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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	012108004	1	60

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *WAKE*

PROJECT DESCRIPTION *McCRIMMON PARKWAY EXTENSION FROM NC 54 /CHAPEL HILL ROAD TO AVIATION PARKWAY*

INVENTORY

PROJECT: McCRIMMON PARKWAY EXTENSION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	17+00 - 135+00	4 - 13	14 - 22
-Y7-	20+00 - 25+00	11	23

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
012108004	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

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

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

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-__
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] D-50 (TER346)
- [X] D-50 (TER255)

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [X] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE __" STEEL TEETH
- [ ] TRICONE __" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

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

CORE SIZE:
- [ ] -B-__
- [ ] -N-__
- [ ] -H-__

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK: BORING ELEVATIONS ESTIMATED USING PROJECT TIN FILE

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_ ELEVATION: N/A FT.

NOTES:

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REVISED 09/23/09

Project Reference No.	Sheet No.
012108004	3

Kimley-Horn & Associates, Inc.
3001 Weston Parkway
Cary, North Carolina 27513

Attn: Mr. Matthew West, PE, AVS

Re: **Geotechnical Report – Roadway Inventory**
County: Wake
Description: McCrimmon Parkway Extension between NC 54 / Chapel Hill Road and Aviation Parkway

Project Description

This project consists of a proposed 2.1 mile, four-lane divided roadway (-L-) between NC 54 / Chapel Hill Road (-Y2-) and Aviation Parkway (-Y8-). Portions of the project have been previously constructed (between approximately -L- Stations 35+35 and 55+55), while the remainder of the alignment is on new location. The project is proposed to be constructed in phases as development progresses along the corridor. The initial phase will consist of the construction of a new four-lane roadway between NC 54 / Chapel Hill Road and the existing portion of McCrimmon Parkway and the construction of a new two-lane divided roadway between Airport Boulevard (-Y4-) and Aviation Parkway. Grading will be performed during the initial phase to accommodate the proposed ultimate design consisting of a four-lane divided roadway between NC 54 / Chapel Hill Road and Aviation Parkway.

All roadway design data presented in this report is based on the preliminary design provided to Terracon by Kimley-Horn & Associates in June through November of 2014. The geotechnical investigation of the -L- alignment was performed during June and July of 2014. Three borings were performed later along the Southport Drive (-Y7-) alignment in October 2014. Two track mounted Diedrich D-50T drill machines equipped with automatic hammers were used during the investigation. Standard Penetration Tests were performed in the boreholes and samples were collected for visual classification in the field. Select samples were submitted for laboratory analysis.

The following alignments were investigated. Subsurface profiles and selected cross sections of these alignments are included in this report.

Line	Station
-L-	23+75 to 35+35
-L-	55+55 to 143+00
-Y7-	20+00 to 24+84

Areas of Special Geotechnical Interest

1) Artificial Fills: Artificial fills were encountered on the project at the following locations:

Line	Station
-L-	26+41 to 27+52
-L-	28+85 to 29+88
-L-	30+12 to 34+74
-L-	68+24 to 70+96

Cross sections of the areas where artificial fills will impact construction are attached.

2) Alluvial Soils: Alluvial soils were encountered on the project at the following location:

Line	Station
-L-	27+06 to 28+64

3) High Plasticity Clays: High plasticity clays (PI > 25) were encountered on the project at the following locations:

Line	Station
-L-	69+60 to 72+95
-L-	93+55 to 98+35
-L-	112+50 to 114+00
-L-	119+70 to 121+85
-L-	124+50 to 126+50
-Y7-	19+75 to 22+85

A discussion of high plasticity clay soils is located in the section titled “Soil Properties.” Cross sections of areas where high plasticity clays were encountered near proposed grades are attached.

4) Non-Crystalline Rock: The non-crystalline rock on this project includes Triassic siltstone and sandstone. Rock occurs within 6 feet below proposed grade at the following location:

Line	Station
-L-	92+00 to 93+00

5) Degradable Rock: Degradable rock is defined as rock material (including weathered rock) which exhibits high slaking characteristics when exposed to air and water (see Rock Properties for further explanation). Degradable rock occurs within the proposed unclassified excavation in the following areas:

Line	Station
-L-	59+70 to 62+85
-L-	72+10 to 76+50
-L-	81+40 to 89+25
-L-	90+75 to 95+60
-L-	123+75 to 128+60

Cross sections of areas where degradable rock was encountered near proposed grades are attached.

6) Groundwater: Groundwater was encountered near proposed grade at the following location:

Line	Station
-L-	91+00
-L-	69+00 to 70+00

6) Ponds: A pond was encountered within close proximity to the right of way at the proposed location:

Line	Station	Offset (ft)
-L-	68+40 to 70+80	80 RT

Physiography and Geology

The terrain along the project corridor is comprised of gently rolling hills with steep-sided drainage areas. One flowing creek was observed along the sewer easement behind the landscape supply yard at approximately -L- Station 27+50. Lake Crabtree and several tributaries are also located nearby outside the project limits. No other flowing creeks or streams were observed during the investigation within the project limits. The corridor winds through wooded and recently logged areas located between business parks.

The project is located within the Piedmont Physiographic Province. More specifically, the project is located within the Durham Sub-Basin of the Triassic Basin. The soils along the project were created from weathering of the underlying sedimentary Triassic-age rock. The rock in the Triassic Basin consists of interbedded sandstone, siltstone, and mudstone with scattered diabase dike intrusions.

Soil Properties

Soils within the project area include roadway embankment fill, artificial fill, alluvial, and Triassic residual soils.

Roadway embankment fill soils are present along the existing roadways on the project. These soils are similar to and derived from the Triassic residual soils encountered elsewhere on the project.

Artificial fill soils were encountered behind the existing landscape supply and construction laydown yards located approximately between -L- Stations 27+90 and 34+80. Artificial fill used as trench backfill should be anticipated along the sewer easement near -L- Station 28+00. Soils were observed piled in the wooded area at the rear of the landscape supply yard and at the rear of the construction laydown yard. The soil piles were observed to contain construction debris, topsoil, strippings, and a mix of sandy and clayey soils. Some artificial fill was placed at the rear of the construction laydown yard to level site grades. Where encountered in the borings, these soils consist of moist, sandy clay (A-6).

Alluvial soils are present near the surface in the creek along the sewer easement near -L- Station 28+00. These soils consist predominately of silts (A-4), although the bed of the creek appeared to be recently disturbed and lined with new rip rap prior to the field investigation.

Triassic residual soils are derived from the weathering of underlying sedimentary rock. These soils consist of orange, gray, and red-brown sandy silt (A-4), sandy clay (A-6), and silty clay (A-7). The near surface residual soils are generally soft to very stiff and become hard with depth. Most of the residual soils encountered along the project were moist when sampled although some near surface soils in the low lying areas were wet. Based on the laboratory testing performed, the clay soils at the site exhibit medium to high plasticity. The Triassic residual soils transition into weathered rock within the range of boring depths along a majority of the project.

Degradable Rock

Weathered rock was encountered near proposed grades along the portions of the site mentioned herein. Triassic siltstone and weathered rock derived from Triassic siltstone typically exhibits high slaking characteristics when excavated or exposed to weather. Based on the weathered rock recovered in the split spoons taken along the project corridor, the weathered rock along the project is highly degradable.

Non-crystalline sedimentary Triassic rock underlies the project at depth, however none was encountered within 6 feet of proposed finished grade.

Groundwater

A majority of the borings performed at the site remained open for a minimum of 24 hours to measure groundwater levels after drilling. The open boreholes were dry or groundwater was encountered well below proposed grades with the exception of the locations listed in “Areas of Special Geotechnical Interest.” However, the potential for a perched water table is high along the project where soft soils are present above impermeable hard material such as weathered rock.

Ponds

One pond is located adjacent to the project between approximately -L- Stations 68+40 and 70+80. The overflow is due northeast and drainage flows toward the project. The pond is up gradient from the natural surface and should not be affected by runoff from the project. No flowing water was observed draining from the pond. However, the soils down gradient from the dam between approximately -L-

Stations 68+80 and 70+00 were very wet and soft possibly due to seepage beneath the existing earth dam.

Respectfully Submitted,
Terracon Consultants, Inc.

Matthew J. Alexander, PE
Geotechnical Project Engineer

R. L. “Levi” Denton, II, PE
Principal, Geotechnical
Department Manager

PROJECT REFERENCE NO.	SHEET NO.
012108004	4

0 50 100 FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

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mplexander AT WTE-7001280

N/F
JOSEPH M.WILKERSON
PIN# 746838759
LOT 2
BM 1989 PG 565
DB 2596 PG 696

N/F
ATM OF NC, LLC
PIN# 746837520
BM 1989 PG 1297
DB 12497 PG 004

N/F
PTM LIMITED PARTNERSHIP
PIN# 746835271
PARCEL 2
BM 2012 PG 51
DB 15205 PG 363

N/F
JAMS CONCRETE PRODUCTS
PIN# 746813603
LOT 1
BM 1980 PG 754
DB 1913 PG 160

N/F
TOWN OF MORRISVILLE
PIN# 746828712
LOT 3
BM 2012 PG 690
DB 7319 PG 387

N/F
RVRV, LLC
PIN# 746838064
PARCEL 1
BM 2012 PG 51
DB 12132 PG 2149

N/F
DUKE REALTY LIMITED PARTNERSHIP
PIN# 746934282
LOT 16
BM 1999 PG 2333
DB 8487 PG 1040

NCRR RAILROAD TRACKS

-L- NC 54 (CHAPEL HILL ROAD)

-L- SR-1635 (MCCRIMMON PARKWAY)

RESIDUAL

ALLUVIAL

ART FILL

ARTIFICIAL FILL

MATCH LINE -L- STA. 30+00 SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
012108004	5

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

0 50 100
FEET

N

N/F
JOSEPH M. WILKERSON
RHONDA M. WILKERSON
PIN# 746846004
DB 4523 PG 932

N/F
JOSEPH M.WILKERSON
PIN# 746838759
LOT 2
BM 1989 PG 565
DB 2596 PG 696

N/F
DUKE REALTY, LP
PIN# 746947179
LOT 18 PERIMETER PARK WEST
BM 1998 PG 223
DB 8221PG 866

N/F
DUKE REALTY LIMITED PARTNERSHIP
PIN# 746937688
BM 1996 PG 1487
DB 8608 PG 535

N/F
ATM OF NC, LLC
PIN# 746837520
BM 1989 PG 1297
DB 12497 PG 004

N/F
DUKE REALTY LIMITED PARTNERSHIP
PIN# 746934282
LOT 16
BM 1999 PG 2333
DB 8487 PG 1040

RESIDUAL
RESIDUAL
ROADWAY EMBANKMENT
ARTIFICIAL FILL

-L- SR-1635 (MCCRIMMON PARKWAY)
45' CONC ISLAND

-Y3- PERIMETER PARK DRIVE

MATCH LINE -L- STA. 30+00 SEE SHEET 4

MATCH LINE -L- STA. 42+00 SEE SHEET 6

END CONSTRUCTION
-Y3- POC Sta. 21+75.00

END ALIGNMENT
-Y3- PI Sta. 23

8' SIDEWALK
28' C&G
16' C&G
28' C&G
5' SIDEWALK
8' SIDEWALK
8' SIDEWALK
30' C&G
18' C&G
EXISTING R/W
LONG. R/W
EXIST. 10' SAN. SEWER ESMT.
CELLULAR TOWER
SHED
POWER GENERATOR
WOODS
7' CONC WALLS
72" CPL & SW
BST
CB
35
40

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mlalexander
ALT_WZE-70013280

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PROJECT REFERENCE NO.	SHEET NO.
012108004	6

0 50 100 FEET

N

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCH LINE -L- STA. 42+00 SEE SHEET 5

MATCH LINE -L- STA. 56+00 SEE SHEET 7

-L- SR-1635 (MCCRIMMON PARKWAY)

-Y4- SR-3015 (AIRPORT BOULEVARD)

8' SIDEWALK

16' C&G

18' C&G

37' C&G

EXISTING R/W

CONC S/W

BST

WOODS

GRAVEL

CB

RESIDUAL

ROADWAY EMBANKMENT

9' CONC ISLAND

5' P.S.

END CONSTRUCTION
-Y4- POT Sta. 26+00.00

N/F
DC-150 McCRIMMON PARKWAY, LLC.
PIN# 756046227
DB 15196 PG 153

N/F
CHARLES WILLIAM MYERS HEIRS
PIN# 756142412
DB 06-E PG 216

N/F
AIRPORT BOULEVARD PARTNERS, LLC.
PIN# 756145352, LOT 17 AIRPARK
BM 1996 PG 1696
DB 7366 PG 193

N/F
DUKE REALTY LIMITED PARTNERSHIP
PIN# 756034647
BM 1995 PG 1158
DB 8608 PG 535

N/F
DUKE REALTY LIMITED PARTNERSHIP
PIN# 756039676
BM 1993 PG 1425
DB 8608 PG 535

N/F
MICHAEL L. STEWART
STEPHENS ENTERPRISES, LLC
PIN# 756135833
DB 15268 PG 779

N/F
MICHAEL L. STEWART
STEPHENS ENTERPRISES, LLC
PIN# 756134625
DB 15268 PG 769

N/F
AIR PARK ASSOCIATES
PIN# 756134470
DB 5438 PG 219

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PROJECT REFERENCE NO.	SHEET NO.
012108004	7

0 50 100 FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

N/F
AIRPORT BOULEVARD PARTNERS, LLC.
PIN# 756145352, LOT 17 AIRPARK
BM 1996 PG 1696
DB 7366 PG 193

N/F
EXTER 120 TRANS AIR, LLC.
PIN# 756241238
LOT 16 AIRPARK
BM 1996 PG 1696
DB 14402 PG 338

25 BLK BUS
(WARESHOUSE)

N/F
AIR PARK ASSOCIATES
PIN# 756235875
FUTURE R/W
BM 1998 PG 2106
DB 5438 PG 219

N/F
ROI INVESTMENTS, LLC.
PIN# 756247178
LOT 13 AIRPARK
BM 1998 PG 2106
DB 15566 PG 2254

-L- SR-1635 (MCCRIMMON PARKWAY)

RESIDUAL

MATCH LINE -L- STA. 56+00 SEE SHEET 6

MATCH LINE -L- STA. 69+00 SEE SHEET 8

N/F
M.A.L. PROPERTIES, LLC
CENTRAL CAROLINA REALTY, INC.
MICHAEL L. STEWART
STEPHENS ENTERPRISES, LLC.
PIN# 756230220
DB 15268 PG 759

N/F
MICHAEL L. STEWART
STEPHENS ENTERPRISES, LLC
PIN# 756134625
DB 15268 PG 769

N/F
AIS FORESTRY & FARMING, LLC
STEPHENS ENTERPRISES, LLC
PIN# 756330565
DB 15268 PG 739

N/F
STEPHENS ENTERPRISES, LLC
PIN# 756236139
DB 15268 PG 759

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mlexander AT WZE-7001-3200

PROJECT REFERENCE NO.	SHEET NO.
012108004	8

0 50 100
FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

N/F
MORRISVILLE ASSOCIATES, LLC
PIN# 756337955
DB 10884 PG 730

N/F
AIS FORESTRY & FARMING, LLC
STEPHENS ENTERPRISES, LLC
PIN# 756330565
DB 15268 PG 739

N/F
CCF PROPERTIES, LLC
PIN# 756323769
DB 14038 PG 1799

N/F
ROI INVESTMENTS, LLC.
PIN# 756247178
LOT 13 AIRPARK
BM 1998 PG 2106
DB 15566 PG 2254

N/F
STEPHENS ENTERPRISES, LLC
PIN# 756236139
DB 15268 PG 759

-Y5- FUTURE ODYSSEY DRIVE

-L- SR-1635 (MCCRIMMON PARKWAY)

MATCH LINE -L- STA. 69+00 SEE SHEET 7

MATCH LINE -L- STA. 81+00 SEE SHEET 9

RESIDUAL

ARTIFICIAL FILL

5' SIDEWALK

8' SIDEWALK

9' CONC ISLAND

16' CURB

R.P.

