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REFERENCE: U-5302

PROJECT: 48000

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN
-L-	17+50 TO 96+40	4-10
-Y3-	10+54 TO 23+50	7, 11
-Y1-	10+36 TO 18+10	

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	36+00 TO 96+50	12-40
-Y3-	10+54 TO 23+50	41-45

APPENDICES

APPENDIX	TITLE	SHEETS
A	SOIL TEST RESULTS	46-47
B	BORING LOGS	48-52

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *WAKE*

PROJECT DESCRIPTION *US 401 WIDENING FROM SOUTH OF SR 2782 (LEGEND RD) TO US 70 GARNER*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5302	1	52

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. 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.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. 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.

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

PERSONNEL

S. BUCHANAN

R. DOYLE

Z. ARDEBILI

G. LANG

A. LOZADA

SUMMIT D&E

GEOTECHNICS

INVESTIGATED BY *S. BUCHANAN*

DRAWN BY *Z. ARDEBILI*

CHECKED BY *R. DOYLE*

SUBMITTED BY *AECOM*

DATE *NOVEMBER 2018*

NORTH CAROLINA PROFESSIONAL SEAL 045161 ENGINEER RYAN PATRICK DOYLE

Signed by:
Ryan P. Doyle
41B36319749E419...
SIGNATURE

1/8/2026
DATE

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PROJECT REFERENCE NO.	SHEET NO.
U-5302	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 UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

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

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	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
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

RECOMMENDATION SYMBOLS

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

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] CME 450 ATV
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 4" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [X] 4" O.D. PAVEMENT CORE

HAMMER TYPE:
- [ ] AUTOMATIC
- [ ] MANUAL

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

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK: N/A
N: N/A E: N/A
ELEVATION: N/A FEET

NOTES:

ADDITIONAL ABBREVIATIONS:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

ROADWAY BORING ELEVATIONS BASED OFF U5302_ls_tnl_170920.tin FILE DATED 9/21/2017

BEGIN STA. FOR ALIGNMENT -L- CHANGED ON 4/2/2018 FROM 17+50 TO 36+00. ALSO DESIGN ALONG LEGEND DR. WAS REMOVED

ASPHALT CORES WITH DCP

DATE: 8-15-14

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

09/08/2018 C:\Deliverables\U5302_GEO_RDWY\CADD_GEOTECH\PlanProf\u5302_rdy_tsh.dgn

TIP PROJECT: U-5302

CONTRACT: 48000

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

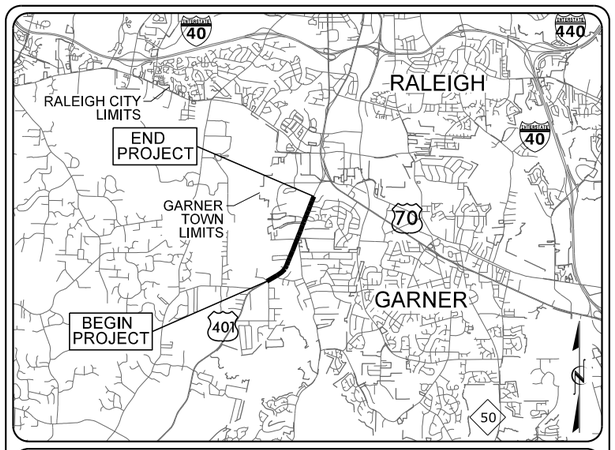
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5302	3	52

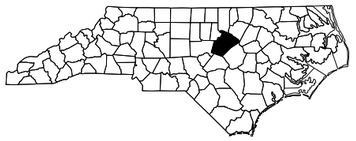
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48000.1.1	N/A	PE

