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REFERENCE

**DESCRIPTION** TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE BORE LOGS SOIL LABORATORY RESULTS

# STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** 

# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY COLUMBUS

PROJECT DESCRIPTION NEW INTERCHANGE AT THE INTERSECTION OF NC 87 AND NC 11

SITE DESCRIPTION BRIDGE NO. 372 ON NC 87 (-L-) EASTBOUND LANE OVER WEYMAN CREEK

| STATE | STATE PROJECT REFERENCE NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------|-----------------------------|--------------|-----------------|
| N.C.  | R–2561CA                    | 1            | 38              |

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PERSONNEL

S. PAPKE

MID-ATLANTIC DRILLING

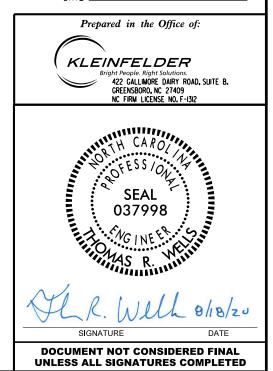
INVESTIGATED BY S. PAPKE

DRAWN BY C. DRISCOLL

CHECKED BY <u>T. WELLS</u>

SUBMITTED BY \_KLEINFELDER, INC.

DATE AUGUST 2020



# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

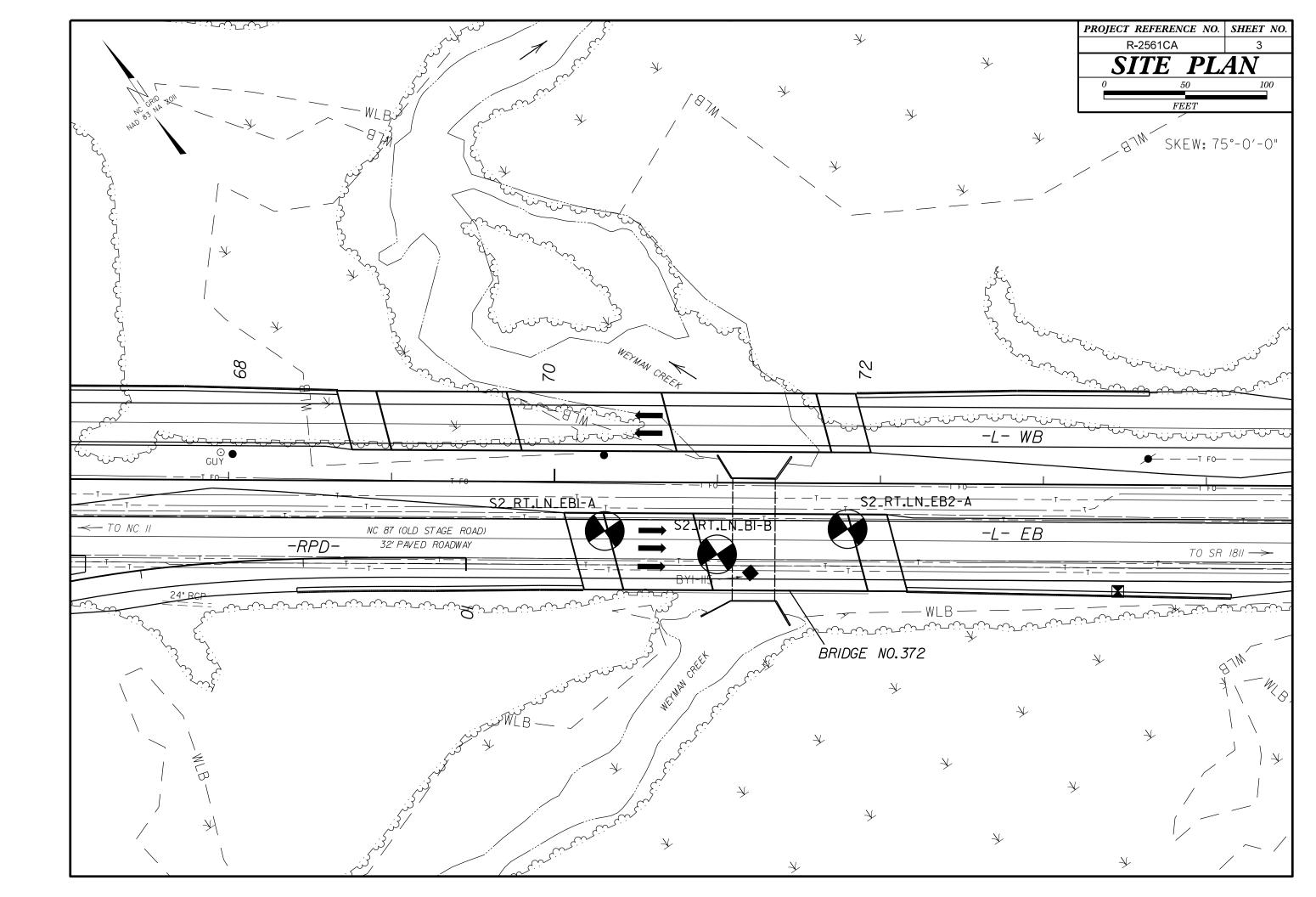
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

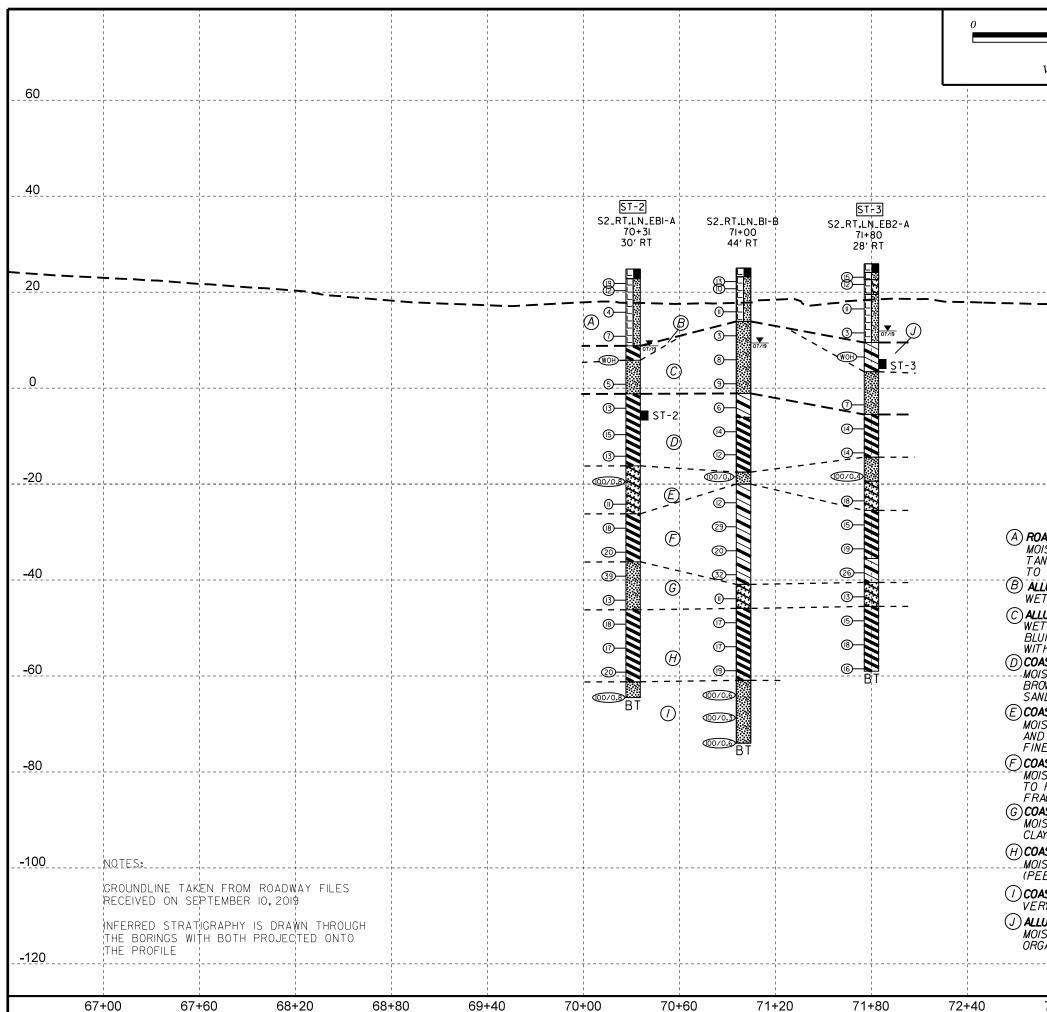
|   |   |   | SOIL (  | DESCRIP  | TION   |  |  |                                      | T   |         | GRA  | DATION  |                                   |  | l   |   |   | ROCK D   | SCRIPTION   |
|---|---|---|---|--|--|--|--|--------------------------------------|---|---------|--|---|-----------------------------------|--|---|---|---|--|---|
| BE PENETH<br>ACCORDIN<br>IS BA<br>CONSISTEN | RATED WITH<br>NG TO THE<br>ASED ON TH<br>NCY,COLOR,               | A CONTINUOU<br>STANDARD PE<br>E AASHTO SY<br>TEXTURE, MOI | TED, SEMI-CON<br>JS FLIGHT PO<br>NETRATION TE<br>STEM, BASIC I<br>STURE, AASHTC | ISOLIDATED,<br>WER AUGER<br>ST (AASHTO<br>DESCRIPTION<br>) CLASSIFIC | OR WEATHEF<br>AND YIELD<br>T 206, AST<br>IS GENERALL<br>ATION, AND | LESS THAN 1<br>M D1586).SC<br>LY INCLUDE 1<br>OTHER PERTIN | 00 BLOWS P<br>DIL CLASSIFI<br>THE FOLLOWI<br>NENT FACTOR | ER FOOT<br>CATION<br>ING:<br>RS SUCH | WELL GRADED - INDICAT<br>UNIFORMLY GRADED - IN<br>GAP-GRADED - INDICATES                      | DICATES | GOOD REPRESENT<br>S THAT SOIL PA<br>XTURE OF UNIFC | ATION OF PARTIC                                       | _ APPROXIMA<br>ES OF TWO          | TELY THE SAME SIZE.                              | ROCK LINE IND<br>SPT REFUSAL<br>BLOWS IN NON<br>REPRESENTED | DICATES<br>IS PENE<br>N-COAST<br>BY A Z                     | S THE LEVEL<br>ETRATION B<br>TAL PLAIN<br>ZONE OF WEA | NIN MATERIAL THAT<br>L AT WHICH NON-CO<br>Y A SPLIT SPOON<br>MATERIAL, THE TR<br>ATHERED ROCK. | WOULD YIELD SPT REFUSAL IF TEST<br>NASTAL PLAIN MATERIAL WOULD YIELD<br>SAMPLER EQUAL TO OR LESS THAN Ø.<br>NANSITION BETWEEN SOIL AND ROCK |
| AS<br>V                                     | S MINERALO  | GICAL COMPOS<br>RAY,SILTY CLAY,                           | ITION, ANGULAI<br>WOIST WITH INT  | REPEDDED F   | WRE, PLAST   | ICITY,ETC. F<br>YERS.HIGHLY F                              | OR EXAMPLE<br>LASTIC.A-7-6                               | •                                    |   |         |  | OIL GRAINS IS DE                                      | SIGNATED B                        | Y THE TERMS:                                     | WEATHERED   | _5 ARE  | SUPERION  | NON-COASTAL PL   | JWS:<br>AIN MATERIAL THAT WOULD YIELD SP1   |
|   |   |   | ND AND  |  |  |  | N  |                                      | ANGULAR, SUBAN  |         |  | AL COMPOSI  | TION                              |  | ROCK (WR)   | 6   |   | 100 BLOWS PER  | FOOT IF TESTED.   |
| GENERAL<br>CLASS.                           |   | GRANULAR MATEF<br>≤ 35% PASSING                           |   |  | AY MATERIALS<br>PASSING #200                                       |  | ORGANIC MATER  | IALS                                 | MINERAL NAM   |         |  | FELDSPAR, MICA, TA                                    |                                   | ETC.   | CRYSTALLINE<br>ROCK (CR)                                    |   |   | 🖞 WOULD YIELD SP   | GRAIN IGNEOUS AND METAMORPHIC RC<br>T REFUSAL IF TESTED. ROCK TYPE IN   |
| GROUP                                       | A-1   | A-3   | A-2   | _  |  | -7 A-1, A-2  | A-4, A-5   |                                      | ARE USED IN   | I DESCR |  | THEY ARE CONSIDE                                      | ERED OF SIG                       | NIFICANCE.                                       |   |   | <u>20.20.</u>   | GNEISS, GABBRO,<br>FINE TO COARSE  | GRAIN METAMORPHIC AND NON-COASTA  |
|   | A-1-a A-1-b   | A-2-4 A   | 2-5 A-2-6 A-2   |  |  | 7-5. A-3<br>-7-6   | A-6, A-7   |                                      | SLIG+   | ATLY CC |  | ESSIBILITY  | LL < 31                           |  | NON-CRYSTALL<br>ROCK (NCR)                                  | INE   |   |  | CK THAT WOULD YEILD SPT REFUSAL<br>JDES PHYLLITE, SLATE, SANDSTONE, ET(   |
| 00  |   |   |   | 2  |  |  |  |                                      | MODEF   | RATELY  | COMPRESSIBLE<br>PRESSIBLE                          |   | LL = 31 -<br>LL > 50              | 50   | COASTAL PLAIN<br>SEDIMENTARY                                |   |   |  | SEDIMENTS CEMENTED INTO ROCK, BUT<br>OCK TYPE INCLUDES LIMESTONE, SANDS   |
| -   | ю мх  |   |   |  |  | GRANULAR   | SILT-  | MUCK,                                |   |         |  | E OF MATER  |                                   |  | (CP)  |   |   | SHELL BEDS, ETC  | THERING   |
| *40 3<br>*200 15                            | ØMX 50MX<br>5MX 25MX  | 51 MN<br>10 MX 35 MX 35                                   | 5 MX 35 MX 35 M   | 4X 36 MN 36  | MN 36 MN 36  | SOILS  | SOILS  | PEAT                                 | ORGANIC MATERIAL  |         | GRANULAR<br>SOILS                                  | SILT - CLAY<br>SOILS                                  | OTHER                             | MATERIAL   | FRESH F   | ROCK FF   | RESH. CRYST   |  | NTS MAY SHOW SLIGHT STAINING. ROCK  |
| MATERIAL<br>PASSING =40<br>LL<br>PI         | 6 MX  |   | I MN 40 MX 41 M<br>I MX 11 MN 11 M  |  |  | MN LIT   | LS WITH<br>ITLE OR<br>IDERATE                            | HIGHLY                               | TRACE OF ORGANIC MA<br>LITTLE ORGANIC MATT<br>MODERATELY ORGANIC<br>HIGHLY ORGANIC            | TER     | 2 - 3%<br>3 - 5%<br>5 - 10%<br>> 10%               | 3 - 5%<br>5 - 12%<br>12 - 20%<br>> 20%                | TRACE<br>LITTLE<br>SOME<br>HIGHLY | 1 - 10%<br>10 - 20%<br>20 - 35%<br>35% AND ABOVE | VERY SLIGHT F<br>(V SLI.) (                                 | HAMMER<br>ROCK GE<br>CRYSTAL                                | IF CRYSTAL<br>ENERALLY FR                             | LLINE.<br>RESH, JOINTS STAINE<br>DKEN SPECIMEN FACE  | D, SOME JOINTS MAY SHOW THIN CLAY C<br>SHINE BRIGHTLY. ROCK RINGS UNDER H   |
|   | Ø<br>TONE FRAGS.<br>GRAVEL, AND                                   | Ø Ø   | 4 MX  | 8 MX 12<br>SILTY   | MX 16 MX NO  | I MX AMO   | iunts of<br>Rganic<br>Iatter                             | ORGANIC<br>SOILS                     |   | WATE    |  | ND WATER  | TELY AFTER                        | DRILLING   | (SLI.) 1  | I INCH. I   | OPEN JOINTS   | 5 MAY CONTAIN CLAY   | D AND DISCOLORATION EXTENDS INTO RC<br>. IN GRANITOID ROCKS SOME OCCASIONA<br>CRYSTALLINE ROCKS RING UNDER HAMMEF                           |
| MATERIALS                                   | SAND  | SAND GRAY   | (El and sand  | SOILS  | SOILS  |  | 1  |                                      | <b></b>   |         |  | L AFTER <u>24</u> H                                   |                                   |  |   |   |   |  | ISCOLORATION AND WEATHERING EFFECT  |
| GEN. RATING<br>AS SUBGRADE                  |   | EXCELLENT TO G  | 000   | FAI  | r to poor  | FAIR TO  | POOR   | UNSUITABLE                           |   | PERC    | HED WATER, SAT                                     | URATED ZONE, OR                                       | WATER BEAR                        | RING STRATA                                      | 1   | DULL SC   | OUND UNDER  |  | DULL AND DISCOLORED, SOME SHOW CLA<br>SHOWS SIGNIFICANT LOSS OF STRENGTH  |
|   |   | PIOF A-7-5 SUB  | GROUP IS ≤ LL   | - 30; PI OF 6  | -7-6 SUBGROU   | P IS > LL - 30   | <br>   |                                      | - O-M-  | SPRIM   | NG OR SEEP   |   |                                   |  |   |   | RESH ROCK.<br>ГК ЕХСЕРТ О                             |  | OR STAINED. IN GRANITOID ROCKS.ALL F  |
|   |   | 00  | NSISTENC  |  |  |  |  |                                      |   | 1       | MISCELLAN  | EOUS SYMBO  | LS                                |  | SEVERE 4  | AND DIS   | COLORED AN  | D A MAJORITY SHOW  | KAOLINIZATION. ROCK SHOWS SEVERE L<br>IST'S PICK. ROCK GIVES "CLUNK" SOUND  |
| PRIMARY SU                                  | OIL TYPE  | COMPACT<br>CONSIS   | NESS OR   | PENETRAT   | OF STANDAR<br>ION RESISTE  |  | NGE OF UNC   | STRENGTH                             |   |         |  | DIP & DIP DIRE  |                                   |  |   |   |   | <u>(IELD SPT REFUSAL</u>   | IST S FICK, NOCK DIVES CLONK SOUND  |
| GENERAL<br>GRANULA                          |   | VERY  | LOOSE<br>DSE  | 4  | < 4<br>TO 10   |  | (TONS/F  | 1-)                                  | UTH SOIL DE   | SCRIPTI | <b>_</b>   | ▶ OF ROCK STRUC<br>SPT<br>DPT DMT TEST BOR<br>VST PMT | ~                                 | SLOPE INDICATOR<br>INSTALLATION                  | (SEV.) F  | REDUCED<br>TO SOME  | D IN STRENG<br>E EXTENT. S                            | TH TO STRONG SOIL  | OR STAINED. ROCK FABRIC CLEAR AND E<br>IN GRANITOID ROCKS ALL FELDSPARS A<br>STRONG ROCK USUALLY REMAIN.                                    |
| MATERIAL<br>(NON-COH                        | L   | DE  | DENSE<br>NSE  | 30   | 1 TO 30<br>1 TO 50   |  | N/A  |                                      | ARTIFICIAL FI   | LL (AF) |  | AUGER BORING  | ۵                                 | CONE PENETROMETER<br>TEST                        | -   |   |   | <u>VIELD SPT N VALUES</u><br>DUARTZ DISCOLORED   | <u>&gt; 100 BPF</u><br>OR STAINED. ROCK FABRIC ELEMENTS AF  |
| GENERAL                                     |   | VERY<br>VERY<br>SC  |   |  | > 50<br>< 2<br>? TO 4  |  | < 0.25<br>0.25 TO  |                                      |   |         | $\leftarrow$                                       | - CORE BORING   | •                                 | SOUNDING ROD                                     | (V SEV.) F  | REMAINI   | NG. SAPROLI   | TE IS AN EXAMPLE   | SOIL STATUS, WITH ONLY FRAGMENTS OU<br>OF ROCK WEATHERED TO A DEGREE THAT<br>MAIN. <u>IF TESTED, WOULD YIELD SPT N V</u>                    |
| SILT-CLA<br>MATERIAL<br>(COHESIV            | L   | ST<br>VERY  |   | 8<br>15  | TO 8<br>TO 15<br>TO 30   |  | 0.5 TO<br>1 TO 2<br>2 TO 4                               | 2                                    | INFERRED ROC  |         |  | MONITORING WE<br>PIEZOMETER<br>INSTALLATION           | ш 🕂<br>—                          | TEST BORING<br>WITH CORE<br>- SPT N-VALUE        | 9   | SCATTER   |   |  | OT DISCERNIBLE.OR DISCERNIBLE ONLY<br>AY BE PRESENT AS DIKES OR STRINGERS   |
|   |   |   |   |  | > 30<br>IN SIZE  |  | > 4  |                                      |   | R       |  | ATION SYMB  |                                   |  |   |   |   | ROCK   | HARDNESS  |
| U.S. STD. SIE                               | VE SIZE   |   | 4 10  | 40   |  | 200 270  |  |                                      |   |         | CLASSIFIED EXC                                     |   |                                   | SIFIED EXCAVATION -                              |   |   |   | HED BY KNIFE OR SH<br>WS OF THE GEOLOGIS   | ARP PICK. BREAKING OF HAND SPECIMEN<br>T'S PICK.  |
| OPENING (MM                                 |   |   | 4.76 2.00   | 0.42   | 0.25 0   | .075 0.053   |  |                                      |   |         | SUITABLE WASTE<br>CLASSIFIED EXC                   |   | USED IN                           | ABLE,BUT NOT TO BE<br>N THE TOP 3 FEET OF        | HARD (  | CAN BE  | SCRATCHED   | BY KNIFE OR PICK   | ONLY WITH DIFFICULTY. HARD HAMMER B   |
| BOULDER                                     |   |   | RAVEL   | COARSE<br>SAND   |  | FINE<br>SAND   | SILT   | CLAY                                 |   |         | CEPTABLE DEGRA                                     |   | EMBANK                            | MENT OR BACKFILL                                 |   |   | ACH HAND SP<br>SCRATCHED                              |  | GOUGES OR GROOVES TO 0.25 INCHES DE   |
| (BLDR.)<br>GRAIN MM<br>SIZE IN.             | 305   | 08.)<br>75<br>3   | (GR.)<br>2.0  | (CSE. SD.)   | (F<br>0.25   | SD.)<br>0.05   | (SL.)<br>0.005   | (CL.)                                | AR - AUGER REFUSAL<br>BT - BORING TERMINATED  |         | MED ME   | EVIATIONS<br>EDIUM<br>MICACEOUS                       |                                   | VANE SHEAR TEST                                  | HARD E  | EXCAVAT<br>BY MODE  | TED BY HARD<br>ERATE BLOWS                            | ) BLOW OF A GEOLO<br>S.  | DIST'S PICK. HAND SPECIMENS CAN BE D  |
| SIZE IN.                                    |   | -   | STURE -   |  |  |  | <u>م</u>   |                                      | CL CLAY   |         | MOD MO   | ODERATELY   | γ-1                               | JNIT WEIGHT                                      | HARD (  | can be  | EXCAVATED   | IN SMALL CHIPS TO  | S DEEP BY FIRM PRESSURE OF KNIFE C<br>PEICES 1 INCH MAXIMUM SIZE BY HARD  |
|   | MOISTURE C  | SCALE   | FIELD MO<br>DESCRI  | DISTURE  |  | OR FIELD MO  |  | SCRIPTION                            | CPT - CONE PENETRATION<br>CSE COARSE<br>DMT - DILATOMETER TES                                 | т       | ORG OF<br>PMT - PF                                 | RESSUREMETER TE                                       | ST <u>SAM</u>                     | DRY UNIT WEIGHT                                  | SOFT C  | CAN BE<br>FROM CH   | HIPS TO SEV   | GOUGED READILY BY<br>REAL INCHES IN SIZ  | KNIFE OR PICK. CAN BE EXCAVATED IN<br>E BY MODERATE BLOWS OF A PICK POIN  |
| LL  |   |   | - SATURA<br>(SAT.   |  |  | T LIQUID; VEF  |  |                                      | DPT - DYNAMIC PENETRAT<br>e - VOID RATIO<br>F - FINE  | TION TE | SD SA<br>SD SA<br>SL SIL<br>SLI SL                 | T, SILTY  | ST -                              | SPLIT SPOON<br>SHELBY TUBE                       | VERY (  | CAN BE  | CARVED WIT  |  | SSURE.<br>CAVATED READILY WITH POINT OF PICK.<br>BY FINGER PRESSURE. CAN BE SCRATCH   |
| PLASTIC                                     |   | 21.11   | - WET -   | (w)  |  | ID: REQUIRES   |  | )                                    | <ul> <li>FOSS FOSSILIFEROUS</li> <li>FRAC FRACTURED, FRAC</li> <li>FRAGS FRAGMENTS</li> </ul> | TURES   | TCR - TF<br>W - MOIS                               | RICONE REFUSAL<br>STURE CONTENT                       |                                   | RECOMPACTED TRIAXIAL<br>CALIFORNIA BEARING       |   | FINGERN   | IAIL.<br>URE SPA                                      | ACING  | BEDDING   |
| (PI) PL                                     | PLASTI  | C LIMIT   |   |  |  |  |  |                                      | HI HIGHLY   |         |  | 0N SUBJECT  |                                   | RATIO  | TERM<br>VERY WIDE   |   | MORE  | SPACING<br>THAN 10 FEET  | TERM<br>VERY THICKLY BEDDED   |
|   |   | M MOISTURE  | - MOIST   | - (M)  | SOLID; A   | T OR NEAR  | OPTIMUM MO   | DISTURE                              | DRILL UNITS:  |         | NCING TOOLS:                                       | ON SOBSECT  | HAMMER 1                          |  | WIDE<br>MODERATEL   |   | 3   | TO 10 FEET<br>TO 3 FEET  | THICKLY BEDDED 1<br>THINLY BEDDED 0.  |
| SL _  | SHRINK  | AGE LIMIT   |   |  | BEQUIRE  | S ADDITIONA  |  | n                                    | X CME-45C   |         | CLAY BITS  |   | X AUT                             | OMATIC MANUAL                                    | CLOSE<br>VERY CLOSE   |   | 0.1   | 16 TO 1 FOOT<br>THAN 0.16 FEET   | VERY THINLY BEDDED 0.0<br>THICKLY LAMINATED 0.00  |
|   |   |   | - DRY -   | (D)  |  | OPTIMUM MO   |  | -                                    | CME-55  |         | 6" CONTINUOUS F                                    |   | CORE SIZ                          | E:   |   | ·   | LE 35   |  | THINLY LAMINATED <  |
|   |   |   | PL  | ASTICIT  | (  |  |  |                                      |   |         | 8" HOLLOW AUGE                                     |   | □-в _                             | П-н  |   |   |   |  | RATION  |
|   | PLASTIC   | TIC   | PLAST   | ICITY INDE)<br>Ø-5<br>6-15   | <u>( (PI)</u>  |  | DRY STRENO<br>VERY LOW<br>SLIGHT                         |                                      | CME-550   |         | HARD FACED FIN                                     | INSERTS   |                                   |  | FOR SEDIMENT  |   | LKS, INDURA   | RUBBING WIT  | NING OF MATERIAL BY CEMENTING.HE<br>I FINGER FREES NUMEROUS GRAINS;<br>BY HAMMER DISINTEGRATES SAMPLE.                                      |
|   | MODERATELY PLASTIC 16-25 MEDIUM<br>HIGHLY PLASTIC 26 OR MORE HIGH |   |   |  |  | PORTABLE HOIST   |  | CASING V                             | ADVANCER  |         | T HOLE DIGGER<br>D AUGER                           | MODERA  | TELY IN                           | NDURATED   |   | BE SEPARATED FROM SAMPLE WITH ST<br>Y WHEN HIT WITH HAMMER. |   |  |   |
|   |   |   | I   | COLOR  |  |  |  |                                      |   |         | TRICONE  | 5/16. TUNGCARB.                                       |                                   | NDING ROD  | INDURAT   | ED  |   |  | DIFFICULT TO SEPARATE WITH STEEL<br>BREAK WITH HAMMER.  |
|   |   |   | DR OR COLOR<br>,DARK,STREA  |  |  |  |  |                                      |   |         | CORE BIT   |   |                                   | E SHEAR TEST                                     | EXTREM  | ELY IN(   | DURATED   | SHARP HAMME  | R BLOWS REQUIRED TO BREAK SAMPLE<br>KS ACROSS GRAINS.   |

#### PROJECT REFERENCE NO.

# R-2561CA

|                                    | TERMS AND DEFINITIONS   |
|------------------------------------|---|
| ED. AN INFERRED<br>SPT REFUSAL.    | ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  |
| FOOT PER 60                        | AUUIFER - A WATER BEARING FORMATION OR STRATA.  |
| IS OFTEN                           | 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  |
| N VALUES >                         | A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.   |
| IN THEORY                          | ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT  |
| СК ТНАТ                            | WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND   |
| CLUDES GRANITE,                    | SURFACE.  |
| AL PLAIN                           | CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.   |
| IF TESTED.                         | COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM   |
| C.<br>MAY NOT YIELD                | OF SLOPE.   |
| STONE, CEMENTED                    | CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED<br>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<br>ROCKS OR CUTS MASSIVE ROCK.   |
| RINGS UNDER                        | DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE   |
|                                    | HORIZONTAL.   |
| OATINGS IF OPEN,<br>AMMER BLOWS IF | DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE   |
| AMMER BLUWS IF                     | LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.   |
| ICK UP TO                          | FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE  |
| L FELDSPAR                         | SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.   |
| R BLOWS.                           | FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.   |
| S. IN                              | FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIG1NAL POSITION AND DISLODGED FROM   |
| Y. ROCK HAS<br>AS COMPARED         | PARENT MATERIAL.  |
| HI CUMPARED                        | FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.   |
| FELDSPARS DULL                     | FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE   |
| OSS OF STRENGTH                    | FIELD.  |
| WHEN STRUCK.                       | 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   |
| VIDENT BUT<br>ARE KAOLINIZED       | ITS LATERAL EXTENT.   |
| HAE KHULINIZED                     | 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   |
| RE DISCERNIBLE                     | USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  |
| F STRONG ROCK                      | PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE  |
| ONLY MINOR<br>ALUES < 100 BPF      | OF AN INTERVENING IMPERVIOUS STRATUM.   |
| IN SMALL AND                       | RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  |
| S. SAPROLITE IS                    | ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF<br>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   |
| S REQUIRES                         | ROCK.   |
|                                    | SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND   |
| LOWS REQUIRED                      | RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO  |
|                                    | THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.   |
| EEP CAN BE                         | <u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT<br>OR SLIP PLANE.   |
| ETACHED                            |   |
|                                    | STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPF) OF<br>A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL   |
| OR PICK POINT.<br>BLOWS OF THE     | WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL  |
|                                    | TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.  |
| FRAGMENTS                          | STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY   |
| IT. SMALL, THIN                    | TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  |
|                                    | <u>STRATA ROCK QUALITY DESIGNATION (SRQD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL<br>LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY |
| PIECES 1 INCH<br>IED READILY BY    | THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.   |
| LO NEHOIET DI                      | TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.  |
|                                    |   |
| THICKNESS                          | BENCH MARK:BY-II5 AT STA. 7I+20.I6 -L- 55' RT (227,8I3 FT.N.,   |
| 4 FEET                             | _2.219.352 FT.E) ELEVATION: 24.22 FEET  |
| .5 - 4 FEET                        |   |
| 16 - 1.5 FEET<br>13 - 0.16 FEET    | NOTES:  |
| 08 - 0.03 FEET                     |   |
| 0.008 FEET                         |   |
|                                    |   |
| AT, PRESSURE, ETC.                 |   |
|                                    |   |
|                                    |   |
| EEL PROBE:                         |   |
|                                    |   |
| PROBE:                             |   |
|                                    |   |
| ;                                  |   |
|                                    | DATE: 8-15-14   |
|                                    |   |