WOODS

POND

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
012108004	9

0 50 100
FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCH LINE -L- STA. 81+00 SEE SHEET 8

MATCH LINE -L- STA. 94+50 SEE SHEET 10

-L- SR-1635 (MCCRIMMON PARKWAY)

-Y6- FUTURE EAST/WEST CONNECTOR

N/F
CCF PROPERTIES, LLC
PIN# 756323769
DB 14038 PG 1799

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 756318355
DB 8150 PG 024

N/F
STEPHENS ENTERPRISES, LLC
PIN# 756216570
DB 8716 PG 945

RESIDUAL

WOODS

5' SIDEWALK

8' SIDEWALK

9' CONC ISLAND

5' P.S.

16' C&G

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
012108004	4

0 50 100
FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 756318355
DB 8150 PG 024

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 756318355
DB 8150 PG 024

95 100 105

RESIDUAL

RESIDUAL

MATCH LINE -L- STA. 94+50 SEE SHEET 9

MATCH LINE -L- STA. 108+00 SEE SHEET 11

8' SIDEWALK

5' SIDEWALK

5' SIDEWALK

5' SIDEWALK

5' SIDEWALK

5' P.S.

5' P.S.

5' P.S.

16' C&G

16' C&G

16' C&G

9' CONC ISLAND

9' CONC ISLAND

WOODS

WOODS

WOODS

-L- SR-1635 (MCCRIMMON PARKWAY)

PARKWAY)

RESIDUAL

RESIDUAL

N/F
JT HOBBY & SON, INC.
A&J WHITE, LLC
PIN# 755396968
LOT 10
BM 1999 PG 1306
DB 15546 PG 2209

N/F
STEPHENS ENTERPRISES, LLC
PIN# 756216570
DB 8716 PG 945

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alexander
ai WZF-7001280

PROJECT REFERENCE NO.	SHEET NO.
012108004	11

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

0 50 100
FEET

BEGIN CONSTRUCTION
-Y7- POT Sta. 19+45.00

-Y7- SOUTHPORT DRIVE

-L- STA. 108+00 SEE SHEET 10

MATCH LINE -L- STA. 121+50 SEE SHEET 12

-L- SR-1635 (MCCRIMMON PARKWAY)

-Y7- FUTURE SOUTHPORT DRIVE

-Y7- FUTURE SOUTHPORT DRIVE

RESIDUAL

RESIDUAL

RESIDUAL

RESIDUAL

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 755318355
DB 8150 PG 024

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 755318355
DB 8150 PG 024

N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755497184
LOT 2
BM 1995 PG 1372
DB 5425 PG 467

N/F
JT HOBBY & SON, INC.
A&J WHITE, LLC
PIN# 755396968
LOT 10
BM 1999 PG 1306
DB 15546 PG 2209

N/F
JT HOBBY & SON, INC.
A&J WHITE, LLC
PIN# 755388866
LOT 10
BM 1999 PG 1306
DB 15556 PG 370

N/F
SOUTHPORT BUSINESS PARK, LIMITED PARTNERSHIP
PIN# 755485334
DB 8681PG 2240

WOODS

8/17/99

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alexander
GT WZF 70013280

PROJECT REFERENCE NO.	SHEET NO.
012108004	12

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

0 50 100
FEET

MATCH LINE -L- STA. 121+50 SEE SHEET 11

MATCH LINE -L- STA. 133+50 SEE SHEET 13

-L- SR-1635 (MCCRIMMON PARKWAY)

-L- SR-3084 (EVANS RD)

-Y8- SR-1002 (AVIATION PARKWAY)

RESIDUAL

N/F
SOUTHPORT BUSINESS PARK, LIMITED PARTNERSHIP
PIN# 755485334
DB 8681PG 2240

N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 756318355
DB 850 PG 024

N/F
SOUTHPORT BUSINESS PARK
LIMITED PARTNERSHIP
PIN# 755584219
LOT E
BM 1998 PG 1680
DB 7976 PG 433

N/F
MORRISVILLE THEYS
STONE, LLC
PIN# 755571774
PORTION OF TRACT B
BM 1981PG 199
DB 14621PG 2126

8' SIDEWALK
5' SIDEWALK
10' SIDEWALK
16' C&G
26' C&G
5' P.S.
4' P.S.
VAR CONC ISLAND
EXISTING R/W
WOODS

125
130
20
25
30

8/17/99

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mjalexander
61 W2E-7001-3280

PROJECT REFERENCE NO.	SHEET NO.
012108004	13

0 50 100
FEET

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 7555842119
LOT E
BM 1998 PG 1680
DB 7976 PG 433

N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 7555893112
LOT F
BM 1998 PG 1680
DB 7976 PG 433

N/F
WAKE COUNTY
PIN# 755987679
CRABTREE CREEK WATERSHED
BM 1975 PG 80
DB 3006 PG 246

N/F
MORRISVILLE THEYS STONE, LLC
PAN# 7555717174
PORTION OF TRACT B
BM 1981PG 199
DB 14621PG 2126

MATCH LINE -L- STA. 133+50 SEE SHEET 12

RESIDUAL

-L- SR-3084.(EVANS RD)

RESIDUAL

5' SIDEWALK

2'-6" C&G

GRAU 350

END ALIGNMENT
-L- POT Sta. 143+55.18

END PROJECT
END CONSTRUCTION
-L- POT Sta. 143+50.00

EXISTING R/W

WOODS

CONC BRIDGE

RIPRAP

EXIST. 20' SAN. SEWER EASM'T

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mjalexander
GT WZF-7001(280)

PROJECT REFERENCE NO.	SHEET NO.
012108004	14

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

400
390
380
370
360
350
340
330
320
310

17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00

PROPOSED GRADE

EXISTING GRADE

-L- 29+50
21' RT

-L- 28+00
20' LT

TRIASSIC RESIDUAL,
TAN AND GRAY, MOIST, MEDIUM
STIFF TO VERY STIFF, SANDY CLAY
14
25
26
16
11
7
9
100/0.9
BT
DRY
(06/14)
100/0.8
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)
60/0.0
BT
DRY
(06/14)
NON-CRYSTALLINE ROCK
(TRIASSIC SANDSTONE)

5/14/99

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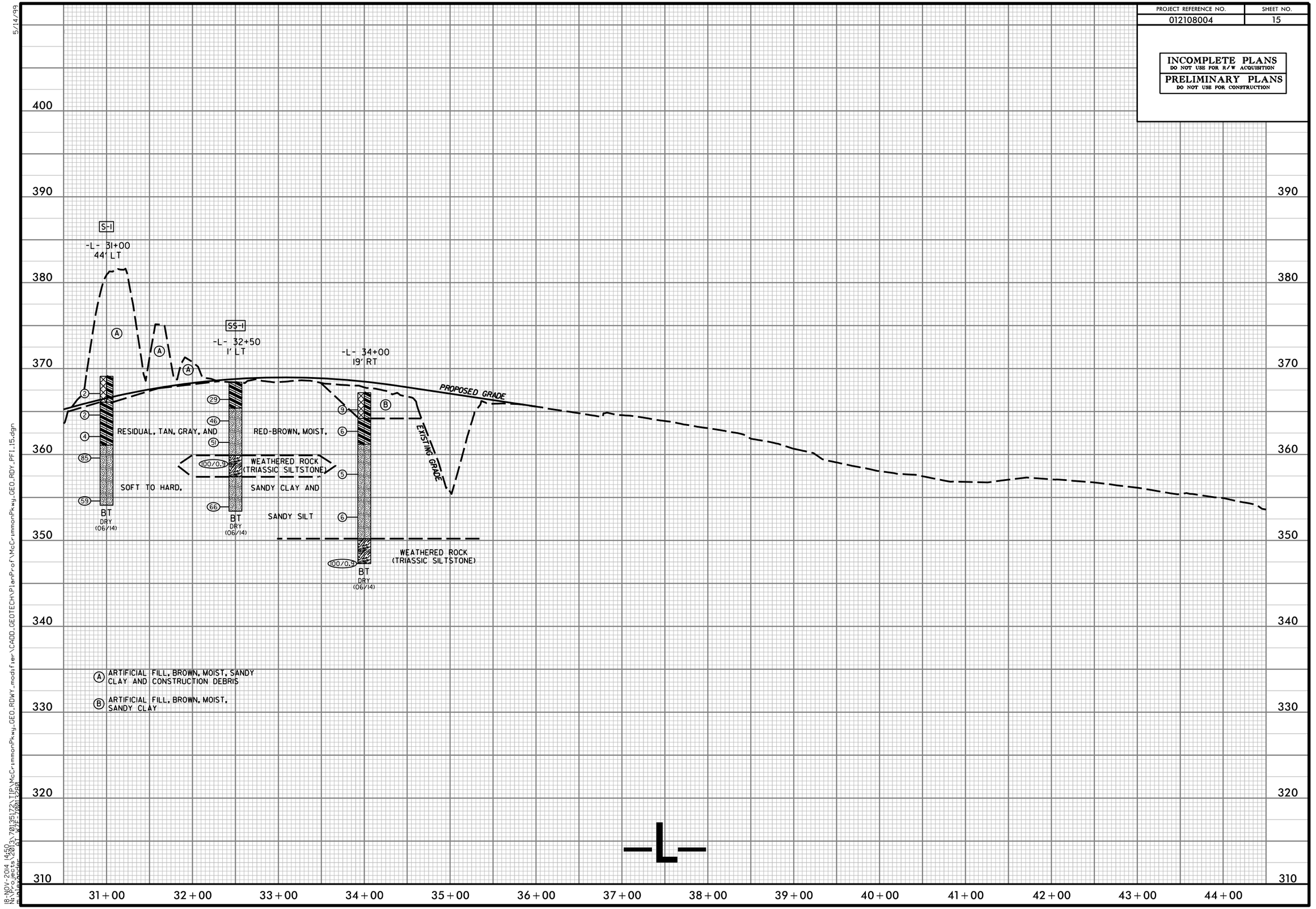
mpalecek 01 WIF-7001328

PROJECT REFERENCE NO.	SHEET NO.
012108004	15

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
012108004	16

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/14/99

380
370
360
350
340
330
320
310
300
290

EXISTING GRADE

PROPOSED GRADE

-L- 56+50
17' LT

-L- 58+00
21' RT

TRIASSIC RESIDUAL, TAN AND GRAY, MOIST, STIFF TO VERY STIFF, SANDY AND SANDY CLAY SILT

16 75 100/0.1 100/0.4

BT
DRY
(07/14)

10 12 37 19 100/0.3

BT
DRY
(06/14)

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00

18-NOV-2014 14:50
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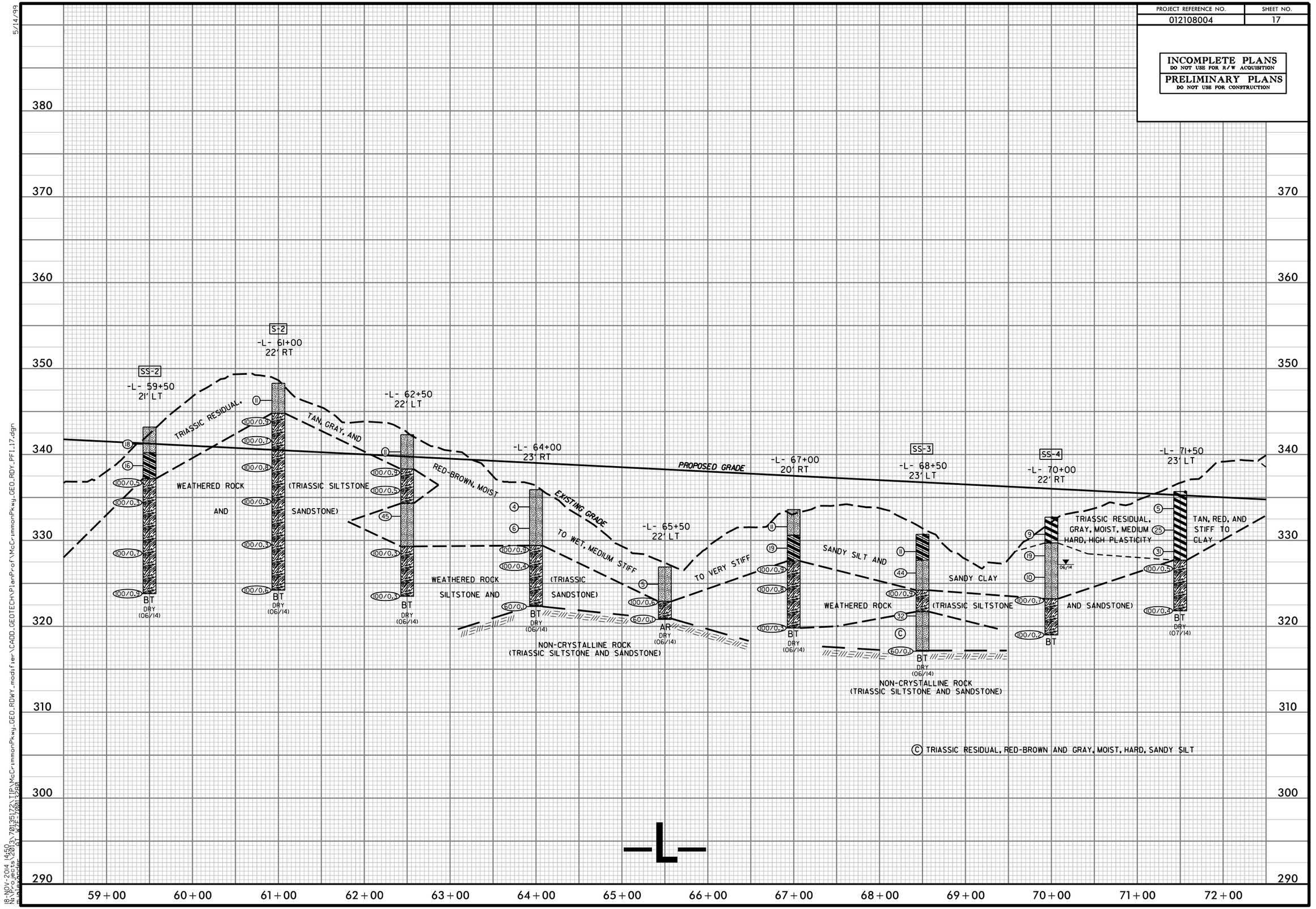
mlexander
$USER1 W7F-20013280