LOCATION: US 401 SOUTH OF SR 2782 (LEGEND RD) TO US 70 GARNER

TYPE OF WORK: PAVING, GRADING, DRAINAGE, AND SIGNALS

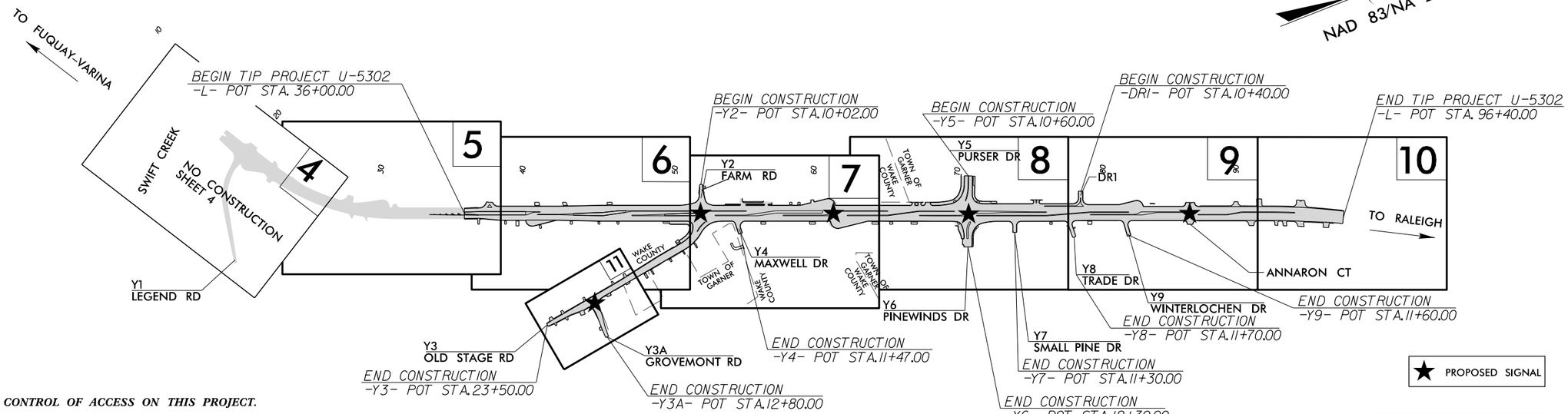


VICINITY MAP
NOT TO SCALE



25% PRELIMINARY SUBMITTAL

NAD 83/NA 2011



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

THE PROJECT IS PARTIALLY LOCATED WITHIN THE MUNICIPAL LIMITS OF THE TOWN OF GARNER.

CLEARING ON THIS PROJECT WILL BE PERFORMED TO THE LIMITS ESTABLISHED BY NCDOT METHOD II.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 48,300
ADT 2040 = 67,000
K = 8 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST = 1% DUAL 4%
FUNC CLASS = MAJOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5302 = 1.144 MILES
LENGTH CULVERT TIP PROJECT U-5302 = 0.000 MILES
TOTAL LENGTH OF TIP PROJECT U-5302 = 1.144 MILES

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 13, 2018

LETTING DATE:

LEN HILL, P.E.
PROJECT ENGINEER

KEVIN VANMETRE, P.E.
PROJECT DESIGN ENGINEER

BEN UPSHAW, P.E.
NCDOT DIVISION DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/21/2018 O:\DCS\Projects\L-URS\Jobs4_Projects\Geotechnical Support\NCDOT U-5302 US 401\4.0 Deliverables\U5302_GEO_RDWY\CADD_GEOTECH\PlanProf\u5302_rdy_tsh.dgn ryan.p.doyle

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AECOM – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
Tel: 919-461-1100
Fax: 919-461-1415

November 21, 2018

WBS NO.: 48000.1.1
NCDOT TIP: U-5302
COUNTY: Wake

DESCRIPTION: US 401 Widening from South of SR 2782 (Legend Rd) to US 70 Garner

SUBJECT: Geotechnical Report – Roadway Inventory

Project Description

This project is for the widening of US 401 (alignment -L-) between Legend Rd (SR 2782) and US 70 Garner. The project is located in Garner, Wake County, NC. The project begins approximately 1,600-ft northwest of the Legend Dr./US 401 intersection and extends east/northeast approximately 6,040-ft. SR 1006 (Old Stage Rd) (alignment -Y3-) will also be widened as part of the project. Minimal cut/fill is required for this site.

A geotechnical investigation was conducted in March 2018. 32 hand-augers with the maximum depth of 6-ft and 23 pavement cores were performed throughout the alignment to classify subgrade soils. Dynamic cone penetration testing was also performed in all pavement core locations and in select hand-auger locations. Representative soil samples were collected for visual classification in the field and select samples were submitted for laboratory analysis. The following alignments were investigated:

Line	Station(±)
-L-	17+50 to 96+40
-Y1-	10+36 to 18+10
-Y3-	10+54 to 23+50

It should be noted that during the time of the field investigation the design included widening along US 401 (alignment -L-) from station 17+50 to 94+65 and widening Legend Dr. from station 10+36 to 18+10; however, NCDOT decided to revise the design and start the project construction at station 36+00 along alignment -L- and remove construction along alignment -Y1- on April 2, 2018. For the purpose of this inventory, data gathered along Legend Dr. (Y1) and US 401 (L) (between stations 17+50 to 36+00) will be presented in boring logs located in Appendix B.