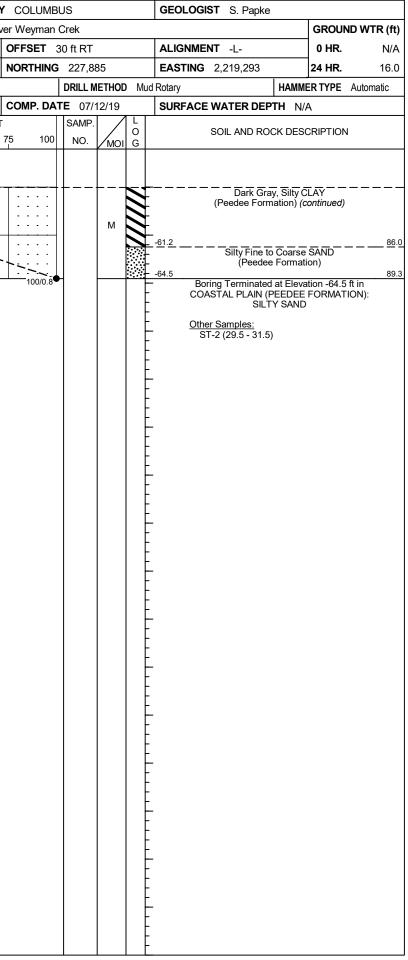




| 00  | 100            | PROJECT                | REFERENCE                | NO.             | SHEET NO.   |
|---|----------------|------------------------|--------------------------|-----------------|-------------|
| 60  | 120            |                        | R-2561CA                 |                 | 4           |
| FEET $VE = 3$   |                |                        | FOR BRIDGE<br>EB OVER WE |                 |             |
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|   |                |                        | i<br>i<br>i              |                 |             |
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|   |                |                        | 1<br>1<br>1              |                 |             |
|   |                |                        | 1<br>1<br>1              |                 |             |
| D <b>ADWAY EMBANKME</b><br>DIST <b>,</b> VERY LOOSE 1 | OMEDIUI        | M DENSE.               | ,<br> <br> <br>          |                 |             |
| W.GRAY.AND ORANO<br>FINE SAND TO C                    | GE,SILTY (     | COARSE                 | AVEMENT                  |                 | -40         |
| LUVIAL:   | · +            |                        | <br> <br>                |                 | -+0         |
| T,VERY SOFT,BRO                                       | WN¦AND (       | GRAY, SILTY            | ¦CLAY                    |                 |             |
| T TO MOIST, VERY                                      | LOOSE T        | 0 LOOSE,G              | RAY.                     |                 |             |
| UISH GRAY,AND BE<br>TH WOOD FRAGMEI                   | VTS            | I FINE SA              |                          |                 |             |
| <b>ASTÀL PLAIN:</b><br>IST <b>. M</b> EDIUMDENSE      | DARK-G         | RAY_T0                 | <br> <br> <br>           |                 | <b>-</b> 60 |
| OWN AND GRAY, SIL                                     | TYCLAY         | TO FINE                |                          |                 |             |
| ASTAL PLAN:   |                | 10147                  | <br> <br>                |                 |             |
| IST.VERY DENSE 1<br>D GRAY,CLAYEY FIN                 | TO MEDIUI      | N DENSE, D<br>ARSF SAN | ARK GRAY TO              | BROW            | /N          |
| IE T¦O COARSE SA                                      | ND¦(PEEL       | DEE FORM               | ATION)                   |                 |             |
| <b>ASTAL PLAIN:</b><br>IST.\$TIFF <sup></sup> TO-HAR  |                | GRAY, SILTY            | CLAY                     |                 | -80         |
| FINE SANDY CLAY<br>AGMENTS (PEEDEL                    | WITH TF        | RACE SHEL              |                          |                 |             |
| ASTAL PLAIN:  |                |                        |                          |                 |             |
| IST,DENSE TO ME<br>AYEY¦FINE TO COA                   |                |                        |                          | πar,            |             |
| ASTAL PLAIN:  |                |                        |                          |                 | -100        |
| IST, \$TIFF_TO_VER<br>EDEE FORMATION                  |                | UARK_ GRAY             | SILLY_CLAY               |                 |             |
| ASTAL PLAIN:  |                |                        |                          |                 |             |
| RY DENSE,SILTY F<br>L <b>UVIAL:</b>                   | INE IO C       | UARSE SA               | ND (PEEDEE F<br>¦        | ·URM/           | ai IUN)     |
| IST, VERY SOFT, GR.                                   | AY, FINE       | SANDY CLAY             | WITH TRACE               | OF              |             |
| GANIC MATTER AND                                      |                | TAGMENIS               | 2                        |                 | -120        |
|   |                |                        |                          |                 |             |
| 73+00   | 73+60          | 71                     | +20 7                    | 4+80            | )           |
| 10700   | טסינ ו         | /4-                    | r∠∪ /                    | 4+ŏl            | J           |

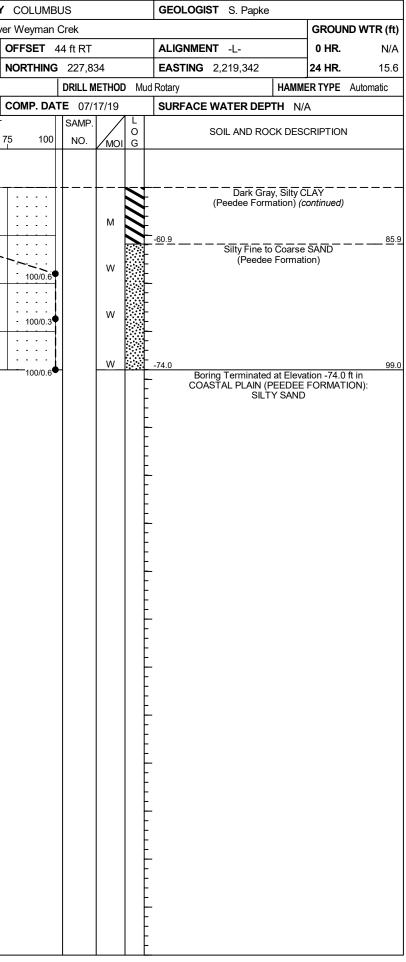
# GEOTECHNICAL BORING REPORT BORE LOG

|  |              |                   |        |        |         |  |                 |                |        |                     | 1  |                                       |      |                |               |         |       |         |                       |              |
|--|--------------|-------------------|--------|--------|---------|--|-----------------|----------------|--------|---------------------|--|---------------------------------------|------|----------------|---------------|---------|-------|---------|-----------------------|--------------|
| WBS                                    | 34466        | 6.4.1             |        |        | Т       | IP R-2561CA COUN   | TY COLUM        | BUS            |        |                     | GEOLOGIST S. Papke   | 1                                     | WB   | <b>S</b> 34466 | .4.1          |         |       | TI      | P R-2561CA            | COUNTY       |
| SITE                                   | DESCR        | IPTION            | Brid   | ge No. | 372 o   | n NC 87 (-L-) Eastbound Lane   | over Weymar     | n Crek         |        |                     |  | GROUND WTR (ft)                       | SIT  | E DESCR        | IPTION        | Bridg   | e No. | 372 on  | NC 87 (-L-) Eastboun  | nd Lane over |
| BORI                                   | NG NO.       | S2_F              | RT.LN_ | EB1-A  | \ s     | TATION 70+31   | OFFSET          | 30 ft RT       |        |                     | ALIGNMENT -L-  | 0 HR. N/A                             | BOF  | ring no.       | S2_F          | T.LN_E  | EB1-A | .   S1  | TATION 70+31          | C            |
| COLL                                   | AR EL        | <b>EV.</b> 24     | 1.8 ft |        | Т       | OTAL DEPTH 89.3 ft   | NORTHIN         | <b>G</b> 227,8 | 85     |                     | EASTING 2,219,293  | 24 HR. 16.0                           | COI  | LAR ELI        | <b>EV.</b> 24 | .8 ft   |       | т       | OTAL DEPTH 89.3 ft    | N            |
| DRILL                                  | RIG/HAM      | <b>IMER EF</b>    | F./DAT | E MIC  | )5464 C | CME-45C 90% 02/21/2019   | •               | DRILL          | NETHO  | D Mu                | d Rotary HAM   | MER TYPE Automatic                    | DRIL | L RIG/HAN      | IMER EF       | F./DATE | MID   | 5464 CN | ME-45C 90% 02/21/2019 | •            |
| DRIL                                   | LER B        | . Fowle           | r      |        | s       | TART DATE 07/12/19   | COMP. DA        | ATE 07/        | /12/19 |                     | SURFACE WATER DEPTH  | I/A                                   | DRI  | LLER B         | Fowle         | r       |       | ST      | ART DATE 07/12/19     | 9 <b>C</b>   |
| FLEV                                   | DRIVE        | DEPTH             | BLC    | ow co  | UNT     | BLOWS PER FO   | DT              | SAMP.          | . 💙/   |                     |  |                                       | ELE\ |                |               |         | w co  |         | BLOWS F               | PER FOOT     |
| ELEV<br>(ft)                           | ELEV<br>(ft) | (ft)              |        | 0.5ft  | 0.5ft   | 0 25 50  | 75 100          | NO.            | мо     | 0<br>  G            | SOIL AND ROCK DES  | SCRIPTION<br>DEPTH (fi                | (ft) | ELEV<br>(ft)   | (ft)          | 0.5ft   | 0.5ft | 0.5ft   | 0 25 5                | 50 75        |
|  |              |                   |        |        |         |  | - 1             |                |        |                     |  | , , , , , , , , , , , , , , , , , , , |      |                |               |         |       |         |                       |              |
| 25                                     |              |                   |        |        |         |  |                 |                |        |                     | _24.8 GROUND SURI  | FACE 0.0                              | -55  |                |               |         |       |         | Matc                  | h Line       |
|  |              | ŧ                 | 1      |        |         | <mark>.</mark>   |                 |                |        |                     | ROADWAY EMBAN  | NKMENT                                |      | +              |               | +       |       |         |                       |              |
|  | 22.8<br>21.3 | <u>2.0</u><br>3.5 | 8      | 9      | 10      | _    · · · <b> </b> ·   · · · ·   · · ·<br>    · · · <b>↓</b> 19 · · · ·   · · ·   | · · · · · ·     |                | м      |                     | <u>. 22.8</u> Asphalt (0.0 - 2.0<br>Tan, Gray and Orange, Silt | v Coarse to Fine                      |      | -58.2          | - 83.0        |         |       |         |                       |              |
| _20                                    |              | 1                 | 6      | 6      | 6       |  |                 |                | м      |                     | SAND with Trace Cl   | ay Seams                              | -60  |                | L             | 6       | 9     | 11      | <u>↓</u> 20           |              |
|  |              | ŧ                 |        |        |         | :/: :   : : : :   : : :  | · · · · ·       |                |        |                     |  |                                       |      |                |               |         |       |         |                       |              |
|  | 16.8         | 8.0               | 3      | 1      | 3       | $\left  \begin{array}{c} J \\ J \\ L \end{array} \right  $   |                 |                | м      |                     |  |                                       |      | -63.2 -        | - 88.0        | 5       | 37    | 63/0.3  |                       |              |
| 15                                     | -            | Ŧ                 |        | .      | ľ       |  |                 |                |        |                     | _  |                                       |      | -              | -             | Ŭ       | 01    | 00/0.0  |                       |              |
|  |              | ‡                 |        |        |         |  | · · · · · ·     |                |        |                     |  |                                       |      | -              | F             |         |       |         |                       |              |
| 10                                     | 11.8         | <u> </u>          | 2      | 3      | 4       | $\frac{1}{1} \begin{bmatrix} \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \end{bmatrix} = \frac{1}{2} \begin{bmatrix} \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \end{bmatrix} = \frac{1}{2} \begin{bmatrix} \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \end{bmatrix} = \frac{1}{2} \begin{bmatrix} \frac{1}{2}, \frac{1}{$   | · · · · · ·     |                | м      |                     |  |                                       |      | -              | -             |         |       |         |                       |              |
| 10                                     | -            | ŧ                 |        |        |         | $\left \begin{array}{c c c c c c c c c c c c c c c c c c c$  |                 |                |        |                     |  | 16.0                                  |      | -              | -             |         |       |         |                       |              |
|  | 68           | <br>  18.0        |        |        |         | $   \hat{f} \cdot \cdot \cdot \cdot   \cdot \cdot \cdot \cdot   \cdot \cdot \cdot \cdot   \cdot \cdot \cdot \cdot $  | · · · · ·       |                |        |                     | ALLUVIAL<br>Brown and Gray, Si                                 |                                       |      | -              | Ł             |         |       |         |                       |              |
| 5                                      |              | +                 | WOH    | WOH    | WOH     | $\downarrow \phi_0$  |                 |                | w      |                     | _ 5.8 Gray, Silty, Fine SANE                                   | 19.0                                  |      | -              | -             |         |       |         |                       |              |
|  |              | Ŧ                 |        |        |         |  |                 |                |        |                     | Fragments  | S Will Wood                           |      | -              | F             |         |       |         |                       |              |
|  | 1.8          | 23.0              |        |        |         | ,  | · · · · · ·     |                |        |                     |  |                                       |      | -              | ļ.            |         |       |         |                       |              |
| 0                                      |              | ‡                 | 1      | 3      | 2       | <b>b</b> 5 <sup></sup>   |                 | 41             | W      |                     | _  |                                       |      | -              | È.            |         |       |         |                       |              |
|  |              | t                 |        |        |         |  | · · · · ·       |                |        |                     | <u></u>  | AIN                                   |      | -              |               |         |       |         |                       |              |
|  | -3.2         | 28.0              | 4      | 6      | 7       |  |                 |                | м      |                     | Dark Gray, Silty<br>(Peedee Forma                              | CLAY                                  |      | -              | -             |         |       |         |                       |              |
| -5                                     | -            | Ŧ                 | ·      |        |         | • • • • • • • • • • • • • • • • • • •  |                 |                | 27%    |                     |  |                                       |      | -              | F             |         |       |         |                       |              |
|  |              | ‡                 |        |        |         |  | · · · · · ·     |                | 21%    |                     |  |                                       |      |                | -             |         |       |         |                       |              |
| 10                                     | -8.7         | 33.5              | 4      | 7      | 8       | · · · · ·   · · · ·   · · · ·   · · · ·   · · · ·   · · · ·   · · · ·   · · · · ·   · · · · ·   · · · · · ·   ·  |                 |                |        |                     |  |                                       |      | -              | È             |         |       |         |                       |              |
| -10                                    | -            | ŧ                 | "      | '      |         |  |                 |                | M      | N                   | <u>-</u>   |                                       |      |                | F             |         |       |         |                       |              |
|  | -13.2        | - 38.0            |        |        |         |  | · · · · ·       |                |        | N                   |  |                                       |      | -              |               |         |       |         |                       |              |
| -15                                    | -10.2        | T 30.0            | 4      | 5      | 8       |  |                 |                | м      |                     |  |                                       |      | -              | F             |         |       |         |                       |              |
|  | -            | Ŧ                 |        |        |         |  |                 | 11             |        |                     |  | <u></u>                               |      |                | F             |         |       |         |                       |              |
| -                                      | -18.2        | 43.0              |        |        | 0.5/0.0 | · · · ·   · · · ·   <b>· · ·</b>   | ÷               |                |        |                     | Dark Gray, Clayey Fine to<br>Peedee Forma                      | ation)                                |      |                | -             |         |       |         |                       |              |
| -20                                    | -            | ŧ                 | 17     | 65     | 35/0.3  | 3  | 100/0.8         | <b>∳</b>       |        |                     | _  |                                       |      | -              | L             |         |       |         |                       |              |
|  |              | ŧ                 |        |        |         | · · · ·   · · · ·   · · · ·  |                 |                |        |                     |  |                                       |      | -              | L             |         |       |         |                       |              |
|  | -23.2        | 48.0              | 4      | 5      | 6       | · · · · ·   · · · · · · · · · · · ·  |                 |                | м      |                     |  |                                       |      | -              | -             |         |       |         |                       |              |
| -25                                    | -            | Ŧ                 | ·      |        |         |  |                 |                |        | $\sim$              |  | 51.0                                  |      | -              | F             |         |       |         |                       |              |
|  |              | ‡                 |        |        |         |  | · · · · · ·     |                |        | Ň                   | Dark Gray, Silty CLAY w  | ith Trace Shell                       |      | -              | F             |         |       |         |                       |              |
| -30                                    | -28.2        | - <u>53.0</u>     | 6      | 8      | 10      |  | · · · · · ·     |                | м      |                     | - Fragments<br>- (Peedee Forma                                 | ation)                                |      | -              | -             |         |       |         |                       |              |
| <u>-30</u><br><u>-35</u><br><u>-40</u> | -            | ŧ                 |        |        |         |  |                 |                |        |                     | _ ·  |                                       |      | -              |               |         |       |         |                       |              |
| J                                      | -33.2        | 58.0              |        |        |         | · · ·  ·   · · · ·   · · ·   | · · · · ·       |                |        | N                   |  |                                       |      | -              | Ł             |         |       |         |                       |              |
| -35                                    |              | +                 | 8      | 9      | 11      |  |                 |                | м      | N                   |  |                                       |      | -              | -             |         |       |         |                       |              |
|  |              | Ŧ                 |        |        |         |  |                 |                |        |                     | - <u></u>  |                                       |      | -              | F             |         |       |         |                       |              |
|  | -38.2        | 63.0              | 10     | 01     | 10      | _   · · · · ·   · · ·   · · ·   · · ·  | · · · · · ·     |                |        | ///                 | Orange and Gray, Clayey<br>SAND                                | Fine to Coarse                        |      | -              | ļ.            |         |       |         |                       |              |
| -40                                    | _            | ‡                 | 12     | 21     | 18      | 39   |                 |                | M      | ///                 | - (Peedee Forma  | ation)                                |      | -              | ļ.            |         |       |         |                       |              |
|  |              | ‡                 |        | 1      |         |  | -  <br>-        |                |        | //                  |  |                                       |      |                | t             |         |       |         |                       |              |
| -45                                    | -43.2        | 68.0              | 5      | 5      | 8       |  |                 |                | м      | $\sim$              |  |                                       |      |                | Ł             |         |       |         |                       |              |
|  | -            | Ŧ                 |        |        |         |  |                 |                |        | $\langle / \rangle$ | -46.2  | 71.0                                  |      | -              | F             |         |       |         |                       |              |
|  |              | ‡                 |        |        |         | · · <b>!</b> ·   · · · ·   · · ·   | · · · · · · · · |                |        | Ň                   |  |                                       |      |                | ļ.            |         |       |         |                       |              |
| = 0                                    | -48.2        | - 73.0<br>-       | 6      | 8      | 10      | $  \cdot \cdot \cdot \cdot \cdot \cdot   \cdot \cdot \cdot \cdot \cdot   \cdot \cdot \cdot   \cdot \cdot \cdot \cdot   \cdot \cdot \cdot \cdot   \cdot \cdot   \cdot \cdot \cdot   \cdot \cdot \cdot   \cdot \cdot   \cdot \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot \cdot   \cdot   \cdot \cdot   \cdot   \cdot \cdot   \cdot $ | · · · · · ·     |                | м      | $\mathbb{N}$        | (Peedee Forma  | ation)                                |      |                | È             |         |       |         |                       |              |
| -50                                    | -            | t                 |        |        |         |  |                 |                |        | N                   | -  |                                       |      | -              | F             |         |       |         |                       |              |
|  | -53 2        | - 78.0            |        |        |         |  |                 |                |        | N                   |  |                                       |      | -              | Ł             |         |       |         |                       |              |
| -55                                    | -00.2        | + 10.0            | 6      | 7      | 10      | $   \cdot \cdot \cdot \downarrow_{17}  \cdot \cdot \cdot \cdot   \cdot \cdot \cdot$  |                 |                | м      | N                   | -  |                                       |      |                | F             |         |       |         |                       |              |
| -55                                    |              | L                 |        |        | -       | <u> </u>   |                 |                |        |                     |  |                                       | L    |                | L             |         |       |         |                       |              |



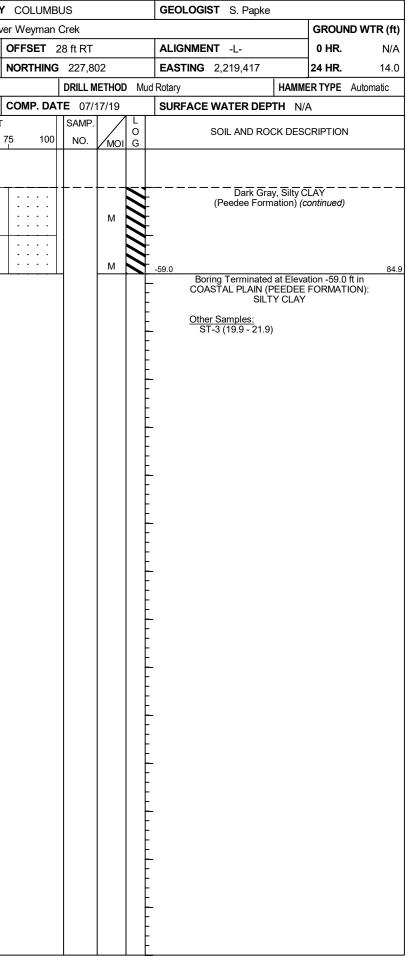
# GEOTECHNICAL BORING REPORT BORE LOG

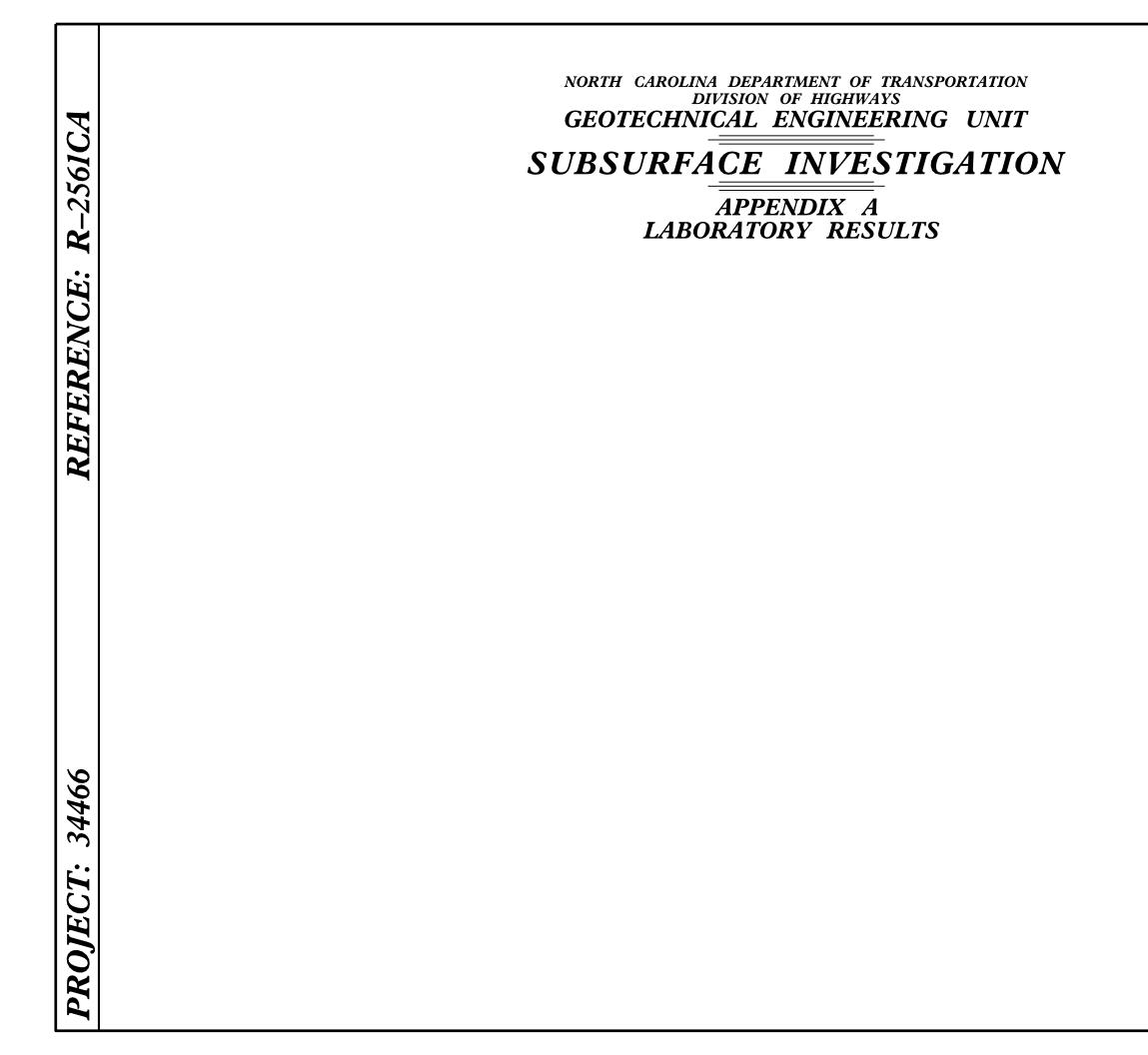
| BORING NO.         S2_RT.LN_B1-B         STATION         71+00         OFFSET         44 ft RT         ALIGNMENT         0         NA           COLLAR ELEV.         25.0 ft         TOTAL DEPTH         90.0 ft         NORTHING         227,834         EASTING         2,219,342         24 HR         15.6           DRILL RIGHAMMER EFF.DATE         MD8464 CME-45C 30% 0221/2019         DRILL METHOD         Mud Rolary         HAMMER TYPE         Automatic           DRILL RIGHAMMER EFF.DATE         DRILD R B. Fowler         START DATE         0/17/1/19         COMP. DATE         0/17/1/19         SURFACE WATER DEPTH         NA           ELEV         DRIVE         DEPTH (N)         SOIL AND ROCK DESCRIPTION         DEPTH (N)  | TIP     R-2561CA     COUNTY       je No. 372 on NC 87 (-L-) Eastbound Lane over     B1-B     STATION 71+00     O       B1-B     STATION 71+00     O       TOTAL DEPTH     99.0 ft     N       MID5464 CME-45C 90% 02/21/2019     START DATE     07/17/19     C       W COUNT     BLOWS PER FOOT       0.5ft     0.5ft     0     25     50     75       Match Line     Match Line |
|--|--|
| BORING NO.         S2_RT_LN_B1-B         STATION         T1+00         OFFSET         44 ft RT         ALIGNMENT         0         NA           COLLAR ELEV.         25.0 ft         TOTAL DEPTH         99.0 ft         NORTHING         227,834         EASTING         2.219,342         24 HR         15.6           DRILL RGHAMMER EFF.DATE         MD3640 40K-45C 90% 0221/2019         DRILL METHOD         Mud Rotary         HAMMER TYPE         Automatic           DRILL RGHAMMER EFF.DATE         MD3640 40K-45C 90% 0221/2019         DRILL METHOD         Mud Rotary         HAMMER TYPE         Automatic           DRILL RGHAMMER EFF.DATE         DRILD R B. Fowler         START DATE 07/17/19         COMP. DATE 07/17/19         SURFACE WATER DEPTH N/A         DEPTH         DELLER         B. Fowler           ELEV         DRIV         BLOW COUNT         BLOW SPER FOOT         SAMP.         Sold AND ROCK DESCRIPTION         DEPTH (B)         O((1)         (1)         -55         -57.9  | B1-B         STATION         71+00         C           TOTAL DEPTH         99.0 ft         N           MID5464 CME-45C 90% 02/21/2019         START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT         0.5ft         0.25         50         75  |
| COLLAR ELEV.         25.0 ft         TOTAL DEPTH         99.0 ft         NORTHING         227,834         EASTING         2,219,342         24 HR.         1.6           DRILL RIGHAMMER EFF.JDATE         MID5464 CME-45C 90% 0221/2019         DRILL METHOD         Mud Rotary         HAMMER TYPE         Automatic           DRILLER         B. Fowler         START DATE         07/17/19         COMP. DATE         07/17/19         SURFACE WATER DEPTH         NAMP.         V         b         BULK CEVERT         DRILL RE B. Fowler         ELEV         SOL AND ROCK DESCRIPTION         DEPTH (B)         DRILL RE B. Fowler         ELEV. (ft)         SOL AND ROCK DESCRIPTION         DEPTH (B)         DRILL RE B. Fowler         ELEV. (ft)         DRILL RE B. Fowler         ELEV. (ft)         DEPTH (B)         DEP   | TOTAL DEPTH         99.0 ft         N           MID5464 CME-45C 90% 02/21/2019         START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT         0         25         50         75           0.5ft         0.5ft         0         25         50         75  |
| DRILL ROHAMMER EFF.DATE         MD6464 CME-45C 90% 02/21/2019         DRILL METHOD         Mud Rotary         HAMMER TYPE         Automatic           DRILL ROHAMMER EFF.DATE         START DATE         07/17/19         COMP. DATE         07/17/19         SURFACE WATER DEPTH         N/A           DRILL ROHAMMER EFF.DATE         07/17/19         COMP. DATE         07/17/19         SURFACE WATER DEPTH         N/A           DRILL ROHAMMER EFF.DATE         0.5ft         0.25         50         75         100         SOIL AND ROCK DESCRIPTION         DEPTH (ft)         CMP. DATE         0/1 <t< th=""><th>MID5464 CME-45C 90% 02/21/2019           START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT           0.5ft         0.5ft         0         25         50         75</th></t<>  | MID5464 CME-45C 90% 02/21/2019           START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT           0.5ft         0.5ft         0         25         50         75   |
| DRILLER         B. Fowler         START DATE         07/17/19         COMP. DATE         07/17/19         SURFACE WATER DEPTH         N/A           ELEV         DENVE         DEPTH         BLOWS OUNT         BLOWS PER FOOT         SAMP.         SOIL AND ROCK DESCRIPTION         ELEV. (8)         SOIL AND ROCK DESCRIPTION         ELEV. (8)         DepTH         ELEV. (8)         SOIL AND ROCK DESCRIPTION         ELEV. (8)         DepTH (10)         ELEV. (10)         ELEV. (10)         ELEV. (10) <t< th=""><th>START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT           0.5ft         0.5ft         25         50         75</th></t<>  | START DATE         07/17/19         C           W COUNT         BLOWS PER FOOT           0.5ft         0.5ft         25         50         75  |
| ELEV         DEPTH<br>(ft)         BLOW COUNT<br>(ft)         BLOWS PER FOOT<br>(ft)         SAMP.<br>NO.         SOIL AND ROCK DESCRIPTION<br>(ft)         ELEV<br>(ft)         DePTH (ft)         ELEV<br>(ft)         DePTH (ft)         ELEV<br>(ft)         DePTH (ft)         BLOW COUNT         BLOW SPER FOOT<br>(ft)         SOIL AND ROCK DESCRIPTION<br>(ft)         ELEV<br>(ft)         DePTH (ft)         BLOW<br>(ft)         DePTH (ft)         DeFTH (ft)         DeFTH (ft)         DeFTH (ft  | W COUNT         BLOWS PER FOOT           0.5ft         0.5ft         0         25         50         75  |
| (ft)       (ft)       0.5ft       0.5ft       0.5ft       0       25       50       75       100       NO       G       ELEV. (ft)       DEPTH (ft)       (ft)       Left)       (ft)       0.5ft  | 0.5ft 0.5ft 0 25 50 75   |
| (10)       (10)       0.5ft       0.5ft       0.5ft       0       25       50       75       100       NO.       MOI       G       ELEV. (ft)       DEPTH (ft)       (10)       (10)       (11)   |  |
| 232       1.8       - <td>Match Line</td>  | Match Line   |
| 23.2       1.8   | Match Line   |
| 232       1.8       - <td></td>  |  |
| 20       10 <t< td=""><td></td></t<>   |  |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$  | 8 11 <b>I</b>  |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$  |  |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$  |  |
| 11.9       13.1       2       2       1       -7.0       -67.9       92.9         10       -7.0       -67.9       92.9       -67.9       92.9         6.9       18.1       -7.0       -7.0       -7.0       -67.9       92.9         5       -1       3       5       -7.0       -7.29       97.9       -41         1.9       23.1       -7.0       -7.29       97.9       -41         -3.1       28.1       8       4       2       -7.0       -7.29       97.9         M       M       -1.1       -7.0       -7.2.9       97.9       -7.0       -7.2.9       97.9         0       -3.1       -28.1       8       4       2       -7.0       -7.2.9       97.9  | 51 49/0.1  |
| 11.9       13.1       -7.9       92.9         10       -7.0       -7.0       -6.7.9       92.9         6.9       18.1       -7.0       -7.0       -7.0       -7.0         5       -1       3       -5       -6       3       -7.0       -7.0       -7.0         1.9       23.1       -1.1       -1.1       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.2.9       97.9       41         0       -3.1       28.1       8       4       2       -1.1       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.2.9       97.9       -7.2.9       97.9       -7.2.9       97.9       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.0       -7.2.9       97.9       -7.0  |  |
| 10       -70       -70         6.9       18.1       -70         6.9       18.1       -70         -5       -72.9       97.9         -6       -72.9       97.9         -1.1       -72.9       97.9         -1.1       -70       -72.9         -70       -72.9       97.9         41       -70       -72.9         -70       -72.9       97.9         -1.1       -70       -72.9         -72.9       97.9         -1.1       -70       -72.9         -72.9       97.9         -1.1       -70       -72.9         -72.9       97.9         -1.1       -72.9       97.9         -1.1       -72.9       97.9         -1.1       -70       -72.9         -72.9       97.9         -1.1       -70       -72.9         -72.9       -72.9       -72.9         -1.1       -72.9       -72.9         -1.1       -72.9       -72.9         -1.1       -72.9       -72.9         -1.1       -72.9       -72.9         -1.1       -72.9   | 100/0.3  |
| 6.9       18.1       1       3       5       1       3       5       1       1       3       5       1 <td></td>   |  |
| 5       1       3       5       -       -       -       -       -       -       -       41         1       3       5       6       -       -       -       -       -       -       41         1       -       -       -       -       -       -       -       -       -       41         1       -       -       -       -       -       -       -       -       -       -       41         1       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       41       -       41       -       -       41       -   |  |
| 0<br>1.9<br>23.1<br>5<br>6<br>3<br>-3.1<br>28.1<br>-3.1<br>28.1<br>-3.1<br>28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-28.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1<br>-3.1 | 88 12/0.1  |
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| -12.9  37.9     12.9  37.9     12.9  |  |
| -15 $+$ $4$ $5$ $7$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$  |  |
|  |  |
| -17.9 42.9 Silty, Fine to Coarse SAND  |  |
| -20 Dark Gray, Fine Sandy CLAY   |  |
| -22.9 47.9 (Peedee Formation)  |  |
|  |  |
|  |  |
| -27.9 52.9 11 13 16  |  |
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| -42.9 67.9 (Peedee Formation)  |  |
|  |  |
| -47.9 72.9 Dark Gray, Silty CLAY (Peedee Formation)  |  |
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# GEOTECHNICAL BORING REPORT BORE LOG