PROJECT REFERENCE NO.	SHEET NO.
012108004	17

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/14/99

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modifier AT WTF-7001280

PROJECT REFERENCE NO.	SHEET NO.
012108004	18

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SS-5
-L- 73+00
23' RT

S-3
-L- 74+50
23' LT

-L- 76+00
24' RT

-L- 77+50
23' LT

-L- 79+00
22' RT

-L- 80+50
22' LT

-L- 82+00
19' RT

SS-6
-L- 83+50
24' LT

-L- 85+00
22' RT

PROPOSED GRADE

EXISTING GRADE

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

SANDY SILT AND STIFF TO HARD, WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

SANDY TO SILTY CLAY

NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT DRY (07/14)

380 370 360 350 340 330 320 310 300 290

73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00

5/14/99

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mjeffcoat 0 W7E-7001-3280

PROJECT REFERENCE NO.	SHEET NO.
012108004	19

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Ⓓ WEATHERED ROCK (TRIASSIC SILTSTONE)

SS-7
-L- 88+00
23' RT

SS-8
-L- 89+50
22' LT

SS-9
-L- 94+00
22' RT

S-4
-L- 95+50
23' LT

SS-10
-L- 97+00
23' RT

SS-11
-L- 98+50
22' LT

-L- 86+50
17' LT

-L- 91+00
22' RT

-L- 92+50
23' LT

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET. WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

EXISTING GRADE

TRIASSIC RESIDUAL, ORANGE, RED-BROWN, AND GRAY, MOIST, MEDIUM STIFF TO HARD. WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

SOFT TO STIFF, HIGH PLASTICITY SILTY CLAY

SANDY SILT AND SANDY TO SILTY CLAY

PROPOSED GRADE

NON-CRYSTALLINE ROCK TRIASSIC SILTSTONE AND SANDSTONE

BT DRY (07/14)

380 370 360 350 340 330 320 310 300 290

86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00 96+00 97+00 98+00 99+00

5/14/99

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mdale3rdde 01 WPF-7001-1280

PROJECT REFERENCE NO.	SHEET NO.
012108004	20

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Ⓔ TRIASSIC RESIDUAL, RED-BROWN, TAN, ORANGE, AND GRAY, MOIST, MEDIUM STIFF, HIGH PLASTICITY SILTY CLAY WITH LITTLE SAND

-L- 100+00
23' RT

-L- 101+50
22' LT

-L- 103+00
23' RT

-L- 104+50
22' LT

-L- 106+00
23' RT

-L- 107+50
22' LT

SS-12
-L- 110+50
21' LT

-L- 109+00
23' RT

SS-13
-L- 112+00
28' LT

PROPOSED GRADE

EXISTING GRADE

TRIASSIC RESIDUAL, TAN TO ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY SILT AND SANDY TO SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT DRY (07/14)

BT DRY (06/14)

360 350 340 330 320 310 300 290 280 270

100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
012108004	21

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/14/99

360
350
340
330
320
310
300
290
280
270

Ⓔ TRIASSIC RESIDUAL, RED-BROWN, TAN, ORANGE, AND GRAY, MOIST, MEDIUM STIFF, HIGH PLASTICITY SILTY CLAY WITH LITTLE SAND

Ⓕ WEATHERED ROCK (TRIASSIC SILTSTONE)

Ⓖ TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

SS-14
-L- 113+50
22' LT

S-5
SS-15
-L- 116+50
18' LT

SS-16
-L- 119+50
22' LT

SS-17
-L- 121+00
22' RT

SS-18
-L- 122+50
22' LT

SS-19
-L- 124+00
23' RT

SS-20
-L- 125+50
27' LT

-L- 118+00
22' RT

-L- 115+00
24' RT

PROPOSED GRADE

EXISTING GRADE

TRIASSIC RESIDUAL, RED-BROWN, AND TAN, MOIST TO WET, STIFF TO HARD, SANDY SILT

TRIASSIC RESIDUAL, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY AND SANDY CLAY

TRIASSIC RESIDUAL, TAN, ORANGE, MOIST, SANDY TO SILTY CLAY

SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

WEATHERED ROCK (TRIASSIC SILTSTONE)

NON-CRYSTALLINE ROCK
TRIASSIC SILTSTONE AND SANDSTONE

BT DRY (06/14)

AR DRY (06/14)

113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00

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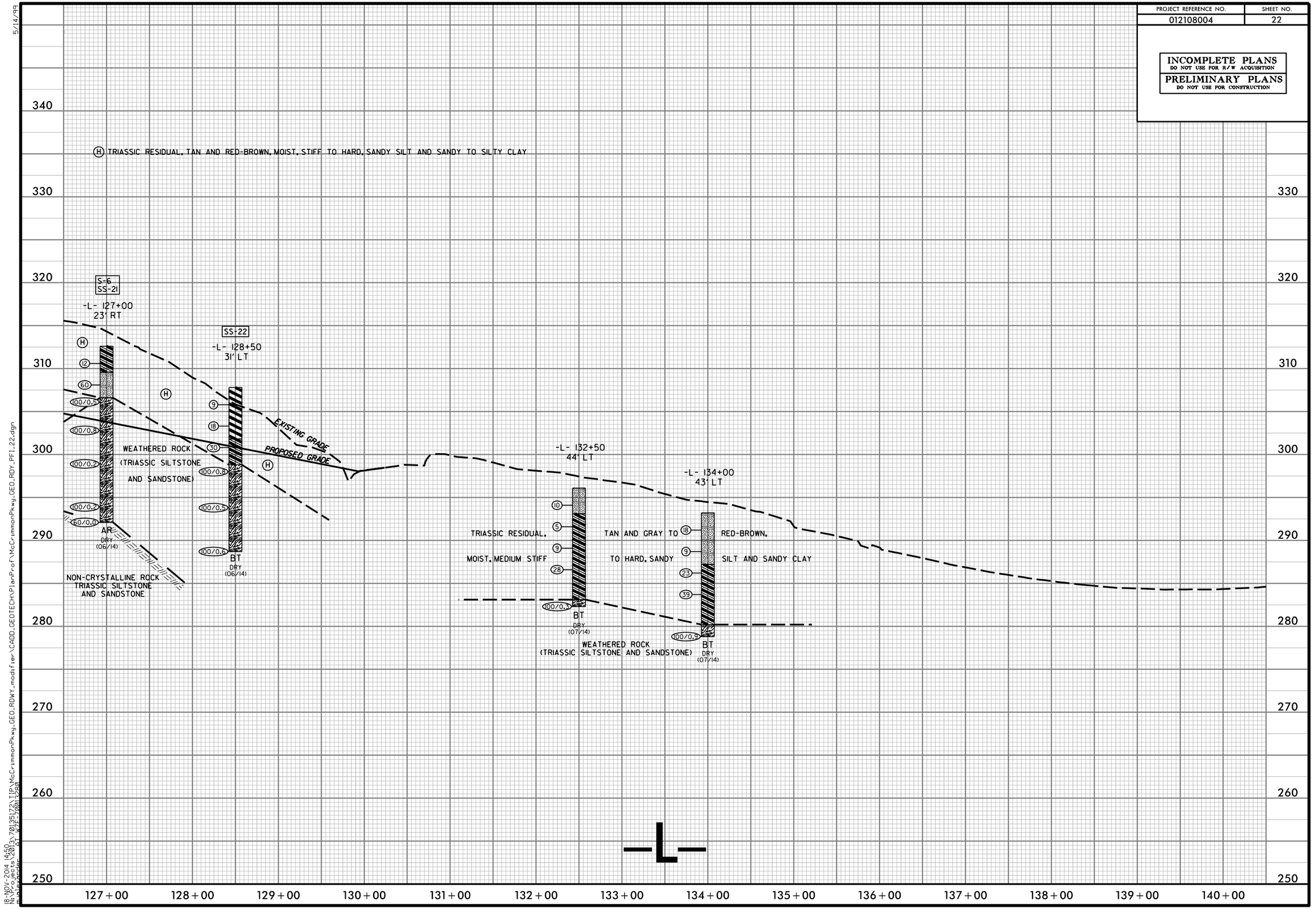
mjolley
Default
GT_WTF-70013280

PROJECT REFERENCE NO.	SHEET NO.
012108004	22

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
012108004	23

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y7- 20+50
10' LT

-Y7- 22+00
CL

-Y7- 23+50
CL

INTERSECTION
WITH -L-

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

TRIASSIC RESIDUAL,
ORANGE AND GRAY, WET TO MOIST,
MEDIUM STIFF, SANDY SILT

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

(A) TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, MEDIUM STIFF TO VERY STIFF, HIGH PLASTICITY SILTY CLAY

-Y7-

360 350 340 330 320 310 300 290 280 270

16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00

5/14/99

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mjalexander
GT WTF-7001-3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	24

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

360
350
340
330

-L- 29+50
21' RT

4:1

3:1

ARTIFICIAL FILL

TRIASSIC RESIDUAL
TAN AND GRAY, MOIST, STIFF
TO VERY STIFF SANDY CLAY

14
25
26
16
100/0.3'

WEATHERED ROCK

(TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(06/14)

29+50.00

4:1

3:1

ARTIFICIAL FILL

TRIASSIC RESIDUAL
TAN AND GRAY, MOIST MEDIUM STIFF
TO VERY STIFF, SANDY CLAY

29+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander
AT W7E-7001\3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	25

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

380 370 360 350

ARTIFICIAL FILL
SANDY CLAY
4:1
BROWN, MOIST,
AND CONSTRUCTION DEBRIS
3:1
TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
SOFT TO HARD, SANDY CLAY AND SANDY SILT

32+00.00

370 360 350

4:1
ARTIFICIAL FILL
BROWN, MOIST, SANDY CLAY
AND CONSTRUCTION DEBRIS
3:1
TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
SOFT TO HARD, SANDY CLAY AND SANDY SILT

31+50.00

380 370 360 350 340

S-1
-L- 31+00
44' LT
4:1
2
2
4
85
59
BT
DRY
(06/14)
ARTIFICIAL FILL
BROWN, MOIST, SANDY CLAY AND
CONSTRUCTION DEBRIS
3:1
TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
SOFT TO HARD, SANDY CLAY AND SANDY SILT

31+00.00

380 370 360 350 340

4:1
ARTIFICIAL FILL
3:1
TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
SOFT TO HARD, SANDY CLAY AND SANDY SILT

30+50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mlalexander
AT W7E-70013280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	26

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

370 360 350 340 330 380

-L- 34+00
19' RT

4:1 3:1

ARTIFICIAL FILL
BROWN, MOIST, SANDY CLAY

TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
MEDIUM STIFF, SANDY SILT AND SANDY CLAY

9 6 5 6

WEATHERED ROCK (TRIASSIC SILTSTONE)

100/0.3

BT
DRY
(06/14)

34+00.00

4:1 3:1

TRIASSIC RESIDUAL,
TAN, GRAY, AND RED-BROWN, VERY STIFF
TO HARD, SANDY SILT AND SANDY CLAY

ARTIFICIAL FILL

33+50.00

4:1 3:1

TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
MEDIUM STIFF, SANDY SILT AND SANDY CLAY

ARTIFICIAL FILL

33+00.00

SS-1
-L- 32+50
1' LT

4:1 3:1

TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

29 46 51

WEATHERED ROCK 100/0.3 (TRIASSIC SILTSTONE)

66

BT
DRY
(06/14)

ARTIFICIAL FILL

32+50.00

-L-

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mlalexander
AT W7E-70013280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	27

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

370
360
350
340

3:1

3:1

ARTIFICIAL FILL
BROWN, MOIST, SANDY CLAY

TRIASSIC RESIDUAL
TAN, GRAY, AND RED-BROWN, MOIST,
MEDIUM STIFF, SANDY CLAY AND SANDY SILT

34+50.00

-℄-

370
360
350
340

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander AT WTE-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	28

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

360 350 340 330 320 310

S-2
-L- 61+00
22' RT

SANDY SILT

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, STIFF,

100/0.3
100/0.7
100/0.8
100/0.3
100/0.3
100/0.5

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(06/14)

4:1 3:1 4:1 3:1 4:1 3:1

61+00.00

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, STIFF, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4:1 3:1 4:1 3:1 4:1 3:1

60+50.00

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, STIFF, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4:1 3:1 4:1 3:1 4:1 3:1

60+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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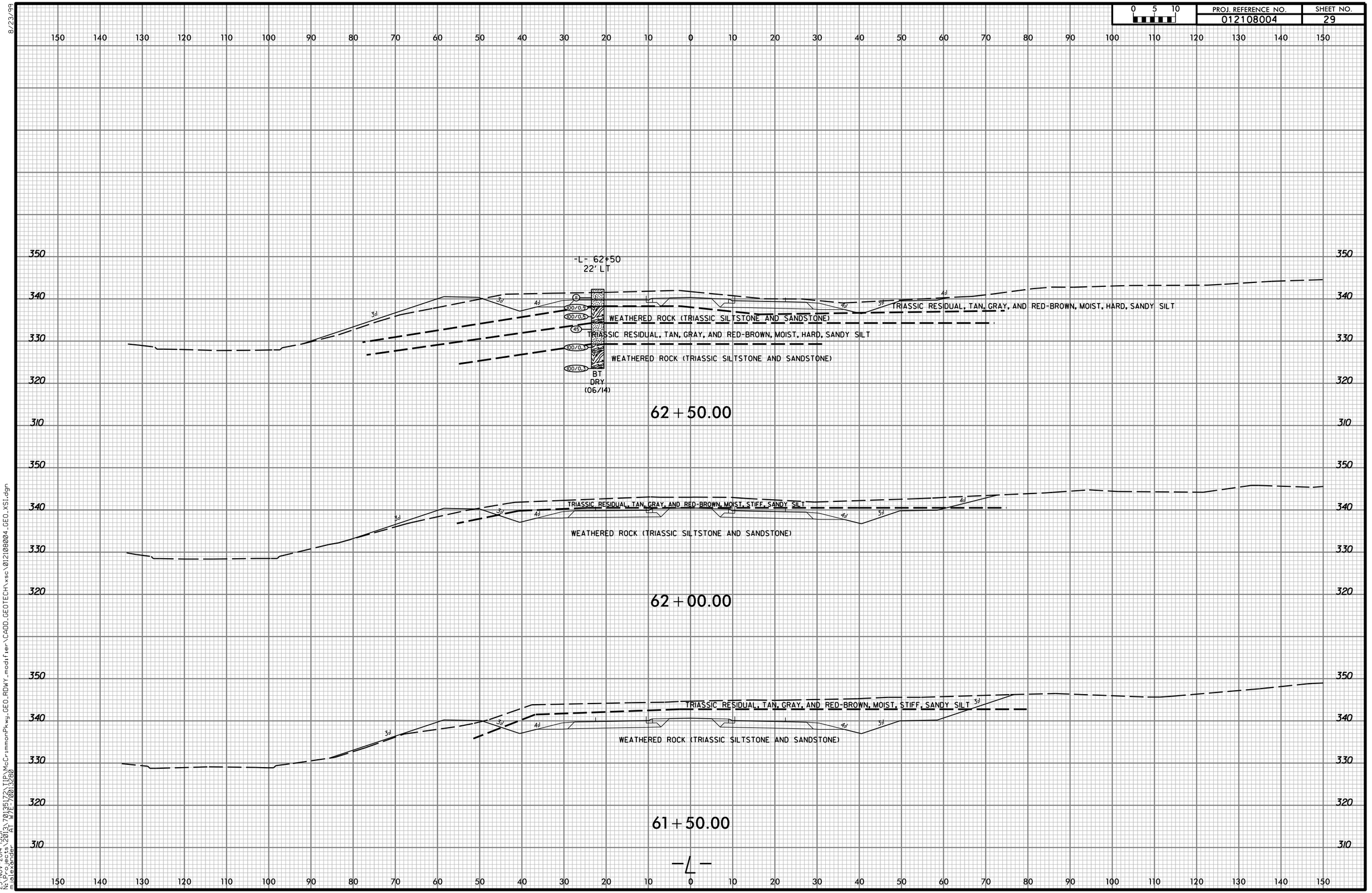
mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	29



