.4984	0.0004	0.5692	0.04004	2.423
2			15	0.25	0.50	1000	0.4986	0.0006	0.569	0.06006	2.422
3			30	0.50	0.71	1000	0.4988	0.0008	0.5688	0.08008	2.420
4		1		1.00	1.00	1000	0.499	0.001	0.5686	0.1001	2.419
5		2		2.00	1.41	1000	0.4993	0.0013	0.5683	0.13013	2.417
6		4		4.00	2.00	1000	0.4998	0.0018	0.5678	0.18018	2.414
7		8		8.00	2.83	1000	0.5004	0.0024	0.5672	0.24024	2.411
8		15		15.00	3.87	1000	0.501	0.003	0.5666	0.3003	2.407
9		30		30.00	5.48	1000	0.5019	0.0039	0.5657	0.39039	2.402
10		57		57.00	7.55	1000	0.5026	0.0046	0.565	0.46046	2.397
11	2	5		125.00	11.18	1000	0.5031	0.0051	0.5645	0.510511	2.394
12	4			240.00	15.49	1000	0.5035	0.0055	0.5641	0.550551	2.392
13	6	41		401.00	20.02	1000	0.5038	0.0058	0.5638	0.580581	2.390
14	7	18		438.00	20.93	1000	0.5039	0.0059	0.5637	0.590591	2.390
15	22	43		1363.00	36.92	1000	0.5043	0.0063	0.5633	0.630631	2.387
16	28	20		1700.00	41.23	1000	0.5045	0.0065	0.5631	0.650651	2.386
17	46	57		2817.00	53.08	1000	0.5047	0.0067	0.5629	0.670671	2.385
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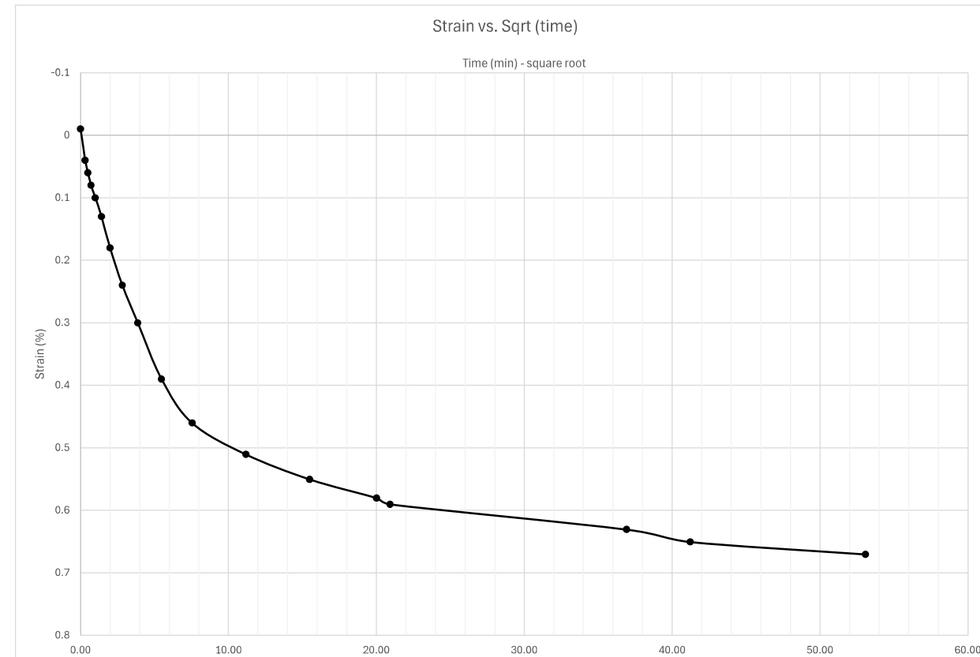
Sequence 9: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

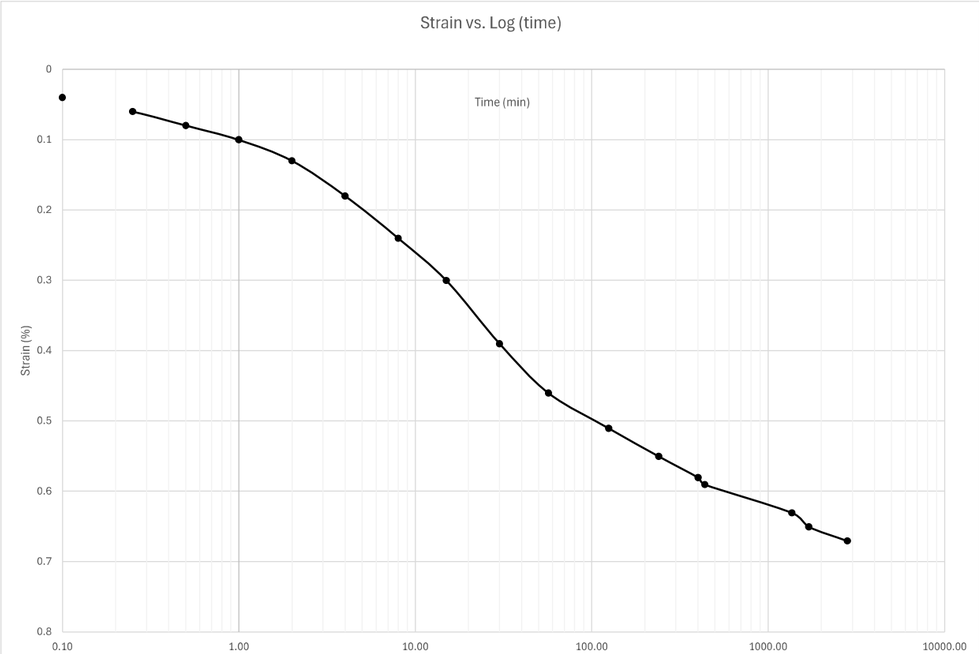


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.5047	-0.0002	0.5631	-0.02002	2.386
1			6	0.10	0.32	2000	0.5058	0.0009	0.562	0.09009	2.379
2			15	0.25	0.50	2000	0.5061	0.0012	0.5617	0.12012	2.378
3			30	0.50	0.71	2000	0.5065	0.0016	0.5613	0.16016	2.375
4		1		1.00	1.00	2000	0.5069	0.002	0.5609	0.2002	2.373
5		2		2.00	1.41	2000	0.5076	0.0027	0.5602	0.27027	2.369
6		4		4.00	2.00	2000	0.5085	0.0036	0.5593	0.36036	2.363
7		8		8.00	2.83	2000	0.5098	0.0049	0.558	0.49049	2.355
8		15		15.00	3.87	2000	0.5114	0.0065	0.5564	0.650651	2.346
9		25	10	25.17	5.02	2000	0.5129	0.008	0.5549	0.800801	2.337
10	1	17		77.00	8.77	2000	0.5157	0.0108	0.5521	1.081081	2.320
11	2	37		157.00	12.53	2000	0.5168	0.0119	0.551	1.191191	2.313
12	4	22		262.00	16.19	2000	0.5174	0.0125	0.5504	1.251251	2.310
13	23	39		1419.00	37.67	2000	0.5192	0.0143	0.5486	1.431431	2.299
14	31	47		1907.00	43.67	2000	0.5195	0.0146	0.5483	1.461461	2.297
15	47	44		2864.00	53.52	2000	0.5198	0.0149	0.548	1.491491	2.295
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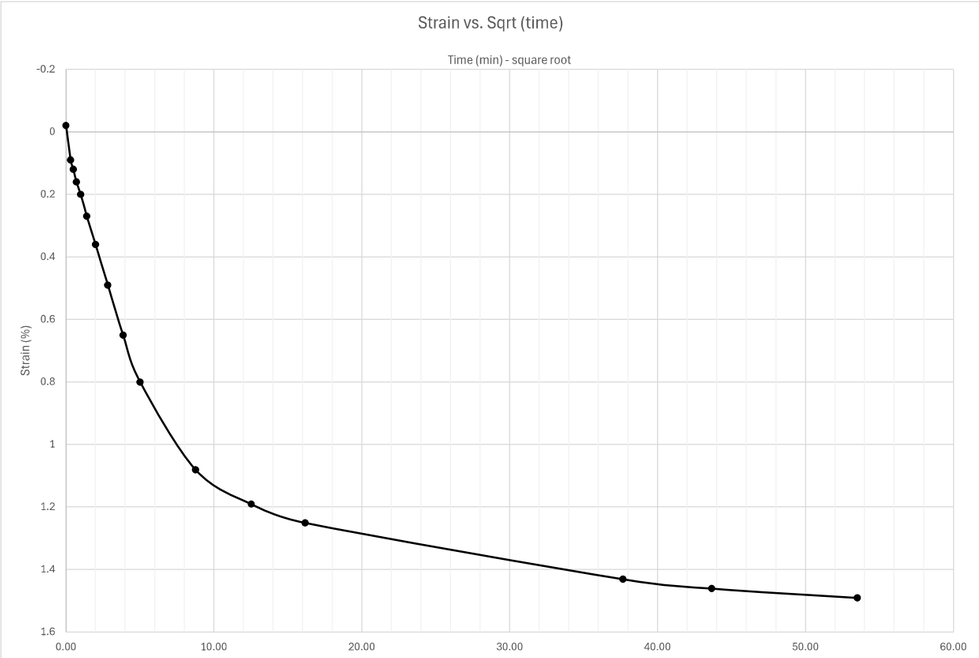
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

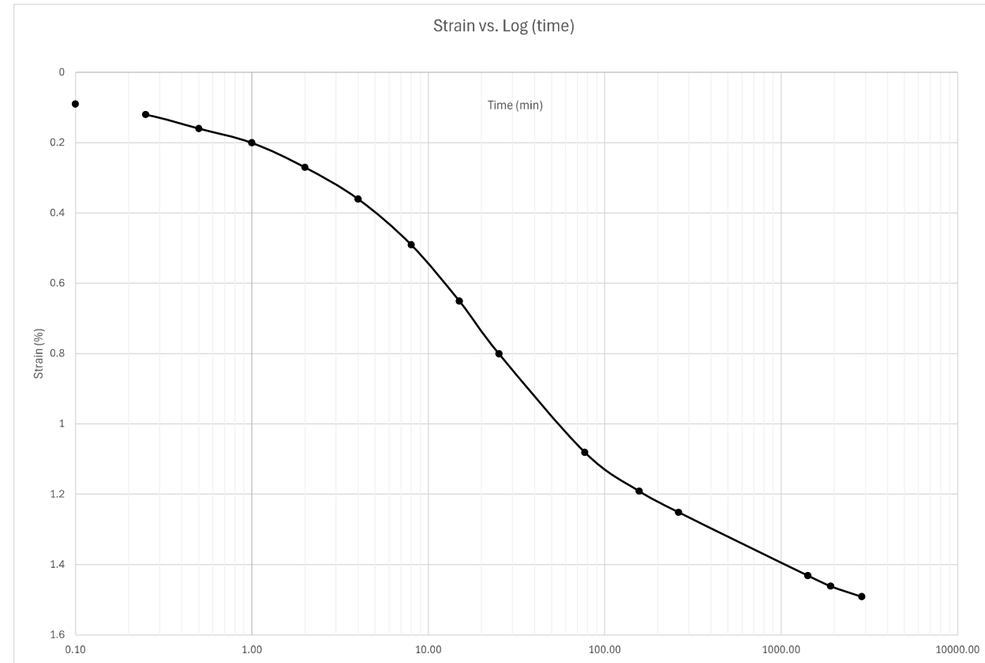
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.5198	-0.0003	0.5483	-0.03003	2.297
1			6	0.10	0.32	4000	0.5215	0.0014	0.5466	0.14014	2.287
2			15	0.25	0.50	4000	0.522	0.0019	0.5461	0.19019	2.284
3			30	0.50	0.71	4000	0.5224	0.0023	0.5457	0.23023	2.281
4		1		1.00	1.00	4000	0.5233	0.0032	0.5448	0.32032	2.276
5		2		2.00	1.41	4000	0.5242	0.0041	0.5439	0.41041	2.271
6		4		4.00	2.00	4000	0.5257	0.0056	0.5424	0.560561	2.262
7		8		8.00	2.83	4000	0.5279	0.0078	0.5402	0.780781	2.248
8		15		15.00	3.87	4000	0.5304	0.0103	0.5377	1.031031	2.233
9		30		30.00	5.48	4000	0.5334	0.0133	0.5347	1.331331	2.215
10	1	52		112.00	10.58	4000	0.5382	0.0181	0.5299	1.811812	2.186
11	3	57		237.00	15.39	4000	0.5403	0.0202	0.5278	2.022022	2.174
12	6	23		383.00	19.57	4000	0.5417	0.0216	0.5264	2.162162	2.165
13	52	18		3138.00	56.02	4000	0.547	0.0269	0.5211	2.692693	2.133
14	73	53		4433.00	66.58	4000	0.548	0.0279	0.5201	2.792793	2.127
15	95	46		5746.00	75.80	4000	0.5489	0.0288	0.5192	2.882883	2.122
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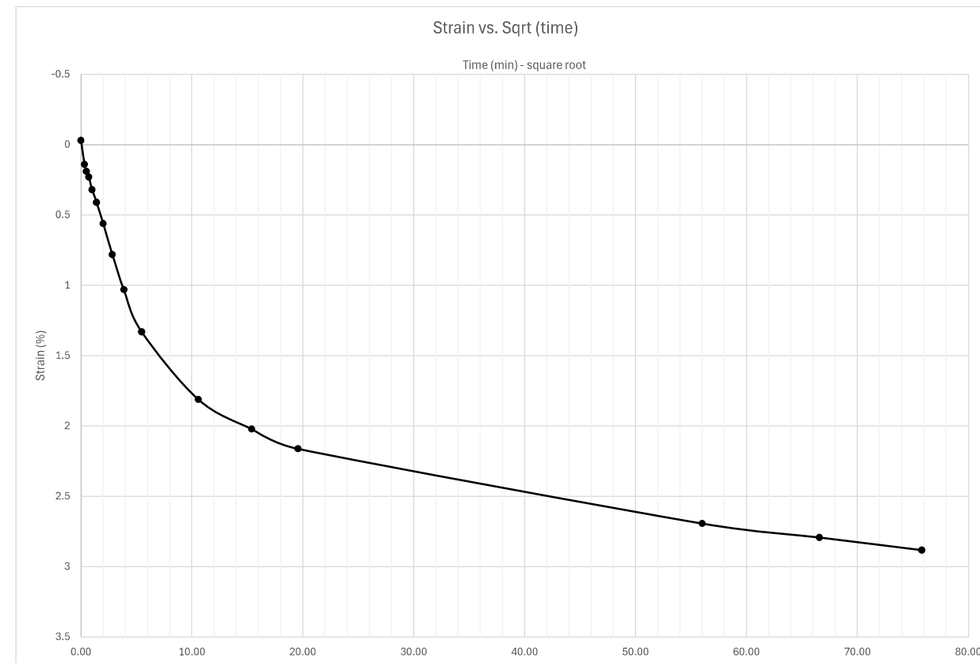
Sequence 11: 4000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

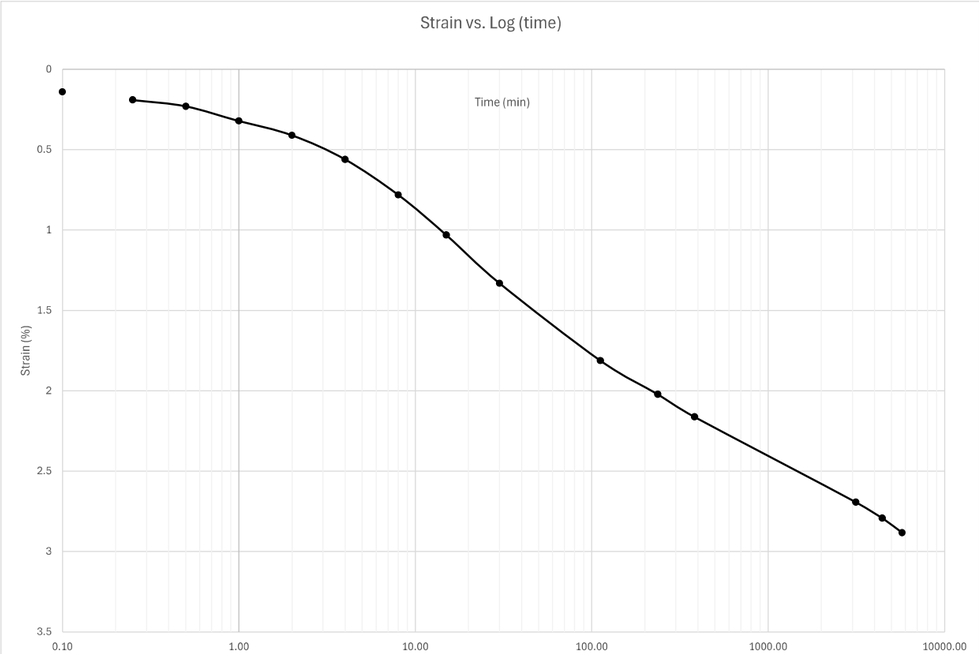


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.5489	-0.0006	0.5198	-0.06006	2.126
1			6	0.10	0.32	8000	0.5515	0.002	0.5172	0.2002	2.110
2			15	0.25	0.50	8000	0.5522	0.0027	0.5165	0.27027	2.106
3			30	0.50	0.71	8000	0.5531	0.0036	0.5156	0.36036	2.100
4		1		1.00	1.00	8000	0.5543	0.0048	0.5144	0.48048	2.093
5		2		2.00	1.41	8000	0.5562	0.0067	0.5125	0.670671	2.082
6		4		4.00	2.00	8000	0.559	0.0095	0.5097	0.950951	2.065
7		8		8.00	2.83	8000	0.5629	0.0134	0.5058	1.341341	2.041
8		15		15.00	3.87	8000	0.5677	0.0182	0.501	1.821822	2.013
9		32		32.00	5.66	8000	0.5762	0.0267	0.4925	2.672673	1.961
10	1	3		63.00	7.94	8000	0.585	0.0355	0.4837	3.553554	1.909
11	1	46		106.00	10.30	8000	0.592	0.0425	0.4767	4.254254	1.866
12	4	15		255.00	15.97	8000	0.6017	0.0522	0.467	5.225225	1.808
13	6	10		370.00	19.24	8000	0.6051	0.0556	0.4636	5.565566	1.788
14	22	25		1345.00	36.67	8000	0.6127	0.0632	0.456	6.326326	1.742
15	24	41		1481.00	38.48	8000	0.6133	0.0638	0.4554	6.386386	1.738
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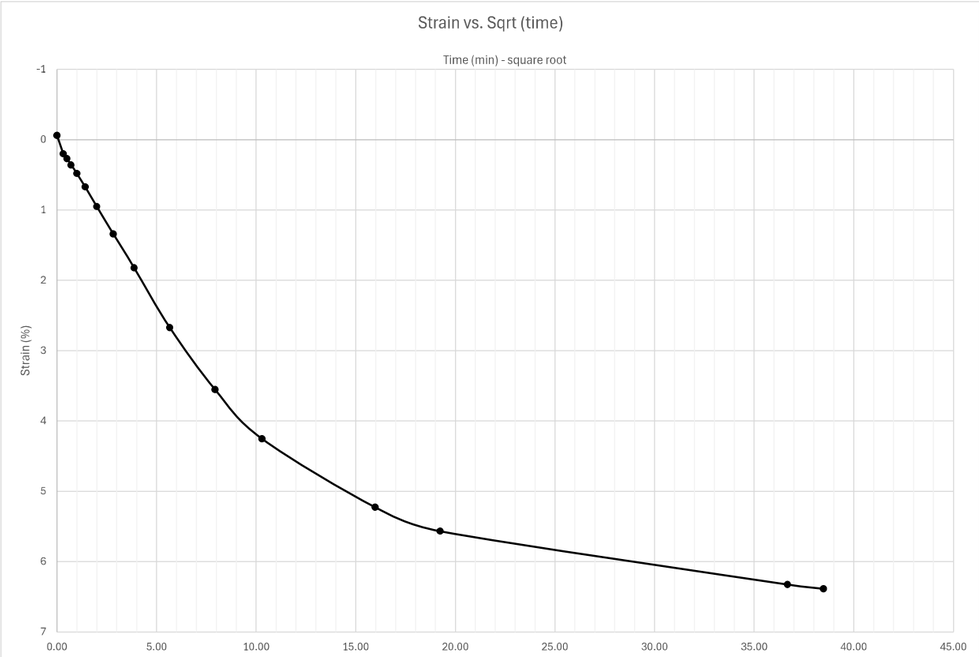
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

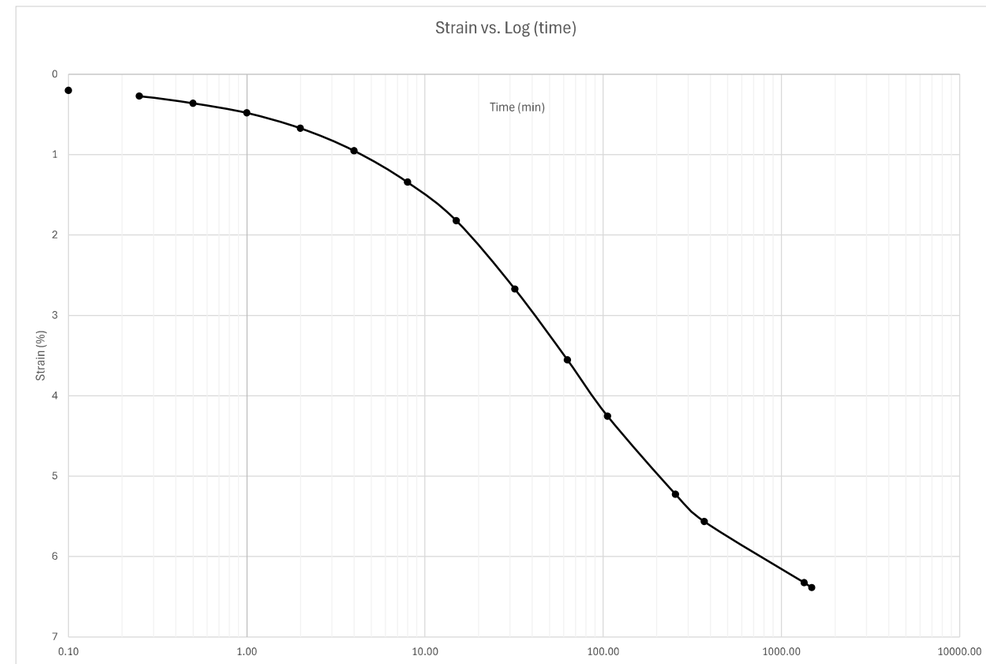
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6133	-0.0008	0.4562	-0.08008	1.743
1			6	0.10	0.32	16000	0.6167	0.0026	0.4528	0.26026	1.723
2			15	0.25	0.50	16000	0.6174	0.0033	0.4521	0.33033	1.719
3			30	0.50	0.71	16000	0.6184	0.0043	0.4511	0.43043	1.713
4		1		1.00	1.00	16000	0.6199	0.0058	0.4496	0.580581	1.704
5		2		2.00	1.41	16000	0.622	0.0079	0.4475	0.790791	1.691
6		4		4.00	2.00	16000	0.6251	0.011	0.4444	1.101101	1.672
7		8		8.00	2.83	16000	0.6296	0.0155	0.4399	1.551552	1.645
8		15		15.00	3.87	16000	0.6352	0.0211	0.4343	2.112112	1.612
9		29		29.00	5.39	16000	0.6431	0.029	0.4264	2.902903	1.564
10	1			60.00	7.75	16000	0.6537	0.0396	0.4158	3.963964	1.500
11	2			120.00	10.95	16000	0.6634	0.0493	0.4061	4.934935	1.442
12	3	56		236.00	15.36	16000	0.6701	0.056	0.3994	5.605606	1.402
13	6	12		372.00	19.29	16000	0.673	0.0589	0.3965	5.895896	1.384
14	21	23		1283.00	35.82	16000	0.6787	0.0646	0.3908	6.466466	1.350
15	24	11		1451.00	38.09	16000	0.6792	0.0651	0.3903	6.516517	1.347
16	28	25		1705.00	41.29	16000	0.6798	0.0657	0.3897	6.576577	1.343
17	45	5		2705.00	52.01	16000	0.6815	0.0674	0.388	6.746747	1.333
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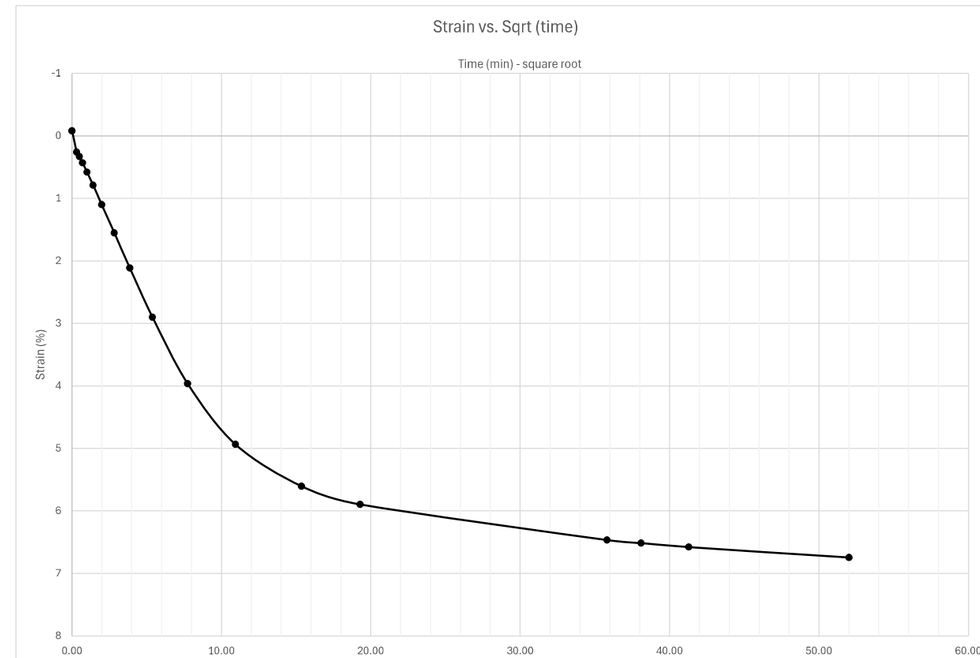
Sequence 13: 16000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

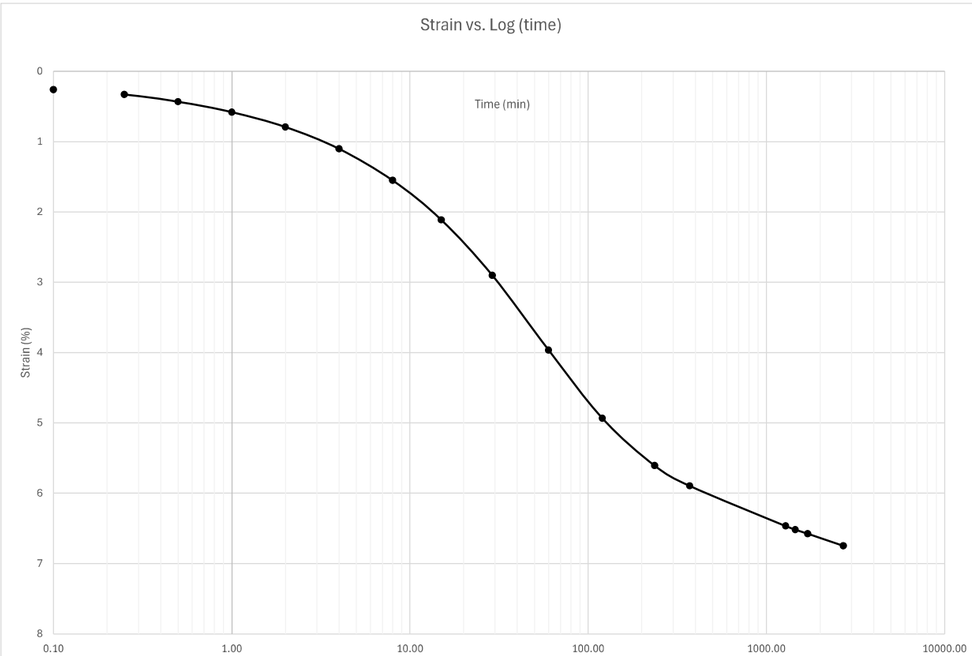


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.6815	-0.0012	0.3892	-0.12012	1.340
1			6	0.10	0.32	32000	0.685	0.0023	0.3857	0.23023	1.319
2			15	0.25	0.50	32000	0.6857	0.003	0.385	0.3003	1.315
3			30	0.50	0.71	32000	0.6866	0.0039	0.3841	0.39039	1.310
4		1		1.00	1.00	32000	0.6879	0.0052	0.3828	0.520521	1.302
5		2		2.00	1.41	32000	0.6898	0.0071	0.3809	0.710711	1.290
6		4		4.00	2.00	32000	0.6927	0.01	0.378	1.001001	1.273
7		8		8.00	2.83	32000	0.6962	0.0135	0.3745	1.351351	1.252
8		15		15.00	3.87	32000	0.7006	0.0179	0.3701	1.791792	1.225
9		29		29.00	5.39	32000	0.7068	0.0241	0.3639	2.412412	1.188
10		56		56.00	7.48	32000	0.7143	0.0316	0.3564	3.163163	1.143
11	1	58		118.00	10.86	32000	0.7218	0.0391	0.3489	3.913914	1.098
12	3	58		238.00	15.43	32000	0.7269	0.0442	0.3438	4.424424	1.067
13	5	41		341.00	18.47	32000	0.7288	0.0461	0.3419	4.614615	1.056
14	7	14		434.00	20.83	32000	0.7299	0.0472	0.3408	4.724725	1.049
15	24	12		1452.00	38.11	32000	0.735	0.0523	0.3357	5.235235	1.019
16	74	55		4495.00	67.04	32000	0.7368	0.0541	0.3339	5.415415	1.008
17	95	57		5757.00	75.87	32000	0.7373	0.0546	0.3334	5.465465	1.005
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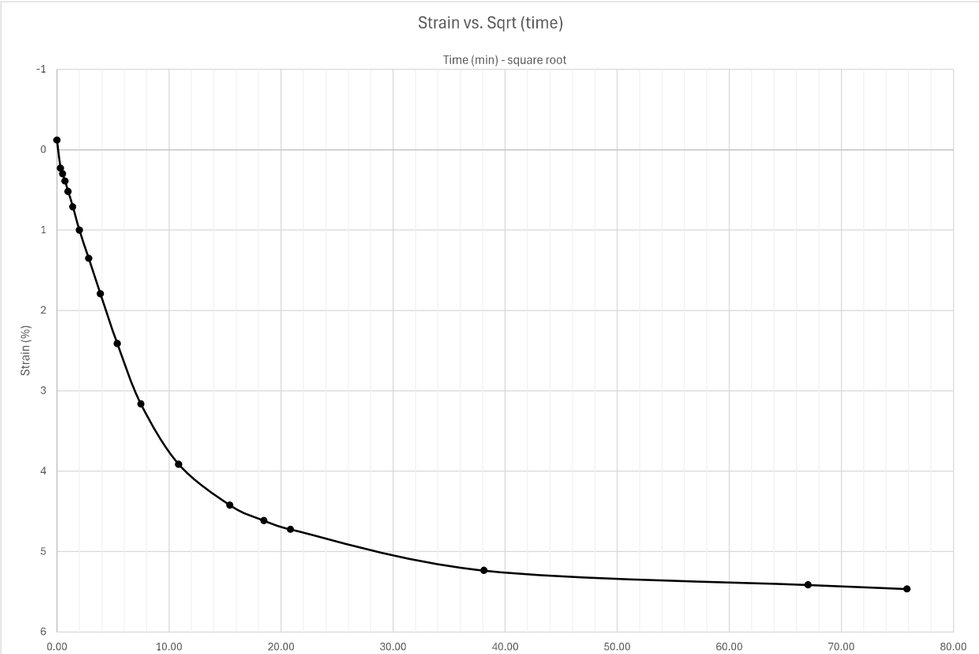
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

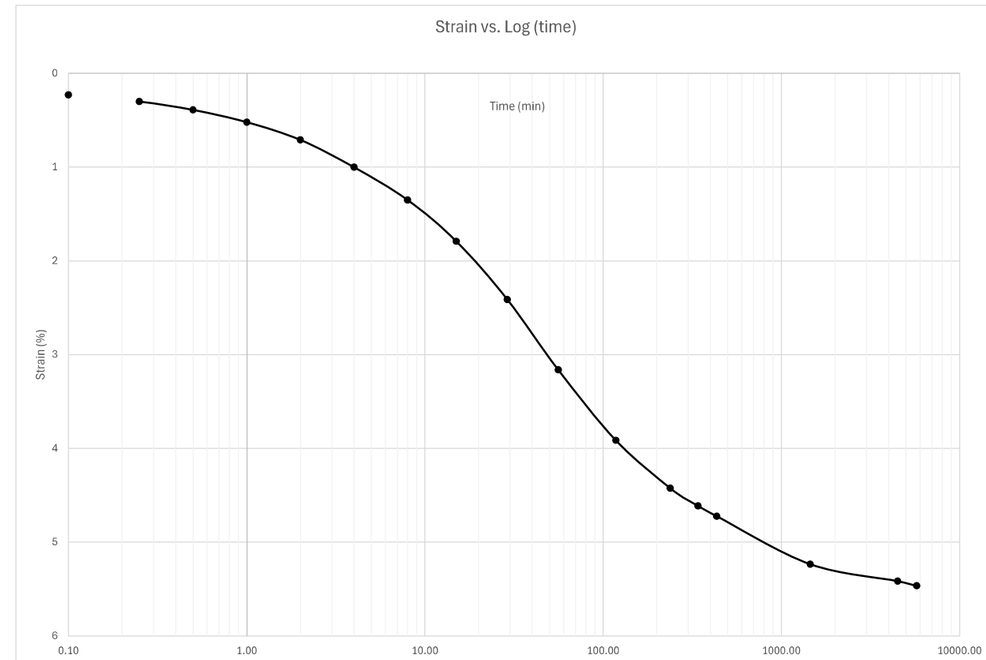
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_4000, ST-39, 3.0-5.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	8.0-10.0
Sample Number	ST-40	Boring Number	Y1RPC_4000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0104	0.1145	0.9886	0.010	6.600	18.49	2.5	0.01121	0.019253
2	500	0.0567	0.1146	0.9423	0.057	6.244	6.25	2.1	0.03012	0.020824
3	1000	0.146	0.1147	0.853	0.146	5.558	12.25	4.8	0.01259	0.007466
4	2000	0.2704	0.1149	0.7286	0.271	4.601	33.64	12.5	0.00335	0.002092
5	4000	0.3915	0.1151	0.6075	0.392	3.670	40.96	17.5	0.00191	0.001039
6	2000	0.3814	0.1149	0.6176	0.382	3.748	-	-	-	-
7	1000	0.3689	0.1147	0.6301	0.369	3.844	-	-	-	-
8	500	0.3496	0.1146	0.6494	0.350	3.992	-	-	-	-
9	1000	0.3574	0.1147	0.6416	0.358	3.933	12.96	4.1	0.00673	0.00494
10	2000	0.3709	0.1149	0.6281	0.371	3.829	10.89	-	0.00768	-
11	4000	0.4023	0.1152	0.5967	0.403	3.587	14.44	4.1	0.00523	0.00428
12	8000	0.4962	0.1158	0.5028	0.497	2.865	54.76	19	0.00098	0.00066
13	16000	0.5876	0.1166	0.4114	0.588	2.163	46.24	27.5	0.00078	0.00030
14	32000	0.6386	0.1178	0.3604	0.639	1.771	36	30	0.00076	0.00021
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 4/23/2026
Machine Apparatus: 5
Technician: KSB

Sampling Date: 4/14/2026
Sample Number: ST-40
Depth (ft): 8.0-10.0
Boring Number: Y1RPC_4000
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.893 (Measured)
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-1-b (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 102.78

Parameters	Initial	Final
Height (in)	0.999	0.3604
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.779
Weight of Container (g)	60.35	60.8
Weight of Wet Soil + Container (g)	242.83	97.78
Weight of Dry Soil + Container (g)	103	79.64
Moisture Content (%)	327.85	96.28
Moist Weight + Ring Weight (g)	188	139.86
Dry Mass (g)	19.92	18.89
Water Content (calc from spec)	327.85	96.28
Dry Density (pcf)	15.39	40.45
Wet Density (pcf)	65.83	79.40
Volume of Solids (in^3)	0.64	0.61
Height of Solids (in)	0.13	0.12
Void Ratio	6.680	1.771

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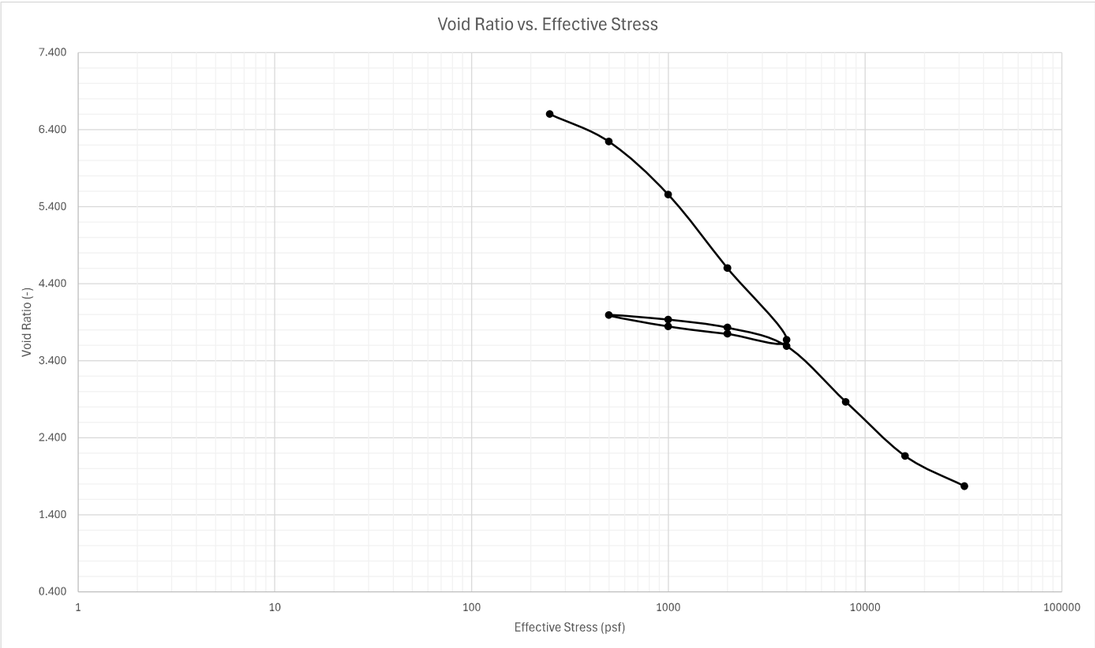
Void Ratio vs. Effective Stress

Y1RPC_4000, ST-40, 8.0-10.0 ft

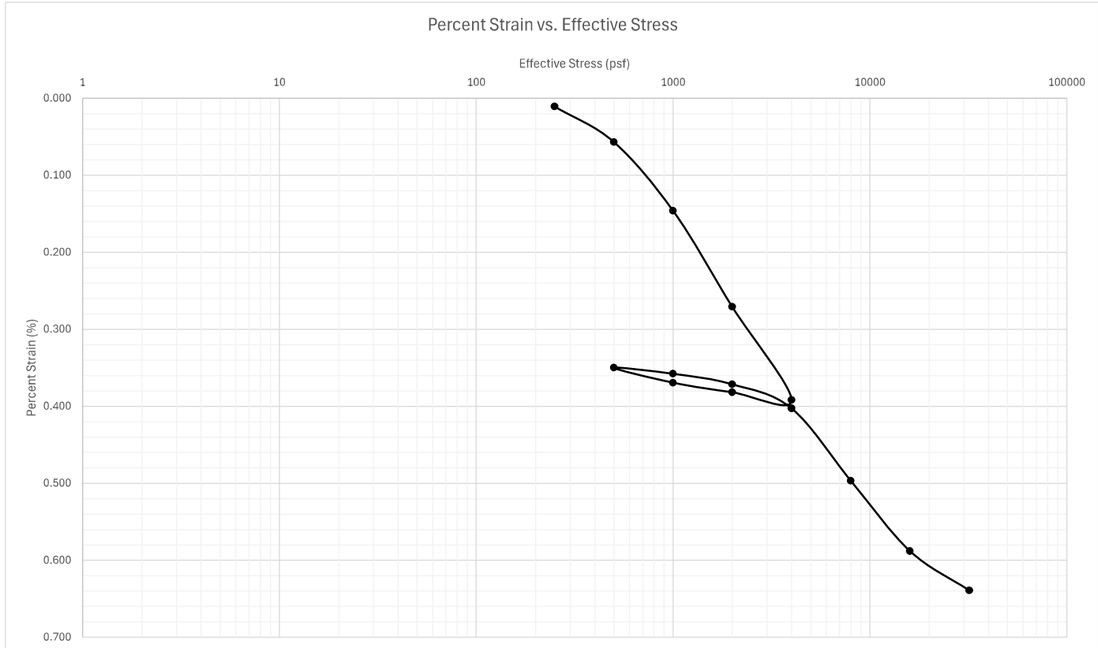
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0908	0	0.999	0	6.680
1			15	0.25	0.5	250	0.0918	0.001	0.998	0.1001	6.672
2			30	0.5	0.707106781	250	0.0928	0.002	0.997	0.2002	6.665
3		1		1	1	250	0.0936	0.0028	0.9962	0.28028	6.659
4		2		2	1.414213562	250	0.0945	0.0037	0.9953	0.37037	6.652
5		4		4	2	250	0.0954	0.0046	0.9944	0.46046	6.645
6		8		8	2.828427125	250	0.0963	0.0055	0.9935	0.550551	6.638
7		15		15	3.872983346	250	0.097	0.0062	0.9928	0.620621	6.632
8		30		30	5.477225575	250	0.0976	0.0068	0.9922	0.680681	6.628
9	1			60	7.745966692	250	0.0983	0.0075	0.9915	0.750751	6.623
10	2			120	10.95445115	250	0.0989	0.0081	0.9909	0.810811	6.618
11	4	22		262	16.18641406	250	0.0995	0.0087	0.9903	0.870871	6.613
12	6	44		404	20.09975124	250	0.0999	0.0091	0.9899	0.910911	6.610
13	23	12		1392	37.30951621	250	0.1012	0.0104	0.9886	1.041041	6.600
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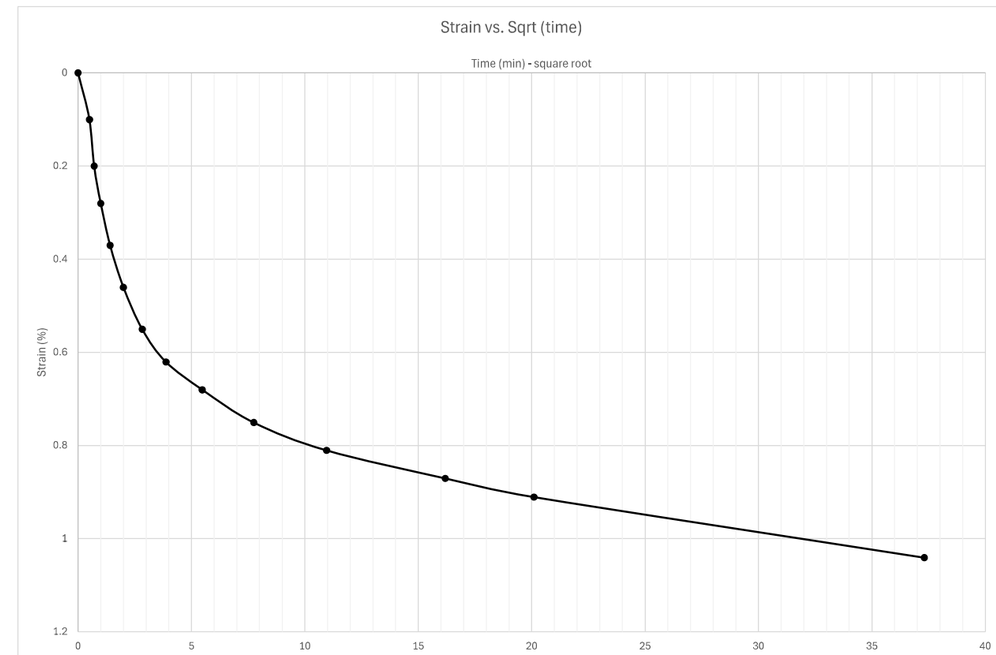
Sequence 1: 250 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

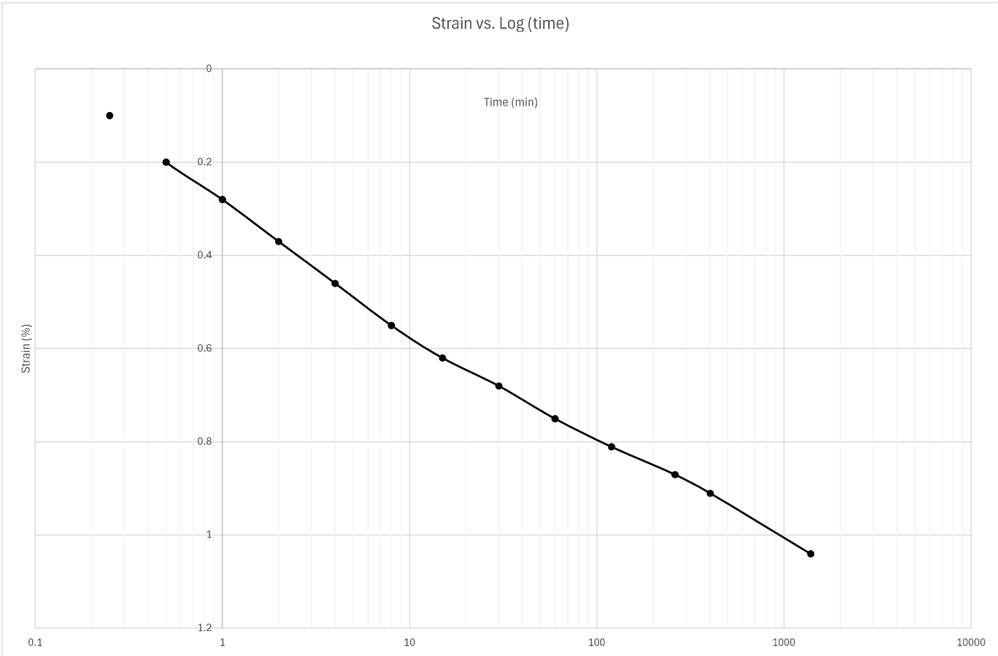


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1012	-0.0001	0.9887	-0.01001	6.601
1			6	0.1	0.32	500	0.1086	0.0073	0.9813	0.730731	6.544
2			15	0.25	0.50	500	0.1101	0.0088	0.9798	0.880881	6.533
3			30	0.5	0.71	500	0.1118	0.0105	0.9781	1.051051	6.519
4		1		1	1.00	500	0.1141	0.0128	0.9758	1.281281	6.502
5		2		2	1.41	500	0.1172	0.0159	0.9727	1.591592	6.478
6		4		4	2.00	500	0.1206	0.0193	0.9693	1.931932	6.452
7		8		8	2.83	500	0.1242	0.0229	0.9657	2.292292	6.424
8		15		15	3.87	500	0.1270	0.0257	0.9629	2.572573	6.403
9	1	10		70	8.37	500	0.1323	0.0310	0.9576	3.103103	6.362
10	2			120	10.95	500	0.1342	0.0329	0.9557	3.293293	6.347
11	4	3		243	15.59	500	0.1360	0.0347	0.9539	3.473473	6.333
12	6	25		385	19.62	500	0.1379	0.0366	0.9520	3.663664	6.319
13	24	23		1463	38.25	500	0.1426	0.0413	0.9473	4.134134	6.283
14	71	27		4287	65.48	500	0.1476	0.0463	0.9423	4.634635	6.244
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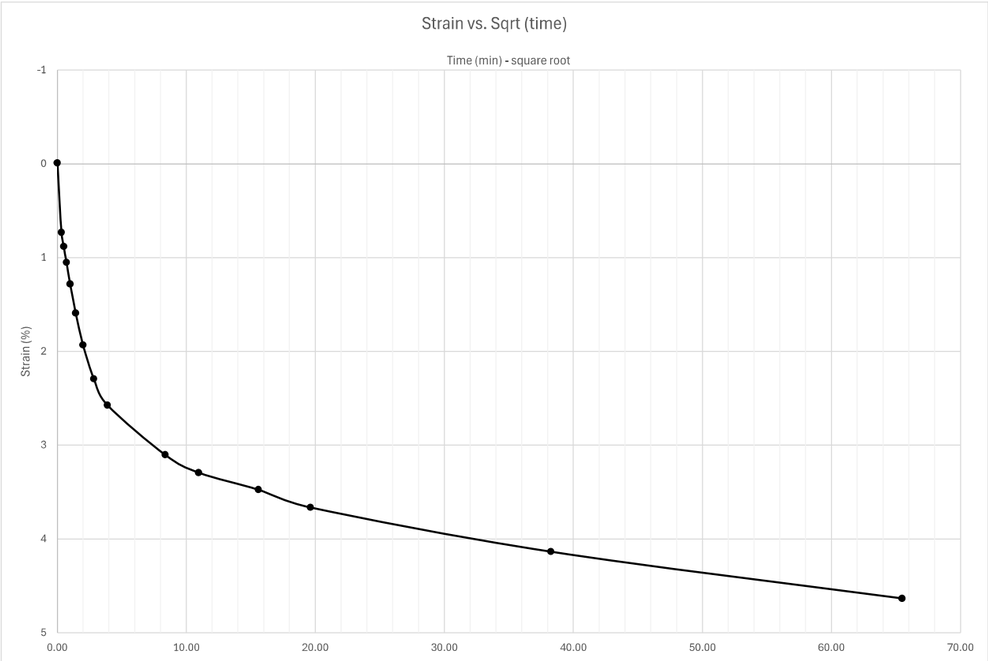
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

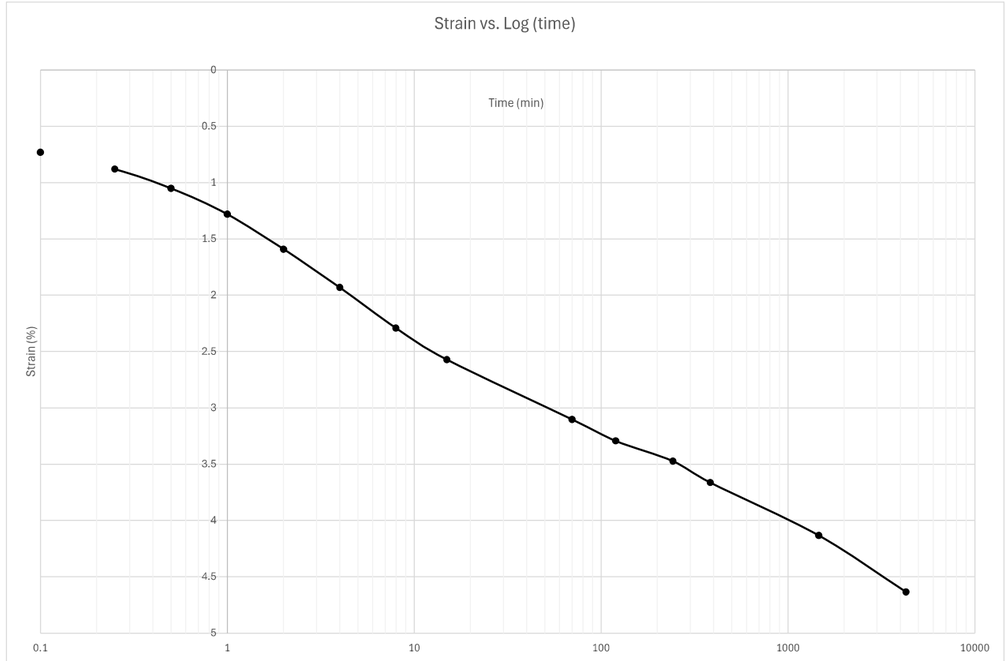
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.1476	-0.0001	0.9424	-0.01001	6.245
1			6	0.10	0.32	1000	0.1569	0.0092	0.9331	0.920921	6.174
2			15	0.25	0.50	1000	0.1593	0.0116	0.9307	1.161161	6.155
3			30	0.50	0.71	1000	0.1618	0.0141	0.9282	1.411411	6.136
4		1		1.00	1.00	1000	0.1654	0.0177	0.9246	1.771772	6.108
5		2		2.00	1.41	1000	0.17	0.0223	0.92	2.232232	6.073
6		4		4.00	2.00	1000	0.1761	0.0284	0.9139	2.842843	6.026
7		8		8.00	2.83	1000	0.1833	0.0356	0.9067	3.563564	5.971
8		15		15.00	3.87	1000	0.1899	0.0422	0.9001	4.224224	5.920
9		24		24.00	4.90	1000	0.1948	0.0471	0.8952	4.714715	5.882
10		40		40.00	6.32	1000	0.1996	0.0519	0.8904	5.195195	5.845
11	1	10		70.00	8.37	1000	0.2046	0.0569	0.8854	5.695696	5.807
12	2	12		132.00	11.49	1000	0.2099	0.0622	0.8801	6.226226	5.766
13	4	8		248.00	15.75	1000	0.2154	0.0677	0.8746	6.776777	5.724
14	7	10		430.00	20.74	1000	0.2202	0.0725	0.8698	7.257257	5.687
15	22	42		1362.00	36.91	1000	0.23	0.0823	0.86	8.238238	5.612
16	29	31		1771.00	42.08	1000	0.2329	0.0852	0.8571	8.528529	5.589
17	31	2		1862.00	43.15	1000	0.2334	0.0857	0.8566	8.578579	5.585
18	46	22		2782.00	52.74	1000	0.237	0.0893	0.853	8.938939	5.558
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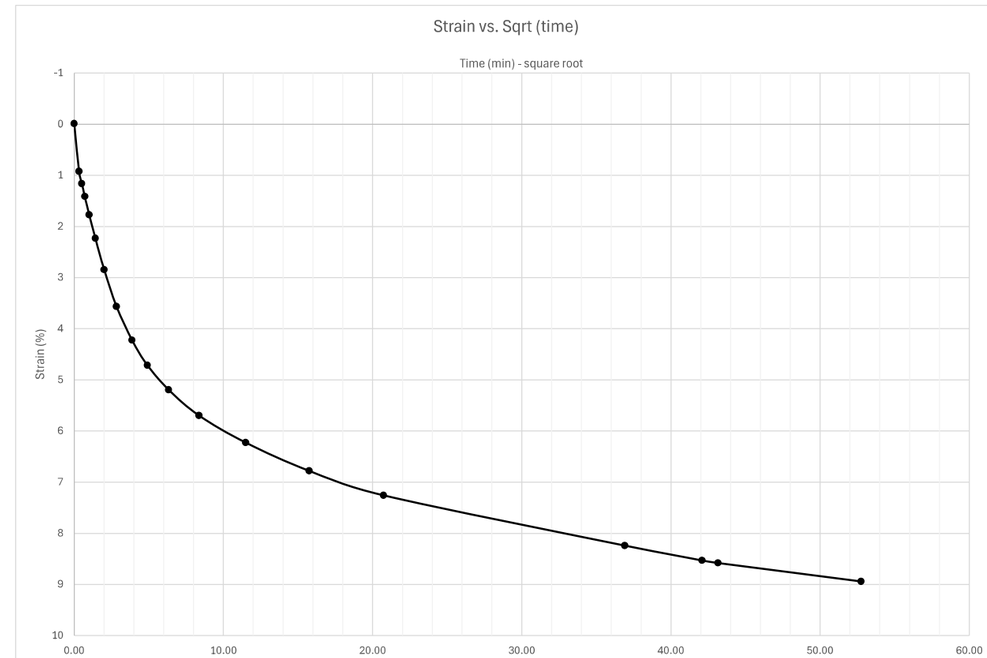
Sequence 3: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

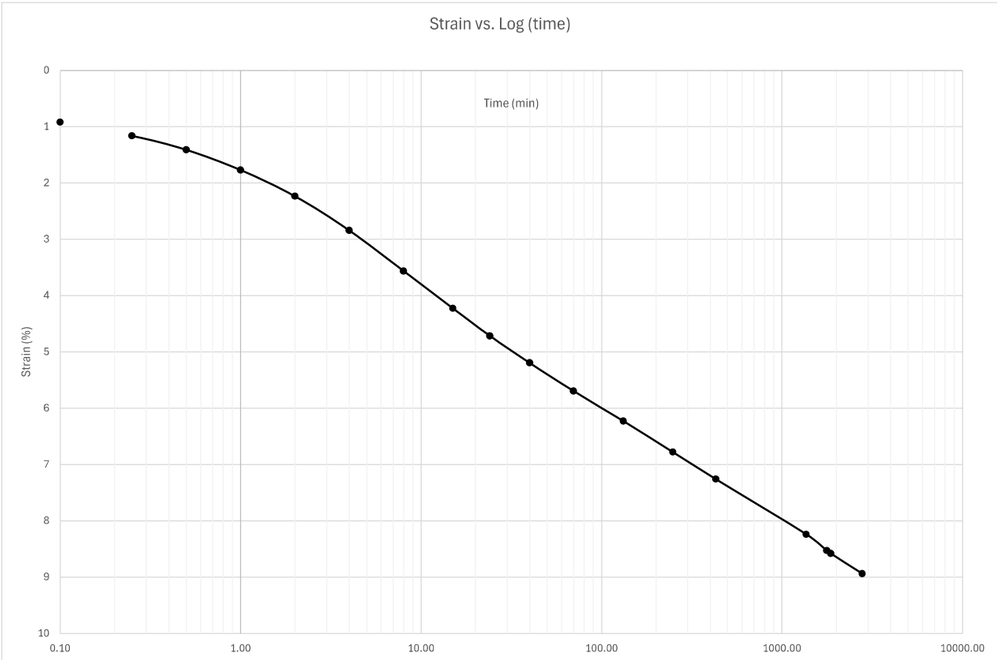


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.237	-0.0002	0.8532	-0.02002	5.559
1			6	0.10	0.32	2000	0.2445	0.0073	0.8457	0.730731	5.502
2			15	0.25	0.50	2000	0.2472	0.01	0.843	1.001001	5.481
3			30	0.50	0.71	2000	0.2498	0.0126	0.8404	1.261261	5.461
4		1		1.00	1.00	2000	0.2536	0.0164	0.8366	1.641642	5.432
5		2		2.00	1.41	2000	0.2591	0.0219	0.8311	2.192192	5.389
6		4	30	4.50	2.12	2000	0.2676	0.0304	0.8226	3.043043	5.324
7		8	30	8.50	2.92	2000	0.2777	0.0405	0.8125	4.054054	5.246
8		15		15.00	3.87	2000	0.2872	0.05	0.803	5.005005	5.173
9		34		34.00	5.83	2000	0.3031	0.0659	0.7871	6.596597	5.051
10	1	22		82.00	9.06	2000	0.3177	0.0805	0.7725	8.058058	4.939
11	2	25		145.00	12.04	2000	0.3259	0.0887	0.7643	8.878879	4.876
12	4	11		251.00	15.84	2000	0.3332	0.096	0.757	9.60961	4.820
13	7	15		435.00	20.86	2000	0.34	0.1028	0.7502	10.29029	4.767
14	23	13		1393.00	37.32	2000	0.3534	0.1162	0.7368	11.63163	4.664
15	30	49		1849.00	43.00	2000	0.357	0.1198	0.7332	11.99199	4.637
16	46	29		2789.00	52.81	2000	0.3616	0.1244	0.7286	12.45245	4.601
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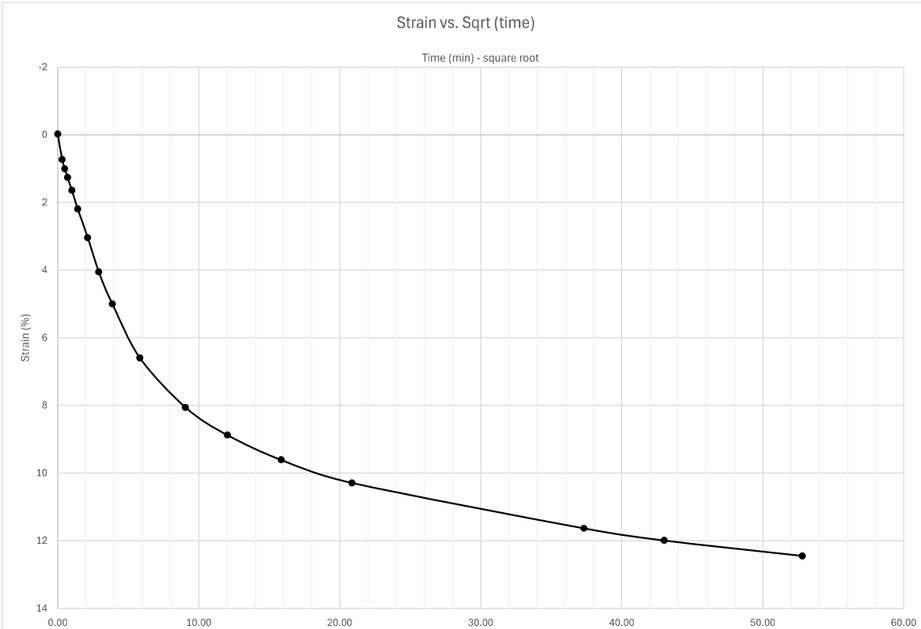
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