| MIDC              | 0.1.10        |                    |          |         |      | - 0  | 0501             |              |          |         |          |       |          |     |  | 0==           |   |                    | ]            |               |               |      |       |      | <b>D D D D D</b> |                          | 0.01       |    |
|-------------------|---------------|--------------------|----------|---------|------|--|------------------|--------------|----------|---------|----------|-------|----------|-----|--|---------------|---|--------------------|--------------|---------------|---------------|------|-------|------|------------------|--------------------------|------------|----|
|                   | 34466         |                    | Duid     |         |      | IP R-                                      |                  |              |          |         |          |       |          |     |  | GEC           | LOGIST S. Papke                                     | GROUND WTR (ft)    | -            | <b>3</b> 3446 |               |      |       |      | P R-256          |                          | COU        |    |
|                   | DESCR         |                    |          | -       |      |  |                  | -            | ouna     | Lane ov | -        |       | 28 ft RT | ,   |  |               |   |                    |              |               |               |      | -     |      |                  | -L-) Eastb               | ound Lane  |    |
|                   | NG NO.        |                    |          | EB2-A   | _    |  |                  |              | <u> </u> |         |          |       |          |     |  | _             |   | 0 HR. N/A          |              |               |               |      | EB2-A |      |                  |                          | <u> </u>   | 0  |
|                   | LAR EL        |                    |          |         |      |  |                  | <b>H</b> 84. |          |         | NORT     | HING  | 227,8    |     |  |               | TING 2,219,417                                      | <b>24 HR.</b> 14.0 | -            | LAR EL        |               |      |       |      |                  | <b>PTH</b> 84.           |            | N  |
|                   | RIG/HAN       |                    |          | E MID   |      |  |                  |              |          |         |          |       |          |     |  | /lud Rotary   |   | ER TYPE Automatic  |              |               |               |      | E MID |      |                  | 1% 02/21/20 <sup>-</sup> |            |    |
|                   | LER B         |                    |          |         |      |  | DATE             | 07/1         |          |         |          | . DA  | TE 07/   |     | 9                                      |               | FACE WATER DEPTH N/                                 | Ά                  |              | LER E         |               | 1    |       |      |                  | TE 07/1                  |            | C  |
| ELEV<br>(ft)      | DRIVE<br>ELEV | DEPTH<br>(ft)      |          | 0.5ft   |      |  |                  |              |          | R FOOT  |          | 100   | SAMP     | 17  | /  o                                   |               | SOIL AND ROCK DES                                   |                    | ELEV<br>(ft) | LEV           | DEPTH<br>(ft) |      | 0W CO |      | 0                |                          | VS PER FC  |    |
| (11)              | (ft)          | (14)               | 0.5π     | 0.5π    | 0.51 |  | 2                | 25           | 50       |         | 75       | 100   | NO.      | /м  | OI G                                   | ELEV.         | (ft)  | DEPTH (ft)         | (11)         | (ft)          | (14)          | 0.5π | 0.5π  | 0.5π |                  | 25                       | 50         | 75 |
|                   |               |                    |          |         |      |  |                  |              |          |         |          |       |          |     |  |               |   |                    |              |               |               |      |       |      |                  |                          |            |    |
| 30                |               | ł                  |          |         |      |  |                  |              |          |         |          |       |          |     |  | -             |   |                    | -50          | +             | +             |      | +     |      | ⊢──              | M                        | latch Line |    |
| 1                 |               | ŧ                  |          |         |      |  |                  |              |          |         |          |       |          |     |  | F             |   |                    |              | -52.5         | 78.4          |      |       |      | : : i            |                          |            |    |
| 25                |               | <u>†</u>           |          |         |      | 11   |                  | 1            |          |         |          |       |          |     |  | 25.9          | GROUND SURF   |                    | -55          |               | ŧ             | 6    | 8     | 10   |                  | 18                       |            |    |
|                   | 24.1          | 1.8                | 6        | 7       | 8    |  |                  |              | -        |         |          |       |          |     |  | 24.1          | Asphalt (0.0 - 1.8                                  | Feet)              |              | 1 .           | ŧ             |      |       |      |                  |                          |            |    |
| 1                 | 22.6          | - 3.3              | 4        | 7       | 5    |  | • <b>()</b> 15   |              | •        | · · · · |          |       |          | M   |  | 22.6          | Tan and Gray, Silty Coarse<br>Tan Clayey SAI        |                    |              | -57.5         | 83.4          | 5    | 7     | 9    | :::              | · · · ·                  |            |    |
| 20                |               | ŧ                  |          |         |      |  | <b>•</b> 12      |              | •        |         |          |       |          |     | <br>                                   | 19.5          | Tan Glayey SA                                       | 6.4                |              | <u> </u>      | ±             | -    |       | -    | ┍┶╌╌╴᠊᠊          | 16                       |            |    |
|                   | 47.5          | ±                  |          |         |      | -  | ¦ : :            |              | •        |         | · ·      |       |          |     | L                                      |               | Tan, Silty Fine to Coarse S                         | AND with Clay      |              |               | Ŧ             |      |       |      |                  |                          |            |    |
|                   | 17.5          | <u>† 8.4</u><br>1  | 5        | 5       | 6    | 1 -  | 11               |              | -        |         |          |       |          | м   |  |               | Seams   |                    |              |               | Ŧ             | 1    |       |      |                  |                          |            |    |
| 15                | _             | Ŧ                  |          |         |      | /  |                  |              |          |         |          |       |          |     |  | -             |   |                    |              | .             | Ŧ             |      |       |      |                  |                          |            |    |
|                   | 12.5          | 13.4               |          |         |      | /  |                  |              |          |         |          |       |          |     |  |               |   |                    |              |               | Ŧ             |      |       |      |                  |                          |            |    |
| 10                |               | ŧ                  | 2        | 1       | 2    | <b>4</b> 3                                 |                  |              | -        |         |          |       |          | -M- |  | -             |   |                    |              |               | ŧ             |      |       |      |                  |                          |            |    |
| 10                | -             | ŧ                  |          |         |      |  |                  |              |          |         |          |       |          |     |  | <u>9.5</u>    | ALLUVIAL  | <u>16.4</u>        |              | -             | ŧ             |      |       |      |                  |                          |            |    |
|                   | 7.5           | 18.4               | <br>Iwoн | woн     | WOF  | <u>                                   </u> |                  |              | •        | · · · · |          |       |          | М   |  | 1             | Gray, Fine Sandy CLAY<br>Organic Matter and Woo     | with Trace of      |              |               | ŧ             |      |       |      |                  |                          |            |    |
| 5                 |               | ŧ                  |          |         |      |  |                  |              | -        |         |          |       |          |     |  | -             |   | d i raginents      |              |               | ŧ             |      |       |      |                  |                          |            |    |
|                   |               | ł                  |          |         |      | $  _{1}$                                   |                  |              | •        |         | <br>     |       |          |     |  | 3.4           |   | 22.5               |              |               | ł             |      |       |      |                  |                          |            |    |
|                   |               | Ŧ                  |          |         |      |  |                  |              |          |         |          |       |          |     |  | Ē             | Brown, Silty Fine S                                 | SAND               |              |               | Ŧ             |      |       |      |                  |                          |            |    |
| 0                 | -             | Ŧ                  |          |         |      | 14   |                  |              | -        |         | <u> </u> |       |          |     |  | <b>-</b>      |   |                    |              | -             | Ŧ             |      |       |      |                  |                          |            |    |
|                   | -2.5          | +<br>+ 28.4        |          |         |      |  | · · ·            |              | •        | · · · · |          |       |          |     |  | -             |   |                    |              |               | ŧ             |      |       |      |                  |                          |            |    |
| -5                |               | ŧ                  | 2        | 3       | 4    |  | 2                |              | -        |         |          |       |          | M   |  |               |   |                    |              |               | ‡             |      |       |      |                  |                          |            |    |
| -5                | -             | ŧ                  |          |         |      |  | <u>.</u>         |              |          |         |          |       |          |     |  | <u></u>       | COASTAL PLA   | <u>31.4</u>        |              | .             | ŧ             |      |       |      |                  |                          |            |    |
|                   | -7.5          | 33.4               | 3        | 6       | 8    |  | ·\··             |              |          |         |          |       |          | М   |  |               | Dark Gray, Silty C<br>(Peedee Format                | CLAY               |              |               | ŧ             |      |       |      |                  |                          |            |    |
| -10               |               | ŧ                  |          |         |      |  | <b>6</b> 14      |              | -        |         |          |       |          |     |  | Ł             | (Feedee Format                                      | lion)              |              |               | ŧ             |      |       |      |                  |                          |            |    |
|                   | 10 5          | 1                  |          |         |      |  | .  <br>.         |              | •        |         |          | •••   |          |     |  |               |   |                    |              |               | Ŧ             |      |       |      |                  |                          |            |    |
|                   | -12.5         | <u>T 38.4</u><br>T | 4        | 5       | 9    | 1   -                                      | <b>6</b> 14      |              | -        |         |          | •••   |          | м   |  |               |   |                    |              |               | Ŧ             |      |       |      |                  |                          |            |    |
| -15               | _             | Ŧ                  |          |         |      |  |                  | <u> </u>     |          |         | +        |       |          |     |  | - <u>15.5</u> |   | 41.4               |              | .             | Ŧ             |      |       |      |                  |                          |            |    |
|                   | -17.5         | 43.4               |          |         |      |  |                  |              |          |         | · +      |       |          |     |  |               | Silty Fine to Coarse<br>(Peedee Format              | e SAND<br>tion)    |              |               | Ŧ             |      |       |      |                  |                          |            |    |
| -20               |               | ŧ                  | 10       | 100/0.4 |      |  |                  |              | -        |         | 10       | 0/0.4 | ·        |     |  | -             |   |                    |              |               | ŧ             |      |       |      |                  |                          |            |    |
| -20               | -             | ŧ                  |          |         |      |  |                  |              |          | <u></u> | 1        |       |          |     | $\sim$                                 | -20.5         | Brown and Grav. Clavev Co                           | 46.4               |              | -             | ŧ             |      |       |      |                  |                          |            |    |
|                   | -22.5         | + 48.4<br>+        | 21       | 9       | 9    |  | · · ·            | <u></u>      |          | · · · · | · ·      |       |          | М   | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ,<br>,        | Brown and Gray, Clayey Co<br>SAND<br>(Peedee Format | tion)              |              |               | ‡             |      |       |      |                  |                          |            |    |
| -25<br>-30<br>-35 | -             | ŧ                  |          |         |      |  | <b>∀</b> 18<br>  |              | •        |         |          |       |          |     | <i>\</i>                               | -25.5         |   | 51.4               |              | .             | ŧ             |      |       |      |                  |                          |            |    |
|                   | -27.5         | + 53.4             |          |         |      |  | : į:             | <br>         | •        | · · · · |          | · ·   |          |     | Ň                                      |               | Dark Gray, Silty C<br>(Peedee Format                | CLAY               |              |               | ŧ             |      |       |      |                  |                          |            |    |
|                   | -27.5         | 1 55.4<br>1        | 5        | 6       | 9    | 1   . :                                    | •15              |              | •        |         | · ·      | •••   |          | м   |  |               | (reedee roimat                                      | lion)              |              |               | ŧ             |      |       |      |                  |                          |            |    |
| -30               | -             | Ŧ                  |          |         |      |  | <u> </u>         |              |          |         |          |       |          |     |  | -             |   |                    |              | .             | Ŧ             |      |       |      |                  |                          |            |    |
|                   | -32.5         | 58.4               |          |         |      |  | • • • • •        |              | •        |         |          |       |          |     |  | -             |   |                    |              |               | Ŧ             |      |       |      |                  |                          |            |    |
| -35               |               | ŧ                  | 6        | 8       | 11   |  | •19              |              | -        |         |          |       |          | M   |  | 1             |   |                    |              |               | ŧ             |      |       |      |                  |                          |            |    |
| -40               | -             | ŧ                  |          |         |      |  |                  |              |          |         |          |       |          |     | R                                      | - <u>35.5</u> | Dark Gray, Fine San                                 | dv CLAY61.4        |              | -             | ŧ             |      |       |      |                  |                          |            |    |
|                   | -37.5         | <u>+ 63.4</u>      | 6        | 10      | 16   | ::   | · · · \<br>· · · |              | -        | · · · · | · ·      | ::    |          | М   |  | 1             | (Peedee Format                                      | tion)              |              |               | ‡             | 1    |       |      |                  |                          |            |    |
| -40               | _             | ‡                  |          |         |      |  | · · · /          | 26           | •        |         |          |       |          |     |  | -40 5         |   | 66.4               |              | .             | ‡             | 1    |       |      |                  |                          |            |    |
|                   | 40 5          | ±                  |          |         |      |  | ::/              |              | :        |         |          | ::    |          |     | <u> /::</u> ;                          | ∎`<br>∮       | Dark Gray, Clayey Coarse                            | to Fine SAND       | 11           |               | ŧ             | 1    |       |      |                  |                          |            |    |
| -45               | -42.5         | <u>+ 68.4</u><br>T | 4        | 6       | 7    | 1 :  | <b>/</b>         |              | -        |         |          |       |          | м   | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | <u>الم</u>    | (Peedee Format                                      | uon)               |              |               | f             | 1    |       |      |                  |                          |            |    |
| -45               | -             | Ŧ                  |          |         |      |  | 4                | • • •        |          |         |          |       |          |     | /://                                   | -45.5         |   |                    |              | .             | Ŧ             | 1    |       |      |                  |                          |            |    |
|                   | -47.5         | +<br>- 73.4        |          |         |      |  | · ŀ ·            |              | :        | · · · · |          |       |          |     |  | <b>F</b>      | Dark Gray, Silty C<br>(Peedee Format                | CLAY<br>tion)      |              |               | Ŧ             | 1    |       |      |                  |                          |            |    |
| -50               |               | ‡ _                | 5        | 6       | 9    |  | <b>•</b> 15      | : : :        | :        |         |          | ::    |          | M   |  | 1             | `   |                    |              |               | ‡             | 1    |       |      |                  |                          |            |    |
| -50               |               | L                  | I        | I       |      |  |                  | L            |          |         |          |       |          | 1   |  | •             |   |                    | J L          |               | <u> </u>      | 1    | I     | I    |                  |                          |            |    |







8



# LABORATORY SUMMARY SHEET FOR SOIL SAMPLES

# PROJECT NO.: 34466.4.1 (R-2561CA) COUNTY: COLUMBUS NEW INTERCHANGE AT INTERSECTION OF NC 87 AND NC 11

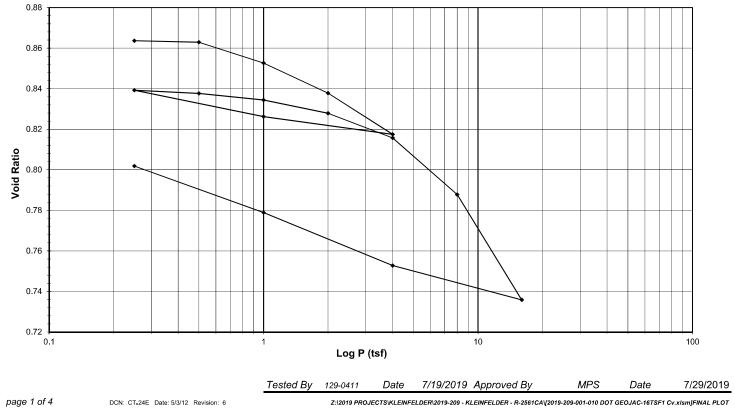
|            |                |           |         |        |                       |                                    |                        |                  | /    | Atterberg Limit | s    |                      |                   |                   | Gradatio           | n Results          |                  |          |          |
|------------|----------------|-----------|---------|--------|-----------------------|------------------------------------|------------------------|------------------|------|-----------------|------|----------------------|-------------------|-------------------|--------------------|--------------------|------------------|----------|----------|
| Sample No. | Boring Number  | Alignment | Station | Offset | Sample Depth<br>(ft.) | Natural<br>Moisture<br>Content (%) | Organic<br>Content (%) | AASHTO<br>Class. | L.L. | P.L.            | P.I. | Retained #4<br>Sieve | Pass #10<br>Sieve | Pass #40<br>Sieve | Pass #200<br>Sieve | Coarse Sand<br>(%) | Fine Sand<br>(%) | Silt (%) | Clay (%) |
| ST-2       | S2_RT.LN_EB1-A | -L-       | 70+31   | 30' RT | 29.5 - 31.5           | 26.5                               |                        | A-7-6            | 45   | 17              | 28   | 0.0                  | 100.0             | 99.8              | 75.9               | 0.4                | 35.3             | 24.7     | 39.6     |
| ST-3       | S2_RT.LN_EB2-A | -L-       | 71+80   | 28' RT | 19.9 - 21.9           |                                    |                        | A-6              | 37   | 17              | 20   | 0.0                  | 100.0             | 99.9              | 74.9               | 0.1                | 36.6             | 25.1     | 38.2     |



AASHTO T-216

| Client           | Kleinfelder                          | Boring No.         | S2_RT_LN_EB1-A         |
|------------------|--------------------------------------|--------------------|------------------------|
| Client Reference | R-2561CA                             | Depth (ft)         | 29.5-31.5              |
| Project No.      | R-2019-209-001<br>R-2019-209-001-010 | Sample No.         | ST-2<br>GRAY LEAN CLAY |
| Lab ID           | K-2019-209-001-010                   | Visual Description | GRAT LEAN CLAT         |

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-001-010 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT DCN: CT-24E Date: 5/3/12 Revision: 6 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net

**ONE DIMENSIONAL CONSOLIDATION** AASHTO T-216

Client Kleinfelder Client Reference R-2561CA R-2019-209-001 Project No. R-2019-209-001-010 Lab ID

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED Consolidometer No. R470

1 Division = 0.0001 (in.)

| Sample Properties                   | Initial | Final    |           |                     |       |                       | Test Data  | Summary |        |         |               |
|-------------------------------------|---------|----------|-----------|---------------------|-------|-----------------------|------------|---------|--------|---------|---------------|
| <i>Water Content</i><br>Tare Number | TB-04   | X-15     |           | Applied<br>Pressure |       | Machine<br>Deflection |            | •       |        | Dry     | Void<br>Ratio |
| Wt. Tare & WS (g)                   | 330.14  | 293.80   |           |                     | •     |                       |            | Sample  | (cc)   | Density | Ratio         |
| (0)                                 | 289.26  | 293.80   | -         | (tsf)               | (div) | (div)                 | (div)      | (mm)    |        | (g/cc)  |               |
| Wt. Tare & DS (g)<br>Wt. Water (g)  | 40.88   | 201.05   |           | Section             | 0     | 0                     | 0          | 25.400  | 80.440 | 1.48443 | 0.8660;       |
| (0)                                 |         |          |           | Seating             |       | -                     | -          |         |        |         |               |
| Wt. Tare (g)                        | 135.09  | 142.28   |           | 0.25                | 35.5  | 22.8                  | 12.7       | 25.368  | 80.338 | 1.48632 | 0.8636        |
| Wt. DS (g)                          | 154.17  | 119.57   |           | 0.5                 | 60.9  | 44.2                  | 16.7       | 25.358  | 80.305 | 1.48692 | 0.8629        |
| Water Content (%)                   | 26.52   | 26.72    |           | 1                   | 132.4 | 60.5                  | 71.9       | 25.217  | 79.861 | 1.49519 | 0.8526        |
|                                     |         |          |           | 2                   | 244.9 | 93.6                  | 151.3      | 25.016  | 79.223 | 1.50723 | 0.8378        |
| Sample Parameters                   |         |          |           | 4                   | 390.8 | 130.5                 | 260.3      | 24.739  | 78.346 | 1.52411 | 0.8174        |
| Sample Diameter (in)                | 2.5     | 2.5      |           | 1                   | 296.4 | 83.0                  | 213.4      | 24.858  | 78.724 | 1.51680 | 0.8262        |
| Sample Height (in)                  | 1.0000  | 0.9656   |           | 0.25                | 196.3 | 52.7                  | 143.6      | 25.035  | 79.285 | 1.50606 | 0.8392        |
| Sample Volume (cc)                  | 80.44   | 77.67    |           | 0.5                 | 210.1 | 58.3                  | 151.8      | 25.014  | 79.219 | 1.50732 | 0.8377        |
| Wt. Wet Sample + Ring (g)           | 365.80  | 366.04   |           | 1                   | 244.4 | 74.9                  | 169.5      | 24.969  | 79.076 | 1.51003 | 0.8344        |
| Wt. of Ring (g)                     | 214.73  | 214.73   |           | 2                   | 304.6 | 100.0                 | 204.6      | 24.880  | 78.794 | 1.51544 | 0.8278        |
| Wt. of Wet Sample (g)               | 151.07  | 151.31   |           | 4                   | 402.9 | 133.4                 | 269.5      | 24.715  | 78.272 | 1.52555 | 0.8157        |
| Wet Density (pcf)                   | 117.19  | 121.56   |           | 8                   | 589.3 | 169.9                 | 419.4      | 24.335  | 77.066 | 1.54942 | 0.7877        |
| Wet Density (g/cc)                  | 1.88    | 1.95     |           | 16                  | 923.9 | 226.1                 | 697.8      | 23.628  | 74.827 | 1.59579 | 0.7358        |
| Water Content (%)                   | 26.52   | 26.72    |           | 4                   | 768.7 | 161.7                 | 607.1      | 23.858  | 75.557 | 1.58037 | 0.7527        |
| Wt. of Dry Sample (g)               | 119.41  | 119.41   |           | 1                   | 578.7 | 111.7                 | 466.9      | 24.214  | 76.684 | 1.55715 | 0.7789        |
| Dry Density (pcf)                   | 92.63   | 95.93    |           | 0.25                | 417.0 | 73.0                  | 344.0      | 24.526  | 77.673 | 1.53732 | 0.8018        |
| Dry Density (g/cc)                  | 1.48    | 1.54     |           |                     |       |                       |            |         |        |         |               |
| Void Ratio                          | 0.8660  | 0.8018   |           |                     |       |                       |            |         |        |         |               |
| Saturation (%)                      | 84.81   | 92.31    |           |                     |       |                       |            |         |        |         |               |
| Specific Gravity                    | 2.77    | Measured |           |                     |       |                       |            |         |        |         |               |
|                                     |         |          | Tested By | 129-0411            | Date  | 7/19/2019             | Input Chec | ked By  | GEM    | Date    | 7/29/201      |

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| Boring No.         | S2_RT_LN_EB1-A |
|--------------------|----------------|
| Depth (ft)         | 29.5-31.5      |
| Sample No.         | ST-2           |
| Visual Description | GRAY LEAN CLAY |



AASHTO T-216

Client Kleinfelder Client Reference R-2561CA Project No. R-2019-209-001 Lab ID R-2019-209-001-010

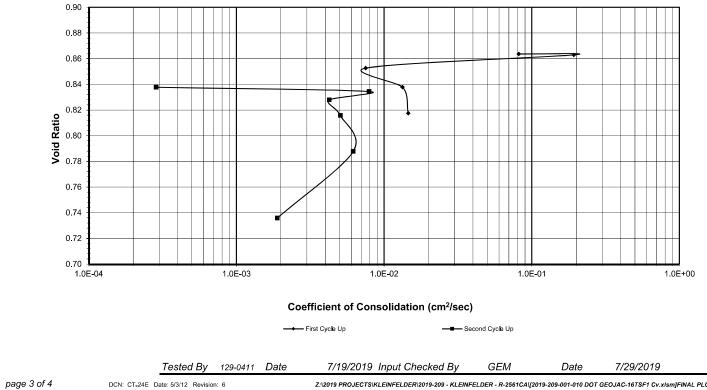
Boring No.

Depth (ft)

Sample No.

S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2 GRAY LEAN CLAY Visual Description

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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ONE DIMENSIONAL CONSOLIDATION AASHTO T-216

| Client           | Kleinfelder        |
|------------------|--------------------|
| Client Reference | R-2561CA           |
| Project No.      | R-2019-209-001     |
| Lab ID           | R-2019-209-001-010 |

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED Consolidometer No. R470 0 0001 (in )

| Sample Properties |        | Initial | Fina |
|-------------------|--------|---------|------|
| 1 Division =      | 0.0001 | (in.)   |      |

| Sample Properties         | Initial | Final     |          |            |                   |             | C <sub>v</sub> Test Data Sı | ummary            |        |           |
|---------------------------|---------|-----------|----------|------------|-------------------|-------------|-----------------------------|-------------------|--------|-----------|
|                           |         |           |          | Load       | Dial              | Machine     | Corrected                   | Sample            | Time   | Cv        |
| Water Content             |         |           |          | Increment  | Reading           | Deflection  | Dial Reading                | Height            | t 50   |           |
| Tare Number               | TB-04   | X-15      |          |            | @ t <sub>50</sub> |             | @ t <sub>50</sub>           | @ t <sub>50</sub> |        |           |
| Wt. Tare & WS (g)         | 330.14  | 293.80    |          | (tsf)      | (div)             | (div)       | (div)                       | (cm)              | (min.) | (cm²/sec) |
| Wt. Tare & DS (g)         | 289.26  | 261.85    |          |            |                   | · · ·       | <u> </u>                    | <u> </u>          |        | * * *     |
| Wt. Water (g)             | 40.88   | 31.95     |          | 0 - 0.25   | 16.5              | 22.8        | -6.3                        | 2.542             | 0.07   | 0.08158   |
| Wt. Tare (g)              | 135.09  | 142.28    |          | 0.25 - 0.5 | 45.8              | 44.2        | 1.6                         | 2.540             | 0.03   | 0.19251   |
| Wt. DS (g)                | 154.17  | 119.57    |          | 0.5 - 1.0  | 100.7             | 60.5        | 40.2                        | 2.530             | 0.70   | 0.00750   |
| Water Content (%)         | 26.52   | 26.72     |          | 1.0 - 2.0  | 192.7             | 93.6        | 99.1                        | 2.515             | 0.39   | 0.01331   |
|                           |         |           |          | 2.0 - 4.0  | 317.3             | 130.5       | 186.8                       | 2.493             | 0.35   | 0.01457   |
| Sample Parameters         |         |           |          | 4.0 - 1.0  | NA                | 83.0        | NA                          | NA                | NA     | NA        |
| Sample Diameter (in)      | 2.5     | 2.5       |          | 1.0 - 0.25 | NA                | 52.7        | NA                          | NA                | NA     | NA        |
| Sample Height (in)        | 1.000   | 0.966     |          | 0.25 - 0.5 | 205.1             | 58.3        | 146.8                       | 2.503             | 18.00  | 0.00029   |
| Sample Volume (cc)        | 80.44   | 77.67     |          | 0.5 - 1.0  | 226.1             | 74.9        | 151.2                       | 2.502             | 0.65   | 0.00790   |
| Wt. Wet Sample + Ring (g) | 365.80  | 366.04    |          | 1.0 - 2.0  | 279.3             | 100.0       | 179.2                       | 2.494             | 1.20   | 0.00426   |
| Wt. of Ring (g)           | 214.73  | 214.73    |          | 2.0 - 4.0  | 359.1             | 133.4       | 225.7                       | 2.483             | 1.00   | 0.00506   |
| Wt. of Wet Sample (g)     | 151.07  | 151.31    |          | 4.0 - 8.0  | 506.3             | 169.9       | 336.4                       | 2.455             | 0.80   | 0.00618   |
| Wet Density (pcf)         | 117.19  | 121.56    |          | 8.0 - 16.0 | 776.7             | 226.1       | 550.6                       | 2.400             | 2.50   | 0.00189   |
| Wet Density (g/cc)        | 1.88    | 1.95      |          | 16.0 - 4.0 | NA                | 161.7       | NA                          | NA                | NA     | NA        |
| Water Content (%)         | 26.52   | 26.72     |          | 4.0 - 1.0  | NA                | 111.7       | NA                          | NA                | NA     | NA        |
| Wt. of Dry Sample (g)     | 119.41  | 119.41    |          | 1.0 - 0.25 | NA                | 73.0        | NA                          | NA                | NA     | NA        |
| Dry Density (pcf)         | 92.63   | 95.93     |          |            |                   |             |                             |                   |        |           |
| Dry Density (g/cc)        | 1.48    | 1.54      |          |            |                   |             |                             |                   |        |           |
| Void Ratio                | 0.8660  | 0.8018    |          |            |                   |             |                             |                   |        |           |
| Saturation (%)            | 84.81   | 92.31     |          |            |                   |             |                             |                   |        |           |
| Specific Gravity          | 2.77    | Measured  |          |            |                   |             |                             |                   |        |           |
|                           |         | Tested By | 129-0411 | Date       | 7/19/2019         | Input Check | ed By                       | GEM               | Date   | 7/29/2019 |

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| Boring No.     | S2_RT_L       | N_EB1-A |
|----------------|---------------|---------|
| Depth (ft)     | 29.5-31.5     |         |
| Sample No.     | ST-2          |         |
| Visual Descrip | otion GRAY LE | AN CLAY |
|                |               |         |

AASHTO T-216



(tsf)

(in)

0.0-0.25

35.5

R470

0.0001

7/19/2019

Dial

Reading

(div)

0.0

9.6 25.0

27.4

28.2

28.9

28.8

28.7

28.6

30.6

30.3

31.1

29.0

32.0

32.8 32.7

33.8

33.7

34.7

35.1

35.2

35.3

35.2 35.5

7/29/2019

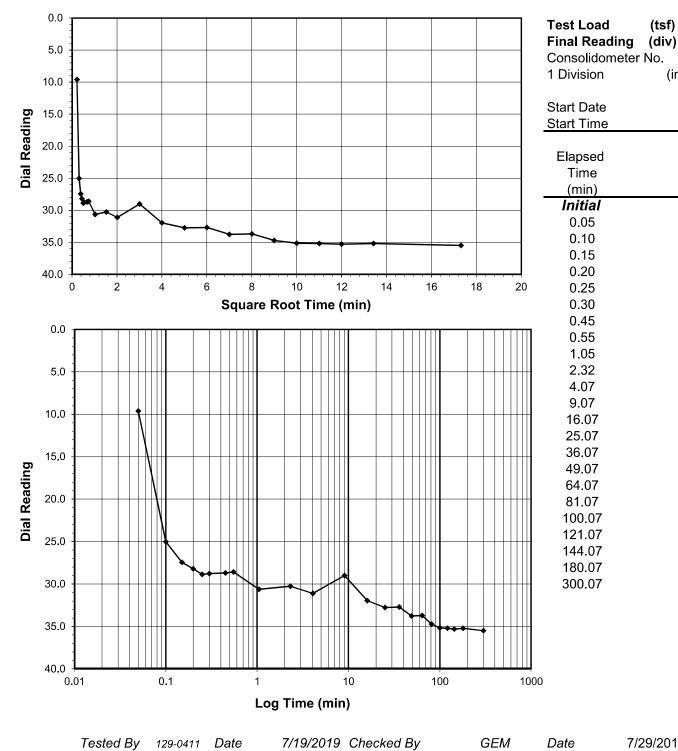
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# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |  |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|--|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |  |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |  |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |  |

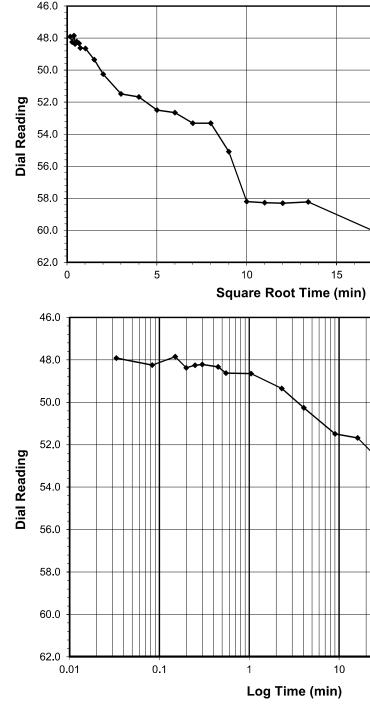
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



DCN: CT-24E Date: 5/3/12 Revision: 3

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### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



7/29/2019 GEM Date Tested By 129-0411 Date 7/19/2019 Checked By page 1 of 1 DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEIN .xlsm]STEP 2 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net



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S2\_RT\_LN\_EB1-A Boring No. Depth (ft) 29.5-31.5 ST-2 Sample No. GRAY LEAN CLAY Visual Description

| Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in)  | 0.25-0.5<br>60.9<br>R470<br>0.0001  |
|---|---|
| Start Date<br>Start Time  | 7/19/2019<br>19:47:08   |
| Elapsed<br>Time<br>(min)<br>Initial<br>0.03<br>0.08<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05<br>9.05<br>16.05<br>25.05<br>36.05<br>49.05<br>64.05<br>81.05<br>100.05<br>121.05<br>144.05<br>180.05<br>300.05<br>520.05<br>540.28 | Dial<br>Reading<br>(div)<br><b>35.5</b><br>47.9<br>48.3<br>47.9<br>48.4<br>48.3<br>48.2<br>48.3<br>48.6<br>48.7<br>49.3<br>50.3<br>51.5<br>51.7<br>52.5<br>52.7<br>53.3<br>53.3<br>55.1<br>58.2<br>58.3<br>58.2<br>60.2<br>60.8<br>60.9 |
|   |   |

| NFELDER\2019-209 - KLEINF | EI DER - R-2561 | CA\[2019-209-001-01 | 0 DOT GEOJAC-16TSE1 CV |
|---------------------------|-----------------|---------------------|------------------------|
|                           | LEBER R LOOP    | 0/142010 200 001 01 |                        |
|                           |                 |                     |                        |