Physiography and Geology

The project is located within the Piedmont Physiographic Province and lies within the Raleigh Belt. Along the project corridor the terrain is relatively flat and land use consists mostly of commercial businesses, residential housing and woods. Residual soil in this area comes from weathering of the underlying Injected Gneiss.

Soil Properties

Soils encountered at the project site include mainly residuum, with little roadway embankment and artificial fills.

Residual soils were encountered throughout the project. These soils generally consisted of red-brown to brown, moist, fine to medium-grained, micaceous, silty, clayey sands to sand with silt (A-2-4, A-1-b); and brown to red-brown, moist, micaceous, sandy silt to silty clay (A-4, A-6).

Roadway embankment material was encountered in borings 401H-04, 401H-09, 401H-10, 401H-16, 401H-17, and 401H-19. These soils generally consisted of brown to red-brown, moist, sandy clay (A-6) to brown, moist, silty sand (A-2-4) and gray, silty, gravelly sand (A-1-a).

Artificial fill was encountered in boring 401H-03, This soil consisted of brown to red-brown, moist, silty sand (A-2-4) with clay.

Groundwater Properties

All borings were dry at zero hour but filled in after drilling due to traffic concerns, and therefore groundwater was not encountered during field investigations. There is a monitoring well at the right side of alignment L, between station 57+50 and 58+00, which is shown on plan view.

Areas of Special Geotechnical Interest

1) Highly Plastic Soils: Moderately to highly plastic soils were encountered in the majority of the laboratory samples. Atterberg limit tests for six of the eight samples had plasticity indices that ranged from 23 to 42. The following sections were found to contain highly plastic soils:

Line	Stations (±)	Offsets
-L-	36+00 to 40+00	LT
-L-	40+00 to 43+00	RT
-L-	46+00 to 48+00	LT
-L-	50+00 to 52+00	LT
-L-	54+00 to 56+00	LT
-L-	61+50 to 64+00	LT
-L-	68+50 to 91+00	LT
-L-	72+00 to 77+00	RT
-L-	79+00 to 96+40	RT
-L-	93+50 to 94+65	LT
-Y3-	16+00 to 23+50	LT

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2) Micaceous Soils: Micaceous material was encounter throughout the project, and therefore the following sections were found to contain micaceous soils:

Line	Stations (±)	Offsets
-L-	36+00 to 94+65	LT to RT
-Y3-	10+54 to 23+50	LT to RT

3) Artificial Fill: Artificial fill is countered only in the boring 401H-03 at station 40+50. It is started from depth 0.5 ft to 1.0 ft at the very left side of the cross section 40+50. This boring log then terminated by auger refusal at depth 1.0 ft.

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PROJECT REFERENCE NO.	SHEET NO.
U-5302	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-L-	-Y1-
PI Sta 26+75.11	PI Sta 12+66.71
Δ = 37° 41' 17.2" (LT)	Δ = 47° 46' 42.9" (LT)
D = 4° 02' 05.7"	D = 15° 04' 40.2"
L = 934.05'	L = 316.88'
T = 484.63'	T = 168.31'
R = 1,420.00'	R = 380.00'
e = 0.06	e = 0.06
Runoff = 216'	Runoff = 138'

N 59°13'47" E
546.18'

-L- PC Sta. 21+90.48

-L- STA 19+83.77
-Y1- POT Sta. 10+00.00

-Y3- PC Sta. 10+98.40

-L- STA 25+00.00
SEE SHEET 5

MATCHLINE
-Y1- STA 13+90.00 SEE SHEET 11

RESIDUAL

ROADWAY EMBANKMENT

N 59°13'37.0" E

S 30°46'23.0" E

WAKE CHRISTIAN ACADEMY INC.
DB 15523 PG 376
BM 2015 PG 440

COC PROPERTIES INC
DB 5859 PG 261
BM 1993 PG 1074

BANNISTER PROPERTIES
DB 4823 PG 107
BM 1946 PG 12

LOUISE C BOLING
DB 951 PG 615
BM 1946 PG 12

WILLIAM H ADAMS
DB 1372 PG 35
BM 1957 PG 20

WILLIAM H ADAMS
DB 6459 PG 30
BM 1957 PG 20

FAYETTEVILLE ROAD #5429 LP
UNKOWN REFERENCE
BM 1958 PG 7

DOROTHY W PAGE
DB 9506 PG 1462
BM 1966 PG 224

TRAFFIC DIAGRAM
(VOLUMES SHOWN IN 100'S)