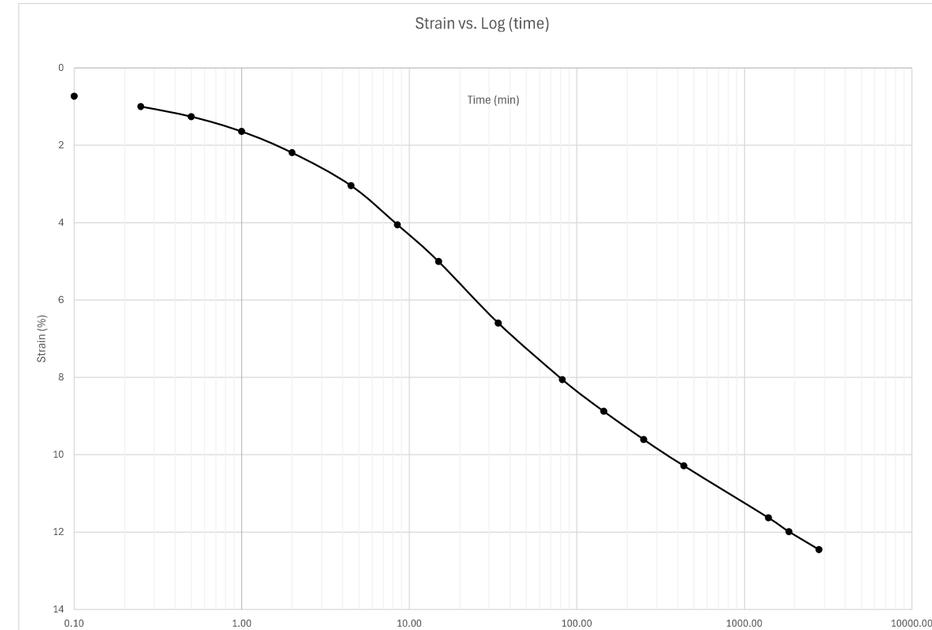
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.3616	-0.0002	0.7288	-0.02002	4.603
1			6	0.10	0.32	4000	0.376	0.0142	0.7144	1.421421	4.492
2			15	0.25	0.50	4000	0.3779	0.0161	0.7125	1.611612	4.478
3			30	0.50	0.71	4000	0.3804	0.0186	0.71	1.861862	4.458
4		1		1.00	1.00	4000	0.3826	0.0208	0.7078	2.082082	4.441
5		2		2.00	1.41	4000	0.3866	0.0248	0.7038	2.482482	4.411
6		4		4.00	2.00	4000	0.3924	0.0306	0.698	3.063063	4.366
7		8		8.00	2.83	4000	0.4002	0.0384	0.6902	3.843844	4.306
8		15		15.00	3.87	4000	0.409	0.0472	0.6814	4.724725	4.239
9		30		30.00	5.48	4000	0.4202	0.0584	0.6702	5.845846	4.152
10	1	1		61.00	7.81	4000	0.4327	0.0709	0.6577	7.097097	4.056
11	1	45		105.00	10.25	4000	0.4406	0.0788	0.6498	7.887888	3.996
12	4	29		269.00	16.40	4000	0.453	0.0912	0.6374	9.129129	3.900
13	18	42		1122.00	33.50	4000	0.4688	0.107	0.6216	10.71071	3.779
14	21	32		1292.00	35.94	4000	0.4703	0.1085	0.6201	10.86086	3.767
15	24	39		1479.00	38.46	4000	0.4718	0.11	0.6186	11.01101	3.756
16	43	38		2618.00	51.17	4000	0.4779	0.1161	0.6125	11.62162	3.709
17	48	34		2914.00	53.98	4000	0.4793	0.1175	0.6111	11.76176	3.698
18	68	12		4092.00	63.97	4000	0.4829	0.1211	0.6075	12.12212	3.670
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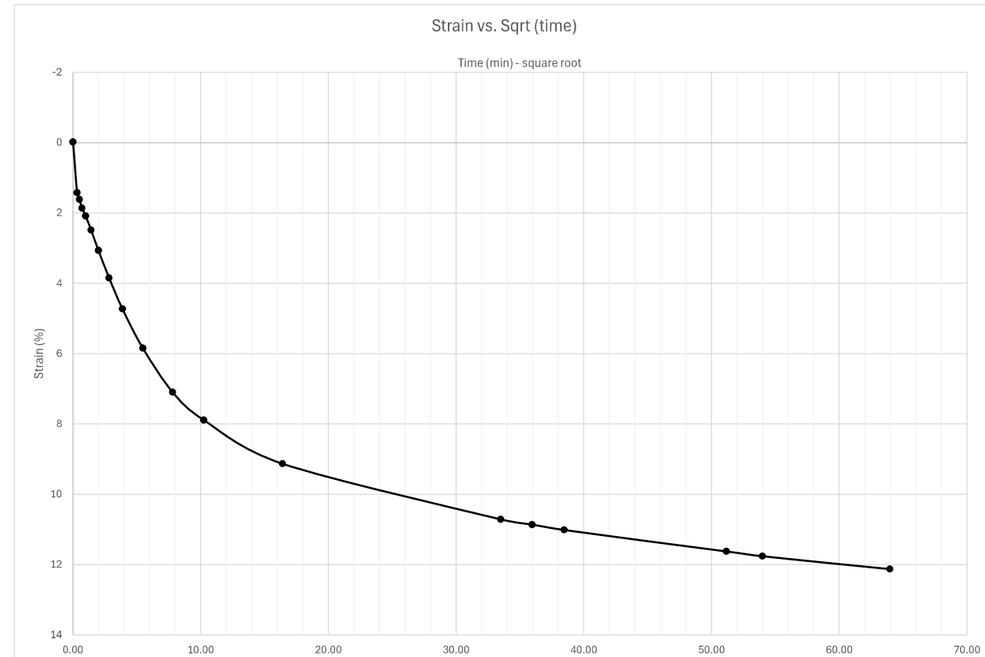
Sequence 5: 4000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

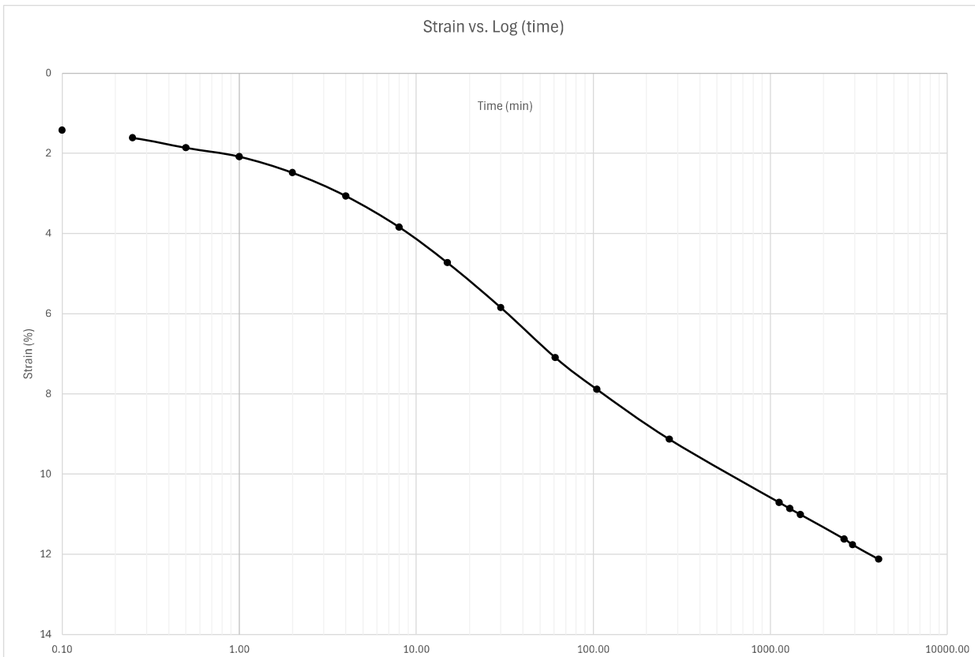


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.4829	0.0002	0.6073	0.02002	3.669
1			6	0.10	0.32	2000	0.4813	-0.0014	0.6089	-0.14014	3.681
2			15	0.25	0.50	2000	0.481	-0.0017	0.6092	-0.17017	3.683
3			30	0.50	0.71	2000	0.4806	-0.0021	0.6096	-0.21021	3.687
4		1		1.00	1.00	2000	0.4801	-0.0026	0.6101	-0.26026	3.690
5		2		2.00	1.41	2000	0.4793	-0.0034	0.6109	-0.34034	3.697
6		4		4.00	2.00	2000	0.4784	-0.0043	0.6118	-0.43043	3.703
7		8		8.00	2.83	2000	0.4775	-0.0052	0.6127	-0.520521	3.710
8		15		15.00	3.87	2000	0.4767	-0.006	0.6135	-0.600601	3.716
9		29		29.00	5.39	2000	0.476	-0.0067	0.6142	-0.670671	3.722
10		56		56.00	7.48	2000	0.4755	-0.0072	0.6147	-0.720721	3.726
11	1	59		119.00	10.91	2000	0.4749	-0.0078	0.6153	-0.780781	3.730
12	3	57		237.00	15.39	2000	0.4744	-0.0083	0.6158	-0.830831	3.734
13	7	5		425.00	20.62	2000	0.4737	-0.009	0.6165	-0.900901	3.740
14	24	9		1449.00	38.07	2000	0.4729	-0.0098	0.6173	-0.980981	3.746
15	31	29		1889.00	43.46	2000	0.4728	-0.0099	0.6174	-0.990991	3.746
16	48	16		2896.00	53.81	2000	0.4727	-0.01	0.6175	-1.001001	3.747
17	119	31		7171.00	84.68	2000	0.4726	-0.0101	0.6176	-1.011011	3.748
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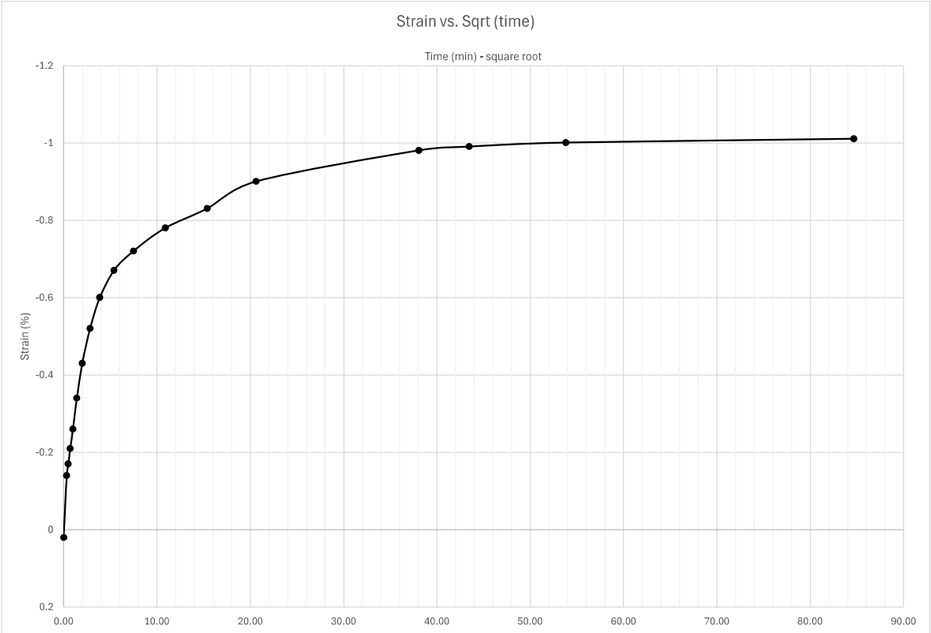
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

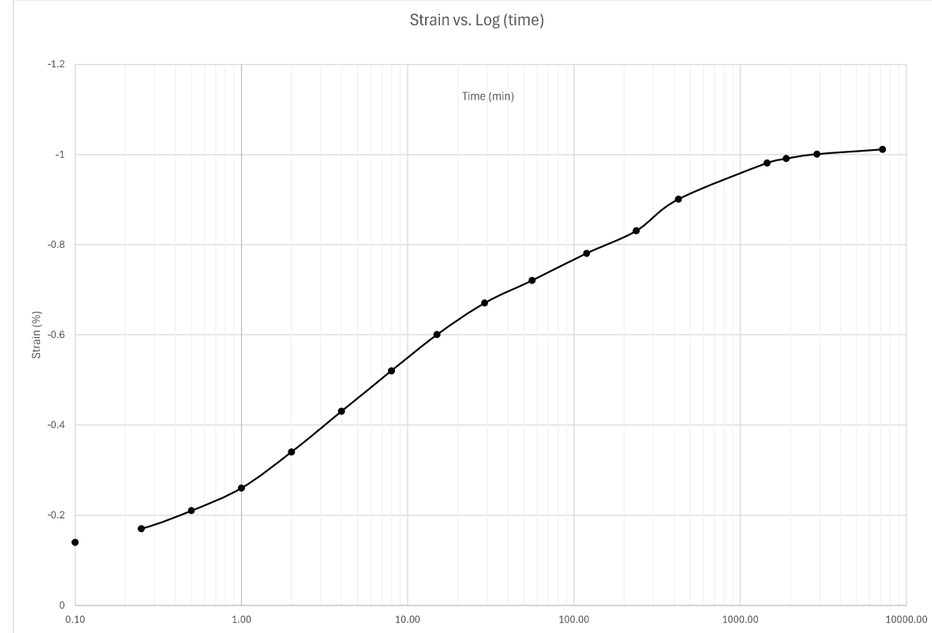
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4726	0.0002	0.6174	0.02002	3.746
1			6	0.10	0.32	1000	0.4714	-0.001	0.6186	-0.1001	3.756
2			15	0.25	0.50	1000	0.4711	-0.0013	0.6189	-0.13013	3.758
3			30	0.50	0.71	1000	0.4707	-0.0017	0.6193	-0.17017	3.761
4		1		1.00	1.00	1000	0.4703	-0.0021	0.6197	-0.21021	3.764
5		2		2.00	1.41	1000	0.4696	-0.0028	0.6204	-0.28028	3.770
6		4		4.00	2.00	1000	0.4689	-0.0035	0.6211	-0.35035	3.775
7		8		8.00	2.83	1000	0.468	-0.0044	0.622	-0.44044	3.782
8		17		17.00	4.12	1000	0.4672	-0.0052	0.6228	-0.520521	3.788
9		30		30.00	5.48	1000	0.4663	-0.0061	0.6237	-0.610611	3.795
10	1			60.00	7.75	1000	0.4655	-0.0069	0.6245	-0.690691	3.801
11	2	3		123.00	11.09	1000	0.4647	-0.0077	0.6253	-0.770771	3.807
12	3	58		238.00	15.43	1000	0.4639	-0.0085	0.6261	-0.850851	3.813
13	6	39		399.00	19.97	1000	0.4632	-0.0092	0.6268	-0.920921	3.819
14	7	16		436.00	20.88	1000	0.463	-0.0094	0.627	-0.940941	3.820
15	22	41		1361.00	36.89	1000	0.4613	-0.0111	0.6287	-1.111111	3.833
16	28	18		1698.00	41.21	1000	0.4608	-0.0116	0.6292	-1.161161	3.837
17	46	55		2815.00	53.06	1000	0.4599	-0.0125	0.6301	-1.251251	3.844
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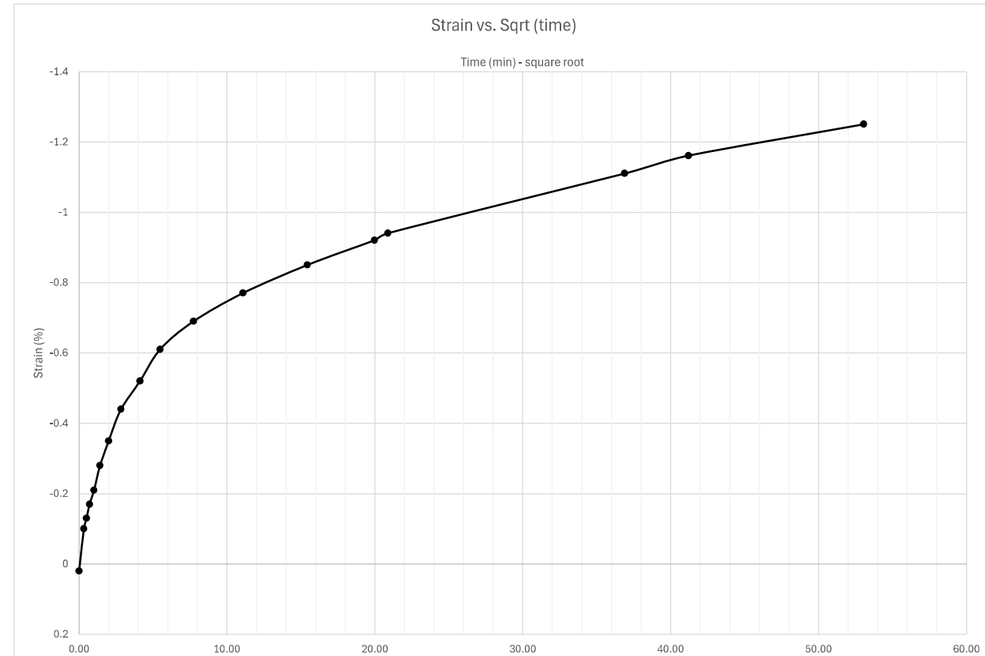
Sequence 7: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

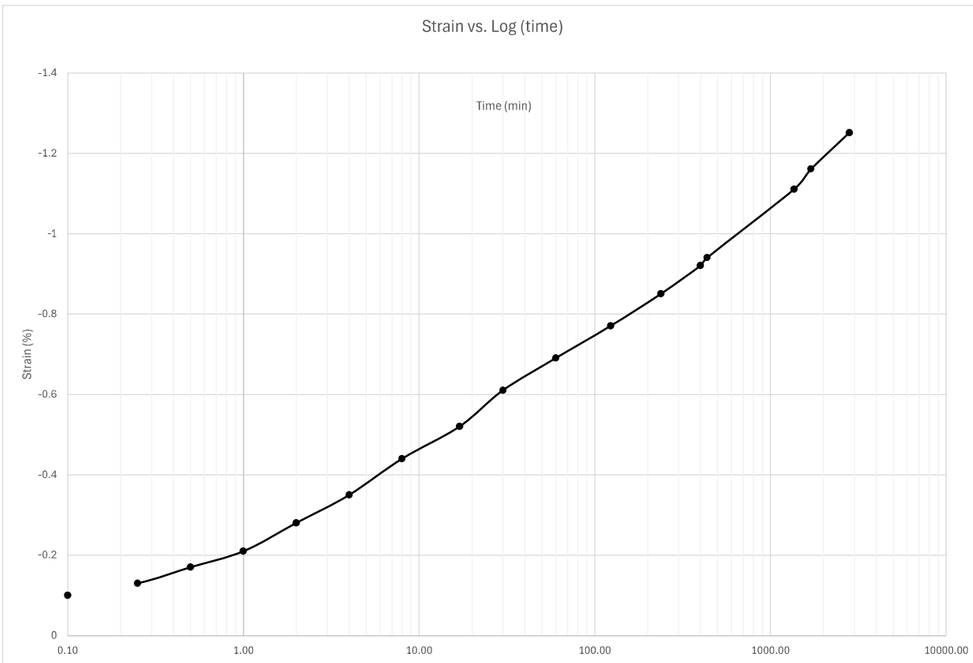


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.4599	0.0001	0.63	0.01001	3.843
1			6	0.10	0.32	500	0.4589	-0.0009	0.631	-0.09009	3.851
2			15	0.25	0.50	500	0.4587	-0.0011	0.6312	-0.11011	3.853
3			30	0.50	0.71	500	0.4585	-0.0013	0.6314	-0.13013	3.854
4		1		1.00	1.00	500	0.4581	-0.0017	0.6318	-0.17017	3.857
5		2		2.00	1.41	500	0.4576	-0.0022	0.6323	-0.22022	3.861
6		4		4.00	2.00	500	0.4569	-0.0029	0.633	-0.29029	3.866
7		8		8.00	2.83	500	0.456	-0.0038	0.6339	-0.38038	3.873
8		15		15.00	3.87	500	0.4549	-0.0049	0.635	-0.49049	3.882
9		23	10	23.17	4.81	500	0.4541	-0.0057	0.6358	-0.570571	3.888
10	1	15		75.00	8.66	500	0.4516	-0.0082	0.6383	-0.820821	3.907
11	2	35		155.00	12.45	500	0.45	-0.0098	0.6399	-0.980981	3.919
12	4	20		260.00	16.12	500	0.4488	-0.011	0.6411	-1.101101	3.929
13	23	36		1416.00	37.63	500	0.4431	-0.0167	0.6468	-1.671672	3.973
14	31	45		1905.00	43.65	500	0.4421	-0.0177	0.6478	-1.771772	3.980
15	47	42		2862.00	53.50	500	0.4405	-0.0193	0.6494	-1.931932	3.992
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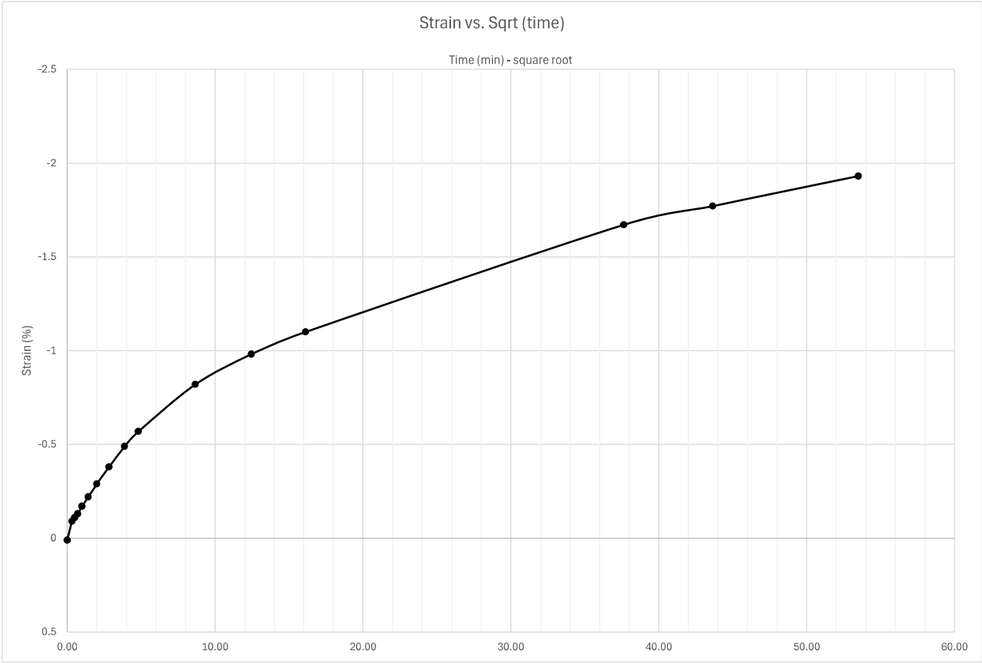
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

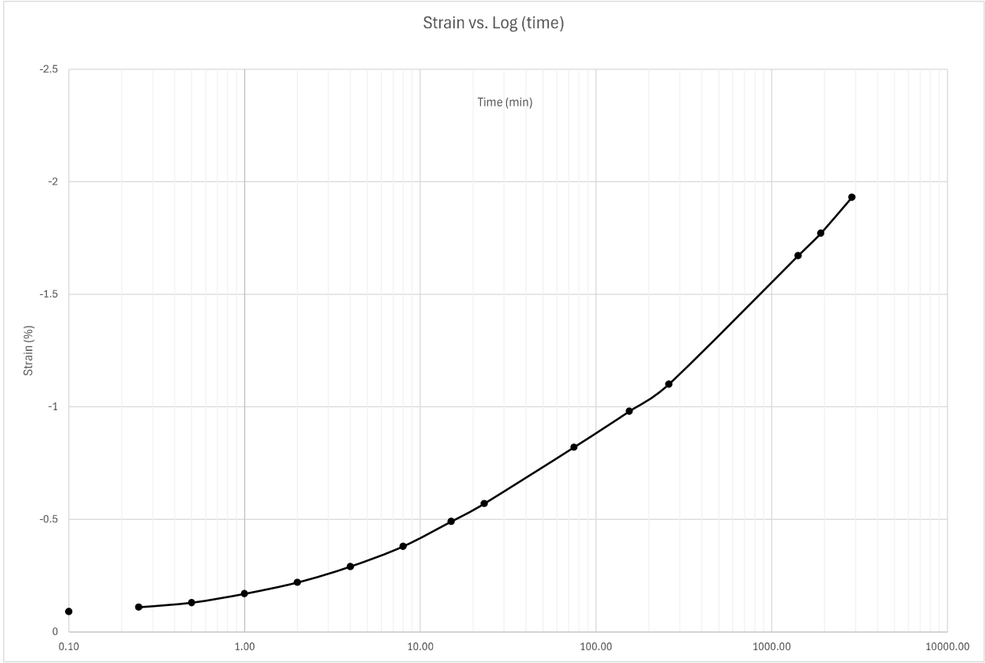
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4405	-0.0001	0.6495	-0.01001	3.993
1			6	0.10	0.32	1000	0.4415	0.0009	0.6485	0.09009	3.986
2			15	0.25	0.50	1000	0.4418	0.0012	0.6482	0.12012	3.983
3			30	0.50	0.71	1000	0.4421	0.0015	0.6479	0.15015	3.981
4		1		1.00	1.00	1000	0.4425	0.0019	0.6475	0.19019	3.978
5		2		2.00	1.41	1000	0.4431	0.0025	0.6469	0.25025	3.973
6		4		4.00	2.00	1000	0.4438	0.0032	0.6462	0.32032	3.968
7		8		8.00	2.83	1000	0.4447	0.0041	0.6453	0.41041	3.961
8		17		17.00	4.12	1000	0.4455	0.0049	0.6445	0.49049	3.955
9		32		32.00	5.66	1000	0.446	0.0054	0.644	0.540541	3.951
10	1	49		109.00	10.44	1000	0.4469	0.0063	0.6431	0.630631	3.944
11	3	54		234.00	15.30	1000	0.4472	0.0066	0.6428	0.660661	3.942
12	6	20		380.00	19.49	1000	0.4475	0.0069	0.6425	0.690691	3.939
13	52	14		3134.00	55.98	1000	0.4482	0.0076	0.6418	0.760761	3.934
14	73	50		4430.00	66.56	1000	0.4483	0.0077	0.6417	0.770771	3.933
15	95	43		5743.00	75.78	1000	0.4484	0.0078	0.6416	0.780781	3.933
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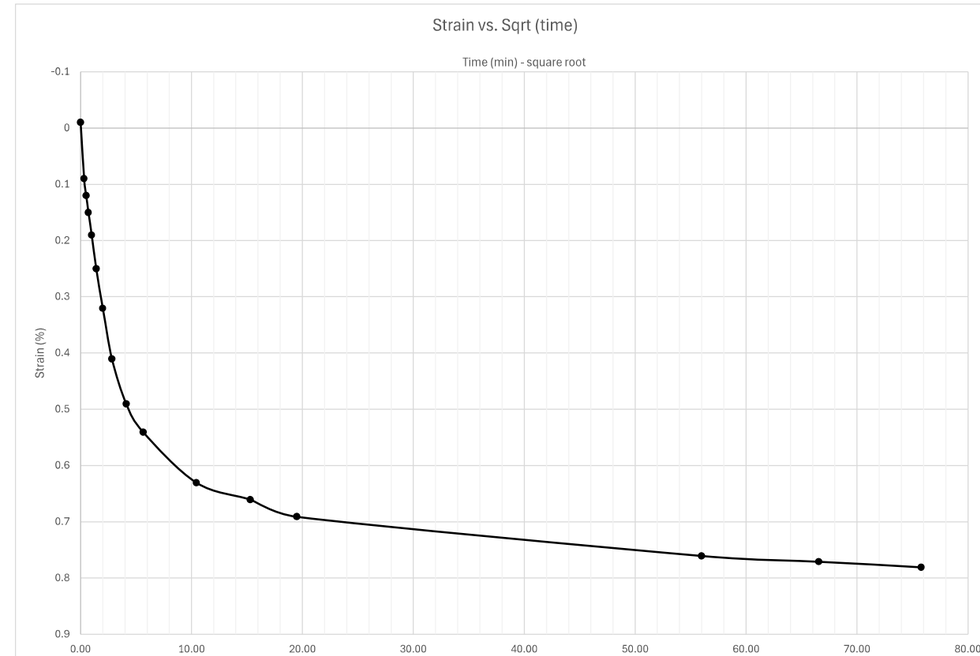
Sequence 9: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

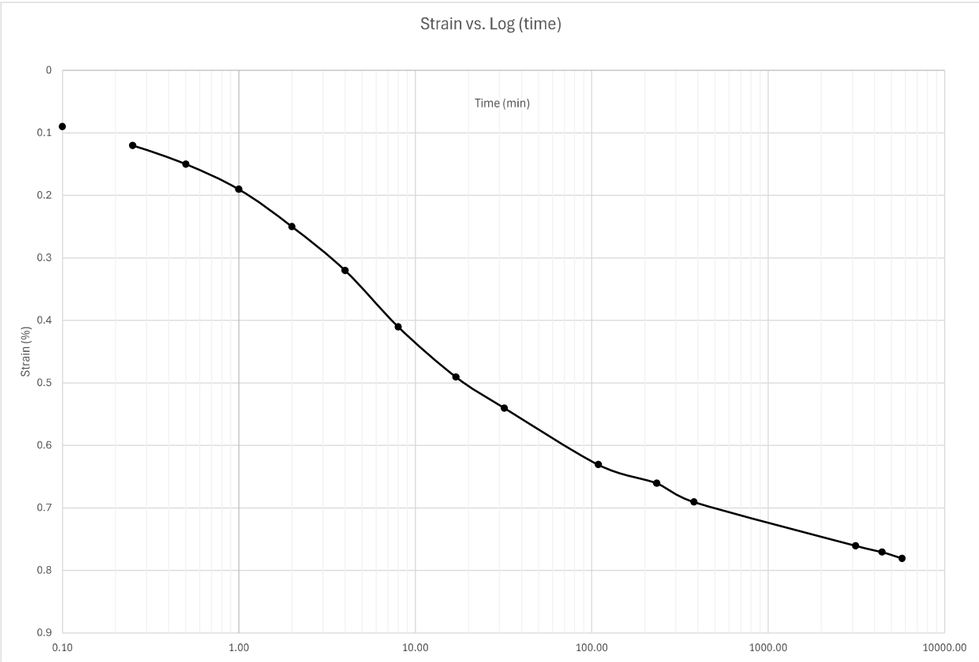


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.4484	-0.0002	0.6418	-0.02002	3.934
1			6	0.10	0.32	2000	0.4503	0.0017	0.6399	0.17017	3.919
2			15	0.25	0.50	2000	0.4508	0.0022	0.6394	0.22022	3.916
3			30	0.50	0.71	2000	0.4513	0.0027	0.6389	0.27027	3.912
4		1		1.00	1.00	2000	0.4519	0.0033	0.6383	0.33033	3.907
5		2		2.00	1.41	2000	0.4529	0.0043	0.6373	0.43043	3.899
6		4		4.00	2.00	2000	0.4541	0.0055	0.6361	0.550551	3.890
7		8		8.00	2.83	2000	0.4555	0.0069	0.6347	0.690691	3.879
8		15		15.00	3.87	2000	0.4567	0.0081	0.6335	0.810811	3.870
9		31		31.00	5.57	2000	0.4578	0.0092	0.6324	0.920921	3.862
10	1	2		62.00	7.87	2000	0.4586	0.01	0.6316	1.001001	3.856
11	1	44		104.00	10.20	2000	0.4592	0.0106	0.631	1.061061	3.851
12	4	13		253.00	15.91	2000	0.4601	0.0115	0.6301	1.151151	3.844
13	6	9		369.00	19.21	2000	0.4605	0.0119	0.6297	1.191191	3.841
14	22	23		1343.00	36.65	2000	0.4621	0.0135	0.6281	1.351351	3.829
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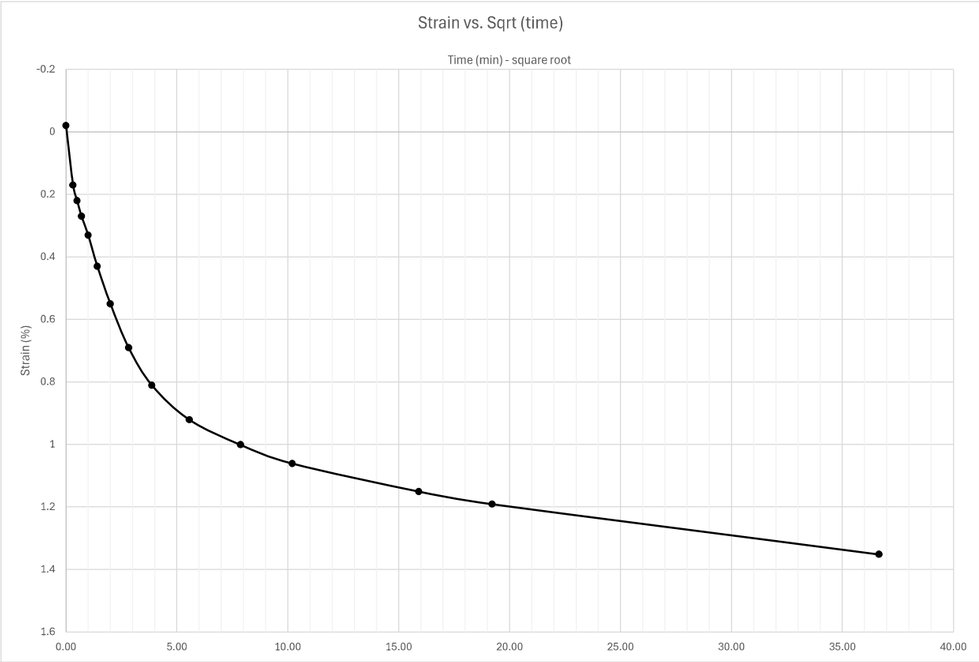
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

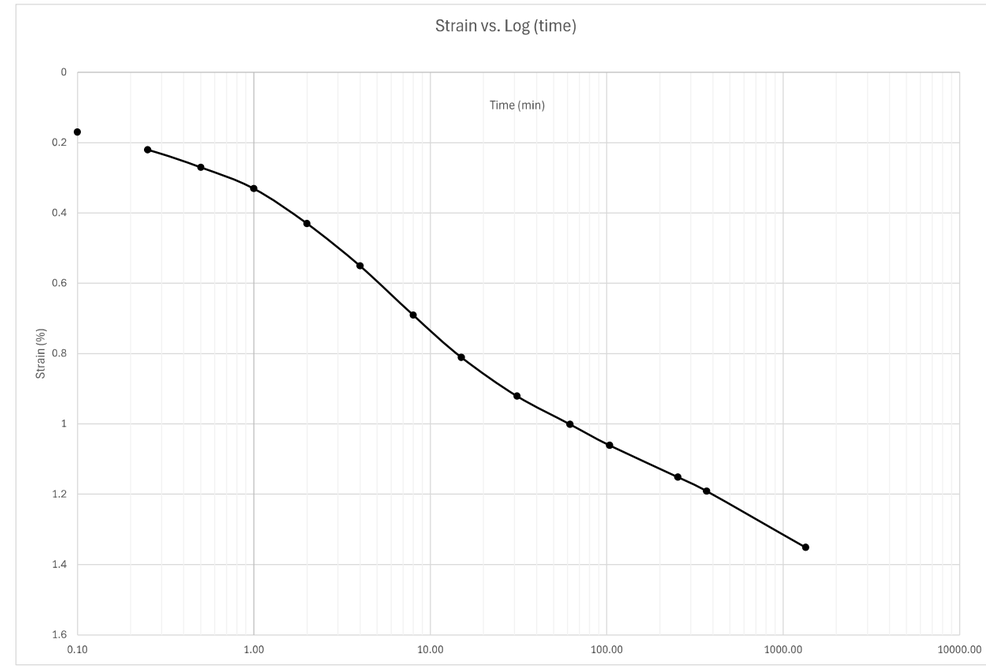
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.4621	-0.0003	0.6284	-0.03003	3.831
1			6	0.10	0.32	4000	0.4651	0.0027	0.6254	0.27027	3.808
2			15	0.25	0.50	4000	0.4659	0.0035	0.6246	0.35035	3.802
3			30	0.50	0.71	4000	0.4667	0.0043	0.6238	0.43043	3.796
4		1		1.00	1.00	4000	0.468	0.0056	0.6225	0.560561	3.786
5		2		2.00	1.41	4000	0.4697	0.0073	0.6208	0.730731	3.773
6		4		4.00	2.00	4000	0.4717	0.0093	0.6188	0.930931	3.757
7		8		8.00	2.83	4000	0.4744	0.012	0.6161	1.201201	3.736
8		15		15.00	3.87	4000	0.4767	0.0143	0.6138	1.431431	3.719
9		30		30.00	5.48	4000	0.4791	0.0167	0.6114	1.671672	3.700
10		55		55.00	7.42	4000	0.4808	0.0184	0.6097	1.841842	3.687
11	1	55		115.00	10.72	4000	0.4828	0.0204	0.6077	2.042042	3.672
12	4	5		245.00	15.65	4000	0.4849	0.0225	0.6056	2.252252	3.656
13	6	6		366.00	19.13	4000	0.4861	0.0237	0.6044	2.372372	3.647
14	21	17		1277.00	35.74	4000	0.4903	0.0279	0.6002	2.792793	3.614
15	24	7		1447.00	38.04	4000	0.4908	0.0284	0.5997	2.842843	3.610
16	28	20		1700.00	41.23	4000	0.4915	0.0291	0.599	2.912913	3.605
17	45			2700.00	51.96	4000	0.4938	0.0314	0.5967	3.143143	3.587
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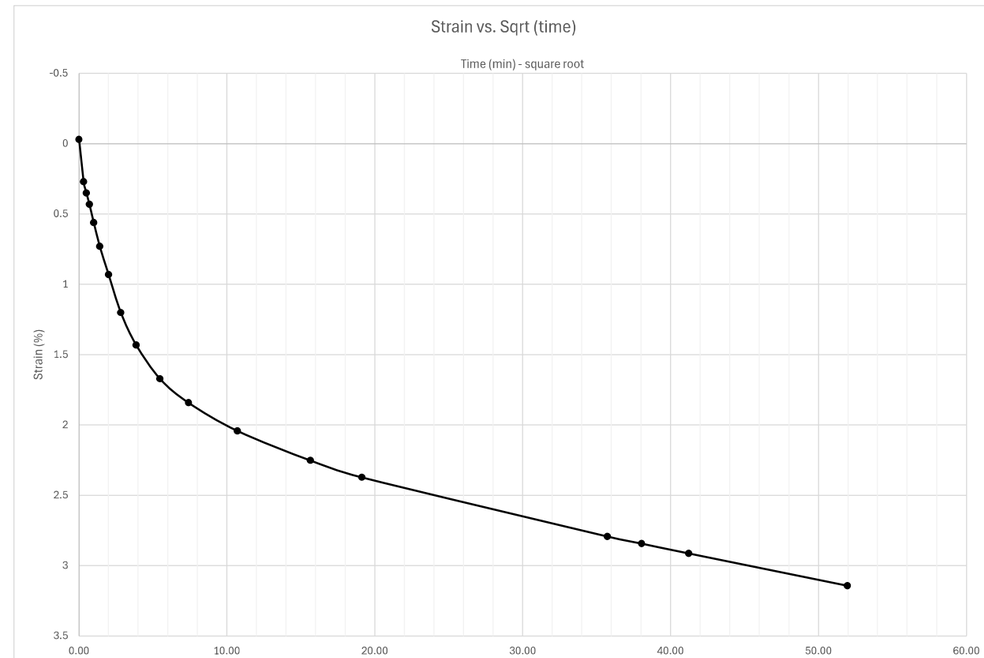
Sequence 11: 4000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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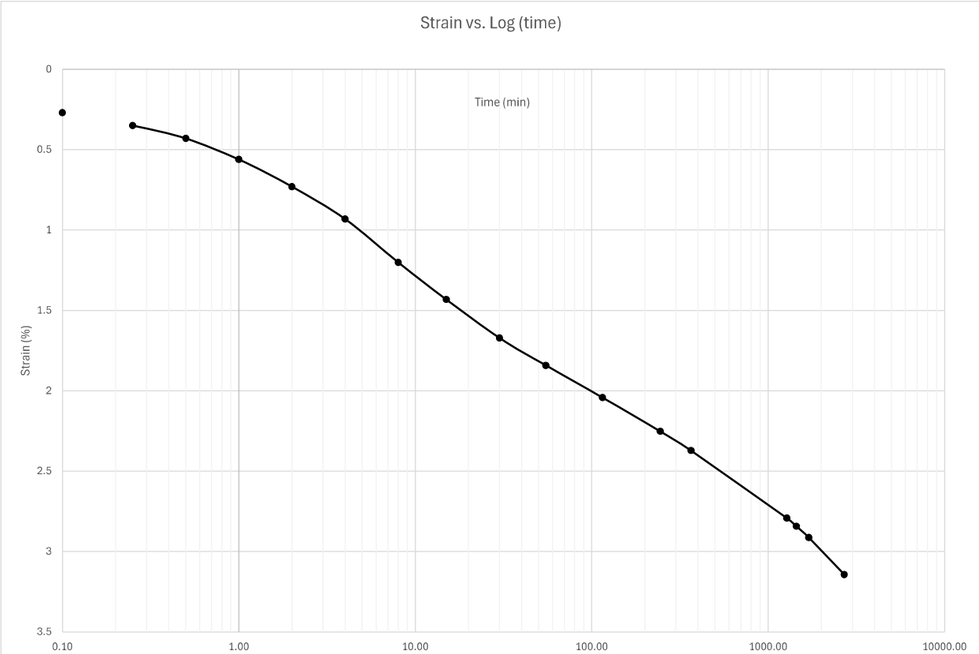
Sequence 11: 4000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.4938	-0.0006	0.5973	-0.06006	3.592
1			6	0.10	0.32	8000	0.4979	0.0035	0.5932	0.35035	3.560
2			15	0.25	0.50	8000	0.4995	0.0051	0.5916	0.510511	3.548
3			30	0.50	0.71	8000	0.501	0.0066	0.5901	0.660661	3.537
4		1		1.00	1.00	8000	0.5029	0.0085	0.5882	0.850851	3.522
5		2		2.00	1.41	8000	0.506	0.0116	0.5851	1.161161	3.498
6		4		4.00	2.00	8000	0.5104	0.016	0.5807	1.601602	3.464
7		8		8.00	2.83	8000	0.5162	0.0218	0.5749	2.182182	3.420
8		15		15.00	3.87	8000	0.523	0.0286	0.5681	2.862863	3.367
9		29		29.00	5.39	8000	0.5312	0.0368	0.5599	3.683684	3.304
10	1	0		60.00	7.75	8000	0.5425	0.0481	0.5486	4.814815	3.218
11	1	58		118.00	10.86	8000	0.55	0.0556	0.5411	5.565566	3.160
12	3	56		236.00	15.36	8000	0.5581	0.0637	0.533	6.376376	3.098
13	5	38		338.00	18.38	8000	0.5616	0.0672	0.5295	6.726727	3.071
14	7	11		431.00	20.76	8000	0.5646	0.0702	0.5265	7.027027	3.048
15	36	9		2169.00	46.57	8000	0.5795	0.0851	0.5116	8.518519	2.933
16	74	53		4493.00	67.03	8000	0.5861	0.0917	0.505	9.179179	2.882
17	95	54		5754.00	75.86	8000	0.5883	0.0939	0.5028	9.399399	2.865
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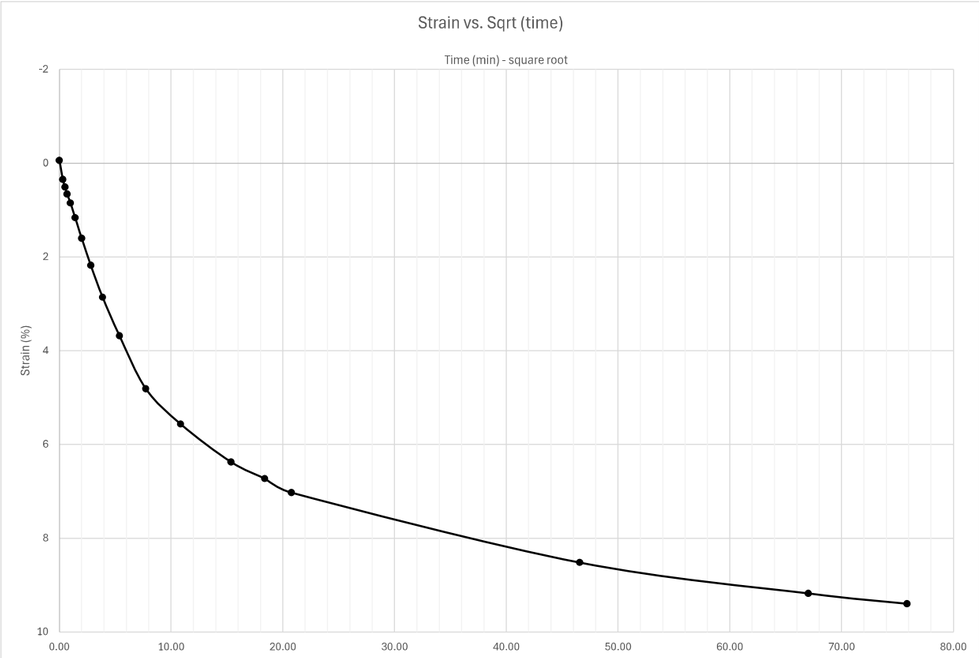
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

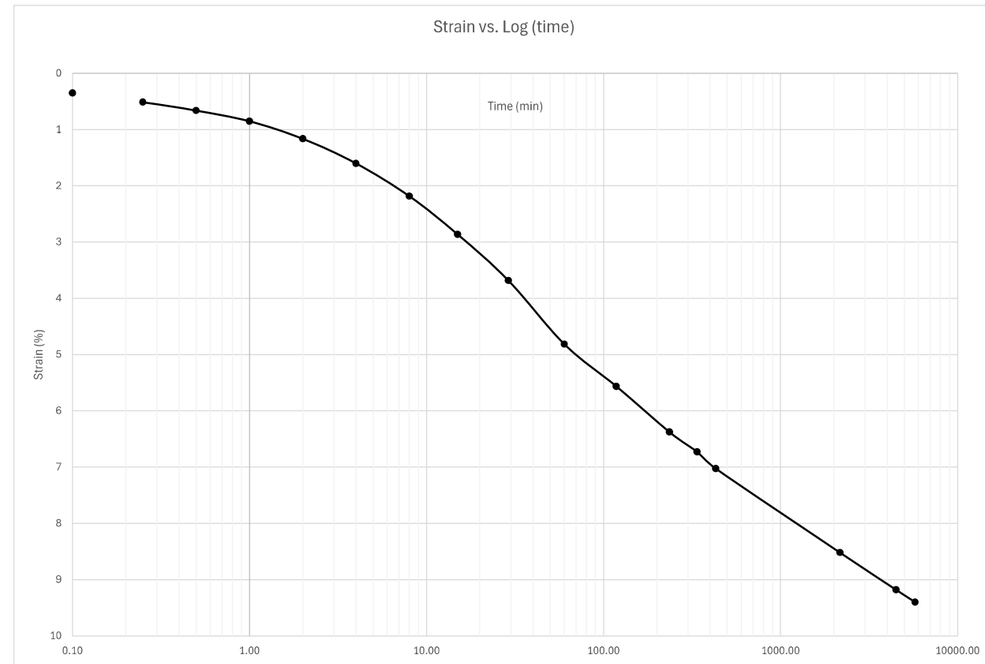
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.5883	-0.0008	0.5036	-0.08008	2.872
1			6	0.10	0.32	16000	0.594	0.0049	0.4979	0.49049	2.828
2			15	0.25	0.50	16000	0.5951	0.006	0.4968	0.600601	2.819
3			30	0.50	0.71	16000	0.5965	0.0074	0.4954	0.740741	2.809
4		1		1.00	1.00	16000	0.5986	0.0095	0.4933	0.950951	2.792
5		2		2.00	1.41	16000	0.5999	0.0108	0.492	1.081081	2.782
6		4		4.00	2.00	16000	0.6041	0.015	0.4878	1.501502	2.750
7		8		8.00	2.83	16000	0.609	0.0199	0.4829	1.991992	2.712
8		15		15.00	3.87	16000	0.615	0.0259	0.4769	2.592593	2.666
9		30		30.00	5.48	16000	0.6215	0.0324	0.4704	3.243243	2.616
10	1			60.00	7.75	16000	0.6304	0.0413	0.4615	4.134134	2.548
11	1	53		113.00	10.63	16000	0.6379	0.0488	0.454	4.884885	2.490
12	5	18		318.00	17.83	16000	0.6483	0.0592	0.4436	5.925926	2.410
13	16	34		994.00	31.53	16000	0.6581	0.069	0.4338	6.906907	2.335
14	23	0		1380.00	37.15	16000	0.6609	0.0718	0.431	7.187187	2.313
15	40	39		2439.00	49.39	16000	0.6655	0.0764	0.4264	7.647648	2.278
16	115	10		6910.00	83.13	16000	0.6737	0.0846	0.4182	8.468468	2.215
17	307	20		18440.00	135.79	16000	0.6805	0.0914	0.4114	9.149149	2.163
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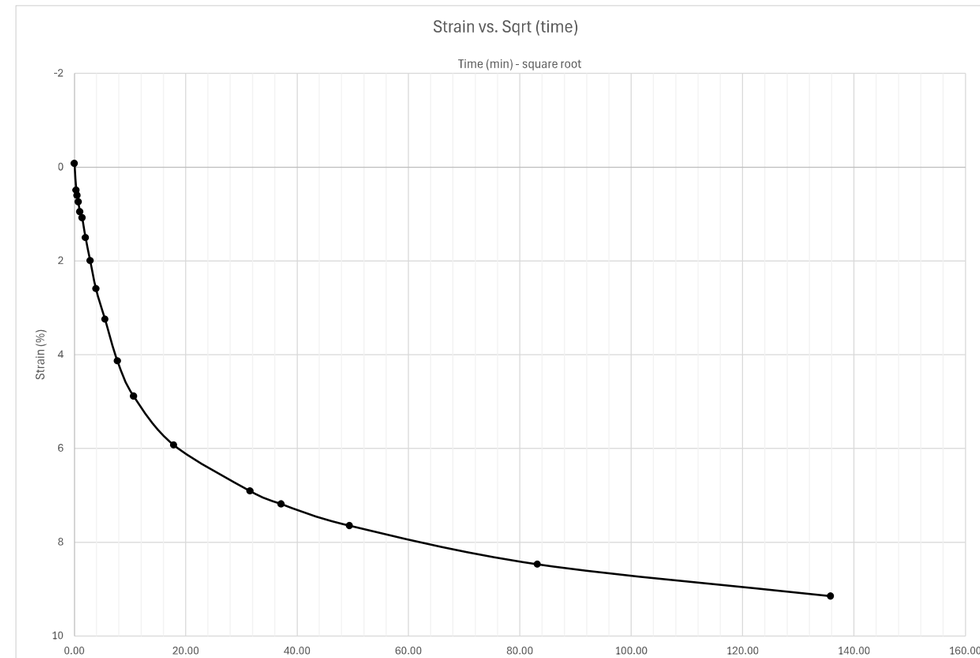
Sequence 13: 16000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

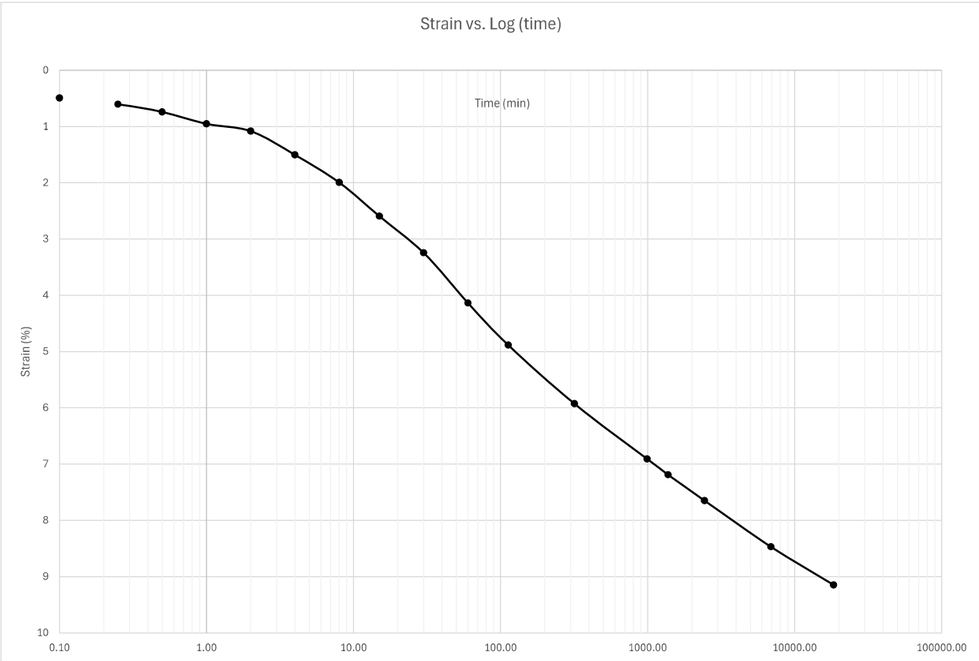


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.6805	-0.0012	0.4126	-0.12012	2.172
1			6	0.10	0.32	32000	0.6838	0.0021	0.4093	0.21021	2.147
2			15	0.25	0.50	32000	0.6845	0.0028	0.4086	0.28028	2.141
3			30	0.50	0.71	32000	0.6852	0.0035	0.4079	0.35035	2.136
4		1		1.00	1.00	32000	0.6865	0.0048	0.4066	0.48048	2.126
5		2		2.00	1.41	32000	0.6881	0.0064	0.405	0.640641	2.114
6		4		4.00	2.00	32000	0.6905	0.0088	0.4026	0.880881	2.095
7		8		8.00	2.83	32000	0.6936	0.0119	0.3995	1.191191	2.071
8		15		15.00	3.87	32000	0.697	0.0153	0.3961	1.531532	2.045
9		30		30.00	5.48	32000	0.7019	0.0202	0.3912	2.022022	2.007
10	1	7		67.00	8.19	32000	0.708	0.0263	0.3851	2.632633	1.961
11	2	24		144.00	12.00	32000	0.7143	0.0326	0.3788	3.263263	1.912
12	4	50		290.00	17.03	32000	0.7199	0.0382	0.3732	3.823824	1.869
13	22	24		1344.00	36.66	32000	0.7307	0.049	0.3624	4.904905	1.786
14	24	24		1464.00	38.26	32000	0.7314	0.0497	0.3617	4.974975	1.781
15	29	56		1796.00	42.38	32000	0.7327	0.051	0.3604	5.105105	1.771
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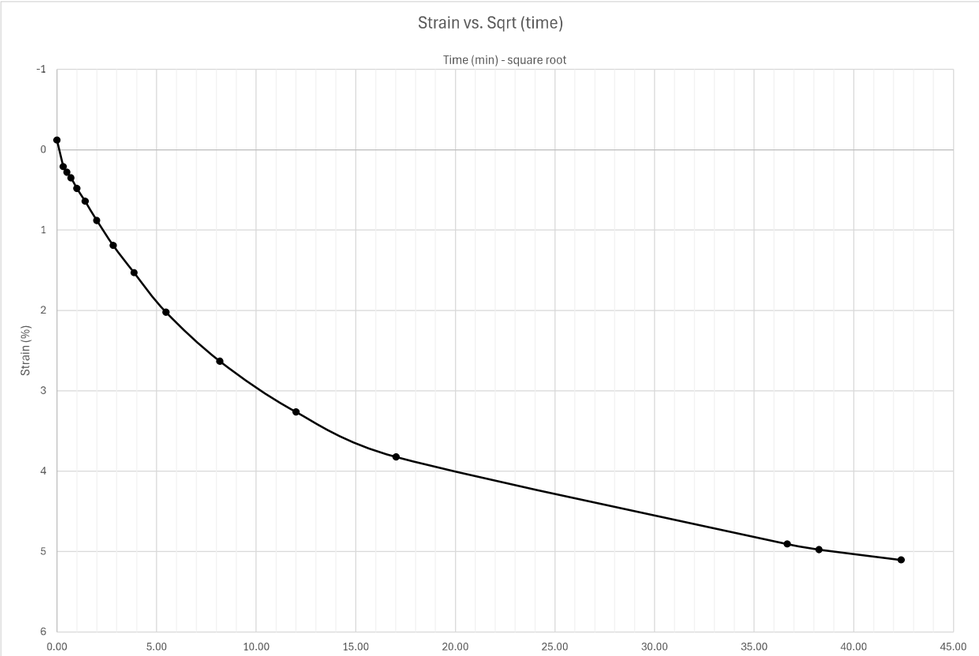
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

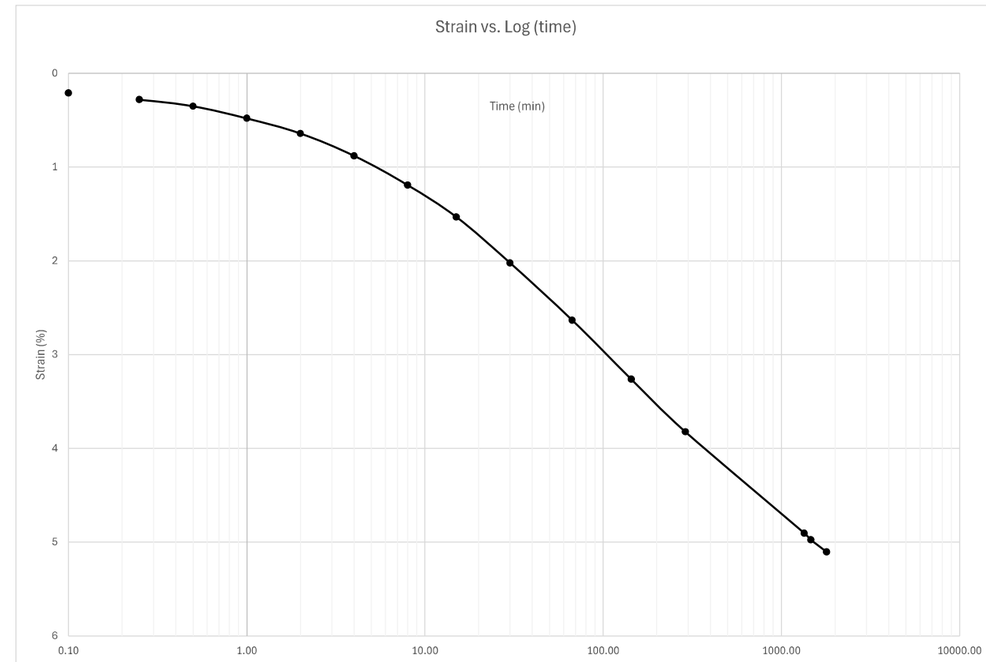
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_4000, ST-40, 8.0-10.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	13.0-15.0'
Sample Number	ST-41	Boring Number	Y1RPC_4000
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0113	0.1145	0.9877	0.011	8.648	1.69	1.25	0.12238	0.038437
2	500	0.0433	0.1146	0.9557	0.043	8.335	0.81	-	0.23905	-
3	1000	0.1875	0.1147	0.8115	0.188	6.927	4.84	1.85	0.02884	0.017531
4	2000	0.3675	0.1149	0.6315	0.368	5.169	14.44	4.35	0.00585	0.004515
5	4000	0.5146	0.1151	0.4844	0.515	3.732	8.41	9	0.00591	0.001284
6	2000	0.506	0.1149	0.493	0.507	3.816	-	-	-	-
7	1000	0.4945	0.1147	0.5045	0.495	3.928	-	-	-	-
8	500	0.4808	0.1146	0.5182	0.481	4.062	-	-	-	-
9	1000	0.4866	0.1147	0.5124	0.487	4.005	4	1.9	0.01392	0.00681
10	2000	0.4992	0.1149	0.4998	0.500	3.882	6.25	2	0.00847	0.00615
11	4000	0.5231	0.1151	0.4759	0.524	3.649	10.24	2.5	0.00469	0.00446
12	8000	0.62	0.1158	0.379	0.621	2.702	38.44	15	0.00079	0.00047
13	16000	0.6982	0.1166	0.3008	0.699	1.938	60.84	17	0.00032	0.00026
14	32000	0.7486	0.1178	0.2504	0.749	1.446	51.84	20	0.00026	0.00015
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 4/24/2026
Machine Apparatus: 6
Technician: KSB

Sampling Date: 4/14/2026
Sample Number: ST-41
Depth (ft): 13.0-15.0'
Boring Number: Y1RPC_4000
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.534 (Measured)
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.24

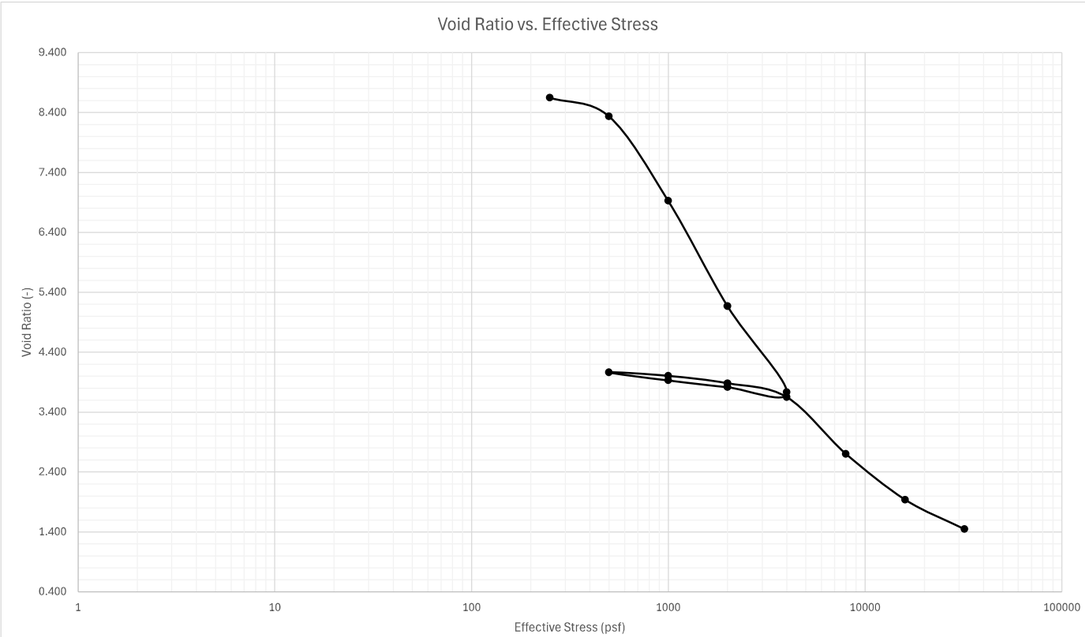
Parameters	Initial	Final
Height (in)	0.999	0.2504
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.236
Weight of Container (g)	60.35	61.09
Weight of Wet Soil + Container (g)	242.83	95.57
Weight of Dry Soil + Container (g)	87.93	73.65
Moisture Content (%)	561.64	174.52
Moist Weight + Ring Weight (g)	187.29	138.09
Dry Mass (g)	12.70	12.69
Water Content (calc from spec)	561.64	174.52
Dry Density (pcf)	9.81	39.13
Wet Density (pcf)	64.93	107.41
Volume of Solids (in^3)	0.51	0.51
Height of Solids (in)	0.10	0.10
Void Ratio	8.758	1.446