AASHTO T-216

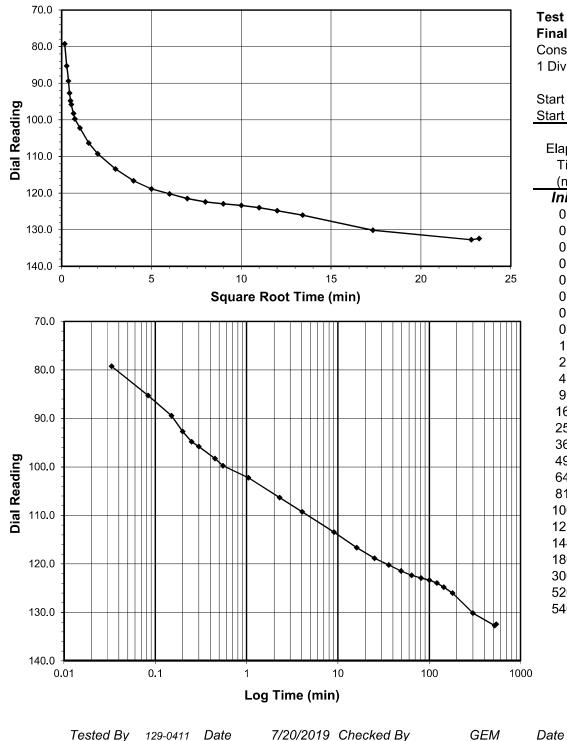


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |
|                |                    |                    |                |                |                    |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

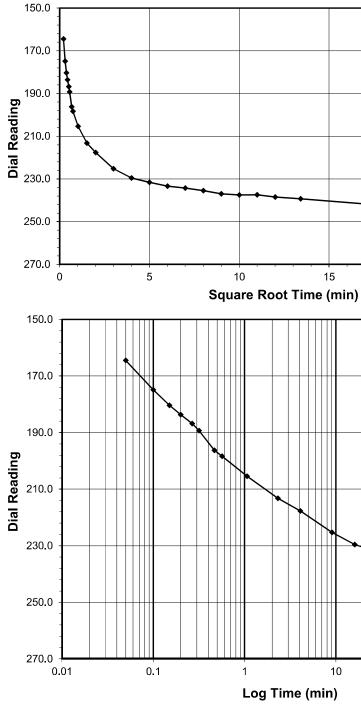


DCN: CT-24E Date: 5/3/12 Revision: 3

page 1 of 1

| <b>T</b> ( ] ]           | (1 - D)           | 0540             |
|--------------------------|-------------------|------------------|
| Test Load<br>Final Readi | (tsf)<br>ng (div) | 0.5-1.0<br>132.4 |
| Consolidom               | • • •             | R470             |
| 1 Division               | (in)              | 0.0001           |
|                          | ()                |                  |
| Start Date               |                   | 7/20/2019        |
| Start Time               |                   | 4:47:26          |
| Elapad                   |                   | Dial             |
| Elapsed<br>Time          |                   | Reading          |
| (min)                    |                   | (div)            |
| Initial                  |                   | 60.9             |
| 0.03                     |                   | 79.3             |
| 0.08                     |                   | 85.3             |
| 0.15                     |                   | 89.4             |
| 0.20                     |                   | 92.7             |
| 0.25                     |                   | 94.8             |
| 0.30                     |                   | 95.8             |
| 0.45                     |                   | 98.3             |
| 0.55                     |                   | 99.7             |
| 1.05                     |                   | 102.2            |
| 2.30                     |                   | 106.3            |
| 4.05                     |                   | 109.3<br>113.4   |
| 9.07<br>16.07            |                   | 115.4            |
| 25.07                    |                   | 118.8            |
| 36.07                    |                   | 120.2            |
| 49.07                    |                   | 121.5            |
| 64.07                    |                   | 122.4            |
| 81.07                    |                   | 122.9            |
| 100.07                   |                   | 123.4            |
| 121.07                   |                   | 123.9            |
| 144.07                   |                   | 124.8            |
| 180.07                   |                   | 126.0            |
| 300.07                   |                   | 130.1            |
| 520.07                   |                   | 132.7            |
| 540.38                   |                   | 132.4            |
|                          |                   |                  |
|                          |                   |                  |
| 00                       |                   |                  |
|                          |                   |                  |
|                          |                   |                  |
| 5                        |                   |                  |
| Date                     | 7/29/2019         |                  |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date



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Date



Boring No. Depth (ft) Sample No. Visual Description

S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2 GRAY LEAN CLAY

|    |     |      | <b>Test Load<br/>Final Reading</b><br>Consolidometer<br>1 Division | <b>(tsf)</b><br>(div)<br>No.<br>(in) | <b>1.0-2.0</b><br><b>244.9</b><br><b>R470</b><br>0.0001 |
|----|-----|------|--|--------------------------------------|---|
|    |     |      | Start Date<br>Start Time   |                                      | 7/20/2019<br>13:47:50                                   |
|    |     |      | Elapsed<br>Time<br>(min)   |                                      | Dial<br>Reading<br>(div)                                |
| +  |     | ++   | <i>Initial</i><br>0.05<br>0.10<br>0.15                             |                                      | <b>132.4</b><br>164.5<br>174.9<br>180.3                 |
| ו) | 20  | 25   | 0.20<br>0.27<br>0.32<br>0.47                                       |                                      | 183.6<br>186.8<br>189.3<br>196.3                        |
|    |     |      | 0.57<br>1.07<br>2.32   |                                      | 198.4<br>205.4<br>213.2                                 |
|    |     |      | 4.07<br>9.07<br>16.07<br>25.07                                     |                                      | 217.7<br>225.3<br>229.6<br>231.6                        |
|    |     |      | 36.07<br>49.07<br>64.07<br>81.07                                   |                                      | 233.3<br>234.3<br>235.5<br>237.0                        |
| *  |     |      | 100.07<br>121.07<br>144.08   |                                      | 237.5<br>237.4<br>238.5                                 |
|    |     | •••• | 180.08<br>300.08<br>520.08<br>540.33                               |                                      | 239.3<br>241.9<br>245.3<br>244.9                        |
|    | 100 | 100  | 00   |                                      |   |
|    |     |      |  |                                      |   |

7/29/2019

AASHTO T-216

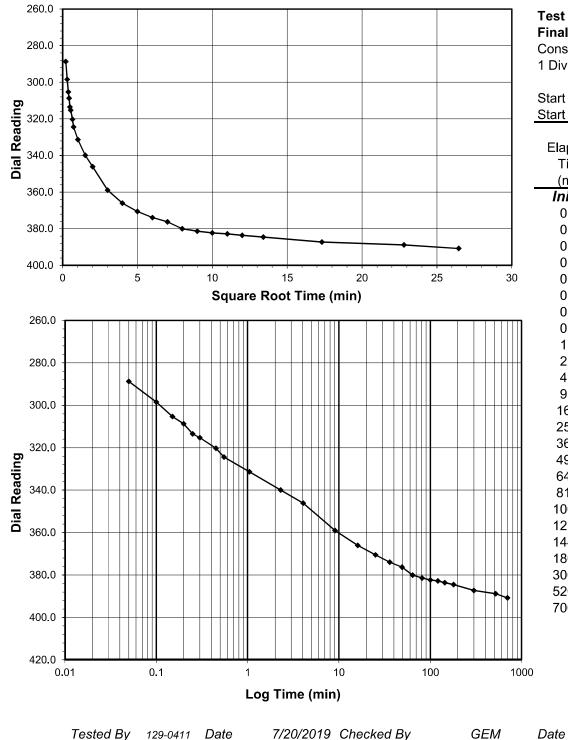


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |  |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|--|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |  |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |  |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |  |
| •              |                    | •                  |                | 2              |                    |  |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

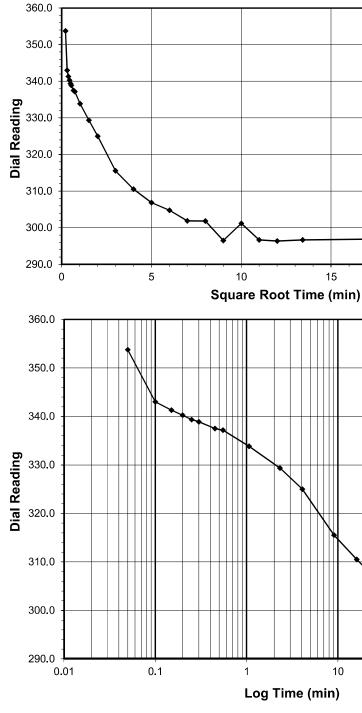


page 1 of 1

| <b>Test Load (tsf</b><br><b>Final Reading (div</b><br>Consolidometer No.<br>1 Division (i   |  |
|---|--|
| Start Date<br>Start Time  | 7/20/2019<br>22:48:10  |
| Elapsed<br>Time<br>(min)<br>Initial<br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05<br>9.05<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07<br>520.07 | Dial<br>Reading<br>(div)<br>244.9<br>288.7<br>298.5<br>305.3<br>305.3<br>308.8<br>313.5<br>315.3<br>320.3<br>324.4<br>331.3<br>340.0<br>346.1<br>359.0<br>346.1<br>359.0<br>346.1<br>359.0<br>346.1<br>359.0<br>366.0<br>370.5<br>374.0<br>376.3<br>374.0<br>376.3<br>380.1<br>381.4<br>382.3<br>382.8<br>383.6<br>384.5<br>387.3<br>388.8 |
| 700.07<br>D   | 390.8  |

7/29/2019

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





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Boring No. Depth (ft) Sample No. Visual Description

S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2 GRAY LEAN CLAY

|         | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in) | <b>4.0-1.0</b><br><b>296.4</b><br><b>R470</b><br>0.0001 |
|---------|--|---|
|         | Start Date<br>Start Time   | 7/21/2019<br>10:48:27                                   |
|         | Elapsed<br>Time<br>(min)<br><b>Initial</b>                       | Dial<br>Reading<br>(div)<br><b>390.8</b>                |
|         | 0.05<br>0.10<br>0.15   | 353.7<br>343.0<br>341.3                                 |
| 20 25   | 0.20<br>0.25   | 340.3<br>339.3  |
| )<br>   | 0.30<br>0.45<br>0.55   | 338.9<br>337.5<br>337.2                                 |
|         | 1.07<br>2.32<br>4.07   | 333.8<br>329.3<br>325.0                                 |
|         | 9.07<br>16.07  | 315.6<br>310.5  |
|         | 25.07<br>36.07<br>49.07  | 306.9<br>304.8<br>301.9                                 |
|         | 64.08<br>81.08<br>100.08   | 301.8<br>296.5<br>301.2                                 |
| •       | 121.08<br>144.08<br>180.08<br>300.08                             | 296.7<br>296.4<br>296.7<br>296.9                        |
|         | 420.12   | 296.9<br>296.4  |
| 100 100 | 0  |   |
|         |  |   |

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AASHTO T-216

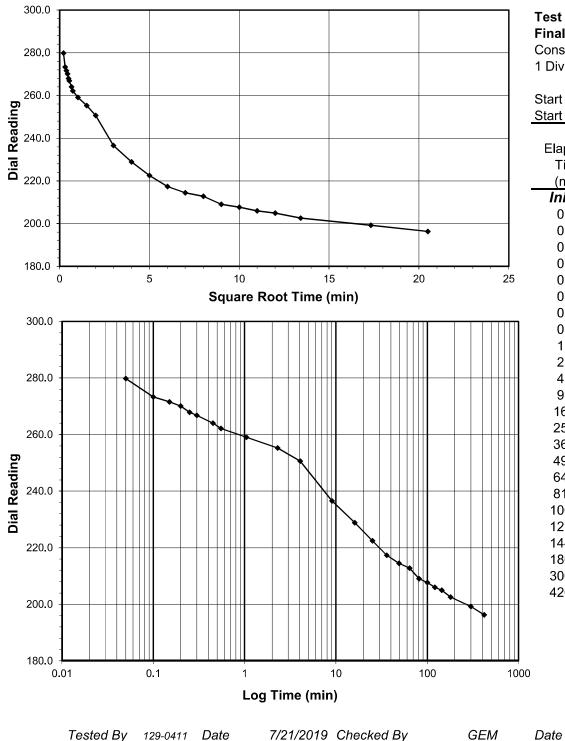


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |  |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|--|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |  |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |  |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |  |
|                |                    |                    |                |                |                    |  |

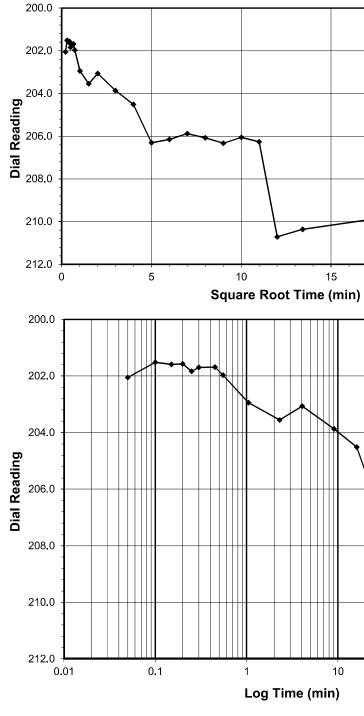
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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| <b>Test Load</b><br><b>Final Readi</b><br>Consolidom<br>1 Division   | • • •     | <b>1.0-0.25</b><br><b>196.3</b><br><b>R470</b><br>0.0001   |
|--|-----------|--|
| Start Date<br>Start Time   |           | 7/21/2019<br>17:48:34  |
| Elapsed<br>Time<br>(min)<br><i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07 |           | Dial<br>Reading<br>(div)<br><b>296.4</b><br>279.8<br>273.3<br>271.6<br>270.1<br>267.9<br>266.8<br>264.0<br>262.1<br>259.0<br>255.3<br>250.6<br>236.5<br>228.9<br>222.5<br>217.4<br>214.5<br>212.8<br>209.1<br>207.7<br>206.0<br>205.0<br>205.0<br>202.6<br>199.2 |
| 420.10<br>00   |           | 196.3  |
| Date   | 7/29/2019 |  |

#### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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S2\_RT\_LN\_EB1-A

GRAY LEAN CLAY

29.5-31.5

ST-2

Boring No. Depth (ft) Sample No. Visual Description

|       | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in   | <b>0.25-0.5</b><br><b>210.1</b><br><b>R470</b><br>) 0.0001  |
|-------|---|---|
|       | Start Date<br>Start Time  | 7/22/2019<br>0:48:40  |
|       | Elapsed<br>Time<br>(min)<br>Initial<br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05<br>9.05<br>16.05<br>25.05<br>36.05<br>49.05<br>64.05<br>81.05<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07 | Dial<br>Reading<br>(div)<br><b>196.3</b><br>202.1<br>201.5<br>201.6<br>201.6<br>201.8<br>201.7<br>201.7<br>202.0<br>202.9<br>203.6<br>203.1<br>203.9<br>204.5<br>206.3<br>206.1<br>205.9<br>206.1<br>205.9<br>206.1<br>205.9<br>206.1<br>205.9<br>206.1<br>205.3<br>206.1<br>205.3<br>206.1<br>205.3<br>206.1<br>206.3<br>210.7<br>210.4<br>209.9 |
|       | 420.08  | 210.1   |
| 100 1 | 000   |   |

| NFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-001-010 DOT GEOJAC-16TSF1 Cv.xlsm]STEP 8 |
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AASHTO T-216

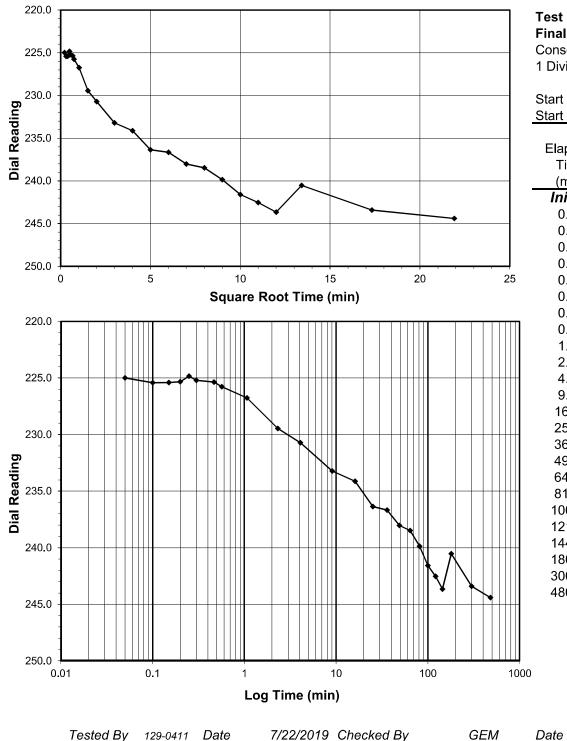


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |  |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|--|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |  |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |  |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |  |
|                |                    |                    |                |                |                    |  |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

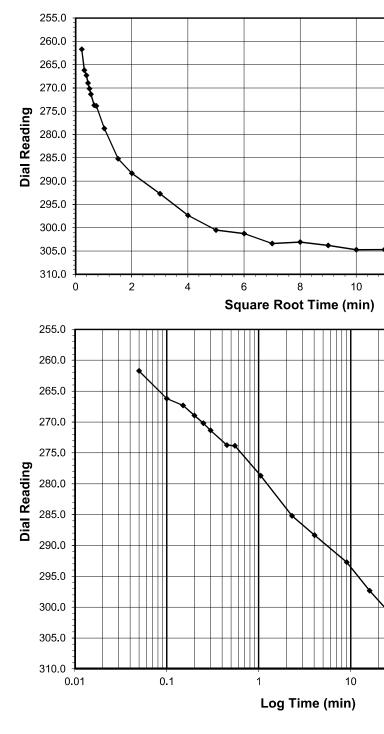


page 1 of 1

| <b>Test Load</b><br><b>Final Reading</b><br>Consolidometer<br>1 Division<br>Start Date<br>Start Time  | • • | <b>0.5-1.0</b><br><b>244.4</b><br><b>R470</b><br>0.0001<br>7/22/2019<br>7:48:45  |
|---|-----|--|
| Elapsed<br>Time<br>(min)<br>Initial<br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.47<br>0.57<br>1.07<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07<br>480.23 |     | Dial<br>Reading<br>(div)<br><b>210.1</b><br>225.0<br>225.4<br>225.4<br>225.3<br>224.8<br>225.2<br>225.4<br>225.8<br>226.8<br>229.5<br>230.7<br>233.2<br>234.1<br>236.4<br>236.7<br>233.2<br>234.1<br>236.4<br>236.7<br>238.0<br>238.5<br>239.9<br>241.6<br>242.5<br>243.6<br>240.5<br>243.4<br>244.4 |
| 0   |     |  |

7/29/2019

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-001-010 DOT GEOJAC-16TSF1 Cv.xlsm]STEP 9

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Tested By 129-0411 Date

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S2\_RT\_LN\_EB1-A

GRAY LEAN CLAY

29.5-31.5 ST-2

Boring No. Depth (ft) Sample No. Visual Description

|          | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in) | <b>1.0-2.0</b><br><b>304.6</b><br><b>R470</b><br>0.0001   |
|----------|--|---|
|          | Start Date<br>Start Time   | 7/22/2019<br>15:48:59                                     |
|          | Elapsed<br>Time<br>(min)   | Dial<br>Reading<br>(div)                                  |
| 12 14 16 | <i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25           | <b>244.4</b><br>261.7<br>266.2<br>267.3<br>268.9<br>270.2 |
|          | 0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05                     | 271.4<br>273.7<br>273.9<br>278.7<br>285.2<br>288.3        |
|          | 9.05<br>16.05<br>25.05<br>36.05<br>49.07                         | 292.7<br>297.3<br>300.5<br>301.3<br>303.4                 |
|          | 64.07<br>81.07<br>100.07<br>121.07<br>144.07                     | 303.1<br>303.8<br>304.7<br>304.7<br>305.2                 |
| ****     | 180.07   | 304.6   |
| 100 100  | 0  |   |

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7/29/2019

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AASHTO T-216

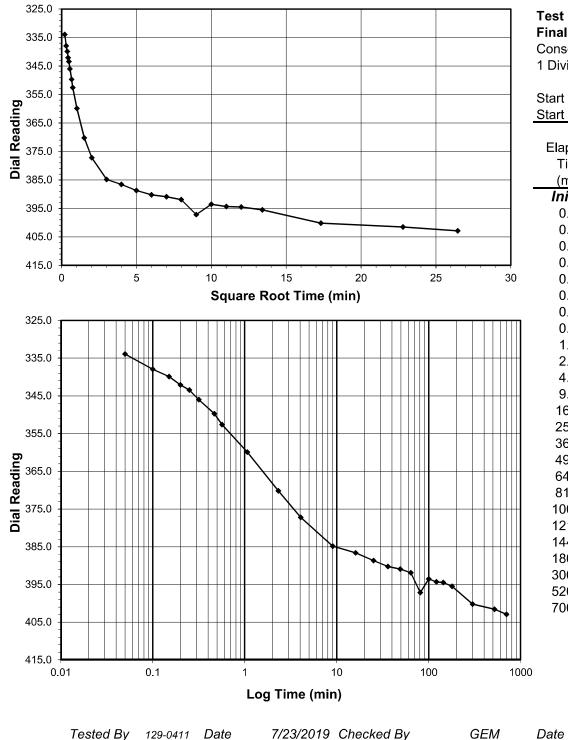


# **ONE DIMENSIONAL CONSOLIDATION**

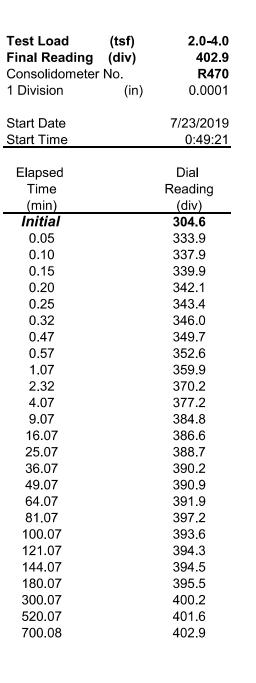
AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

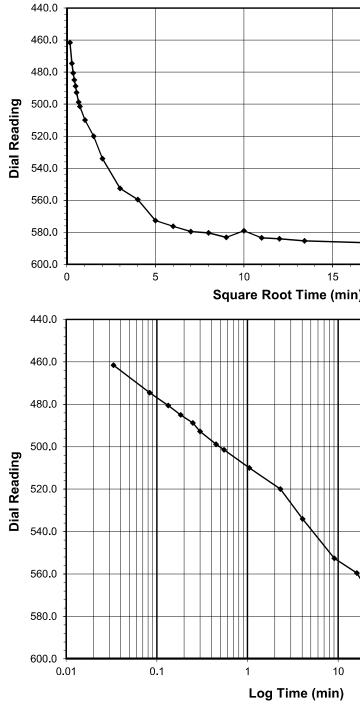


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7/29/2019

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-001-010 DOT GEOJAC-16TSF1 Cv.xlsm]STEP 11

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DCN: CT-24E Date: 5/3/12 Revision: 3

Tested By 129-0411 Date

page 1 of 1



Boring No. Depth (ft) Sample No. **Visual Description**  S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2 GRAY LEAN CLAY

|             | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in)   | <b>4.0-8.0</b><br><b>589.3</b><br><b>R470</b><br>0.0001   |
|-------------|--|---|
|             | Start Date<br>Start Time   | 7/23/2019<br>12:49:41   |
|             | Elapsed<br>Time<br>(min)   | Dial<br>Reading<br>(div)  |
| 20 25<br>n) | Initial $0.03$ $0.08$ $0.13$ $0.13$ $0.18$ $0.25$ $0.30$ $0.45$ $0.55$ $1.05$ $2.30$ $4.05$ $9.05$ $16.05$ $25.05$ $36.05$ $49.05$ $64.05$ $81.05$ $100.07$ $121.07$ $144.07$ $180.07$ $300.07$ $520.07$ | <b>402.9</b><br>461.6<br>474.6<br>480.6<br>485.0<br>488.9<br>492.8<br>498.8<br>501.4<br>509.9<br>520.0<br>534.0<br>552.6<br>559.5<br>572.7<br>576.3<br>579.5<br>580.4<br>583.1<br>579.1<br>583.5<br>584.1<br>585.4<br>585.4<br>585.4<br>589.3 |
| 100 100     | 00   |   |

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Date

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AASHTO T-216

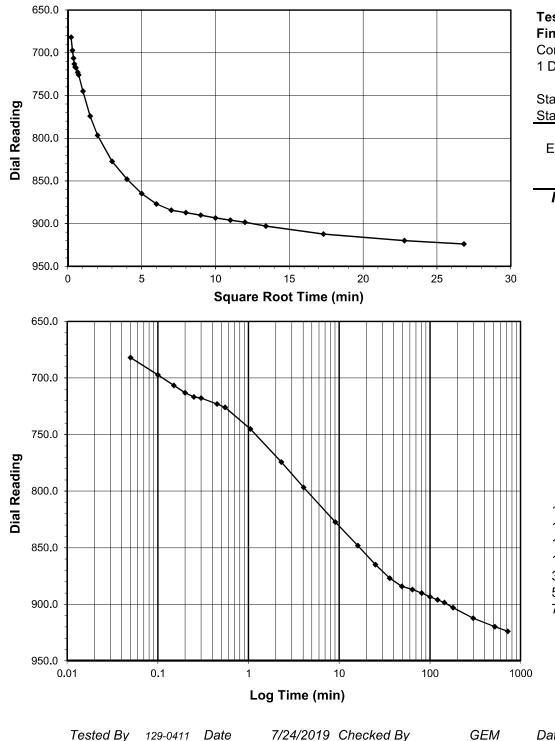


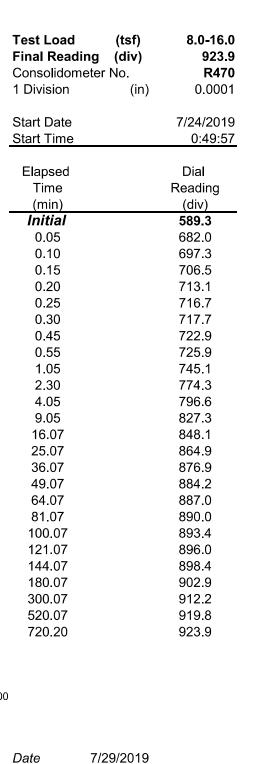
# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

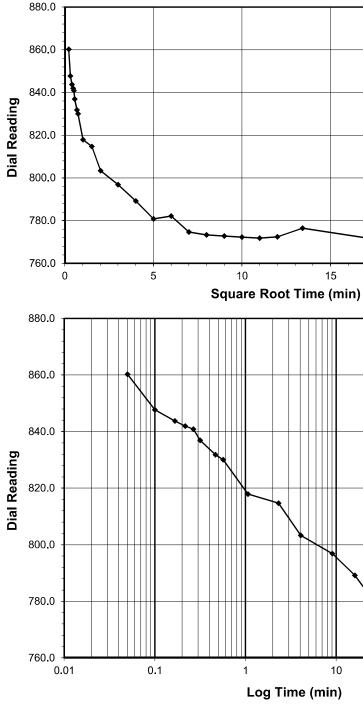
| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |
|                |                    | I                  |                |                |                    |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





#### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date

DCN: CT-24E Date: 5/3/12 Revision: 3

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129-0411 Date

Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-001-010 DOT GEOJAC-16TSF1 Cv.xism]STEP 13

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Date



S2\_RT\_LN\_EB1-A

GRAY LEAN CLAY

29.5-31.5 ST-2

Boring No. Depth (ft) Sample No. Visual Description

|       | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in)   | <b>16.0-4.0</b><br><b>768.7</b><br><b>R470</b><br>0.0001  |
|-------|--|---|
|       | Start Date<br>Start Time   | 7/24/2019<br>12:50:09   |
|       | 0.32<br>0.47<br>0.57<br>1.07<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.08<br>64.08<br>81.08<br>100.08<br>121.08<br>144.08<br>180.08<br>300.08<br>420.03 | Dial<br>Reading<br>(div)<br>923.9<br>860.2<br>847.7<br>843.7<br>841.9<br>840.8<br>836.9<br>831.8<br>830.0<br>817.9<br>814.7<br>803.3<br>796.8<br>789.2<br>780.8<br>789.2<br>780.8<br>789.2<br>780.8<br>782.1<br>774.6<br>773.3<br>772.8<br>772.8<br>772.8<br>772.2<br>771.8<br>772.4<br>776.5<br>771.5<br>768.7 |
| 100 1 | 000  |   |

7/29/2019

AASHTO T-216

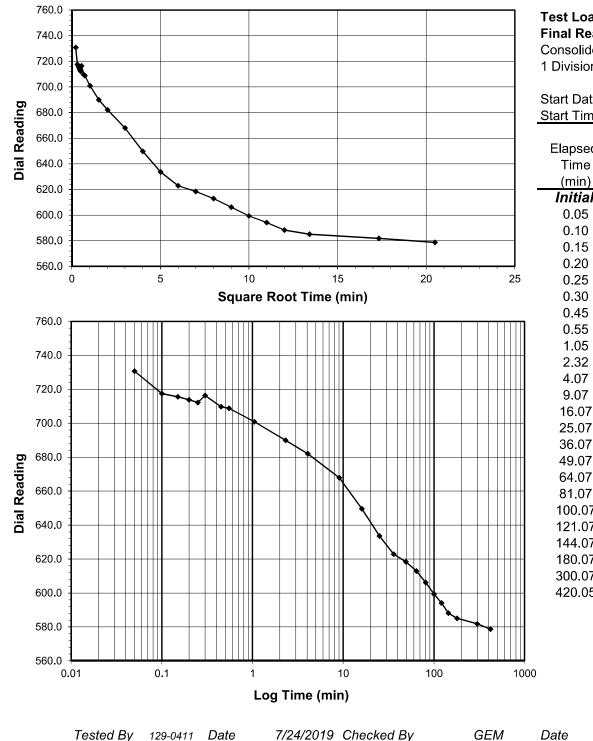


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

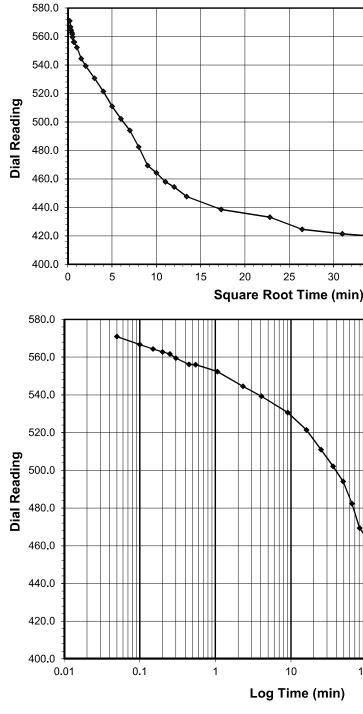
| Client         | Kleinfelder        | Boring No.         | S2_RT_LN_EB1-A | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|----------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 29.5-31.5      | Client Project | R-2561CA           |
| Project No.    | R-2019-209-001     | Sample No.         | ST-2           | Project No.    | R-2019-209-001     |
| Lab ID         | R-2019-209-001-010 | Visual Description | GRAY LEAN CLAY | Lab ID         | R-2019-209-001-010 |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



| <b>Test Load</b><br><b>Final Readi</b><br>Consolidom<br>1 Division   | • • •     | <b>4.0-1.0</b><br><b>578.7</b><br><b>R470</b><br>0.0001   |
|--|-----------|---|
| Start Date<br>Start Time   |           | 7/24/2019<br>19:50:11   |
| Elapsed<br>Time<br>(min)<br><b>Initial</b><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07<br>420.05 |           | Dial<br>Reading<br>(div)<br><b>768.7</b><br>730.7<br>717.5<br>715.6<br>713.8<br>712.3<br>716.4<br>709.7<br>700.9<br>689.9<br>682.0<br>667.9<br>649.6<br>633.6<br>622.9<br>618.4<br>612.9<br>606.2<br>599.4<br>594.1<br>588.2<br>585.1<br>581.8<br>578.7 |
| 00   |           |   |
| Date   | 7/29/2019 |   |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date

DCN: CT-24E Date: 5/3/12 Revision: 3

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Boring No. Depth (ft) Sample No. Visual Description