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mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	30

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

340
330
320
310

3.00(d)
3(d)
4(d)
1
3(d)
4(d)

TRIASSIC RESIDUAL, TAN, RED, AND GRAY, MOIST, MEDIUM STIFF TO HARD, HIGH PLASTICITY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET, STIFF TO VERY STIFF, SANDY SILT

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

71+00.00

340
330
320
310

3(d)
4(d)
1
3(d)
4(d)

TRIASSIC RESIDUAL, TAN, RED, AND GRAY, MOIST, MEDIUM STIFF TO HARD, HIGH PLASTICITY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET, STIFF TO VERY STIFF, SANDY SILT

70+50.00

300
340
330
320
310

-L- 70+00
22' RT

3(d)
4(d)
1
3(d)
4(d)

9
19
10
100/0.1
100/0.2

06/14

TRIASSIC RESIDUAL, TAN, RED, AND GRAY, MOIST, MEDIUM STIFF TO HARD, HIGH PLASTICITY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET, STIFF TO VERY STIFF, SANDY SILT

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

BT

70+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	31

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310

SS-5
-L- 73+00
23' RT

TRIASSIC RESIDUAL, TAN, ORANGE, AND RED-BROWN, MOIST, STIFF, SILTY CLAY TO SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

13 13 100/0.5 100/0.4 100/0.3

BT
DRY
(07/14)

4:1 3:1

73+00.00

TRIASSIC RESIDUAL, ORANGE AND TAN, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

72+50.00

TRIASSIC RESIDUAL, TAN, RED, AND GRAY, MOIST, MEDIUM STIFF TO HARD, HIGH PLASTICITY CLAY

WEATHERED ROCK
(TRIASSIC SILTSTONE AND SANDSTONE)

72+00.00

-L- 71+50
23' LT

TRIASSIC RESIDUAL, TAN, RED, AND GRAY, MOIST, MEDIUM STIFF TO HARD, HIGH PLASTICITY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

5 25 31 100/0.5 100/0.4

BT
DRY
(07/14)

71+50.00

-L-

25-NOV-2014 15:31
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mjalexander
AT WTE-7001S280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	32

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310

S-3
-L- 74+50
23' LT

10
22
100/0.6
100/0.1
100/0.2

BT
DRY
(07/14)

TRIASSIC RESIDUAL, TAN, ORANGE, AND RED-BROWN, MOIST, STIFF TO VERY STIFF, SILTY CLAY TO SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4H 3H 4H 4H 4H 3H

74+50.00

TRIASSIC RESIDUAL, TAN, ORANGE, AND RED-BROWN, MOIST, STIFF, SILTY CLAY TO SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4H 3H 4H 4H 4H 3H

74+00.00

TRIASSIC RESIDUAL, TAN, ORANGE, AND RED-BROWN, MOIST, STIFF, SILTY CLAY TO SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4H 3H 4H 4H 4H 3H

73+50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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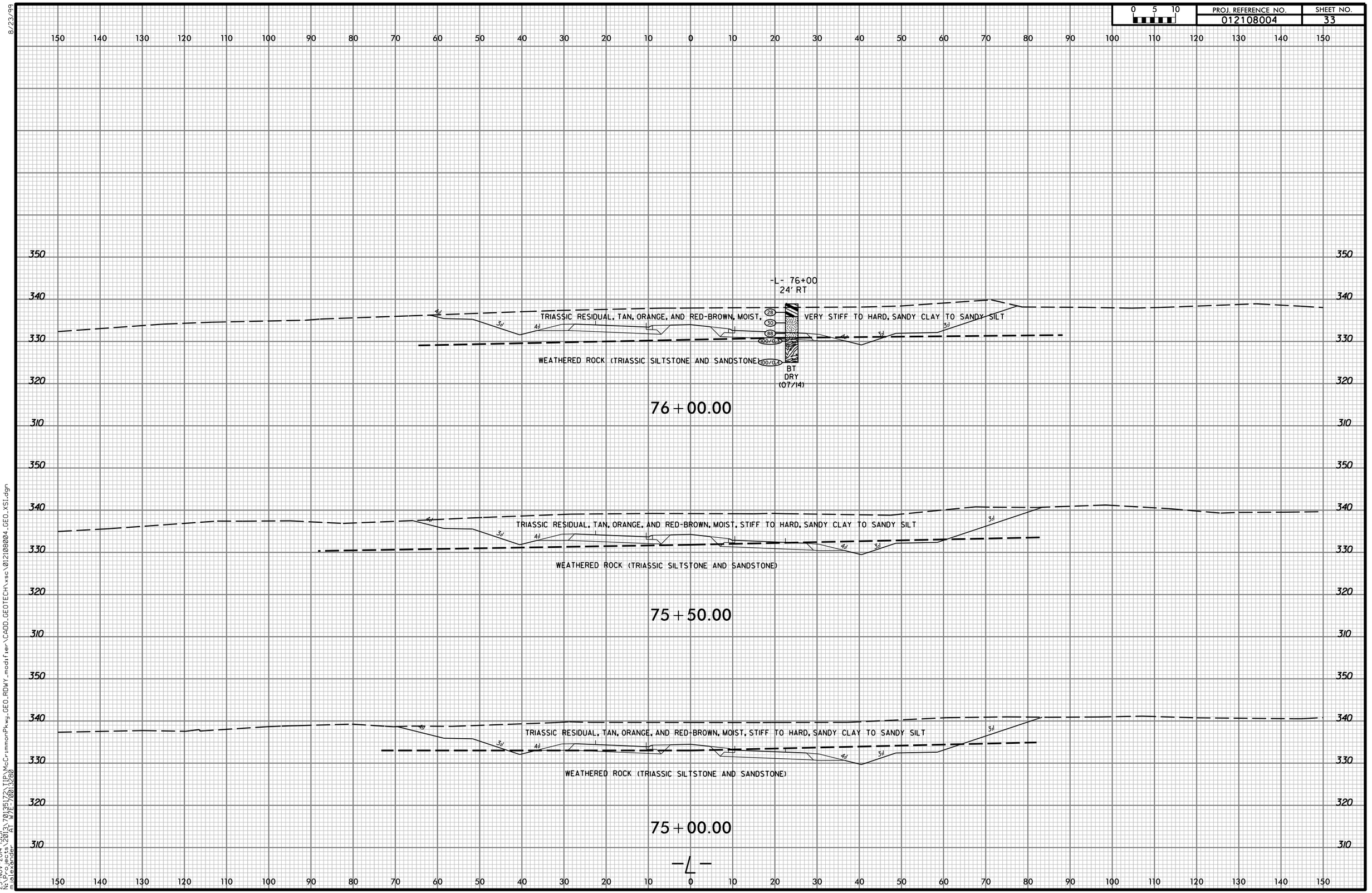
mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	33



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mjalexander
AT W7E-7001\3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	34

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350
340
330
320
310

4J 3J 4J 4J 3J 3J

TRIASSIC RESIDUAL, TAN, ORANGE, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY TO SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

76+50.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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malexander AT WTE-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	35

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

83+00.00

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

82+50.00

-L- 82+00
19' RT

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, VERY STIFF, 27 SANDY CLAY

100/0.3
100/0.3
100/0.3
100/0.5

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(07/14)

82+00.00

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

81+50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander
AT W7E-7001\3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	36

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310

-L- 85+00
22' RT

10
57
66
100/0.5
100/0.3

3:1 3:1 4:1 4:1 3:1 3:1

TRIASSIC RESIDUAL, TAN, GRAY, AND RED, MOIST, STIFF TO HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(07/14)

85+00.00

3:1 3:1 4:1 4:1 3:1 3:1

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

84+50.00

3:1 3:1 4:1 4:1 3:1 3:1

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

84+00.00

SS-6
-L- 83+50
24' LT

20
17
82
100/0.9
100/0.8

3:1 3:1 4:1 4:1 3:1 3:1

TRIASSIC RESIDUAL, TAN, ORANGE, RED-BROWN, AND GRAY, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(07/14)

83+50.00

-L-

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mjalexander AT WTE-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	37

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350
340
330
320
310

TRIASSIC RESIDUAL, TAN, GRAY, AND RED, MOIST, STIFF TO HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 3:1

87+00.00

-L- 86+50
17' LT

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT

18
28
100/0.8
100/0.5
100/0.1

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(07/14)

3:1 3:1 4:1 4:1 3:1 3:1

86+50.00

TRIASSIC RESIDUAL, TAN, GRAY, AND RED, MOIST, STIFF TO HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 3:1

85+50.00

-L-

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mlalexander AT WTE-7001\3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	38

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310 360

TRIASSIC RESIDUAL, TAN, GRAY AND RED-BROWN, MOIST, HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 4:1

88+50.00

SS-7
-L- 88+00
23' RT

TRIASSIC RESIDUAL, TAN, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY
TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, HARD, SANDY SILT
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

(13) (36) (77) (100/0.5) (100/0.4)

BT DRY (07/14)

88+00.00

TRIASSIC RESIDUAL, TAN, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY
TRIASSIC RESIDUAL, TAN, GRAY, AND RED, MOIST, STIFF TO HARD, SANDY SILT
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

87+50.00

-4-

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malexander
AT W7E-70013280

8/23/99

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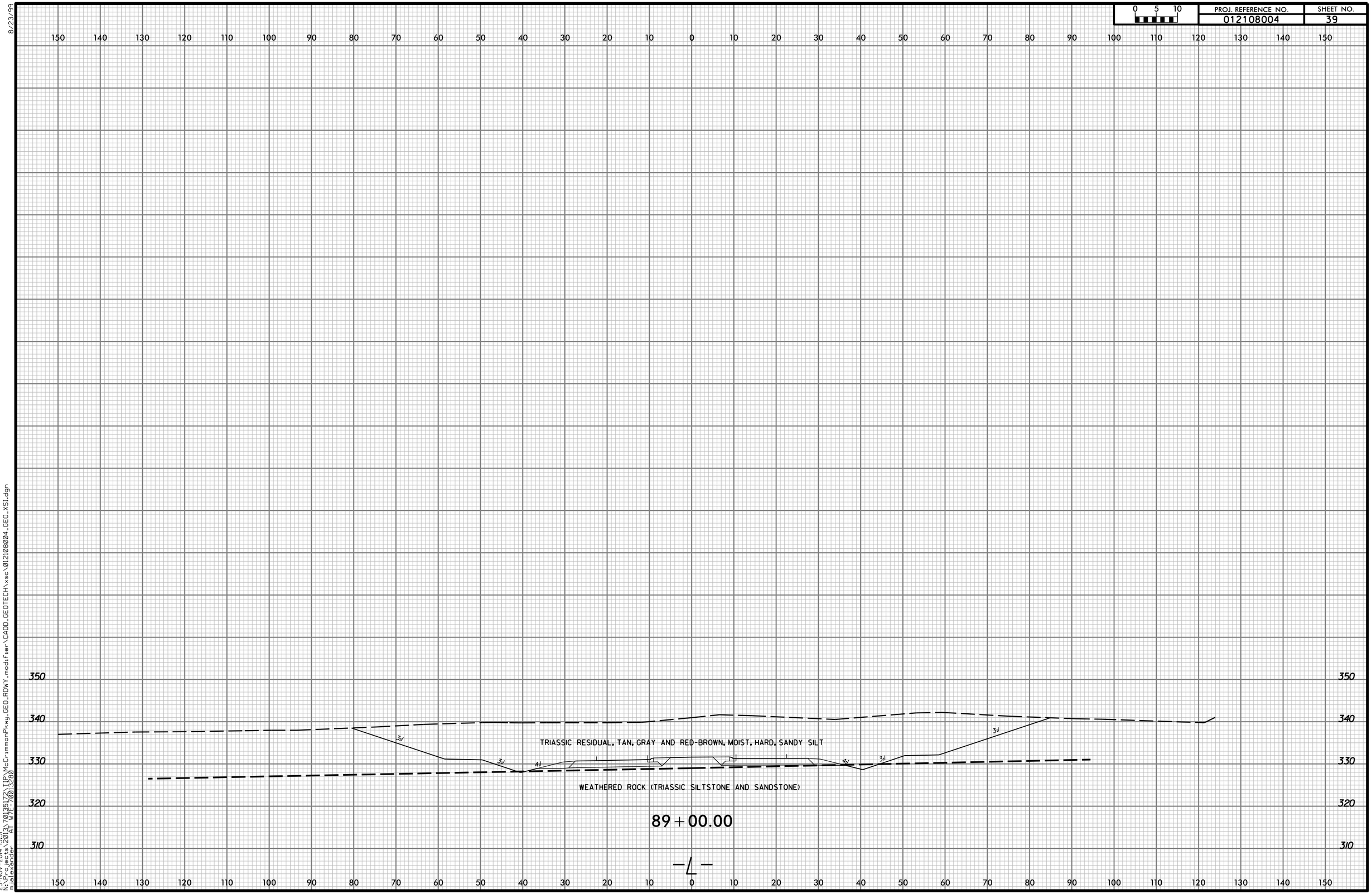
	012108004	39



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mjalexander AT WTE-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	40

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350
340
330
320
310

3d
TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY
4d
3d
4d
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

92+00.00

340
330
320
310
300

3d
TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET,
MEDIUM STIFF, SANDY CLAY
4d
3d
4d
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