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

Y1RPC_4000, ST-41, 13.0-15.0' ft

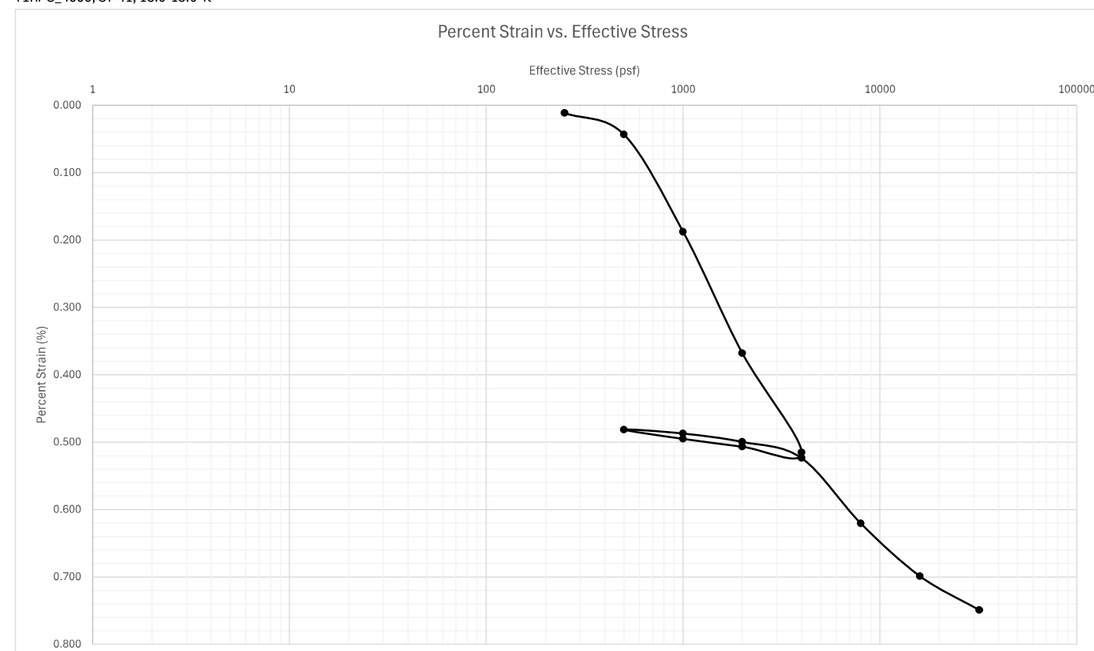
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.1164	0	0.999	0	8.758
1			15	0.25	0.5	250	0.1182	0.0018	0.9972	0.18018	8.741
2			30	0.5	0.707106781	250	0.1198	0.0034	0.9956	0.34034	8.725
3		1		1	1	250	0.1211	0.0047	0.9943	0.47047	8.712
4		2		2	1.414213562	250	0.1222	0.0058	0.9932	0.580581	8.702
5		4		4	2	250	0.1227	0.0063	0.9927	0.630631	8.697
6		8		8	2.828427125	250	0.1234	0.007	0.992	0.700701	8.690
7		15		15	3.872983346	250	0.1239	0.0075	0.9915	0.750751	8.685
8		44		44	6.633249581	250	0.1246	0.0082	0.9908	0.820821	8.678
9	1	30		90	9.486832981	250	0.1252	0.0088	0.9902	0.880881	8.672
10	4	27		267	16.34013464	250	0.1261	0.0097	0.9893	0.970971	8.664
11	22	24		1344	36.66060556	250	0.1269	0.0105	0.9885	1.051051	8.656
12	69	29		4169	64.56779383	250	0.1277	0.0113	0.9877	1.131131	8.648
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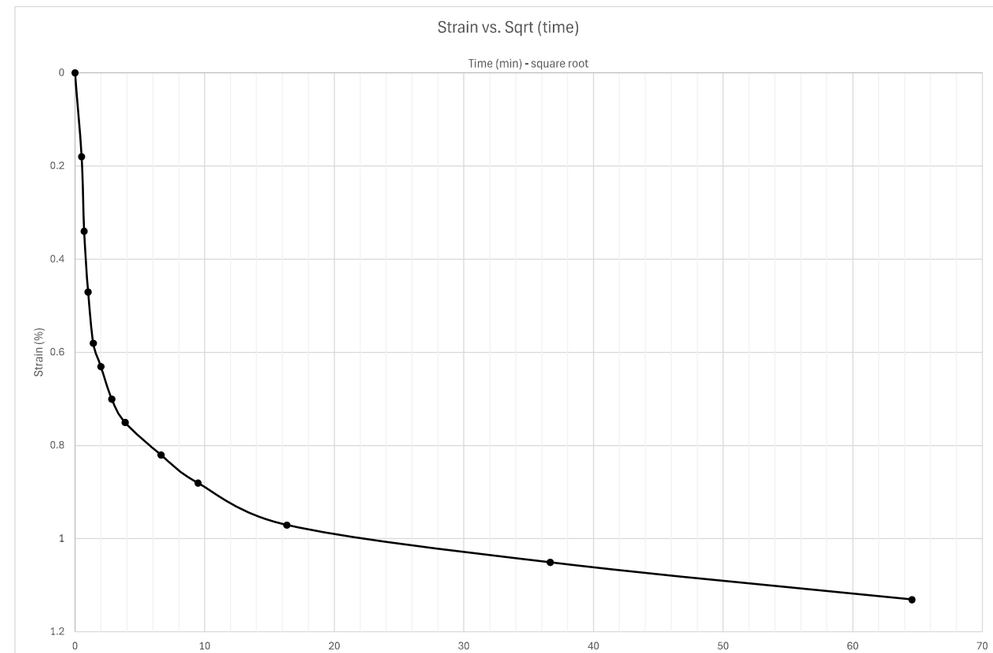
Sequence 1: 250 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

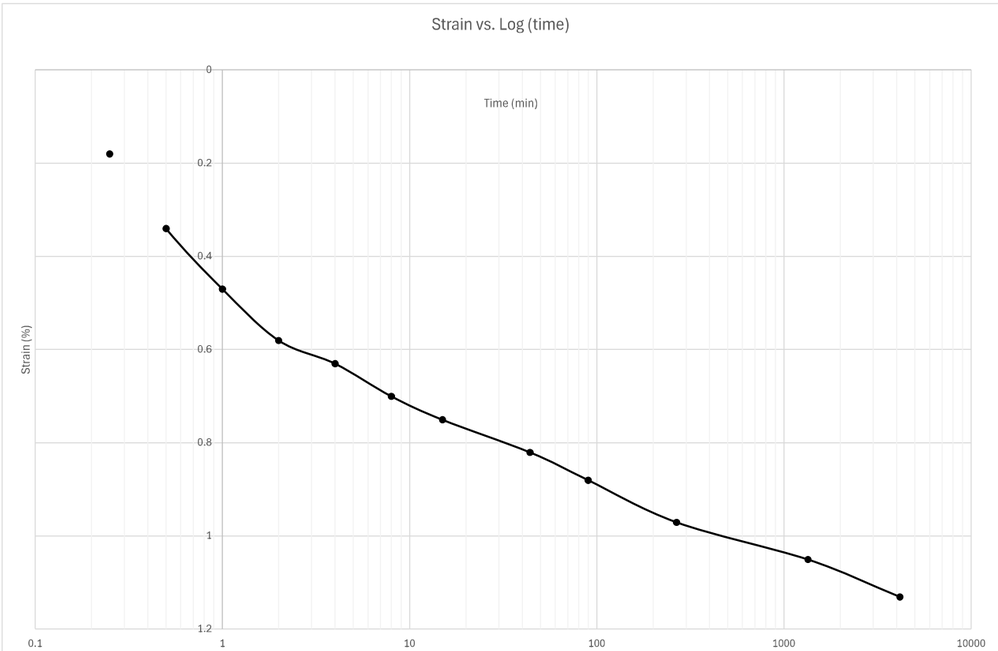


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1277	-0.0001	0.9878	-0.01001	8.649
1			6	0.1	0.32	500	0.1374	0.0096	0.9781	0.960961	8.554
2			15	0.25	0.50	500	0.1402	0.0124	0.9753	1.241241	8.527
3			30	0.5	0.71	500	0.1427	0.0149	0.9728	1.491491	8.502
4		1		1	1.00	500	0.1443	0.0165	0.9712	1.651652	8.487
5		2		2	1.41	500	0.1457	0.0179	0.9698	1.791792	8.473
6		4		4	2.00	500	0.1472	0.0194	0.9683	1.941942	8.458
7		8		8	2.83	500	0.1482	0.0204	0.9673	2.042042	8.449
8		15		15	3.87	500	0.1489	0.0211	0.9666	2.112112	8.442
9		22		22	4.69	500	0.1494	0.0216	0.9661	2.162162	8.437
10		38		38	6.16	500	0.1503	0.0225	0.9652	2.252252	8.428
11	1	8		68	8.25	500	0.1518	0.0240	0.9637	2.402402	8.413
12	2	10		130	11.40	500	0.1530	0.0252	0.9625	2.522523	8.402
13	4	6		246	15.68	500	0.1541	0.0263	0.9614	2.632633	8.391
14	7	8		428	20.69	500	0.1550	0.0272	0.9605	2.722723	8.382
15	22	40		1360	36.88	500	0.1578	0.0300	0.9577	3.003003	8.355
16	29	29		1769	42.06	500	0.1589	0.0311	0.9566	3.113113	8.344
17	31			1860	43.13	500	0.1590	0.0312	0.9565	3.123123	8.343
18	46	20		2780	52.73	500	0.1598	0.0320	0.9557	3.203203	8.335
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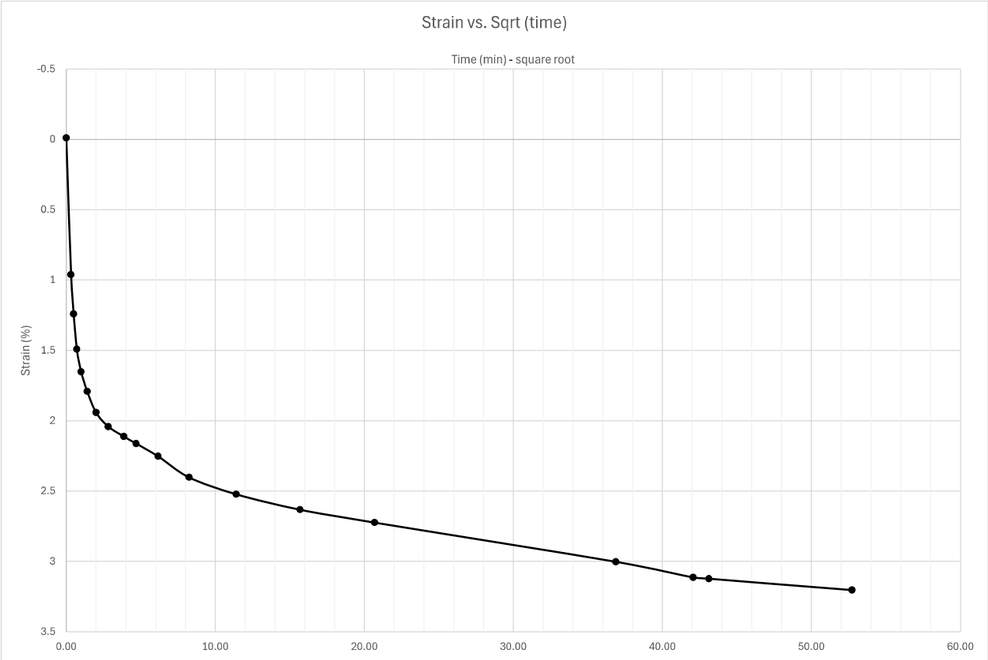
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

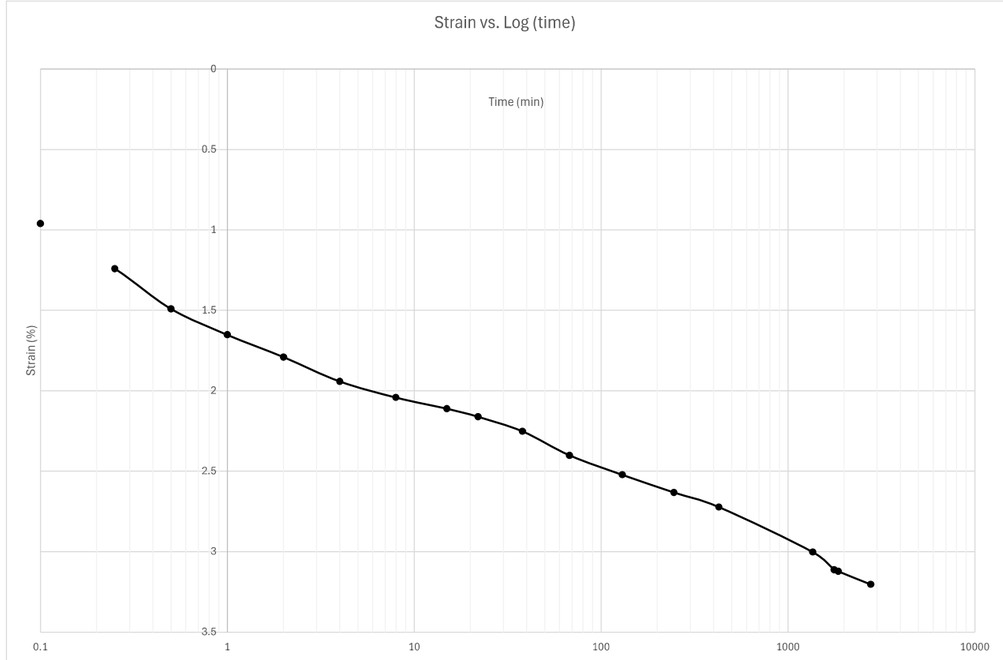
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.1598	-0.0001	0.9558	-0.01001	8.336
1			6	0.10	0.32	1000	0.175	0.0151	0.9406	1.511512	8.188
2			15	0.25	0.50	1000	0.1835	0.0236	0.9321	2.362362	8.105
3			30	0.50	0.71	1000	0.1915	0.0316	0.9241	3.163163	8.027
4		1		1.00	1.00	1000	0.2009	0.041	0.9147	4.104104	7.935
5		2		2.00	1.41	1000	0.212	0.0521	0.9036	5.215215	7.826
6		4		4.00	2.00	1000	0.2246	0.0647	0.891	6.476476	7.703
7		8		8.00	2.83	1000	0.2365	0.0766	0.8791	7.667668	7.587
8		16	30	16.50	4.06	1000	0.2487	0.0888	0.8669	8.888889	7.468
9		29		29.00	5.39	1000	0.2562	0.0963	0.8594	9.63964	7.395
10	1	15		75.00	8.66	1000	0.2688	0.1089	0.8468	10.9009	7.272
11	2	19		139.00	11.79	1000	0.2756	0.1157	0.84	11.58158	7.205
12	4	4		244.00	15.62	1000	0.2828	0.1229	0.8328	12.3023	7.135
13	7	10		430.00	20.74	1000	0.2899	0.13	0.8257	13.01301	7.065
14	23	7		1387.00	37.24	1000	0.3038	0.1439	0.8118	14.4044	6.930
15	23	43		1423.00	37.72	1000	0.3041	0.1442	0.8115	14.43443	6.927
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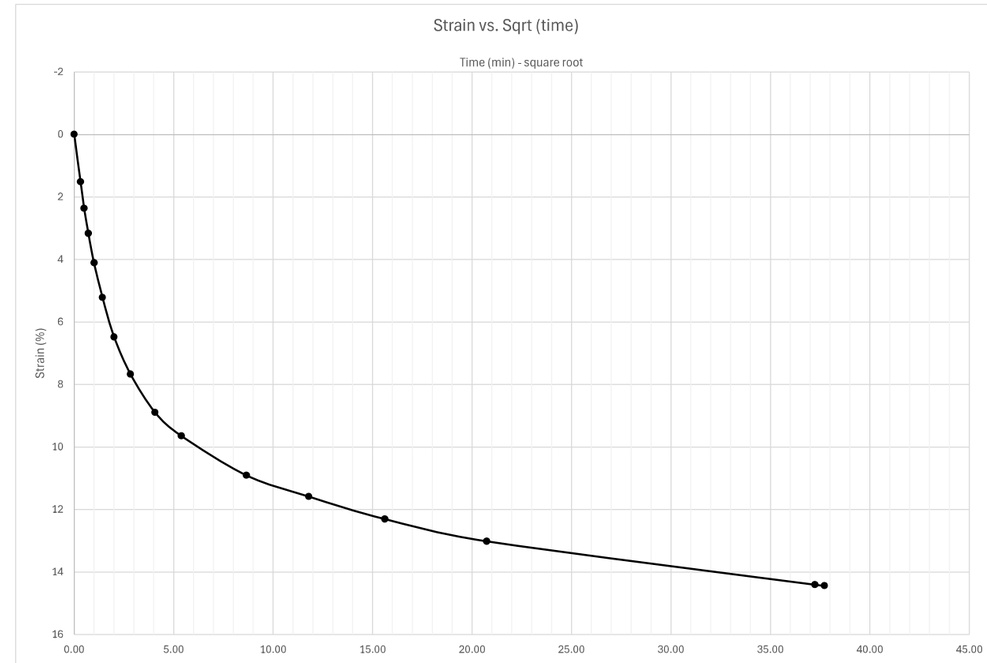
Sequence 3: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

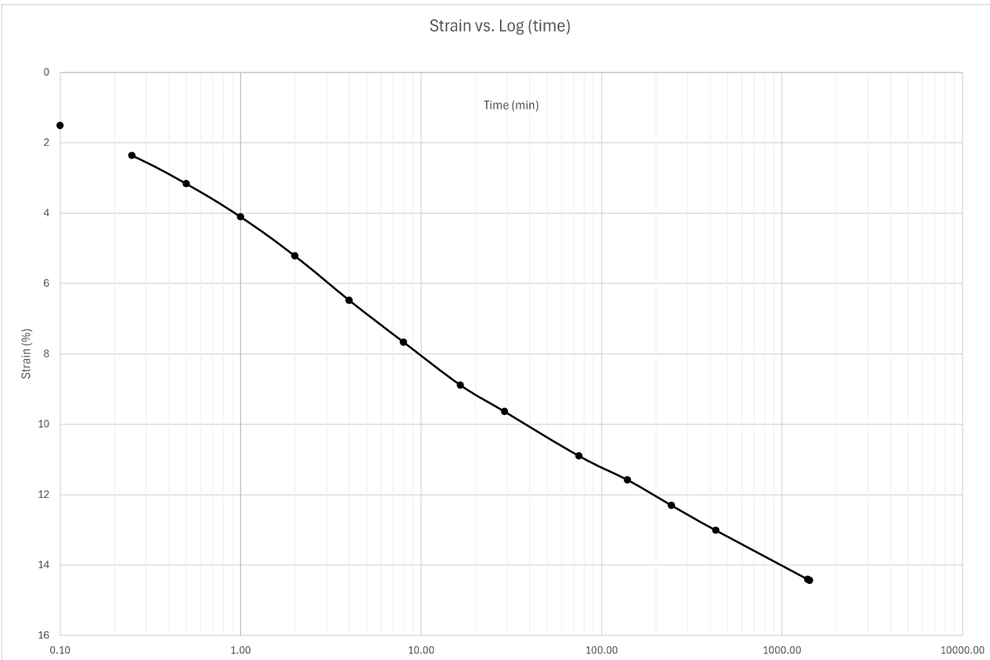


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3041	-0.0002	0.8117	-0.02002	6.929
1			6	0.10	0.32	2000	0.317	0.0127	0.7988	1.271271	6.803
2			15	0.25	0.50	2000	0.3245	0.0202	0.7913	2.022022	6.729
3			30	0.50	0.71	2000	0.3328	0.0285	0.783	2.852853	6.648
4		1		1.00	1.00	2000	0.3438	0.0395	0.772	3.953954	6.541
5		2		2.00	1.41	2000	0.3588	0.0545	0.757	5.455455	6.394
6		4		4.00	2.00	2000	0.3773	0.073	0.7385	7.307307	6.214
7		8		8.00	2.83	2000	0.3986	0.0943	0.7172	9.439439	6.006
8		15		15.00	3.87	2000	0.4188	0.1145	0.697	11.46146	5.808
9		30		30.00	5.48	2000	0.4367	0.1324	0.6791	13.25325	5.633
10	1			60.00	7.75	2000	0.4515	0.1472	0.6643	14.73473	5.489
11	2			120.00	10.95	2000	0.4627	0.1584	0.6531	15.85586	5.380
12	4			240.00	15.49	2000	0.4721	0.1678	0.6437	16.7968	5.288
13	7			420.00	20.49	2000	0.4788	0.1745	0.637	17.46747	5.222
14	22	39		1359.00	36.86	2000	0.4827	0.1784	0.6331	17.85786	5.184
15	26	25		1585.00	39.81	2000	0.4843	0.18	0.6315	18.01802	5.169
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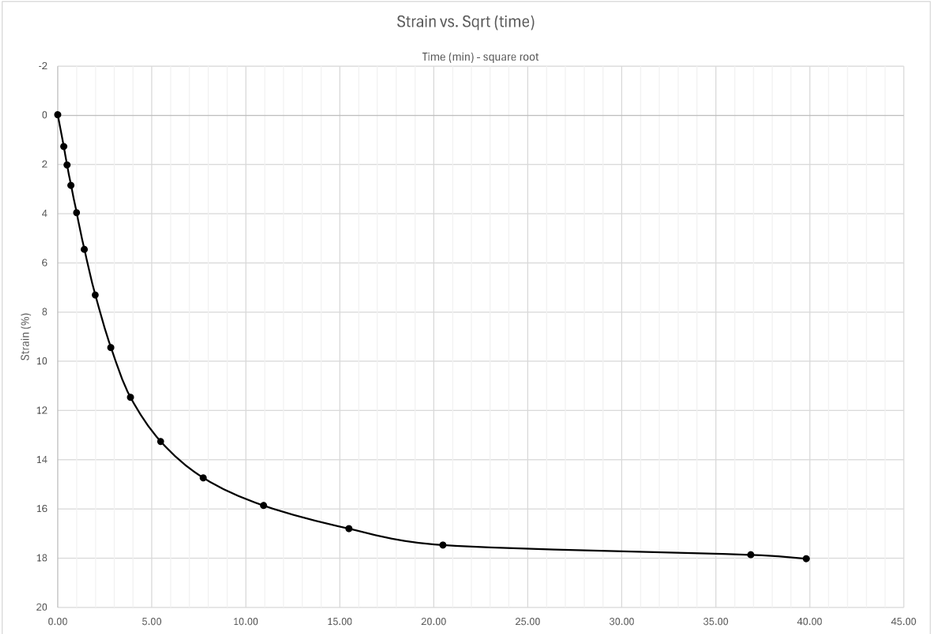
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

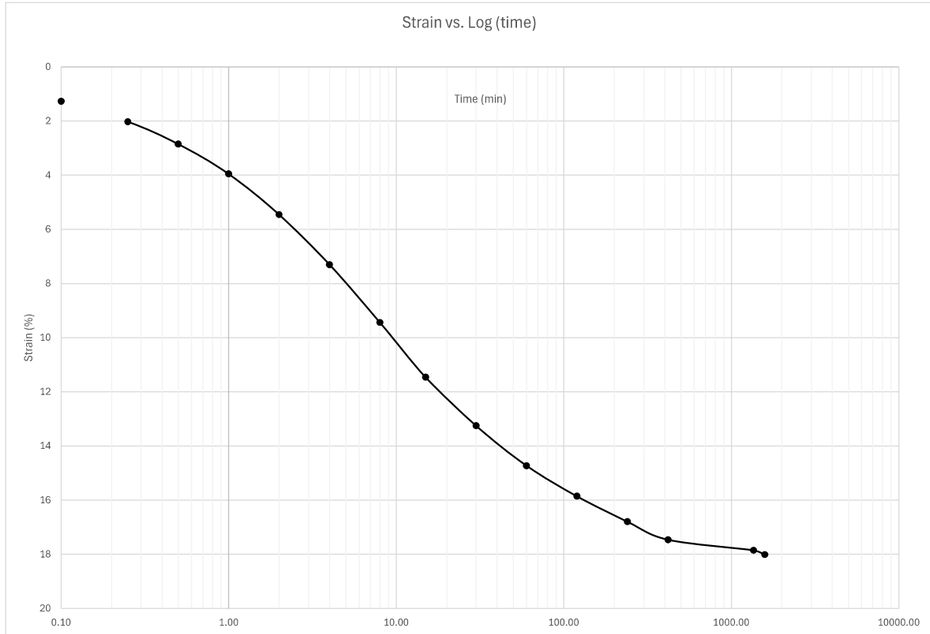
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4843	-0.0002	0.6317	-0.02002	5.170
1			6	0.10	0.32	4000	0.5001	0.0156	0.6159	1.561562	5.016
2			15	0.25	0.50	4000	0.5029	0.0184	0.6131	1.841842	4.989
3			30	0.50	0.71	4000	0.506	0.0215	0.61	2.152152	4.959
4		1		1.00	1.00	4000	0.5119	0.0274	0.6041	2.742743	4.901
5		2		2.00	1.41	4000	0.5226	0.0381	0.5934	3.813814	4.796
6		4		4.00	2.00	4000	0.536	0.0515	0.58	5.155155	4.665
7		8		8.00	2.83	4000	0.548	0.0635	0.568	6.356356	4.548
8		14		14.00	3.74	4000	0.5591	0.0746	0.5569	7.467467	4.440
9		27		27.00	5.20	4000	0.5755	0.091	0.5405	9.109109	4.280
10	1			60.00	7.75	4000	0.5933	0.1088	0.5227	10.89089	4.106
11	1	43		103.00	10.15	4000	0.6031	0.1186	0.5129	11.87187	4.010
12	4	25		265.00	16.28	4000	0.6154	0.1309	0.5006	13.1031	3.890
13	18	39		1119.00	33.45	4000	0.629	0.1445	0.487	14.46446	3.757
14	21	29		1289.00	35.90	4000	0.6302	0.1457	0.4858	14.58458	3.745
15	25			1500.00	38.73	4000	0.6316	0.1471	0.4844	14.72472	3.732
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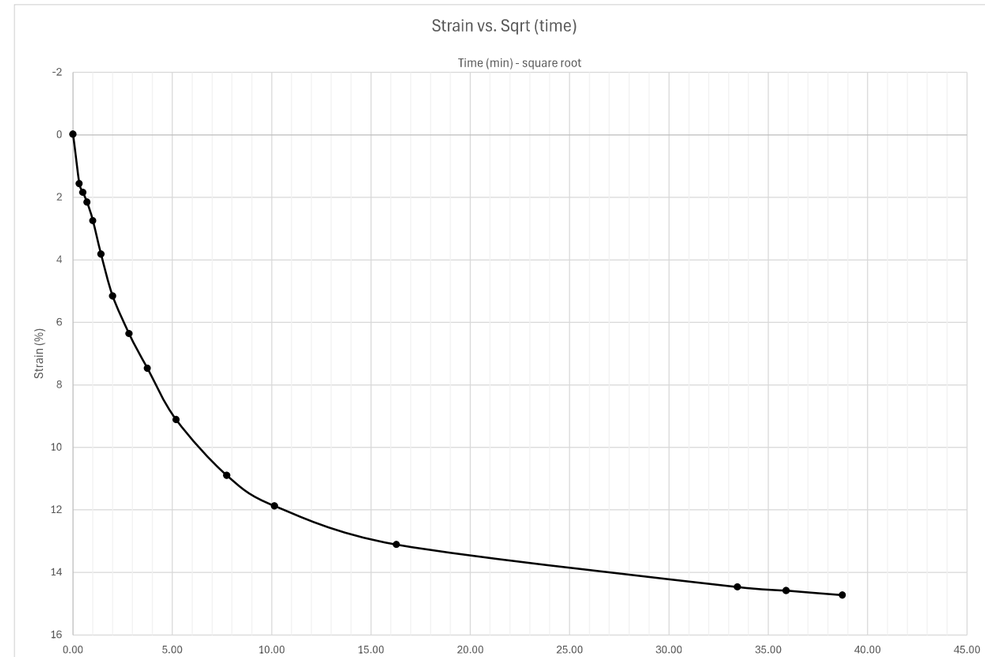
Sequence 5: 4000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

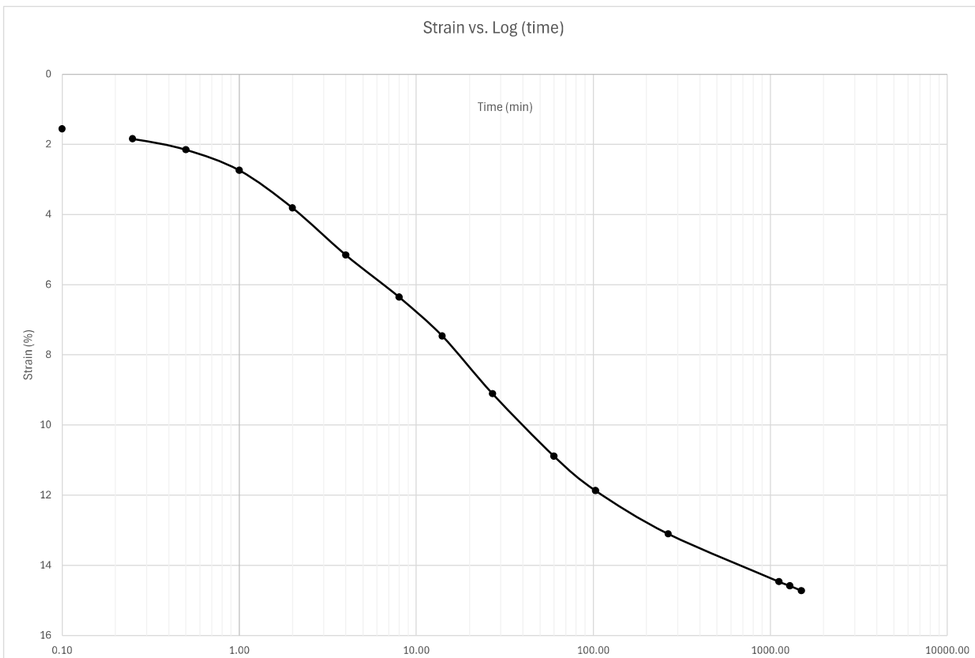


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.6316	0.0002	0.4842	0.02002	3.730
1			6	0.10	0.32	2000	0.6312	-0.0002	0.4846	-0.02002	3.734
2			15	0.25	0.50	2000	0.6298	-0.0016	0.486	-0.16016	3.747
3			30	0.50	0.71	2000	0.6293	-0.0021	0.4865	-0.21021	3.752
4		1		1.00	1.00	2000	0.6287	-0.0027	0.4871	-0.27027	3.758
5		2		2.00	1.41	2000	0.628	-0.0034	0.4878	-0.34034	3.765
6		4		4.00	2.00	2000	0.6271	-0.0043	0.4887	-0.43043	3.774
7		9		9.00	3.00	2000	0.6262	-0.0052	0.4896	-0.520521	3.782
8		16	21	16.35	4.04	2000	0.6256	-0.0058	0.4902	-0.580581	3.788
9		41		41.00	6.40	2000	0.625	-0.0064	0.4908	-0.640641	3.794
10	1	25		85.00	9.22	2000	0.6244	-0.007	0.4914	-0.700701	3.800
11	2	38		158.00	12.57	2000	0.624	-0.0074	0.4918	-0.740741	3.804
12	8	17		497.00	22.29	2000	0.6234	-0.008	0.4924	-0.800801	3.810
13	18	25		1105.00	33.24	2000	0.6231	-0.0083	0.4927	-0.830831	3.813
14	23	21		1401.00	37.43	2000	0.6229	-0.0085	0.4929	-0.850851	3.815
15	26	19		1579.00	39.74	2000	0.6228	-0.0086	0.493	-0.860861	3.816
16	42	59		2579.00	50.78	2000	0.6228	-0.0086	0.493	-0.860861	3.816
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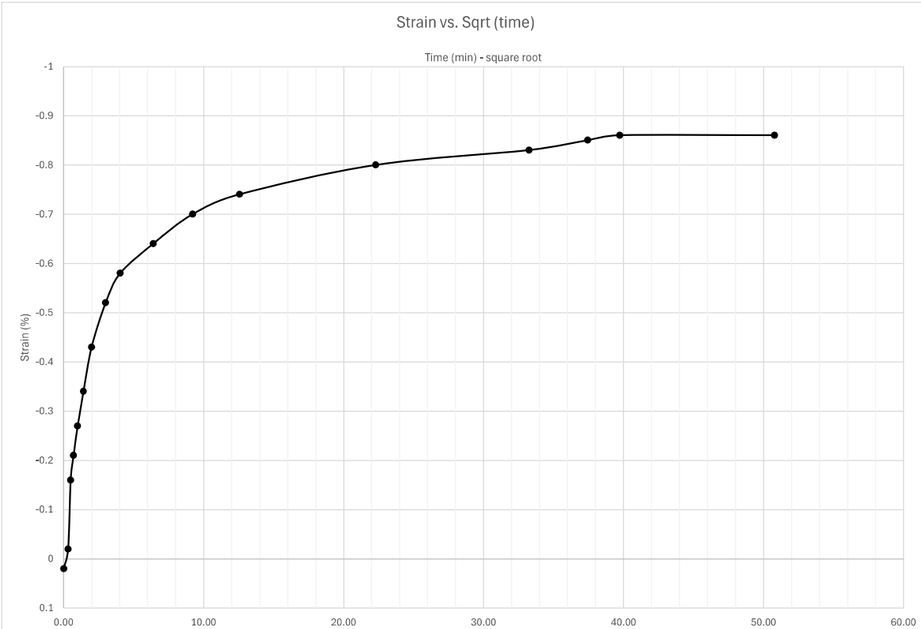
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

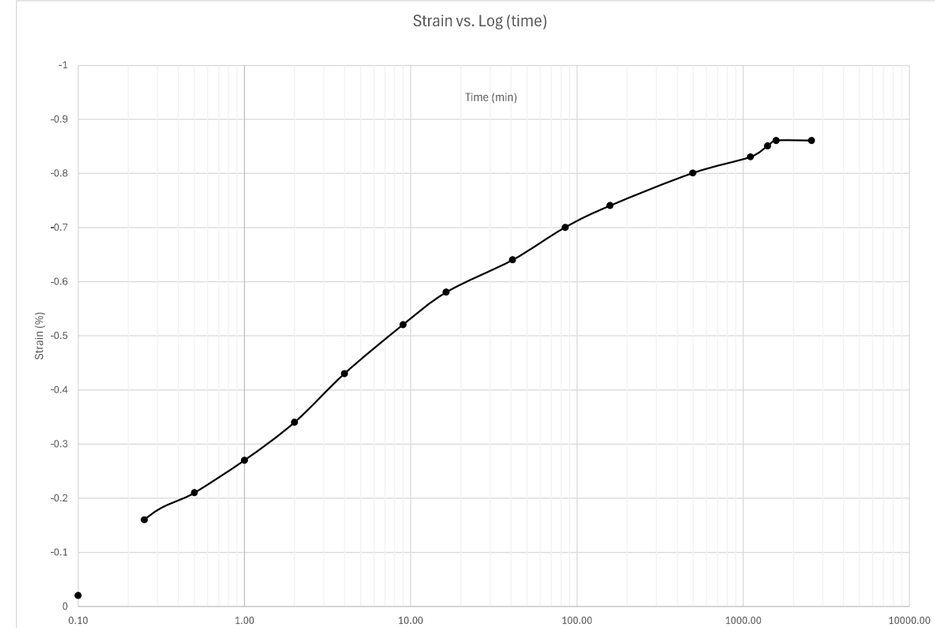
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.6228	0.0002	0.4928	0.02002	3.814
1			6	0.10	0.32	1000	0.6218	-0.0008	0.4938	-0.08008	3.823
2			15	0.25	0.50	1000	0.6215	-0.0011	0.4941	-0.11011	3.826
3			30	0.50	0.71	1000	0.6212	-0.0014	0.4944	-0.14014	3.829
4		1		1.00	1.00	1000	0.6208	-0.0018	0.4948	-0.18018	3.833
5		2		2.00	1.41	1000	0.6202	-0.0024	0.4954	-0.24024	3.839
6		4		4.00	2.00	1000	0.6194	-0.0032	0.4962	-0.32032	3.847
7		8		8.00	2.83	1000	0.6186	-0.004	0.497	-0.4004	3.855
8		15		15.00	3.87	1000	0.6181	-0.0045	0.4975	-0.45045	3.860
9		30		30.00	5.48	1000	0.6174	-0.0052	0.4982	-0.520521	3.866
10		56		56.00	7.48	1000	0.6168	-0.0058	0.4988	-0.580581	3.872
11	2	4		124.00	11.14	1000	0.6159	-0.0067	0.4997	-0.670671	3.881
12	5	4		304.00	17.44	1000	0.6149	-0.0077	0.5007	-0.770771	3.891
13	7	11		431.00	20.76	1000	0.6145	-0.0081	0.5011	-0.810811	3.895
14	24			1440.00	37.95	1000	0.6127	-0.0099	0.5029	-0.990991	3.912
15	95	15		5715.00	75.60	1000	0.6111	-0.0115	0.5045	-1.151151	3.928
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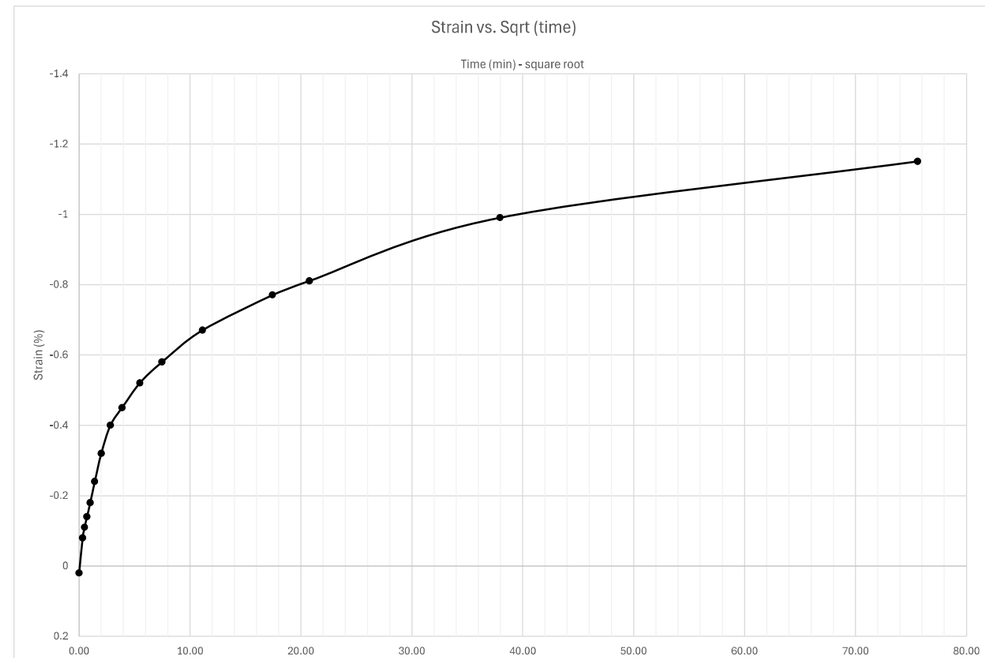
Sequence 7: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

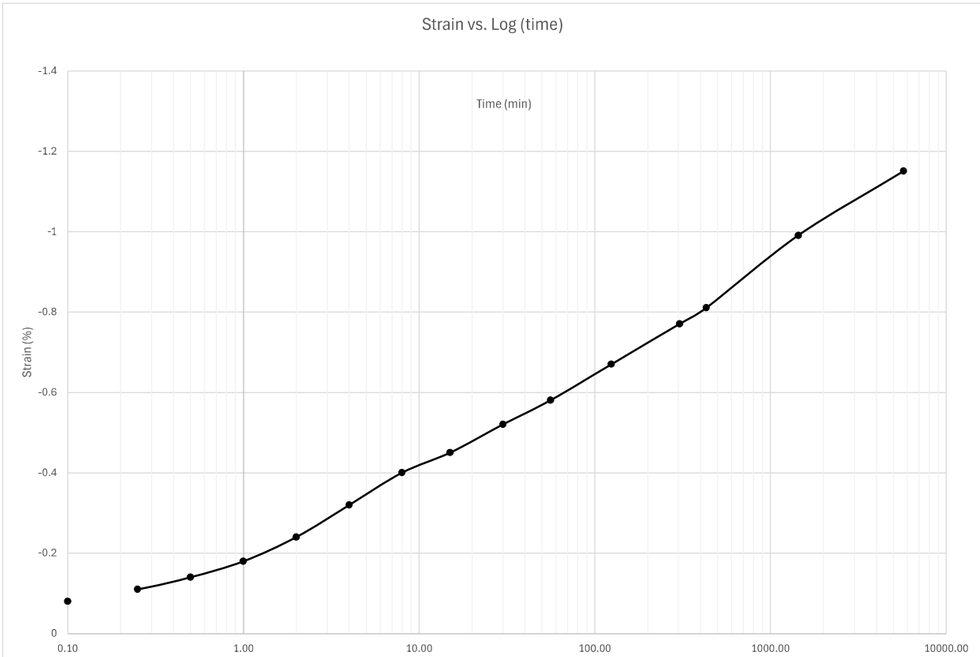


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.6111	0.0001	0.5044	0.01001	3.927
1			6	0.10	0.32	500	0.6103	-0.0007	0.5052	-0.07007	3.935
2			15	0.25	0.50	500	0.6101	-0.0009	0.5054	-0.09009	3.937
3			30	0.50	0.71	500	0.6099	-0.0011	0.5056	-0.11011	3.939
4		1		1.00	1.00	500	0.6095	-0.0015	0.506	-0.15015	3.943
5		2		2.00	1.41	500	0.6091	-0.0019	0.5064	-0.19019	3.947
6		4		4.00	2.00	500	0.6084	-0.0026	0.5071	-0.26026	3.953
7		8		8.00	2.83	500	0.6077	-0.0033	0.5078	-0.33033	3.960
8		15		15.00	3.87	500	0.607	-0.004	0.5085	-0.4004	3.967
9		30		30.00	5.48	500	0.6061	-0.0049	0.5094	-0.49049	3.976
10		58		58.00	7.62	500	0.6054	-0.0056	0.5101	-0.560561	3.983
11	2	1		121.00	11.00	500	0.6043	-0.0067	0.5112	-0.670671	3.993
12	3	55		235.00	15.33	500	0.6031	-0.0079	0.5124	-0.790791	4.005
13	6	37		397.00	19.92	500	0.6021	-0.0089	0.5134	-0.890891	4.015
14	7	14		434.00	20.83	500	0.6019	-0.0091	0.5136	-0.910911	4.017
15	22	39		1359.00	36.86	500	0.5993	-0.0117	0.5162	-1.171171	4.042
16	28	17		1697.00	41.19	500	0.5986	-0.0124	0.5169	-1.241241	4.049
17	46	53		2813.00	53.04	500	0.5973	-0.0137	0.5182	-1.371371	4.062
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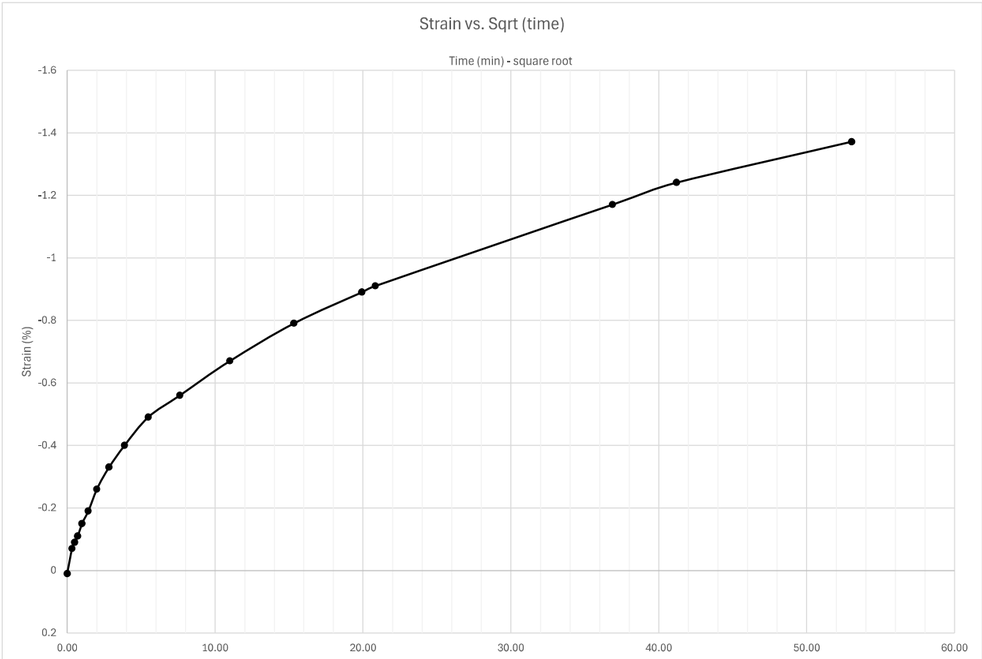
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

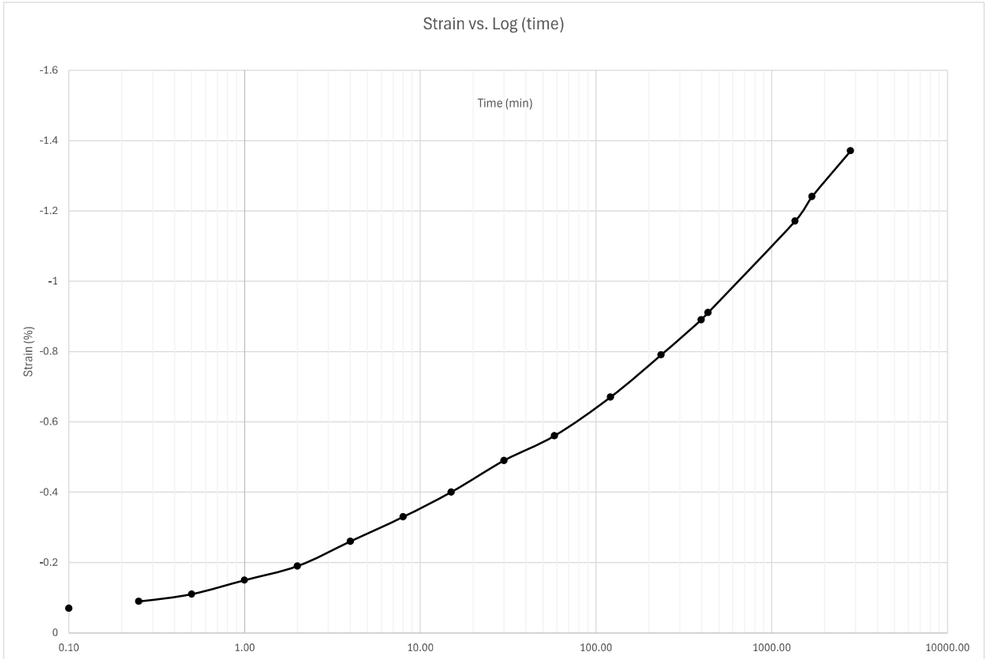
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5973	-0.0001	0.5183	-0.01001	4.063
1			6	0.10	0.32	1000	0.598	0.0006	0.5176	0.06006	4.056
2			15	0.25	0.50	1000	0.5983	0.0009	0.5173	0.09009	4.053
3			30	0.50	0.71	1000	0.5986	0.0012	0.517	0.12012	4.050
4		1		1.00	1.00	1000	0.599	0.0016	0.5166	0.16016	4.046
5		2		2.00	1.41	1000	0.5995	0.0021	0.5161	0.21021	4.041
6		4		4.00	2.00	1000	0.6001	0.0027	0.5155	0.27027	4.035
7		8		8.00	2.83	1000	0.6007	0.0033	0.5149	0.33033	4.030
8		15		15.00	3.87	1000	0.6011	0.0037	0.5145	0.37037	4.026
9		21	10	21.17	4.60	1000	0.6013	0.0039	0.5143	0.39039	4.024
10	1	14		74.00	8.60	1000	0.6019	0.0045	0.5137	0.45045	4.018
11	2	33		153.00	12.37	1000	0.6021	0.0047	0.5135	0.47047	4.016
12	4	18		258.00	16.06	1000	0.6023	0.0049	0.5133	0.49049	4.014
13	23	35		1415.00	37.62	1000	0.603	0.0056	0.5126	0.560561	4.007
14	31	43		1903.00	43.62	1000	0.6031	0.0057	0.5125	0.570571	4.006
15	47	40		2860.00	53.48	1000	0.6032	0.0058	0.5124	0.580581	4.005
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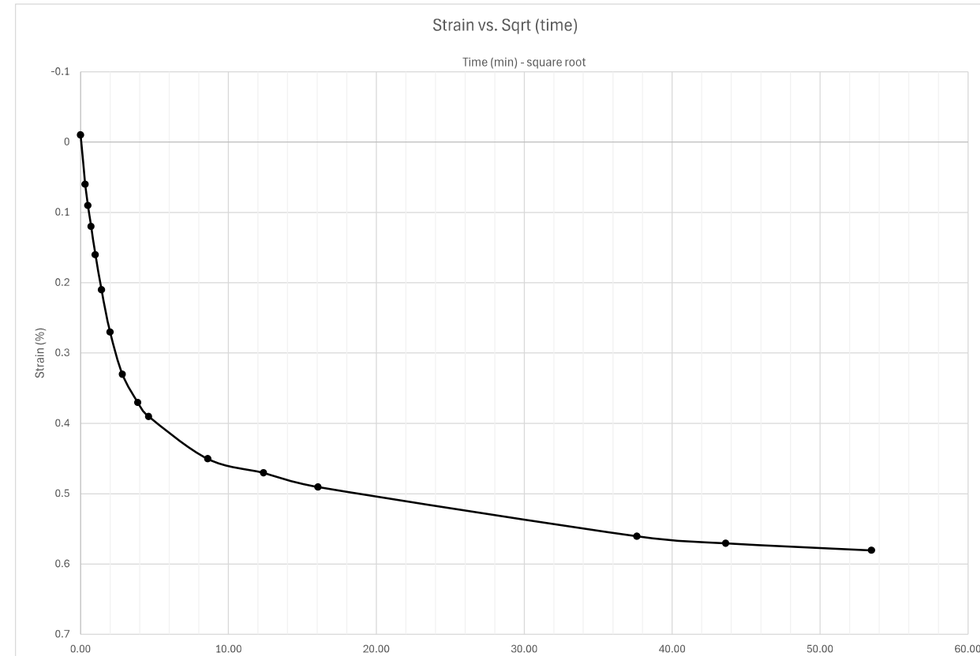
Sequence 9: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

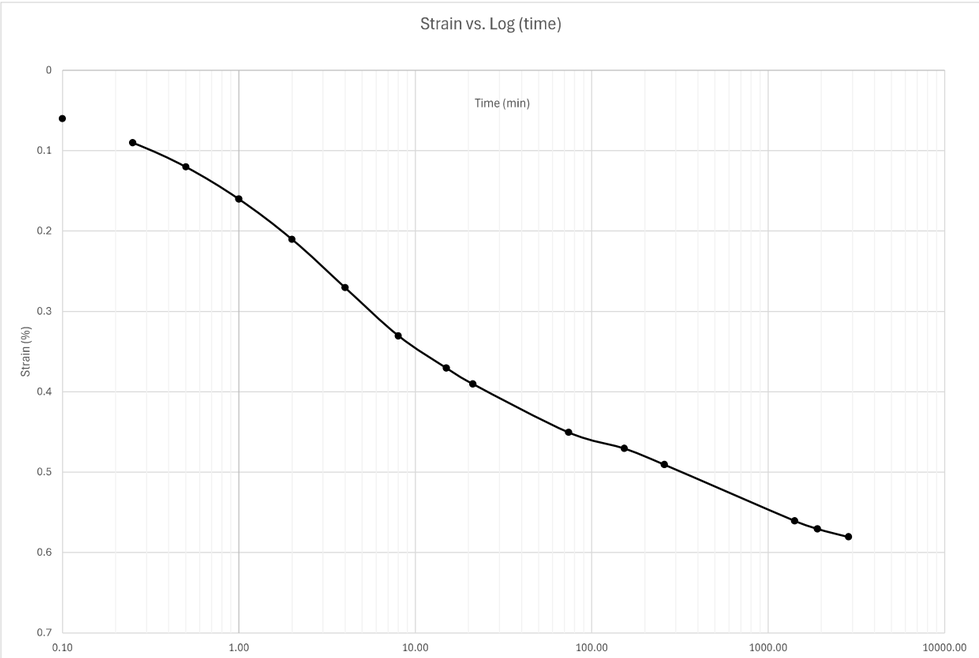


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.6032	-0.0002	0.5126	-0.02002	4.007
1			6	0.10	0.32	2000	0.6047	0.0013	0.5111	0.13013	3.992
2			15	0.25	0.50	2000	0.6052	0.0018	0.5106	0.18018	3.988
3			30	0.50	0.71	2000	0.6057	0.0023	0.5101	0.23023	3.983
4		1		1.00	1.00	2000	0.6064	0.003	0.5094	0.3003	3.976
5		2		2.00	1.41	2000	0.6076	0.0042	0.5082	0.42042	3.964
6		4		4.00	2.00	2000	0.6084	0.005	0.5074	0.500501	3.956
7		8		8.00	2.83	2000	0.6097	0.0063	0.5061	0.630631	3.944
8		15		15.00	3.87	2000	0.6105	0.0071	0.5053	0.710711	3.936
9		29		29.00	5.39	2000	0.6112	0.0078	0.5046	0.780781	3.929
10	1	46		106.00	10.30	2000	0.6122	0.0088	0.5036	0.880881	3.919
11	3	51		231.00	15.20	2000	0.6128	0.0094	0.503	0.940941	3.913
12	6	16		376.00	19.39	2000	0.6133	0.0099	0.5025	0.990991	3.908
13	52	11		3131.00	55.96	2000	0.6152	0.0118	0.5006	1.181181	3.890
14	73	46		4426.00	66.53	2000	0.6156	0.0122	0.5002	1.221221	3.886
15	95	40		5740.00	75.76	2000	0.616	0.0126	0.4998	1.261261	3.882
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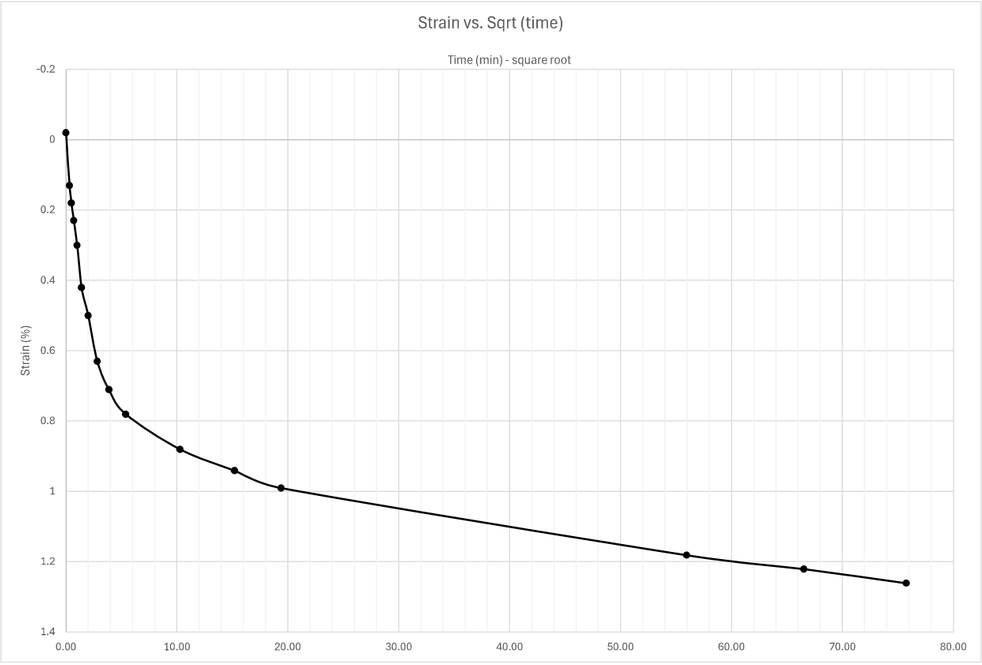
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

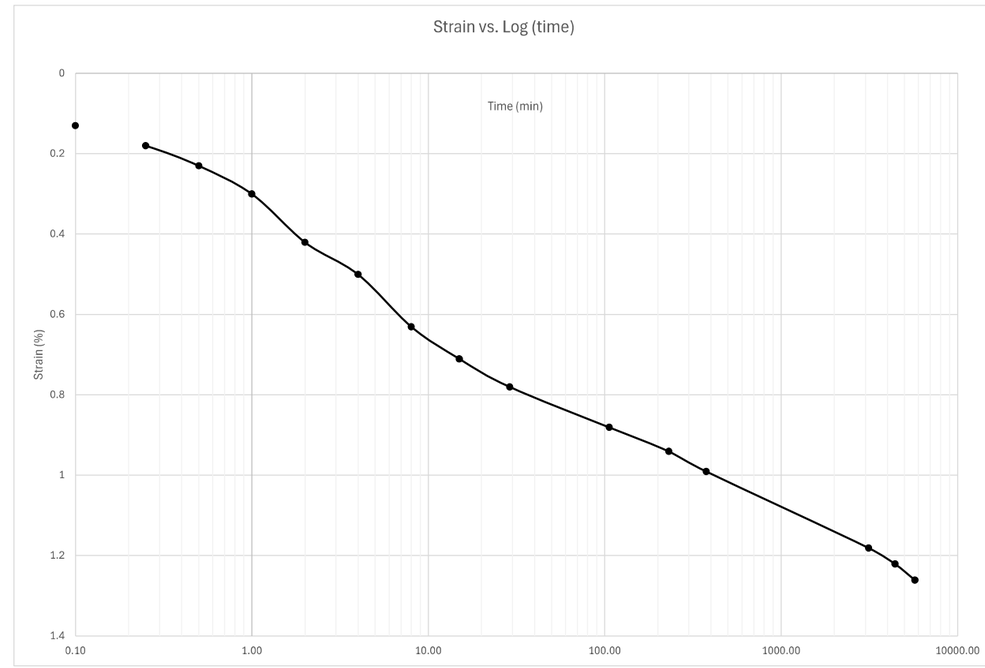
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.616	-0.0002	0.5	-0.02002	3.884
1			6	0.10	0.32	4000	0.6184	0.0022	0.4976	0.22022	3.861
2			15	0.25	0.50	4000	0.6191	0.0029	0.4969	0.29029	3.854
3			30	0.50	0.71	4000	0.6199	0.0037	0.4961	0.37037	3.846
4		1		1.00	1.00	4000	0.6211	0.0049	0.4949	0.49049	3.834
5		2		2.00	1.41	4000	0.6227	0.0065	0.4933	0.650651	3.819
6		4		4.00	2.00	4000	0.6247	0.0085	0.4913	0.850851	3.799
7		8		8.00	2.83	4000	0.6267	0.0105	0.4893	1.051051	3.780
8		18		18.00	4.24	4000	0.6289	0.0127	0.4871	1.271271	3.758
9		29		29.00	5.39	4000	0.63	0.0138	0.486	1.381381	3.747
10	1			60.00	7.75	4000	0.6315	0.0153	0.4845	1.531532	3.733
11	1	42		102.00	10.10	4000	0.6327	0.0165	0.4833	1.651652	3.721
12	4	11		251.00	15.84	4000	0.6348	0.0186	0.4812	1.861862	3.700
13	6	6		366.00	19.13	4000	0.6358	0.0196	0.4802	1.961962	3.691
14	22	21		1341.00	36.62	4000	0.6398	0.0236	0.4762	2.362362	3.652
15	24	38		1478.00	38.44	4000	0.6401	0.0239	0.4759	2.392392	3.649
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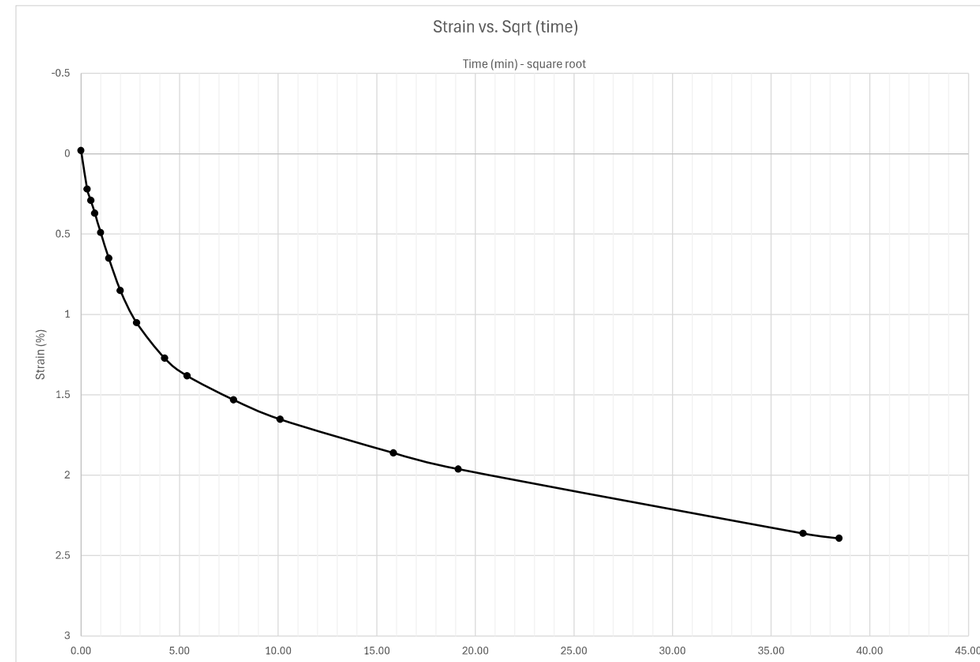
Sequence 11: 4000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