S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2 GRAY LEAN CLAY

|                                |            | <b>Test Load</b><br><b>Final Readin</b><br>Consolidome<br>1 Division  |           | <b>1.0-0.25</b><br><b>417.0</b><br><b>R470</b><br>0.0001   |
|--------------------------------|------------|---|-----------|--|
|                                |            | Start Date<br>Start Time  |           | 7/25/2019<br>2:50:14   |
|                                |            | Elapsed<br>Time<br>(min)  |           | Dial<br>Reading<br>(div)   |
| 25 30 35 4<br>Root Time (min)  |            | <i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.07  |           | <b>578.7</b><br>570.9<br>566.7<br>564.4<br>562.8<br>561.6<br>559.4<br>556.1<br>556.0<br>552.3  |
|                                |            | 2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07<br>520.08<br>700.08<br>960.08<br>1440.08 |           | 544.5<br>539.3<br>530.7<br>521.3<br>510.9<br>502.2<br>494.1<br>482.3<br>469.4<br>464.3<br>457.9<br>454.3<br>447.7<br>438.6<br>433.1<br>424.5<br>421.4<br>418.0 |
| 10 100<br><b>og Time (min)</b> | 1000 10000 | 2117.92   |           | 416.6<br>414.4<br>417.1  |
| 7/25/2019 Checked By           | GEM        | 2134.02<br><i>Date</i>  | 7/29/2019 | 417.0  |

| Client:<br>Client Referer<br>Project No.:<br>Lab ID: | nce:           | Kleinfelder<br>R-2561CA<br>R-2019-209-001<br>R-2019-209-001-0 | )10            | D               | oring No.<br>epth (ft):<br>ample No |              | S2_RT_LN<br>29.5-31.5<br>ST-2 | I_EB1-A |
|--|----------------|---|----------------|-----------------|-------------------------------------|--------------|-------------------------------|---------|
| Visual Descrip                                       |                | Gray Clay (UNDIS  |                |                 |                                     |              |                               |         |
| Stage No.  |                | 2   |                | INITIAL SAM     |                                     | ENSIONS (in) |                               |         |
| Test No.   |                | 2<br>1  |                | Length 1:       | 6.379                               | Diameter 1:  | 2.859                         |         |
| 1001110.   |                |   |                | Length 2:       | 6.458                               | Diameter 2:  | 2.875                         |         |
| PRESSURES  | (psi)          |   |                | Length 3:       | 6.444                               | Diameter 3:  | 2.862                         |         |
|  | (100)          |   |                | Length 4:       | 6.395                               | Diameter 4:  | 2.858                         |         |
| Cell Pressure  | (psi)          | 55.0  |                | Avg. Length:    | 6.419                               | Avg. Diam.:  | 2.864                         |         |
| Back Pressure  |                | 50.0  |                | 5 5             |                                     | 5            |                               |         |
| Eff. Conf. Pre                                       |                | 5.0   |                | VOLUME CH       | ANGE                                |              |                               |         |
| Pore Pressure  | ·· /           | 0.0   |                | Initial Burette |                                     | (ml)         | 24.0                          |         |
| Response (%)   |                | 100   |                | Final Burette   | -                                   | • •          | 13.5                          |         |
|  | )              | 100   |                | Final Change    | -                                   | (1111)       | 10.5                          |         |
|  |                | ONTO  |                | i indi ondrige  | (1111)                              |              | 10.0                          |         |
|  | BLIQUITY P     |   |                |                 | a alia ci (ci '                     | N            | 000                           |         |
| <u>P</u> =   |                | 7.00  |                | Initial Dial Re |                                     |              | 388                           |         |
|  |                | 7.09  |                | Dial Reading    |                                     | • •          | 501                           |         |
| Q =  |                | 6.06  |                | Dial Reading A  |                                     |              | 531                           |         |
|  | LOAD           |   | DEFORMAT       | ION             |                                     | PORE PRESSU  | IRE                           |         |
|  | (LB)           |   | (IN)           |                 |                                     | (PSI)        |                               |         |
|  | 9.5            |   | 0.000          |                 |                                     | 50.0         |                               |         |
|  | 10.5           |   | 0.001          |                 |                                     | 50.4         |                               |         |
|  | 11.1<br>24.2   |   | 0.003<br>0.009 |                 |                                     | 50.4<br>51.7 |                               |         |
|  | 24.2<br>30.9   |   | 0.009          |                 |                                     | 52.4         |                               |         |
|  | 35.5           |   | 0.013          |                 |                                     | 52.4         |                               |         |
|  | 40.6           |   | 0.031          |                 |                                     | 53.3         |                               |         |
|  | 44.9           |   | 0.040          |                 |                                     | 53.5         |                               |         |
|  | 49.9           |   | 0.053          |                 |                                     | 53.8         |                               |         |
|  | 58.2           |   | 0.076          |                 |                                     | 54.0         |                               |         |
|  | 70.2           |   | 0.108          |                 |                                     | 54.1         |                               |         |
|  | 85.7           |   | 0.146          |                 |                                     | 54.0         |                               |         |
|  | 100.8<br>115.6 |   | 0.185<br>0.229 |                 |                                     | 53.7<br>53.1 |                               |         |
|  | 123.9          |   | 0.225          |                 |                                     | 52.6         |                               |         |
|  | 130.6          |   | 0.306          |                 |                                     | 51.9         |                               |         |
|  | 134.6          |   | 0.367          |                 |                                     | 51.2         |                               |         |
|  | 140.2          |   | 0.431          |                 |                                     | 50.7         |                               |         |
|  | 145.2          |   | 0.479          |                 |                                     | 50.4         |                               |         |
|  | 151.6          |   | 0.543          |                 |                                     | 50.0         |                               |         |
|  | 155.3          |   | 0.591          |                 |                                     | 49.8         |                               |         |
|  | 160.1<br>164.7 |   | 0.639<br>0.687 |                 |                                     | 49.5<br>49.2 |                               |         |
|  | 165.9          |   | 0.007          |                 |                                     | 49.2<br>49.2 |                               |         |
|  | 168.0          |   | 0.751          |                 |                                     | 49.0         |                               |         |
|  | 166.9          |   | 0.783          |                 |                                     | 49.0         |                               |         |
|  | 169.3          |   | 0.815          |                 |                                     | 48.9         |                               |         |
|  | 172.1          |   | 0.863          |                 |                                     | 48.7         |                               |         |
|  | 174.6          |   | 0.911          |                 |                                     | 48.5         |                               |         |
|  | 177.2          |   | 0.959          |                 |                                     | 48.4         |                               |         |
|  | 179.1          | Date: 8/2/  | 1.008          |                 |                                     | 48.2         |                               |         |
| Tested By: 1   | 29-07-0411     | Date: 8/2/  | 4.0            | Input Checke    |                                     | GEM          | Date:                         | 8/12/19 |

#### AASHTO T-297 Client: Kleinfelder R-2561CA Client Reference: Project No.: R-2019-209-001 Lab ID: R-2019-209-001-010 Gray Clay (UNDISTURBED) Visual Description: Effective Confining Pressure (psi) 5.0 INITIAL DIMENSIONS Initial Sample Length (in) 6.42 Initial Sample Diameter (in) 2.86 Initial Sample Area (in<sup>2</sup>) 6.44 Initial Sample Volume (in<sup>3</sup>) 41.34 \_\_\_\_\_ Deviation $\Delta U$ Strain $\sigma_1$ $\sigma_3$ (%) Stress 0.02 0.17 0.40 4.77 4.6 0.04 0.26 0.44 4.82 4.6 2.39 1.66 5.73 3.3 0.14 2.6 2.2 1.7 0.23 3.48 2.39 6.09 6.38 0.34 4.22 2.84 0.49 5.05 3.26 6.79 1.5 0.64 5.74 3.53 7.21 1.2 0.85 6.53 3.77 7.77 7.84 3.98 1.0 1.21 8.86 1.71 9.72 4.08 10.64 0.9 2.33 3.97 1.0 12.12 13.15 2.94 3.67 1.3 14.43 15.76 1.9 3.65 16.66 3.07 18.59 4.16 17.86 2.60 20.27 2.4 4.88 18.78 1.93 21.85 3.1 5.85 22.98 3.8 19.19 1.21 4.3 6.86 19.84 0.73 24.11 20.43 4.6 7.64 0.42 25.01 5.0 8.65 21.15 0.03 26.12 9.42 21.53 -0.23 26.75 5.2 22.04 -0.52 5.5 10.18 27.56 22.53 5.8 10.94 -0.76 28.28 22.57 5.8 11.46 -0.83 28.40

22.75

22.45

22.66

22.86

23.00

23.15

23.21

11.97

12.48

12.99

13.74

14.52

15.29

16.05

-0.95

-1.03

-1.14

-1.29

-1.46

-1.61

-1.75

28.70

28.48

28.80

29.15

29.45

29.76

29.96

page 4 of 11

# CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

|  | 57   |   |  |  |
|--|--|---|--|--|
|  | Boring No.:<br>Depth (ft):<br>Sample No  |   | S2_RT_LN<br>29.5-31.5<br>ST-2  | I_EB1-A  |
| ED)  |  |   |  |  |
|  | Stage No.<br>Test No   |   | 2<br>1   |  |
|  | VOLUME CHANGE  |   |  |  |
|  | Volume After Consolid<br>Length After Consolida<br>Area After Consolidatio   | ation (in)  |  | 38.51<br>6.28<br>6.137   |
| $\overline{\sigma}_3$  | Effective Principle<br>Stress Ratio  | A   | Р  | Q  |
| $\begin{array}{c} 4.6\\ 4.6\\ 3.3\\ 2.2\\ 1.7\\ 1.2\\ 1.0\\ 9\\ 1.3\\ 1.9\\ 2.4\\ 3.1\\ 3.8\\ 4.6\\ 5.2\\ 5.8\\ 5.0\\ 6.0\\ 6.1\\ 6.3\\ \end{array}$ | 1.036<br>1.056<br>1.716<br>2.335<br>2.956<br>3.906<br>4.909<br>6.299<br>8.702<br>11.561<br>12.771<br>11.859<br>9.639<br>8.429<br>7.114<br>6.061<br>5.649<br>5.460<br>5.258<br>5.120<br>4.993<br>4.914<br>4.870<br>4.822<br>4.721<br>4.688<br>4.636 | 2.39<br>1.72<br>0.69<br>0.67<br>0.65<br>0.62<br>0.58<br>0.51<br>0.42<br>0.33<br>0.25<br>0.18<br>0.15<br>0.10<br>0.06<br>0.04<br>0.02<br>0.00<br>-0.01<br>-0.02<br>-0.03<br>-0.04<br>-0.05<br>-0.05<br>-0.06 | 4.69<br>4.69<br>4.54<br>4.35<br>4.27<br>4.26<br>4.34<br>4.50<br>4.94<br>5.78<br>7.09<br>8.55<br>10.26<br>11.34<br>12.46<br>13.39<br>14.19<br>14.80<br>15.54<br>15.99<br>16.54<br>17.02<br>17.12<br>17.26<br>17.47<br>17.72 | 0.08<br>0.13<br>1.20<br>1.74<br>2.11<br>2.52<br>2.87<br>3.27<br>3.92<br>4.86<br>6.06<br>7.22<br>8.33<br>8.93<br>9.39<br>9.59<br>9.59<br>9.92<br>10.21<br>10.58<br>10.76<br>11.02<br>11.26<br>11.29<br>11.37<br>11.23<br>11.33<br>11.43 |

AASHTO T-297

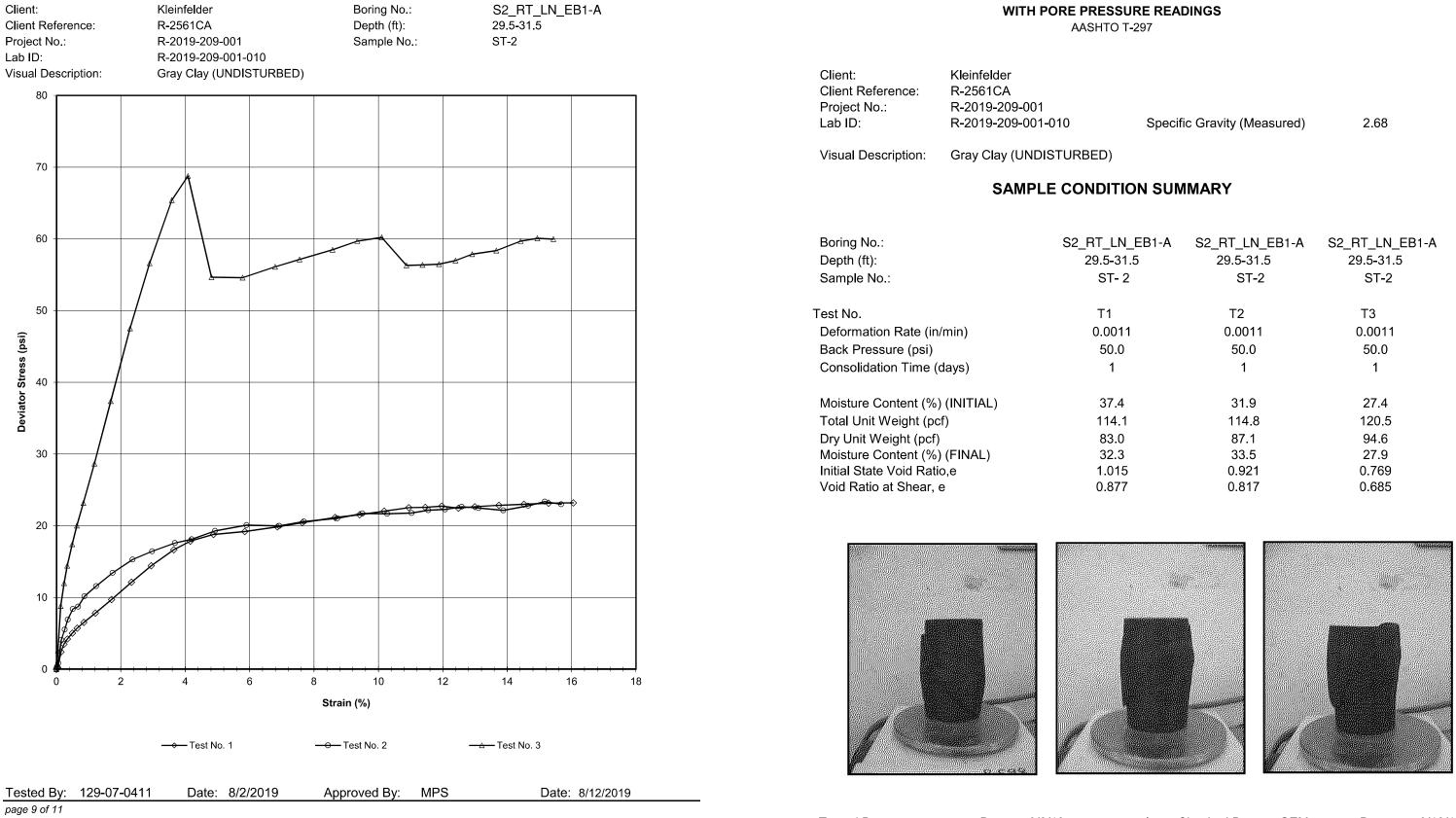
| Client:<br>Client Reference:<br>Project No.:<br>Lab ID:   | Kleinfelder<br>R-2561CA<br>R-2019-209-001<br>R-2019-209-001-010                              | Boring No.:<br>Depth (ft):<br>Sample No.:   | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | Client:<br>Client Refe<br>Project No<br>Lab ID:   | erence:<br>.:   | Kleinfelder<br>R-2561CA<br>R-2019-209<br>R-2019-209   | 9-001  |   | Boring No.<br>Depth (ft):<br>Sample No  |  | S2_RT_LN<br>29.5-31.5<br>ST-2   | I_EB1-A   |
|---|--|---|-------------------------------------|---|---|---|--|---|---|--|---|---|
| Visual Description:   | Gray Clay (UNDISTURBED)  |   |                                     | Visual Des  | scription:  | Gray Clay (   | UNDISTUR   | BED)  |   |  |   |   |
| Stage No.<br>Test No.   | 3<br>2   | INITIAL SAMPLE DIMENSIONS (in)<br>Length 1: 6.253 Diameter 1:                             | 2.867                               | Effective C   | Confining Pre   | ssure (psi)   | 10.1   |   | Stage No.<br>Test No  |  | 3<br>2  |   |
| PRESSURES (psi)   |  | Length 2: 6.224 Diameter 2:<br>Length 3: 6.243 Diameter 3:<br>Length 4: 6.293 Diameter 4: | 2.868<br>2.863<br>2.864             | INITIAL D   | IMENSIONS   |   |  |   | VOLUME CHANGE   |  |   |   |
| Cell Pressure (psi)<br>Back Pressure (psi)<br>Eff. Conf. Pressure (psi)   | 60.0<br>50.0<br>10.1   | Avg. Length: 6.253 Avg. Diam.:<br>VOLUME CHANGE   | 2.866                               | Initial Sam<br>Initial Sam  | ple Length (i<br>ple Diamete<br>ple Area (in²   | r (in)<br>)   | 6.25<br>2.87<br>6.45   |   | Volume After Consolic<br>Length After Consolida<br>Area After Consolidati   | ation (in)   |   | 38.15<br>6.12<br>6.233  |
| Pore Pressure<br>Response (%)   | 98   | Initial Burette Reading (ml)<br>Final Burette Reading (ml)<br>Final Change (ml)           | 24.0<br>7.3<br>16.7                 | Initial Sam   | ple Volume  | (in³)   | 40.33  |   |   |  |   |   |
|   |  | Initial Dial Reading (mil)  | 512                                 | Strain<br>(%)   | Deviation<br>Stress   | $\Delta U$  | $\overline{\sigma}_1$  | $\overline{\sigma_3}$   | Effective Principle<br>Stress Ratio   | Ā  | P   | Q   |
| P =<br>Q =  | 13.03<br>8.80  | Dial Reading After Saturation (mil)<br>Dial Reading After Consolidation (mil)             | 572<br>645                          |   |   |   |  |   |   |  |   |   |
| LOAD<br>(LB)  | DEFORM<br>(IN  |   | URE                                 |   |   |   |  |   |   |  |   |   |
| $\begin{array}{c} 14.0\\ 17.0\\ 37.2\\ 46.4\\ 55.0\\ 64.4\\ 66.4\\ 75.7\\ 84.7\\ 96.9\\ 109.3\\ 117.4\\ 125.6\\ 129.6\\ 138.2\\ 144.8\\ 145.5\\ 150.7\\ 155.4\\ 161.2\\ 162.2\\ 164.3\\ 167.9\\ 169.5\\ 173.2\\ 172.8\\ 171.9\\ 178.1\end{array}$ | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                           | $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                      |                                     | $\begin{array}{c} 0.02\\ 0.06\\ 0.15\\ 0.25\\ 0.35\\ 0.51\\ 0.67\\ 0.87\\ 1.23\\ 1.75\\ 2.36\\ 2.97\\ 3.68\\ 4.20\\ 4.92\\ 5.91\\ 6.92\\ 7.69\\ 8.73\\ 9.50\\ 10.27\\ 11.03\\ 11.55\\ 12.07\\ 12.58\\ 13.11\\ 13.88\\ 14.65\end{array}$ | 0.36<br>0.85<br>4.09<br>5.55<br>6.92<br>8.41<br>8.72<br>10.18<br>11.57<br>13.43<br>15.29<br>16.46<br>17.60<br>18.11<br>19.29<br>20.09<br>19.99<br>20.59<br>21.05<br>21.70<br>21.66<br>21.78<br>22.16<br>22.46<br>22.13<br>22.78 | $\begin{array}{c} -0.03\\ 0.03\\ 1.31\\ 2.39\\ 3.15\\ 3.84\\ 4.34\\ 4.80\\ 5.40\\ 5.83\\ 6.06\\ 5.93\\ 5.82\\ 5.66\\ 5.30\\ 4.76\\ 4.27\\ 3.85\\ 3.57\\ 3.39\\ 3.11\\ 2.77\\ 2.57\\ 2.36\\ 2.27\\ 2.36\\ 2.27\\ 2.10\\ 1.90\end{array}$ | 10.45<br>10.88<br>12.84<br>13.21<br>13.83<br>14.62<br>14.44<br>15.43<br>16.23<br>17.66<br>19.29<br>20.59<br>21.83<br>22.51<br>24.05<br>25.39<br>25.78<br>26.80<br>27.53<br>28.61<br>29.07<br>29.45<br>29.75<br>30.35<br>30.25<br>30.25<br>30.09<br>30.94 | $\begin{array}{c} 10.1\\ 10.0\\ 8.7\\ 7.7\\ 6.9\\ 6.2\\ 5.7\\ 5.3\\ 4.7\\ 4.2\\ 4.0\\ 4.1\\ 4.2\\ 4.4\\ 4.8\\ 5.3\\ 5.8\\ 6.2\\ 6.5\\ 6.7\\ 7.3\\ 7.5\\ 7.7\\ 7.8\\ 8.0\\ 8.2\end{array}$ | 1.036<br>1.084<br>1.468<br>1.724<br>2.001<br>2.352<br>2.526<br>2.936<br>3.482<br>4.179<br>4.826<br>4.986<br>5.156<br>5.156<br>5.124<br>5.055<br>4.795<br>4.451<br>4.315<br>4.244<br>4.254<br>4.120<br>3.987<br>4.039<br>3.975<br>3.945<br>3.883<br>3.780<br>3.793 | $\begin{array}{c} -0.08\\ 0.03\\ 0.33\\ 0.44\\ 0.46\\ 0.47\\ 0.51\\ 0.48\\ 0.48\\ 0.44\\ 0.40\\ 0.37\\ 0.34\\ 0.32\\ 0.28\\ 0.24\\ 0.22\\ 0.19\\ 0.17\\ 0.16\\ 0.15\\ 0.13\\ 0.12\\ 0.11\\ 0.10\\ 0.09\end{array}$ | 10.27<br>10.45<br>10.80<br>10.44<br>10.37<br>10.42<br>10.08<br>10.34<br>10.44<br>10.94<br>11.64<br>12.36<br>13.03<br>13.45<br>14.40<br>15.34<br>15.78<br>16.51<br>17.01<br>17.52<br>17.78<br>18.18<br>18.37<br>18.61<br>19.02<br>19.03<br>19.55 | 0.18<br>0.42<br>2.05<br>2.77<br>3.46<br>4.20<br>4.36<br>5.09<br>5.78<br>6.72<br>7.65<br>8.23<br>8.80<br>9.06<br>9.64<br>10.05<br>9.99<br>10.29<br>10.52<br>10.85<br>10.83<br>10.83<br>10.83<br>11.03<br>11.23<br>11.07<br>11.39 |
| 178.1<br>183.5<br>181.7   | 0.8<br>0.9<br>0.9  | 28 51.9<br>59 51.7  | <b>B</b> ( <b>1</b> )               | 14.65<br>15.17<br>15.68   | 22.78<br>23.38<br>23.00   | 1.90<br>1.92<br>1.80  | 30.94<br>31.52<br>31.26  | 8.2<br>8.1<br>8.3   | 3.793<br>3.875<br>3.783   | 0.09<br>0.08<br>0.08   | 19.55<br>19.83<br>19.76   | 11.39<br>11.69<br>11.50   |
| Tested By: 129-07-041 <sup>-</sup><br>page 5 of 11  | Date:         8/2/19           DCN: CT-S28         DATE:         4/12/13         REVISION: 3 | Input Checked By: GEM   | Date: 8/12/19                       | page 6 of 1   | 1   |   |  |   |   |  |   |   |

### CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS AASHTO T-297

|  | /  | 0.  |                                     |  |  |  |  |  |  |  |   |  |
|--|--|---|-------------------------------------|--|--|--|--|--|--|--|---|--|
| Client:<br>Client Reference:<br>Project No.:<br>Lab ID:  | Kleinfelder<br>R-2561CA<br>R-2019-209-001<br>R-2019-209-001-010  | Boring No.:<br>Depth (ft):<br>Sample No.:   | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | Client:<br>Client Refe<br>Project No<br>Lab ID:  | erence:<br>.:  | Kleinfelder<br>R-2561CA<br>R-2019-209<br>R-2019-209  |  |  | Boring No.<br>Depth (ft):<br>Sample No   |  | S2_RT_LN<br>29.5-31.5<br>ST-2   | _EB1-A   |
| Visual Description:  | Gray Clay (UNDISTURBED)  |   |                                     | Visual Des   | cription:  | Gray Clay (  | UNDISTURE  | BED)   |  |  |   |  |
| Stage No.<br>Test No.  | 1<br>3   | INITIAL SAMPLE DIMENSIONS (in<br>Length 1: 6.004 Diameter 1:  | 2.850                               | Effective C  | Confining Pre  | ssure (psi)  | 20.0   |  | Stage No.<br>Test No   |  | 1   |  |
| PRESSURES (psi)  |  | Length 2: 5.980 Diameter 2:<br>Length 3: 6.009 Diameter 3:<br>Length 4: 6.017 Diameter 4:                     | 2.871<br>2.887<br>2.862             | INITIAL D  | MENSIONS   |  |  |  | VOLUME CHANGE  |  |   |  |
| Cell Pressure (psi)<br>Back Pressure (psi)<br>Eff. Conf. Pressure (psi)<br>Pore Pressure<br>Response (%)   | 70.0<br>50.0<br>20.0<br>98   | Avg. Length: 6.003 Avg. Diam.:<br>VOLUME CHANGE<br>Initial Burette Reading (ml)<br>Final Burette Reading (ml) | 2.868<br>24.0<br>6.2                | Initial Sam<br>Initial Sam   | ple Length (i<br>ple Diameter<br>ple Area (in <sup>2</sup><br>ple Volume (   | (in)<br>)  | 6.00<br>2.87<br>6.46<br>38.76  |  | Volume After Consolid<br>Length After Consolida<br>Area After Consolidatio   | ation (in)   |   | 36.92<br>5.90<br>6.262   |
|  |  | Final Change (ml)<br>Initial Dial Reading (mil)   | 17.8                                | Strain<br>(%)  | Deviation<br>Stress  | ΔU   | $\overline{\sigma}_1$  | $\overline{\sigma}_3$  | Effective Principle<br>Stress Ratio  | A  | P   | Q  |
| P =<br>Q =   | 35.56<br>28.29   | Dial Reading After Saturation (mil)<br>Dial Reading After Consolidation (mil)                                 | 211<br>278                          |  |  |  |  |  |  |  |   |  |
| LOAD<br>(LB)   | DEFORM.<br>(IN)  |   | URE                                 |  |  |  |  |  |  |  |   |  |
| $\begin{array}{c} 16.2\\ 27.9\\ 66.6\\ 86.7\\ 102.2\\ 121.1\\ 137.7\\ 157.8\\ 193.0\\ 249.5\\ 315.9\\ 376.4\\ 436.0\\ 460.4\\ 370.9\\ 374.3\\ 388.3\\ 398.4\\ 411.9\\ 423.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 418.6\\ 427.4\\ 434.7\\ 448.2\\ 453.8\\ 455.6\\ 80.9\\ 4$ | 0.00<br>0.00<br>0.00<br>0.01<br>0.02<br>0.03<br>0.04<br>0.07<br>0.09<br>0.13<br>0.17<br>0.21<br>0.24<br>0.28<br>0.34<br>0.28<br>0.34<br>0.40<br>0.44<br>0.50<br>0.55<br>0.59<br>0.64<br>0.67<br>0.70<br>0.73<br>0.76<br>0.80<br>0.85<br>0.88<br>0.85 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$  |                                     | 0.02<br>0.04<br>0.13<br>0.24<br>0.33<br>0.49<br>0.63<br>0.83<br>1.18<br>1.69<br>2.29<br>2.89<br>3.59<br>4.09<br>4.81<br>5.78<br>6.79<br>7.55<br>8.58<br>9.34<br>10.10<br>10.87<br>11.37<br>11.88<br>12.39<br>12.91<br>13.66<br>14.42<br>14.94<br>15.44 | 0.76<br>2.62<br>8.80<br>11.98<br>14.44<br>17.42<br>20.03<br>23.17<br>28.65<br>37.38<br>47.51<br>56.59<br>65.38<br>68.77<br>54.64<br>54.69<br>57.13<br>58.46<br>59.69<br>60.22<br>56.30<br>56.36<br>56.48<br>56.96<br>57.85<br>58.36<br>59.69<br>60.09<br>59.98 | 0.13<br>0.22<br>3.21<br>5.17<br>6.64<br>8.22<br>9.42<br>10.60<br>11.97<br>13.01<br>13.31<br>12.78<br>11.02<br>8.42<br>3.71<br>3.15<br>2.88<br>2.73<br>2.21<br>2.06<br>1.91<br>1.67<br>1.60<br>1.49<br>1.24<br>0.95<br>0.70<br>0.39 | $\begin{array}{c} 20.68\\ 22.45\\ 25.64\\ 26.86\\ 27.85\\ 29.24\\ 30.65\\ 32.62\\ 36.73\\ 44.42\\ 54.24\\ 63.86\\ 74.41\\ 80.39\\ 70.98\\ 71.49\\ 73.26\\ 74.45\\ 76.14\\ 77.53\\ 78.20\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 74.45\\ 75.40\\ 76.41\\ 77.16\\ 78.78\\ 79.43\\ 79.63\\ \end{array}$ | $\begin{array}{c} 19.9\\ 19.8\\ 16.8\\ 14.9\\ 13.4\\ 11.8\\ 10.6\\ 9.4\\ 8.1\\ 7.0\\ 6.7\\ 7.3\\ 9.0\\ 11.6\\ 16.3\\ 16.9\\ 17.2\\ 17.3\\ 17.7\\ 17.8\\ 18.0\\ 18.1\\ 18.3\\ 18.4\\ 18.4\\ 18.6\\ 18.8\\ 19.1\\ 19.3\\ 19.7\\ \end{array}$ | 1.038<br>1.132<br>1.522<br>1.806<br>2.077<br>2.473<br>2.885<br>3.452<br>4.546<br>6.310<br>8.054<br>8.786<br>8.239<br>6.917<br>4.344<br>4.231<br>4.269<br>4.299<br>4.308<br>4.347<br>4.348<br>4.105<br>4.087<br>4.073<br>4.089<br>4.117<br>4.103<br>4.126<br>4.106<br>4.052 | 0.17<br>0.08<br>0.37<br>0.44<br>0.47<br>0.48<br>0.47<br>0.43<br>0.36<br>0.29<br>0.23<br>0.17<br>0.13<br>0.07<br>0.06<br>0.05<br>0.05<br>0.05<br>0.04<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.02<br>0.02<br>0.01<br>0.01 | $\begin{array}{c} 20.30\\ 21.14\\ 20.86\\ 20.63\\ 20.53\\ 20.64\\ 21.04\\ 22.40\\ 25.73\\ 30.49\\ 35.56\\ 41.72\\ 46.01\\ 43.66\\ 44.19\\ 45.21\\ 45.88\\ 46.91\\ 47.69\\ 48.09\\ 46.28\\ 46.91\\ 47.69\\ 48.09\\ 46.28\\ 46.44\\ 46.62\\ 46.92\\ 47.49\\ 48.94\\ 49.39\\ 49.64\end{array}$ | 0.38<br>1.31<br>4.40<br>5.99<br>7.22<br>8.71<br>10.01<br>11.59<br>14.32<br>18.69<br>23.75<br>28.29<br>32.69<br>34.39<br>27.32<br>27.30<br>28.05<br>28.56<br>29.23<br>29.85<br>30.11<br>28.15<br>28.18<br>28.24<br>28.48<br>28.93<br>29.18<br>29.84<br>30.04<br>29.99 |
| Tested By: 129-07-041  |  | Input Checked By: GEM   | Date: 8/12/2019                     |  | 00.00  | 0.00   | 10.00  | 10.7   | 7.002  | 0.01   | -0.04   |  |

page 8 of 11

### CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS AASHTO T-297



Tested By: 129-07-0411 Date: 8/2/19 page 10 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

# CONSOLIDATED UNDRAINED TRIAXIAL TEST

| N_EB1-A<br>31.5<br>- 2 | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 |
|------------------------|-------------------------------------|-------------------------------------|
|                        | T2                                  | Т3                                  |
| 11                     | 0.0011                              | 0.0011                              |
| 0                      | 50.0                                | 50.0                                |
|                        | 1                                   | 1                                   |
| 4                      | 31.9                                | 27.4                                |
| .1                     | 114.8                               | 120.5                               |
| 0                      | 87.1                                | 94.6                                |
| 3                      | 33.5                                | 27.9                                |
| 15                     | 0.921                               | 0.769                               |
| 7                      | 0.817                               | 0.685                               |
|                        |                                     |                                     |

Input Checked By: GEM Date: 8/12/19



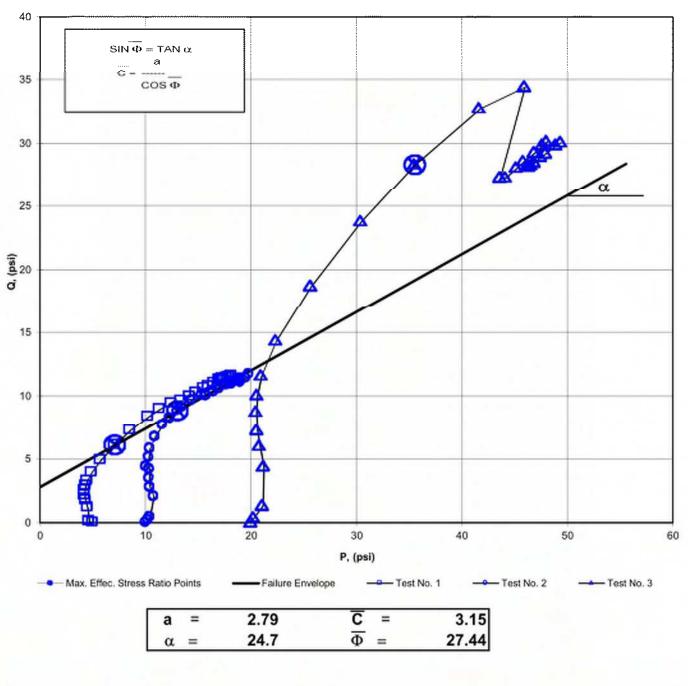
AASHTO T-297

Client: Client Reference: Project No .: Lab ID:

Kleinfelder R-2561CA R-2019-209-001 R-2019-209-001-010

Boring No.: Depth (ft): Sample No.: S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2