91+50.00

340
330
320
310

-L- 91+00
22' RT
3d
TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST TO WET,
MEDIUM STIFF, SANDY CLAY
4d
3d
4d
4
6
100/0.8
100/0.7
100/0.1
07/18
BT
WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

91+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	41

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 3:1

93+50.00

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

93+00.00

-L- 92+50
23' LT

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY

17 30 100/0.3 100/0.5 100/0.1

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(07/14)

NON-CRYSTALLINE ROCK, TRIASSIC SILTSTONE AND SANDSTONE

92+50.00

-L-

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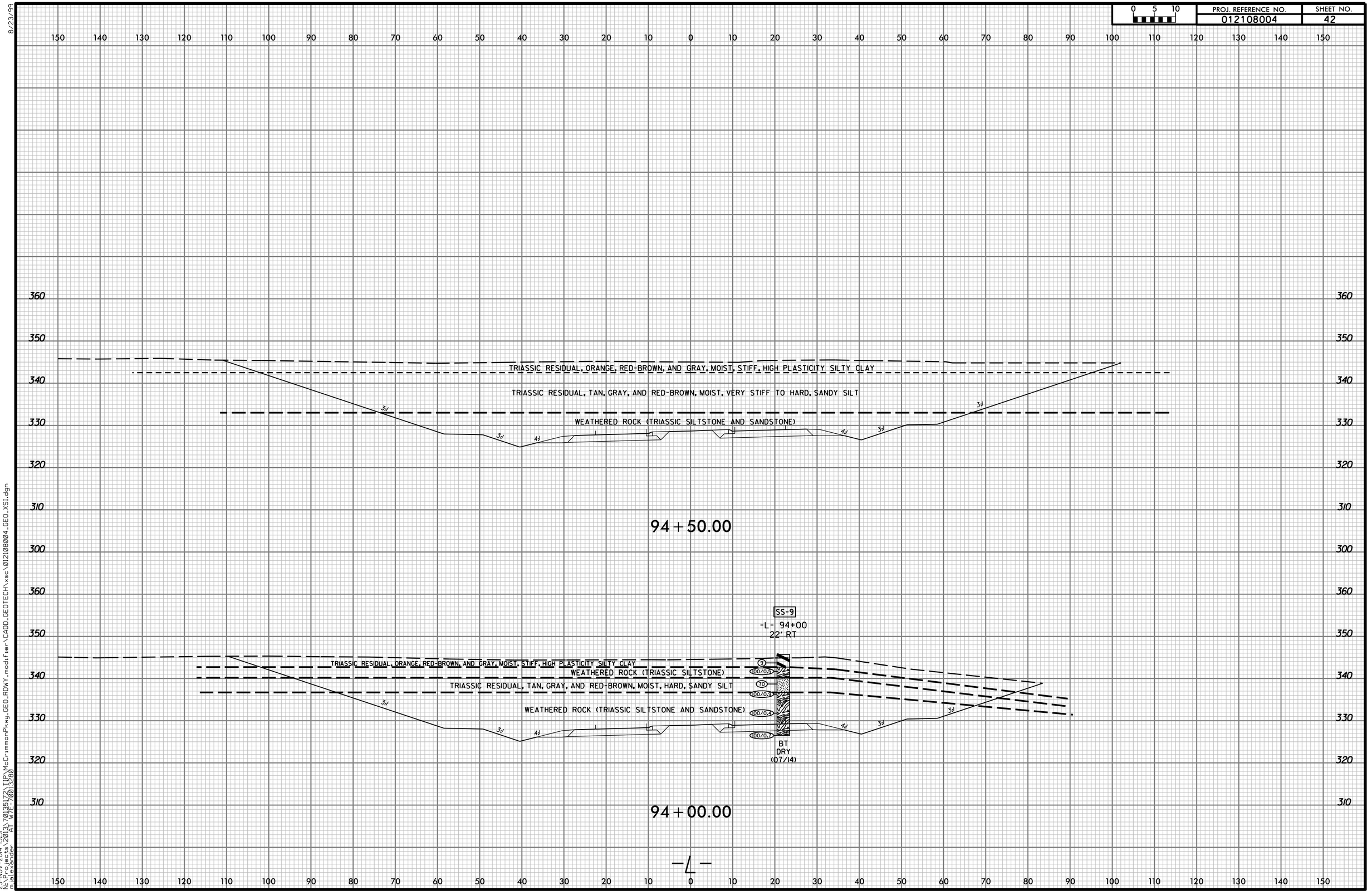
mjalexander
AT WTE-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	42



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mlelexander
AT W7E-700013280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	43

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310 360 350 340 330 320 310 300

TRIASSIC RESIDUAL, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT

3:1 4:1 3:1 4:1 3:1

96+00.00

S-4
-L- 95+50
23' LT

TRIASSIC RESIDUAL, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

12 21 23 24 71 100/0.3

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT

3:1 4:1 3:1 4:1 3:1

WEATHERED ROCK

BT
DRY
(07/14)

TRIASSIC SILTSTONE AND SANDSTONE

95+50.00

TRIASSIC RESIDUAL, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT

3:1 4:1 3:1 4:1 3:1

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

95+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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malexander
AT W7E-7001J3200

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	44

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310 300

TRIASSIC RESIDUAL, RED-BROWN, MOIST, SOFT TO MEDIUM STIFF, HIGH PLASTCITY SILTY CLAY

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF TO VERY STIFF, SANDY SILT

3d 4d

97+50.00

SS-10
-L- 97+00
23' RT

TRIASSIC RESIDUAL, RED-BROWN, MOIST, SOFT TO MEDIUM STIFF, HIGH PLASTCITY SILTY CLAY

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF TO VERY STIFF, SANDY SILT

3 5 4 4 6 18

BT
DRY
(07/14)

97+00.00

TRIASSIC RESIDUAL, ORANGE, RED-BROWN, AND GRAY, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

TRIASSIC RESIDUAL, TAN, GRAY, AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT

96+50.00

-L-

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mjalexander AT WTE-7001\3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	45

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350
340
330
320
310
300

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, HIGH PLASTCITY SILTY CLAY

TRIASSIC RESIDUAL, RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT

3d 3d 4d 4d 4d 3d

98+00.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350
340
330
320
310
300

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mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	46

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

330 320 310 300 290

SS-14

-L- 113+50
22' LT

4:1 3:1 4:1

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

TRIASSIC RESIDUAL, RED-BROWN AND TAN, MOIST, MEDIUM STIFF, HIGH PLASTICITY SILTY CLAY

4:1 3:1

3:1

113 + 50.00

330 320 310 300 290 280

4:1 3:1 4:1

TRIASSIC RESIDUAL, RED-BROWN AND TAN, MOIST, MEDIUM STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4:1 3:1

3:1

113 + 00.00

330 320 310 300 290 280

4:1 3:1 4:1

TRIASSIC RESIDUAL, RED-BROWN AND TAN, MOIST, STIFF TO VERY STIFF, SANDY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

4:1 3:1

3:1

112 + 50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mlalexander AT WPE-7001328O

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	47

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

320
310
300
290

4:1 3:1 4:1 4:1 3:1 3:1

TRIASSIC RESIDUAL, RED-BROWN AND TAN, MOIST, MEDIUM STIFF TO STIFF, SANDY SILT AND CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

114+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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malexander
AT W7E-7001.3280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	48

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

330 320 310 300 290

TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY CLAY AND SILT

WEATHERED ROCK (TRIASSIC SILTSTONE)

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

3:1 4:1

125+00.00

330 320 310 300 290

3:1 4:1

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY CLAY AND SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

124+50.00

330 320 310 300 290 280

3.00:1 3:1 4:1

SS-19
-L- 124+00
23' RT

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

10 26 32 100/0.5 100/0.5 100/0.5

BT
DRY
(06/14)

124+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mjalexander AT WTE-7001280

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	49

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

330 320 310 300 290 280

TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF TO HARD, SANDY CLAY AND SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3d 3d 4d 4d 3d 4d

126+50.00

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT AND CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE)

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

3d 4d 4d 3d 40/3"

126+00.00

SS-20
-L- 125+50
27' LT

TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST, STIFF, HIGH PLASTICITY SILTY CLAY

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE)

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

WEATHERED ROCK (TRIASSIC SILTSTONE)

NON-CRYSTALLINE ROCK

12 30 100/0.4 100/0.4 44 100/0.6 60/0

BT
DRY
(06/14)

TRIASSIC SILTSTONE

3d 4d 4d 3d 40/3"

125+50.00

-L-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	50

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

320 310 300 290 280 270 330 320 310 300 290 280 330 320 310 300 290 280

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 4:1

128+00.00

TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, SANDY CLAY AND SILT

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 4:1

127+50.00

S-6
SS-21
-L- 127+00
23' RT

TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF TO HARD, SANDY CLAY AND SILT

12
60
100/0.5
100/0.8
100/0.2
100/0.2
50/0.0

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(06/14)

NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

3:1 3:1 4:1 4:1 3:1 4:1

127+00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mlalexander AT WJE-70013280

8/23/99

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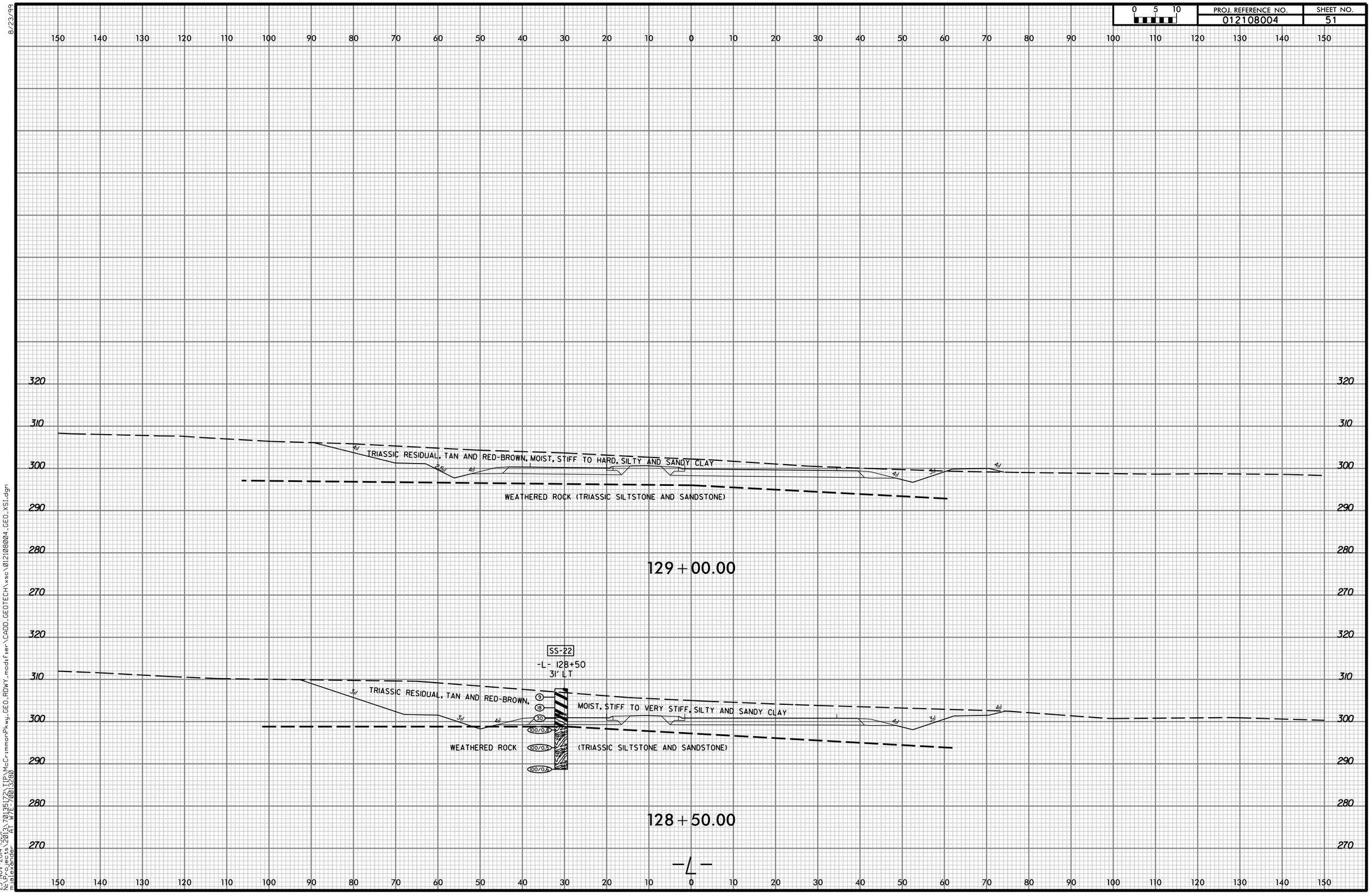

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m.alexander
AT W7E-70013200

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	012108004	52

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

330 320 310 300 290

TRIASSIC RESIDUAL, TAN, RED-BROWN, AND GRAY, MOIST,
MEDIUM STIFF TO VERY STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

21+50.00

330 320 310 300

TRIASSIC RESIDUAL, TAN, RED-BROWN, AND GRAY, MOIST,

STIFF TO VERY STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

21+00.00

340 330 320 310 300

-Y7- 20+50
10' LT

16
12
100/0.4
100/0.5
100/0.4

TRIASSIC RESIDUAL, TAN, RED-BROWN, AND GRAY,

MOIST, STIFF TO VERY STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK

(TRIASSIC SILTSTONE AND SANDSTONE)

BT
DRY
(10/14)

20+50.00

340 330 320 310 300

4.025:1

4.52:1

TRIASSIC RESIDUAL, TAN, RED-BROWN, AND GRAY, MOIST, STIFF TO VERY STIFF, HIGH PLASTICITY SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE AND SANDSTONE)

20+00.00

-Y7-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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mlalexander AT WTE-7001.3280