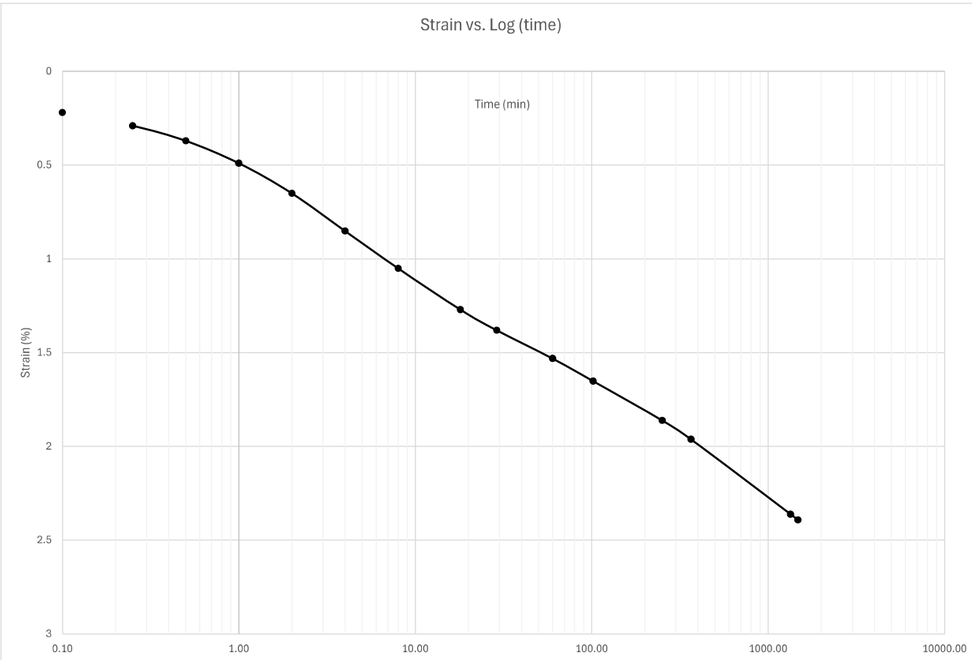


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.6401	-0.0007	0.4766	-0.07007	3.655
1			6	0.10	0.32	8000	0.6445	0.0037	0.4722	0.37037	3.612
2			15	0.25	0.50	8000	0.6461	0.0053	0.4706	0.530531	3.597
3			30	0.50	0.71	8000	0.648	0.0072	0.4687	0.720721	3.578
4		1		1.00	1.00	8000	0.6509	0.0101	0.4658	1.011011	3.550
5		2		2.00	1.41	8000	0.6551	0.0143	0.4616	1.431431	3.509
6		4		4.00	2.00	8000	0.6609	0.0201	0.4558	2.012012	3.452
7		9		9.00	3.00	8000	0.6716	0.0308	0.4451	3.083083	3.348
8		17		17.00	4.12	8000	0.6815	0.0407	0.4352	4.074074	3.251
9		30		30.00	5.48	8000	0.6912	0.0504	0.4255	5.045045	3.156
10	1	48		108.00	10.39	8000	0.7115	0.0707	0.4052	7.077077	2.958
11	4			240.00	15.49	8000	0.7203	0.0795	0.3964	7.957958	2.872
12	6	2		362.00	19.03	8000	0.7238	0.083	0.3929	8.308308	2.838
13	21	13		1273.00	35.68	8000	0.7328	0.092	0.3839	9.209209	2.750
14	24	2		1442.00	37.97	8000	0.7337	0.0929	0.383	9.299299	2.741
15	28	16		1696.00	41.18	8000	0.7347	0.0939	0.382	9.399399	2.731
16	44	56		2696.00	51.92	8000	0.7377	0.0969	0.379	9.6997	2.702
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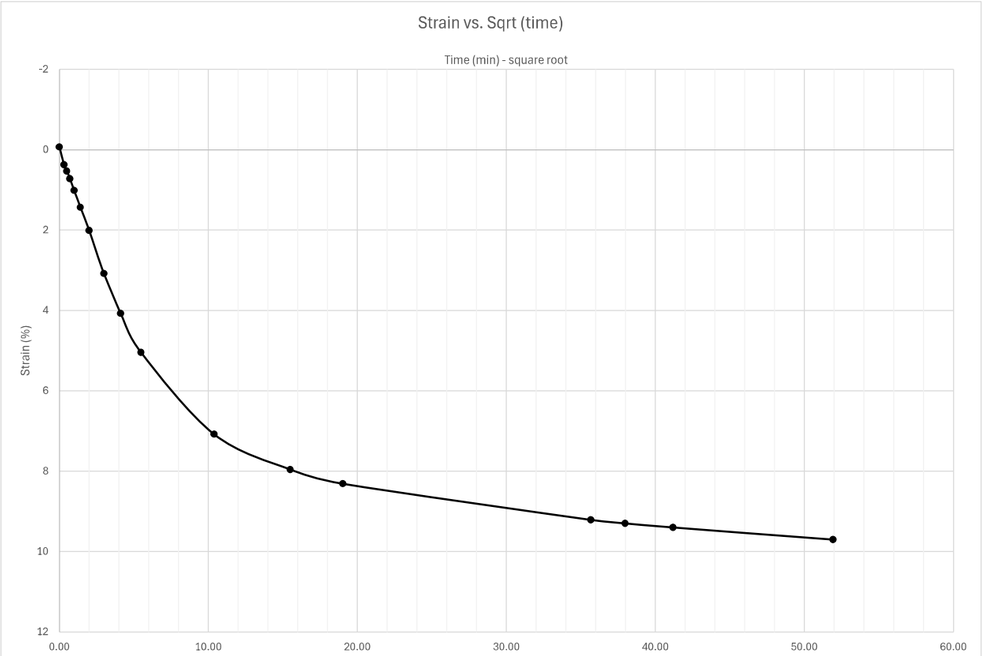
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.7377	-0.0008	0.3798	-0.08008	2.710
1			6	0.10	0.32	16000	0.7407	0.0022	0.3768	0.22022	2.681
2			15	0.25	0.50	16000	0.7424	0.0039	0.3751	0.39039	2.664
3			30	0.50	0.71	16000	0.7439	0.0054	0.3736	0.540541	2.649
4		1		1.00	1.00	16000	0.7462	0.0077	0.3713	0.770771	2.627
5		2		2.00	1.41	16000	0.7489	0.0104	0.3686	1.041041	2.601
6		4		4.00	2.00	16000	0.7533	0.0148	0.3642	1.481481	2.558
7		8		8.00	2.83	16000	0.7594	0.0209	0.3581	2.092092	2.498
8		17		17.00	4.12	16000	0.7679	0.0294	0.3496	2.942943	2.415
9		30		30.00	5.48	16000	0.7761	0.0376	0.3414	3.763764	2.335
10		58		58.00	7.62	16000	0.7866	0.0481	0.3309	4.814815	2.232
11	2	3		123.00	11.09	16000	0.7944	0.0559	0.3231	5.595596	2.156
12	4	12		252.00	15.87	16000	0.8006	0.0621	0.3169	6.216216	2.095
13	5	31		331.00	18.19	16000	0.8025	0.064	0.315	6.406406	2.077
14	7	4		424.00	20.59	16000	0.8041	0.0656	0.3134	6.566567	2.061
15	36	2		2162.00	46.50	16000	0.8123	0.0738	0.3052	7.387387	1.981
16	74	44		4484.00	66.96	16000	0.8157	0.0772	0.3018	7.727728	1.948
17	95	48		5748.00	75.82	16000	0.8167	0.0782	0.3008	7.827828	1.938
18											
19											
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22											
23											
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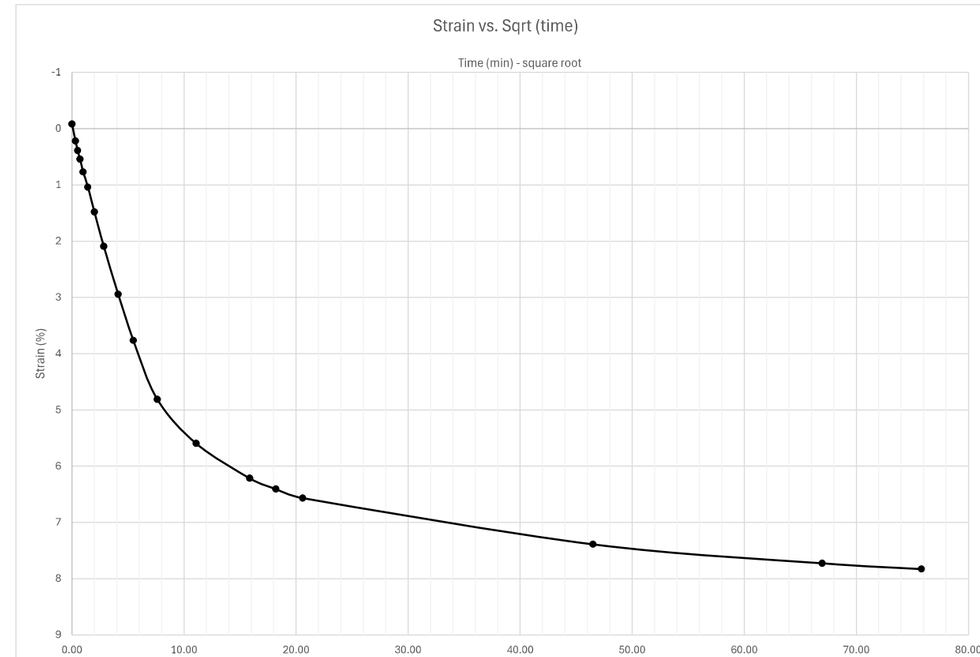
25											
26											
27											
28											
29											
30											
31											

Sequence 13: 16000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

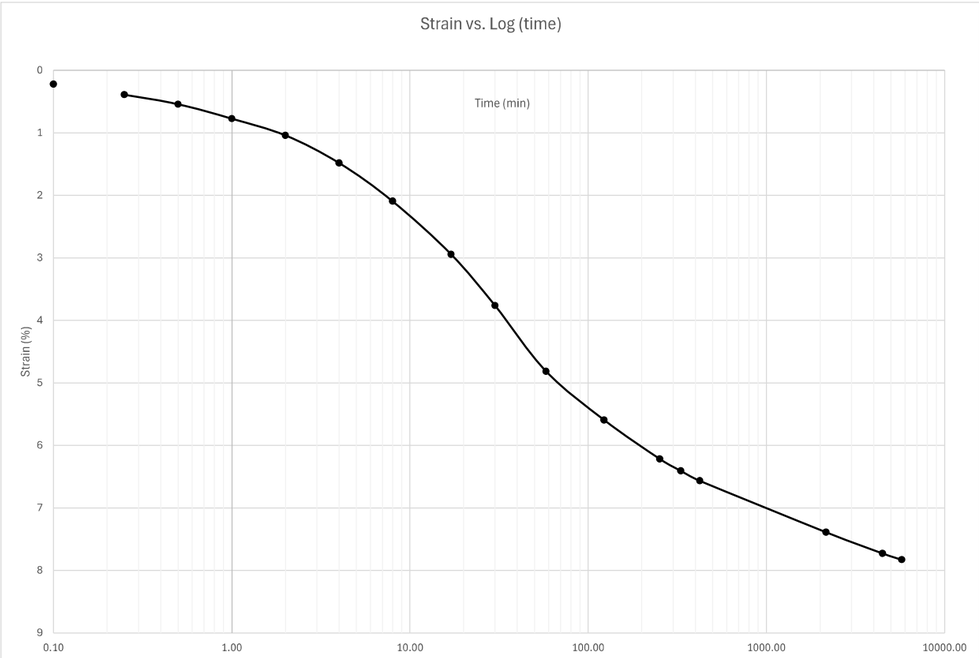


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.8167	-0.0012	0.302	-0.12012	1.950
1			6	0.10	0.32	32000	0.8211	0.0032	0.2976	0.32032	1.907
2			15	0.25	0.50	32000	0.8218	0.0039	0.2969	0.39039	1.900
3			30	0.50	0.71	32000	0.8226	0.0047	0.2961	0.47047	1.892
4		1		1.00	1.00	32000	0.8237	0.0058	0.295	0.580581	1.882
5		2		2.00	1.41	32000	0.8255	0.0076	0.2932	0.760761	1.864
6		4		4.00	2.00	32000	0.8281	0.0102	0.2906	1.021021	1.839
7		8		8.00	2.83	32000	0.8316	0.0137	0.2871	1.371371	1.804
8		15		15.00	3.87	32000	0.8356	0.0177	0.2831	1.771772	1.765
9		30		30.00	5.48	32000	0.8421	0.0242	0.2766	2.422422	1.702
10	1	5		65.00	8.06	32000	0.8479	0.03	0.2708	3.003003	1.645
11	1	56		116.00	10.77	32000	0.8532	0.0353	0.2655	3.533534	1.593
12	5	22		322.00	17.94	32000	0.8595	0.0416	0.2592	4.164164	1.532
13	16	39		999.00	31.61	32000	0.8646	0.0467	0.2541	4.674675	1.482
14	23	4		1384.00	37.20	32000	0.8661	0.0482	0.2526	4.824825	1.467
15	40	44		2444.00	49.44	32000	0.8683	0.0504	0.2504	5.045045	1.446
16											
17											
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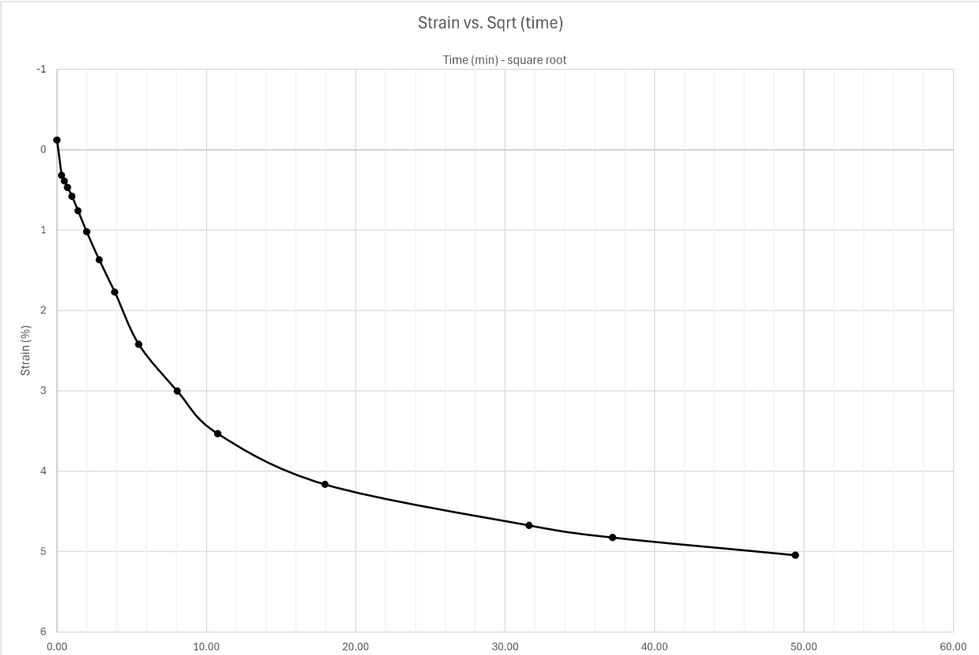
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 32000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

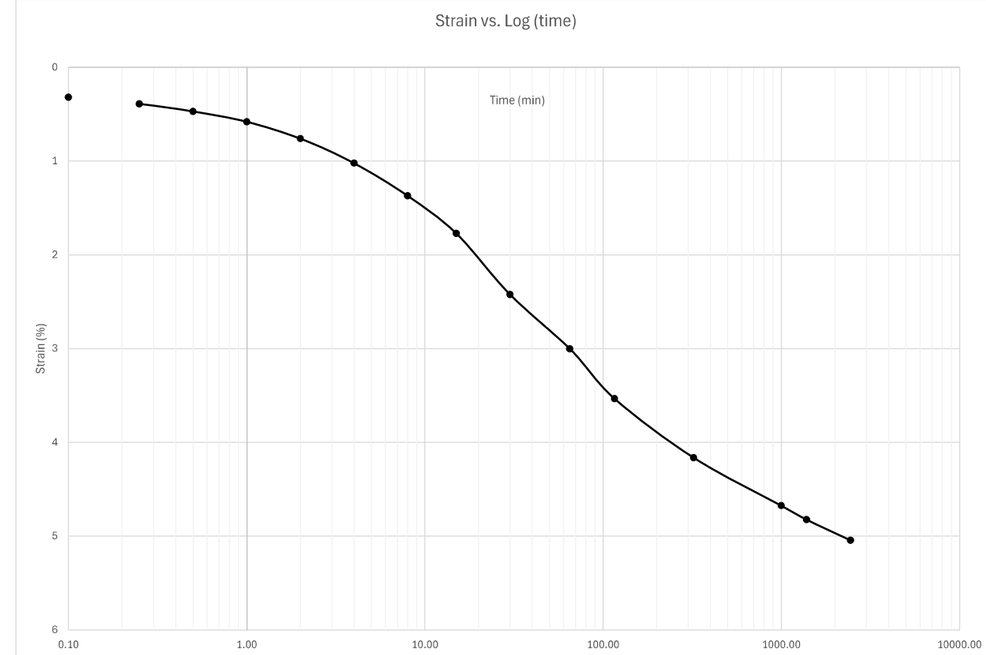
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 32000 psf

Y1RPC_4000, ST-41, 13.0-15.0' ft

INFRASTRUCTURE CONSULTING & ENGINEERING

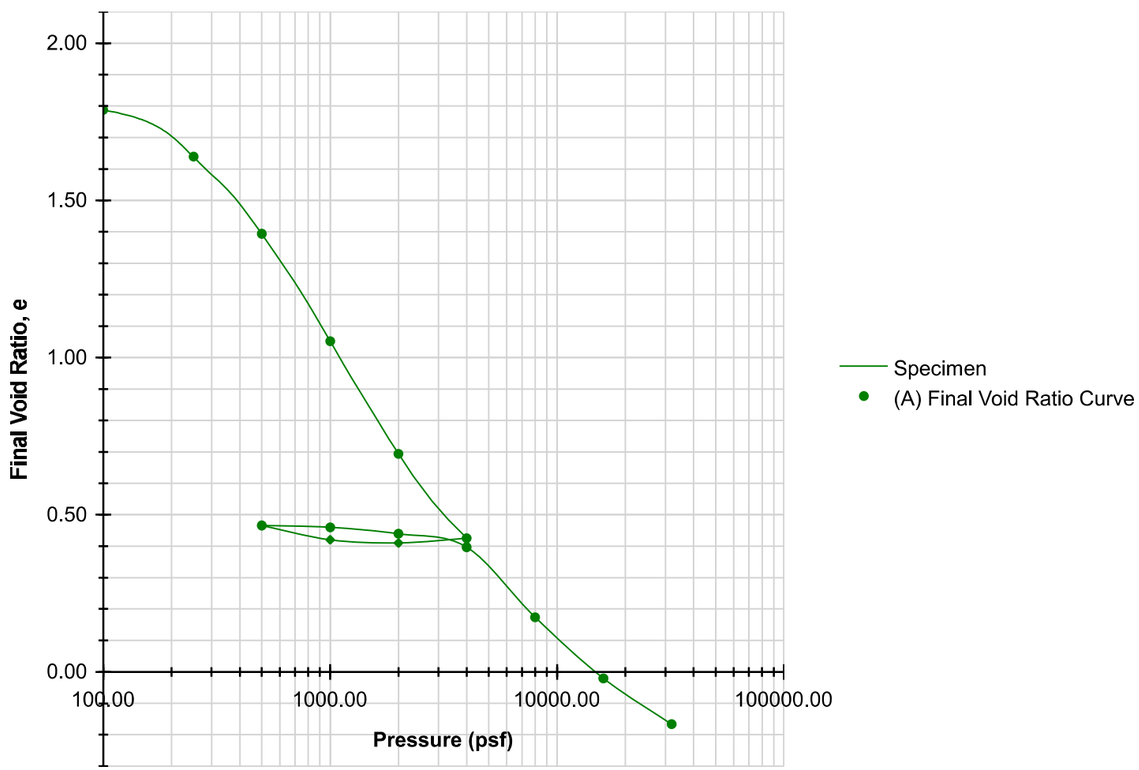


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
CONSULTING & ENGINEERING

Final Voids [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 5/8/2026
Moisture (%)	46.8	58.8	**Plastic Limits**	NP	
Dry Density (pcf)	45.5	54.0			
Saturation (%)	52.4	87.1			
Void Ratio	1.86	1.41	**Specific Gravity**	2.081	MEASURED

Sample Description	Black/Brown Sandy Silt			
Project Number	25-051.05	**Depth (ft)**	18-20	**Remarks**
Sample Number	ST-42	**Boring Number**	Y1RPC_4000	
Project	Replace Bridge No. 13 over the Cape Fear River			
Client				
Location	Alignment Y1RPC			

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INFRASTRUCTURE
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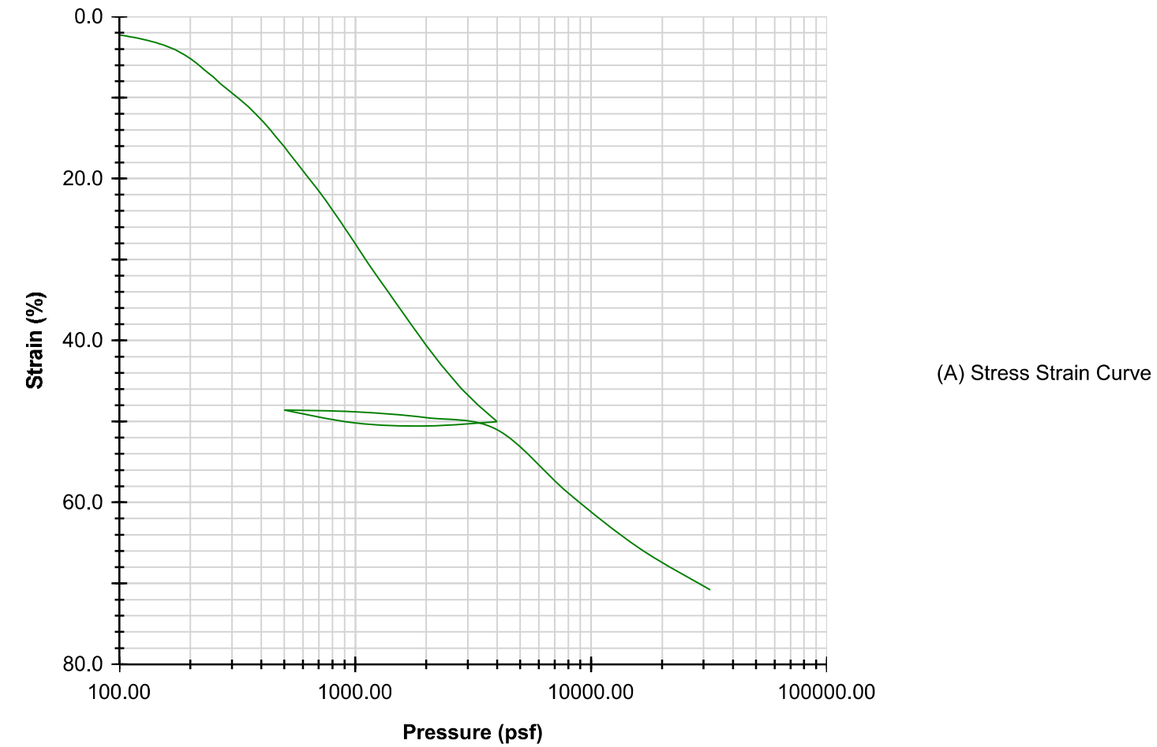
SHEET 609

Percent Strain [Log]

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 5/8/2026
Moisture (%)	46.8	58.8	**Plastic Limits**	NP	
Dry Density (pcf)	45.5	54.0			
Saturation (%)	52.4	87.1			
Void Ratio	1.86	1.41	**Specific Gravity**	2.081	MEASURED

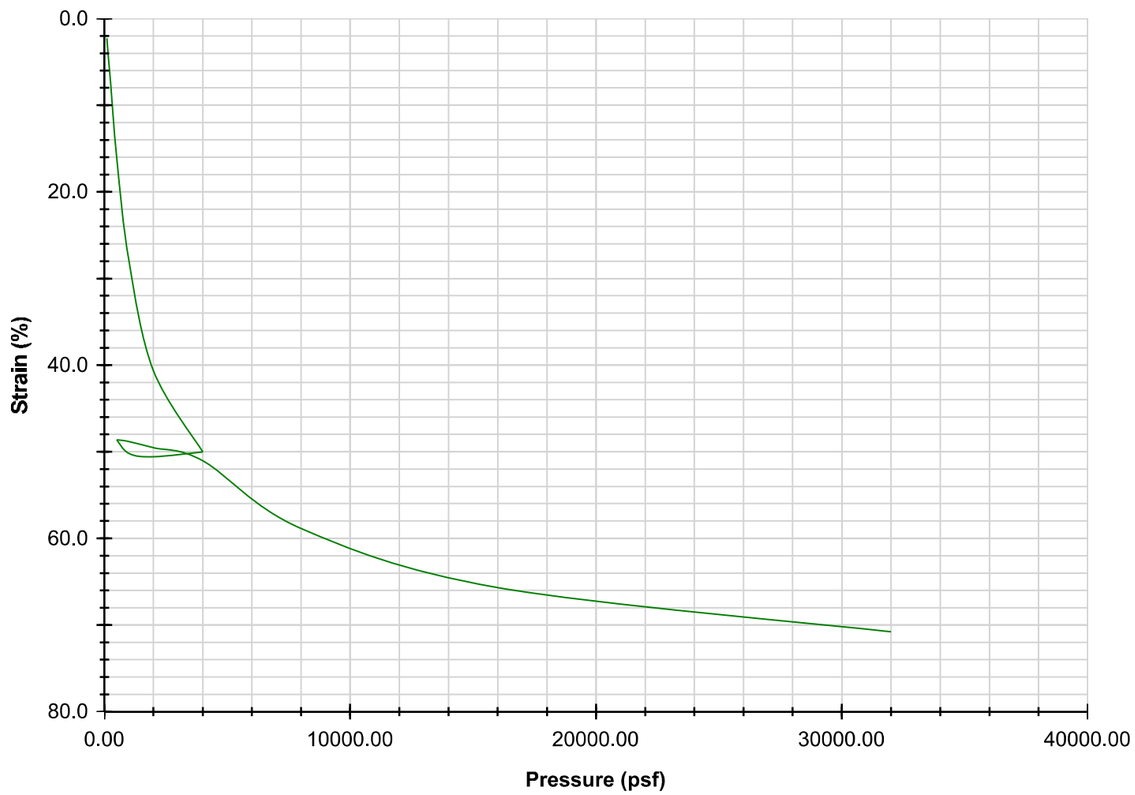
Sample Description	Black/Brown Sandy Silt			
Project Number	25-051.05	**Depth (ft)**	18-20	**Remarks**
Sample Number	ST-42	**Boring Number**	Y1RPC_4000	
Project	Replace Bridge No. 13 over the Cape Fear River			
Client				
Location	Alignment Y1RPC			

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
CONSULTING & ENGINEERING

Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	NP	**Test Date** 5/8/2026
Moisture (%)	46.8	58.8	**Plastic Limits**	NP	
Dry Density (pcf)	45.5	54.0			
Saturation (%)	52.4	87.1			
Void Ratio	1.86	1.41	**Specific Gravity**	2.081	MEASURED

Sample Description	Black/Brown Sandy Silt			
Project Number	25-051.05	**Depth (ft)**	18-20	**Remarks**
Sample Number	ST-42	**Boring Number**	Y1RPC_4000	
Project	Replace Bridge No. 13 over the Cape Fear River			
Client				
Location	Alignment Y1RPC			

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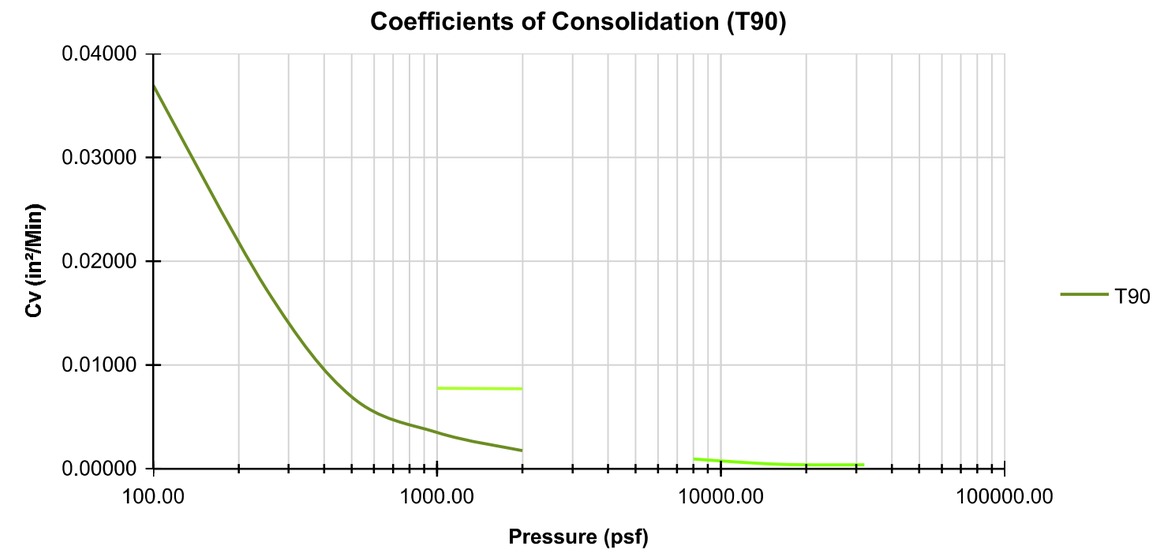
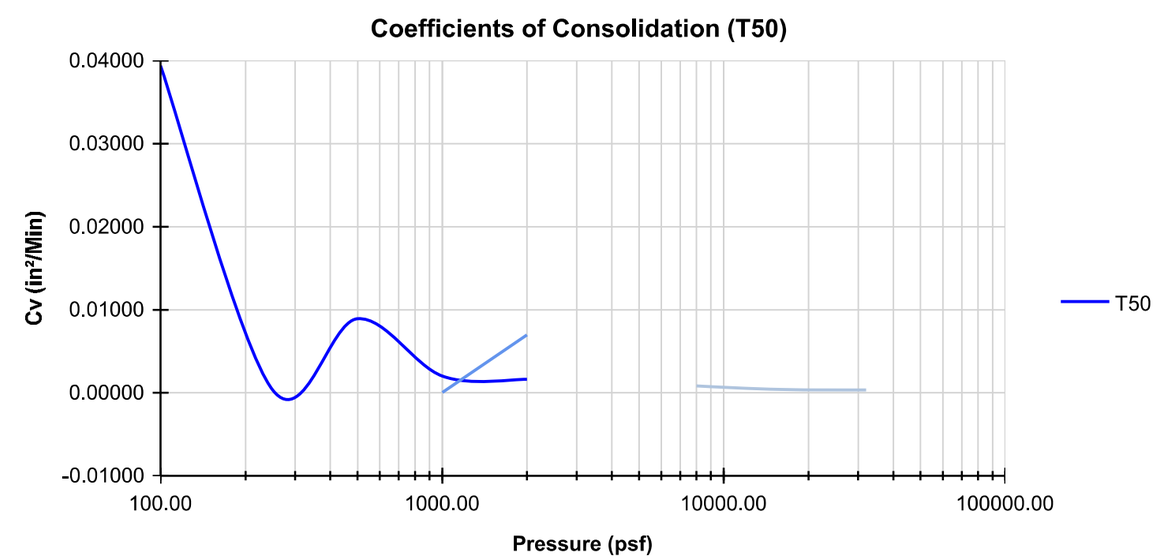
INFRASTRUCTURE
CONSULTING & ENGINEERING

SHEET 610

Coefficients of Consolidation

ASTM D2435



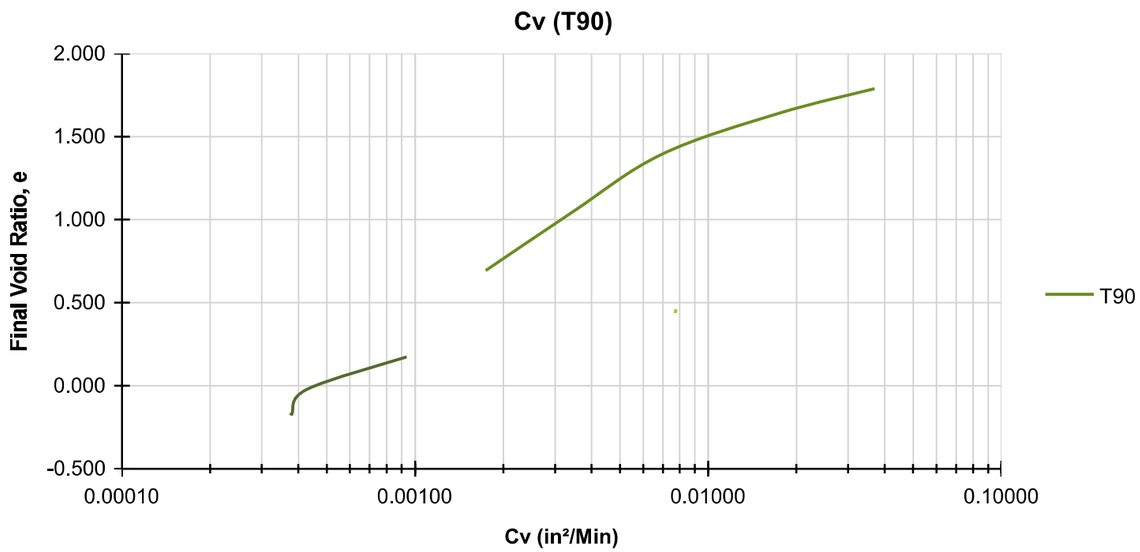


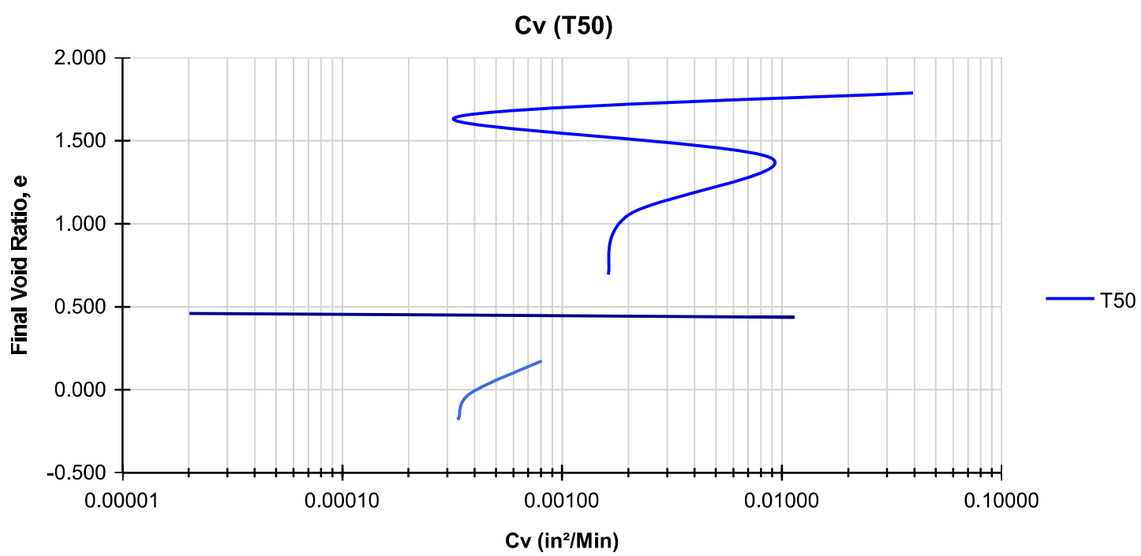
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
CONSULTING & ENGINEERING

Cv - Void Ratio

ASTM D2435





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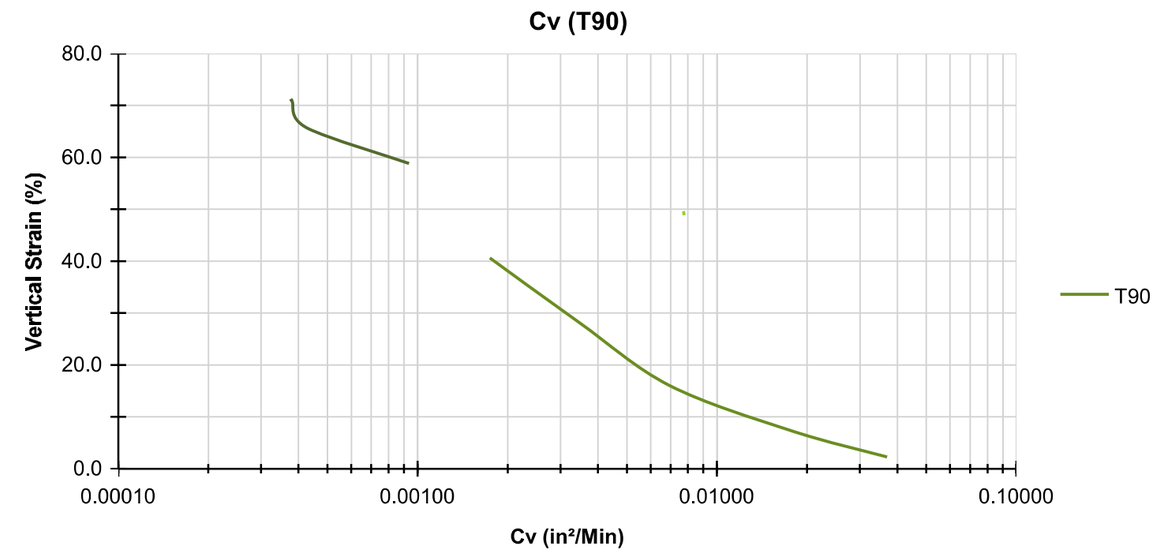
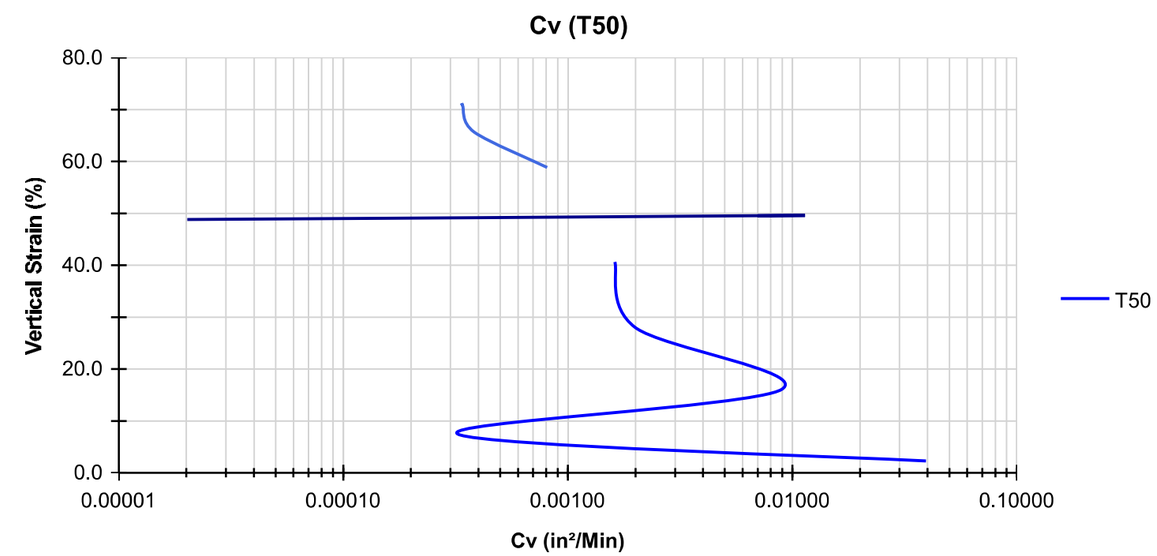
SHEET 611

Cv - Vertical Strain

ASTM D2435



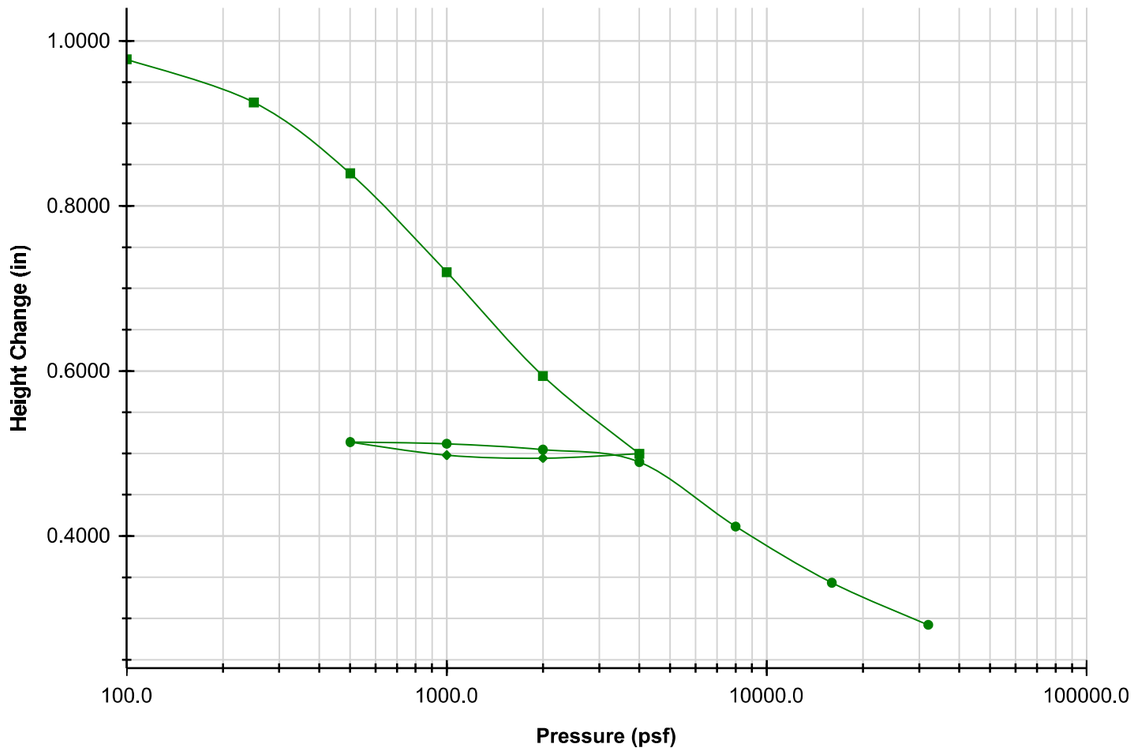


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

INFRASTRUCTURE
CONSULTING & ENGINEERING

Height Change [Log]

ASTM D2435



	BEFORE	AFTER			
Moisture (%)	46.8	58.8	**Liquid Limits**	NP	**Test Date** 5/8/2026
Dry Density (pcf)	45.5	54.0	**Plastic Limits**	NP	
Saturation (%)	52.4	87.1			
Void Ratio	1.86	1.41	**Specific Gravity**	2.081	MEASURED

Sample Description	Black/Brown Sandy Silt			
Project Number	25-051.05	**Depth (ft)**	18-20	**Remarks**
Sample Number	ST-42	**Boring Number**	Y1RPC_4000	
Project	Replace Bridge No. 13 over the Cape Fear River			
Client				
Location	Alignment Y1RPC			

Summary

ASTM D2435

Sample Description	Black/Brown Sandy Silt			
Project Number	25-051.05	**Depth (ft)**	18-20	**Remarks**
Sample Number	ST-42	**Boring Number**	Y1RPC_4000	
Project	Replace Bridge No. 13 over the Cape Fear River			
Client				
Location	Alignment Y1RPC			

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.00	0.0000	1.0000	0.0000	0.0	1.857	0.000	0.000	0.00000	0.00000	ENABLED
1	100.00	0.0226	0.9774	0.6268	2.3	1.788	0.091	0.020	0.03693	0.03939	ENABLED
2	250.00	0.0746	0.9254	0.5748	7.5	1.639	0.174	1.899	0.01735	0.00032	ENABLED
3	500.00	0.1606	0.8394	0.4887	16.1	1.394	0.359	0.065	0.00693	0.00893	ENABLED
4	1,000.00	0.2805	0.7195	0.3689	28.0	1.052	0.525	0.213	0.00349	0.00199	ENABLED
5	2,000.00	0.4061	0.5939	0.2432	40.6	0.694	0.715	0.179	0.00174	0.00162	ENABLED
6	4,000.00	0.5003	0.4997	0.1491	50.0	0.425	0.000	0.000	0.00000	0.00000	ENABLED
7	2,000.00	0.5056	0.4944	0.1437	50.6	0.410	0.000	0.000	0.00000	0.00000	ENABLED
8	1,000.00	0.5021	0.4979	0.1473	50.2	0.420	0.000	0.000	0.00000	0.00000	ENABLED
9	500.00	0.4861	0.5139	0.1632	48.6	0.466	0.000	0.000	0.00000	0.00000	ENABLED
10	1,000.00	0.4882	0.5118	0.1612	48.8	0.460	0.119	0.026	0.00777	0.00002	ENABLED
11	2,000.00	0.4954	0.5046	0.1540	49.5	0.439	0.117	0.030	0.00772	0.00698	ENABLED
12	4,000.00	0.5103	0.4897	0.1391	51.0	0.397	0.000	0.000	0.00000	0.00000	ENABLED
13	8,000.00	0.5885	0.4115	0.0608	58.9	0.174	0.639	0.172	0.00094	0.00081	ENABLED
14	16,000.00	0.6566	0.3434	-0.0072	65.7	-0.021	0.974	0.253	0.00043	0.00038	ENABLED
15	32,000.00	0.7078	0.2922	-0.0584	70.8	-0.167	0.792	0.206	0.00038	0.00034	ENABLED

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INFRASTRUCTURE
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Consolidated Test Results

ASTM D2435

Project:	Replace Bridge No. 13 over the Cape Fear River
Project Number:	25-051.05
Job Number:	
Test Date:	5/8/2026

Sampling Date:	8/24/2026
Sample Number:	ST-42
Depth (ft)	18-20
Boring Number:	Y1RPC_4000
Location:	Alignment Y1RPC
Client Name:	
Remarks:	

Specific Gravity:	2.081	Plastic Limit:	NP	Liquid Limit:	NP
Specific Gravity Method:	MEASURED			Weight of Ring (g)	107.7
Sampling Method:	Undisturbed	Soil Classification:	A-2-4 (0)		
Specimen Description:	Black/Brown Sandy Silt				

Parameters	Initial	Final
Height (in)	1.0000	0.2922
Height Source	NA	TEST RESULTS
Diameter (in)	2.5000	NA
Area (in²)	4.909	NA
Volume (in³)	4.9087	1.4343
Weight of Container (g)	40.0	60.0
Weight of Wet Soil + Container (g)	200.0	97.1
Weight of Dry Soil + Container (g)	149.0	83.3
Moisture Content (%)	46.8	58.8
Moist Weight + Ring Weight (g)	193.7	140.0
Dry Density (pcf)	45.5	54.0
Wet Density (pcf)	66.7	85.8
Saturation (%)	52.4	87.1
Void Ratio	1.9	1.4

SHEET 613

INFRASTRUCTURE
CONSULTING & ENGINEERING

Consolidation Test Results

ASTM D2435

Specimen 1

Test Description:	One Dimensional Consolidation		
Other Associated Tests:	Classification, Moisture Content, Organic Content, Unit Weight		
Device Details:			
Test Specification:	ASTM D2435		
Test Time:	5/8/2026 12:00:00 AM		
Technician:	KSB	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	26-0772
Specimen Description:	Black/Brown Sandy Silt		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Natural Moisture		
Test Condition:	Inundated		
Test Procedure:			
Seating Pressure Used:	YES	Seating Pressure (psf):	50.00

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	13.0-15.0
Sample Number	ST-36	Boring Number	Y1RPC_4100
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0179	0.1145	0.9811	0.018	9.651	3.24	-	0.06298	-
2	500	0.0679	0.1146	0.9311	0.068	9.108	1.69	-	0.10875	-
3	1000	0.2048	0.1147	0.7942	0.205	7.622	3.61	1.95	0.03704	0.015931
4	2000	0.3617	0.1149	0.6373	0.362	5.919	8.41	5.5	0.01024	0.003637
5	4000	0.4912	0.1151	0.5078	0.492	4.513	22.09	10	0.00247	0.00127
6	2000	0.4814	0.1149	0.5176	0.482	4.619	-	-	-	-
7	1000	0.4704	0.1147	0.5286	0.471	4.739	-	-	-	-
8	2000	0.4776	0.1149	0.5214	0.478	4.660	5.29	-	0.01089	-
9	4000	0.4999	0.1154	0.4991	0.500	4.418	4.41	-	0.01197	-
10	8000	0.5967	0.1151	0.4023	0.597	3.367	31.36	14.2	0.00109	0.00056
11	16000	0.6783	0.1152	0.3207	0.679	2.482	36	15.5	0.00061	0.00033
12	32000	0.7362	0.1158	0.2628	0.737	1.853	46.24	18.8	0.00032	0.00018
13										
14										
15										
16										
17										

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 4/14/2026
Machine Apparatus: 1
Technician: KSB

Sampling Date: 4/14/2026
Sample Number: ST-36
Depth (ft): 13.0-15.0
Boring Number: Y1RPC_4100
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.918 (Measured)
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-1-a (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 105.68

Parameters	Initial	Final
Height (in)	0.999	0.2628
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.297
Weight of Container (g)	60.35	402.77
Weight of Wet Soil + Container (g)	242.83	431.28
Weight of Dry Soil + Container (g)	91.98	416.52
Moisture Content (%)	476.92	107.35
Moist Weight + Ring Weight (g)	188.13	135.31
Dry Mass (g)	14.29	14.29
Water Content (calc from spec)	476.92	107.35
Dry Density (pcf)	11.04	41.97
Wet Density (pcf)	63.69	87.01
Volume of Solids (in^3)	0.45	0.45
Height of Solids (in)	0.09	0.09
Void Ratio	9.845	1.853

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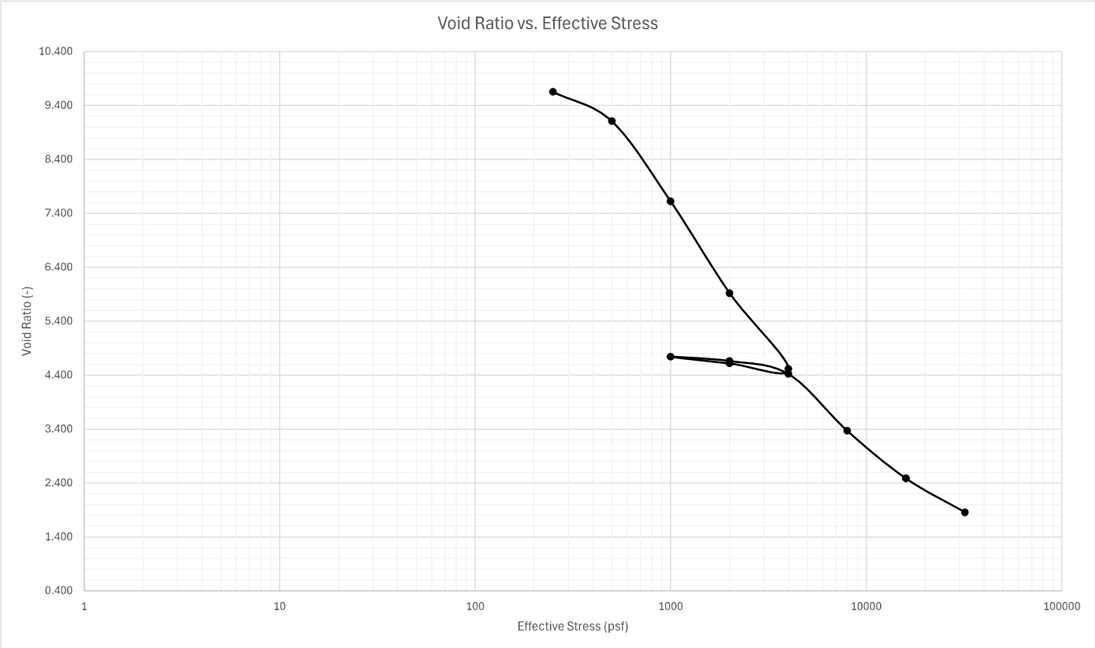
Void Ratio vs. Effective Stress

Y1RPC_4100, ST-36, 13.0-15.0 ft

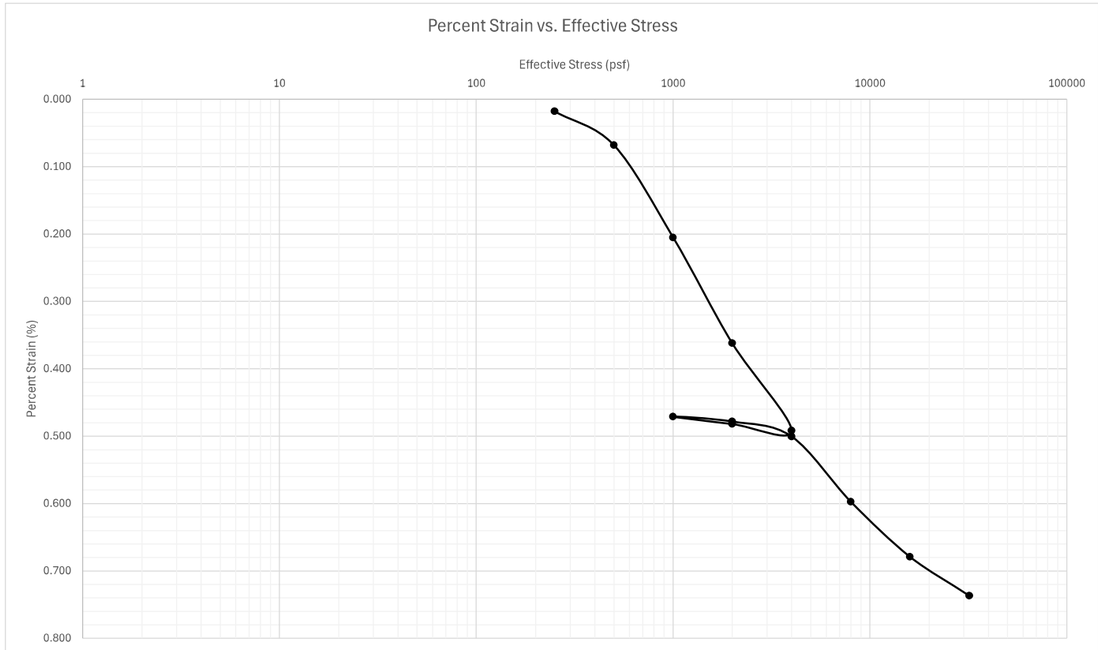
INFRASTRUCTURE CONSULTING & ENGINEERING



Percent Strain vs. Effective Stress

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0795	0	0.999	0	9.845
1			15	0.25	0.5	250	0.0815	0.002	0.997	0.2002	9.824
2			30	0.5	0.707106781	250	0.0833	0.0038	0.9952	0.38038	9.804
3		1		1	1	250	0.0849	0.0054	0.9936	0.540541	9.787
4		2		2	1.414213562	250	0.0863	0.0068	0.9922	0.680681	9.771
5		4		4	2	250	0.0874	0.0079	0.9911	0.790791	9.759
6		8		8	2.828427125	250	0.0884	0.0089	0.9901	0.890891	9.749
7		15		15	3.872983346	250	0.0892	0.0097	0.9893	0.970971	9.740
8		45		45	6.708203932	250	0.0905	0.011	0.988	1.101101	9.726
9	1	10		70	8.366600265	250	0.0909	0.0114	0.9876	1.141141	9.721
10	2			120	10.95445115	250	0.0915	0.012	0.987	1.201201	9.715
11	18	24	33	1104.55	33.23477095	250	0.0935	0.014	0.985	1.401401	9.693
12	21	46		1306	36.138622	250	0.094	0.0145	0.9845	1.451451	9.688
13	24	11		1451	38.09199391	250	0.0944	0.0149	0.9841	1.491491	9.683
14	26	5		1565	39.56008089	250	0.0946	0.0151	0.9839	1.511512	9.681
15	42	8		2528	50.27922036	250	0.0949	0.0154	0.9836	1.541542	9.678
16	47	54		2874	53.60970061	250	0.0953	0.0158	0.9832	1.581582	9.674
17	140	3		8403	91.66787878	250	0.0971	0.0176	0.9814	1.761762	9.654
18	164	10		9850	99.24716621	250	0.0974	0.0179	0.9811	1.791792	9.651
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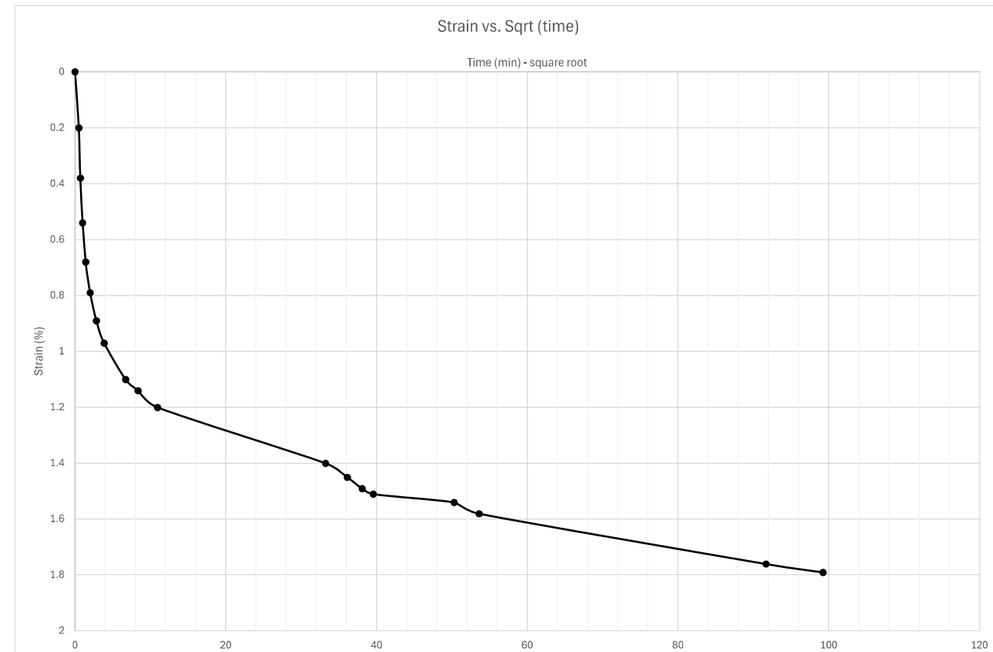
Sequence 1: 250 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