# **Consolidated Undrained Triaxial Test with Pore Pressure**

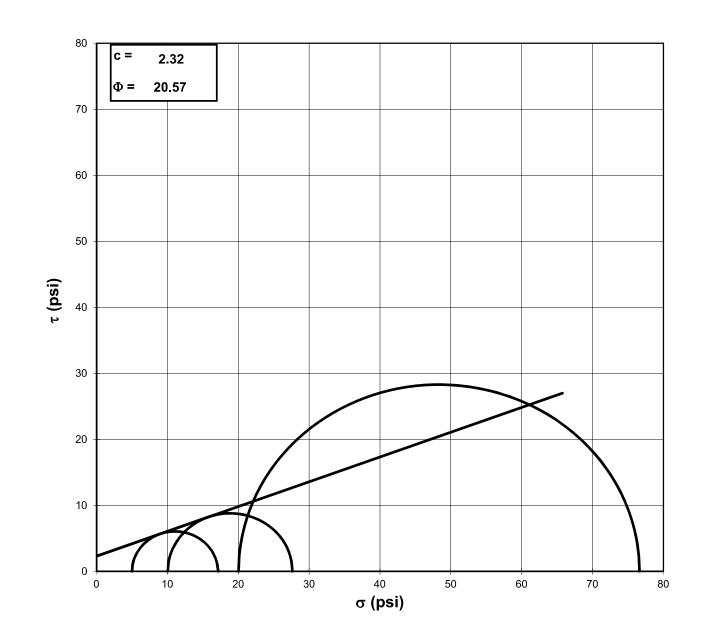


|             | AASHTO |
|-------------|--------|
| Kleinfelder |        |

Kleinfelder Client Reference: R-2561CA Project No.: R-2019-209-001 R-2019-209-001-010 Gray Clay (UNDISTURBED) Visual Description:

Client:

Lab ID:



Failure Based on Maximum Effective Principal Stress Ratio

MPS *Tested By:* 129-07-0411 Date: 8/2/19 Approved By: page 2 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

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Approved By: MPS

Date: 8/12/19

Sigmatriax.xls

Tested By: 129-07-0411 Date: 8/2/19

page 1 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

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### MOHR TOTAL STRENGTH ENVELOPE ) T-297

Boring No.: Depth (ft): Sample No.: S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2

NOTE: GRAPH NOT TO SCALE

Date: 8/12/19



|               |   |             | ////0111012   |                 |                |  |                |       |
|---------------|---|-------------|---|-----------------|----------------|--|----------------|-------|
| Client:       |   | Kleinfelder |   | E               | Boring No.     | :  | S2_RT_LN       | _EB1- |
| Client Refere | ence:   | R-2561CA    |   | Depth (ft):     |                |  | 29.5-31.5      |       |
| Project No.:  |   | R-2019-209- | 001   | Sample No.:     |                |  | ST-2           |       |
| Lab ID:       |   | R-2019-209- |   |                 | ·              |  |                |       |
| Visual Descr  | rintion <sup>.</sup>  |             | INDISTURBED)  |                 |                |  |                |       |
|               |   |             |   |                 |                |  |                |       |
| Stage No.     |   | 2           |   |                 |                | ENSIONS (in)   |                |       |
| Test No.      |   | 1           |   | Length 1:       | 6.379          | Diameter 1:  | 2.859          |       |
| PREGOURE      | 0 (   |             |   | Length 2:       | 6.458          | Diameter 2:  | 2.875          |       |
| PRESSURE      | s (psi)   |             |   | Length 3:       | 6.444<br>6.395 | Diameter 3:  | 2.862<br>2.858 |       |
|               |   | <b>FF 0</b> |   | Length 4:       | 6.419          | Diameter 4:  | 2.858          |       |
| Cell Pressur  |   | 55.0        | /   | Avg. Length:    | 0.419          | Avg. Diam.:  | 2.004          |       |
| Back Pressu   |   | 50.0        |   |                 |                |  |                |       |
| Eff. Conf. Pr |   | 5.0         |   | VOLUME CH       |                | ( I)   |                |       |
| Pore Pressu   |   | 100         |   | Initial Burette |                |  | 24.0           |       |
| Response (%   | %)  | 100         |   | Final Burette   |                | (mi)   | 13.5           |       |
|               |   |             |   | Final Change    | 3 (MI)         |  | 10.5           |       |
| MAXIMUM       | DBLIQUITY I   | POINTS      |   |                 |                |  |                |       |
|               |   | 7.00        |   | Initial Dial Re |                |  | 388            |       |
|               |   | 7.09        |   | Dial Reading    |                |  | 501            |       |
| Q =           |   | 6.06        |   | Dial Reading A  | Atter Consc    | bildation (mill)   | 531            |       |
|               | LOAD  |             | DEFORMAT  | ION             | ļ              | PORE PRESSU  | RE             |       |
|               | (LB)  |             | <u>(IN)</u>   |                 |                | <u>(PSI)</u>   |                |       |
|               | 9.5<br>10.5   |             | 0.000<br>0.001  |                 |                | 50.0<br>50.4   |                |       |
|               | 10.5  |             | 0.001   |                 |                | 50.4   |                |       |
|               | 24.2  |             | 0.009   |                 |                | 51.7   |                |       |
|               | 30.9  |             | 0.015   |                 |                | 52.4   |                |       |
|               | 35.5  |             | 0.021   |                 |                | 52.8   |                |       |
|               | 40.6  |             | 0.031   |                 |                | 53.3   |                |       |
|               | 44.9  |             | 0.040   |                 |                | 53.5   |                |       |
|               | 49.9  |             | 0.053   |                 |                | 53.8   |                |       |
|               | 58.2<br>70.2  |             | 0.076<br>0.108  |                 |                | 54.0<br>54.1   |                |       |
|               | 85.7  |             |   |                 |                | 54.1   |                |       |
|               | 00.7  |             |   |                 |                | 54.0   |                |       |
|               |   |             | 0.146<br>0.185  |                 |                | 54.0<br>53.7   |                |       |
|               | 100.8   |             | 0.185   |                 |                | 53.7   |                |       |
|               |   |             |   |                 |                |  |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6  |             | 0.185<br>0.229<br>0.261<br>0.306  |                 |                | 53.7<br>53.1<br>52.6<br>51.9   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6   |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367   |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6<br>140.2  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431  |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6<br>140.2<br>145.2   |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479   |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6<br>140.2<br>145.2<br>151.6  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543  |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6<br>140.2<br>145.2<br>151.6<br>155.3   |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591   |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8   |                |       |
|               | 100.8<br>115.6<br>123.9<br>130.6<br>134.6<br>140.2<br>145.2<br>151.6  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543  |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0   |                |       |
|               | $100.8 \\ 115.6 \\ 123.9 \\ 130.6 \\ 134.6 \\ 140.2 \\ 145.2 \\ 151.6 \\ 155.3 \\ 160.1 \\ 164.7 \\ 165.9 \\ 165.9 \\ 100.1 \\ 100.$ |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719  |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2   |                |       |
|               | $100.8 \\ 115.6 \\ 123.9 \\ 130.6 \\ 134.6 \\ 140.2 \\ 145.2 \\ 151.6 \\ 155.3 \\ 160.1 \\ 164.7 \\ 165.9 \\ 168.0 \\$  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751                                     |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2<br>49.0   |                |       |
|               | $100.8\\115.6\\123.9\\130.6\\134.6\\140.2\\145.2\\151.6\\155.3\\160.1\\164.7\\165.9\\168.0\\166.9$  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751<br>0.783                            |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2<br>49.0<br>49.0                                 |                |       |
|               | $\begin{array}{c} 100.8\\ 115.6\\ 123.9\\ 130.6\\ 134.6\\ 140.2\\ 145.2\\ 151.6\\ 155.3\\ 160.1\\ 164.7\\ 165.9\\ 168.0\\ 166.9\\ 169.3 \end{array}$  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751<br>0.783<br>0.815                   |                 |                | 53.7 $53.1$ $52.6$ $51.9$ $51.2$ $50.7$ $50.4$ $50.0$ $49.8$ $49.5$ $49.2$ $49.2$ $49.2$ $49.0$ $49.0$ $48.9$                                |                |       |
|               | $100.8\\115.6\\123.9\\130.6\\134.6\\140.2\\145.2\\151.6\\155.3\\160.1\\164.7\\165.9\\168.0\\166.9\\169.3\\172.1$  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751<br>0.783<br>0.815<br>0.863          |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2<br>49.2<br>49.0<br>49.0<br>48.9<br>48.7         |                |       |
|               | $100.8\\115.6\\123.9\\130.6\\134.6\\140.2\\145.2\\151.6\\155.3\\160.1\\164.7\\165.9\\168.0\\166.9\\169.3\\172.1\\174.6$   |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751<br>0.783<br>0.815<br>0.863<br>0.911 |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2<br>49.2<br>49.0<br>49.0<br>48.9<br>48.7<br>48.5 |                |       |
|               | $100.8\\115.6\\123.9\\130.6\\134.6\\140.2\\145.2\\151.6\\155.3\\160.1\\164.7\\165.9\\168.0\\166.9\\169.3\\172.1$  |             | 0.185<br>0.229<br>0.261<br>0.306<br>0.367<br>0.431<br>0.479<br>0.543<br>0.591<br>0.639<br>0.687<br>0.719<br>0.751<br>0.783<br>0.815<br>0.863          |                 |                | 53.7<br>53.1<br>52.6<br>51.9<br>51.2<br>50.7<br>50.4<br>50.0<br>49.8<br>49.5<br>49.2<br>49.2<br>49.2<br>49.0<br>49.0<br>48.9<br>48.7         |                |       |

page 3 of 11

DCN: CT-S28 DATE: 4/12/13 REVISION: 3

Sigmatriax.xls

| Visual Des   | scription: C  | Gray Clay (l  | JNDISTURI   | BED)  |
|--|---|---|---|---|
| Effective (  | Confining Pres  | ssure (psi)   | 5.0   |   |
| INITIAL D  | IMENSIONS   |   |   |   |
| Initial Sam<br>Initial Sam   | nple Length (ir<br>nple Diameter<br>nple Area (in²)<br>nple Volume (i   | (in)  | 6.42<br>2.86<br>6.44<br>41.34   |   |
| Strain<br>(%)  | Deviation<br>Stress   | ΔU  | $\overline{\sigma}_1$   | $\overline{\sigma}_3$   |
| 0.02<br>0.04<br>0.14<br>0.23<br>0.34<br>0.49<br>0.64<br>0.85<br>1.21<br>1.71<br>2.33<br>2.94<br>3.65<br>4.16<br>4.88<br>5.85<br>6.86<br>7.64<br>8.65<br>9.42<br>10.18<br>10.94<br>11.46<br>11.97<br>12.48<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.99<br>12.94<br>12.99<br>12.94<br>12.94<br>12.94<br>12.94<br>12.94<br>12.94<br>12.94<br>12.95<br>12.94<br>12.94<br>12.94<br>12.94<br>12.95<br>12.94<br>12.94<br>12.95<br>12.94<br>12.95<br>12.94<br>12.95<br>12.94<br>12.94<br>12.95<br>12.94<br>12.94<br>12.94<br>12.95<br>12.94<br>12.94<br>12.94<br>12.93<br>12.94<br>12.94<br>12.93<br>12.94<br>12.94<br>12.95<br>12.94<br>12.95<br>12.94<br>12.95<br>12.94<br>12.95<br>12.94<br>12.94<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.94<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12.95<br>12. | 0.17<br>0.26<br>2.39<br>3.48<br>4.22<br>5.05<br>5.74<br>6.53<br>7.84<br>9.72<br>12.12<br>14.43<br>16.66<br>17.86<br>18.78<br>19.19<br>19.84<br>20.43<br>21.15<br>21.53<br>22.04<br>22.53<br>22.57<br>22.75<br>22.45<br>22.66<br>22.66 | 0.40<br>0.44<br>1.66<br>2.39<br>2.84<br>3.26<br>3.53<br>3.77<br>3.98<br>4.08<br>3.97<br>3.67<br>3.07<br>2.60<br>1.93<br>1.21<br>0.73<br>0.42<br>0.03<br>-0.23<br>-0.52<br>-0.76<br>-0.83<br>-0.95<br>-1.03<br>-1.03<br>-1.14<br>-1.20 | 4.77<br>4.82<br>5.73<br>6.09<br>6.38<br>6.79<br>7.21<br>7.77<br>8.86<br>10.64<br>13.15<br>15.76<br>18.59<br>20.27<br>21.85<br>22.98<br>24.11<br>25.01<br>26.12<br>26.75<br>27.56<br>28.28<br>28.40<br>28.70<br>28.48<br>28.40<br>28.48<br>28.40 | 4.6<br>4.6<br>3.3<br>2.6<br>2.2<br>1.7<br>1.5<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2<br>1.2 |

Client:

Lab ID:

13.74

14.52

15.29

16.05

page 4 of 11

22.86

23.00

23.15

23.21

-1.29

-1.46

-1.61

-1.75

29.15

29.45

29.76

29.96

Project No.:

**Client Reference:** 

CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

Kleinfelder

R-2561CA

R-2019-209-001

R-2019-209-001-010

AASHTO T-297



Boring No.: Depth (ft): Sample No.: S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2

| D)  |  |  |   |  |
|---|--|--|---|--|
|   | Stage No.<br>Test No   |  | 2   |  |
|   |  |  |   |  |
|   | Volume After Consolid<br>Length After Consolida<br>Area After Consolidatio   | ition (in)   |   | 38.51<br>6.28<br>6.137   |
| $\overline{\sigma}_3$   | Effective Principle<br>Stress Ratio  | Ā  | P   | Q  |
| $\begin{array}{c} 4.6\\ 4.6\\ 3.3\\ 2.6\\ 2.2\\ 1.7\\ 1.5\\ 1.0\\ 0.9\\ 1.3\\ 1.9\\ 4.3\\ 4.6\\ 5.0\\ 5.5\\ 5.8\\ 5.8\end{array}$ | $\begin{array}{c} 1.036\\ 1.056\\ 1.716\\ 2.335\\ 2.956\\ 3.906\\ 4.909\\ 6.299\\ 8.702\\ 11.561\\ 12.771\\ 11.859\\ 9.639\\ 8.429\\ 7.114\\ 6.061\\ 5.649\\ 5.460\\ 5.258\\ 5.120\\ 4.993\\ 4.914\\ 4.870\end{array}$ | 2.39<br>1.72<br>0.69<br>0.67<br>0.65<br>0.62<br>0.58<br>0.51<br>0.42<br>0.33<br>0.25<br>0.18<br>0.15<br>0.10<br>0.06<br>0.04<br>0.02<br>0.00<br>-0.01<br>-0.02<br>-0.03<br>-0.04 | 4.69<br>4.69<br>4.54<br>4.35<br>4.27<br>4.26<br>4.34<br>4.50<br>4.94<br>5.78<br>7.09<br>8.55<br>10.26<br>11.34<br>12.46<br>13.39<br>14.19<br>14.80<br>15.54<br>15.99<br>16.54<br>17.02<br>17.12 | 0.08<br>0.13<br>1.20<br>1.74<br>2.11<br>2.52<br>2.87<br>3.27<br>3.92<br>4.86<br>6.06<br>7.22<br>8.33<br>8.93<br>9.39<br>9.59<br>9.92<br>10.21<br>10.58<br>10.76<br>11.02<br>11.26<br>11.29 |
| 6.0<br>6.1<br>6.3<br>6.5<br>6.6<br>6.8  | 4.822<br>4.721<br>4.688<br>4.636<br>4.560<br>4.502<br>4.436  | -0.04<br>-0.05<br>-0.05<br>-0.06<br>-0.06<br>-0.07<br>-0.08  | 17.32<br>17.26<br>17.47<br>17.72<br>17.96<br>18.19<br>18.36   | 11.37<br>11.23<br>11.33<br>11.43<br>11.50<br>11.58<br>11.60  |



|   | AASHIC  | 5 1-297                               |                 |                                     |  |
|---|---|---------------------------------------|-----------------|-------------------------------------|--|
| Client:<br>Client Reference:<br>Project No.:<br>Lab ID: | Kleinfelder<br>R-2561CA<br>R-2019-209-001<br>R-2019-209-001-010 | Boring No<br>Depth (ft):<br>Sample No |                 | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | Client:<br>Client Re<br>Project N<br>Lab ID: |
| Visual Description:                                     | Gray Clay (UNDISTURBED)   |                                       |                 |                                     | Visual De                                    |
| Store No.   | 2   |                                       |                 |                                     | Effective                                    |
| Stage No.<br>Test No.                                   | 3<br>2  | INITIAL SAMPLE DIN<br>Length 1: 6.253 | Diameter 1:     | 2.867                               | Enective                                     |
| 1001110.  | -   | Length 2: 6.224                       | Diameter 2:     | 2.868                               |  |
| PRESSURES (psi)   |   | Length 3: 6.243                       | Diameter 3:     | 2.863                               | INITIAL                                      |
|   |   | Length 4: 6.293                       | Diameter 4:     | 2.864                               |  |
| Cell Pressure (psi)                                     | 60.0  | Avg. Length: 6.253                    | Avg. Diam.:     | 2.866                               | Initial Sa                                   |
| Back Pressure (psi)                                     | 50.0  |                                       |                 |                                     | Initial Sa                                   |
| Eff. Conf. Pressure (psi)                               | 10.1  | VOLUME CHANGE                         |                 |                                     | Initial Sa                                   |
| Pore Pressure   |   | Initial Burette Reading               | <b>`</b>        | 24.0                                | Initial Sa                                   |
| Response (%)  | 98  | Final Burette Reading                 | (ml)            | 7.3                                 |  |
|   |   | Final Change (ml)                     |                 | 16.7                                |  |
| MAXIMUM OBLIQUITY                                       | POINTS  |                                       |                 |                                     | Strain                                       |
|   |   | Initial Dial Reading (m               | il)             | 512                                 | (%)  |
| P =   | 13.03   | Dial Reading After Sat                |                 | 572                                 |  |
| Q =   | 8.80  | Dial Reading After Cons               | olidation (mil) | 645                                 |  |
| LOAD  | DEFOR   | MATION                                | PORE PRESSI     | JRE                                 |  |
| (LB)  | 11)   |                                       | (PSI)           |                                     |  |
| 11.7  | 0.0   |                                       | 50.0            |                                     |  |
| 14.0  | 0.0   |                                       | 49.9            |                                     | 0.02   |
| 17.0  | 0.0   |                                       | 50.0            |                                     | 0.06   |
| 37.2<br>46.4  | 0.0<br>0.0  |                                       | 51.3<br>52.3    |                                     | 0.15<br>0.25                                 |
| 55.0  | 0.0   |                                       | 53.1            |                                     | 0.35   |
| 64.4  | 0.0   |                                       | 53.8            |                                     | 0.51   |
| 66.4  | 0.0   |                                       | 54.3            |                                     | 0.67   |
| 75.7  | 0.0   |                                       | 54.8            |                                     | 0.87   |
| 84.7<br>96.9  | 0.0<br>0.1  |                                       | 55.4<br>55.8    |                                     | 1.23<br>1.75                                 |
| 109.3   | 0.1   |                                       | 56.0            |                                     | 2.36   |
| 117.4   | 0.1   |                                       | 55.9            |                                     | 2.97   |
| 125.6   | 0.2   |                                       | 55.8            |                                     | 3.68   |
| 129.6   | 0.2   |                                       | 55.6            |                                     | 4.20   |
| 138.2<br>144.8  | 0.3<br>0.3  |                                       | 55.3<br>54.7    |                                     | 4.92<br>5.91                                 |
| 145.5   | 0.3   |                                       | 54.2            |                                     | 6.92   |
| 150.7   | 0.4   |                                       | 53.8            |                                     | 7.69   |
| 155.4   | 0.5   |                                       | 53.5            |                                     | 8.73   |
| 161.2   | 0.5   |                                       | 53.3            |                                     | 9.50   |
| 162.2<br>164.3  | 0.6   |                                       | 53.1            |                                     | 10.27  |
| 167.9   | 0.6<br>0.7  |                                       | 52.7<br>52.7    |                                     | 11.03<br>11.55                               |
| 169.5   | 0.7   |                                       | 52.5            |                                     | 12.07  |
| 173.2   | 0.7   | 70                                    | 52.3            |                                     | 12.58  |
| 172.8   | 0.8   |                                       | 52.2            |                                     | 13.11  |
| 171.9   | 0.8   |                                       | 52.1            |                                     | 13.88  |
| 178.1<br>183.5  | 0.8<br>0.9  |                                       | 51.9<br>51.9    |                                     | 14.65<br>15.17                               |
| 181.7   | 0.9   |                                       | 51.5            |                                     | 15.68  |
| Tested By: 129-07-041                                   |   | Input Checked By:                     | GEM             | Date: 8/12/19                       |  |
| nogo 5 of 11  |   | inpat enconted by:                    |                 | 24101 0/12/10                       | nage 6 of                                    |

Kleinfelder ent: ent Reference: R-2561CA R-2019-209-001 ject No.: ID: R-2019-209-001-010 Gray Clay (UNDISTURBED) ual Description: ective Confining Pressure (psi) 10.1 TIAL DIMENSIONS 6.25 ial Sample Length (in) ial Sample Diameter (in) 2.87 ial Sample Area (in<sup>2</sup>) 6.45 ial Sample Volume (in<sup>3</sup>) 40.33 Deviation ΔU Strain  $\sigma_1$  $\sigma_3$ (%) Stress -0.03 0.02 0.36 10.45 10. 0.06 0.85 0.03 10.88 10. 0.15 1.31 8.7 4.09 12.84

2.39

3.15

3.84

4.34

4.80

5.40

5.83

6.06

5.93

5.82

5.66

5.30

4.76

4.27

3.85

3.57

3.39

3.11

2.77

2.77

2.57

2.36

2.27

2.10

1.90

1.92

1.80

13.21

13.83

14.62

14.44

15.43

16.23

17.66

19.29

20.59

21.83

22.51

24.05

25.39

25.78

26.80

27.53

28.37

28.61

29.07

29.45

29.75

30.35

30.25

30.09

30.94

31.52

31.26

5.55

6.92

8.41

8.72

10.18

11.57

13.43

15.29

16.46

17.60

18.11

19.29

20.09

19.99

20.59

21.05

21.70

21.66

21.78

22.16

22.26

22.65

22.46

22.13

22.78

23.38

23.00

| page 6 of 11  |    |
|---|----|
| 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 2760 | )4 |

page 5 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS AASHTO T-297



Boring No.: Depth (ft): Sample No.: S2\_RT\_LN\_EB1-A 29.5-31.5 ST-2

|   | Stage No.<br>Test No  |  | 3<br>2   |  |  |  |
|---|---|--|--|--|--|--|
|   | VOLUME CHANGE   |  |  |  |  |  |
|   | Volume After Consolid<br>Length After Consolida<br>Area After Consolidatio  | ation (in)   |  | 38.15<br>6.12<br>6.233   |  |  |
| $\overline{\sigma}_3$   | Effective Principle<br>Stress Ratio   | Ā  | P  | Q  |  |  |
| 10.1<br>10.0<br>8.7<br>7.7<br>6.9<br>6.2<br>5.7<br>5.3<br>4.7<br>4.2<br>4.0<br>4.1<br>4.2   | 1.036<br>1.084<br>1.468<br>1.724<br>2.001<br>2.352<br>2.526<br>2.936<br>3.482<br>4.179<br>4.826<br>4.986<br>5.156<br>5.104                            | -0.08<br>0.03<br>0.33<br>0.44<br>0.46<br>0.47<br>0.51<br>0.48<br>0.48<br>0.48<br>0.48<br>0.44<br>0.40<br>0.37<br>0.34        | 10.27<br>10.45<br>10.80<br>10.44<br>10.37<br>10.42<br>10.08<br>10.34<br>10.44<br>10.94<br>11.64<br>12.36<br>13.03  | 0.18<br>0.42<br>2.05<br>2.77<br>3.46<br>4.20<br>4.36<br>5.09<br>5.78<br>6.72<br>7.65<br>8.23<br>8.80   |  |  |
| $\begin{array}{c} 4.4 \\ 4.8 \\ 5.3 \\ 5.8 \\ 6.2 \\ 6.5 \\ 6.7 \\ 6.9 \\ 7.3 \\ 7.5 \\ 7.7 \\ 7.8 \\ 8.0 \\ 8.2 \\ 8.1 \\ 8.3 \end{array}$ | 5.124<br>5.055<br>4.795<br>4.451<br>4.315<br>4.244<br>4.254<br>4.120<br>3.987<br>4.039<br>3.975<br>3.945<br>3.883<br>3.780<br>3.793<br>3.875<br>3.783 | 0.32<br>0.28<br>0.24<br>0.19<br>0.17<br>0.16<br>0.15<br>0.13<br>0.13<br>0.12<br>0.11<br>0.10<br>0.10<br>0.09<br>0.08<br>0.08 | $\begin{array}{c} 13.45 \\ 14.40 \\ 15.34 \\ 15.78 \\ 16.51 \\ 17.01 \\ 17.52 \\ 17.78 \\ 18.18 \\ 18.37 \\ 18.61 \\ 19.02 \\ 19.02 \\ 19.03 \\ 19.55 \\ 19.83 \\ 19.76 \end{array}$ | 9.06<br>9.64<br>10.05<br>9.99<br>10.29<br>10.52<br>10.85<br>10.83<br>10.89<br>11.08<br>11.13<br>11.23<br>11.23<br>11.07<br>11.39<br>11.69<br>11.50 |  |  |



| Client Reference:<br>Project No.:<br>Lab ID:  | Kleinfelder<br>R-2561CA<br>R-2019-209-001<br>R-2019-209-001-010 |  | Boring No.:<br>Depth (ft):<br>Sample No.: |  |       | N_EB1-A |
|---|---|--|---|--|-------|---------|
| Visual Description:   | Gray Clay (UNDISTUF   | (BED)  |   |  |       |         |
| Stage No.   | 1   | INITIAL S  |   | IONS (in)  |       |         |
| Test No.  | 3   | Length 1:  | 6.004 Dia                                 | ameter 1:  | 2.850 |         |
|   | ·   | Length 2:  | 5.980 Dia                                 | ameter 2:  | 2.871 |         |
| PRESSURES (psi)   |   | Length 3:  |   | ameter 3:  | 2.887 |         |
|   |   | Length 4:  |   | ameter 4:  | 2.862 |         |
| Cell Pressure (psi)   | 70.0  | Avg. Length  |   | g. Diam.:  | 2.868 |         |
| Back Pressure (psi)   | 50.0  | nug. Longu   | . 0.000 /10                               | g. Diam.   | 2.000 |         |
|   |   |  | CHANCE                                    |  |       |         |
| Eff. Conf. Pressure (psi)   | 20.0  |  | CHANGE                                    |  |       |         |
| Pore Pressure   |   |  | ette Reading (ml)                         |  | 24.0  |         |
| Response (%)  | 98  |  | ette Reading (ml)                         |  | 6.2   |         |
|   |   | Final Cha  | nge (ml)                                  |  | 17.8  |         |
| MAXIMUM OBLIQUITY I   | POINTS  |  |   |  |       |         |
|   |   | Initial Dia  | Reading (mil)                             |  | 172   |         |
| <u>P</u> =  | 35.56   |  | ing After Saturation                      | on (mil)   | 211   |         |
| ,<br>Q =  | 28.29   |  | ng After Consolidat                       |  | 278   |         |
|   |   |  | -   | · · ·  |       | :       |
| LOAD  | DE  | FORMATION  | POR                                       | E PRESSU   | RE    |         |
| (LB)  |   | (IN)   |   | (PSI)  |       |         |
| 11.5  |   | 0.000  |   | 50.0   |       |         |
| 16.2  |   | 0.001  |   | 50.1   |       |         |
| 27.9  |   | 0.003  |   | 50.2   |       |         |
| 66.6  |   | 0.008  |   | 53.2   |       |         |
| 86.7  |   | 0.014  |   | 55.1   |       |         |
| 102.2   |   | 0.020  |   | 56.6   |       |         |
| 121.1   |   | 0.029  |   | 58.2   |       |         |
| 137.7   |   | 0.037  |   | 59.4   |       |         |
|   |   | 0.049<br>0.070   |   | 60.6<br>61.9   |       |         |
| 157.8   |   |  |   | 019  |       |         |
| 157.8<br>193.0  |   |  |   |  |       |         |
| 157.8<br>193.0<br>249.5   |   | 0.099  |   | 63.0   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9  |   | 0.099<br>0.135   |   | 63.0<br>63.3   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4   |   | 0.099<br>0.135<br>0.171  |   | 63.0<br>63.3<br>62.8   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0  |   | 0.099<br>0.135<br>0.171<br>0.211   |   | 63.0<br>63.3<br>62.8<br>61.0   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0<br>460.4   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241  |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0  |   | 0.099<br>0.135<br>0.171<br>0.211   |   | 63.0<br>63.3<br>62.8<br>61.0   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0<br>460.4<br>370.9  |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284   |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0<br>460.4<br>370.9<br>374.3<br>388.3<br>398.4   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445  |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0<br>460.4<br>370.9<br>374.3<br>388.3<br>398.4<br>411.9  |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506   |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3   |       |         |
| 157.8<br>193.0<br>249.5<br>315.9<br>376.4<br>436.0<br>460.4<br>370.9<br>374.3<br>388.3<br>398.4<br>411.9<br>423.8   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551  |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2   |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9$  |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596   |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2<br>52.0   |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9 \\ 407.0 \\ $   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641  |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2<br>52.0<br>51.9   |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9 \\ 407.0 \\ 409.6 $   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670   |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2<br>52.0<br>51.9<br>51.8   |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9 \\ 407.0 \\ 409.6 \\ 412.8 \\ $   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701  |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2<br>52.0<br>51.9<br>51.8<br>51.6   |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9 \\ 407.0 \\ 409.6 \\ 412.8 \\ 418.6 $                                   |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701<br>0.731                                     |   | 63.0<br>63.3<br>62.8<br>61.0<br>58.4<br>53.7<br>53.1<br>52.9<br>52.7<br>52.3<br>52.2<br>52.0<br>51.9<br>51.8<br>51.6<br>51.6                                     |       |         |
| $157.8 \\ 193.0 \\ 249.5 \\ 315.9 \\ 376.4 \\ 436.0 \\ 460.4 \\ 370.9 \\ 374.3 \\ 388.3 \\ 398.4 \\ 411.9 \\ 423.8 \\ 430.9 \\ 407.0 \\ 409.6 \\ 412.8 \\ 418.6 \\ 427.4 $                          |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701<br>0.731<br>0.761                            |   | $\begin{array}{c} 63.0\\ 63.3\\ 62.8\\ 61.0\\ 58.4\\ 53.7\\ 53.1\\ 52.9\\ 52.7\\ 52.3\\ 52.2\\ 52.0\\ 51.9\\ 51.8\\ 51.6\\ 51.6\\ 51.5\end{array}$               |       |         |
| $\begin{array}{c} 157.8\\ 193.0\\ 249.5\\ 315.9\\ 376.4\\ 436.0\\ 460.4\\ 370.9\\ 374.3\\ 388.3\\ 398.4\\ 411.9\\ 423.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 418.6\\ 427.4\\ 434.7\end{array}$         |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701<br>0.701<br>0.731<br>0.761<br>0.806          |   | $\begin{array}{c} 63.0\\ 63.3\\ 62.8\\ 61.0\\ 58.4\\ 53.7\\ 53.1\\ 52.9\\ 52.7\\ 52.3\\ 52.2\\ 52.0\\ 51.9\\ 51.8\\ 51.6\\ 51.6\\ 51.5\\ 51.2\end{array}$        |       |         |
| $\begin{array}{c} 157.8\\ 193.0\\ 249.5\\ 315.9\\ 376.4\\ 436.0\\ 460.4\\ 370.9\\ 374.3\\ 388.3\\ 398.4\\ 411.9\\ 423.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 418.6\\ 427.4\\ 434.7\\ 448.2\end{array}$ |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701<br>0.701<br>0.731<br>0.761<br>0.806<br>0.850 |   | $\begin{array}{c} 63.0\\ 63.3\\ 62.8\\ 61.0\\ 58.4\\ 53.7\\ 53.1\\ 52.9\\ 52.7\\ 52.3\\ 52.2\\ 52.0\\ 51.9\\ 51.8\\ 51.6\\ 51.6\\ 51.5\\ 51.2\\ 50.9\end{array}$ |       |         |
| $\begin{array}{c} 157.8\\ 193.0\\ 249.5\\ 315.9\\ 376.4\\ 436.0\\ 460.4\\ 370.9\\ 374.3\\ 388.3\\ 398.4\\ 411.9\\ 423.8\\ 430.9\\ 407.0\\ 409.6\\ 412.8\\ 418.6\\ 427.4\\ 434.7\end{array}$         |   | 0.099<br>0.135<br>0.171<br>0.211<br>0.241<br>0.284<br>0.341<br>0.400<br>0.445<br>0.506<br>0.551<br>0.596<br>0.641<br>0.670<br>0.701<br>0.701<br>0.731<br>0.761<br>0.806          |   | $\begin{array}{c} 63.0\\ 63.3\\ 62.8\\ 61.0\\ 58.4\\ 53.7\\ 53.1\\ 52.9\\ 52.7\\ 52.3\\ 52.2\\ 52.0\\ 51.9\\ 51.8\\ 51.6\\ 51.6\\ 51.5\\ 51.2\end{array}$        |       |         |