8/23/99

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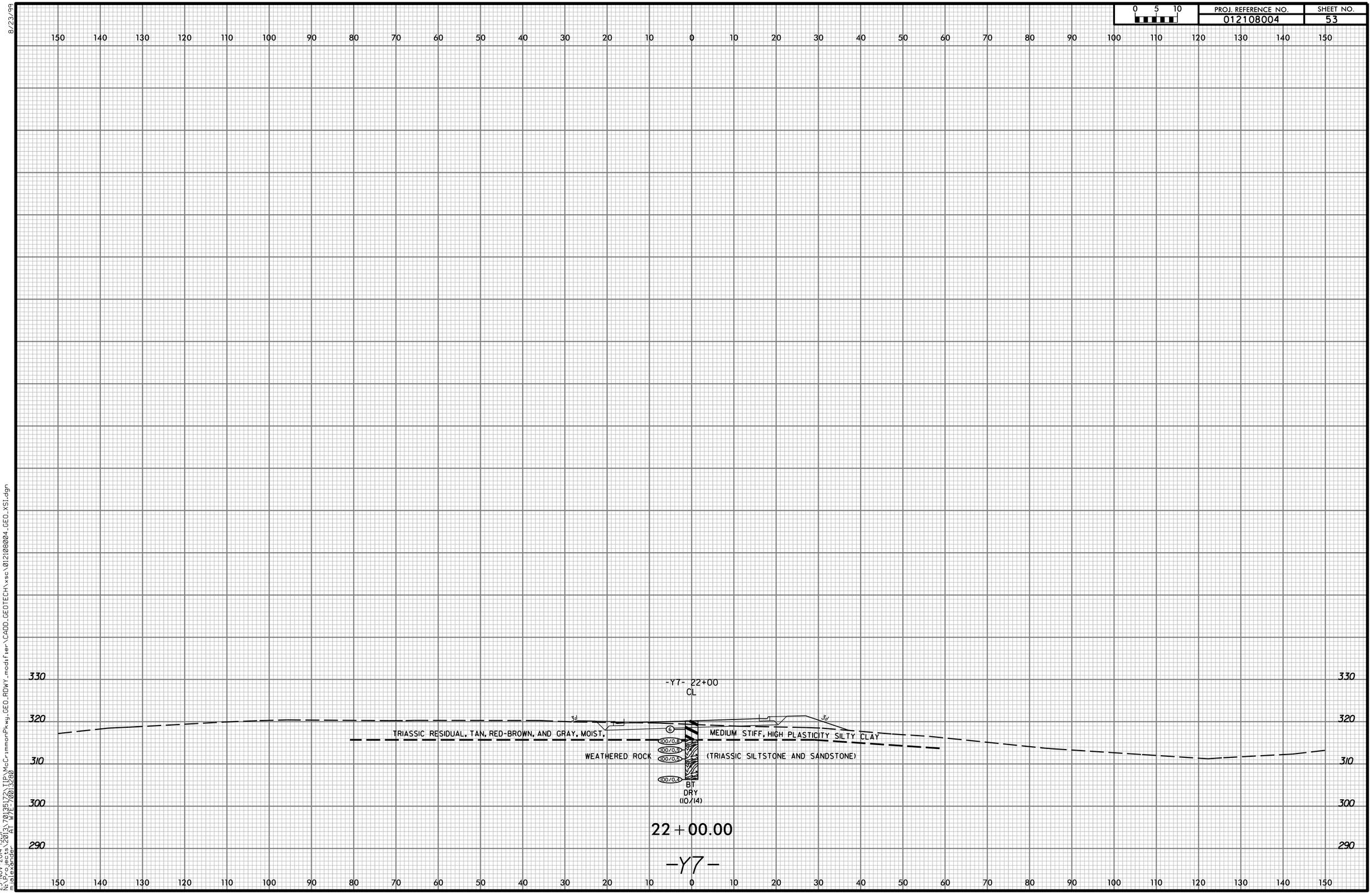
	012108004	53



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mjalexander AT WTE-7001\3280

SOIL LABORATORY TESTING SUMMARY

PROJECT NUMBER: 12108004 **ID (TIP):** N/A **COUNTY:** Wake

DESCRIPTION: McCrimmon Parkway Extension from NC 54 / Chapel Hill Road to Aviation Parkway

Boring No.	Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
									Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
L-3100	S-1	-L-	31+00	20' LT	0-10	A-6 (7)	33	16	16.9	19.3	29.0	34.8	6	89	79	61	19.7	-
L-6100	S-2	-L-	61+00	22' RT	0-10	A-4 (2)	27	10	22.2	27.6	30.1	20.1	2	95	81	53	6.8	-
L-7450	S-3	-L-	74+50	23' LT	0-10	A-6 (11)	30	13	2.1	10.1	56.1	31.7	0	0	98	91	12.7	-
L-9550	S-4	-L-	95+50	23' LT	0-10	A-7-6 (9)	42	17	24.3	18.6	24.2	32.9	0	100	84	62	17.8	-
L-11650	S-5	-L-	116+50	18' LT	0-10	A-6 (10)	32	15	7.3	20.5	37.6	34.6	0	100	95	77	-	-
L-12700	S-6	-L-	127+00	23' RT	0-10	A-6 (11)	37	17	13.7	14.3	37.9	34.1	0	98	88	74	12.2	-
L-3250	SS-1	-L-	32+50	1' LT	1-2.5	A-6 (13)	37	16	8.3	12.8	40.0	38.9	0	99	93	83	12.8	-
L-5950	SS-2	-L-	59+50	21' LT	3.5-5.0	A-6 (13)	36	15	3.8	10.4	48.8	37.0	3	96	94	86	13.2	-
L-6850	SS-3	-L-	68+50	23' LT	1.0-2.5	A-6 (13)	37	16	3.5	18.3	42.5	35.7	0	100	98	83	14.8	-
L-7000	SS-4	-L-	70+00	22' RT	1.0-2.5	A-7-6 (27)	48	28	0.1	11.8	41.4	46.7	0	100	99	91	17.7	-
L-7300	SS-5	-L-	73+00	23' RT	1.0-2.5	A-7-6 (23)	43	23	1.7	5.0	43.2	50.1	0	99	98	94	13.2	-
L-8350	SS-6	-L-	83+50	24' LT	1.0-2.5	A-6 (9)	33	15	15.1	14.2	33.3	37.4	0	98	88	72	11.4	-
L-8800	SS-7	-L-	88+00	23' RT	1.0-2.5	A-7-6 (18)	46	25	13.5	12.5	35.8	38.2	1	97	87	75	11.7	-
L-8950	SS-8	-L-	89+50	22' LT	1.0-2.5	A-6 (9)	35	15	16.2	12.5	34.7	36.6	1	97	84	72	12.9	-
L-9400	SS-9	-L-	94+00	22' RT	1.0-2.5	A-7-6 (27)	52	35	11.4	13.5	26.3	48.8	0	100	93	78	15.5	-
L-9700	SS-10	-L-	97+00	23' RT	3.5-5.0	A-7-6 (46)	73	44	2.3	9.9	31.5	56.3	0	100	99	91	42.4	-
L-9850	SS-11	-L-	98+50	22' LT	1.0-2.5	A-7-6 (20)	41	21	2.8	6.2	46.8	44.2	0	100	98	93	17.4	-
L-11050	SS-12	-L-	110+50	21' LT	1.0-2.5	A-7-6 (22)	44	24	5.5	8.1	38.7	47.7	1	98	94	87	14.5	-
L-11200	SS-13	-L-	112+00	28' LT	1.0-2.5	A-6 (5)	30	12	27.0	12.7	34.7	25.6	0	98	79	61	7.4	-
L-11350	SS-14	-L-	113+50	22' LT	1.0-2.5	A-7-6 (29)	51	32	7.8	6.9	35.4	49.9	0	98	94	86	21.2	-
L-11650	SS-15	-L-	116+50	18' LT	1.0-2.5	A-7 (17)	39	21	2.0	18.1	38.3	41.6	0	100	99	85	14.6	-
L-11950	SS-16	-L-	119+50	22' LT	1.0-2.5	A-7-6 (21)	46	23	4.6	11.7	40.9	42.8	0	100	97	87	18.0	-
L-12100	SS-17	-L-	121+00	22' RT	1.0-2.5	A-7-6 (33)	57	34	4.8	6.5	36.0	52.7	1	98	95	89	17.3	-
L-12250	SS-18	-L-	122+50	22' LT	3.5-5.0	A-4 (4)	26	10	19.1	15.8	38.0	27.1	4	93	81	63	6.7	-
L-12400	SS-19	-L-	124+00	23' RT	3.5-5.0	A-6 (5)	26	11	12.3	22.8	35.3	29.6	0	100	92	70	8.9	-
L-12550	SS-20	-L-	125+50	27' LT	1.0-2.5	A-7-6 (31)	56	34	7.6	8.2	31.4	52.8	0	99	94	86	19.1	-
L-12700	SS-21	-L-	127+00	23' RT	3.5-5.0	A-4 (5)	30	10	17.4	18.3	40.8	23.5	0	98	85	67	8.9	-
L-12850	SS-22	-L-	128+50	31' LT	3.5-5.0	A-7-6 (18)	43	25	13.3	11.9	30.7	44.1	1	98	89	77	16.2	-

Stephanie H. Huffman

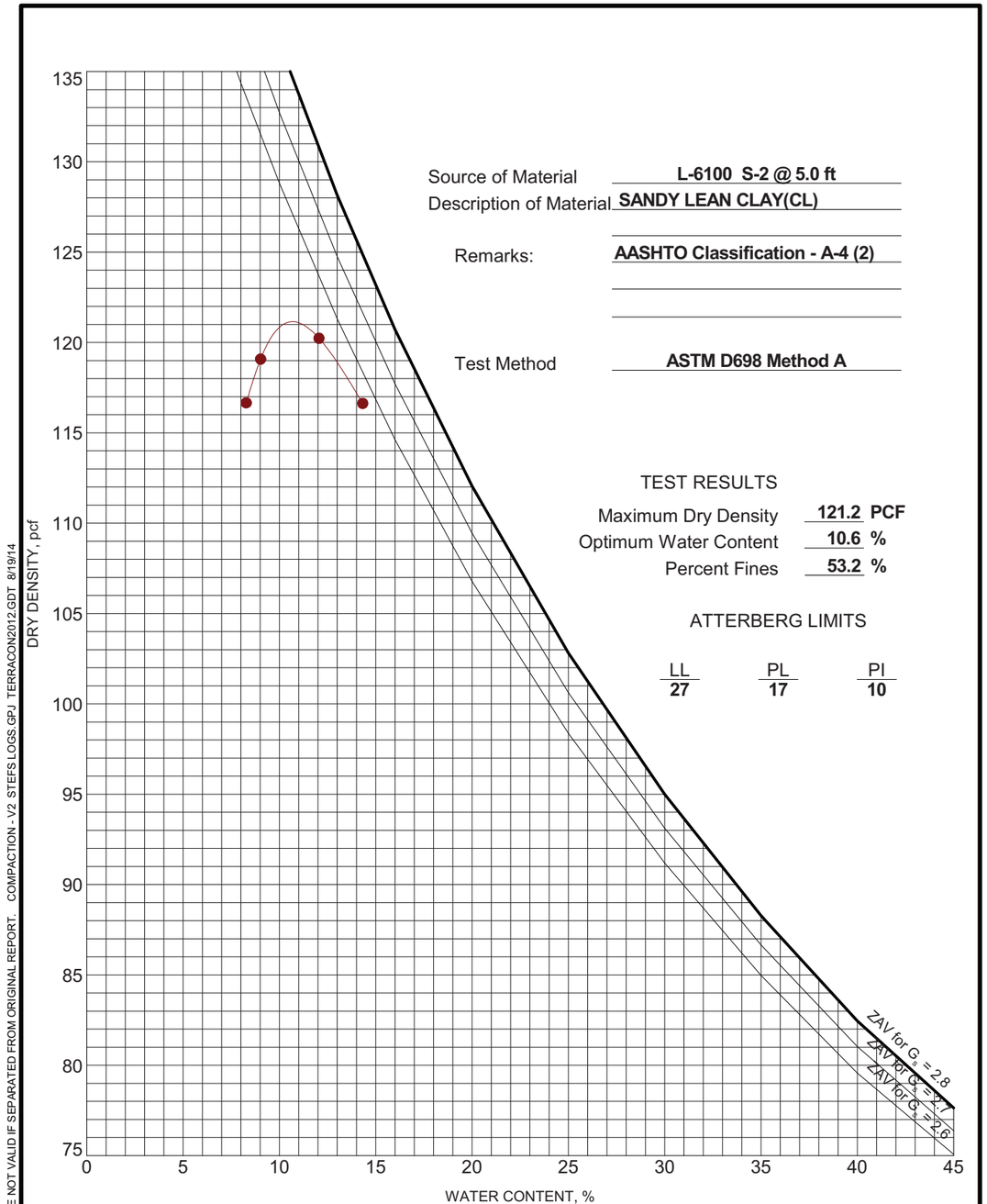
Certified Lab Technician Signature

114-01-1203

Certification Number

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **L-6100 S-2 @ 5.0 ft**

Description of Material: **SANDY LEAN CLAY(CL)**

Remarks: **AASHTO Classification - A-4 (2)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density	**121.2 PCF**
Optimum Water Content	**10.6 %**
Percent Fines	**53.2 %**

ATTERBERG LIMITS

LL	PL	PI
27	**17**	**10**

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 STEPS LOGS.GPJ TERRACON2012.GDT 8/19/14

PROJECT: McCrimmon Parkway Extension

SITE: McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Terracon
2401 Brentwood Road, Suite 107
Raleigh, North Carolina

PROJECT NUMBER: 70135172

CLIENT: Kimley-Horn and Associates, Inc.
Cary, North Carolina

REPORT FOR CALIFORNIA BEARING RATIO

Report Number:
Service Date: 08/04/14
Report Date: 08/19/14

Terracon
2401 Brentwood Road, Suite 107
Raleigh, NC 27604
919-873-2211

Client
Kimley-Horn and Associates, Inc.
Attn: Matthew West
3001 Weston Parkway
Cary, North Carolina 27513

Project
McCrimmon Parkway Extension
McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Project No. 70135172

SAMPLE INFORMATION

Sample Number:	S-2	Proctor Method:	AASHTO T99 - Method A
Boring Number:	L-6100	Maximum Dry Density (pcf):	121.2
Sample Location:	N/A	Optimum Moisture:	10.6
Depth:	0-10'	Liquid Limit:	27
Material Description:	Sandy Lean Clay - AASHTO Classification A-4 (2)	Plasticity Index:	10

CBR TEST DATA

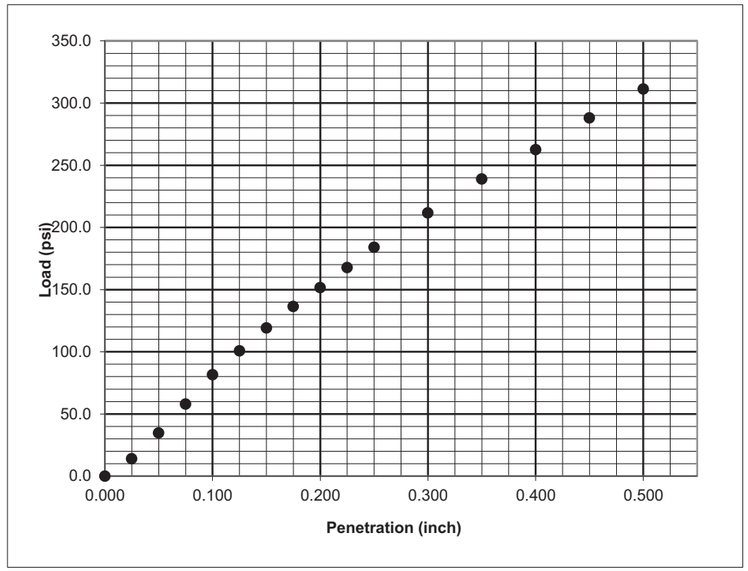
CBR Value at 0.100 inch	**8.2**
CBR Value at 0.200 inch	**10.1**
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	1.1