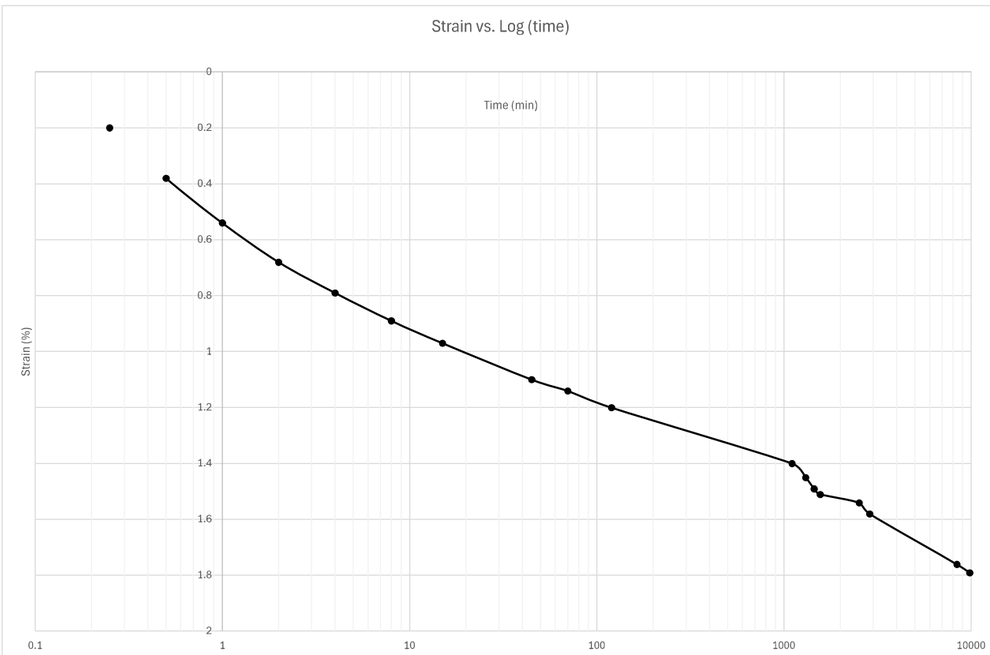


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.0974	-0.0001	0.9812	-0.01001	9.652
1			6	0.1	0.32	500	0.1095	0.0120	0.9691	1.201201	9.521
2			15	0.25	0.50	500	0.1135	0.0160	0.9651	1.601602	9.477
3			30	0.5	0.71	500	0.1168	0.0193	0.9618	1.931932	9.441
4		1		1	1.00	500	0.1199	0.0224	0.9587	2.242242	9.408
5		2		2	1.41	500	0.1231	0.0256	0.9555	2.562563	9.373
6		4		4	2.00	500	0.1252	0.0277	0.9534	2.772773	9.350
7		8		8	2.83	500	0.1274	0.0299	0.9512	2.992993	9.326
8		15		15	3.87	500	0.1293	0.0318	0.9493	3.183183	9.306
9		33		33	5.74	500	0.1315	0.0340	0.9471	3.403403	9.282
10	1	2		62	7.87	500	0.1335	0.0360	0.9451	3.603604	9.260
11	3			180	13.42	500	0.1368	0.0393	0.9418	3.933934	9.224
12	4	55		295	17.18	500	0.1385	0.0410	0.9401	4.104104	9.206
13	22	29		1349	36.73	500	0.1446	0.0471	0.9340	4.714715	9.140
14	24	9		1449	38.07	500	0.1450	0.0475	0.9336	4.754755	9.135
15	30	27		1827	42.74	500	0.1460	0.0485	0.9326	4.854855	9.124
16	46	48		2808	52.99	500	0.1475	0.0500	0.9311	5.005005	9.108
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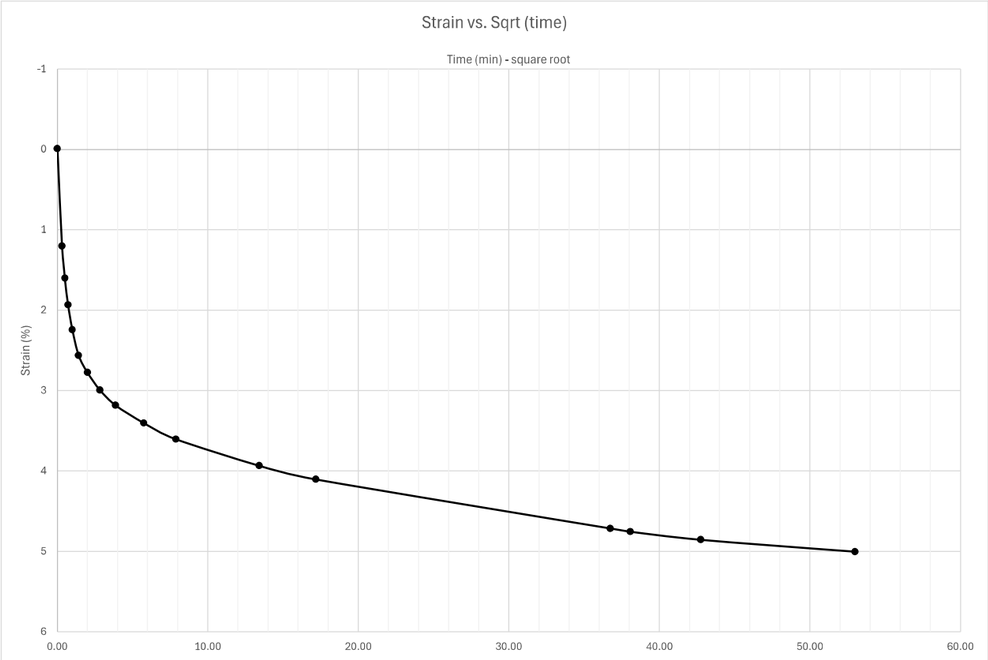
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

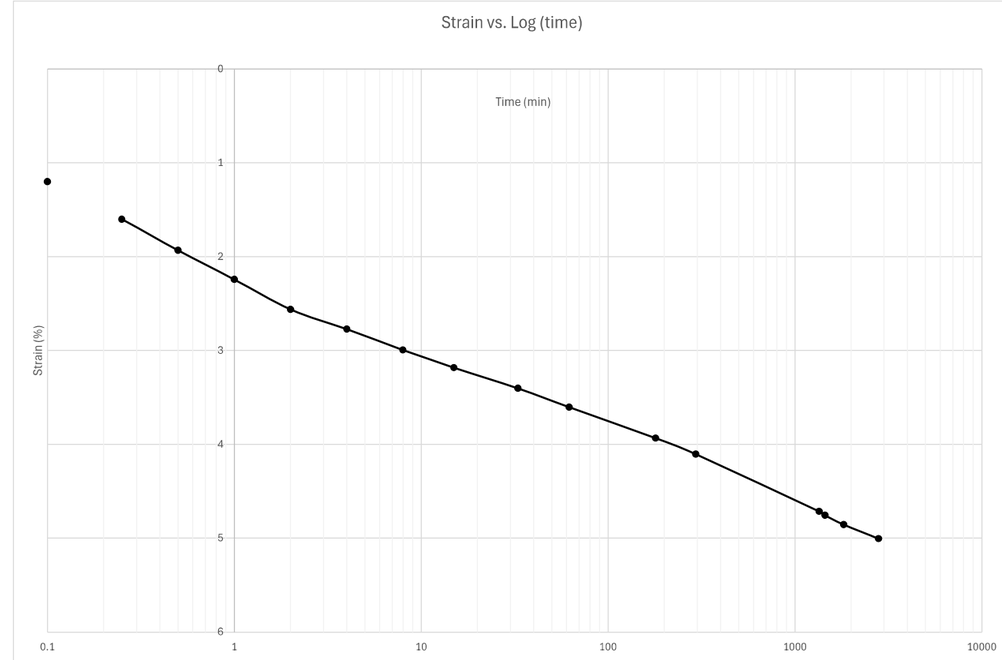
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.1475	-0.0001	0.9312	-0.01001	9.109
1			6	0.10	0.32	1000	0.1646	0.017	0.9141	1.701702	8.924
2			15	0.25	0.50	1000	0.1711	0.0235	0.9076	2.352352	8.853
3			30	0.50	0.71	1000	0.1776	0.03	0.9011	3.003003	8.782
4		1		1.00	1.00	1000	0.1856	0.038	0.8931	3.803804	8.696
5		2		2.00	1.41	1000	0.1952	0.0476	0.8835	4.764765	8.591
6		4		4.00	2.00	1000	0.205	0.0574	0.8737	5.745746	8.485
7		8	45	8.75	2.96	1000	0.2159	0.0683	0.8628	6.836837	8.367
8		15		15.00	3.87	1000	0.2228	0.0752	0.8559	7.527528	8.292
9		30		30.00	5.48	1000	0.2317	0.0841	0.847	8.418418	8.195
10		59		59.00	7.68	1000	0.2381	0.0905	0.8406	9.059059	8.126
11	1	57		117.00	10.82	1000	0.2453	0.0977	0.8334	9.77978	8.047
12	4	13		253.00	15.91	1000	0.2532	0.1056	0.8255	10.57057	7.962
13	6	35		395.00	19.87	1000	0.2574	0.1098	0.8213	10.99099	7.916
14	23	2		1382.00	37.18	1000	0.2695	0.1219	0.8092	12.2022	7.785
15	29	16		1756.00	41.90	1000	0.2723	0.1247	0.8064	12.48248	7.754
16	48	13		2893.00	53.79	1000	0.2774	0.1298	0.8013	12.99299	7.699
17	95	13		5713.00	75.58	1000	0.2845	0.1369	0.7942	13.7037	7.622
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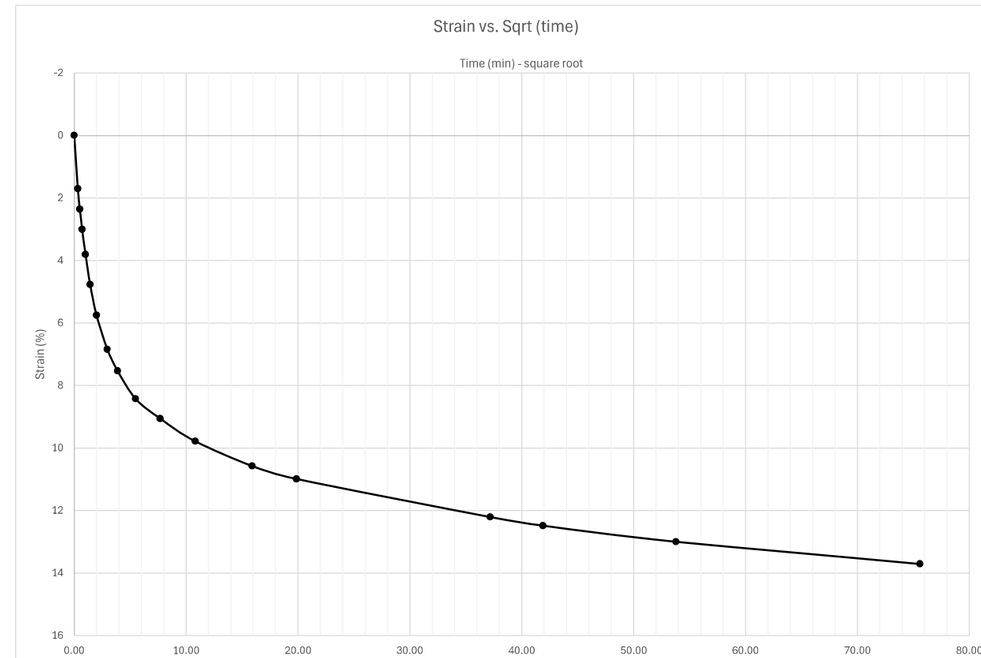
Sequence 3: 1000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

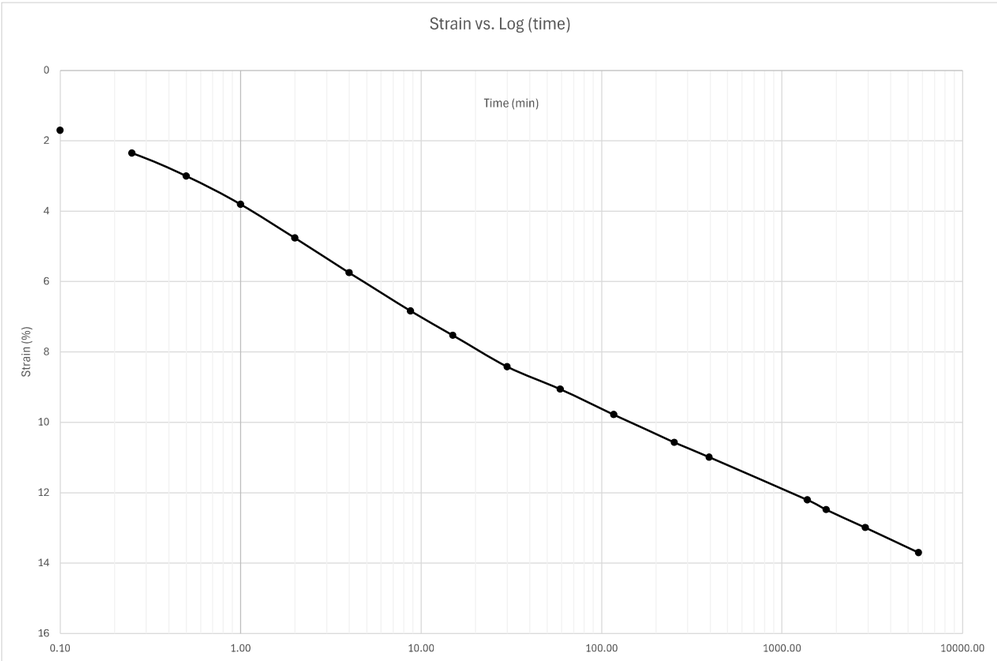


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.2845	-0.0002	0.7944	-0.02002	7.624
1			6	0.10	0.32	2000	0.2976	0.0129	0.7813	1.291291	7.482
2			15	0.25	0.50	2000	0.3032	0.0185	0.7757	1.851852	7.421
3			30	0.50	0.71	2000	0.309	0.0243	0.7699	2.432432	7.358
4		1		1.00	1.00	2000	0.3169	0.0322	0.762	3.223223	7.272
5		2		2.00	1.41	2000	0.327	0.0423	0.7519	4.234234	7.163
6		4		4.00	2.00	2000	0.3397	0.055	0.7392	5.505506	7.025
7		8		8.00	2.83	2000	0.3543	0.0696	0.7246	6.966967	6.866
8		15		15.00	3.87	2000	0.3683	0.0836	0.7106	8.368368	6.714
9		32		32.00	5.66	2000	0.3843	0.0996	0.6946	9.96997	6.541
10		48		48.00	6.93	2000	0.3917	0.107	0.6872	10.71071	6.460
11	1	19		79.00	8.89	2000	0.3998	0.1151	0.6791	11.52152	6.372
12	2	20		140.00	11.83	2000	0.4077	0.123	0.6712	12.31231	6.287
13	4	17		257.00	16.03	2000	0.4154	0.1307	0.6635	13.08308	6.203
14	7	19		439.00	20.95	2000	0.4218	0.1371	0.6571	13.72372	6.134
15	22	50		1370.00	37.01	2000	0.4341	0.1494	0.6448	14.95495	6.000
16	29	39		1779.00	42.18	2000	0.437	0.1523	0.6419	15.24525	5.969
17	31	10		1870.00	43.24	2000	0.4375	0.1528	0.6414	15.2953	5.963
18	46	30		2790.00	52.82	2000	0.4416	0.1569	0.6373	15.70571	5.919
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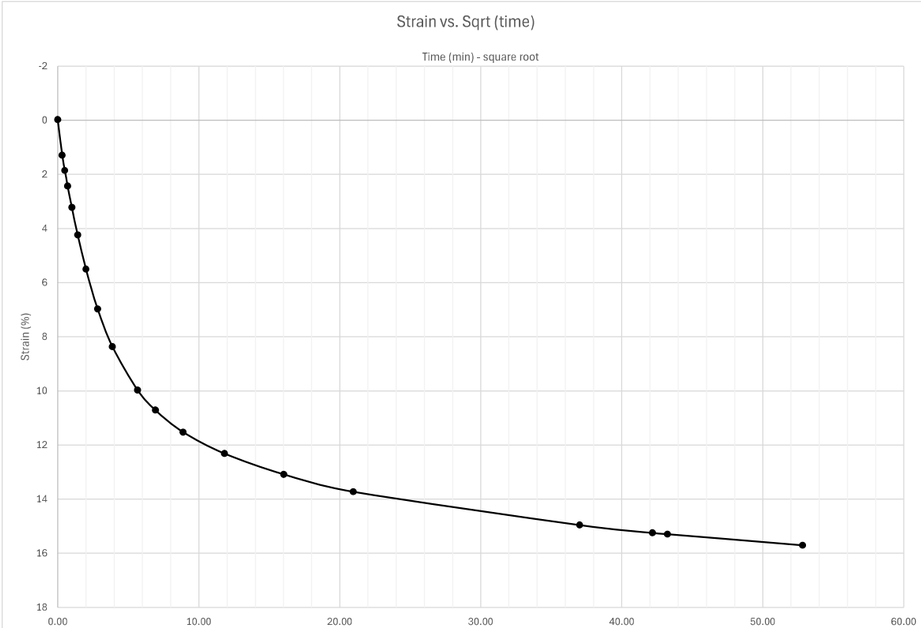
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

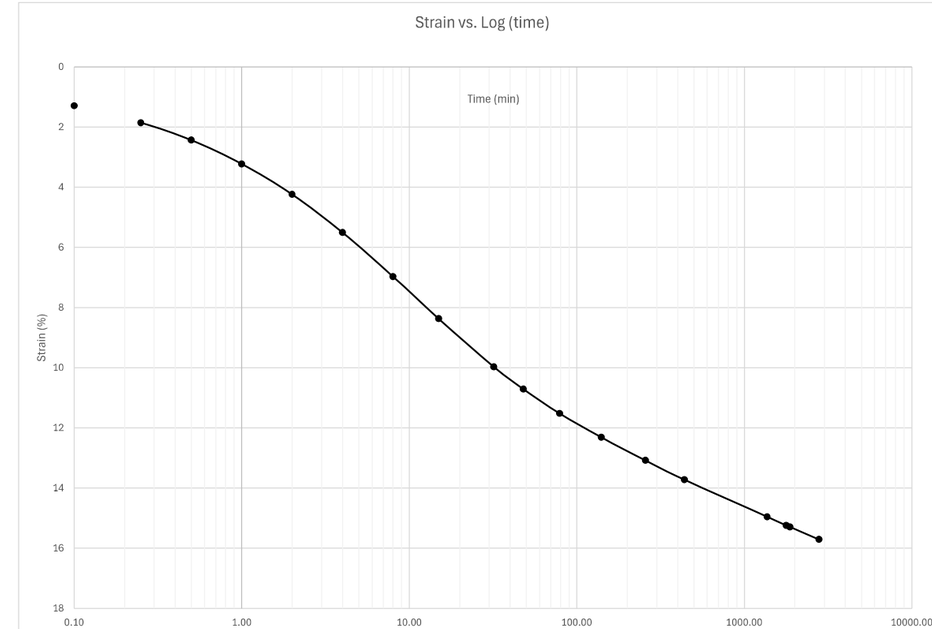
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4416	-0.0002	0.6375	-0.02002	5.921
1			6	0.10	0.32	4000	0.4512	0.0094	0.6279	0.940941	5.817
2			15	0.25	0.50	4000	0.4542	0.0124	0.6249	1.241241	5.784
3			30	0.50	0.71	4000	0.4577	0.0159	0.6214	1.591592	5.746
4		1		1.00	1.00	4000	0.4627	0.0209	0.6164	2.092092	5.692
5		2		2.00	1.41	4000	0.4698	0.028	0.6093	2.802803	5.615
6		4	30	4.50	2.12	4000	0.4812	0.0394	0.5979	3.943944	5.491
7		15		15.00	3.87	4000	0.5043	0.0625	0.5748	6.256256	5.240
8		31		31.00	5.57	4000	0.5216	0.0798	0.5575	7.987988	5.052
9	1	2		62.00	7.87	4000	0.5357	0.0939	0.5434	9.399399	4.899
10	2	1		121.00	11.00	4000	0.5459	0.1041	0.5332	10.42042	4.788
11	3	46		226.00	15.03	4000	0.5537	0.1119	0.5254	11.2012	4.704
12	7	53		473.00	21.75	4000	0.5616	0.1198	0.5175	11.99199	4.618
13	23	50		1430.00	37.82	4000	0.5711	0.1293	0.508	12.94294	4.515
14	24	25		1465.00	38.28	4000	0.5713	0.1295	0.5078	12.96296	4.513
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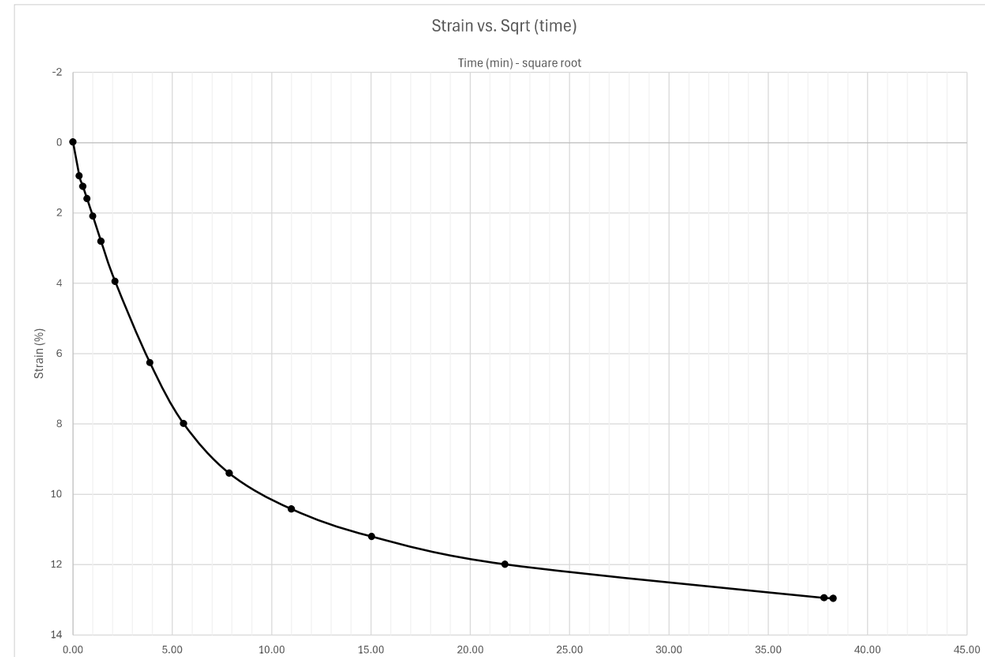
Sequence 5: 4000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

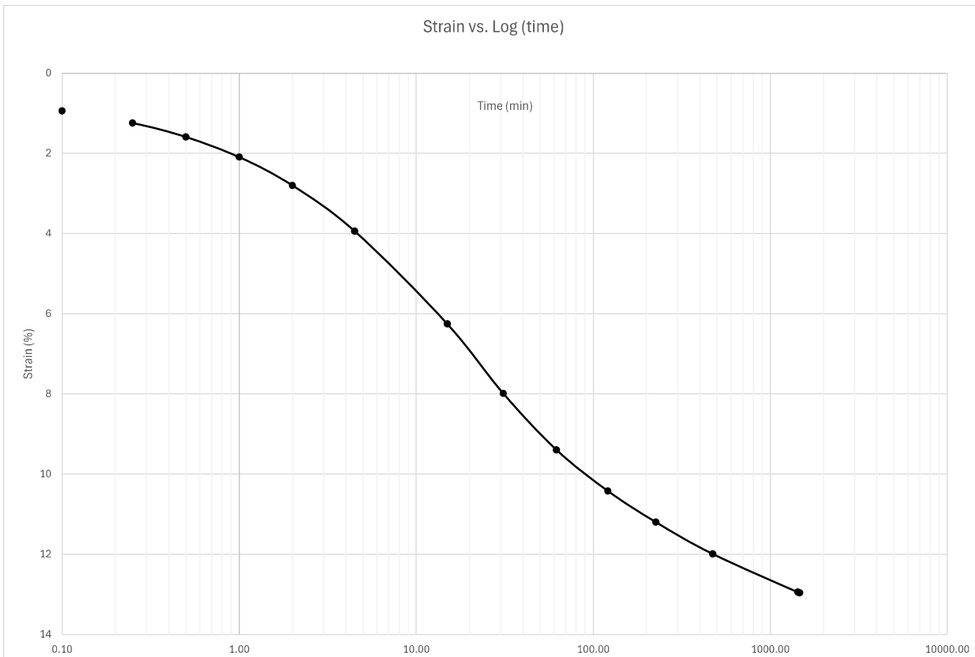


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5713	0.0002	0.5076	0.02002	4.511
1			6	0.10	0.32	2000	0.5692	-0.0019	0.5097	-0.19019	4.533
2			15	0.25	0.50	2000	0.5687	-0.0024	0.5102	-0.24024	4.539
3			30	0.50	0.71	2000	0.5683	-0.0028	0.5106	-0.28028	4.543
4		1		1.00	1.00	2000	0.5677	-0.0034	0.5112	-0.34034	4.550
5		2		2.00	1.41	2000	0.5669	-0.0042	0.512	-0.42042	4.558
6		4	15	4.25	2.06	2000	0.566	-0.0051	0.5129	-0.510511	4.568
7		8		8.00	2.83	2000	0.5653	-0.0058	0.5136	-0.580581	4.576
8		15		15.00	3.87	2000	0.5646	-0.0065	0.5143	-0.650651	4.583
9		30		30.00	5.48	2000	0.564	-0.0071	0.5149	-0.710711	4.590
10	1			60.00	7.75	2000	0.5634	-0.0077	0.5155	-0.770771	4.596
11	2			120.00	10.95	2000	0.5628	-0.0083	0.5161	-0.830831	4.603
12	4			240.00	15.49	2000	0.5623	-0.0088	0.5166	-0.880881	4.608
13	22	43		1363.00	36.92	2000	0.5614	-0.0097	0.5175	-0.970971	4.618
14	50	20		3020.00	54.95	2000	0.5613	-0.0098	0.5176	-0.980981	4.619
15	74	55		4495.00	67.04	2000	0.5613	-0.0098	0.5176	-0.980981	4.619
16	96	50		5810.00	76.22	2000	0.5613	-0.0098	0.5176	-0.980981	4.619
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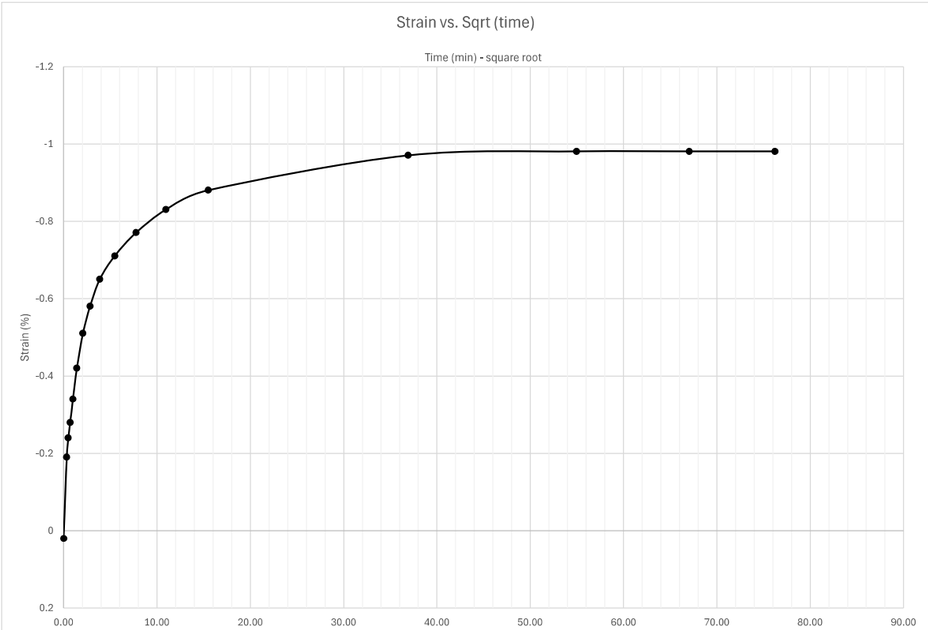
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

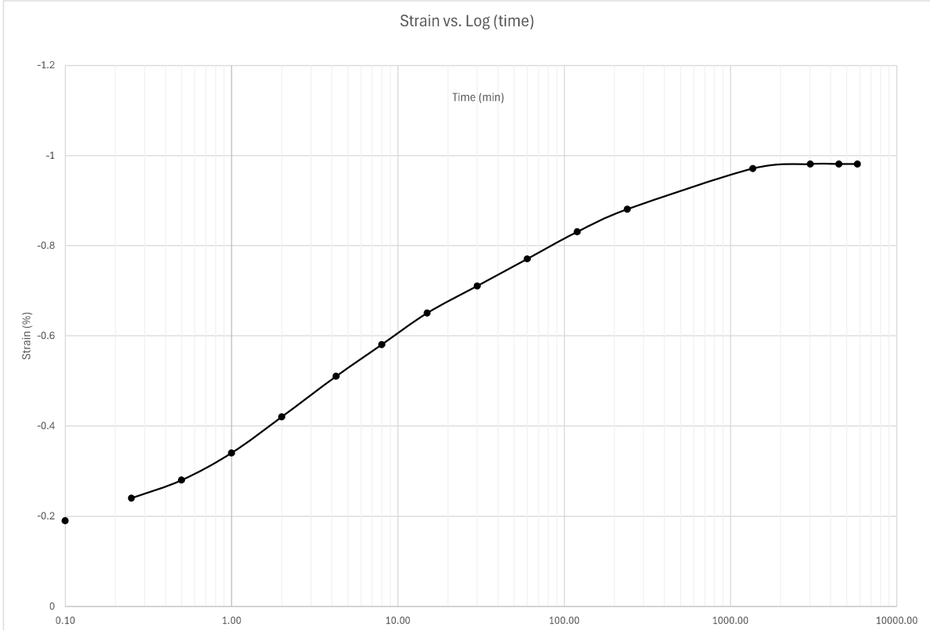
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5613	0.0002	0.5174	0.02002	4.617
1			6	0.10	0.32	1000	0.56	-0.0011	0.5187	-0.11011	4.631
2			15	0.25	0.50	1000	0.5597	-0.0014	0.519	-0.14014	4.634
3			30	0.50	0.71	1000	0.5593	-0.0018	0.5194	-0.18018	4.639
4		1		1.00	1.00	1000	0.559	-0.0021	0.5197	-0.21021	4.642
5		2		2.00	1.41	1000	0.5584	-0.0027	0.5203	-0.27027	4.648
6		4		4.00	2.00	1000	0.5574	-0.0037	0.5213	-0.37037	4.659
7		8		8.00	2.83	1000	0.5567	-0.0044	0.522	-0.44044	4.667
8		15		15.00	3.87	1000	0.5564	-0.0047	0.5223	-0.47047	4.670
9		30		30.00	5.48	1000	0.5558	-0.0053	0.5229	-0.530531	4.677
10	1			60.00	7.75	1000	0.5552	-0.0059	0.5235	-0.590591	4.683
11	2			120.00	10.95	1000	0.5548	-0.0063	0.5239	-0.630631	4.688
12	3	11		191.00	13.82	1000	0.55409	-0.00701	0.52461	-0.701702	4.695
13	8	48		528.00	22.98	1000	0.5528	-0.0083	0.5259	-0.830831	4.709
14	18	53		1133.00	33.66	1000	0.5518	-0.0093	0.5269	-0.930931	4.720
15	23	50		1430.00	37.82	1000	0.5514	-0.0097	0.5273	-0.970971	4.724
16	26	52		1612.00	40.15	1000	0.5512	-0.0099	0.5275	-0.990991	4.727
17	43	29		2609.00	51.08	1000	0.5504	-0.0107	0.5283	-1.071071	4.735
18	48	4		2884.00	53.70	1000	0.5501	-0.011	0.5286	-1.101101	4.739
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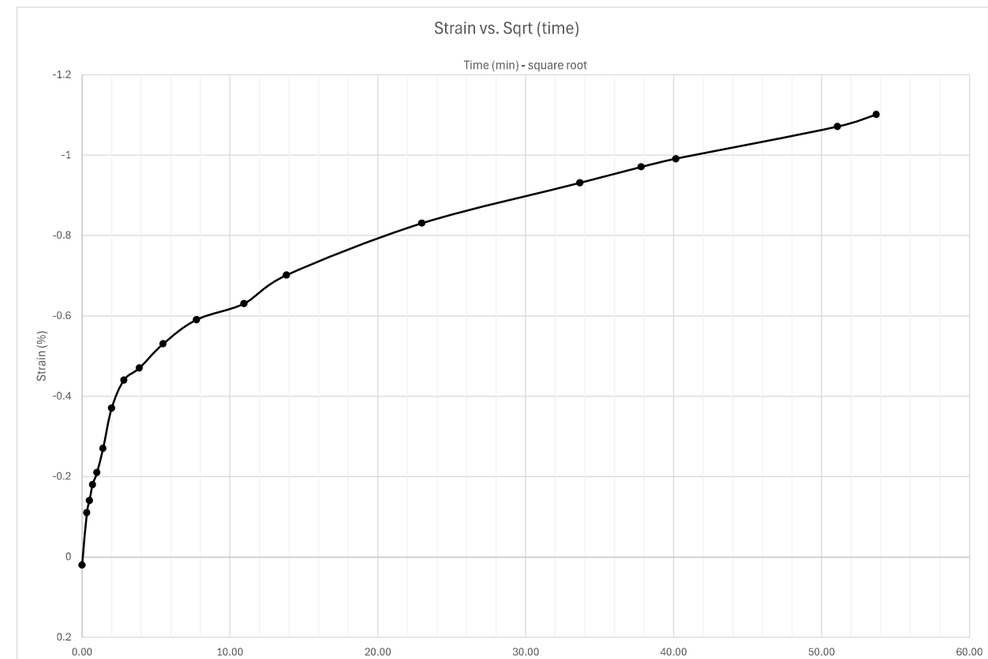
Sequence 7: 1000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

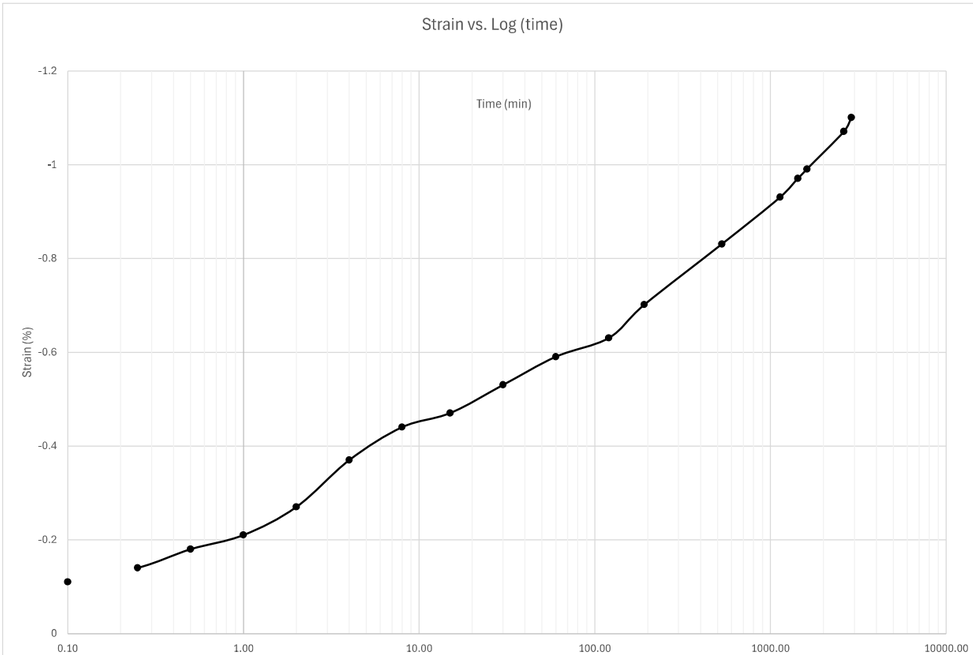


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5501	-0.0002	0.5288	-0.02002	4.741
1			6	0.10	0.32	2000	0.5513	0.001	0.5276	0.1001	4.728
2			15	0.25	0.50	2000	0.5516	0.0013	0.5273	0.13013	4.724
3			30	0.50	0.71	2000	0.5519	0.0016	0.527	0.16016	4.721
4		1		1.00	1.00	2000	0.5524	0.0021	0.5265	0.21021	4.716
5		2		2.00	1.41	2000	0.553	0.0027	0.5259	0.27027	4.709
6		4		4.00	2.00	2000	0.5536	0.0033	0.5253	0.33033	4.703
7		8		8.00	2.83	2000	0.5541	0.0038	0.5248	0.38038	4.697
8		15		15.00	3.87	2000	0.5544	0.0041	0.5245	0.41041	4.694
9		30		30.00	5.48	2000	0.5547	0.0044	0.5242	0.44044	4.691
10	1			60.00	7.75	2000	0.5551	0.0048	0.5238	0.48048	4.686
11	1	57		117.00	10.82	2000	0.5554	0.0051	0.5235	0.510511	4.683
12	5	20		320.00	17.89	2000	0.5558	0.0055	0.5231	0.550551	4.679
13	7	25		445.00	21.10	2000	0.556	0.0057	0.5229	0.570571	4.677
14	24	13		1453.00	38.12	2000	0.5566	0.0063	0.5223	0.630631	4.670
15	95	28		5728.00	75.68	2000	0.5575	0.0072	0.5214	0.720721	4.660
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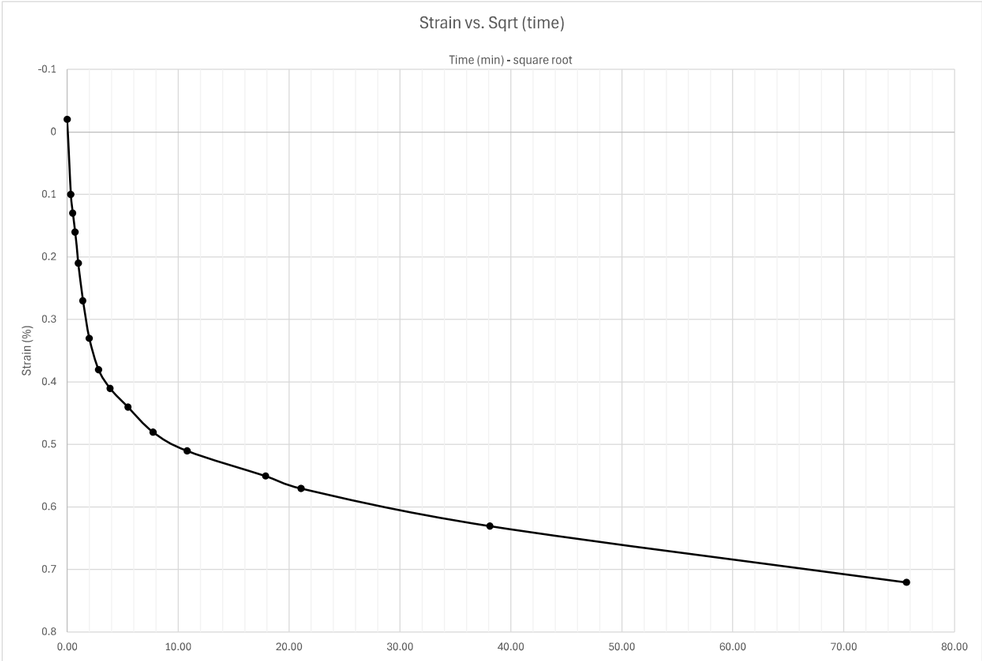
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

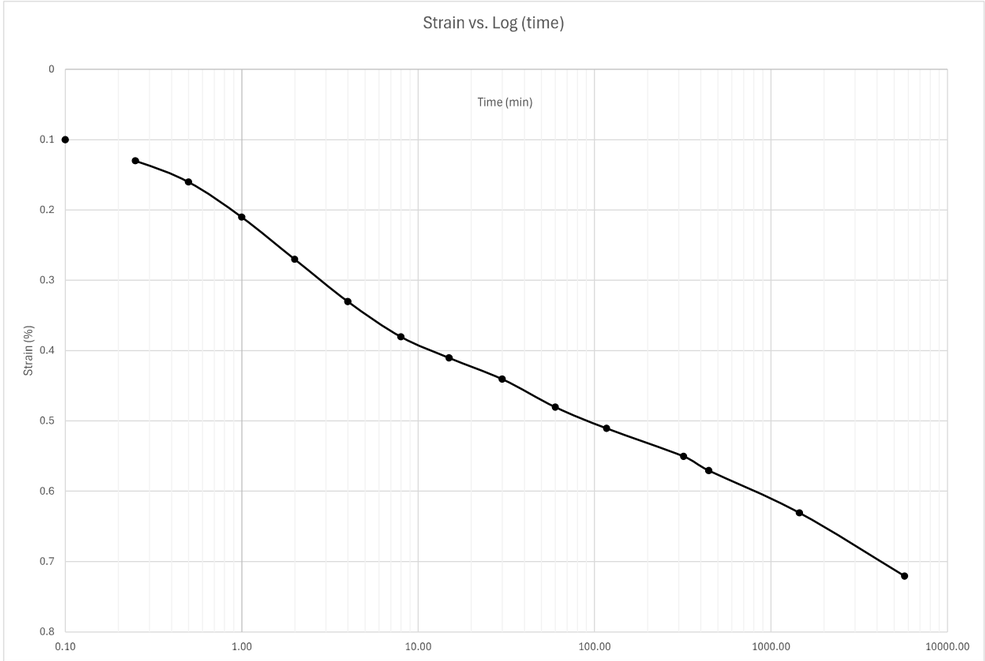
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 2000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.5575	-0.0005	0.5219	-0.05005	4.666
1			6	0.10	0.32	4000	0.5603	0.0023	0.5191	0.23023	4.635
2			15	0.25	0.50	4000	0.561	0.003	0.5184	0.3003	4.628
3			30	0.50	0.71	4000	0.5618	0.0038	0.5176	0.38038	4.619
4		1		1.00	1.00	4000	0.5629	0.0049	0.5165	0.49049	4.607
5		2		2.00	1.41	4000	0.5642	0.0062	0.5152	0.620621	4.593
6		4		4.00	2.00	4000	0.5657	0.0077	0.5137	0.770771	4.577
7		8		8.00	2.83	4000	0.5671	0.0091	0.5123	0.910911	4.562
8		15		15.00	3.87	4000	0.5681	0.0101	0.5113	1.011011	4.551
9		30		30.00	5.48	4000	0.5692	0.0112	0.5102	1.121121	4.539
10		58		58.00	7.62	4000	0.5702	0.0122	0.5092	1.221221	4.528
11	2	11		131.00	11.45	4000	0.5716	0.0136	0.5078	1.361361	4.513
12	4	5		245.00	15.65	4000	0.5729	0.0149	0.5065	1.491491	4.499
13	6	47		407.00	20.17	4000	0.5741	0.0161	0.5053	1.611612	4.486
14	7	24		444.00	21.07	4000	0.5743	0.0163	0.5051	1.631632	4.483
15	22	49		1369.00	37.00	4000	0.5775	0.0195	0.5019	1.951952	4.449
16	28	26		1706.00	41.30	4000	0.5784	0.0204	0.501	2.042042	4.439
17	47	3		2823.00	53.13	4000	0.5803	0.0223	0.4991	2.232232	4.418
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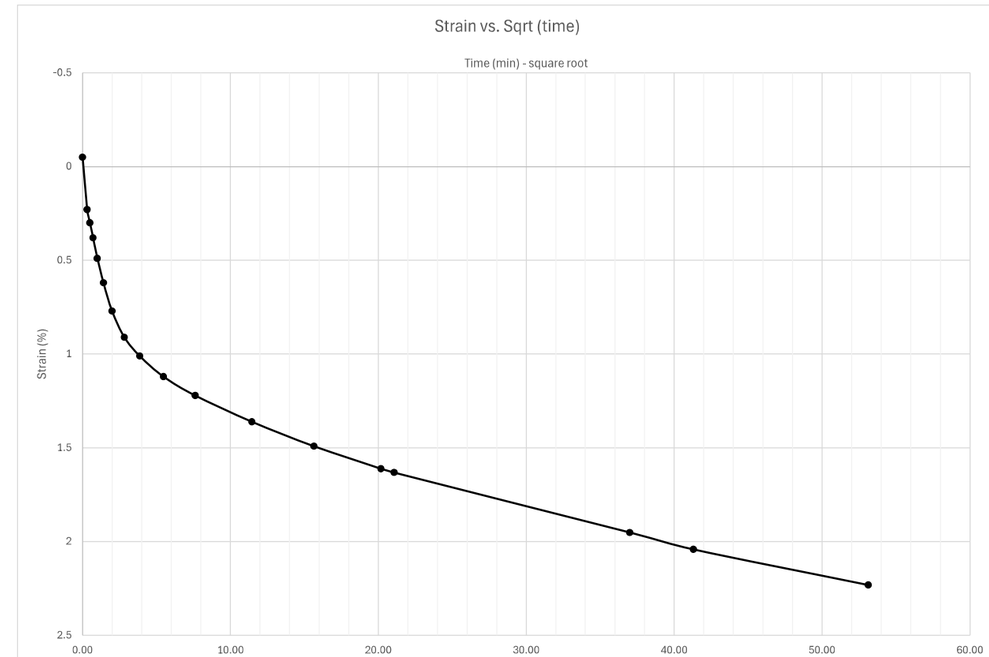
Sequence 9: 4000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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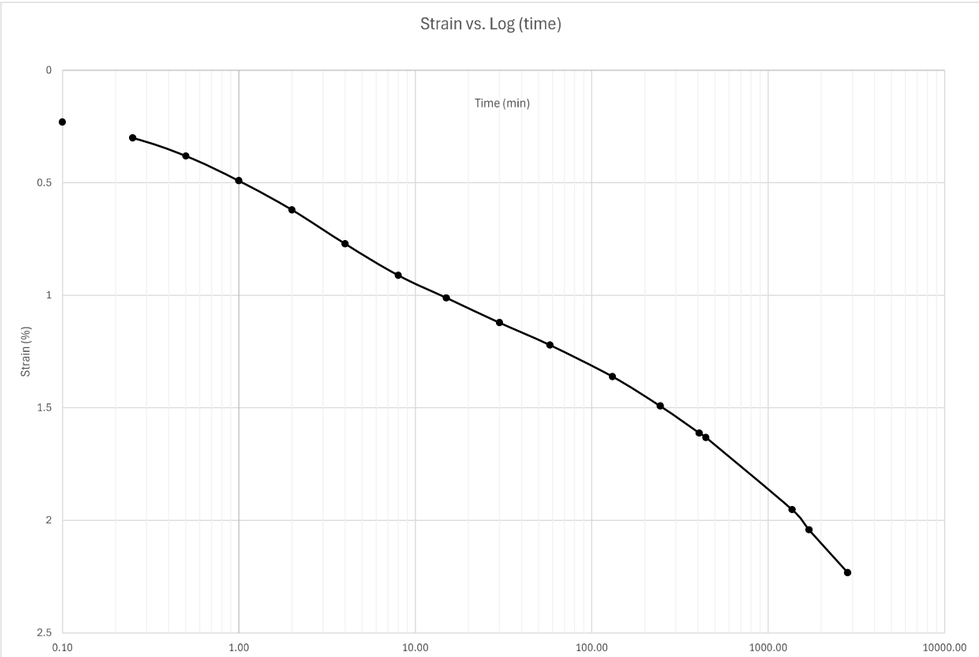
Sequence 9: 4000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.5803	0.0003	0.4988	0.03003	4.415
1			6	0.10	0.32	8000	0.5853	0.0053	0.4938	0.530531	4.361
2			15	0.25	0.50	8000	0.5871	0.0071	0.492	0.710711	4.341
3			30	0.50	0.71	8000	0.5891	0.0091	0.49	0.910911	4.319
4		1		1.00	1.00	8000	0.5921	0.0121	0.487	1.211211	4.287
5		2		2.00	1.41	8000	0.5962	0.0162	0.4829	1.621622	4.242
6		4		4.00	2.00	8000	0.6023	0.0223	0.4768	2.232232	4.176
7		8		8.00	2.83	8000	0.6105	0.0305	0.4686	3.053053	4.087
8		15	15	15.25	3.91	8000	0.6197	0.0397	0.4594	3.973974	3.987
9		30		30.00	5.48	8000	0.6308	0.0508	0.4483	5.085085	3.867
10	1	24		84.00	9.17	8000	0.6462	0.0662	0.4329	6.626627	3.700
11	2	37		157.00	12.53	8000	0.6538	0.0738	0.4253	7.387387	3.617
12	4	29		269.00	16.40	8000	0.6593	0.0793	0.4198	7.937938	3.557
13	23	44		1424.00	37.74	8000	0.6723	0.0923	0.4068	9.239239	3.416
14	31	53		1913.00	43.74	8000	0.6743	0.0943	0.4048	9.439439	3.395
15	47	50		2870.00	53.57	8000	0.6768	0.0968	0.4023	9.68969	3.367
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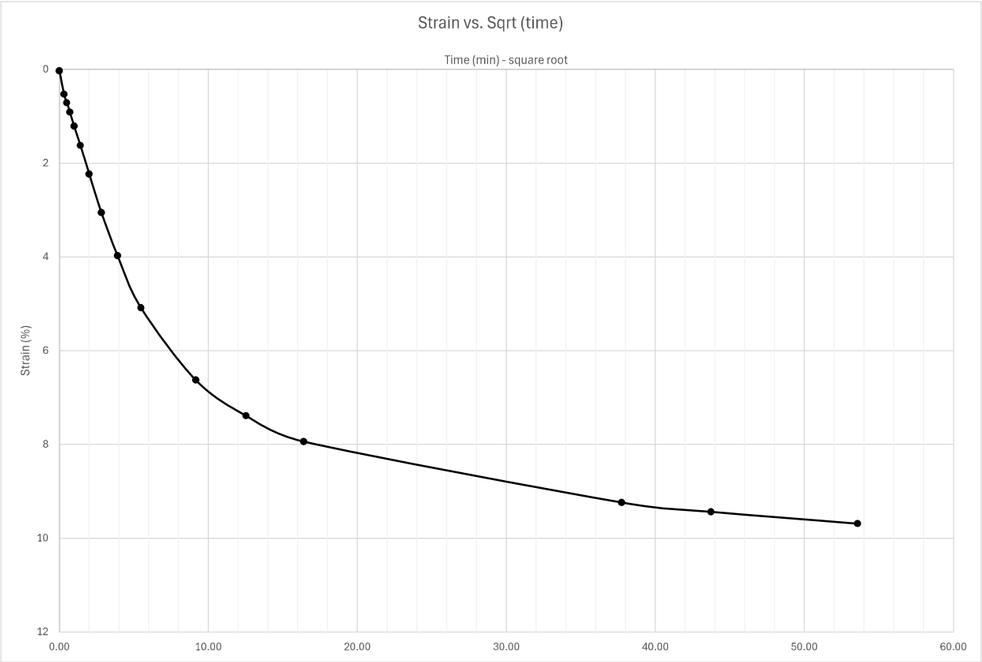
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 8000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

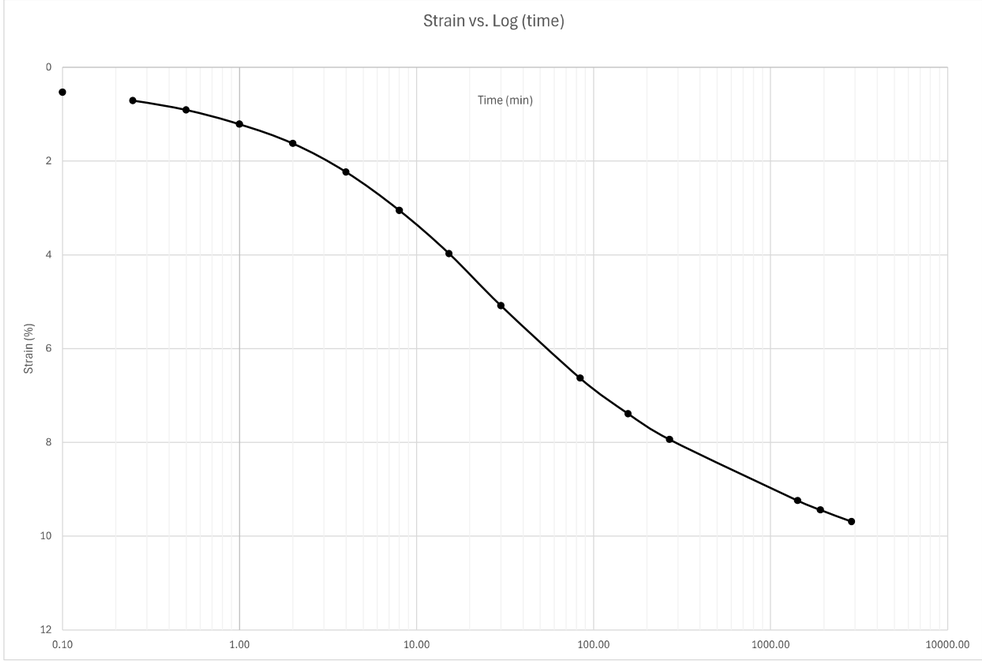
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 8000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6768	-0.0001	0.4024	-0.01001	3.368
1			6	0.10	0.32	16000	0.6812	0.0043	0.398	0.43043	3.321
2			15	0.25	0.50	16000	0.6824	0.0055	0.3968	0.550551	3.308
3			30	0.50	0.71	16000	0.6834	0.0065	0.3958	0.650651	3.297
4		1		1.00	1.00	16000	0.6862	0.0093	0.393	0.930931	3.266
5		2		2.00	1.41	16000	0.6896	0.0127	0.3896	1.271271	3.230
6		4		4.00	2.00	16000	0.6944	0.0175	0.3848	1.751752	3.177
7		8		8.00	2.83	16000	0.701	0.0241	0.3782	2.412412	3.106
8		15		15.00	3.87	16000	0.7087	0.0318	0.3705	3.183183	3.022
9		30		30.00	5.48	16000	0.7183	0.0414	0.3609	4.144144	2.918
10	2			120.00	10.95	16000	0.7353	0.0584	0.3439	5.845846	2.733
11	4	4		244.00	15.62	16000	0.7411	0.0642	0.3381	6.426426	2.670
12	6	33		393.00	19.82	16000	0.7444	0.0675	0.3348	6.756757	2.635
13	52	25		3145.00	56.08	16000	0.7556	0.0787	0.3236	7.877878	2.513
14	74			4440.00	66.63	16000	0.7573	0.0804	0.3219	8.048048	2.495
15	95	54		5754.00	75.86	16000	0.7585	0.0816	0.3207	8.168168	2.482
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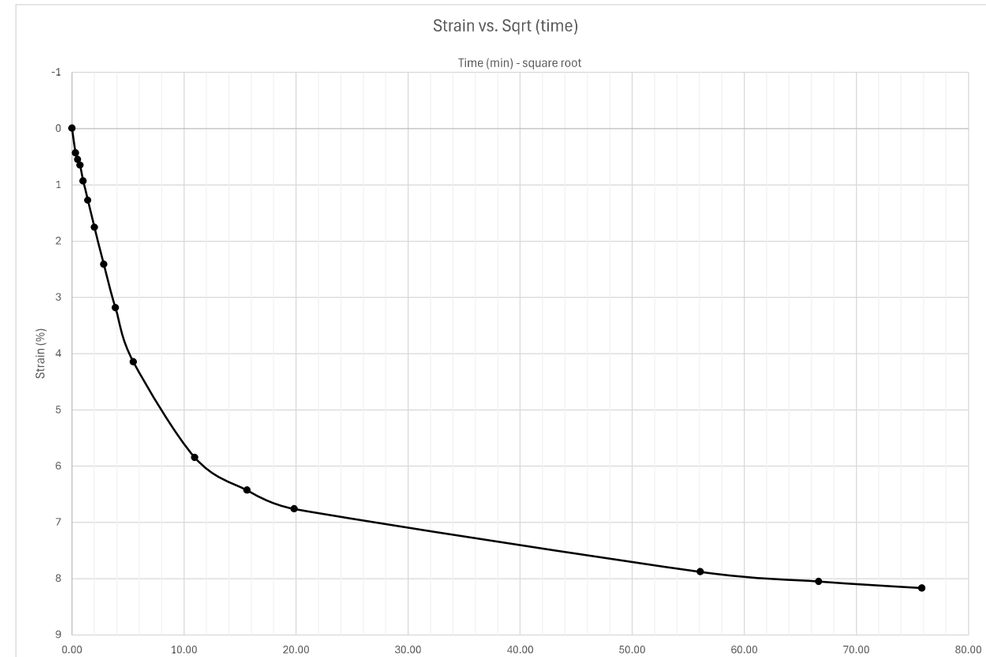
Sequence 11: 16000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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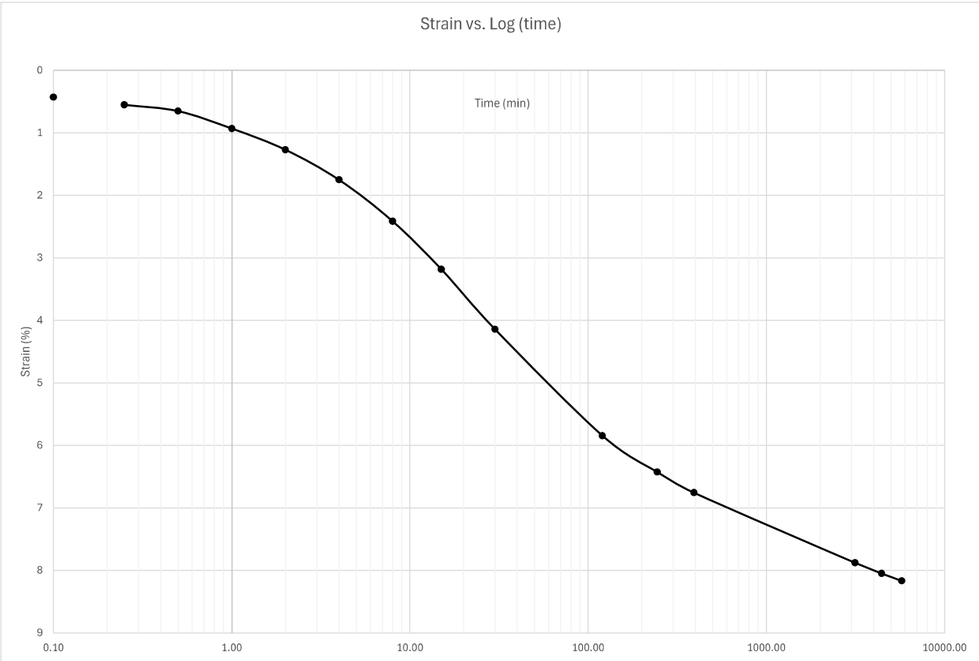
Sequence 11: 16000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.7585	-0.0006	0.3213	-0.06006	2.488
1			6	0.10	0.32	32000	0.762	0.0029	0.3178	0.29029	2.450
2			15	0.25	0.50	32000	0.7628	0.0037	0.317	0.37037	2.441
3			30	0.50	0.71	32000	0.7639	0.0048	0.3159	0.48048	2.429
4		1		1.00	1.00	32000	0.7653	0.0062	0.3145	0.620621	2.414
5		2		2.00	1.41	32000	0.7675	0.0084	0.3123	0.840841	2.390
6		4		4.00	2.00	32000	0.7704	0.0113	0.3094	1.131131	2.359
7		8		8.00	2.83	32000	0.7743	0.0152	0.3055	1.521522	2.317
8		15		15.00	3.87	32000	0.7792	0.0201	0.3006	2.012012	2.263
9		30		30.00	5.48	32000	0.7855	0.0264	0.2943	2.642643	2.195
10	1	6		66.00	8.12	32000	0.7932	0.0341	0.2866	3.413413	2.111
11	1	52		112.00	10.58	32000	0.7975	0.0384	0.2823	3.843844	2.065
12	4	21		261.00	16.16	32000	0.8035	0.0444	0.2763	4.444444	2.000
13	6	16		376.00	19.39	32000	0.8057	0.0466	0.2741	4.664665	1.976
14	22	31		1351.00	36.76	32000	0.8117	0.0526	0.2681	5.265265	1.911
15	25	9		1509.00	38.85	32000	0.8122	0.0531	0.2676	5.315315	1.905
16	31	7		1867.00	43.21	32000	0.8128	0.0537	0.267	5.375375	1.899
17	46	17		2777.00	52.70	32000	0.8145	0.0554	0.2653	5.545546	1.880
18	53	19		3199.00	56.56	32000	0.8154	0.0563	0.2644	5.635636	1.870
19	70			4200.00	64.81	32000	0.8165	0.0574	0.2633	5.745746	1.858
20	77	51		4671.00	68.34	32000	0.817	0.0579	0.2628	5.795796	1.853
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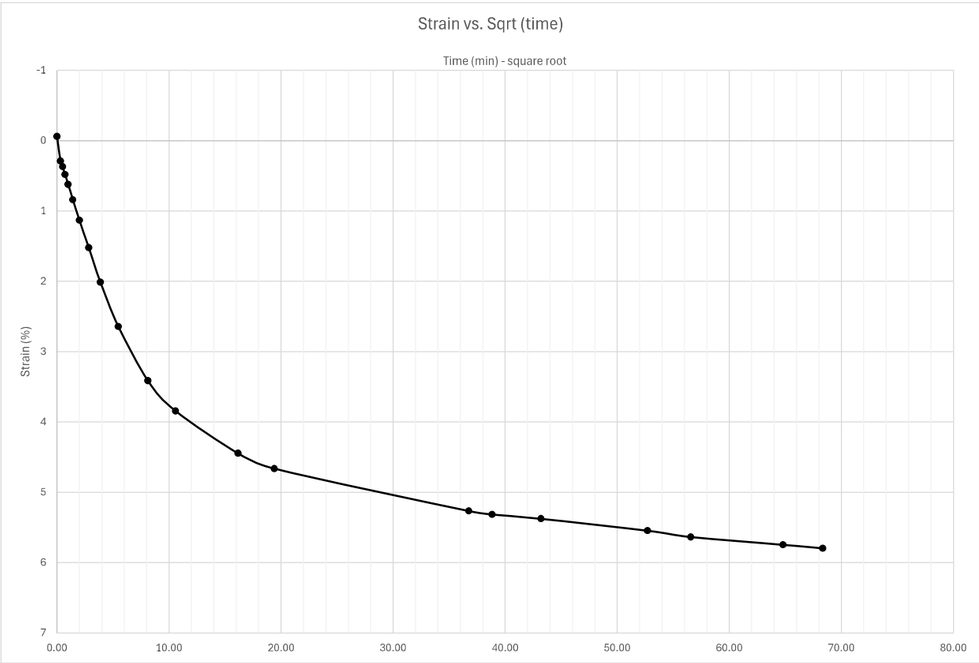
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 32000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

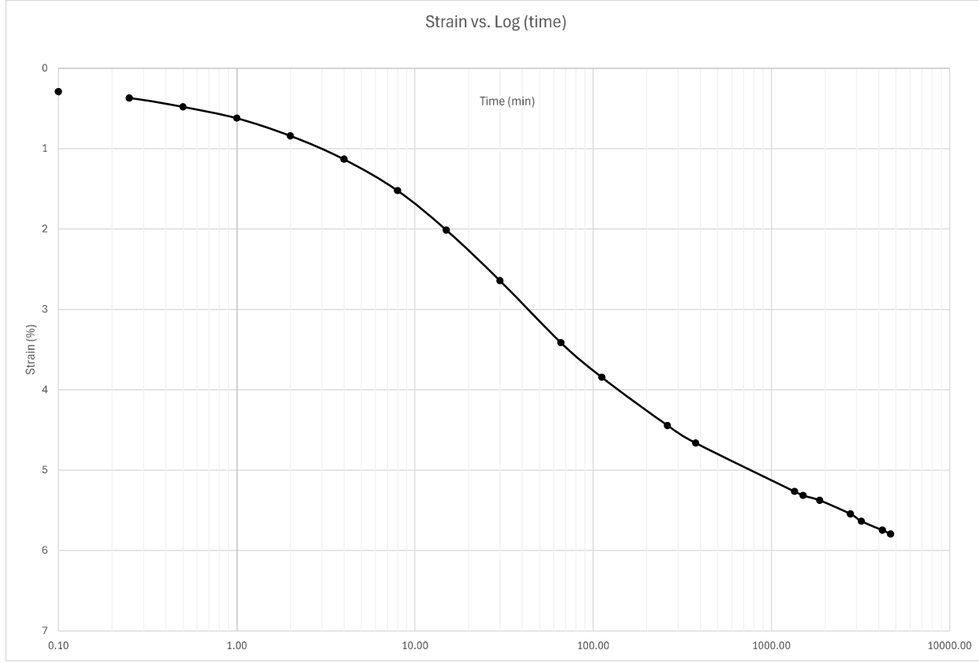
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 32000 psf