| Client:<br>Client Refe<br>Project Nc<br>Lab ID:  | erence:<br>.:  | Kleinfelder<br>R-2561CA<br>R-2019-209<br>R-2019-209  |  |   | Boring No.:<br>Depth (ft):<br>Sample No.:  |  | S2_RT_LN<br>29.5-31.5<br>ST-2   | I_EB1-A  |
|--|--|--|--|---|--|--|---|--|
| Visual Des   | scription:   | Gray Clay (I   | UNDISTURB  | ED)   |  |  |   |  |
| Effective C  | Confining Pre  | ssure (psi)  | 20.0   |   | Stage No.<br>Test No   |  | 1<br>3  |  |
| INITIAL D  | IMENSIONS  |  |  |   | VOLUME CHANGE  |  |   |  |
| Initial Sam<br>Initial Sam   | iple Length (i<br>iple Diamete<br>iple Area (in <sup>2</sup><br>iple Volume (  | r (in)<br>)  | 6.00<br>2.87<br>6.46<br>38.76  |   | Volume After Consolid<br>Length After Consolida<br>Area After Consolidatio   | tion (in)  |   | 36.92<br>5.90<br>6.262   |
| Strain<br>(%)  | Deviation<br>Stress  | ΔU   | $\overline{\sigma}_{l}$  | $\overline{\sigma_3}$   | Effective Principle<br>Stress Ratio  | Ā  | <br>P   | Q  |
| 0.02<br>0.04<br>0.13<br>0.24<br>0.33<br>0.49<br>0.63<br>0.83<br>1.18<br>1.69<br>2.29<br>2.89<br>3.59<br>4.09<br>4.81<br>5.78<br>6.79<br>7.55<br>8.58<br>9.34<br>10.10<br>10.87<br>11.37<br>11.88<br>12.39<br>12.91<br>13.66<br>14.42<br>14.94<br>15.44 | 0.76<br>2.62<br>8.80<br>11.98<br>14.44<br>17.42<br>20.03<br>23.17<br>28.65<br>37.38<br>47.51<br>56.59<br>65.38<br>68.77<br>54.64<br>54.59<br>56.10<br>57.13<br>58.46<br>59.69<br>60.22<br>56.30<br>56.36<br>56.48<br>56.96<br>56.36<br>56.48<br>56.96<br>57.85<br>58.36<br>59.69<br>60.09<br>59.98 | 0.13<br>0.22<br>3.21<br>5.17<br>6.64<br>8.22<br>9.42<br>10.60<br>11.97<br>13.01<br>13.31<br>12.78<br>11.02<br>8.42<br>3.71<br>3.15<br>2.88<br>2.73<br>2.37<br>2.21<br>2.06<br>1.91<br>1.79<br>1.67<br>1.60<br>1.49<br>1.24<br>0.95<br>0.70<br>0.39 | 20.68<br>22.45<br>25.64<br>26.86<br>27.85<br>29.24<br>30.65<br>32.62<br>36.73<br>44.42<br>54.24<br>63.86<br>74.41<br>80.39<br>70.98<br>71.49<br>73.26<br>74.45<br>76.14<br>77.53<br>78.20<br>74.43<br>74.62<br>74.86<br>75.40<br>76.41<br>77.16<br>78.78<br>79.43<br>79.63 | $\begin{array}{c} 19.9\\ 19.8\\ 16.8\\ 14.9\\ 13.4\\ 11.8\\ 10.6\\ 9.4\\ 8.1\\ 7.0\\ 6.7\\ 7.3\\ 9.0\\ 11.6\\ 16.3\\ 16.9\\ 17.2\\ 17.3\\ 17.7\\ 17.8\\ 18.0\\ 18.1\\ 18.3\\ 18.4\\ 18.6\\ 18.8\\ 19.1\\ 19.3\\ 19.7\\ \end{array}$ | 1.038<br>1.132<br>1.522<br>1.806<br>2.077<br>2.473<br>2.885<br>3.452<br>4.546<br>6.310<br>8.054<br>8.786<br>8.239<br>6.917<br>4.344<br>4.231<br>4.269<br>4.299<br>4.308<br>4.347<br>4.348<br>4.105<br>4.087<br>4.073<br>4.089<br>4.117<br>4.103<br>4.126<br>4.106<br>4.052 | 0.17<br>0.08<br>0.37<br>0.44<br>0.47<br>0.48<br>0.47<br>0.43<br>0.36<br>0.29<br>0.23<br>0.17<br>0.13<br>0.07<br>0.06<br>0.05<br>0.05<br>0.04<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.02<br>0.02<br>0.01<br>0.01 | $\begin{array}{c} 20.30\\ 21.14\\ 21.24\\ 20.86\\ 20.63\\ 20.53\\ 20.64\\ 21.04\\ 22.40\\ 25.73\\ 30.49\\ 35.56\\ 41.72\\ 46.01\\ 43.66\\ 44.19\\ 45.21\\ 45.88\\ 46.91\\ 47.69\\ 48.09\\ 46.28\\ 46.44\\ 46.62\\ 46.92\\ 47.49\\ 48.94\\ 49.39\\ 49.64\end{array}$ | 0.38<br>1.31<br>4.40<br>5.99<br>7.22<br>8.71<br>10.01<br>11.59<br>14.32<br>18.69<br>23.75<br>28.29<br>32.69<br>34.39<br>27.32<br>27.30<br>28.05<br>28.56<br>29.23<br>29.85<br>30.11<br>28.15<br>28.18<br>28.24<br>28.48<br>29.84<br>30.04<br>29.99 |

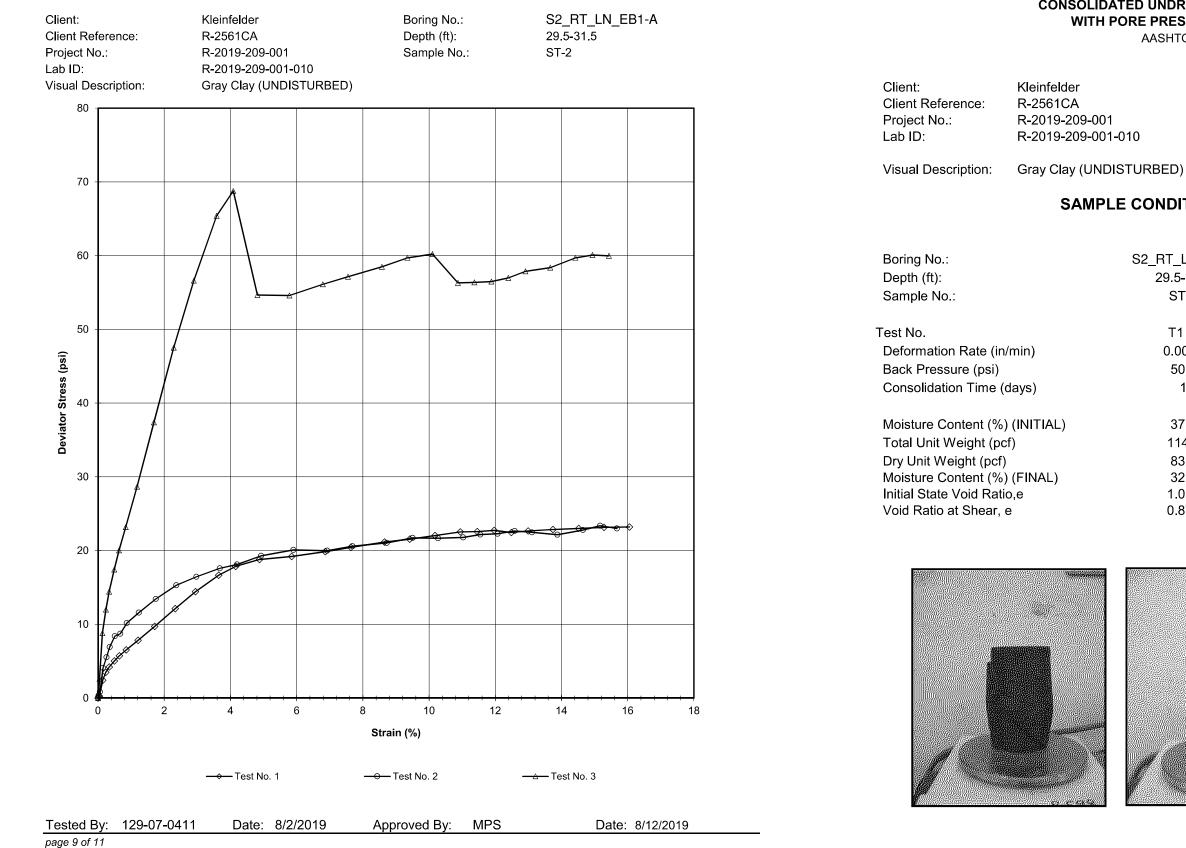
page 7 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net

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CONSOLIDATED UNDRAINED TRIAXIAL TEST







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AASHTO T-297

8/2/19

DCN: CT-S28 DATE: 4/12/13 REVISION: 3

Date:

Tested By: 129-07-0411

page 10 of 11

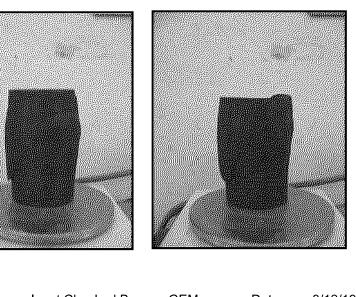


CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

> 2.68 Specific Gravity (Measured)

# SAMPLE CONDITION SUMMARY

| S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 | S2_RT_LN_EB1-A<br>29.5-31.5<br>ST-2 |
|-------------------------------------|-------------------------------------|-------------------------------------|
| T1                                  | T2                                  | Т3                                  |
| 0.0011                              | 0.0011                              | 0.0011                              |
| 50.0                                | 50.0                                | 50.0                                |
| 1                                   | 1                                   | 1                                   |
| 37.4                                | 31.9                                | 27.4                                |
| 114.1                               | 114.8                               | 120.5                               |
| 83.0                                | 87.1                                | 94.6                                |
| 32.3                                | 33.5                                | 27.9                                |
| 1.015                               | 0.921                               | 0.769                               |
| 0.877                               | 0.817                               | 0.685                               |
|                                     |                                     |                                     |



Input Checked By: GEM 8/12/19 Date:

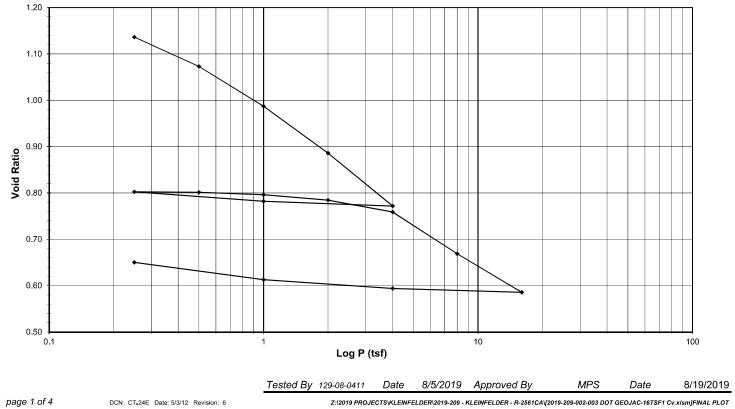
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AASHTO T-216

| Client           | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          |
|------------------|--------------------|--------------------|-------------------------|
| Client Reference | R-2561CA           | Depth (ft)         | 19.9-21.9               |
| Project No.      | R-2019-209-002     | Sample No.         | ST-3                    |
| Lab ID           | R-2019-209-002-003 | Visual Description | Gray Clay with Organics |

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-002-003 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT DCN: CT-24E Date: 5/3/12 Revision: 6 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net

ONE DIMENSIONAL CONSOLIDATION AASHTO T-216

| Client           | Kleinfelder        |
|------------------|--------------------|
| Client Reference | R-2561CA           |
| Project No.      | R-2019-209-002     |
| Lab ID           | R-2019-209-002-003 |

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED Consolidometer No. R409

1 Division = 0.0001 (in.)

| Sample Properties                   | Initial | Final    |                       |        |                       | Test Data Summary |                     | _              |                |                      |
|-------------------------------------|---------|----------|-----------------------|--------|-----------------------|-------------------|---------------------|----------------|----------------|----------------------|
| <i>Water Content</i><br>Tare Number | TB-09   | 812      | Applied<br>Pressure   |        | Machine<br>Deflection |                   | Height of<br>Sample | Volume<br>(cc) | Dry<br>Density | Void<br>Ratio        |
| Wt. Tare & WS (g)                   | 324.50  | 218.25   | (tsf)                 | (div)  | (div)                 | (div)             | (mm)                | (00)           | (g/cc)         | Ratio                |
| Wt. Tare & DS (g)                   | 273.74  | 196,15   | (tot)                 | (u.r)  | (0.1)                 | (0.17)            | ()                  |                | (9,00)         |                      |
| Wt. Water (g)                       | 50.76   | 22.10    | Seating               | 0      | 0                     | 0                 | 25.400              | 80.440         | 1.20683        | 1.22070              |
| Wt. Tare (g)                        | 134.08  | 104.60   | 0.25                  | 391.0  | 10.7                  | 380.3             | 24.434              | 77,380         | 1.25454        | 1.13624              |
| Wt. DS (g)                          | 139.66  | 91.55    | 0.5                   | 694.5  | 30.0                  | 664.5             | 23.712              | 75.095         | 1.29273        | 1.07313              |
| Water Content (%)                   | 36.35   | 24.14    | 1                     | 1099.3 | 47.1                  | 1052.2            | 22.727              | 71.976         | 1.34875        | 0.98703              |
| (,                                  |         |          | 2                     | 1580,9 | 74.4                  | 1506.5            | 21,573              | 68,321         | 1,42089        | 0.88614              |
| Sample Parameters                   |         |          | 4                     | 2122.3 | 101.3                 | 2021.0            | 20.267              | 64.183         | 1.51250        | 0.77190              |
| Sample Diameter (in)                | 2.5     | 2.5      | 1                     | 2045.5 | 69.8                  | 1975.7            | 20,382              | 64,547         | 1,50397        | 0.7819               |
| Sample Height (in)                  | 1.0000  | 0.7431   | 0.25                  | 1917.5 | 34.5                  | 1883.0            | 20.617              | 65.293         | 1.48678        | 0.8025               |
| Sample Volume (cc)                  | 80.44   | 59.78    | 0.5                   | 1928.6 | 40.8                  | 1887.8            | 20.605              | 65.254         | 1.48767        | 0.8014               |
| Wt. Wet Sample + Ring (g)           | 346.56  | 334.71   | 1                     | 1967.2 | 55.4                  | 1911.8            | 20.544              | 65.061         | 1.49209        | 0.79614              |
| Wt. of Ring (g)                     | 214.20  | 214.20   | 2                     | 2041.4 | 77.3                  | 1964.1            | 20.411              | 64.640         | 1.50180        | 0.78452              |
| Wt. of Wet Sample (g)               | 132.36  | 120.51   | 4                     | 2181.9 | 102.2                 | 2079.7            | 20.118              | 63.711         | 1.52371        | 0.7588               |
| Wet Density (pcf)                   | 102.68  | 125.80   | 8                     | 2632.0 | 146.5                 | 2485.5            | 19.087              | 60.447         | 1.60600        | 0.66874              |
| Wet Density (g/cc)                  | 1.65    | 2.02     | 16                    | 3060.2 | 199.9                 | 2860.3            | 18.135              | 57.431         | 1.69031        | 0.5855               |
| Water Content (%)                   | 36.35   | 24.14    | 4                     | 2961.2 | 138.4                 | 2822.8            | 18.230              | 57.734         | 1.68146        | 0.5938               |
| Wt. of Dry Sample (g)               | 97.08   | 97.08    | 1                     | 2823.6 | 86.8                  | 2736.8            | 18.449              | 58.425         | 1.66156        | 0.6129               |
| Dry Density (pcf)                   | 75.31   | 101.34   | 0.25                  | 2614.4 | 45.6                  | 2568.8            | 18.875              | 59.777         | 1.62400        | 0.6502               |
| Dry Density (g/cc)                  | 1.21    | 1.62     |                       |        |                       |                   |                     |                |                |                      |
| Void Ratio                          | 1.2207  | 0.6503   |                       |        |                       |                   |                     |                |                |                      |
| Saturation (%)                      | 79.80   | 99.49    |                       |        |                       |                   |                     |                |                |                      |
| Specific Gravity                    | 2.68    | Measured |                       |        |                       |                   |                     |                |                |                      |
|                                     |         |          | Tested By 129-08-0411 | Date   | 8/5/2019              | Input Chec        | ked By              | GEM            | Date           | 8/19/20 <sup>-</sup> |

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S2\_RT.LN\_EB2-A 19.9-21.9 Boring No. Depth (ft) ST-3 Sample No. Visual Description Gray Clay with Organics



AASHTO T-216

Client Kleinfelder Client Reference R-2561CA Project No. R-2019-209-002 Lab ID R-2019-209-002-003

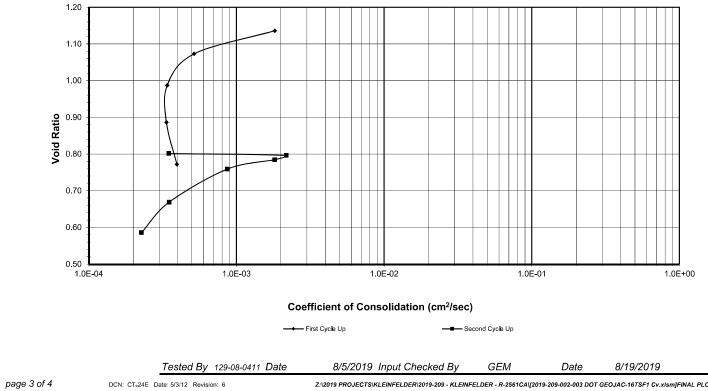
Boring No.

Depth (ft)

Sample No.

S2\_RT.LN\_EB2-A 19.9-21.9 ST-3 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-002-003 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT DCN: CT-24E Date: 5/3/12 Revision: 6 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net

ONE DIMENSIONAL CONSOLIDATION AASHTO T-216

| Client           | Kleinfelder        |
|------------------|--------------------|
| Client Reference | R-2561CA           |
| Project No.      | R-2019-209-002     |
| Lab ID           | R-2019-209-002-003 |

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED Consolidometer No. R409 1 Divi

| vision =             | 0.0001 | (in.)   |        |  |
|----------------------|--------|---------|--------|--|
| ple Properties       |        | Initial | Final  |  |
| er Content<br>Number |        | TB-09   | 812    |  |
| Tare & WS (q)        |        | 324.50  | 218.25 |  |
| Tare & DS (g)        |        | 273.74  | 196.15 |  |
| A1-1 / . )           |        |         | 00 40  |  |

| Sample Properties         | Initial | Final                |            |                   |             | C <sub>v</sub> Test Data Su | ummary            |        |           |
|---------------------------|---------|----------------------|------------|-------------------|-------------|-----------------------------|-------------------|--------|-----------|
|                           |         |                      | Load       | Dial              | Machine     | Corrected                   | Sample            | Time   | Cv        |
| Water Content             |         |                      | Increment  | Reading           | Deflection  | Dial Reading                | Height            | t 50   |           |
| Tare Number               | TB-09   | 812                  |            | @ t <sub>50</sub> |             | @ t <sub>50</sub>           | @ t <sub>50</sub> |        |           |
| Wt. Tare & WS (g)         | 324.50  | 218.25               | (tsf)      | (div)             | (div)       | (div)                       | (cm)              | (min.) | (cm²/sec  |
| Wt. Tare & DS (g)         | 273.74  | 196.15               | · · · ·    |                   |             |                             |                   |        | · · ·     |
| Wt. Water (g)             | 50.76   | 22.10                | 0 - 0.25   | 202.4             | 10.7        | 191.7                       | 2.491             | 2.80   | 0.00182   |
| Wt. Tare (g)              | 134.08  | 104.60               | 0.25 - 0.5 | 546.6             | 30.0        | 516.6                       | 2.409             | 9.20   | 0.00052   |
| Wt. DS (g)                | 139.66  | 91.55                | 0.5 - 1.0  | 911.6             | 47.1        | 864.5                       | 2.320             | 13.00  | 0.00034   |
| Water Content (%)         | 36.35   | 24.14                | 1.0 - 2.0  | 1345.4            | 74.4        | 1271.0                      | 2.217             | 12.00  | 0.00034   |
|                           |         |                      | 2.0 - 4.0  | 1856.2            | 101.3       | 1754.9                      | 2.094             | 9.10   | 0.00040   |
| Sample Parameters         |         |                      | 4.0 - 1.0  | NA                | 69.8        | NA                          | NA                | NA     | NA        |
| Sample Diameter (in)      | 2.5     | 2.5                  | 1.0 - 0.25 | NA                | 34.5        | NA                          | NA                | NA     | NA        |
| Sample Height (in)        | 1.000   | 0.743                | 0.25 - 0.5 | 1923.6            | 40.8        | 1882.8                      | 2.062             | 10.00  | 0.00035   |
| Sample Volume (cc)        | 80.44   | 59.78                | 0.5 - 1.0  | 1949.2            | 55.4        | 1893.8                      | 2.059             | 1.60   | 0.00217   |
| Wt. Wet Sample + Ring (g) | 346.56  | 334.71               | 1.0 - 2.0  | 2008.9            | 77.3        | 1931.6                      | 2.049             | 1.90   | 0.00181   |
| Wt. of Ring (g)           | 214.20  | 214.20               | 2.0 - 4.0  | 2114.5            | 102.2       | 2012.3                      | 2.029             | 3.90   | 0.00087   |
| Wt. of Wet Sample (g)     | 132.36  | 120.51               | 4.0 - 8.0  | 2426.9            | 146.5       | 2280.4                      | 1.961             | 9.00   | 0.00035   |
| Wet Density (pcf)         | 102.68  | 125.80               | 8.0 - 16.0 | 2869.1            | 199.9       | 2669.2                      | 1.862             | 12.50  | 0.00023   |
| Wet Density (g/cc)        | 1.65    | 2.02                 | 16.0 - 4.0 | NA                | 138.4       | NA                          | NA                | NA     | NA        |
| Water Content (%)         | 36.35   | 24.14                | 4.0 - 1.0  | NA                | 86.8        | NA                          | NA                | NA     | NA        |
| Wt. of Dry Sample (g)     | 97.08   | 97.08                | 1.0 - 0.25 | NA                | 45.6        | NA                          | NA                | NA     | NA        |
| Dry Density (pcf)         | 75.31   | 101.34               |            |                   |             |                             |                   |        |           |
| Dry Density (g/cc)        | 1.21    | 1.62                 |            |                   |             |                             |                   |        |           |
| Void Ratio                | 1.2207  | 0.6503               |            |                   |             |                             |                   |        |           |
| Saturation (%)            | 79.80   | 99.49                |            |                   |             |                             |                   |        |           |
| Specific Gravity          | 2.68    | Measured             |            |                   |             |                             |                   |        |           |
| · ·                       |         | Tested By 129-08-041 | 1 Date     | 8/5/2019          | Input Check | ed By                       | GEM               | Date   | 8/19/2019 |

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| Boring No.         | S2_RT.LN_EB2-A          |
|--------------------|-------------------------|
| Depth (ft)         | 19.9-21.9               |
| Sample No.         | ST-3                    |
| Visual Description | Gray Clay with Organics |

AASHTO T-216

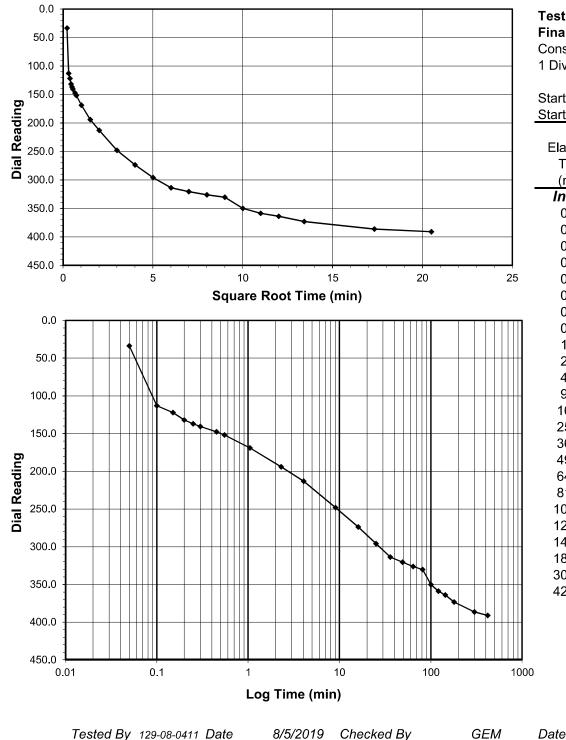


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Kleinfelder        |
|--------------------|
| R-2561CA           |
| R-2019-209-002     |
| R-2019-209-002-003 |
|                    |

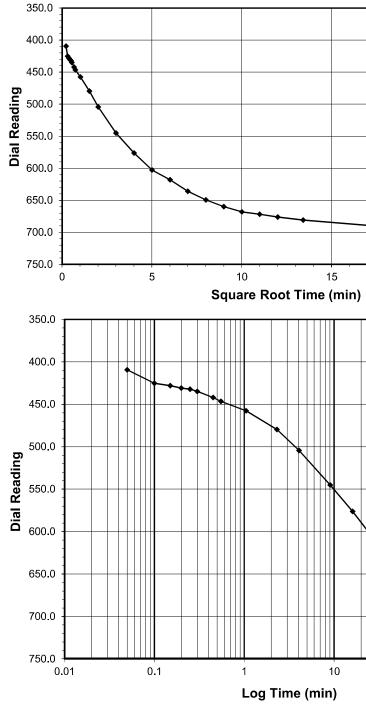
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



page 1 of 1

| Test Load                   | (tsf)     | 0.0-0.25       |
|-----------------------------|-----------|----------------|
| Final Readin<br>Consolidome | • • •     | 391.0<br>R409  |
| 1 Division                  | (in)      | 0.0001         |
|                             | ()        |                |
| Start Date                  |           | 8/5/2019       |
| Start Time                  |           | 13:57:53       |
| Elapsed                     |           | Dial           |
| Time                        |           | Reading        |
| (min)                       |           | (div)          |
| Initial                     |           | 0.0            |
| 0.05                        |           | 33.7           |
| 0.10                        |           | 113.0          |
| 0.15                        |           | 122.0          |
| 0.20                        |           | 132.1          |
| 0.25                        |           | 137.1          |
| 0.30                        |           | 140.8          |
| 0.45<br>0.55                |           | 147.8<br>152.0 |
| 1.05                        |           | 169.0          |
| 2.30                        |           | 194.1          |
| 4.05                        |           | 213.1          |
| 9.05                        |           | 248.2          |
| 16.07                       |           | 273.9          |
| 25.07                       |           | 295.8          |
| 36.07                       |           | 313.9          |
| 49.07                       |           | 320.6          |
| 64.07                       |           | 326.2          |
| 81.07                       |           | 330.4          |
| 100.07                      |           | 350.1          |
| 121.07<br>144.07            |           | 358.8<br>363.8 |
| 180.07                      |           | 373.3          |
| 300.07                      |           | 386.4          |
| 420.12                      |           | 391.0          |
|                             |           |                |
|                             |           |                |
|                             |           |                |
| 00                          |           |                |
|                             |           |                |
|                             |           |                |
| Dete                        | 0/40/0040 |                |
| Date                        | 8/19/2019 |                |

# Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-08-0411 Date

page 1 of 1

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8/5/2019 Checked By

GEM

Date





S2\_RT.LN\_EB2-A Boring No. Depth (ft) 19.9-21.9 ST-3 Sample No. Gray Clay with Organics Visual Description

|                   | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in)   | 0.25-0.5<br>694.5<br>R409<br>0.0001  |
|-------------------|--|--|
|                   | Start Date<br>Start Time   | 8/5/2019<br>20:58:00   |
|                   | Elapsed<br>Time<br>(min)<br><b>Initial</b><br>0.05   | Dial<br>Reading<br>(div)<br><b>391.0</b><br>409.5  |
|                   | 0.10   | 409.5  |
| •                 | 0.10<br>0.15<br>0.20   | 428.1<br>430.8   |
| 20 2<br><b>n)</b> | 5 0.25<br>0.30   | 432.2<br>434.8   |
|                   | 0.45<br>0.55<br>1.05<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.08<br>420.17 | 442.1<br>446.5<br>457.5<br>479.8<br>504.4<br>545.0<br>576.3<br>602.8<br>618.0<br>635.8<br>649.4<br>659.8<br>668.0<br>671.9<br>676.3<br>681.0<br>689.9<br>694.5 |
| 100 10            | 000  |  |

8/19/2019

DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-002-003 DOT GEOJAC-16TSF1 Cv.xism]STEP 1

AASHTO T-216

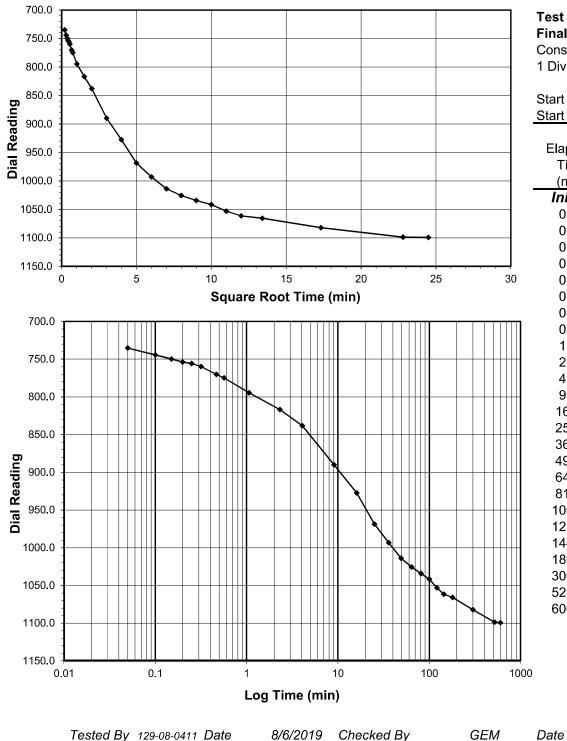


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

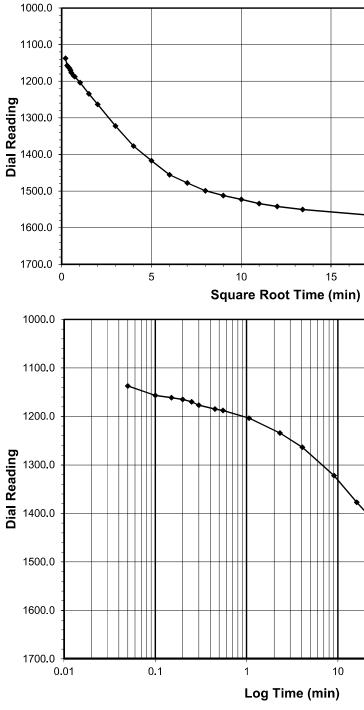


DCN: CT-24E Date: 5/3/12 Revision: 3

page 1 of 1

| <b>Test Load (tsf)</b> | <b>0.5-1.0</b> |
|------------------------|----------------|
| Final Reading (div)    | <b>1099.3</b>  |
| Consolidometer No.     | <b>R409</b>    |
| 1 Division (in)        | 0.0001         |
| Start Date             | 8/6/2019       |
| Start Time             | 3:58:10        |
| Elapsed                | Dial           |
| Time                   | Reading        |
| (min)                  | (div)          |
| Initial                | <b>694.5</b>   |
| 0.05                   | 735.2          |
| 0.10                   | 744.4          |
| 0.15                   | 749.9          |
| 0.20                   | 753.9          |
| 0.25                   | 755.8          |
| 0.32                   | 759.9          |
| 0.47                   | 770.2          |
| 0.57                   | 774.9          |
| 1.07                   | 794.6          |
| 2.32                   | 816.7          |
| 4.07                   | 838.3          |
| 9.07                   | 889.9          |
| 16.07                  | 927.5          |
| 25.07                  | 968.8          |
| 36.07                  | 993.2          |
| 49.07                  | 1013.9         |
| 64.07                  | 1025.6         |
| 81.07                  | 1034.4         |
| 100.07                 | 1041.6         |
| 121.07                 | 1053.1         |
| 144.07                 | 1061.6         |
| 180.08                 | 1065.8         |
| 300.08                 | 1082.2         |
| 520.08                 | 1098.7         |
| 600.08                 | 1099.3         |
| 00                     |                |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



page 1 of 1 DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-002-003 DOT GEOJAC-16TSF1 Cv.xlsm]STEP 3

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Tested By 129-08-0411 Date





Boring No. Depth (ft) Sample No. Visual Description

S2\_RT.LN\_EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

|            | Test Load(tsf)Final Reading(div)Consolidometer No.1 Division(in) | 1.0-2.0<br>1580.9<br>R409<br>0.0001         |
|------------|--|---|
|            | Start Date<br>Start Time   | 8/6/2019<br>12:58:33                        |
|            | Elapsed<br>Time<br>(min)   | Dial<br>Reading<br>(div)                    |
| • • •      | <i>Initial</i><br>0.05<br>0.10<br>0.15                           | <b>1099.3</b><br>1137.1<br>1156.8<br>1161.2 |
| 20 25<br>) | 0.30<br>0.45   | 1164.9<br>1169.9<br>1176.6<br>1184.7        |
|            | 0.55<br>1.07<br>2.32<br>4.07                                     | 1187.5<br>1203.8<br>1234.3<br>1263.5        |
|            | 9.07<br>16.07<br>25.07   | 1322.0<br>1377.2<br>1417.0                  |
|            | 36.07<br>49.07<br>64.07  | 1455.5<br>1477.8<br>1499.1                  |
|            | 81.07<br>100.07<br>121.07<br>144.07                              | 1512.2<br>1522.7<br>1534.1<br>1541.9        |
|            | 180.07<br>300.07<br>520.07<br>540.43                             | 1550.2<br>1566.7<br>1580.7<br>1580.9        |
| 100 1      | 000  |   |
|            |  |   |