DENSITY DATA

Dry Density Before Soaking (pcf)	120.7
Compaction of Proctor (%)	99.6

MOISTURE DATA

Before Compaction (%)	9.5
After Compaction (%)	9.6
Top 1" After Soaking (%)	14.0
Average After Soaking (%)	13.7



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Matthew J. Alexander, PE
Contractor:

Report Distribution

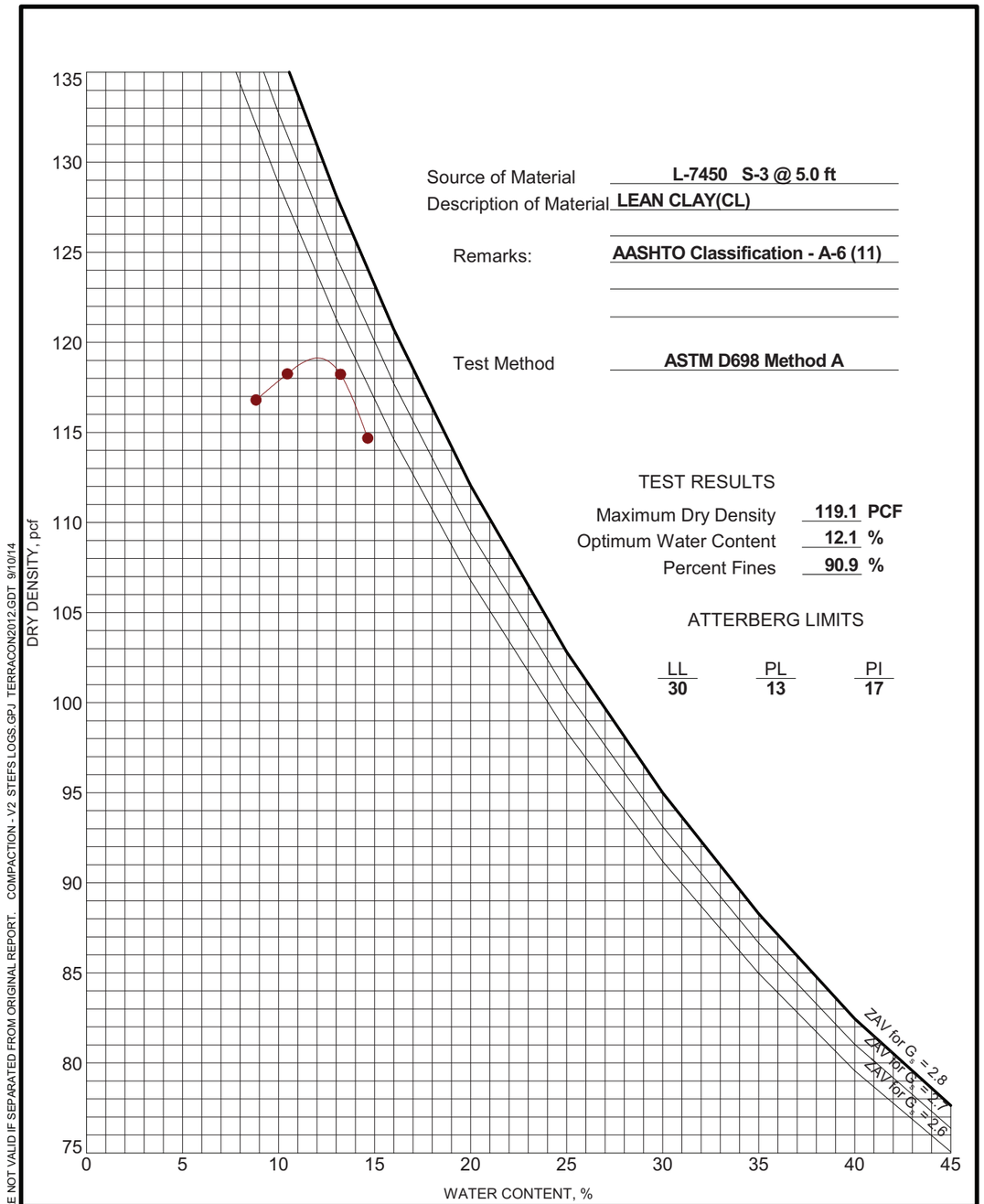
Reviewed by: _____
Matthew J. Alexander, PE
Geotechnical Project Engineer

Test Methods: ASTM D1883

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written approval of Terracon. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **L-7450 S-3 @ 5.0 ft**

Description of Material: **LEAN CLAY(CL)**

Remarks: **AASHTO Classification - A-6 (11)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density	**119.1** PCF
Optimum Water Content	**12.1** %
Percent Fines	**90.9** %

ATTERBERG LIMITS

LL	PL	PI
30	**13**	**17**

PROJECT: McCrimmon Parkway Extension	Terracon 2401 Brentwood Road, Suite 107 Raleigh, North Carolina	PROJECT NUMBER: 70135172
SITE: McCrimmon Parkway and Aviation Parkway Morrisville, North Carolina		CLIENT: Kimley-Horn and Associates, Inc. Cary, North Carolina

REPORT FOR CALIFORNIA BEARING RATIO

Report Number:
Service Date: 09/04/14
Report Date: 09/10/14

Terracon
2401 Brentwood Road, Suite 107
Raleigh, NC 27604
919-873-2211

Client
Kimley-Horn and Associates, Inc.
Attn: Matthew West
3001 Weston Parkway
Cary, North Carolina 27513

Project
McCrimmon Parkway Extension
McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

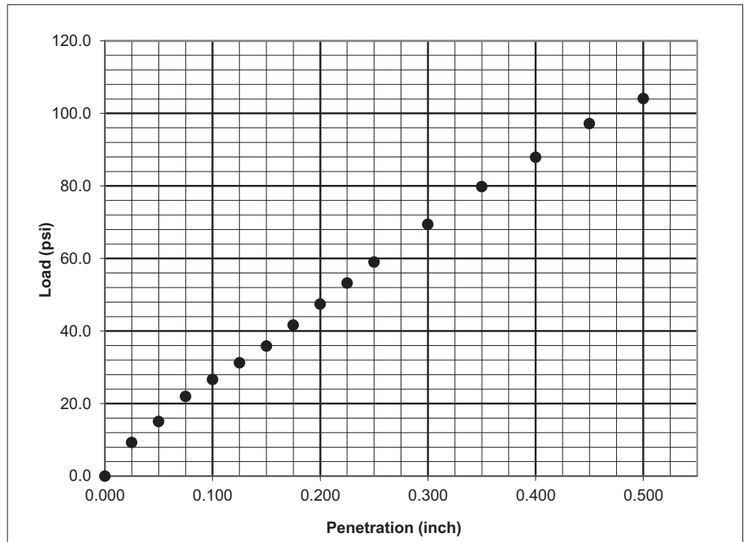
Project No. 70135172

SAMPLE INFORMATION

Sample Number:	S-3	Proctor Method:	AASHTO T99 - Method A
Boring Number:	L-7450	Maximum Dry Density (pcf):	119.1
Sample Location:	N/A	Optimum Moisture:	12.1
Depth:	0-10'	Liquid Limit:	30
Material Description:	Lean Clay - AASHTO Classification A-6 (11)	Plasticity Index:	13

CBR TEST DATA

CBR Value at 0.100 inch	**2.0**
CBR Value at 0.200 inch	**3.2**
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	1.4



DENSITY DATA

Dry Density Before Soaking (pcf)	119.4
Compaction of Proctor (%)	100.2

MOISTURE DATA

Before Compaction (%)	12.6
After Compaction (%)	12.9
Top 1" After Soaking (%)	16.6
Average After Soaking (%)	15.0

Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Matthew J. Alexander, PE
Contractor:

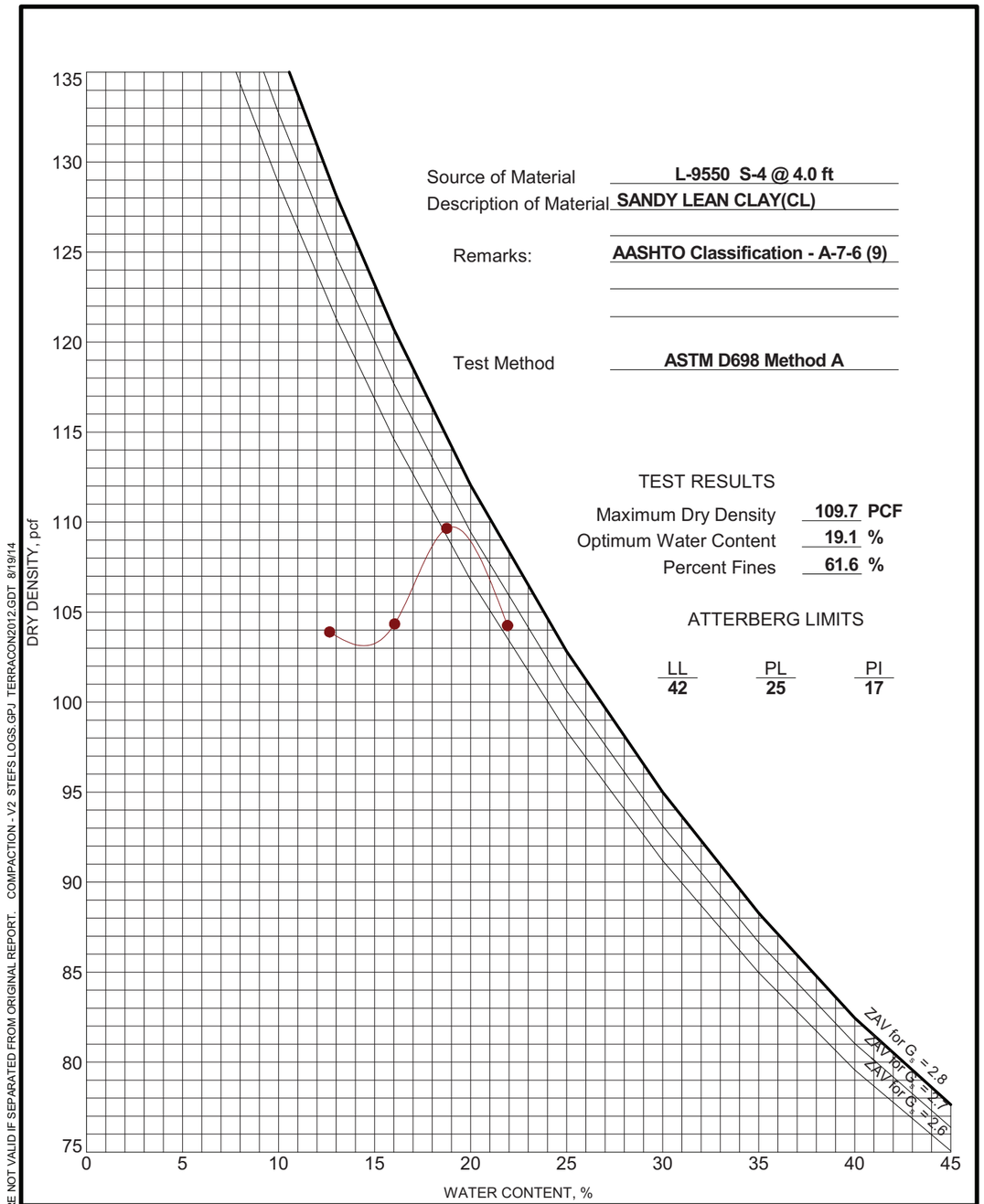
Report Distribution

Reviewed by: _____
Matthew J. Alexander, PE
Geotechnical Project Engineer

Test Methods: ASTM D1883

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **L-9550 S-4 @ 4.0 ft**

Description of Material: **SANDY LEAN CLAY(CL)**

Remarks: **AASHTO Classification - A-7-6 (9)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density	**109.7**	**PCF**
Optimum Water Content	**19.1**	**%**
Percent Fines	**61.6**	**%**

ATTERBERG LIMITS

LL	PL	PI
42	**25**	**17**

PROJECT: McCrimmon Parkway Extension

SITE: McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Terracon
2401 Brentwood Road, Suite 107
Raleigh, North Carolina

PROJECT NUMBER: 70135172

CLIENT: Kimley-Horn and Associates, Inc.
Cary, North Carolina

REPORT FOR CALIFORNIA BEARING RATIO

Report Number:
Service Date: 08/04/14
Report Date: 08/19/14

Terracon
2401 Brentwood Road, Suite 107
Raleigh, NC 27604
919-873-2211

Client
Kimley-Horn and Associates, Inc.
Attn: Matthew West
3001 Weston Parkway
Cary, North Carolina 27513

Project
McCrimmon Parkway Extension
McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Project No. 70135172

SAMPLE INFORMATION

Sample Number:	S-4	Proctor Method:	AASHTO T99 - Method A
Boring Number:	L-9550	Maximum Dry Density (pcf):	109.7
Sample Location:	N/A	Optimum Moisture:	19.1
Depth:	0-8.5'	Liquid Limit:	42
Material Description:	Sandy Lean Clay - AASHTO Classification A-7-6 (9)	Plasticity Index:	17

CBR TEST DATA

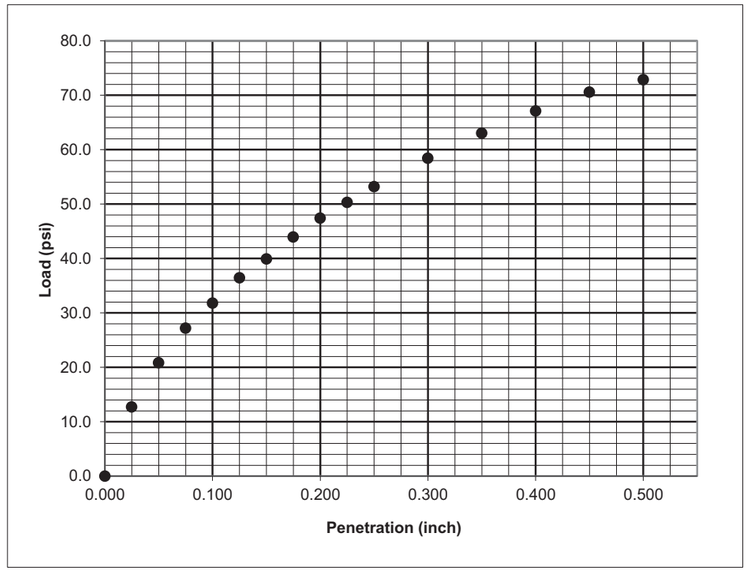
CBR Value at 0.100 inch	**3.2**
CBR Value at 0.200 inch	**3.2**
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	1.1

DENSITY DATA

Dry Density Before Soaking (pcf)	108.2
Compaction of Proctor (%)	98.6

MOISTURE DATA

Before Compaction (%)	20.0
After Compaction (%)	20.1
Top 1" After Soaking (%)	25.1
Average After Soaking (%)	24.0