Y1RPC_4100, ST-36, 13.0-15.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	23.0-25.0
Sample Number	ST-38	Boring Number	Y1RPC_4100
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.027	0.1145	0.972	0.027	5.079	14.44	3.1	0.01387	0.01501
2	500	0.1044	0.1146	0.8946	0.105	4.595	16	4.1	0.01060	0.009613
3	1000	0.2082	0.1147	0.7908	0.208	3.946	12.25	7.5	0.01082	0.004107
4	2000	0.3362	0.1149	0.6628	0.337	3.145	23.04	8.1	0.00404	0.002671
5	4000	0.4423	0.1151	0.5567	0.443	2.482	30.25	9.5	0.00217	0.001607
6	2000	0.4364	0.1149	0.5626	0.437	2.519	-	-	-	-
7	1000	0.4269	0.1147	0.5721	0.427	2.578	-	-	-	-
8	500	0.4148	0.1146	0.5842	0.415	2.654	-	-	-	-
9	1000	0.4183	0.1147	0.5807	0.419	2.632	7.29	-	0.00981	-
10	2000	0.4277	0.1149	0.5713	0.428	2.573	4.84	-	0.01430	-
11	4000	0.4513	0.1152	0.5477	0.452	2.426	4.84	-	0.01314	-
12	8000	0.5404	0.1158	0.4586	0.541	1.868	16.81	8.8	0.00265	0.00118
13	16000	0.6107	0.1166	0.3883	0.611	1.429	25	7.5	0.00128	0.00099
14	24000	0.6492	0.1172	0.3498	0.650	1.188	49	20	0.00053	0.00030
15	32000	0.6731	0.1178	0.3259	0.674	1.038	169	-	0.00013	-
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Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Project: Replace Bridge No. 13 over the Cape Fear River
Project Number: 25-051.05
Test Start Date: 4/15/2026
Machine Apparatus: 2
Technician: KSB

Sampling Date: 4/14/2026
Sample Number: ST-38
Depth (ft): 23.0-25.0
Boring Number: Y1RPC_4100
Location: Alignment Y1RPC
Testing Procedure: ASTM D2435
Preparation: Cutting Shoe
Test Condition: Inundated

Specific Gravity: 1.949
Sampling Method: Shelby Tube
Specimen Description: Black Sandy Silt with organics
Soil Classification: A-2-4 (0)
Plastic Limit: NP
Liquid Limit: NP

Weight of Ring (g): 103.4

Parameters	Initial	Final
Height (in)	0.999	0.3259
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	1.609
Weight of Container (g)	60.35	60.38
Weight of Wet Soil + Container (g)	242.83	101.4
Weight of Dry Soil + Container (g)	111.3	84.83
Moisture Content (%)	258.16	67.77
Moist Weight + Ring Weight (g)	193.68	145.63
Dry Mass (g)	25.21	25.17
Water Content (calc from spec)	258.16	67.77
Dry Density (pcf)	19.47	59.61
Wet Density (pcf)	69.74	100.00
Volume of Solids (in^3)	0.79	0.79
Height of Solids (in)	0.16	0.16
Void Ratio	5.248	1.038

Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Void Ratio vs. Effective Stress

Y1RPC_4100, ST-38, 23.0-25.0 ft

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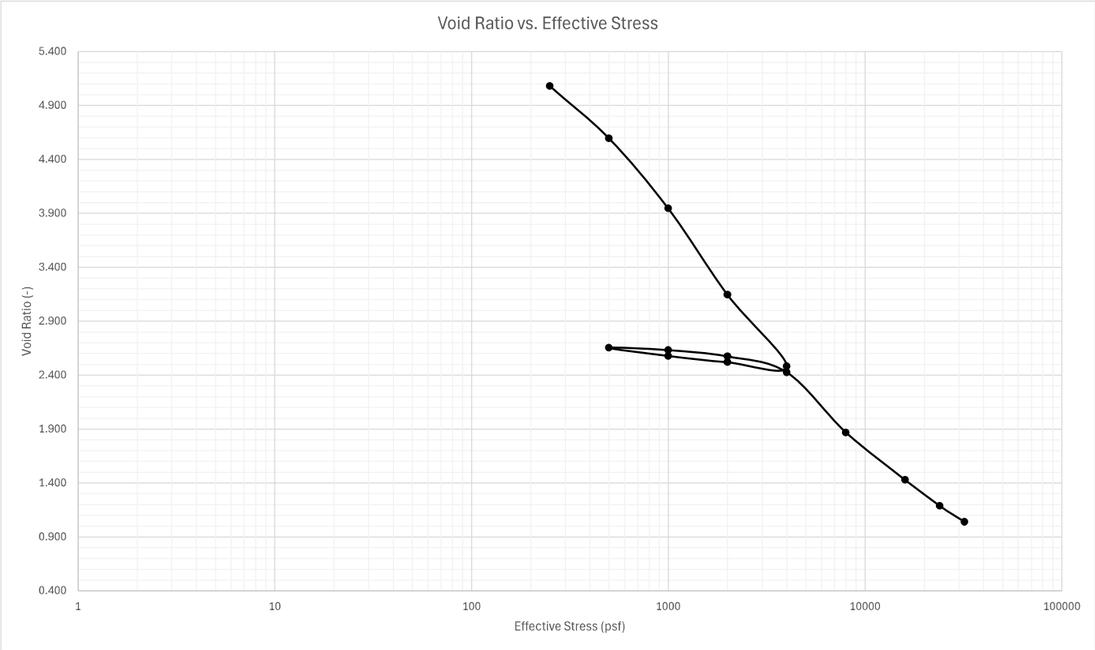
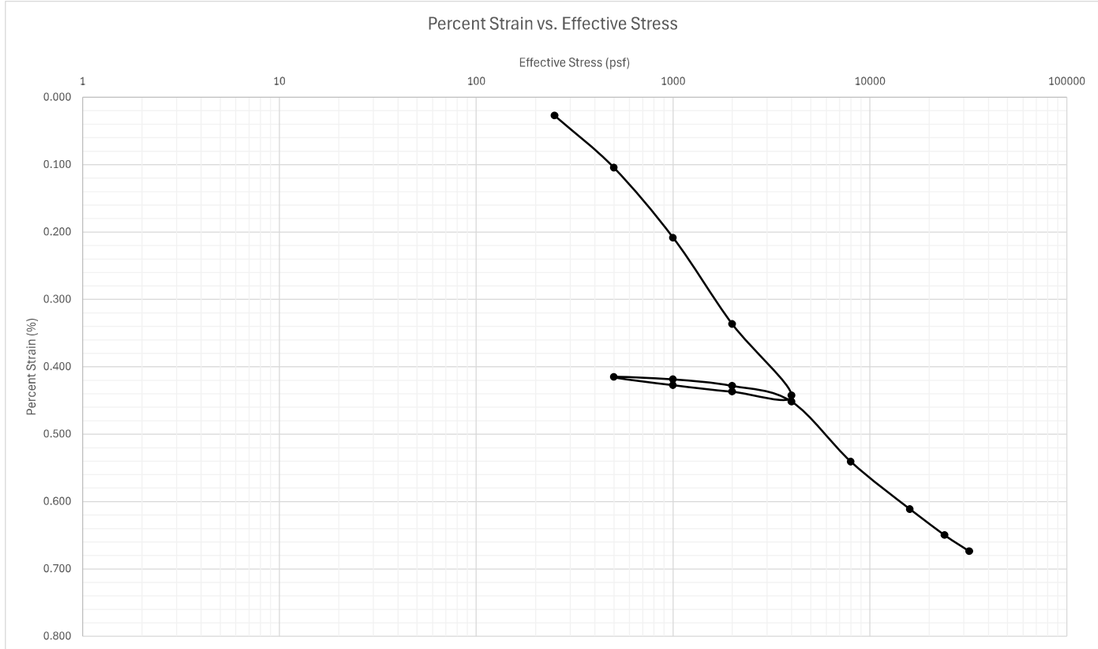


Percent Strain vs. Effective Stress

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.0935	0	0.999	0	5.248
1			15	0.25	0.5	250	0.0942	0.0007	0.9983	0.07007	5.244
2			30	0.5	0.707106781	250	0.0951	0.0016	0.9974	0.16016	5.238
3		1		1	1	250	0.0968	0.0033	0.9957	0.33033	5.228
4		2		2	1.414213562	250	0.099	0.0055	0.9935	0.550551	5.214
5		4		4	2	250	0.1019	0.0084	0.9906	0.840841	5.196
6		8		8	2.828427125	250	0.105	0.0115	0.9875	1.151151	5.176
7		15		15	3.872983346	250	0.1076	0.0141	0.9849	1.411411	5.160
8		38		38	6.164414003	250	0.1102	0.0167	0.9823	1.671672	5.144
9	1			60	7.745966692	250	0.1111	0.0176	0.9814	1.761762	5.138
10	2	3		123	11.09053651	250	0.1128	0.0193	0.9797	1.931932	5.128
11	3	58		238	15.42724862	250	0.114	0.0205	0.9785	2.052052	5.120
12	20			1200	34.64101615	250	0.1162	0.0227	0.9763	2.272272	5.106
13	25	45		1545	39.30648801	250	0.1172	0.0237	0.9753	2.372372	5.100
14	45	16		2716	52.11525688	250	0.1181	0.0246	0.9744	2.462462	5.094
15	119	22		7162	84.62860037	250	0.1201	0.0266	0.9724	2.662663	5.082
16	142	3		8523	92.32009532	250	0.1205	0.027	0.972	2.702703	5.079
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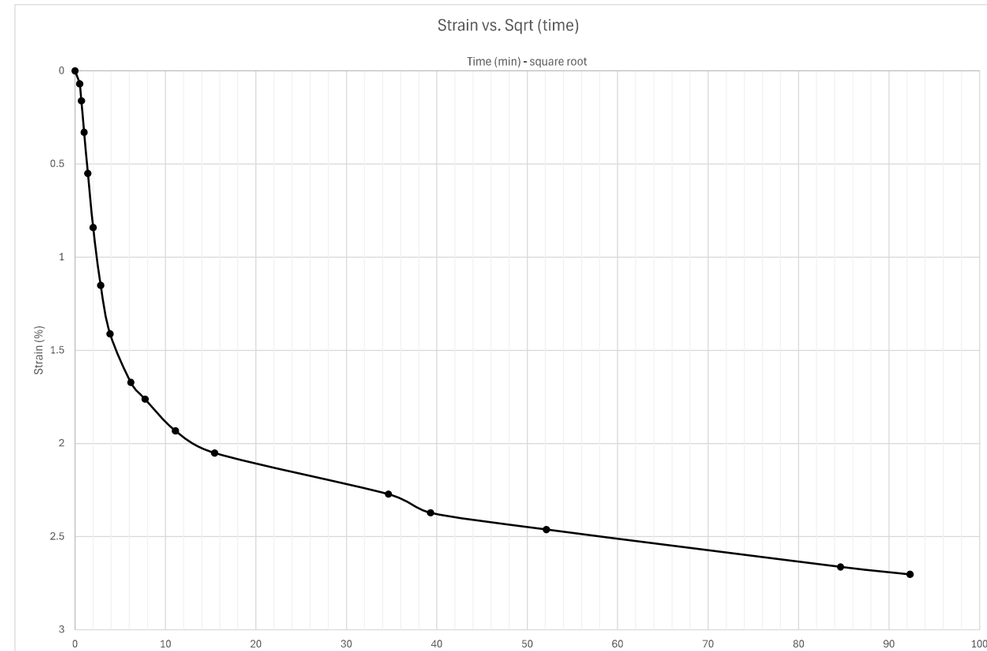
Sequence 1: 250 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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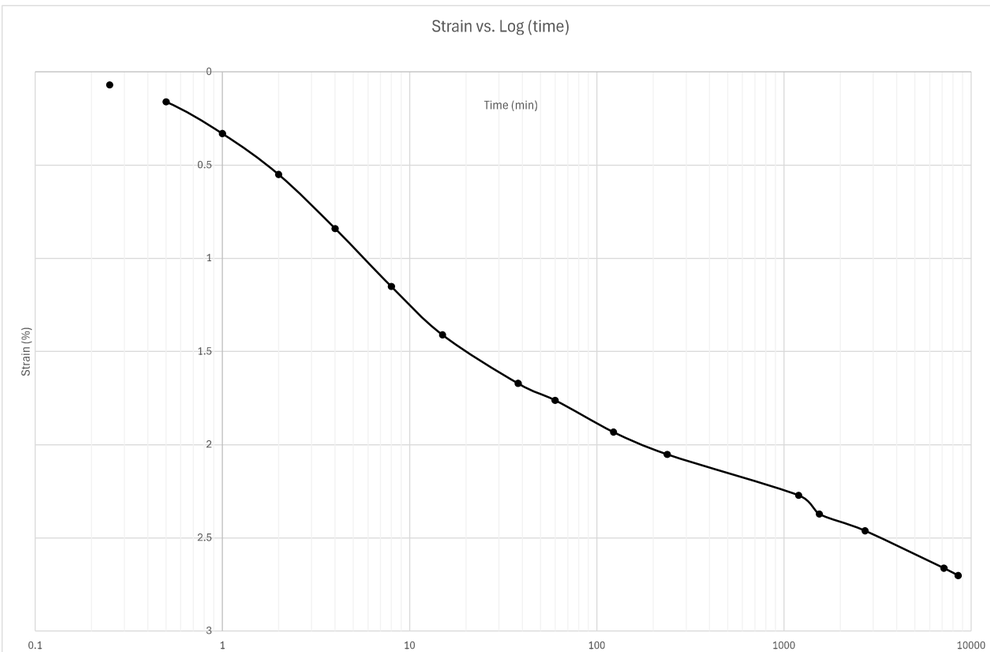
Sequence 1: 250 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1205	-0.0001	0.9721	-0.01001	5.080
1			6	0.1	0.32	500	0.1280	0.0074	0.9646	0.740741	5.033
2			15	0.25	0.50	500	0.1298	0.0092	0.9628	0.920921	5.022
3			30	0.5	0.71	500	0.1324	0.0118	0.9602	1.181181	5.006
4		1		1	1.00	500	0.1357	0.0151	0.9569	1.511512	4.985
5		2		2	1.41	500	0.1411	0.0205	0.9515	2.052052	4.951
6		4		4	2.00	500	0.1483	0.0277	0.9443	2.772773	4.906
7		8		8	2.83	500	0.1575	0.0369	0.9351	3.693694	4.849
8		15		15	3.87	500	0.1665	0.0459	0.9261	4.594595	4.792
9		31		31	5.57	500	0.1749	0.0543	0.9177	5.435435	4.740
10	1			60	7.75	500	0.1791	0.0585	0.9135	5.855856	4.713
11	3			180	13.42	500	0.1845	0.0639	0.9081	6.396396	4.680
12	4	53		293	17.12	500	0.1877	0.0671	0.9049	6.716717	4.660
13	22	27		1347	36.70	500	0.1973	0.0767	0.8953	7.677678	4.600
14	24	6		1446	38.03	500	0.1980	0.0774	0.8946	7.747748	4.595
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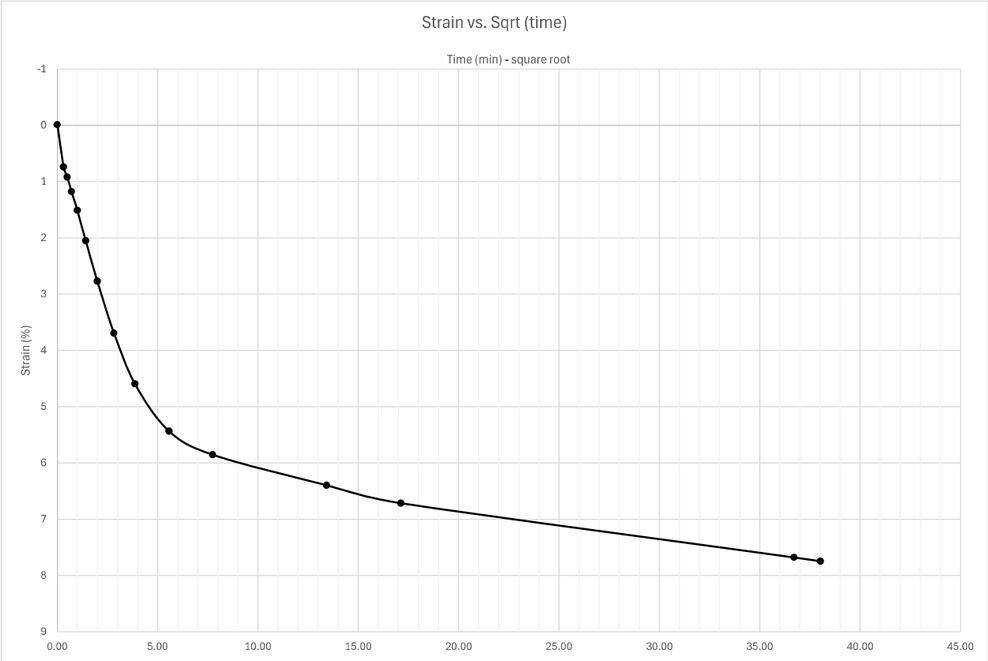
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

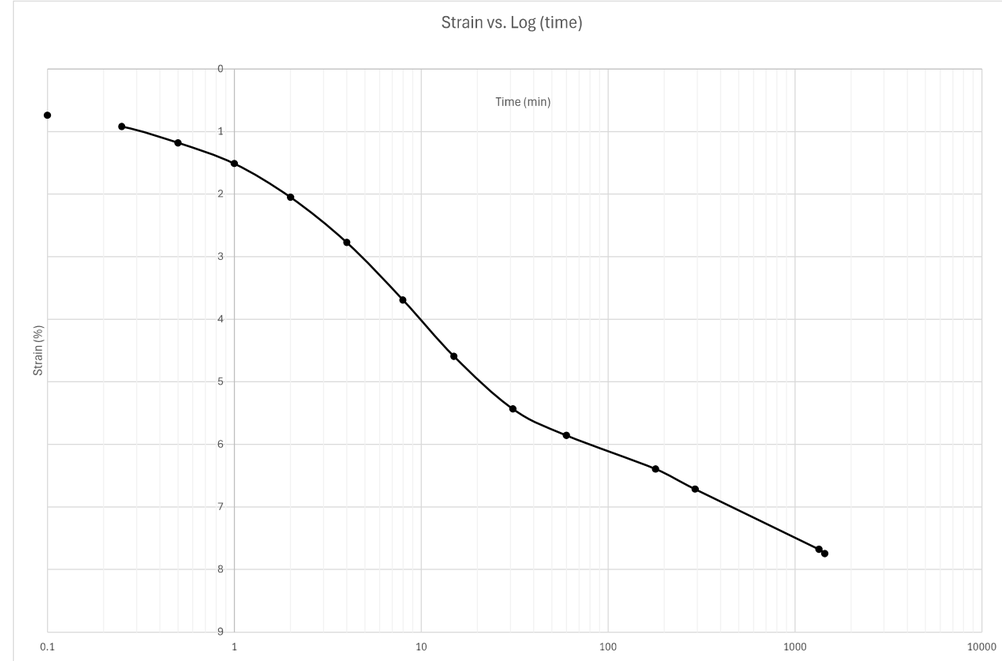
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 2: 500 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.198	-0.0001	0.8947	-0.01001	4.596
1			6	0.10	0.32	1000	0.2087	0.0106	0.884	1.061061	4.529
2			15	0.25	0.50	1000	0.2112	0.0131	0.8815	1.311311	4.513
3			30	0.50	0.71	1000	0.2143	0.0162	0.8784	1.621622	4.494
4		1		1.00	1.00	1000	0.2184	0.0203	0.8743	2.032032	4.468
5		2		2.00	1.41	1000	0.2252	0.0271	0.8675	2.712713	4.426
6		4		4.00	2.00	1000	0.2343	0.0362	0.8584	3.623624	4.369
7		8		8.00	2.83	1000	0.2459	0.0478	0.8468	4.784785	4.296
8		15		15.00	3.87	1000	0.2567	0.0586	0.836	5.865866	4.229
9		30		30.00	5.48	1000	0.2683	0.0702	0.8244	7.027027	4.156
10	1	3		63.00	7.94	1000	0.2781	0.08	0.8146	8.008008	4.095
11	2	3		123.00	11.09	1000	0.2847	0.0866	0.808	8.668669	4.054
12	4			240.00	15.49	1000	0.2906	0.0925	0.8021	9.259259	4.017
13	6	16		376.00	19.39	1000	0.2941	0.096	0.7986	9.60961	3.995
14	22	30		1350.00	36.74	1000	0.3016	0.1035	0.7911	10.36036	3.948
15	23	37		1417.00	37.64	1000	0.3019	0.1038	0.7908	10.39039	3.946
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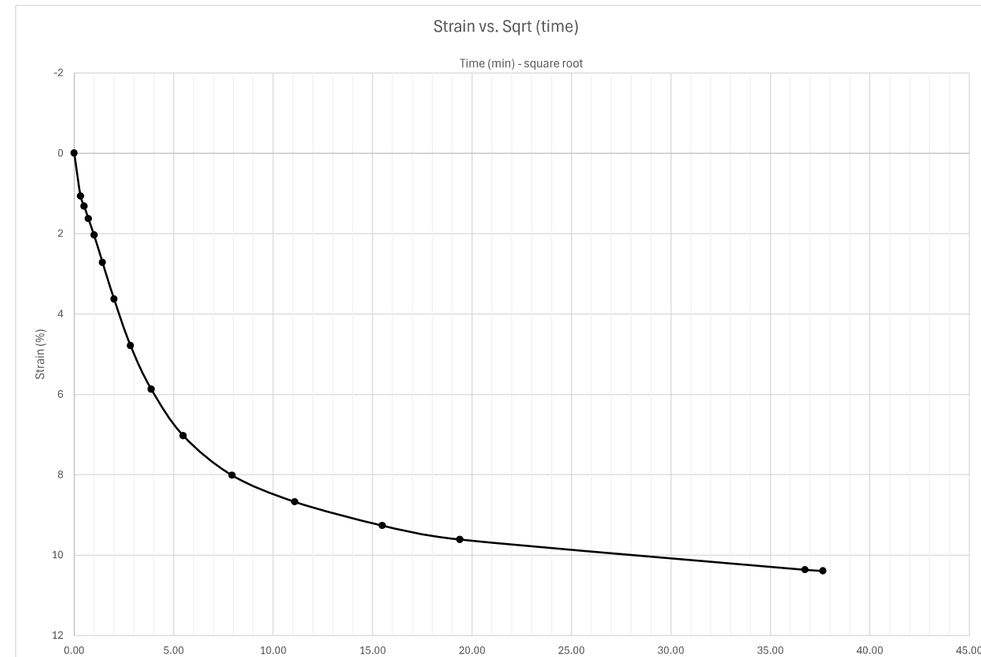
Sequence 3: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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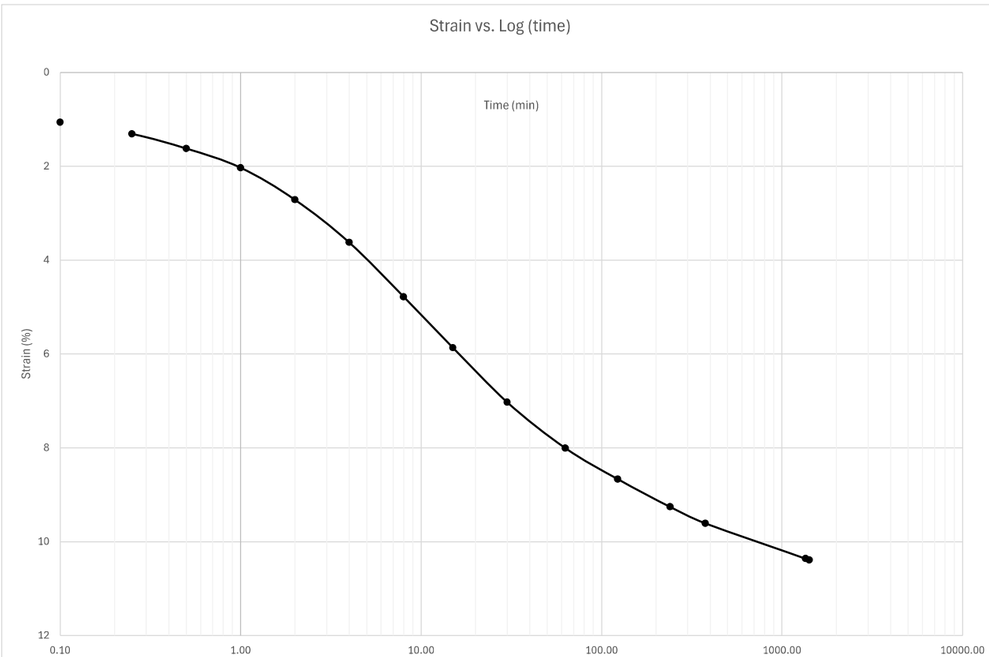
Sequence 3: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.3019	-0.0002	0.791	-0.02002	3.947
1			6	0.10	0.32	2000	0.3129	0.0108	0.78	1.081081	3.878
2			15	0.25	0.50	2000	0.3161	0.014	0.7768	1.401401	3.858
3			30	0.50	0.71	2000	0.3194	0.0173	0.7735	1.731732	3.838
4		1		1.00	1.00	2000	0.3243	0.0222	0.7686	2.222222	3.807
5		2		2.00	1.41	2000	0.3312	0.0291	0.7617	2.912913	3.764
6		4		4.00	2.00	2000	0.3412	0.0391	0.7517	3.913914	3.701
7		8	15	8.25	2.87	2000	0.3541	0.052	0.7388	5.205205	3.621
8		15		15.00	3.87	2000	0.3666	0.0645	0.7263	6.456456	3.543
9		30		30.00	5.48	2000	0.3811	0.079	0.7118	7.907908	3.452
10	1	1		61.00	7.81	2000	0.3899	0.0878	0.703	8.788789	3.397
11	2	9		129.00	11.36	2000	0.4013	0.0992	0.6916	9.92993	3.326
12	4	3		243.00	15.59	2000	0.407	0.1049	0.6859	10.5005	3.290
13	6	24		384.00	19.60	2000	0.4108	0.1087	0.6821	10.88088	3.266
14	22	52		1372.00	37.04	2000	0.4199	0.1178	0.673	11.79179	3.209
15	29	6		1746.00	41.79	2000	0.4218	0.1197	0.6711	11.98198	3.197
16	48	2		2882.00	53.68	2000	0.425	0.1229	0.6679	12.3023	3.177
17	95	3		5703.00	75.52	2000	0.4301	0.128	0.6628	12.81281	3.145
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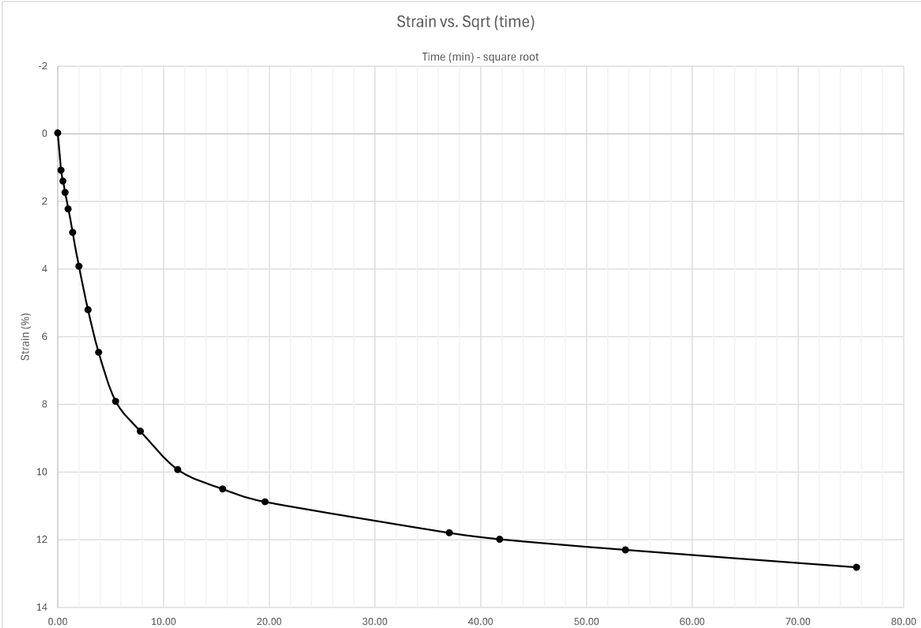
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

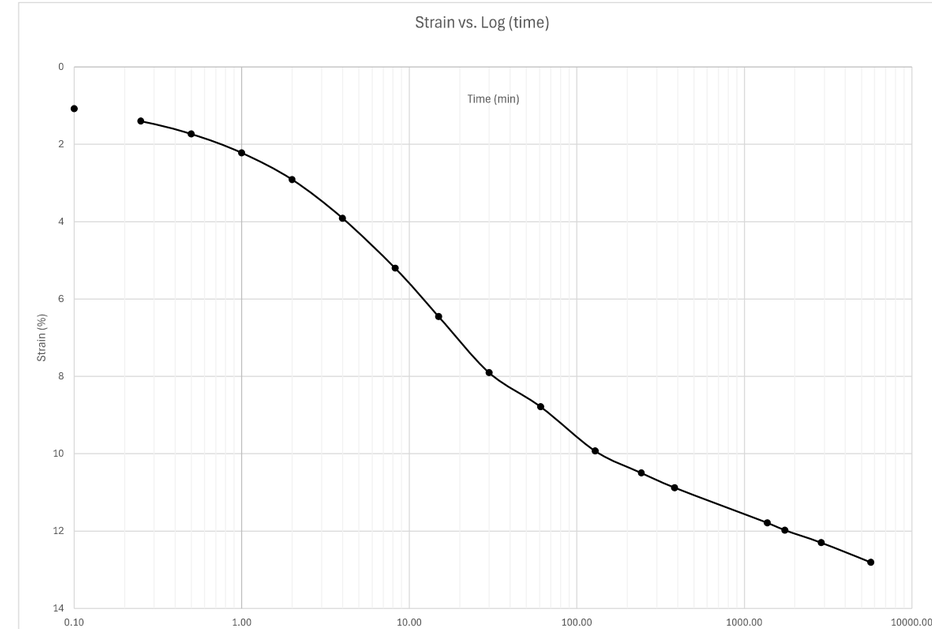
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 4: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.4301	-0.0002	0.663	-0.02002	3.147
1			6	0.10	0.32	4000	0.4408	0.0105	0.6523	1.051051	3.080
2			15	0.25	0.50	4000	0.4423	0.012	0.6508	1.201201	3.070
3			30	0.50	0.71	4000	0.4448	0.0145	0.6483	1.451451	3.055
4		1		1.00	1.00	4000	0.4483	0.018	0.6448	1.801802	3.033
5		2		2.00	1.41	4000	0.4535	0.0232	0.6396	2.322322	3.000
6		4		4.00	2.00	4000	0.4609	0.0306	0.6322	3.063063	2.954
7		8		8.00	2.83	4000	0.4709	0.0406	0.6222	4.064064	2.892
8		15		15.00	3.87	4000	0.482	0.0517	0.6111	5.175175	2.822
9		30		30.00	5.48	4000	0.4943	0.064	0.5988	6.406406	2.745
10		46		46.00	6.78	4000	0.5009	0.0706	0.5922	7.067067	2.704
11	1	16		76.00	8.72	4000	0.5075	0.0772	0.5856	7.727728	2.663
12	2	18		138.00	11.75	4000	0.5138	0.0835	0.5793	8.358358	2.623
13	4	15		255.00	15.97	4000	0.5192	0.0889	0.5739	8.898899	2.589
14	7	17		437.00	20.90	4000	0.5236	0.0933	0.5695	9.339339	2.562
15	22	48		1368.00	36.99	4000	0.5316	0.1013	0.5615	10.14014	2.512
16	29	37		1777.00	42.15	4000	0.5335	0.1032	0.5596	10.33033	2.500
17	31	8		1868.00	43.22	4000	0.5339	0.1036	0.5592	10.37037	2.498
18	46	28		2788.00	52.80	4000	0.5364	0.1061	0.5567	10.62062	2.482
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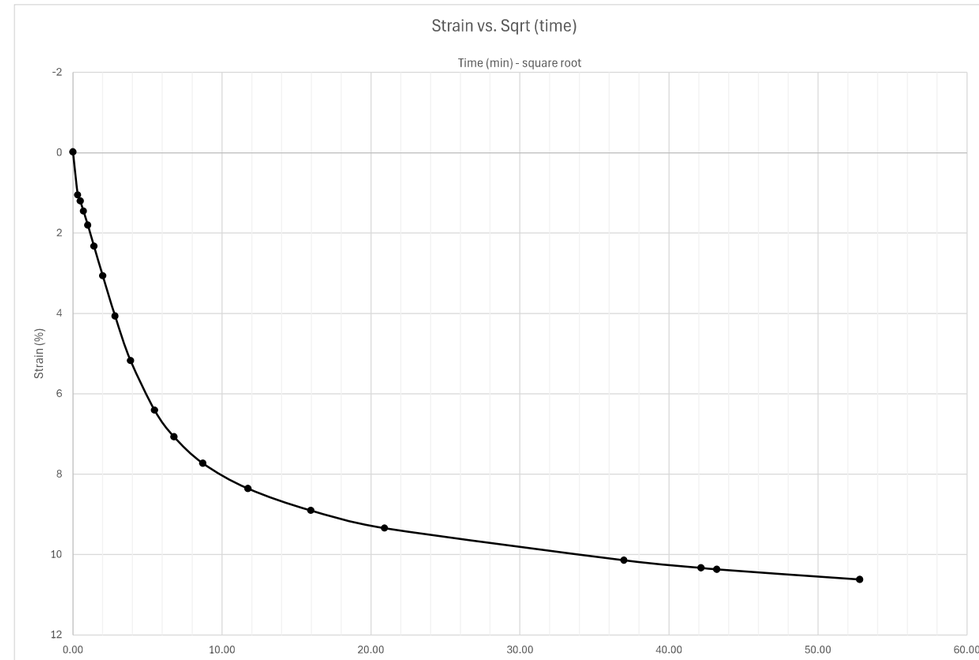
Sequence 5: 4000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

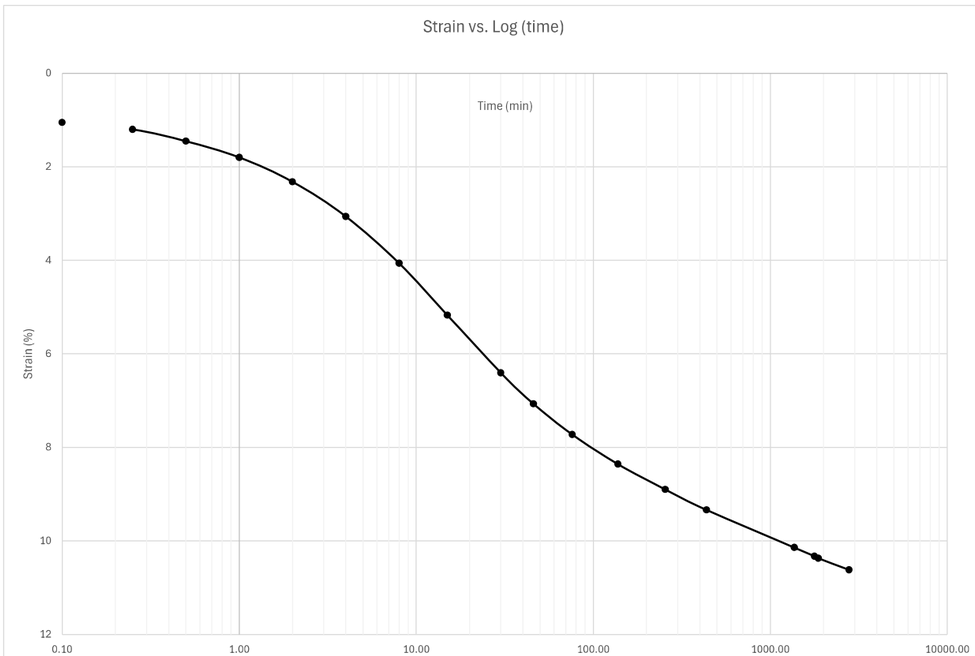


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.5364	0.0002	0.5565	0.02002	2.481
1			6	0.10	0.32	2000	0.5346	-0.0016	0.5583	-0.16016	2.492
2			15	0.25	0.50	2000	0.5343	-0.0019	0.5586	-0.19019	2.494
3			30	0.50	0.71	2000	0.534	-0.0022	0.5589	-0.22022	2.496
4		1		1.00	1.00	2000	0.5337	-0.0025	0.5592	-0.25025	2.498
5		2		2.00	1.41	2000	0.5332	-0.003	0.5597	-0.3003	2.501
6		4		4.00	2.00	2000	0.5328	-0.0034	0.5601	-0.34034	2.503
7		9		9.00	3.00	2000	0.5323	-0.0039	0.5606	-0.39039	2.506
8		15	22	15.37	3.92	2000	0.532	-0.0042	0.5609	-0.42042	2.508
9		28		28.00	5.29	2000	0.5318	-0.0044	0.5611	-0.44044	2.509
10		57		57.00	7.55	2000	0.5314	-0.0048	0.5615	-0.48048	2.512
11	2	5		125.00	11.18	2000	0.5312	-0.005	0.5617	-0.500501	2.513
12	3	31		211.00	14.53	2000	0.5309	-0.0053	0.562	-0.530531	2.515
13	7	38		458.00	21.40	2000	0.5307	-0.0055	0.5622	-0.550551	2.516
14	23	35		1415.00	37.62	2000	0.5303	-0.0059	0.5626	-0.590591	2.519
15	31	12		1872.00	43.27	2000	0.5303	-0.0059	0.5626	-0.590591	2.519
16	46	53		2813.00	53.04	2000	0.5303	-0.0059	0.5626	-0.590591	2.519
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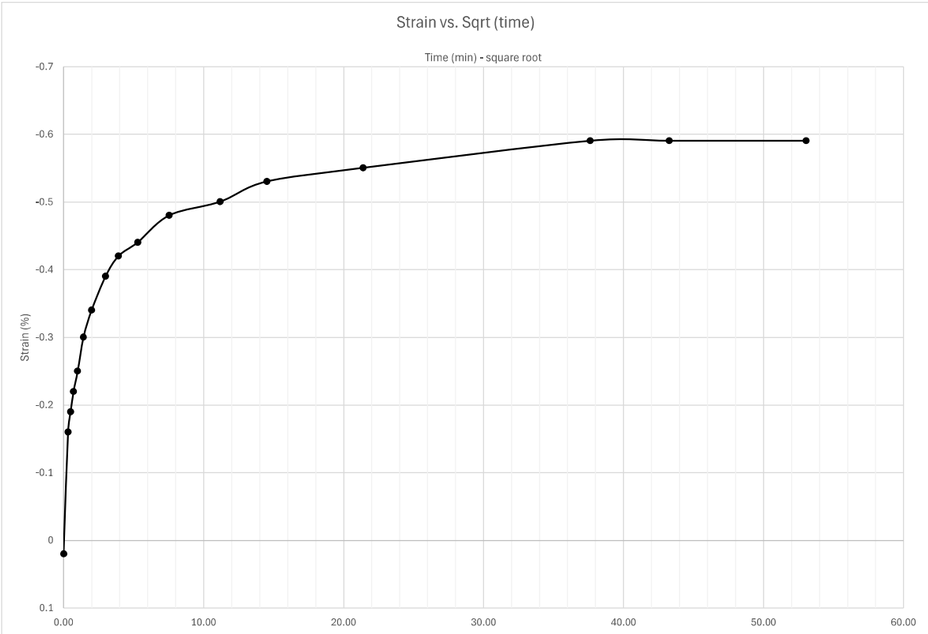
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

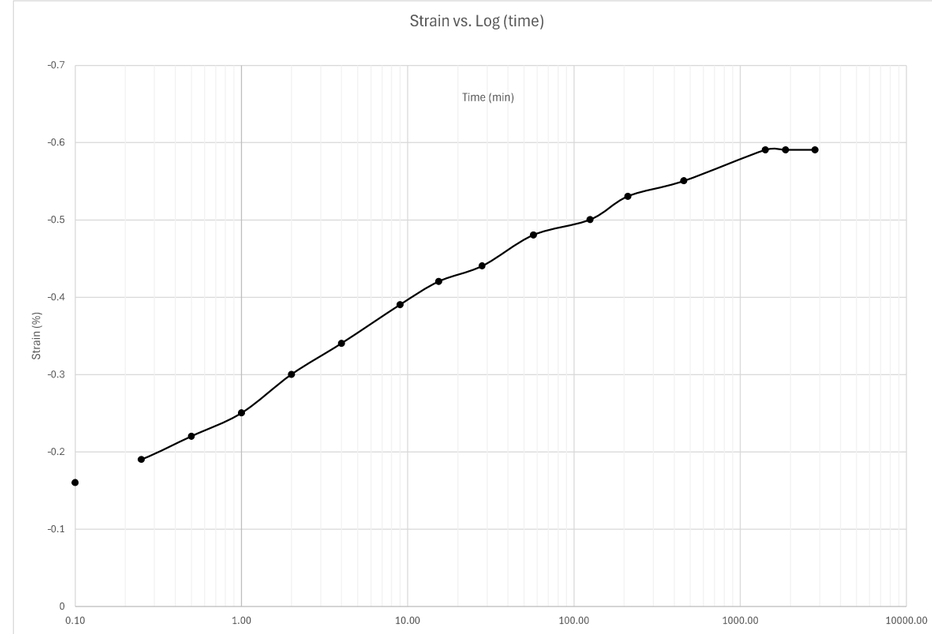
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 6: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5303	0.0002	0.5624	0.02002	2.518
1			6	0.10	0.32	1000	0.5286	-0.0015	0.5641	-0.15015	2.528
2			15	0.25	0.50	1000	0.5282	-0.0019	0.5645	-0.19019	2.531
3			30	0.50	0.71	1000	0.5278	-0.0023	0.5649	-0.23023	2.533
4		1		1.00	1.00	1000	0.5275	-0.0026	0.5652	-0.26026	2.535
5		2		2.00	1.41	1000	0.5272	-0.0029	0.5655	-0.29029	2.537
6		4		4.00	2.00	1000	0.5266	-0.0035	0.5661	-0.35035	2.541
7		8		8.00	2.83	1000	0.5261	-0.004	0.5666	-0.4004	2.544
8		15		15.00	3.87	1000	0.5256	-0.0045	0.5671	-0.45045	2.547
9		30		30.00	5.48	1000	0.525	-0.0051	0.5677	-0.510511	2.551
10		59		59.00	7.68	1000	0.5246	-0.0055	0.5681	-0.550551	2.553
11	2			120.00	10.95	1000	0.524	-0.0061	0.5687	-0.610611	2.557
12	3	18		198.00	14.07	1000	0.5236	-0.0065	0.5691	-0.650651	2.559
13	23	46		1426.00	37.76	1000	0.5216	-0.0085	0.5711	-0.850851	2.572
14	48	20		2900.00	53.85	1000	0.5209	-0.0092	0.5718	-0.920921	2.576
15	70	17		4217.00	64.94	1000	0.5206	-0.0095	0.5721	-0.950951	2.578
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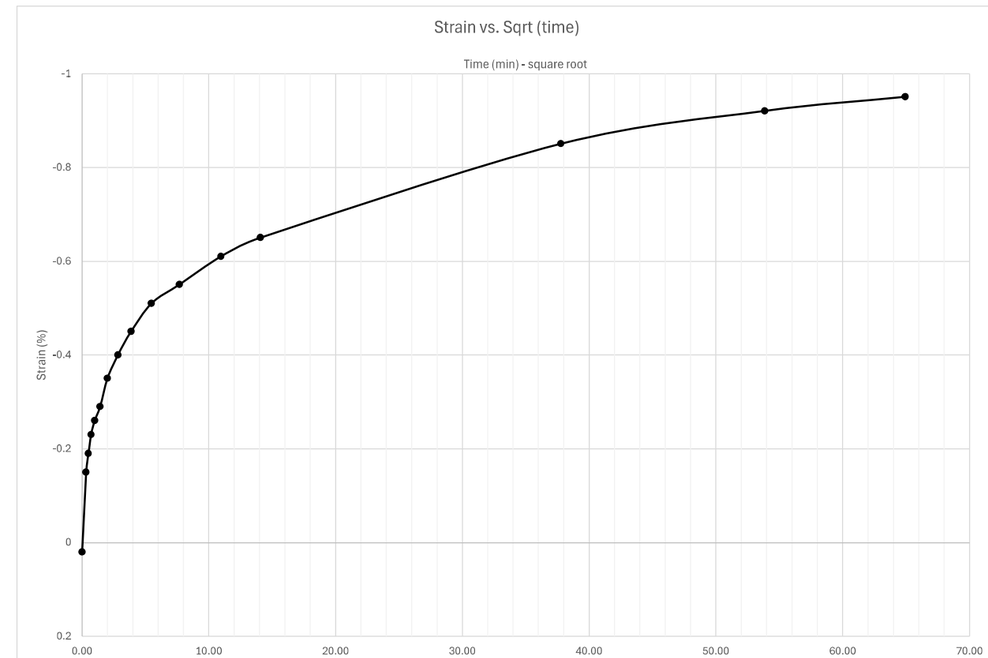
Sequence 7: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

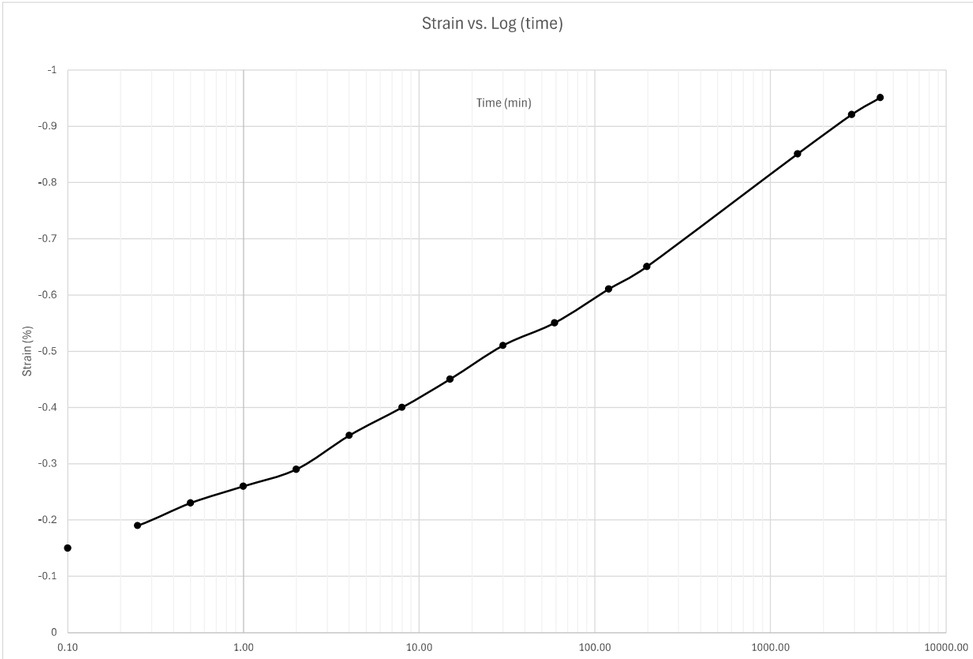


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.5206	0.0001	0.572	0.01001	2.578
1			6	0.10	0.32	500	0.5193	-0.0012	0.5733	-0.12012	2.586
2			15	0.25	0.50	500	0.5191	-0.0014	0.5735	-0.14014	2.587
3			30	0.50	0.71	500	0.5188	-0.0017	0.5738	-0.17017	2.589
4		1		1.00	1.00	500	0.5185	-0.002	0.5741	-0.2002	2.591
5		2		2.00	1.41	500	0.5181	-0.0024	0.5745	-0.24024	2.593
6		4		4.00	2.00	500	0.5174	-0.0031	0.5752	-0.31031	2.598
7		8		8.00	2.83	500	0.5169	-0.0036	0.5757	-0.36036	2.601
8		15		15.00	3.87	500	0.5162	-0.0043	0.5764	-0.43043	2.605
9		30		30.00	5.48	500	0.5156	-0.0049	0.577	-0.49049	2.609
10	1			60.00	7.75	500	0.515	-0.0055	0.5776	-0.550551	2.613
11	2			120.00	10.95	500	0.5142	-0.0063	0.5784	-0.630631	2.618
12	3	4		184.00	13.56	500	0.5136	-0.0069	0.579	-0.690691	2.621
13	8	42		522.00	22.85	500	0.5119	-0.0086	0.5807	-0.860861	2.632
14	18	46		1126.00	33.56	500	0.5103	-0.0102	0.5823	-1.021021	2.642
15	23	44		1424.00	37.74	500	0.5098	-0.0107	0.5828	-1.071071	2.645
16	26	45		1605.00	40.06	500	0.5095	-0.011	0.5831	-1.101101	2.647
17	43	23		2603.00	51.02	500	0.5084	-0.0121	0.5842	-1.211211	2.654
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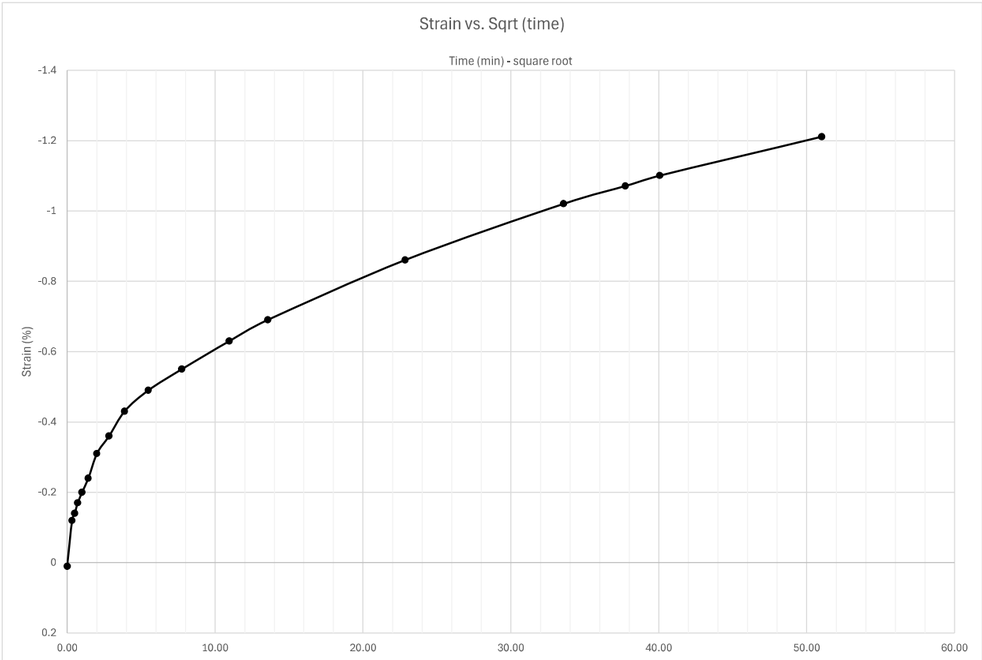
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

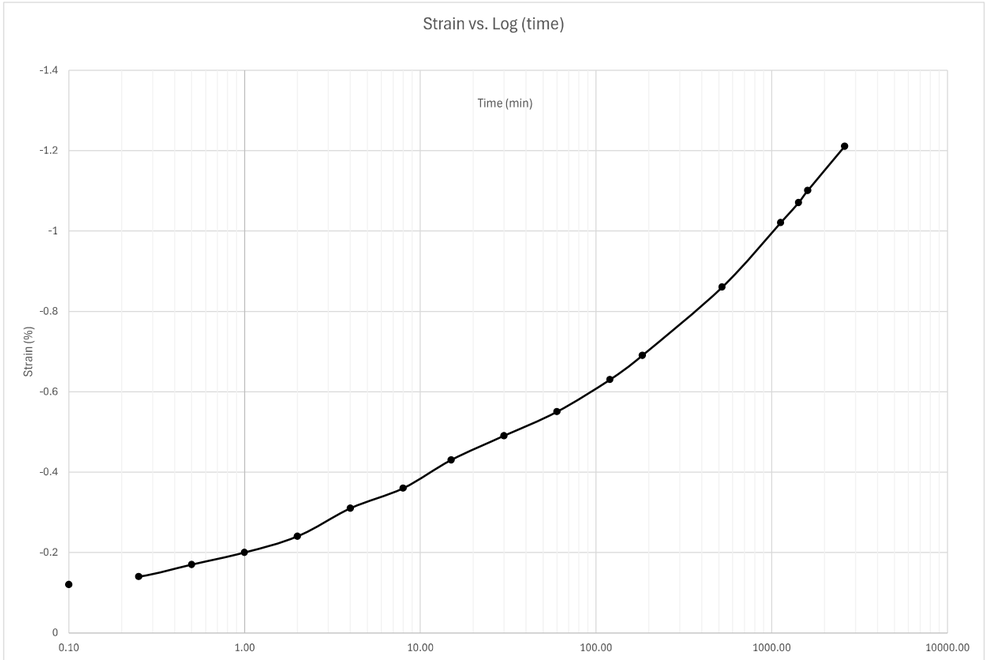
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 8: 500 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.5084	-0.0001	0.5843	-0.01001	2.654
1			6	0.10	0.32	1000	0.5085	-1.38778E-17	0.5842	-1.39E-15	2.654
2			15	0.25	0.50	1000	0.5087	0.0002	0.584	0.02002	2.653
3			30	0.50	0.71	1000	0.509	0.0005	0.5837	0.05005	2.651
4		1		1.00	1.00	1000	0.5092	0.0007	0.5835	0.07007	2.649
5		2		2.00	1.41	1000	0.5095	0.001	0.5832	0.1001	2.648
6		4		4.00	2.00	1000	0.5099	0.0014	0.5828	0.14014	2.645
7		8		8.00	2.83	1000	0.5102	0.0017	0.5825	0.17017	2.643
8		15		15.00	3.87	1000	0.5103	0.0018	0.5824	0.18018	2.643
9		30		30.00	5.48	1000	0.5106	0.0021	0.5821	0.21021	2.641
10		57		57.00	7.55	1000	0.5108	0.0023	0.5819	0.23023	2.639
11	1	55		115.00	10.72	1000	0.511	0.0025	0.5817	0.25025	2.638
12	5	14		314.00	17.72	1000	0.5113	0.0028	0.5814	0.28028	2.636
13	7	23		443.00	21.05	1000	0.5114	0.0029	0.5813	0.29029	2.636
14	24	54		1494.00	38.65	1000	0.5117	0.0032	0.581	0.32032	2.634
15	95	26		5726.00	75.67	1000	0.512	0.0035	0.5807	0.35035	2.632
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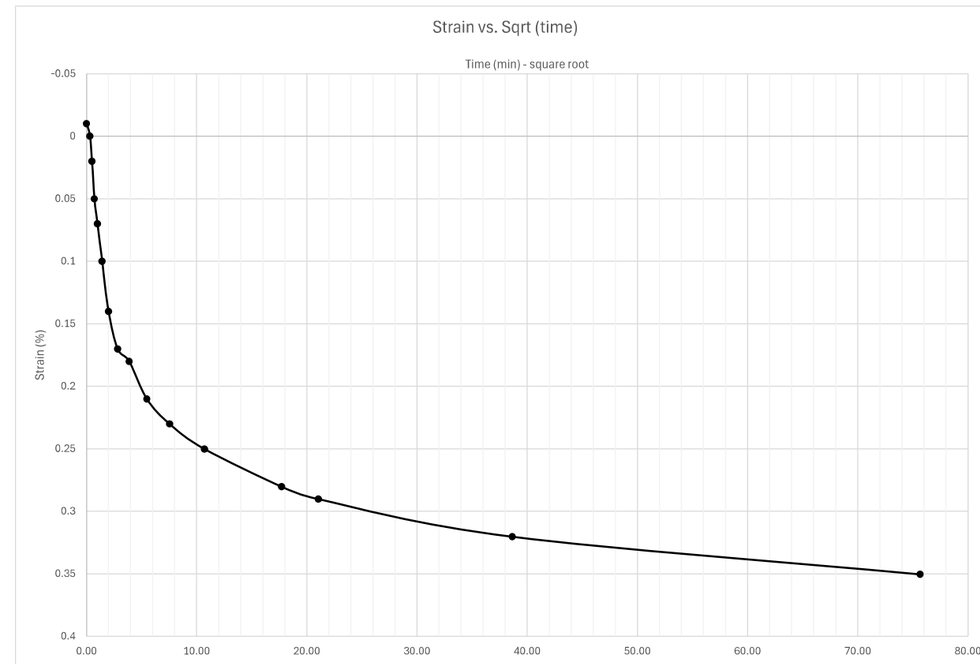
Sequence 9: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.512	-0.0002	0.5809	-0.02002	2.633
1			6	0.10	0.32	2000	0.5144	0.0022	0.5785	0.22022	2.618
2			15	0.25	0.50	2000	0.5149	0.0027	0.578	0.27027	2.615
3			30	0.50	0.71	2000	0.5154	0.0032	0.5775	0.32032	2.612
4		1		1.00	1.00	2000	0.5159	0.0037	0.577	0.37037	2.609
5		2		2.00	1.41	2000	0.5166	0.0044	0.5763	0.44044	2.604
6		4		4.00	2.00	2000	0.5173	0.0051	0.5756	0.510511	2.600
7		8		8.00	2.83	2000	0.518	0.0058	0.5749	0.580581	2.596
8		15		15.00	3.87	2000	0.5184	0.0062	0.5745	0.620621	2.593
9		30		30.00	5.48	2000	0.5188	0.0066	0.5741	0.660661	2.591
10		58		58.00	7.62	2000	0.5192	0.007	0.5737	0.700701	2.588
11	2	9		129.00	11.36	2000	0.5196	0.0074	0.5733	0.740741	2.586
12	4	3		243.00	15.59	2000	0.52	0.0078	0.5729	0.780781	2.583
13	6	45		405.00	20.12	2000	0.5204	0.0082	0.5725	0.820821	2.581
14	7	22		442.00	21.02	2000	0.5204	0.0082	0.5725	0.820821	2.581
15	22	47		1367.00	36.97	2000	0.5212	0.009	0.5717	0.900901	2.576
16	28	24		1704.00	41.28	2000	0.5216	0.0094	0.5713	0.940941	2.573
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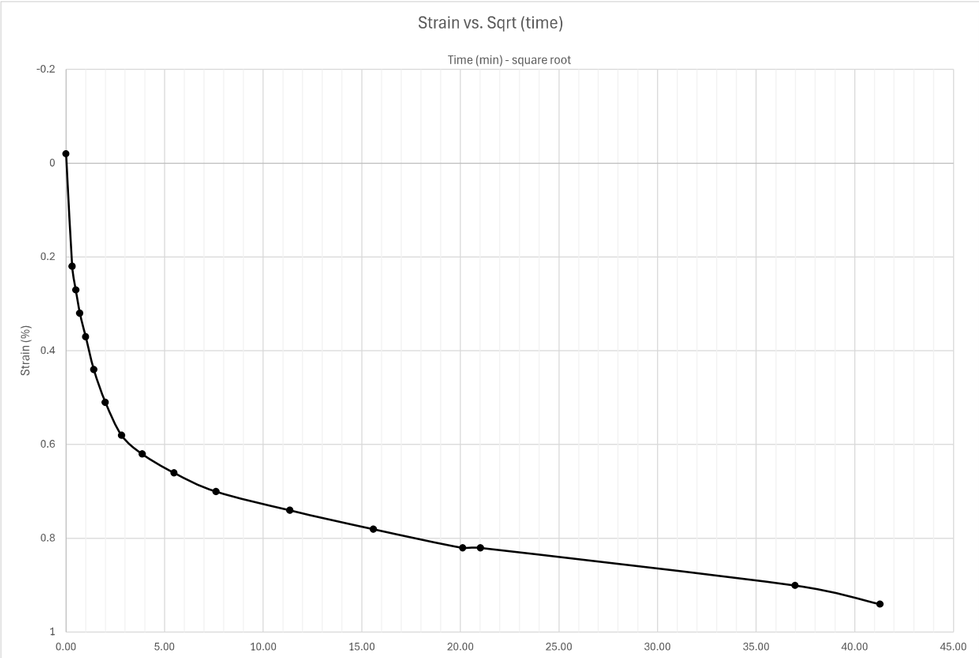
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