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Date

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AASHTO T-216

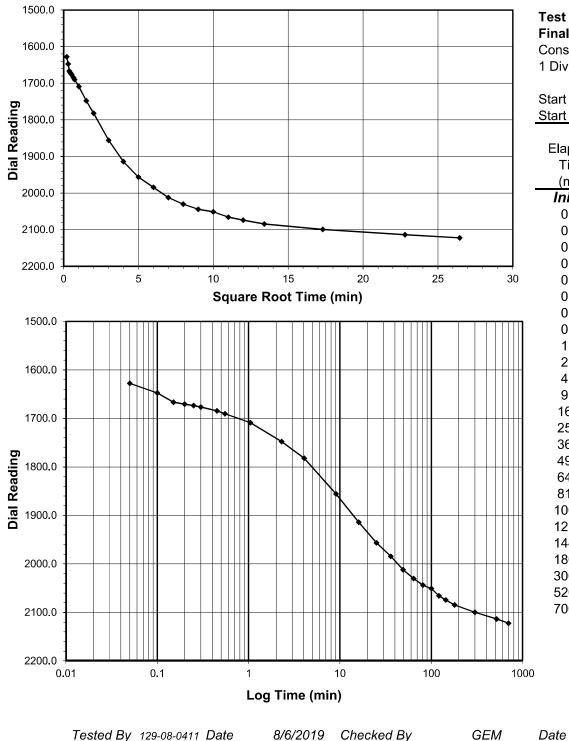


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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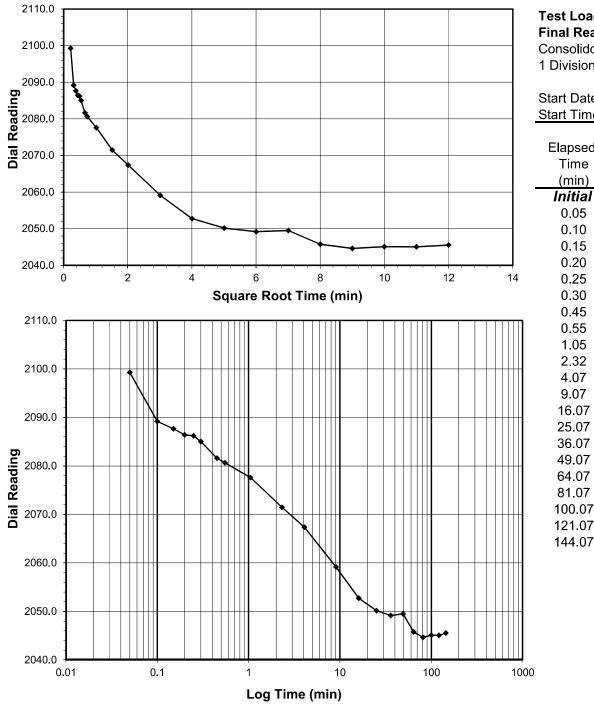
| Test Load    | (tsf)     | 2.0-4.0          |
|--------------|-----------|------------------|
| Final Readi  | • • •     | 2122.3           |
| Consolidom   |           | R409             |
| 1 Division   | (in)      | 0.0001           |
| Start Date   |           | 8/6/2019         |
| Start Time   |           | 21:58:59         |
| Elapsed      |           | Dial             |
| Time         |           | Reading          |
| (min)        |           | (div)            |
| Initial      |           | 1580.9           |
| 0.05         |           | 1627.7           |
| 0.10         |           | 1647.5           |
| 0.15         |           | 1666.4           |
| 0.20         |           | 1670.5           |
| 0.25         |           | 1673.4           |
| 0.30         |           | 1676.4           |
| 0.45         |           | 1684.3           |
| 0.55         |           | 1690.1           |
| 1.05<br>2.30 |           | 1709.1<br>1747.8 |
| 2.30<br>4.05 |           | 1782.0           |
| 4.05<br>9.05 |           | 1855.8           |
| 16.05        |           | 1914.0           |
| 25.05        |           | 1956.5           |
| 36.05        |           | 1984.4           |
| 49.05        |           | 2012.1           |
| 64.05        |           | 2030.1           |
| 81.05        |           | 2043.7           |
| 100.05       |           | 2051.1           |
| 121.05       |           | 2065.7           |
| 144.05       |           | 2074.2           |
| 180.05       |           | 2084.5           |
| 300.05       |           | 2099.5           |
| 520.05       |           | 2113.6           |
| 700.07       |           | 2122.3           |
|              |           |                  |
|              |           |                  |
| 00           |           |                  |
|              |           |                  |
|              |           |                  |
| Date         | 8/19/2019 |                  |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Tested By 129-08-0411 Date

DCN: CT-24E Date: 5/3/12 Revision: 3

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Boring No. Depth (ft) Sample No. Visual Description S2\_RT.LN\_EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

| •  | sf) 4.0-1.0<br>iv) 2045.5<br>. R409<br>(in) 0.0001   |
|--|--|
| Start Date<br>Start Time   | 8/7/2019<br>9:59:21  |
| Elapsed<br>Time<br>(min)<br><i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07 | Dial<br>Reading<br>(div)<br>2122.3<br>2099.3<br>2089.2<br>2087.6<br>2086.4<br>2086.2<br>2085.0<br>2081.6<br>2086.2<br>2085.0<br>2081.6<br>2077.6<br>2071.5<br>2067.4<br>2059.1<br>2052.7<br>2050.2<br>2049.2<br>2049.5<br>2045.8<br>2044.6<br>2045.1<br>2045.1 |
| 144.07   | 2045.5   |
|  |  |

| 8/7/2019 | Checked By | GEM | Date | 8/19/2019 |  |
|----------|------------|-----|------|-----------|--|
| ion: 3   |            |     |      |           |  |

AASHTO T-216



(tsf)

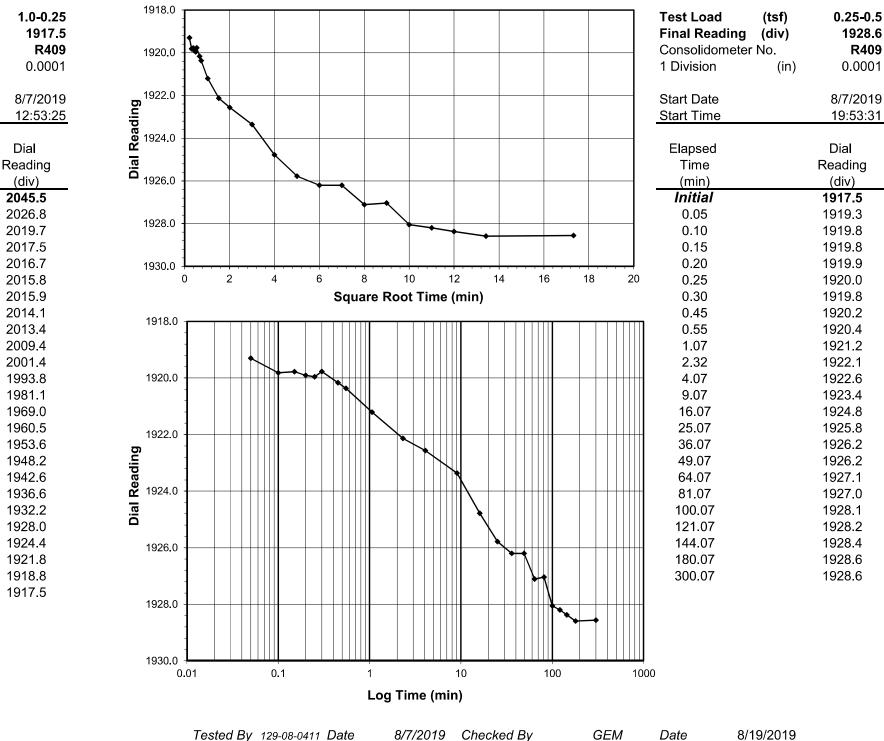
(in)

# **ONE DIMENSIONAL CONSOLIDATION**

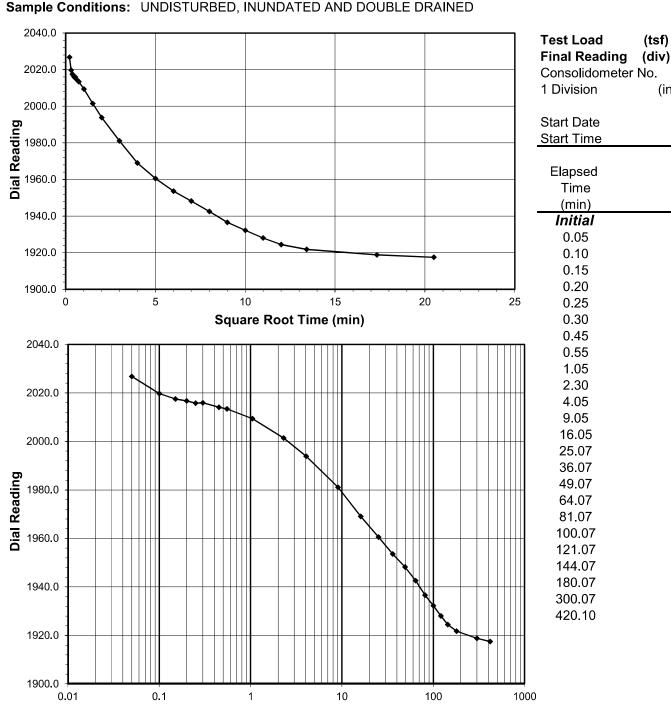
AASHTO T-216

| Client K         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|------------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project R | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No. R    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID R         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |

#### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

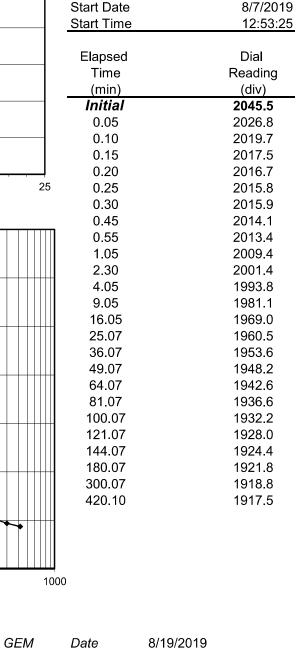


DCN: CT-24E Date: 5/3/12 Revision: 3



Log Time (min)

8/7/2019 Checked By



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Tested By 129-08-0411 Date

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Boring No. Depth (ft) Sample No. Visual Description S2 RT LN EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

AASHTO T-216

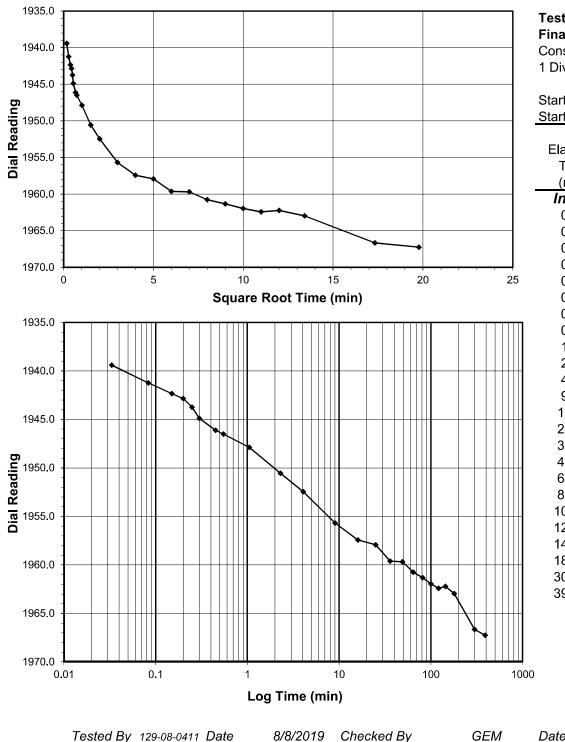


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

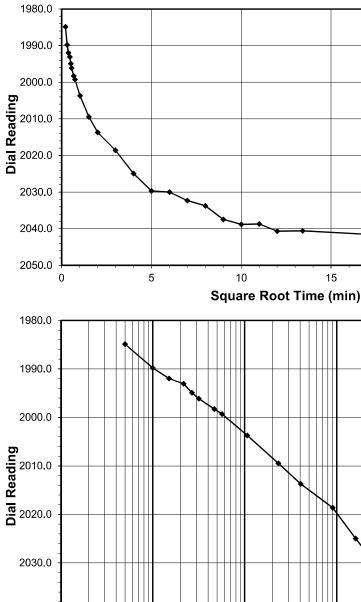
| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |
|                |                    |                    |                         |                |                    |

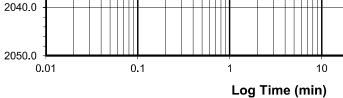
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



| Test Load<br>Final Readi<br>Consolidom        | eter No.  | 0.5-1.0<br>1967.2<br>R409                      |
|---|-----------|--|
| 1 Division                                    | (in)      | 0.0001   |
| Start Date<br>Start Time                      |           | 8/8/2019<br>3:53:42                            |
| Elapsed<br>Time<br>(min)<br>Initial           |           | Dial<br>Reading<br>(div)<br><b>1928.6</b>      |
| 0.03<br>0.08<br>0.15<br>0.20<br>0.25          |           | 1939.4<br>1941.2<br>1942.3<br>1942.9<br>1943.7 |
| 0.30<br>0.45<br>0.55<br>1.05                  |           | 1944.9<br>1946.1<br>1946.5<br>1947.9           |
| 2.30<br>4.05<br>9.05<br>16.05                 |           | 1950.6<br>1952.5<br>1955.7<br>1957.4           |
| 25.05<br>36.05<br>49.05<br>64.05              |           | 1957.9<br>1959.6<br>1959.7<br>1960.8           |
| 81.05<br>100.05<br>121.05<br>144.05<br>180.07 |           | 1961.3<br>1962.0<br>1962.4<br>1962.2<br>1963.0 |
| 300.07<br>391.07                              |           | 1966.7<br>1967.2                               |
| 0   |           |  |
| Date  | 8/19/2019 |  |

# Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





DCN: CT-24E Date: 5/3/12 Revision: 3

Tested By 129-08-0411 Date

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GEM

Date





Boring No. Depth (ft) Sample No. Visual Description S2\_RT.LN\_EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

|          |     | <b>Test Load</b><br><b>Final Reading</b><br>Consolidometer<br>1 Division  | <b>(tsf)</b><br>(div)<br>No.<br>(in) | <b>1.0-2.0</b><br><b>2041.4</b><br><b>R409</b><br>0.0001  |
|----------|-----|---|--------------------------------------|---|
|          |     | Start Date<br>Start Time  |                                      | 8/8/2019<br>10:24:47  |
|          |     | Elapsed<br>Time<br>(min)  |                                      | Dial<br>Reading<br>(div)  |
| 20<br>n) |     | Initial<br>0.05<br>0.10<br>0.15<br>0.22<br>0.27<br>0.32<br>0.47<br>0.57<br>1.07<br>2.32<br>4.07<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.08<br>121.08<br>144.08<br>180.08<br>300.08<br>480.30 |                                      | <b>1967.2</b><br>1984.9<br>1989.8<br>1992.0<br>1993.1<br>1994.9<br>1996.1<br>1998.3<br>1999.3<br>2003.7<br>2009.4<br>2013.7<br>2018.6<br>2024.9<br>2029.7<br>2030.0<br>2032.3<br>2033.7<br>2037.5<br>2038.8<br>2038.7<br>2040.7<br>2040.6<br>2041.6<br>2041.4 |
| 100      | 100 | 0   |                                      |   |

8/19/2019

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AASHTO T-216



(tsf)

8/19/2019

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(in)

Dial

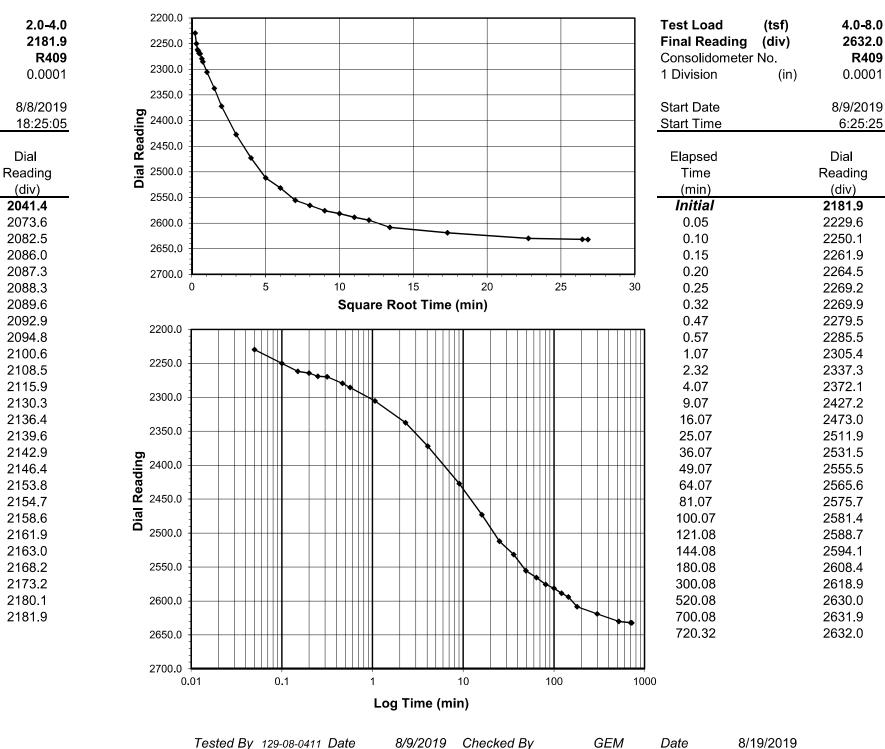
(div)

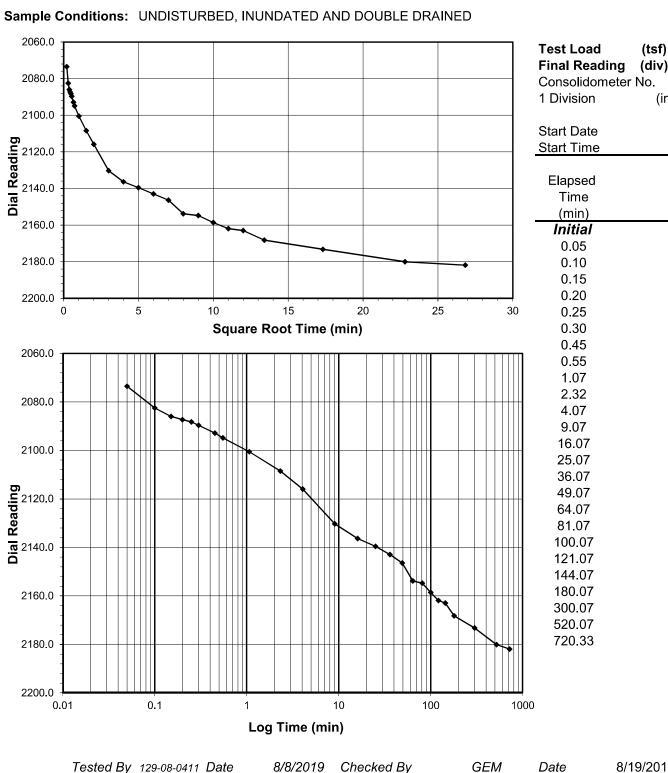
# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |
|                |                    |                    |                         |                |                    |

#### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





DCN: CT-24E Date: 5/3/12 Revision: 3

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DCN: CT-24E Date: 5/3/12 Revision: 3 Z:\2019 PROJECTS\KLEINFELDER\2019-209 - KLEINFELDER - R-2561CA\[2019-209-002-003 DOT GEOJAC-16TSF1 Cv.xlsm]STEP 12 2200 Westinghouse Blvd., Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460 • www.geotechnics.net



4.0-8.0

2632.0

R409

0.0001

6:25:25

Boring No. Depth (ft) Sample No. Visual Description

S2 RT LN EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

AASHTO T-216

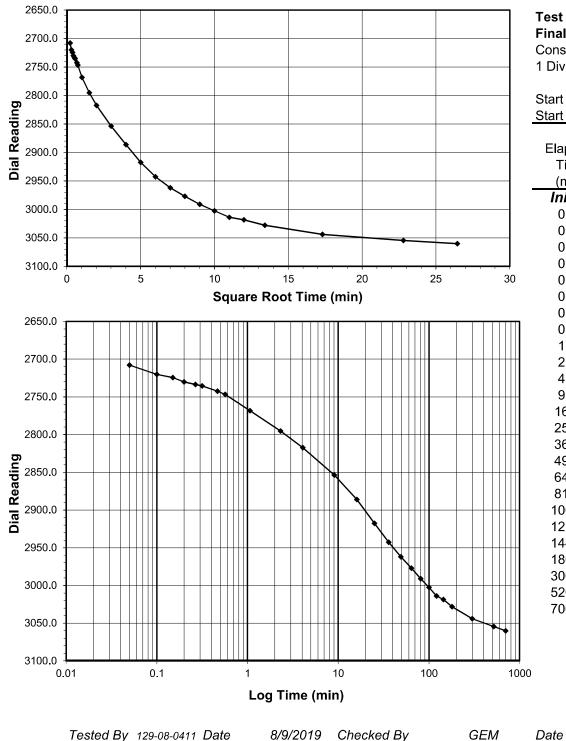


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |
|                |                    |                    |                         |                |                    |

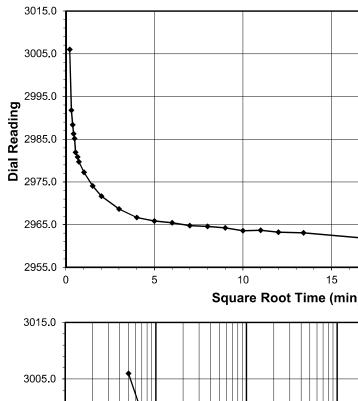
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

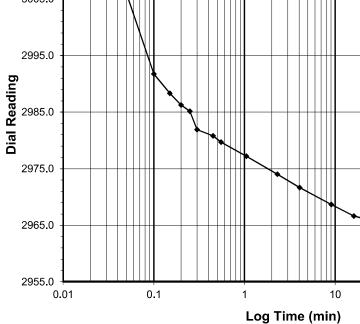


| Test Load (tsf)     | 8.0-16.0         |
|---------------------|------------------|
| Final Reading (div) | 3060.2           |
| Consolidometer No.  | R409             |
| 1 Division (in)     | 0.0001           |
| Start Date          | 8/9/2019         |
| Start Time          | 18:25:44         |
| Florend             | Dial             |
| Elapsed<br>Time     | Dial             |
|                     | Reading          |
| (min)               | (div)<br>2632.0  |
| Initial             | 2708.0           |
| 0.05                |                  |
| 0.10                | 2720.2<br>2724.6 |
| 0.15                | 2724.6<br>2730.3 |
| 0.20                |                  |
| 0.27<br>0.32        | 2733.6<br>2735.6 |
| 0.32                | 2735.0           |
| 0.47                | 2742.5           |
| 1.07                |                  |
| 2.32                | 2768.3<br>2795.4 |
| 4.07                | 2817.4           |
| 9.07                | 2853.6           |
| 9.07<br>16.07       | 2886.2           |
| 25.07               | 2917.7           |
| 36.07               | 2942.7           |
| 49.07               | 2962.1           |
| 64.07               | 2977.0           |
| 81.07               | 2991.0           |
| 100.07              | 3002.5           |
| 121.07              | 3013.9           |
| 144.07              | 3018.5           |
| 180.08              | 3028.0           |
| 300.08              | 3044.0           |
| 520.08              | 3054.5           |
| 700.08              | 3060.2           |
| 100.00              | 0000.2           |
|                     |                  |
| <u>^</u>            |                  |
| 0                   |                  |
|                     |                  |
|                     |                  |
|                     |                  |

8/19/2019

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Tested By 129-08-0411 Date

DCN: CT-24E Date: 5/3/12 Revision: 3

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DCN: CT-24E Date: 5/3/12 Revision: 3

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Boring No. Depth (ft) Sample No. Visual Description S2\_RT.LN\_EB2-A 19.9-21.9 ST-3 Gray Clay with Organics

|             |       | <b>Test Load</b><br><b>Final Reading</b><br>Consolidometer<br>1 Division | <b>(tsf)</b><br>(div)<br>No.<br>(in) | 16.0-4.0<br>2961.2<br>R409<br>0.0001                  |
|-------------|-------|--|--------------------------------------|---|
|             |       | Start Date<br>Start Time   |                                      | 8/10/2019<br>6:26:10                                  |
|             |       | Elapsed<br>Time<br>(min)   |                                      | Dial<br>Reading<br>(div)                              |
| • •         |       | <i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20                           |                                      | <b>3060.2</b><br>3006.0<br>2991.7<br>2988.3<br>2986.3 |
| 20<br>n)    | 25    | 0.25<br>0.30<br>0.45   |                                      | 2985.1<br>2981.9<br>2980.8                            |
|             |       | 0.55<br>1.05<br>2.30<br>4.05   |                                      | 2979.7<br>2977.2<br>2974.0<br>2971.7                  |
|             |       | 9.05<br>16.05<br>25.05<br>36.05  |                                      | 2968.7<br>2966.6<br>2965.8<br>2965.4                  |
|             |       | 49.05<br>64.05<br>81.07<br>100.07  |                                      | 2964.8<br>2964.6<br>2964.2<br>2963.6                  |
|             |       | 121.07<br>144.07<br>180.07<br>300.07                                     |                                      | 2963.7<br>2963.2<br>2963.1<br>2961.7                  |
| * * * * * * | •••   | 420.18   |                                      | 2961.2  |
| 100         | ) 100 | 0  |                                      |   |

8/19/2019

AASHTO T-216

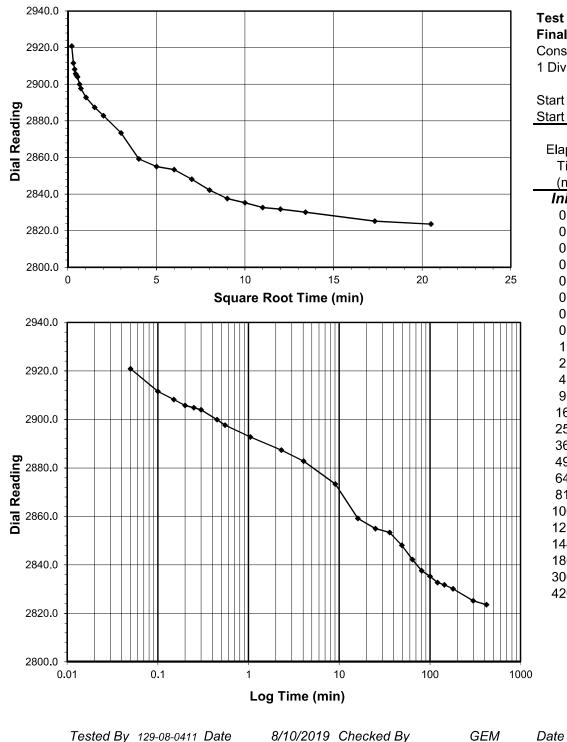


# **ONE DIMENSIONAL CONSOLIDATION**

AASHTO T-216

| Client         | Kleinfelder        | Boring No.         | S2_RT.LN_EB2-A          | Client         | Kleinfelder        |
|----------------|--------------------|--------------------|-------------------------|----------------|--------------------|
| Client Project | R-2561CA           | Depth (ft)         | 19.9-21.9               | Client Project | R-2561CA           |
| Project No.    | R-2019-209-002     | Sample No.         | ST-3                    | Project No.    | R-2019-209-002     |
| Lab ID         | R-2019-209-002-003 | Visual Description | Gray Clay with Organics | Lab ID         | R-2019-209-002-003 |
|                |                    |                    |                         |                |                    |

### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



| Test Load<br>Final Reading<br>Consolidomete  | er No. | <b>4.0-1.0</b><br><b>2823.6</b><br><b>R409</b><br>0.0001   |
|--|--------|--|
| 1 Division   | (in)   | 0.0001   |
| Start Date<br>Start Time   |        | 8/10/2019<br>13:26:21  |
| Elapsed<br>Time<br>(min)<br><i>Initial</i><br>0.05<br>0.10<br>0.15<br>0.20<br>0.25<br>0.30<br>0.45<br>0.55<br>1.05<br>2.30<br>4.05<br>9.07<br>16.07<br>25.07<br>36.07<br>49.07<br>64.07<br>81.07<br>100.07<br>121.07<br>144.07<br>180.07<br>300.07<br>420.02 |        | Dial<br>Reading<br>(div)<br>2961.2<br>2920.9<br>2911.6<br>2908.2<br>2905.7<br>2904.8<br>2904.0<br>2899.9<br>2897.6<br>2892.7<br>2887.3<br>2882.8<br>2873.4<br>2859.2<br>2855.0<br>2855.0<br>2853.4<br>2848.1<br>2842.2<br>2837.6<br>2835.3<br>2832.7<br>2831.8<br>2830.2<br>2825.2<br>2823.6 |
| 0  |        |  |
|  |        |  |

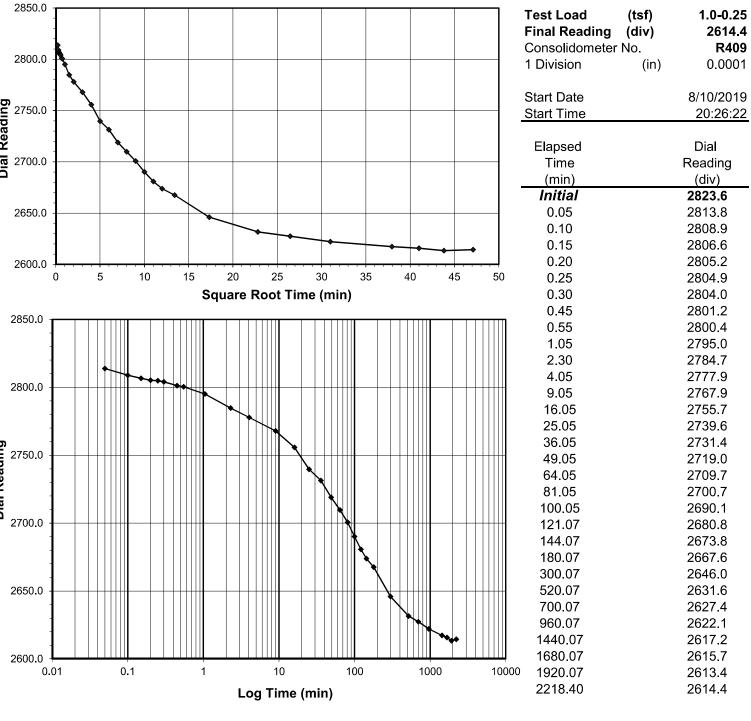
8/19/2019

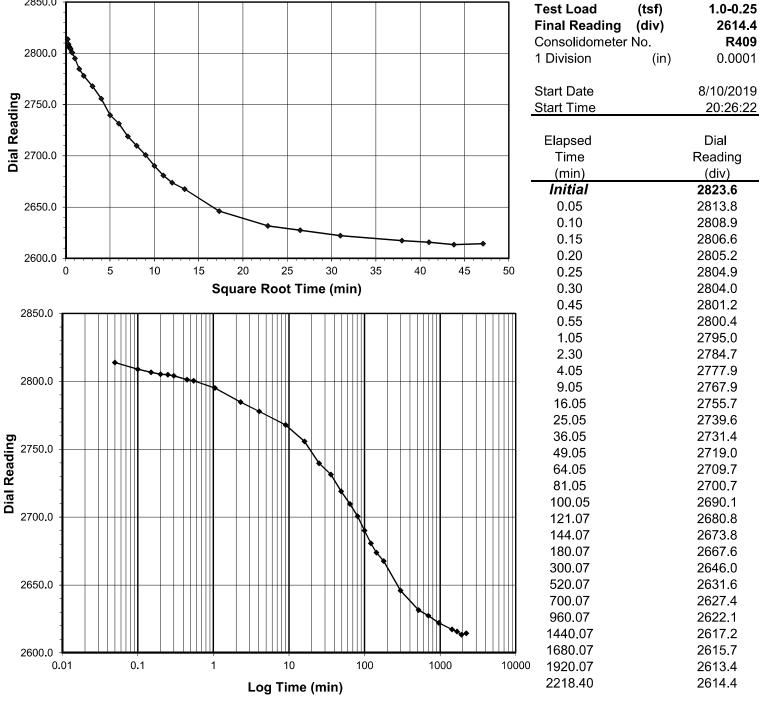
### Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Tested By 129-08-0411 Date

DCN: CT-24E Date: 5/3/12 Revision: 3

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Boring No. Depth (ft) Sample No. Visual Description S2 RT.LN EB2-A 19.9-21.9 ST-3 Gray Clay with Organics