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Matthew J. Alexander, PE
Contractor:

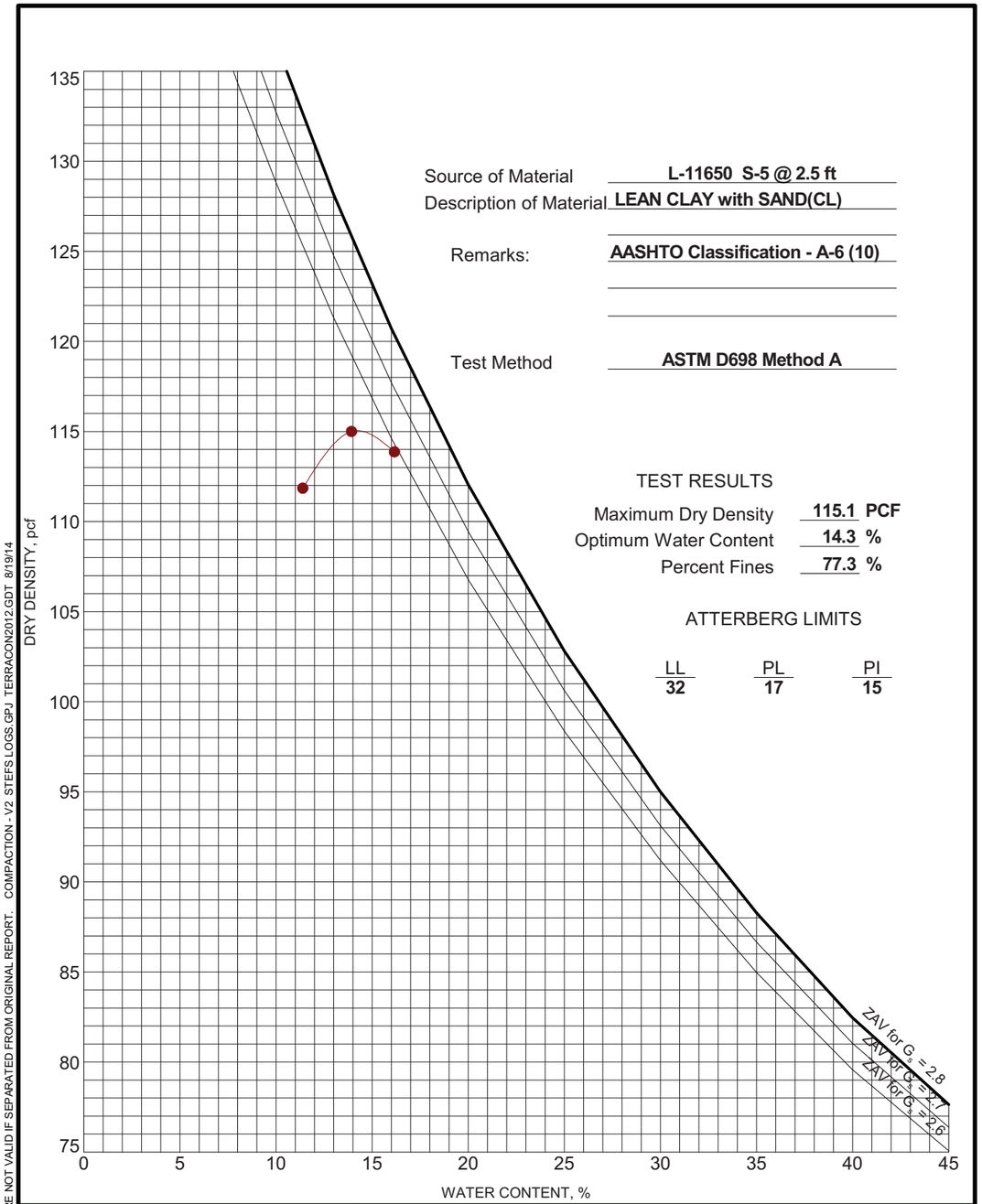
Report Distribution

Reviewed by: _____
Matthew J. Alexander, PE
Geotechnical Project Engineer

Test Methods: ASTM D1883

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **L-11650 S-5 @ 2.5 ft**

Description of Material: **LEAN CLAY with SAND(CL)**

Remarks: **AASHTO Classification - A-6 (10)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density	**115.1 PCF**
Optimum Water Content	**14.3 %**
Percent Fines	**77.3 %**

ATTERBERG LIMITS

LL	PL	PI
32	**17**	**15**

PROJECT: McCrimmon Parkway Extension	Terracon 2401 Brentwood Road, Suite 107 Raleigh, North Carolina	PROJECT NUMBER: 70135172
SITE: McCrimmon Parkway and Aviation Parkway Morrisville, North Carolina		CLIENT: Kimley-Horn and Associates, Inc. Cary, North Carolina
		EXHIBIT: B-1

REPORT FOR CALIFORNIA BEARING RATIO

Report Number:
Service Date: 08/04/14
Report Date: 08/19/14

Terracon
2401 Brentwood Road, Suite 107
Raleigh, NC 27604
919-873-2211

Client
Kimley-Horn and Associates, Inc.
Attn: Matthew West
3001 Weston Parkway
Cary, North Carolina 27513

Project
McCrimmon Parkway Extension
McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Project No. 70135172

SAMPLE INFORMATION

Sample Number:	S-5	Proctor Method:	AASHTO T99 - Method A
Boring Number:	L-11650	Maximum Dry Density (pcf):	115.1
Sample Location:	N/A	Optimum Moisture:	14.3
Depth:	1-5'	Liquid Limit:	32
Material Description:	Lean Clay with Sand - AASHTO Classification A-6 (10)	Plasticity Index:	15

CBR TEST DATA

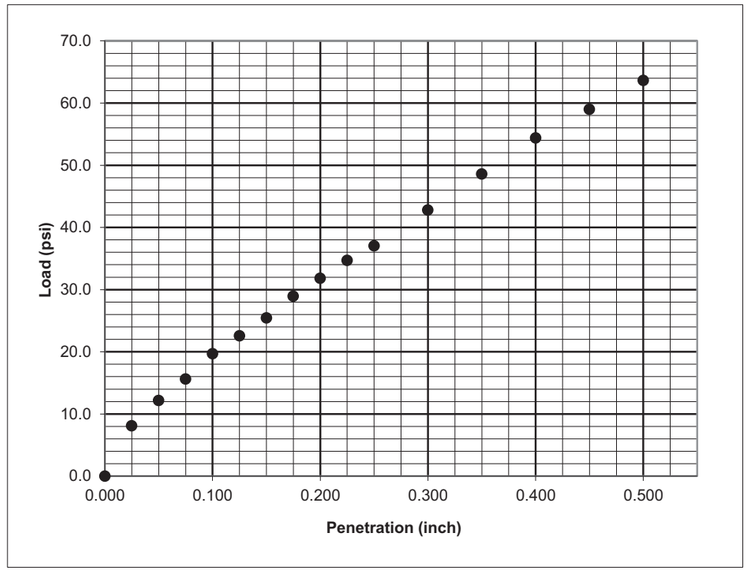
CBR Value at 0.100 inch	**2.0**
CBR Value at 0.200 inch	**2.1**
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	1.8

DENSITY DATA

Dry Density Before Soaking (pcf)	115.6
Compaction of Proctor (%)	100.4

MOISTURE DATA

Before Compaction (%)	14.4
After Compaction (%)	14.3
Top 1" After Soaking (%)	18.9
Average After Soaking (%)	17.7



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Matthew J. Alexander, PE
Contractor:

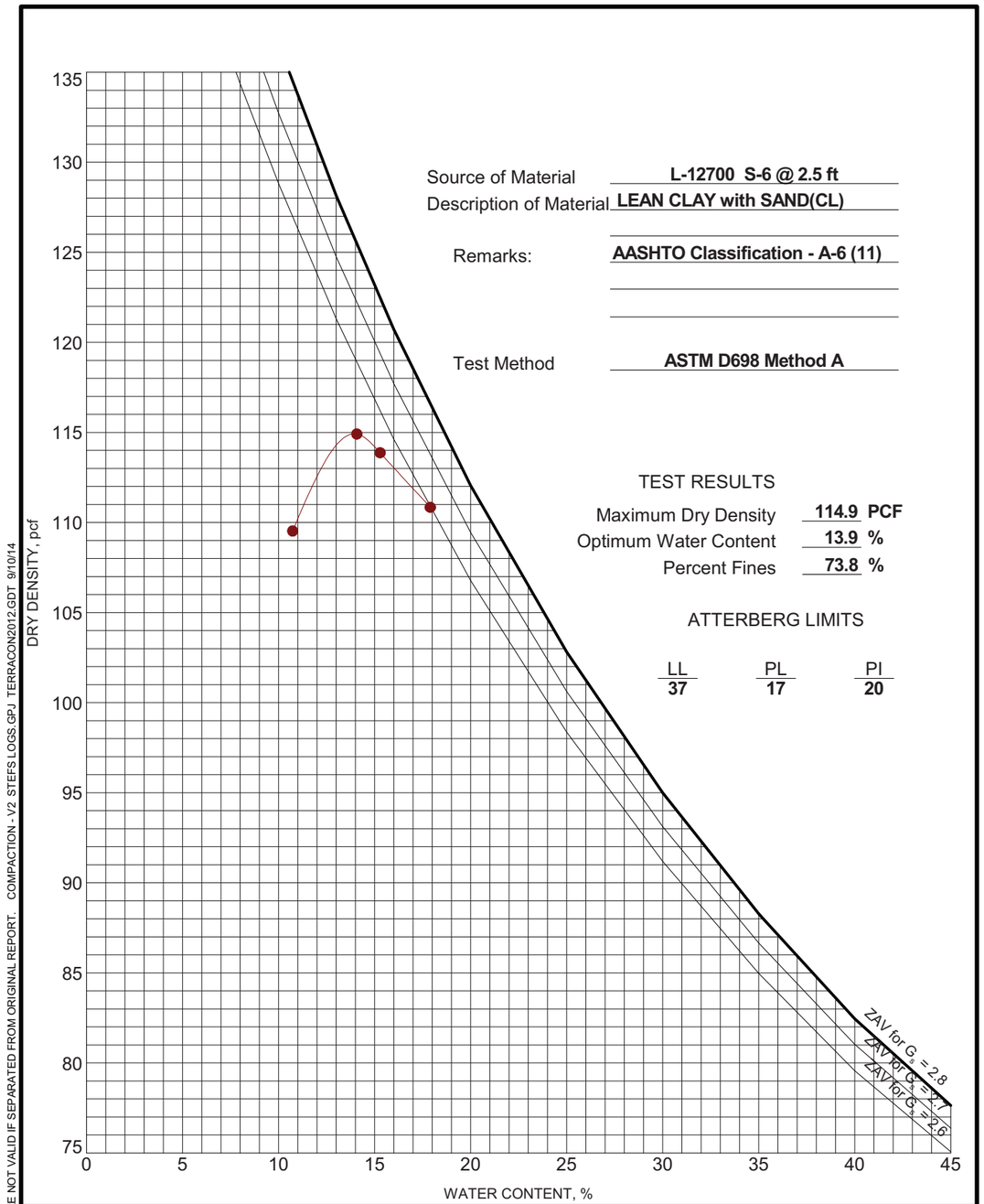
Report Distribution

Reviewed by: _____
Matthew J. Alexander, PE
Geotechnical Project Engineer

Test Methods: ASTM D1883

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **L-12700 S-6 @ 2.5 ft**

Description of Material: **LEAN CLAY with SAND(CL)**

Remarks: **AASHTO Classification - A-6 (11)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density	**114.9 PCF**
Optimum Water Content	**13.9 %**
Percent Fines	**73.8 %**

ATTERBERG LIMITS

LL	PL	PI
37	**17**	**20**

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 STEPS LOGS.GPJ TERRACON2012.GDT 9/10/14

PROJECT: McCrimmon Parkway Extension	Terracon 2401 Brentwood Road, Suite 107 Raleigh, North Carolina	PROJECT NUMBER: 70135172
SITE: McCrimmon Parkway and Aviation Parkway Morrisville, North Carolina		CLIENT: Kimley-Horn and Associates, Inc. Cary, North Carolina

REPORT FOR CALIFORNIA BEARING RATIO

Report Number:
Service Date: 09/04/14
Report Date: 09/10/14

Terracon
2401 Brentwood Road, Suite 107
Raleigh, NC 27604
919-873-2211

Client
Kimley-Horn and Associates, Inc.
Attn: Matthew West
3001 Weston Parkway
Cary, North Carolina 27513

Project
McCrimmon Parkway Extension
McCrimmon Parkway and Aviation Parkway
Morrisville, North Carolina

Project No. 70135172

SAMPLE INFORMATION

Sample Number:	S-6	Proctor Method:	AASHTO T99 - Method A
Boring Number:	L-12700	Maximum Dry Density (pcf):	114.9
Sample Location:	N/A	Optimum Moisture:	13.9
Depth:	1-5'	Liquid Limit:	37
Material Description:	Lean Clay with Sand - AASHTO Classification A-6 (11)	Plasticity Index:	17

CBR TEST DATA

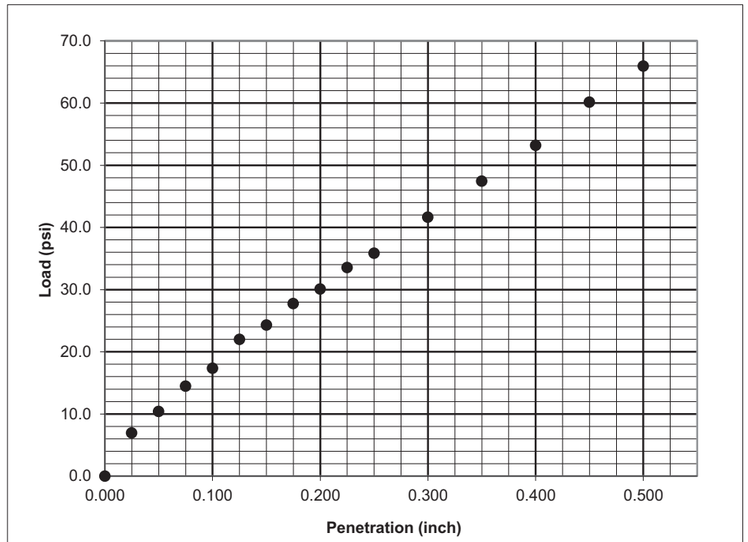
CBR Value at 0.100 inch	**1.7**
CBR Value at 0.200 inch	**2.0**
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	3.1

DENSITY DATA

Dry Density Before Soaking (pcf)	114.2
Compaction of Proctor (%)	99.4

MOISTURE DATA

Before Compaction (%)	14.0
After Compaction (%)	14.1
Top 1" After Soaking (%)	20.5
Average After Soaking (%)	16.3



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Matthew J. Alexander, PE
Contractor:

Report Distribution

Reviewed by: _____
Matthew J. Alexander, PE
Geotechnical Project Engineer

Test Methods: ASTM D1883