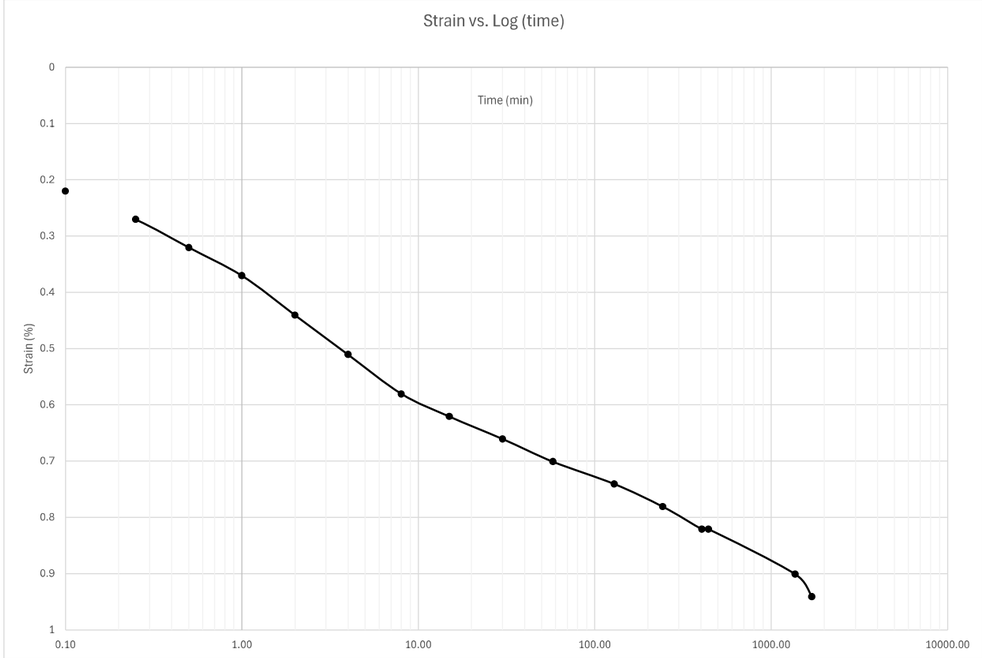
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 10: 2000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.5216	-0.0003	0.5716	-0.03003	2.575
1			6	0.10	0.32	4000	0.5258	0.0039	0.5674	0.39039	2.549
2			15	0.25	0.50	4000	0.5266	0.0047	0.5666	0.47047	2.544
3			30	0.50	0.71	4000	0.5275	0.0056	0.5657	0.560561	2.538
4		1		1.00	1.00	4000	0.5286	0.0067	0.5646	0.670671	2.531
5		2		2.00	1.41	4000	0.53	0.0081	0.5632	0.810811	2.523
6		4		4.00	2.00	4000	0.5316	0.0097	0.5616	0.970971	2.513
7		8		8.00	2.83	4000	0.5332	0.0113	0.56	1.131131	2.503
8		15		15.00	3.87	4000	0.5344	0.0125	0.5588	1.251251	2.495
9		29	22	29.37	5.42	4000	0.5355	0.0136	0.5577	1.361361	2.488
10	1	22		82.00	9.06	4000	0.5374	0.0155	0.5558	1.551552	2.476
11	2	42		162.00	12.73	4000	0.5385	0.0166	0.5547	1.661662	2.469
12	4	27		267.00	16.34	4000	0.5396	0.0177	0.5536	1.771772	2.462
13	23	43		1423.00	37.72	4000	0.5439	0.022	0.5493	2.202202	2.436
14	31	51		1911.00	43.71	4000	0.5447	0.0228	0.5485	2.282282	2.431
15	47	48		2868.00	53.55	4000	0.5455	0.0236	0.5477	2.362362	2.426
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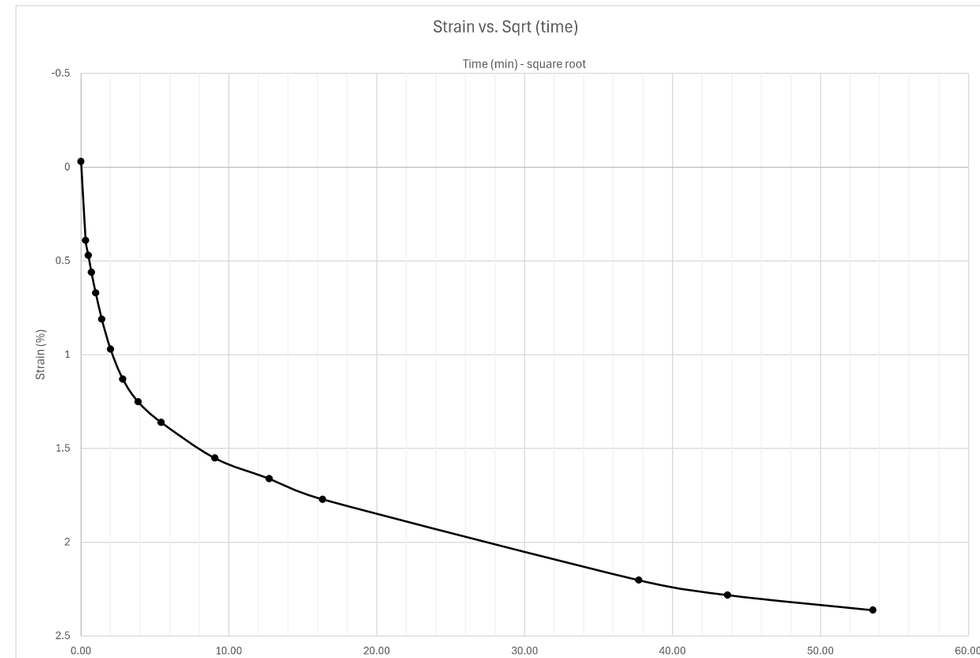
Sequence 11: 4000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

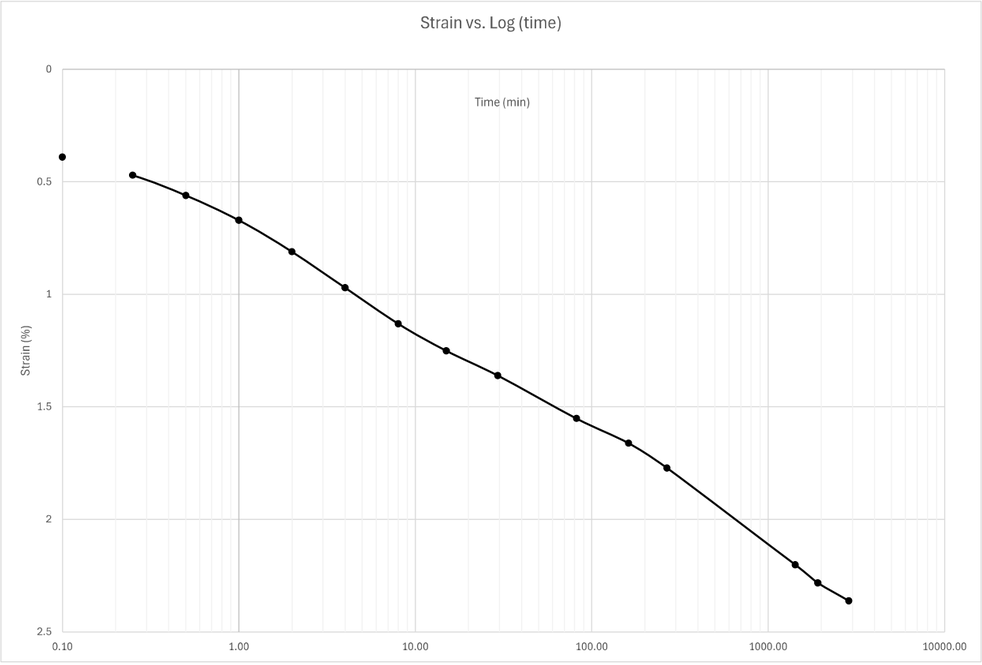


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.5455	-0.0006	0.5483	-0.06006	2.429
1			6	0.10	0.32	8000	0.5522	0.0061	0.5416	0.610611	2.387
2			15	0.25	0.50	8000	0.5543	0.0082	0.5395	0.820821	2.374
3			30	0.50	0.71	8000	0.5563	0.0102	0.5375	1.021021	2.362
4		1		1.00	1.00	8000	0.5596	0.0135	0.5342	1.351351	2.341
5		2		2.00	1.41	8000	0.5644	0.0183	0.5294	1.831832	2.311
6		4		4.00	2.00	8000	0.5711	0.025	0.5227	2.502503	2.269
7		8		8.00	2.83	8000	0.5798	0.0337	0.514	3.373373	2.215
8		15		15.00	3.87	8000	0.5888	0.0427	0.505	4.274274	2.159
9		28		28.00	5.29	8000	0.5978	0.0517	0.496	5.175175	2.102
10		35		35.00	5.92	8000	0.6009	0.0548	0.4929	5.485485	2.083
11	2			120.00	10.95	8000	0.6123	0.0662	0.4815	6.626627	2.012
12	4	2		242.00	15.56	8000	0.6175	0.0714	0.4763	7.147147	1.979
13	6	29		389.00	19.72	8000	0.6206	0.0745	0.4732	7.457457	1.960
14	52	22		3142.00	56.05	8000	0.632	0.0859	0.4618	8.598599	1.888
15	73	58		4438.00	66.62	8000	0.6338	0.0877	0.46	8.778779	1.877
16	95	51		5751.00	75.84	8000	0.6352	0.0891	0.4586	8.918919	1.868
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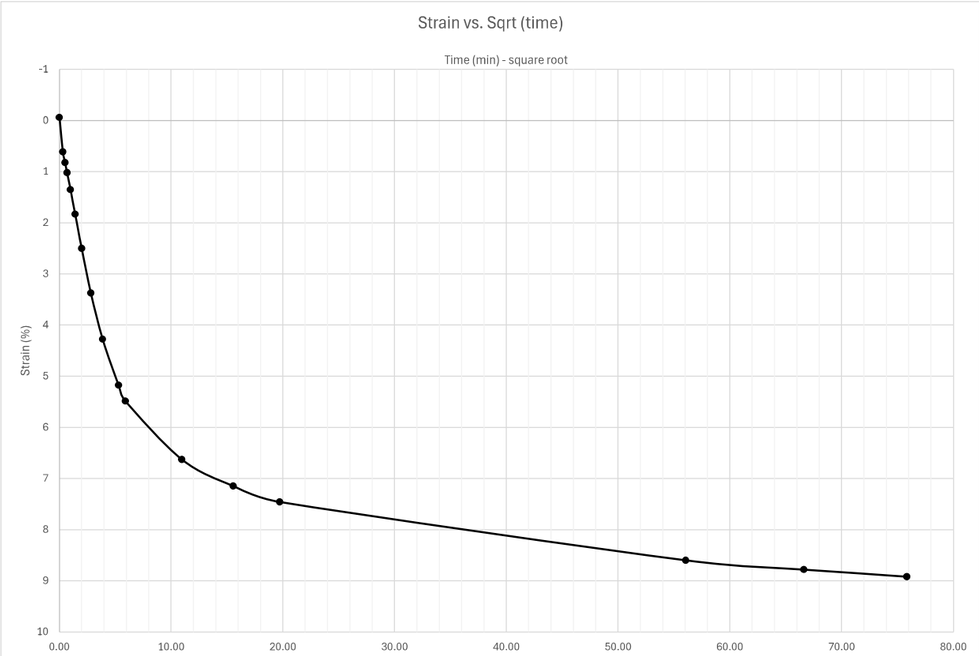
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

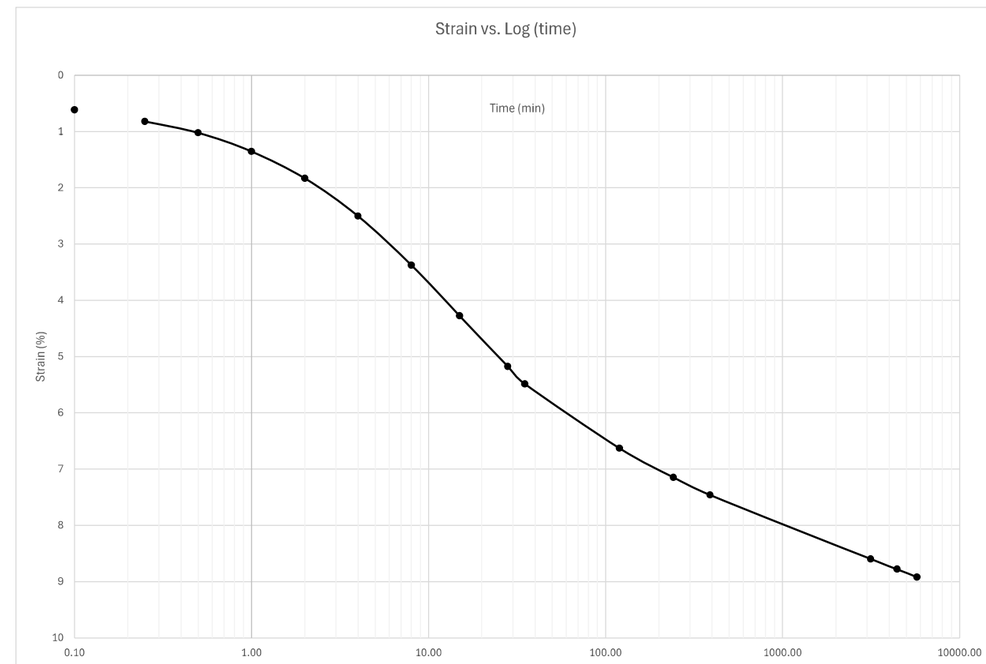
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 12: 8000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.6352	-0.0008	0.4594	-0.08008	1.873
1			6	0.10	0.32	16000	0.6401	0.0041	0.4545	0.41041	1.843
2			15	0.25	0.50	16000	0.6418	0.0058	0.4528	0.580581	1.832
3			30	0.50	0.71	16000	0.644	0.008	0.4506	0.800801	1.818
4		1		1.00	1.00	16000	0.6469	0.0109	0.4477	1.091091	1.800
5		2		2.00	1.41	16000	0.6513	0.0153	0.4433	1.531532	1.773
6		4		4.00	2.00	16000	0.6574	0.0214	0.4372	2.142142	1.734
7		8		8.00	2.83	16000	0.6654	0.0294	0.4292	2.942943	1.684
8		15		15.00	3.87	16000	0.6736	0.0376	0.421	3.763764	1.633
9		36		36.00	6.00	16000	0.684	0.048	0.4106	4.804805	1.568
10	1	4		64.00	8.00	16000	0.6892	0.0532	0.4054	5.325325	1.536
11	1	50		110.00	10.49	16000	0.6928	0.0568	0.4018	5.685686	1.513
12	4	20		260.00	16.12	16000	0.698	0.062	0.3966	6.206206	1.481
13	6	15		375.00	19.36	16000	0.6999	0.0639	0.3947	6.396396	1.469
14	22	29		1349.00	36.73	16000	0.7058	0.0698	0.3888	6.986987	1.432
15	24	45		1485.00	38.54	16000	0.7063	0.0703	0.3883	7.037037	1.429
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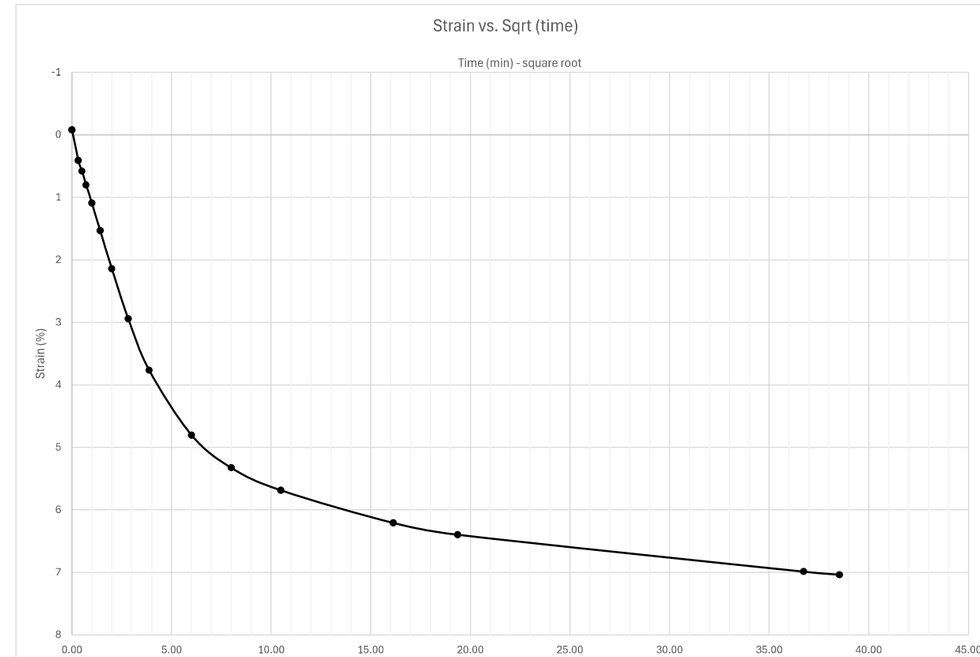
Sequence 13: 16000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



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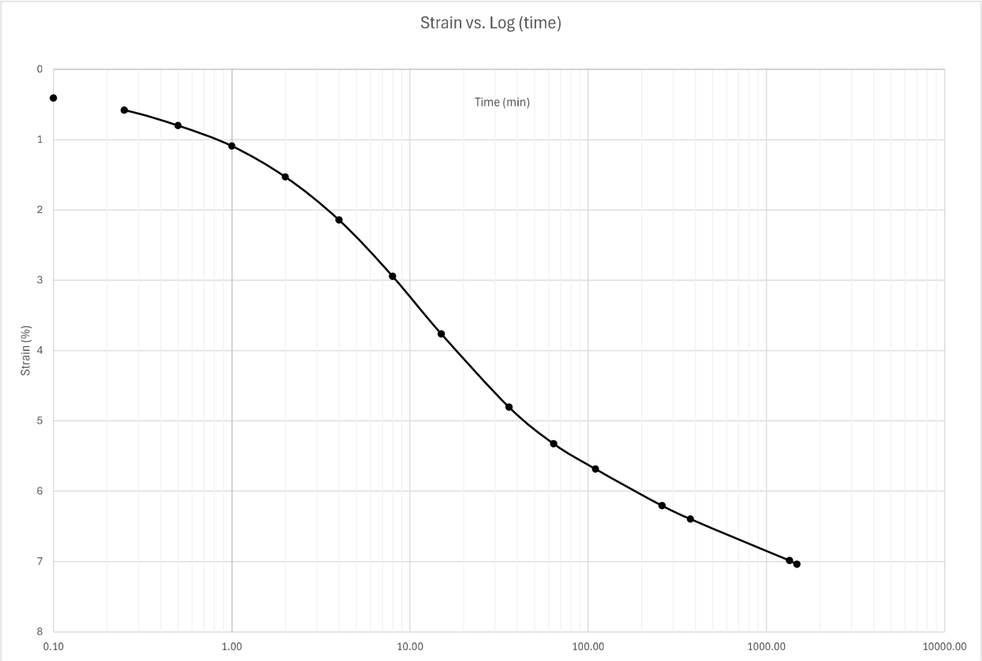
Sequence 13: 16000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 24000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	24000	0.7063	-0.0006	0.3889	-0.06006	1.432
1			6	0.10	0.32	24000	0.7081	0.0012	0.3871	0.12012	1.421
2			15	0.25	0.50	24000	0.7087	0.0018	0.3865	0.18018	1.417
3			30	0.50	0.71	24000	0.7094	0.0025	0.3858	0.25025	1.413
4		1		1.00	1.00	24000	0.7105	0.0036	0.3847	0.36036	1.406
5		2		2.00	1.41	24000	0.7119	0.005	0.3833	0.500501	1.397
6		4		4.00	2.00	24000	0.7138	0.0069	0.3814	0.690691	1.385
7		8		8.00	2.83	24000	0.7166	0.0097	0.3786	0.970971	1.368
8		15		15.00	3.87	24000	0.7193	0.0124	0.3759	1.241241	1.351
9		30		30.00	5.48	24000	0.7232	0.0163	0.372	1.631632	1.327
10	1	4		64.00	8.00	24000	0.7277	0.0208	0.3675	2.082082	1.299
11	2	4		124.00	11.14	24000	0.7313	0.0244	0.3639	2.442442	1.276
12	3	58		238.00	15.43	24000	0.7347	0.0278	0.3605	2.782783	1.255
13	6	17		377.00	19.42	24000	0.7369	0.03	0.3583	3.003003	1.241
14	21	27		1287.00	35.87	24000	0.7423	0.0354	0.3529	3.543544	1.207
15	24	16		1456.00	38.16	24000	0.7428	0.0359	0.3524	3.593594	1.204
16	28	29		1709.00	41.34	24000	0.7435	0.0366	0.3517	3.663664	1.200
17	45	10		2710.00	52.06	24000	0.7454	0.0385	0.3498	3.853854	1.188
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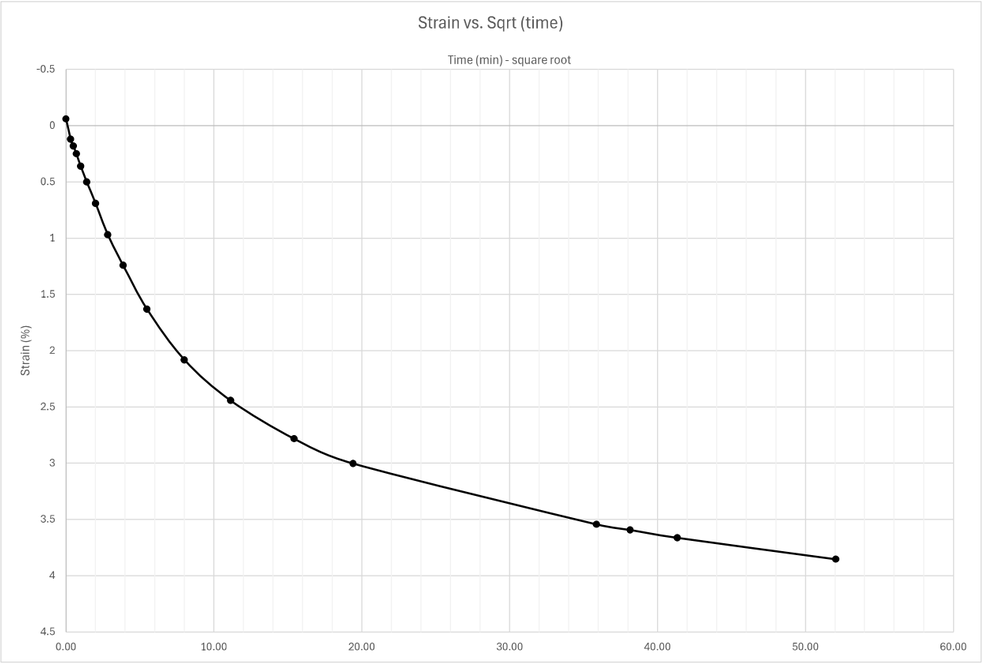
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 24000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

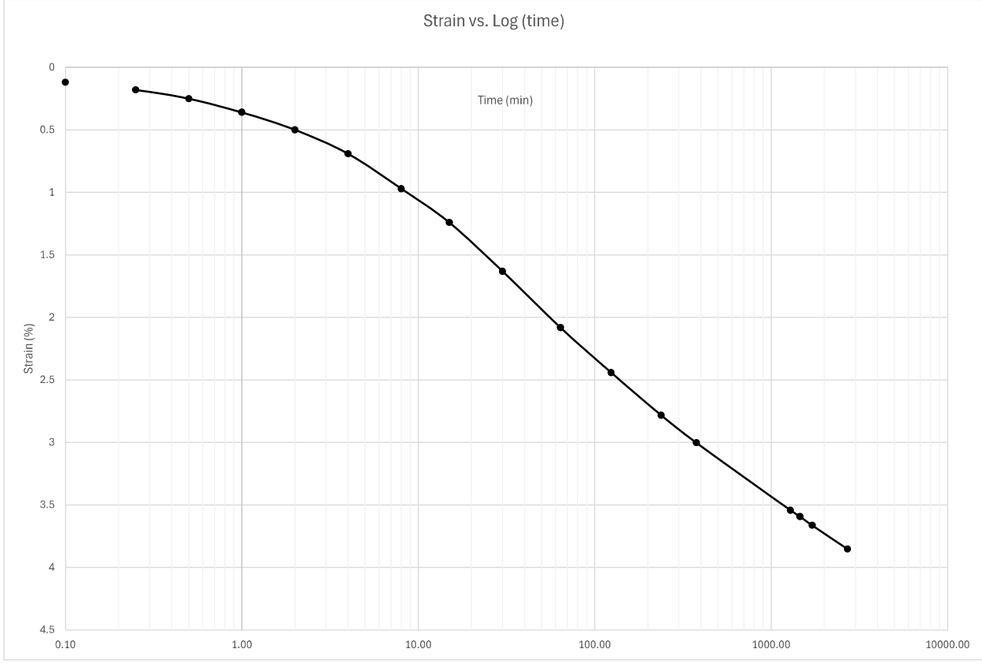
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 14: 24000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 15: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	24000	0.7454	-0.0006	0.3504	-0.06006	1.192
1			6	0.10	0.32	24000	0.7466	0.0006	0.3492	0.06006	1.184
2			15	0.25	0.50	24000	0.7469	0.0009	0.3489	0.09009	1.182
3			30	0.50	0.71	24000	0.7472	0.0012	0.3486	0.12012	1.180
4		1		1.00	1.00	24000	0.7476	0.0016	0.3482	0.16016	1.178
5		2		2.00	1.41	24000	0.748	0.002	0.3478	0.2002	1.175
6		4		4.00	2.00	24000	0.7486	0.0026	0.3472	0.26026	1.172
7		8		8.00	2.83	24000	0.7492	0.0032	0.3466	0.32032	1.168
8		15		15.00	3.87	24000	0.7501	0.0041	0.3457	0.41041	1.162
9		32		32.00	5.66	24000	0.7509	0.0049	0.3449	0.49049	1.157
10	1			60.00	7.75	24000	0.7529	0.0069	0.3429	0.690691	1.145
11	2	2		122.00	11.05	24000	0.7549	0.0089	0.3409	0.890891	1.132
12	4	2		242.00	15.56	24000	0.7573	0.0113	0.3385	1.131131	1.117
13	5	48		348.00	18.65	24000	0.7588	0.0128	0.337	1.281281	1.108
14	7	19		439.00	20.95	24000	0.7597	0.0137	0.3361	1.371371	1.102
15	36	15		2175.00	46.64	24000	0.7663	0.0203	0.3295	2.032032	1.061
16	75	1		4501.00	67.09	24000	0.769	0.023	0.3268	2.302302	1.044
17	96	1		5761.00	75.90	24000	0.7699	0.0239	0.3259	2.392392	1.038
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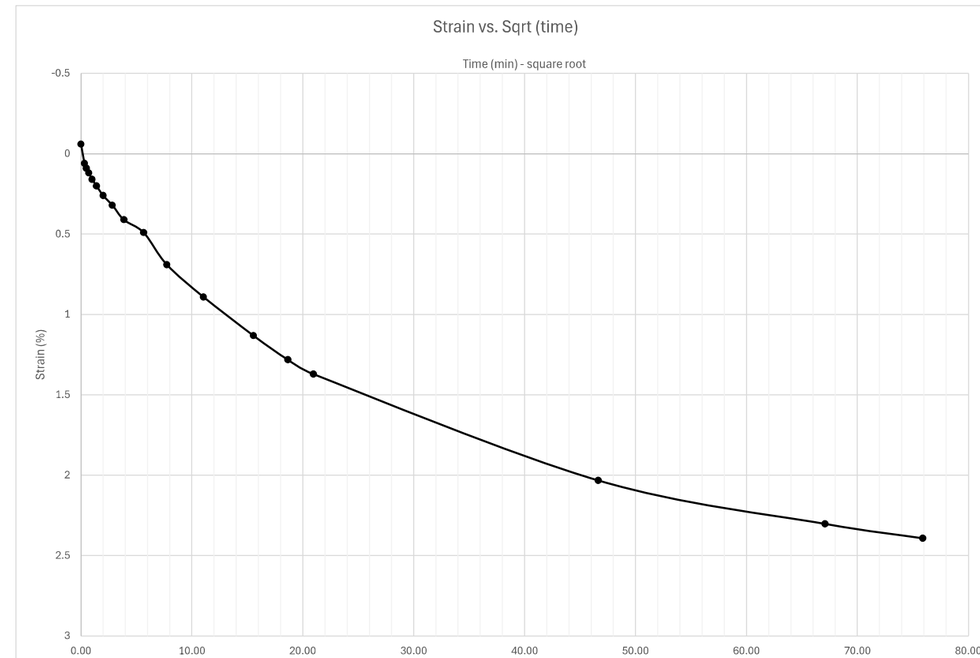
Sequence 15: 32000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

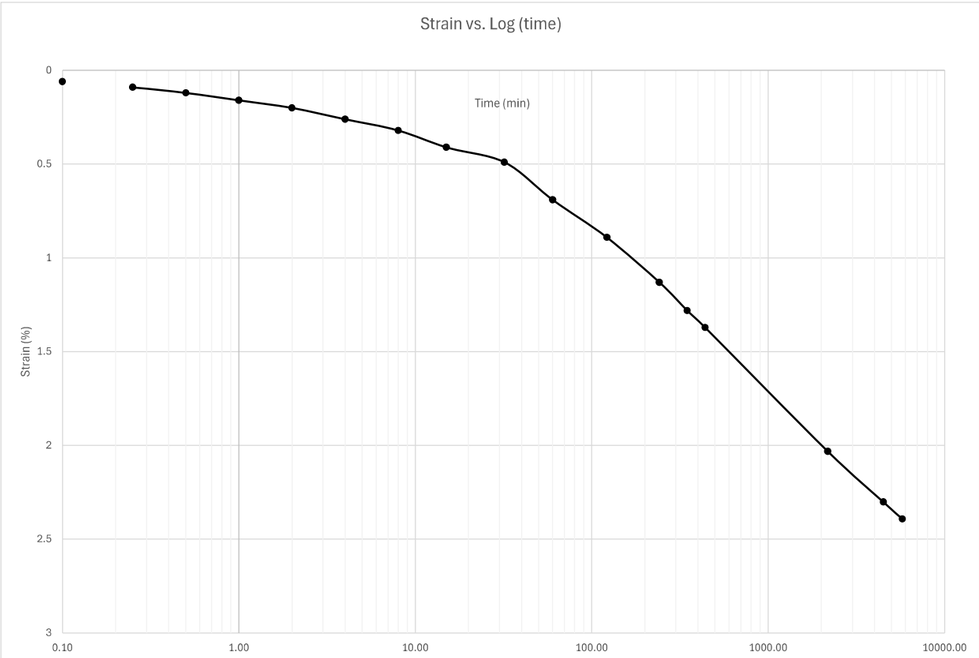


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 15: 32000 psf

Y1RPC_4100, ST-38, 23.0-25.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Summary

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

Sample Description	Black Sandy Silt with organics		
Project Number	25-051.05	Depth (ft)	2.0-4.0
Sample Number	ST-30	Boring Number	Y1RPC_4200
Project	Replace Bridge No. 13 over the Cape Fear River		
Location	Alignment Y1RPC		

Remarks

Index	Loading Sequence (psf)	Cummulative Change in Height (in)	Machine Calibration (in)	Specimen Height (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (min)	T50 Fitting Time (min)	T90 Cv (in2/min)	T50 Cv (in2/min)
1	250	0.0277	0.1145	0.9713	0.028	3.526	40.96	19	0.00488	0.002445
2	500	0.0572	0.1146	0.9418	0.057	3.389	15.21	19	0.01236	0.002299
3	1000	0.1168	0.1147	0.8822	0.117	3.111	72.25	40	0.00228	0.000958
4	2000	0.2181	0.1149	0.7809	0.218	2.639	141.61	41.5	0.00091	0.000724
5	4000	0.308	0.1151	0.691	0.308	2.220	156.25	43	0.00065	0.000547
6	2000	0.3013	0.1149	0.6977	0.302	2.251	-	-	-	-
7	1000	0.2888	0.1147	0.7102	0.289	2.310	-	-	-	-
8	500	0.272	0.1146	0.727	0.272	2.388	-	-	-	-
9	1000	0.2769	0.1147	0.7221	0.277	2.365	30.25	10.5	0.00365	0.00245
10	2000	0.2905	0.1149	0.7085	0.291	2.302	53.29	13.5	0.00200	0.00183
11	4000	0.3187	0.1152	0.6803	0.319	2.170	50.41	15.2	0.00195	0.00150
12	8000	0.3985	0.1158	0.6005	0.399	1.798	116.64	35	0.00066	0.00051
13	16000	0.4678	0.1166	0.5312	0.468	1.475	114.49	30	0.00052	0.00046
14	24000	0.5078	0.1172	0.4912	0.508	1.289	123.21	35	0.00042	0.00034
15	32000	0.5339	0.1178	0.4651	0.534	1.167	182.25	-	0.00025	-
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Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Specimen Information

ASTM D2435

INFRASTRUCTURE CONSULTING & ENGINEERING

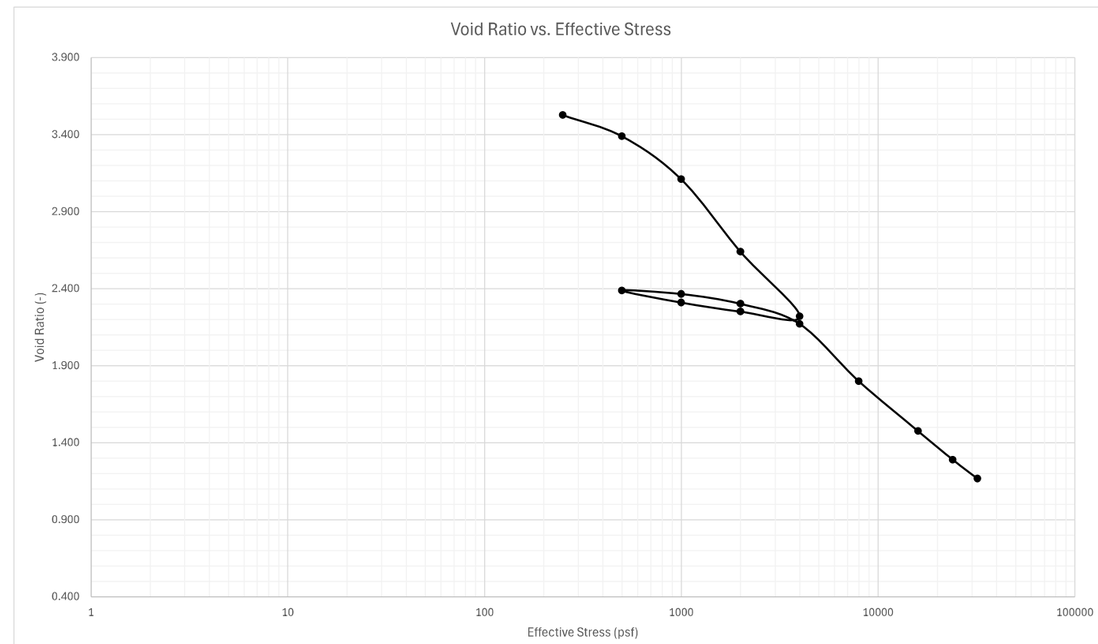
Project:	Replace Bridge No. 13 over the Cape Fear River		
Project Number:	25-051.05	Machine Apparatus:	3
Test Start Date:	4/16/2026	Technician:	KSB
Sampling Date:	4/14/2026	Testing Procedure:	ASTM D2435
Sample Number:	ST-30	Preparation:	Cutting Shoe
Depth (ft):	2.0-4.0	Test Condition:	Inundated
Boring Number:	Y1RPC_4200		
Location:	Alignment Y1RPC		
Specific Gravity:	2.581	Plastic Limit:	NP
Sampling Method:	Shelby Tube	Liquid Limit:	NP
Specimen Description:	Black Sandy Silt with organics		
Soil Classification:	A-1-a (0)		
Weight of Ring (g):	102.92		

Parameters	Initial	Final
Height (in)	0.999	0.4651
Diameter (in)	2.507	2.507
Area (in^2)	4.936	4.936
Volume (in^3)	4.931	2.296
Weight of Container (g)	60.35	60.42
Weight of Wet Soil + Container (g)	242.83	136
Weight of Dry Soil + Container (g)	137.15	104.98
Moisture Content (%)	137.60	69.61
Moist Weight + Ring Weight (g)	209.37	178.88
Dry Mass (g)	44.80	44.78
Water Content (calc from spec)	137.60	69.61
Dry Density (pcf)	34.61	74.31
Wet Density (pcf)	82.24	126.04
Volume of Solids (in^3)	1.06	1.06
Height of Solids (in)	0.21	0.21
Void Ratio	3.655	1.167

Void Ratio vs. Effective Stress

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

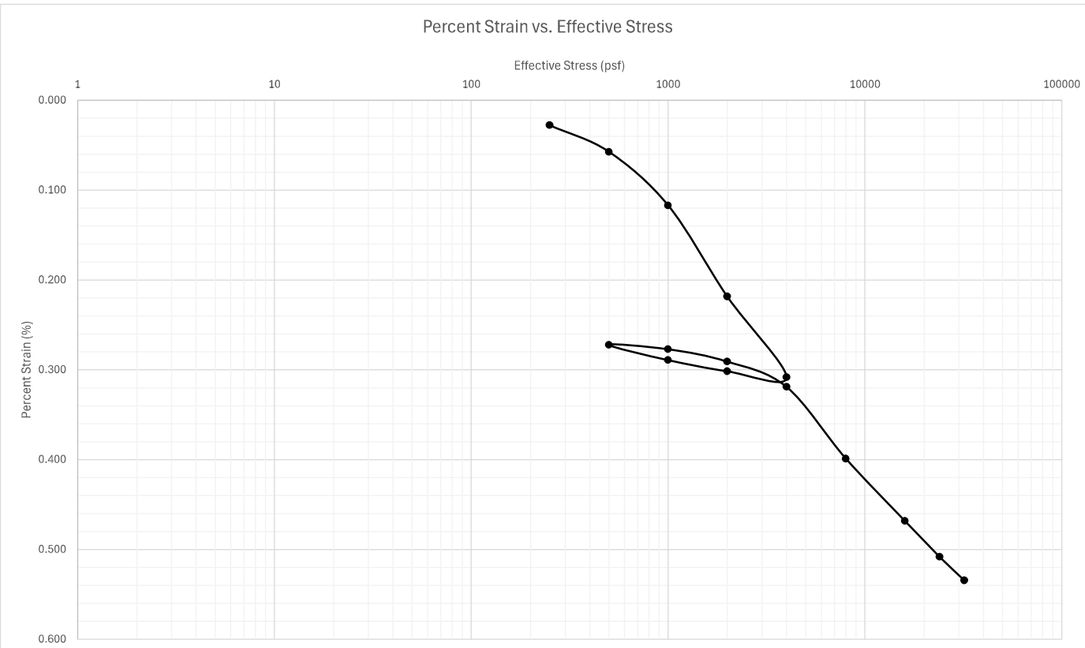


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Percent Strain vs. Effective Stress

INFRASTRUCTURE CONSULTING & ENGINEERING

Y1RPC_4200, ST-30, 2.0-4.0 ft



Sequence 1: 250 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			6	0	0	250	0.1109	0	0.999	0	3.655
1			15	0.25	0.5	250	0.1115	0.0006	0.9984	0.06006	3.653
2			30	0.5	0.707106781	250	0.1123	0.0014	0.9976	0.14014	3.649
3		1		1	1	250	0.1133	0.0024	0.9966	0.24024	3.644
4		2		2	1.414213562	250	0.1149	0.004	0.995	0.4004	3.637
5		4		4	2	250	0.1168	0.0059	0.9931	0.590591	3.628
6		8		8	2.828427125	250	0.1189	0.008	0.991	0.800801	3.618
7		17		17	4.123105626	250	0.1217	0.0108	0.9882	1.081081	3.605
8		31		31	5.567764363	250	0.1252	0.0143	0.9847	1.431431	3.589
9		58		58	7.615773106	250	0.1278	0.0169	0.9821	1.691692	3.577
10	2			120	10.95445115	250	0.1312	0.0203	0.9787	2.032032	3.561
11	3	53		233	15.26433752	250	0.1338	0.0229	0.9761	2.292292	3.549
12	6	12		372	19.28730152	250	0.1347	0.0238	0.9752	2.382382	3.545
13	8	15		495	22.24859546	250	0.1352	0.0243	0.9747	2.432432	3.542
14	23	51		1431	37.82856064	250	0.1367	0.0258	0.9732	2.582583	3.535
15	96	3		5763	75.91442551	250	0.1384	0.0275	0.9715	2.752753	3.527
16	120	10		7210	84.91171886	250	0.1386	0.0277	0.9713	2.772773	3.526
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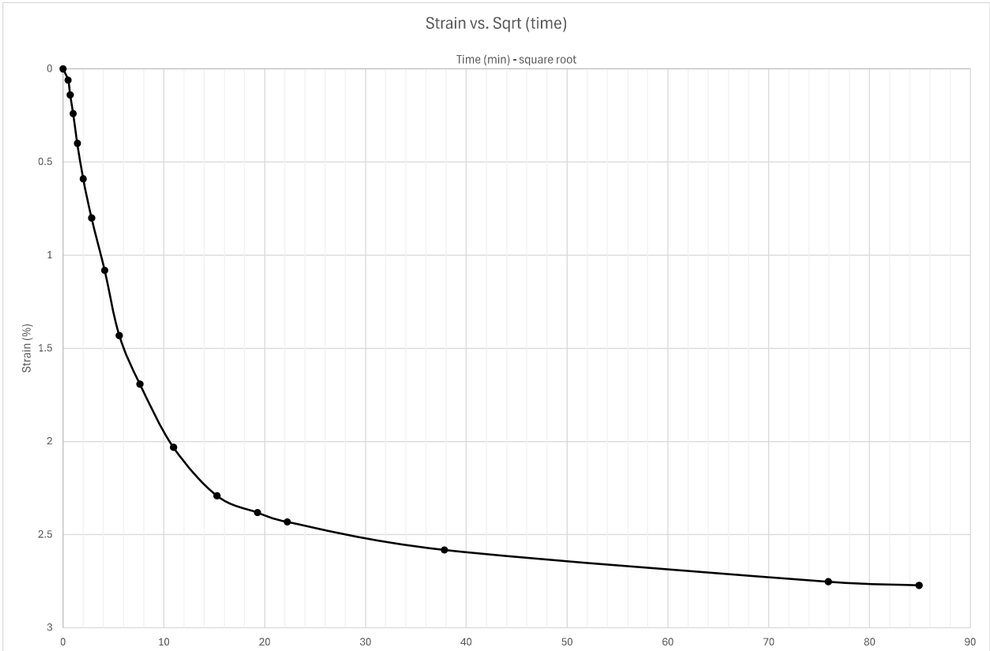
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 1: 250 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

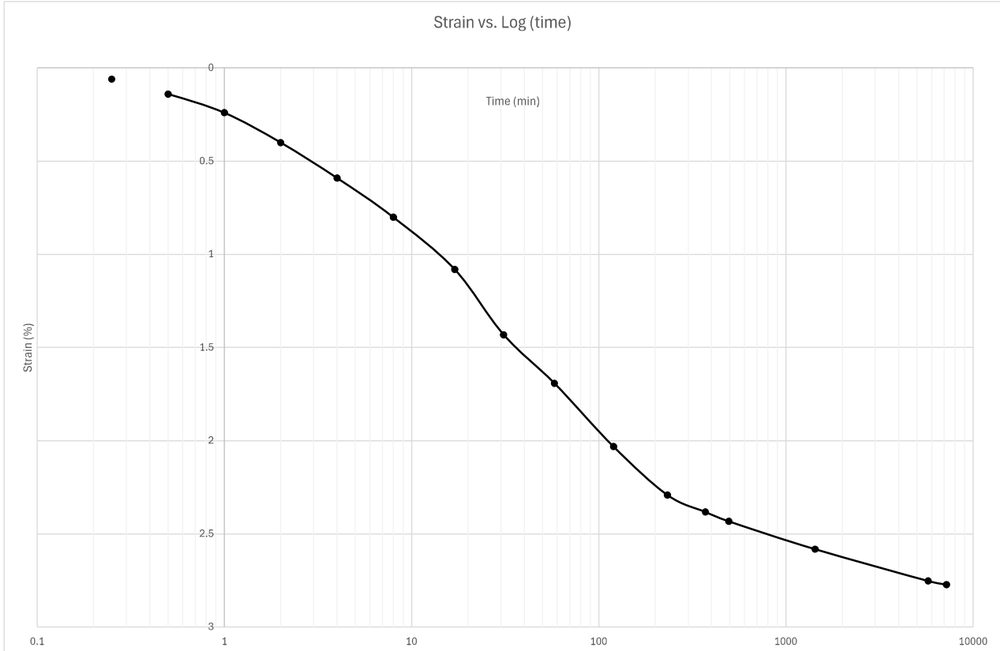
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 1: 250 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0	0.00	500	0.1386	-0.0001	0.9714	-0.01001	3.527
1			6	0.1	0.32	500	0.1411	0.0024	0.9689	0.24024	3.515
2			15	0.25	0.50	500	0.1419	0.0032	0.9681	0.32032	3.511
3			30	0.5	0.71	500	0.1427	0.0040	0.9673	0.4004	3.508
4		1		1	1.00	500	0.1437	0.0050	0.9663	0.500501	3.503
5		2		2	1.41	500	0.1451	0.0064	0.9649	0.640641	3.497
6		4		4	2.00	500	0.1469	0.0082	0.9631	0.820821	3.488
7		8		8	2.83	500	0.1492	0.0105	0.9608	1.051051	3.477
8		15		15	3.87	500	0.1514	0.0127	0.9586	1.271271	3.467
9		29		29	5.39	500	0.1554	0.0167	0.9546	1.671672	3.449
10		59		59	7.68	500	0.1595	0.0208	0.9505	2.082082	3.429
11	2	54		174	13.19	500	0.1647	0.0260	0.9453	2.602603	3.405
12	4	51		291	17.06	500	0.1659	0.0272	0.9441	2.722723	3.400
13	22	25		1345	36.67	500	0.1679	0.0292	0.9421	2.922923	3.390
14	24	4		1444	38.00	500	0.1682	0.0295	0.9418	2.952953	3.389
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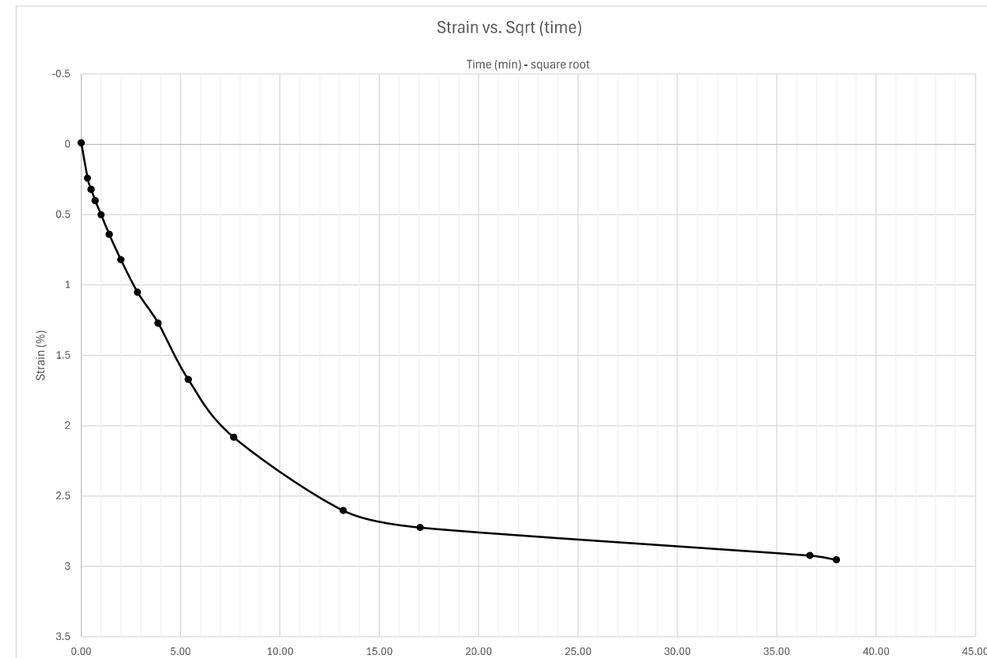
Sequence 2: 500 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

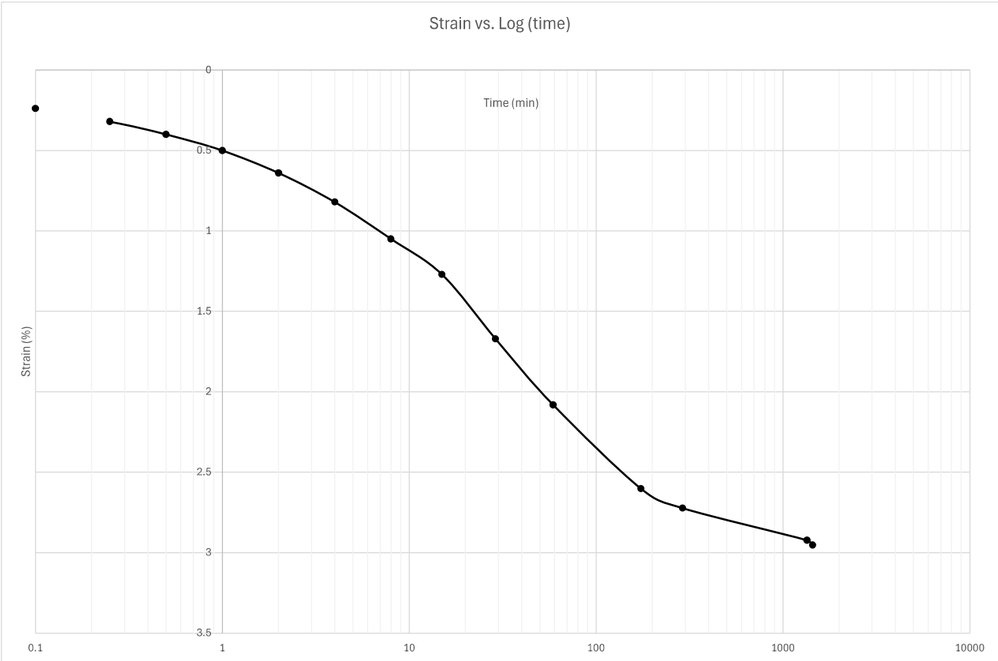


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 2: 500 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 3: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	1000	0.1682	-0.0001	0.9419	-0.01001	3.389
1			6	0.10	0.32	1000	0.171	0.0027	0.9391	0.27027	3.376
2			15	0.25	0.50	1000	0.1718	0.0035	0.9383	0.35035	3.373
3			30	0.50	0.71	1000	0.1727	0.0044	0.9374	0.44044	3.368
4		1		1.00	1.00	1000	0.1741	0.0058	0.936	0.580581	3.362
5		2		2.00	1.41	1000	0.176	0.0077	0.9341	0.770771	3.353
6		4		4.00	2.00	1000	0.1785	0.0102	0.9316	1.021021	3.341
7		8		8.00	2.83	1000	0.1818	0.0135	0.9283	1.351351	3.326
8		15		15.00	3.87	1000	0.1858	0.0175	0.9243	1.751752	3.307
9		30		30.00	5.48	1000	0.1916	0.0233	0.9185	2.332332	3.280
10	1	1		61.00	7.81	1000	0.1996	0.0313	0.9105	3.133133	3.243
11	2			120.00	10.95	1000	0.2088	0.0405	0.9013	4.054054	3.200
12	3	58		238.00	15.43	1000	0.2166	0.0483	0.8935	4.834835	3.164
13	6	14		374.00	19.34	1000	0.2208	0.0525	0.8893	5.255255	3.144
14	22	28		1348.00	36.72	1000	0.2275	0.0592	0.8826	5.925926	3.113
15	23	45		1425.00	37.75	1000	0.2279	0.0596	0.8822	5.965966	3.111
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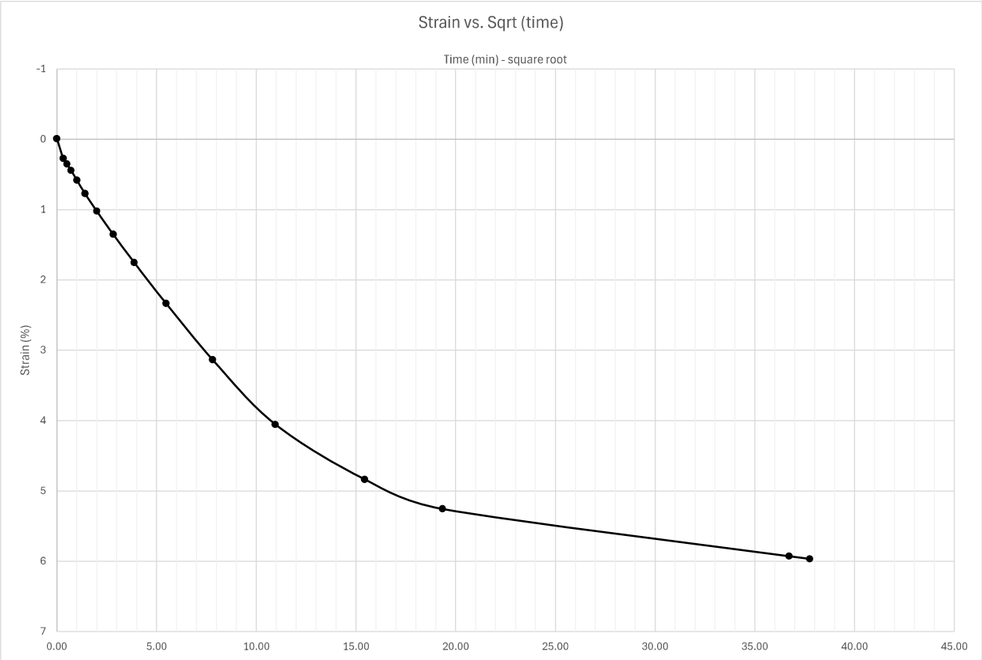
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 3: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

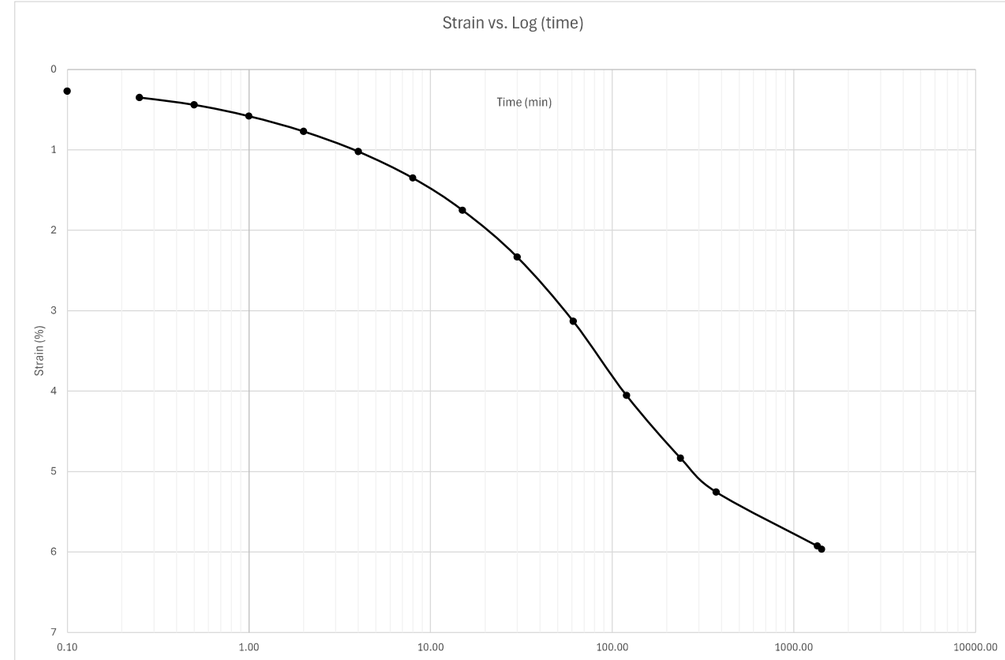
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 3: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

	Elapsed Time (HH:MM:SS)										
Reading	Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.2279	-0.0002	0.8824	-0.02002	3.112
1			6	0.10	0.32	2000	0.2314	0.0033	0.8789	0.33033	3.096
2			15	0.25	0.50	2000	0.2324	0.0043	0.8779	0.43043	3.091
3			30	0.50	0.71	2000	0.2335	0.0054	0.8768	0.540541	3.086
4		1		1.00	1.00	2000	0.2353	0.0072	0.875	0.720721	3.078
5		2		2.00	1.41	2000	0.238	0.0099	0.8723	0.990991	3.065
6		4		4.00	2.00	2000	0.2418	0.0137	0.8685	1.371371	3.047
7		8		8.00	2.83	2000	0.247	0.0189	0.8633	1.891892	3.023
8		15		15.00	3.87	2000	0.2539	0.0258	0.8564	2.582583	2.991
9		32		32.00	5.66	2000	0.2657	0.0376	0.8446	3.763764	2.936
10	1	10		70.00	8.37	2000	0.2814	0.0533	0.8289	5.335335	2.863
11	1	55		115.00	10.72	2000	0.2918	0.0637	0.8185	6.376376	2.814
12	6	8		368.00	19.18	2000	0.3116	0.0835	0.7987	8.358358	2.722
13	22	36		1356.00	36.82	2000	0.3216	0.0935	0.7887	9.359359	2.675
14	28	50		1730.00	41.59	2000	0.3233	0.0952	0.787	9.52953	2.668
15	47	45		2865.00	53.53	2000	0.3261	0.098	0.7842	9.80981	2.654
16	94	48		5688.00	75.42	2000	0.3294	0.1013	0.7809	10.14014	2.639
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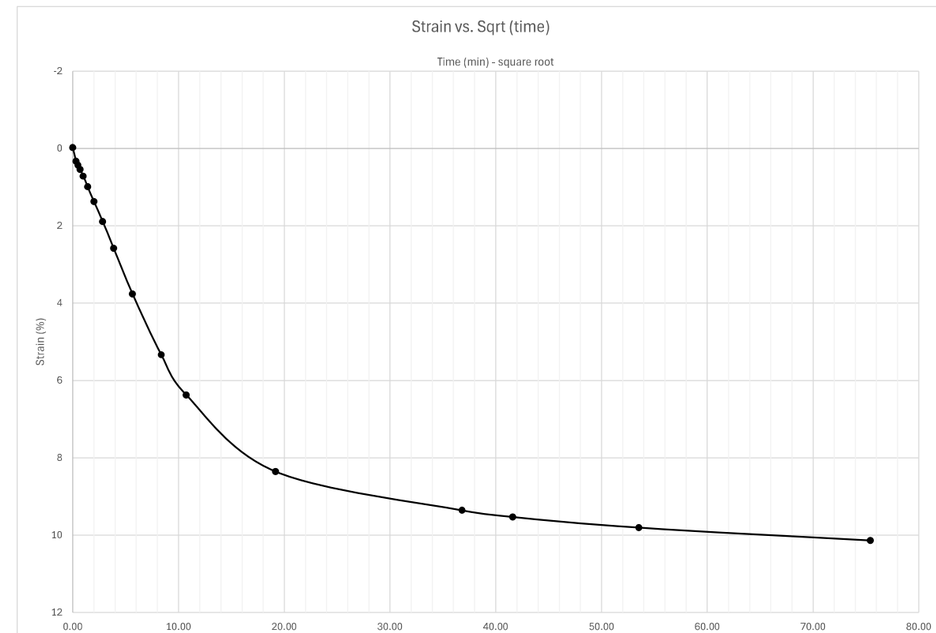
Sequence 4: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

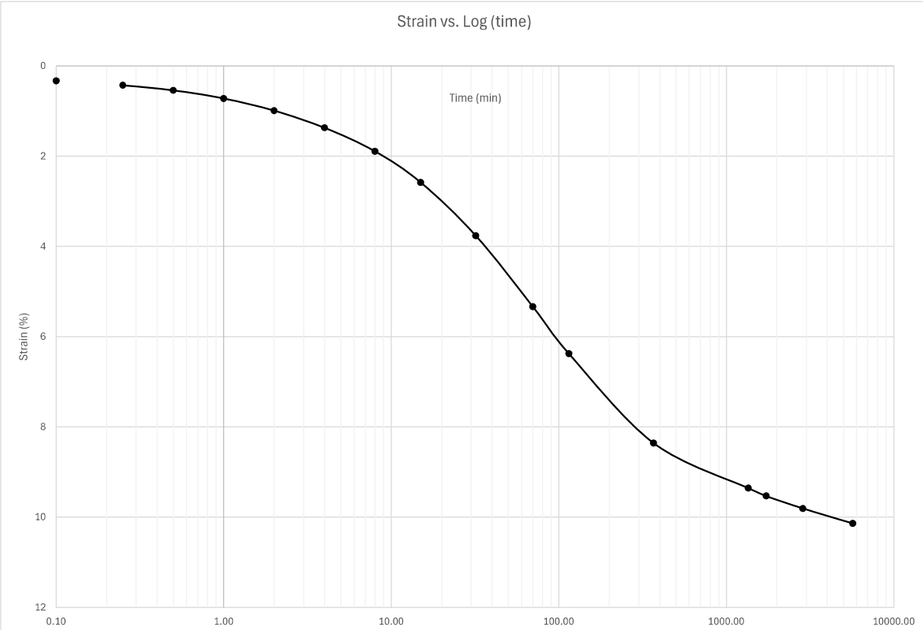


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 4: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 5: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	4000	0.3294	-0.0002	0.7811	-0.02002	2.640
1			6	0.10	0.32	4000	0.3325	0.0029	0.778	0.29029	2.626
2			15	0.25	0.50	4000	0.3334	0.0038	0.7771	0.38038	2.621
3			30	0.50	0.71	4000	0.3344	0.0048	0.7761	0.48048	2.617
4		1		1.00	1.00	4000	0.3359	0.0063	0.7746	0.630631	2.610
5		2		2.00	1.41	4000	0.3382	0.0086	0.7723	0.860861	2.599
6		4		4.00	2.00	4000	0.3416	0.012	0.7689	1.201201	2.583
7		8		8.00	2.83	4000	0.3464	0.0168	0.7641	1.681682	2.561
8		15		15.00	3.87	4000	0.3528	0.0232	0.7577	2.322322	2.531
9		28		28.00	5.29	4000	0.3613	0.0317	0.7492	3.173173	2.491
10		44		44.00	6.63	4000	0.369	0.0394	0.7415	3.943944	2.455
11	1	14		74.00	8.60	4000	0.3793	0.0497	0.7312	4.974975	2.407
12	2	16		136.00	11.66	4000	0.3916	0.062	0.7189	6.206206	2.350
13	4	12		252.00	15.87	4000	0.4016	0.072	0.7089	7.207207	2.304
14	7	15		435.00	20.86	4000	0.4071	0.0775	0.7034	7.757758	2.278
15	22	46		1366.00	36.96	4000	0.4157	0.0861	0.6948	8.618619	2.238
16	29	35		1775.00	42.13	4000	0.4172	0.0876	0.6933	8.768769	2.231
17	31	6		1866.00	43.20	4000	0.4175	0.0879	0.693	8.798799	2.229
18	46	26		2786.00	52.78	4000	0.4195	0.0899	0.691	8.998999	2.220
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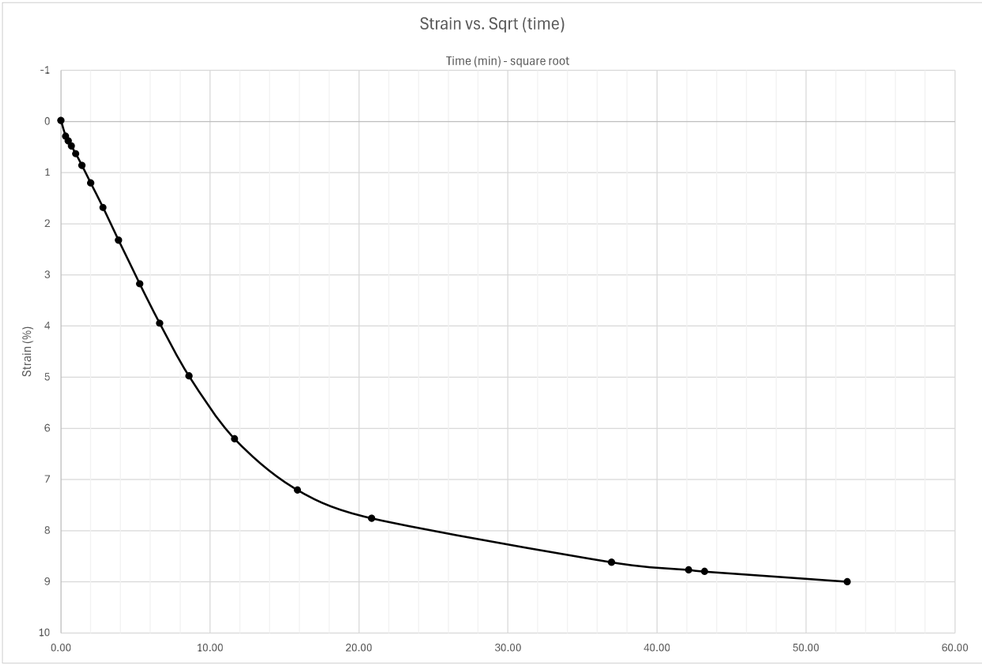
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 5: 4000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

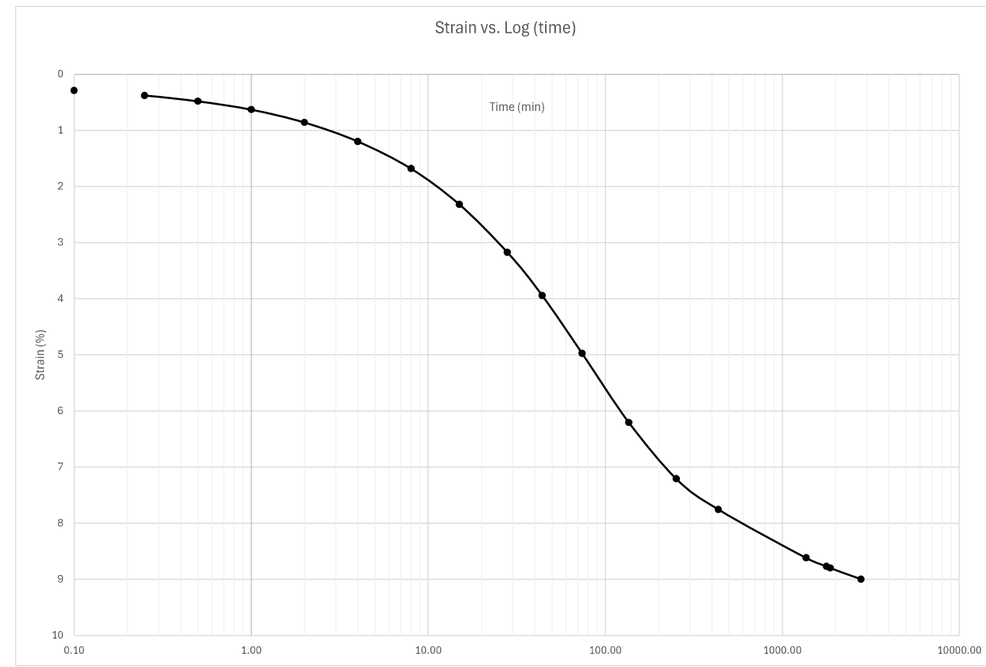
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 5: 4000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	2000	0.4195	0.0002	0.6908	0.02002	2.219
1			6	0.10	0.32	2000	0.419	-0.0003	0.6913	-0.03003	2.222
2			15	0.25	0.50	2000	0.4189	-0.0004	0.6914	-0.04004	2.222
3			30	0.50	0.71	2000	0.4186	-0.0007	0.6917	-0.07007	2.223
4		1		1.00	1.00	2000	0.4183	-0.001	0.692	-0.1001	2.225
5		2		2.00	1.41	2000	0.4178	-0.0015	0.6925	-0.15015	2.227
6		4		4.00	2.00	2000	0.4172	-0.0021	0.6931	-0.21021	2.230
7		8		8.00	2.83	2000	0.4164	-0.0029	0.6939	-0.29029	2.234
8		16		16.00	4.00	2000	0.4156	-0.0037	0.6947	-0.37037	2.237
9		31		31.00	5.57	2000	0.4149	-0.0044	0.6954	-0.44044	2.241
10		57		57.00	7.55	2000	0.4144	-0.0049	0.6959	-0.49049	2.243
11	1	57		117.00	10.82	2000	0.4139	-0.0054	0.6964	-0.540541	2.245
12	2	9		129.00	11.36	2000	0.4139	-0.0054	0.6964	-0.540541	2.245
13	3	15		195.00	13.96	2000	0.4136	-0.0057	0.6967	-0.570571	2.247
14	7	22		442.00	21.02	2000	0.4132	-0.0061	0.6971	-0.610611	2.249
15	23	19		1399.00	37.40	2000	0.4128	-0.0065	0.6975	-0.650651	2.250
16	30	56		1856.00	43.08	2000	0.4127	-0.0066	0.6976	-0.660661	2.251
17	46	37		2797.00	52.89	2000	0.4126	-0.0067	0.6977	-0.670671	2.251
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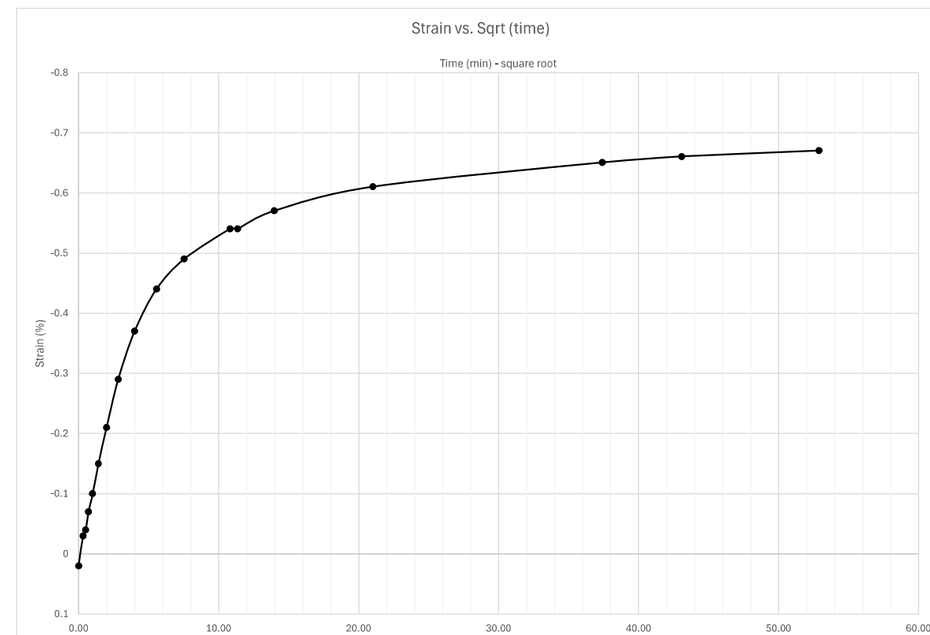
Sequence 6: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

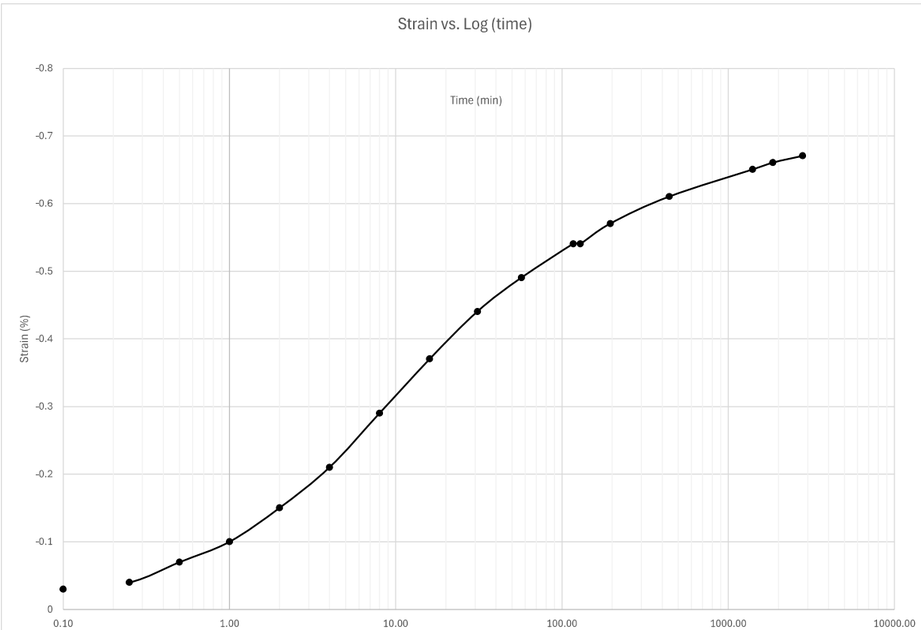


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 6: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 7: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.4126	0.0002	0.6975	0.02002	2.250
1			6	0.10	0.32	1000	0.412	-0.0004	0.6981	-0.04004	2.253
2			15	0.25	0.50	1000	0.4117	-0.0007	0.6984	-0.07007	2.255
3			30	0.50	0.71	1000	0.4114	-0.001	0.6987	-0.1001	2.256
4		1		1.00	1.00	1000	0.4111	-0.0013	0.699	-0.13013	2.257
5		2		2.00	1.41	1000	0.4107	-0.0017	0.6994	-0.17017	2.259
6		4		4.00	2.00	1000	0.4102	-0.0022	0.6999	-0.22022	2.262
7		8		8.00	2.83	1000	0.4094	-0.003	0.7007	-0.3003	2.265
8		15		15.00	3.87	1000	0.4085	-0.0039	0.7016	-0.39039	2.270
9		28		28.00	5.29	1000	0.4072	-0.0052	0.7029	-0.520521	2.276
10		59		59.00	7.68	1000	0.4059	-0.0065	0.7042	-0.650651	2.282
11	2	2		122.00	11.05	1000	0.4045	-0.0079	0.7056	-0.790791	2.288
12	3	16		196.00	14.00	1000	0.4037	-0.0087	0.7064	-0.870871	2.292
13	23	44		1424.00	37.74	1000	0.4002	-0.0122	0.7099	-1.221221	2.308
14	48	18		2898.00	53.83	1000	0.4	-0.0124	0.7101	-1.241241	2.309
15	70	15		4215.00	64.92	1000	0.3999	-0.0125	0.7102	-1.251251	2.310
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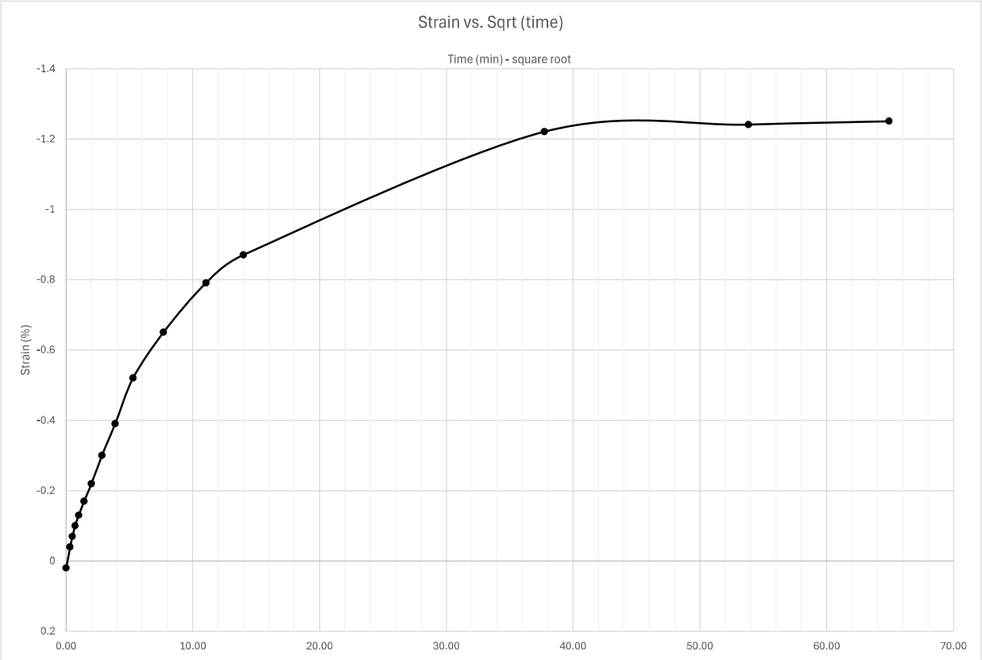
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 7: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

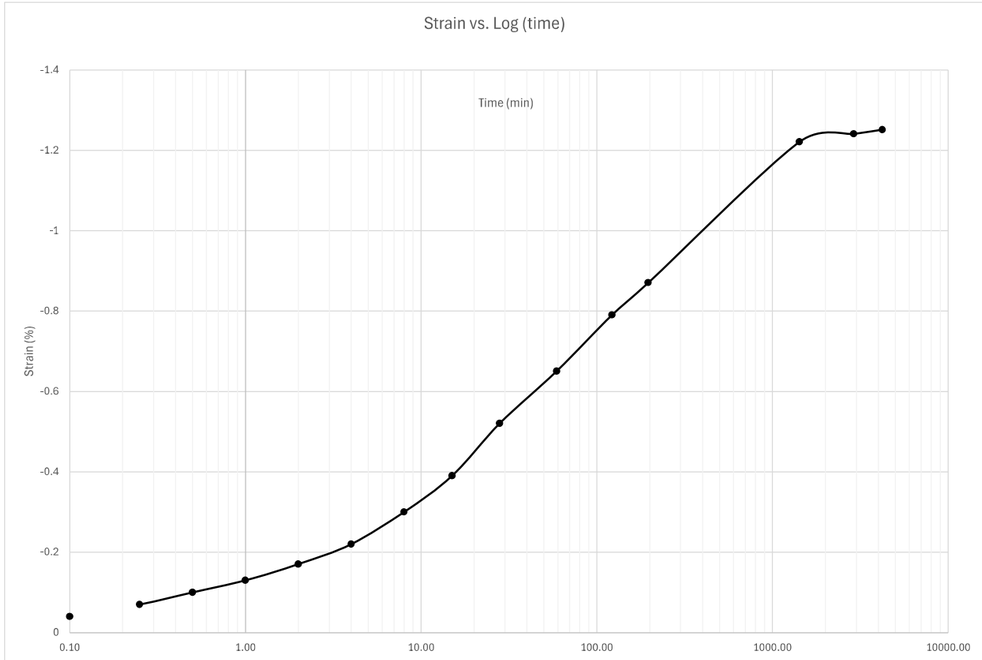
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 7: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G and I to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	500	0.3999	0.0001	0.7101	0.01001	2.309
1			6	0.10	0.32	500	0.3984	-0.0014	0.7116	-0.14014	2.316
2			15	0.25	0.50	500	0.3982	-0.0016	0.7118	-0.16016	2.317
3			30	0.50	0.71	500	0.3981	-0.0017	0.7119	-0.17017	2.318
4		1		1.00	1.00	500	0.3977	-0.0021	0.7123	-0.21021	2.319
5		2		2.00	1.41	500	0.3975	-0.0023	0.7125	-0.23023	2.320
6		4		4.00	2.00	500	0.3972	-0.0026	0.7128	-0.26026	2.322
7		8		8.00	2.83	500	0.397	-0.0028	0.713	-0.28028	2.323
8		16		16.00	4.00	500	0.3966	-0.0032	0.7134	-0.32032	2.325
9		30		30.00	5.48	500	0.3956	-0.0042	0.7144	-0.42042	2.329
10	1			60.00	7.75	500	0.3941	-0.0057	0.7159	-0.570571	2.336
11	3	1		181.00	13.45	500	0.3904	-0.0094	0.7196	-0.940941	2.353
12	8	39		519.00	22.78	500	0.3885	-0.0113	0.7215	-1.131131	2.362
13	18	46		1126.00	33.56	500	0.3855	-0.0143	0.7245	-1.431431	2.376
14	23	42		1422.00	37.71	500	0.3849	-0.0149	0.7251	-1.491491	2.379
15	26	41		1601.00	40.01	500	0.3845	-0.0153	0.7255	-1.531532	2.381
16	43	20		2600.00	50.99	500	0.3834	-0.0164	0.7266	-1.641642	2.386
17	47	56		2876.00	53.63	500	0.383	-0.0168	0.727	-1.681682	2.388
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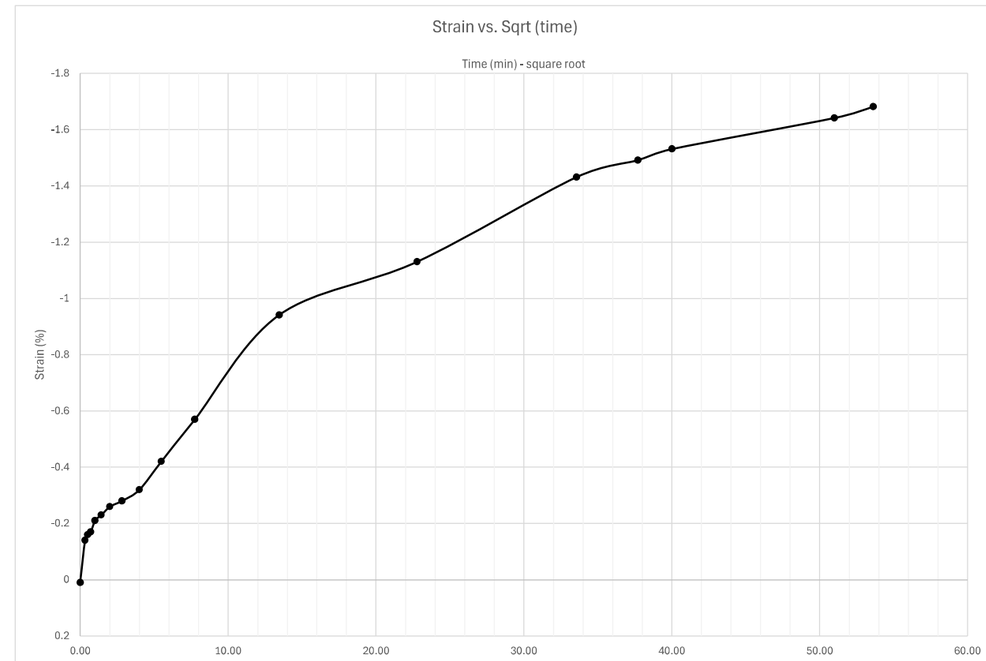
Sequence 8: 500 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

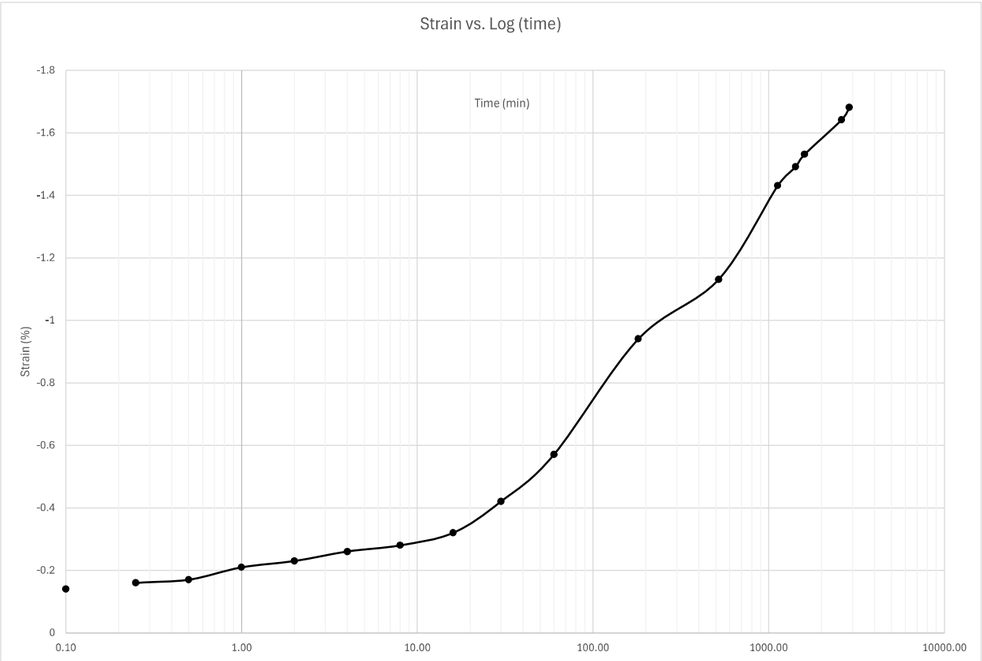


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 8: 500 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 9: 1000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0			0	0.00	0.00	1000	0.383	-0.0001	0.7271	-0.01001	2.388
1			6	0.10	0.32	1000	0.3828	-0.0003	0.7273	-0.03003	2.389
2			15	0.25	0.50	1000	0.3829	-0.0002	0.7272	-0.02002	2.389
3			30	0.50	0.71	1000	0.383	-0.0001	0.7271	-0.01001	2.388
4		1		1.00	1.00	1000	0.3832	1E-04	0.7269	0.01001	2.387
5		2		2.00	1.41	1000	0.3835	0.0004	0.7266	0.04004	2.386
6		4		4.00	2.00	1000	0.384	0.0009	0.7261	0.09009	2.384
7		8		8.00	2.83	1000	0.3845	0.0014	0.7256	0.14014	2.381
8		15		15.00	3.87	1000	0.3849	0.0018	0.7252	0.18018	2.380
9		28		28.00	5.29	1000	0.3855	0.0024	0.7246	0.24024	2.377
10	1	6		66.00	8.12	1000	0.3863	0.0032	0.7238	0.32032	2.373
11	1	53		113.00	10.63	1000	0.3866	0.0035	0.7235	0.35035	2.372
12	5	11		311.00	17.64	1000	0.3871	0.004	0.723	0.4004	2.369
13	7	21		441.00	21.00	1000	0.3872	0.0041	0.7229	0.41041	2.369
14	24	9		1449.00	38.07	1000	0.3876	0.0045	0.7225	0.45045	2.367
15	95	24		5724.00	75.66	1000	0.388	0.0049	0.7221	0.49049	2.365
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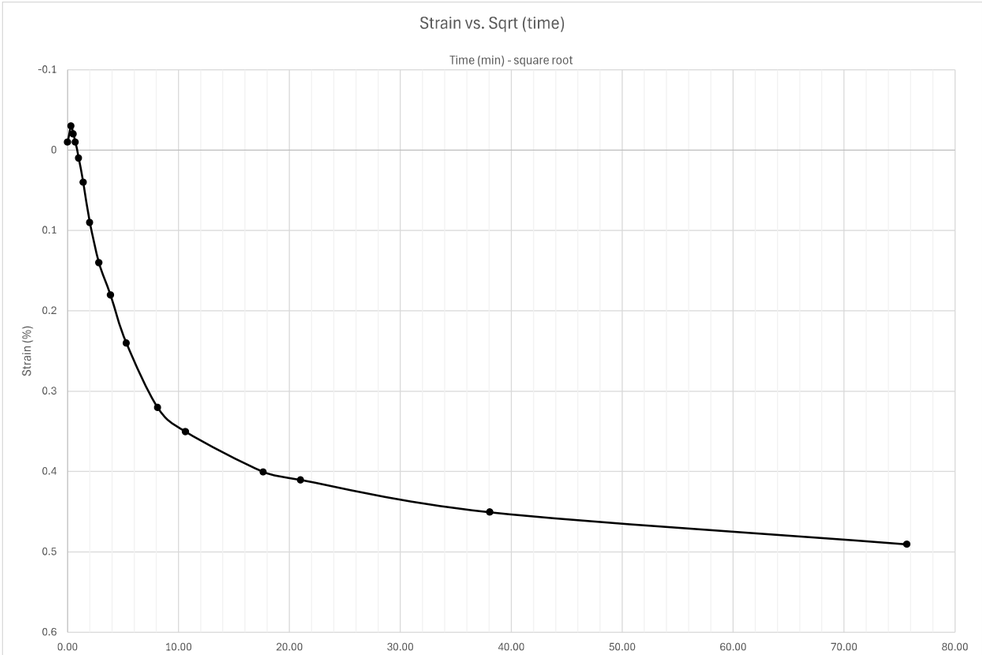
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 9: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

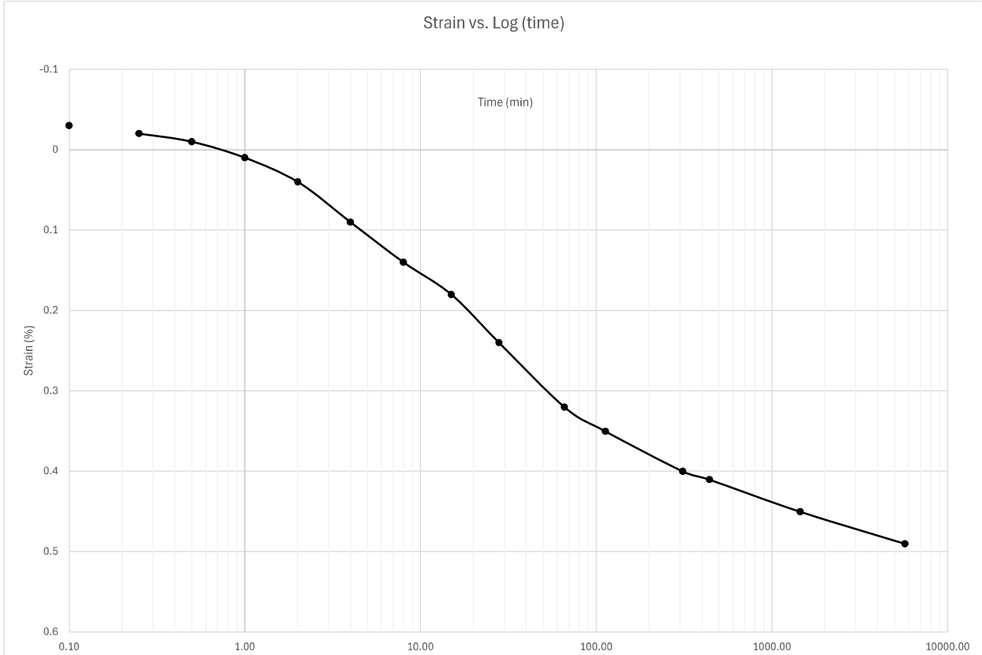
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 9: 1000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	2000	0.388	-0.0002	0.7223	-0.02002	2.366
1			6	0.10	0.32	2000	0.389	0.0008	0.7213	0.08008	2.361
2			15	0.25	0.50	2000	0.3892	0.001	0.7211	0.1001	2.360
3			30	0.50	0.71	2000	0.3895	0.0013	0.7208	0.13013	2.359
4		1		1.00	1.00	2000	0.3899	0.0017	0.7204	0.17017	2.357
5		2		2.00	1.41	2000	0.3905	0.0023	0.7198	0.23023	2.354
6		4		4.00	2.00	2000	0.3913	0.0031	0.719	0.31031	2.351
7		8		8.00	2.83	2000	0.3925	0.0043	0.7178	0.43043	2.345
8		15		15.00	3.87	2000	0.3939	0.0057	0.7164	0.570571	2.339
9		30		30.00	5.48	2000	0.3957	0.0075	0.7146	0.750751	2.330
10		58		58.00	7.62	2000	0.3975	0.0093	0.7128	0.930931	2.322
11	2	7		127.00	11.27	2000	0.3988	0.0106	0.7115	1.061061	2.316
12	4	1		241.00	15.52	2000	0.3996	0.0114	0.7107	1.141141	2.312
13	6	43		403.00	20.07	2000	0.4001	0.0119	0.7102	1.191191	2.310
14	7	20		440.00	20.98	2000	0.4001	0.0119	0.7102	1.191191	2.310
15	22	45		1365.00	36.95	2000	0.4011	0.0129	0.7092	1.291291	2.305
16	28	22		1702.00	41.26	2000	0.4013	0.0131	0.709	1.311311	2.304
17	47			2820.00	53.10	2000	0.4018	0.0136	0.7085	1.361361	2.302
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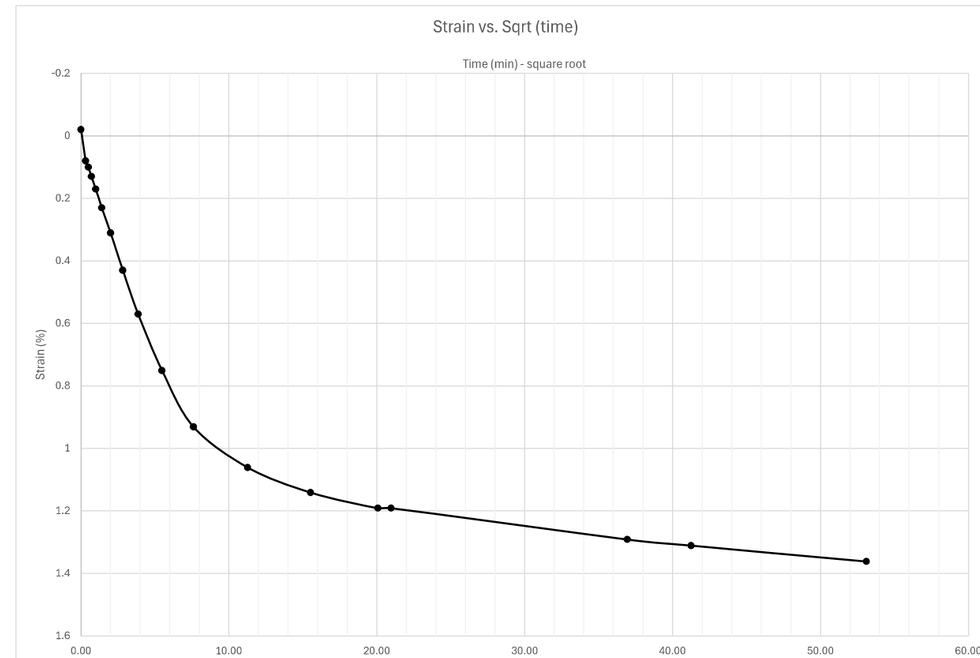
Sequence 10: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

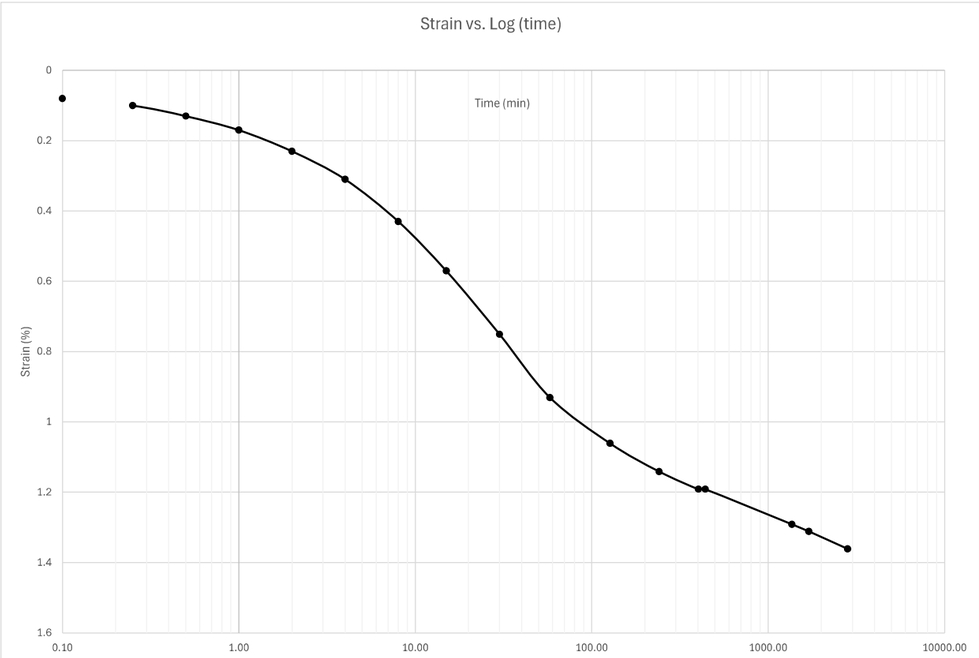


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 10: 2000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 11: 4000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	4000	0.4018	-0.0003	0.7088	-0.03003	2.303
1			6	0.10	0.32	4000	0.4036	0.0015	0.707	0.15015	2.295
2			15	0.25	0.50	4000	0.404	0.0019	0.7066	0.19019	2.293
3			30	0.50	0.71	4000	0.4046	0.0025	0.706	0.25025	2.290
4		1		1.00	1.00	4000	0.4054	0.0033	0.7052	0.33033	2.286
5		2		2.00	1.41	4000	0.4064	0.0043	0.7042	0.43043	2.282
6		4		4.00	2.00	4000	0.4079	0.0058	0.7027	0.580581	2.275
7		8		8.00	2.83	4000	0.41	0.0079	0.7006	0.790791	2.265
8		15		15.00	3.87	4000	0.4126	0.0105	0.698	1.051051	2.253
9		27	10	27.17	5.21	4000	0.4155	0.0134	0.6951	1.341341	2.239
10	1	20		80.00	8.94	4000	0.4203	0.0182	0.6903	1.821822	2.217
11	2	40		160.00	12.65	4000	0.4227	0.0206	0.6879	2.062062	2.206
12	4	24		264.00	16.25	4000	0.4243	0.0222	0.6863	2.222222	2.198
13	23	40		1420.00	37.68	4000	0.4281	0.026	0.6825	2.602603	2.181
14	31	49		1909.00	43.69	4000	0.4294	0.0273	0.6812	2.732733	2.174
15	47	46		2866.00	53.54	4000	0.4303	0.0282	0.6803	2.822823	2.170
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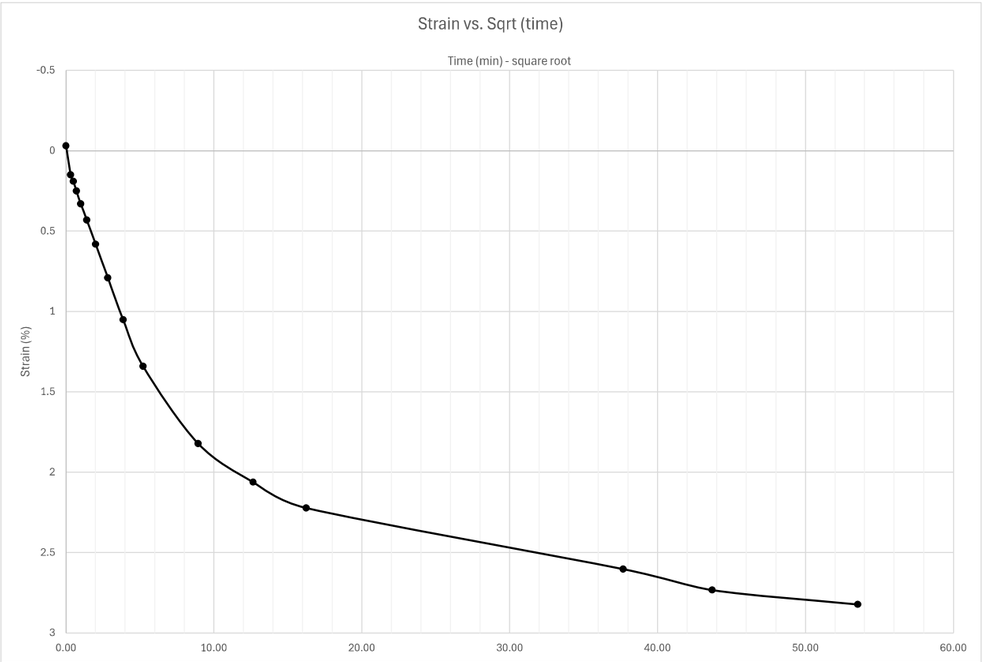
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 11: 4000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

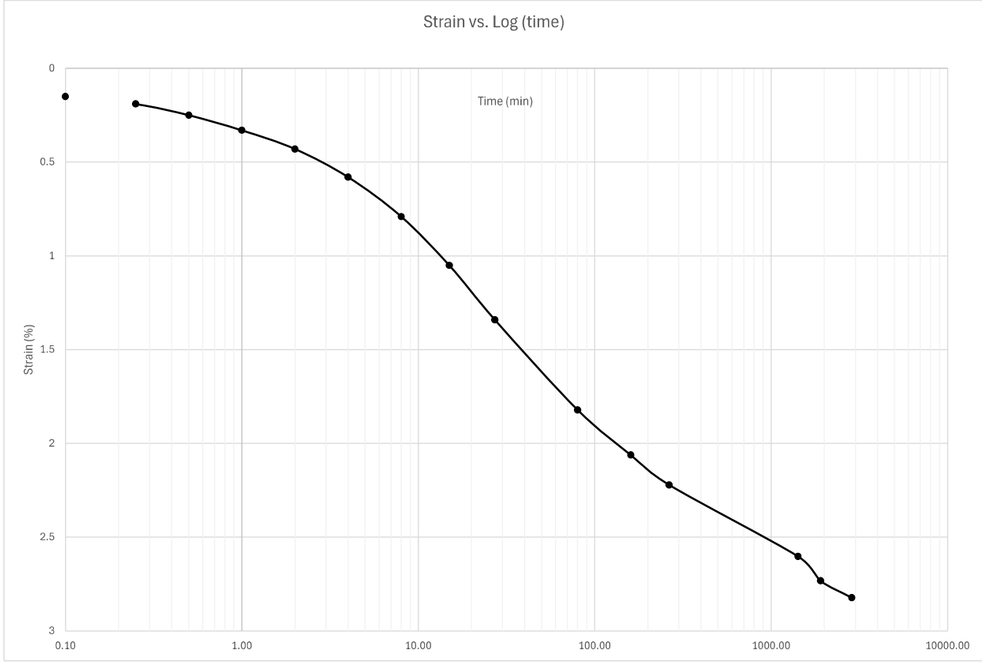
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 11: 4000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	8000	0.4303	-0.0006	0.6809	-0.06006	2.173
1			6	0.10	0.32	8000	0.4333	0.0024	0.6779	0.24024	2.159
2			15	0.25	0.50	8000	0.4341	0.0032	0.6771	0.32032	2.155
3			30	0.50	0.71	8000	0.4351	0.0042	0.6761	0.42042	2.151
4		1		1.00	1.00	8000	0.4366	0.0057	0.6746	0.570571	2.144
5		2		2.00	1.41	8000	0.4387	0.0078	0.6725	0.780781	2.134
6		4		4.00	2.00	8000	0.4419	0.011	0.6693	1.101101	2.119
7		8		8.00	2.83	8000	0.4468	0.0159	0.6644	1.591592	2.096
8		15		15.00	3.87	8000	0.4522	0.0213	0.659	2.132132	2.071
9		33		33.00	5.74	8000	0.4624	0.0315	0.6488	3.153153	2.023
10	2			120.00	10.95	8000	0.4828	0.0519	0.6284	5.195195	1.928
11	4			240.00	15.49	8000	0.4923	0.0614	0.6189	6.146146	1.884
12	6	28		388.00	19.70	8000	0.4968	0.0659	0.6144	6.596597	1.863
13	52	20		3140.00	56.04	8000	0.5082	0.0773	0.603	7.737738	1.810
14	73	56		4436.00	66.60	8000	0.5096	0.0787	0.6016	7.877878	1.804
15	95	49		5749.00	75.82	8000	0.5107	0.0798	0.6005	7.987988	1.798
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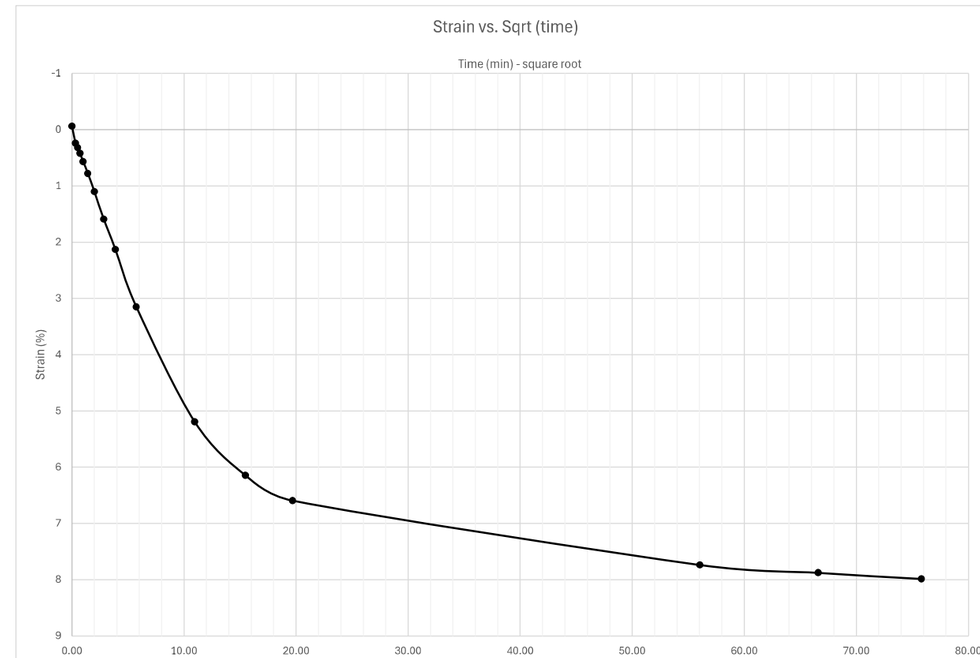
Sequence 12: 8000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

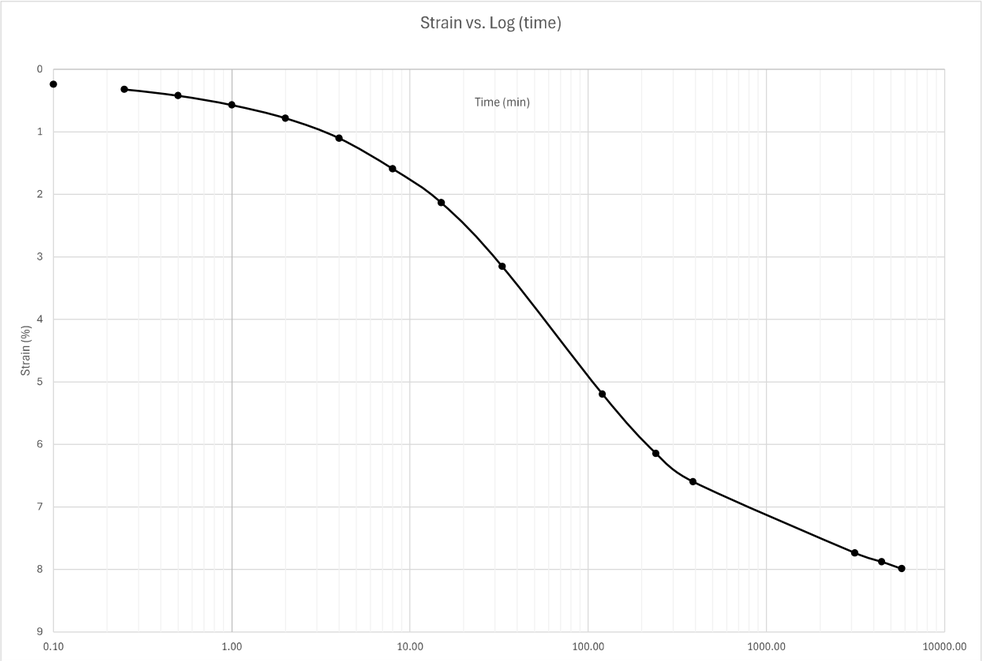


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 12: 8000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 13: 16000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	16000	0.5107	-0.0008	0.6013	-0.08008	1.802
1			6	0.10	0.32	16000	0.5131	0.0016	0.5989	0.16016	1.791
2			15	0.25	0.50	16000	0.5139	0.0024	0.5981	0.24024	1.787
3			30	0.50	0.71	16000	0.515	0.0035	0.597	0.35035	1.782
4		1		1.00	1.00	16000	0.5164	0.0049	0.5956	0.49049	1.776
5		2		2.00	1.41	16000	0.5186	0.0071	0.5934	0.710711	1.765
6		4		4.00	2.00	16000	0.5218	0.0103	0.5902	1.031031	1.750
7		8		8.00	2.83	16000	0.5265	0.015	0.5855	1.501502	1.728
8		15		15.00	3.87	16000	0.5324	0.0209	0.5796	2.092092	1.701
9		35		35.00	5.92	16000	0.5432	0.0317	0.5688	3.173173	1.651
10	1	5		65.00	8.06	16000	0.5534	0.0419	0.5586	4.194194	1.603
11	1	48		108.00	10.39	16000	0.5612	0.0497	0.5508	4.974975	1.567
12	4	17		257.00	16.03	16000	0.5711	0.0596	0.5409	5.965966	1.521
13	6	12		372.00	19.29	16000	0.574	0.0625	0.538	6.256256	1.507
14	22	27		1347.00	36.70	16000	0.5803	0.0688	0.5317	6.886887	1.478
15	24	43		1483.00	38.51	16000	0.5808	0.0693	0.5312	6.936937	1.475
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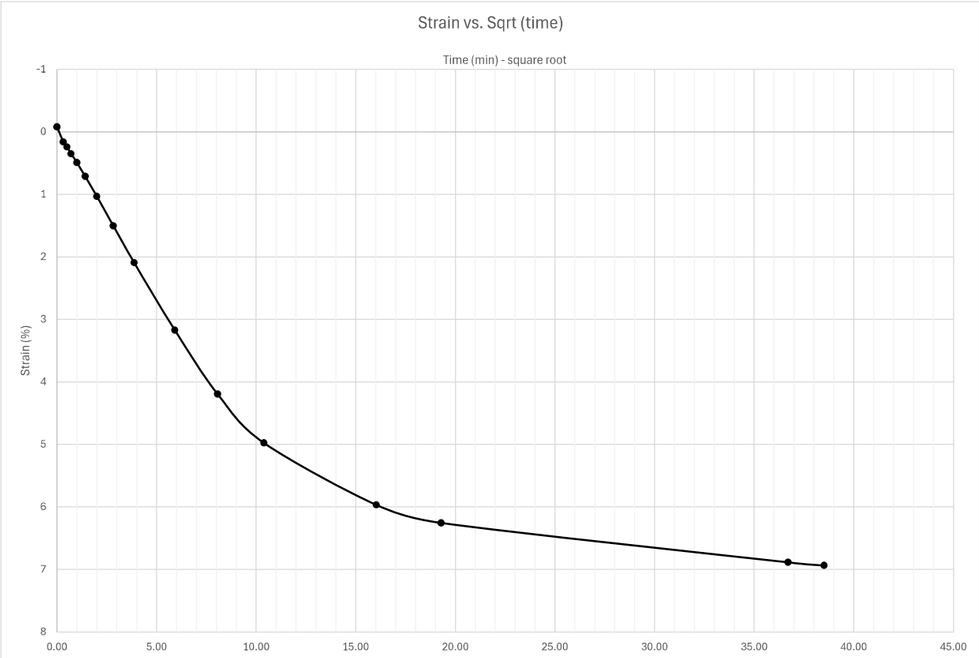
Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 13: 16000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

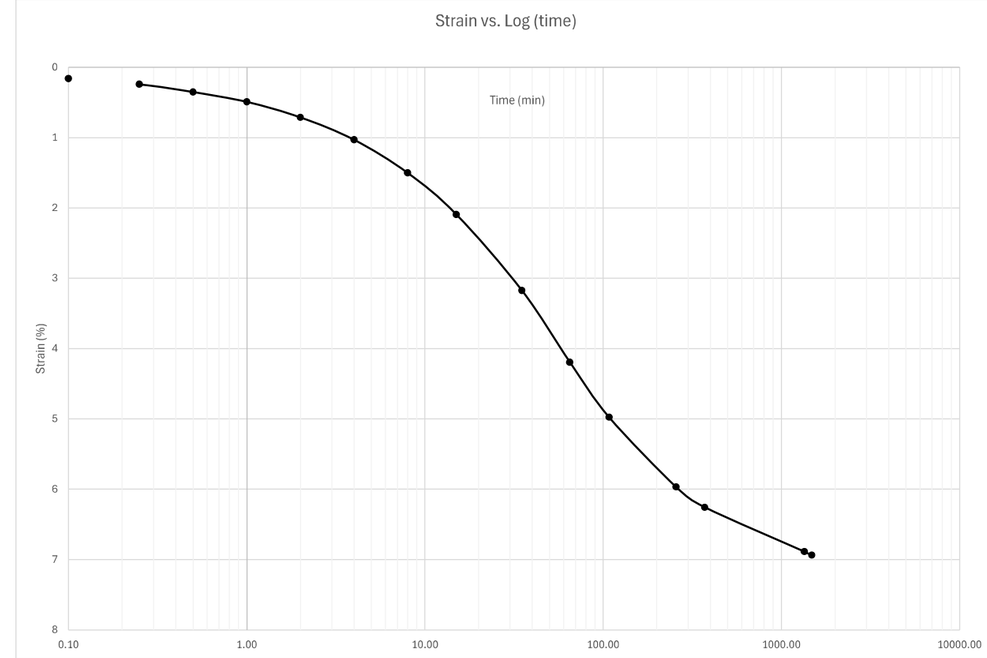
INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 13: 16000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 24000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	24000	0.5808	-0.0006	0.5318	-0.06006	1.478
1			6	0.10	0.32	24000	0.582	0.0006	0.5306	0.06006	1.473
2			15	0.25	0.50	24000	0.5824	0.001	0.5302	0.1001	1.471
3			30	0.50	0.71	24000	0.5829	0.0015	0.5297	0.15015	1.468
4		1		1.00	1.00	24000	0.5835	0.0021	0.5291	0.21021	1.466
5		2		2.00	1.41	24000	0.5846	0.0032	0.528	0.32032	1.461
6		4		4.00	2.00	24000	0.586	0.0046	0.5266	0.46046	1.454
7		8		8.00	2.83	24000	0.5881	0.0067	0.5245	0.670671	1.444
8		15		15.00	3.87	24000	0.591	0.0096	0.5216	0.960961	1.431
9		30		30.00	5.48	24000	0.5955	0.0141	0.5171	1.411411	1.410
10	1	1		61.00	7.81	24000	0.601	0.0196	0.5116	1.961962	1.384
11	2	1		121.00	11.00	24000	0.6066	0.0252	0.506	2.522523	1.358
12	3	56		236.00	15.36	24000	0.6111	0.0297	0.5015	2.972973	1.337
13	6	14		374.00	19.34	24000	0.6136	0.0322	0.499	3.223223	1.325
14	21	25		1285.00	35.85	24000	0.6188	0.0374	0.4938	3.743744	1.301
15	24	13		1453.00	38.12	24000	0.6192	0.0378	0.4934	3.783784	1.299
16	28	27		1707.00	41.32	24000	0.6198	0.0384	0.4928	3.843844	1.297
17	45	8		2708.00	52.04	24000	0.6214	0.04	0.4912	4.004004	1.289
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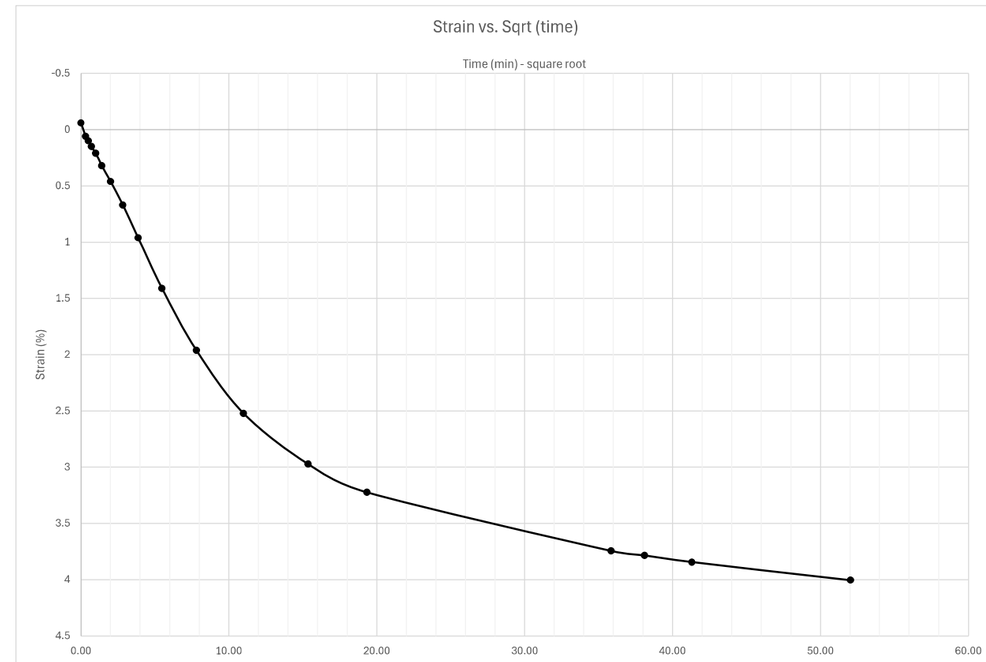
Sequence 14: 24000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING

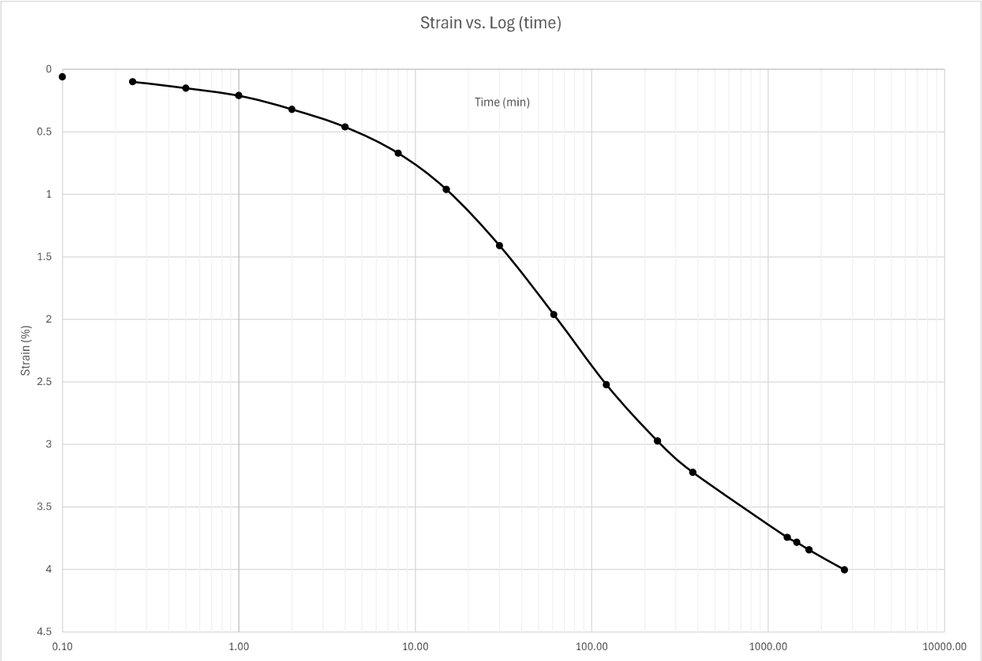


Docusign Envelope ID: 3590BA65-E033-8990-829D-065B224587FF

Sequence 14: 24000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

INFRASTRUCTURE CONSULTING & ENGINEERING



Sequence 15: 32000 psf

Note: when adding sequence tabs, you need to change cell A1 and columns G, I, and J to reference the correct loading sequence

reference last seq. specimen height

Reading	Elapsed Time (HH:MM:SS) Hour	Minute	Second	Elapsed Time (min)	Sqrt (time)	Load (psf)	Displacement (in)	Settlement (in)	Specimen Height (in)	Axial Strain (%)	Void Ratio
0				0.00	0.00	32000	0.6214	-0.0006	0.4918	-0.06006	1.292
1			6	0.10	0.32	32000	0.6224	0.0004	0.4908	0.04004	1.287
2			15	0.25	0.50	32000	0.6225	0.0005	0.4907	0.05005	1.287
3			30	0.50	0.71	32000	0.6227	0.0007	0.4905	0.07007	1.286
4		1		1.00	1.00	32000	0.623	0.001	0.4902	0.1001	1.284
5		2		2.00	1.41	32000	0.6236	0.0016	0.4896	0.16016	1.282
6		4		4.00	2.00	32000	0.6243	0.0023	0.4889	0.23023	1.278
7		8		8.00	2.83	32000	0.6253	0.0033	0.4879	0.33033	1.274
8		15		15.00	3.87	32000	0.6265	0.0045	0.4867	0.45045	1.268
9		30		30.00	5.48	32000	0.6285	0.0065	0.4847	0.650651	1.259
10		59		59.00	7.68	32000	0.6308	0.0088	0.4824	0.880881	1.248
11	2			120.00	10.95	32000	0.6339	0.0119	0.4793	1.191191	1.234
12	4			240.00	15.49	32000	0.6368	0.0148	0.4764	1.481481	1.220
13	5	45		345.00	18.57	32000	0.6383	0.0163	0.4749	1.631632	1.213
14	7	17		437.00	20.90	32000	0.6392	0.0172	0.474	1.721722	1.209
15	36	16		2176.00	46.65	32000	0.6451	0.0231	0.4681	2.312312	1.181
16	74	59		4499.00	67.07	32000	0.6474	0.0254	0.4658	2.542543	1.171
17	96	0		5760.00	75.89	32000	0.6481	0.0261	0.4651	2.612613	1.167
18							0.343				
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Sequence 15: 32000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

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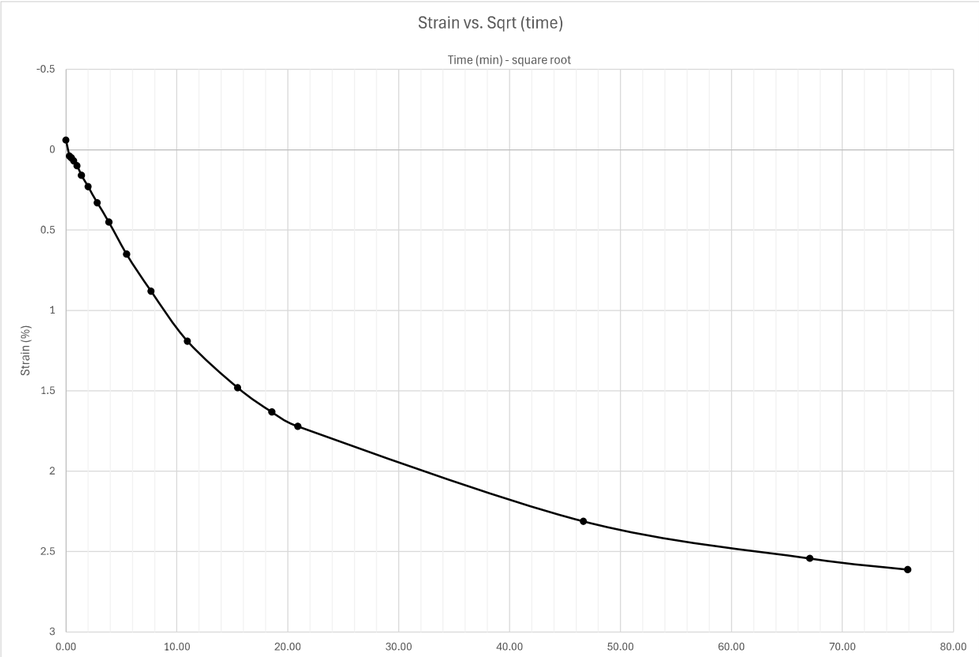
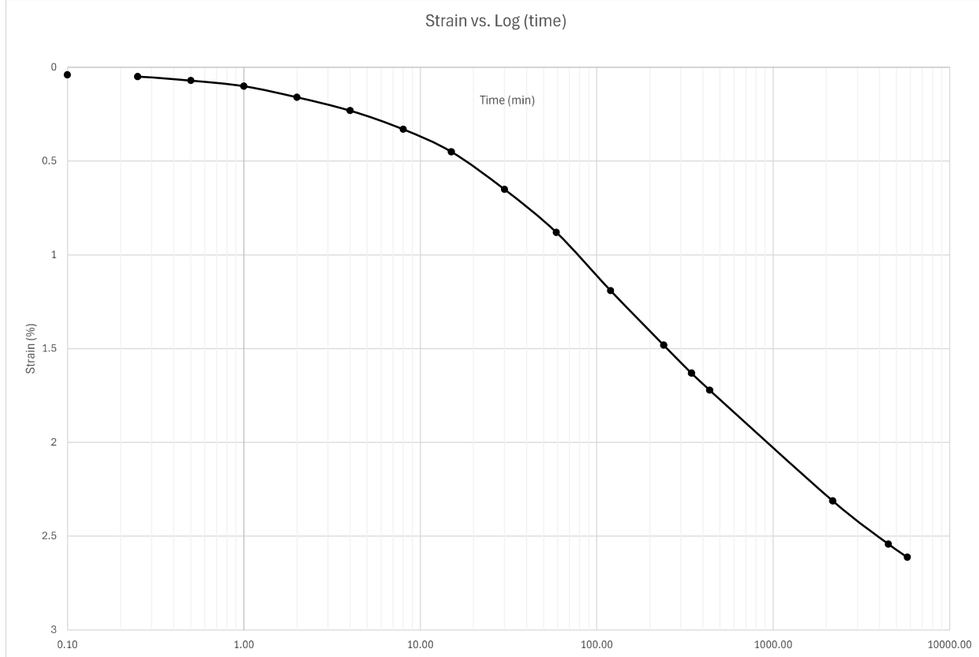


Sequence 15: 32000 psf

Y1RPC_4200, ST-30, 2.0-4.0 ft

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