GAS STATION 8/10 — 2015 ADT / 2040 ADT

US 401: 5/7 (366/509) — 2/3 (334/465)

37/49 — 8/9

46/58 -Y1-

LEGEND RD

★ PROPOSED SIGNAL

REVISIONS

11/21/2018
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User:dduke

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PROJECT REFERENCE NO.	SHEET NO.
U-5302	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 26+75.11
△ = 37° 41' 17.2" (LT)
D = 4° 02' 05.7"
L = 934.05'
T = 484.63'
R = 1,420.00'
e = 0.06
Runoff = 216'

NAD 83/2011

MATCHLINE -L- STA 25+00.00 SEE SHEET 4

MATCHLINE -L- STA 38+00.00 SEE SHEET 6

BEGIN TIP U-5302
-L- POT STA. 36+00.00

-L- PT Sta. 31+24.53

ROADWAY EMBANKMENT

RESIDUAL

RESIDUAL

BANNISTER PROPERTIES
DB 4823 PG 107
BM 1946 PG 12

BANNISTER PROPERTIES
DB 3570 PG 670
BM 1946 PG 12

BANNISTER PROPERTIES LLC
DB 8874 PG 1160
BM 1989 PG 879

POPE INDUSTRIAL PARK IV LLC
DB 14598 PG 533
BM 1981 PG 158

POPE INDUSTRIAL PARK LIMITED
DB 2905 PG 154
BM 1981 PG 158

DOROTHY W PAGE
DB 9506 PG 1462
BM 1966 PG 224

PATRICIA F & CLYDE E SIMMONS
DB 12699 PG 1404
BM 1958 PG 7

BANNISTER PROPERTIES LLC
DB 8874 PG 1155
BM 1946 PG 12

GAIL M MANN &
DONALD F MILLER
WB 15E PG 1011
BM 1946 PG 12

FAYETTEVILLE ROAD 5317 LLC
DB 11763 PG 535
BM 1996 PG 1776

DWB PROPERTIES LLC
DB 12071 PG 373
BM 1938 PG 4

DAVID W BANNISTER
DB 11312 PG 1669
BM 1938 PG 4

DAVID W BANNISTER
DB 11312 PG 1669
BM 1938 PG 4

PAINT DIAGONALS ACROSS EXIST. TURN LANE

BEGIN C&G +79.93

150' RT. LANE TAPER

FOR -L- PROFILE SEE SHEET 12

★ PROPOSED SIGNAL

REVISIONS

11/21/2018
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Plan Produced

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

PROJECT REFERENCE NO.	SHEET NO.
U-5302	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

REVISIONS

8/17/

MATCHLINE -L- STA 38+00.00 SEE SHEET 5

MATCHLINE -L- STA 51+00.00 SEE SHEET 7

POPE INDUSTRIAL PARK II
DB 3570 PG 525
BM 1987 PG 309

V & C COMMERCIAL PROPERTIES LLC
DB 16216 PG 982

LEE & HUDGINS ENTERPRISES LLC
DB 15616 PG 186

ARTIFICIAL FILL

ROADWAY EMBANKMENT

RESIDUAL

300' TAPER

110' TAPER

300' TAPER

200' TAPER

+50.00 BEGIN SYMMETRICAL WIDENING BEGIN LT TAPER

+50.00 BEGIN/END LT TAPER

+60.00 END LT TAPER

+25.00 BEGIN LT TAPER

+50.00 BEGIN LT TAPER

+50.00 END LT TAPER

+65.00 RT

+45.00 RT

-L-

N 21° 32' 19.8" E

60' PRIVATE ROAD

20' WATER EASEMENT

ACCESS EASEMENT

DWB PROPERTIES LLC
DB 9578 PG 1757
BM 1938 PG 4

DAVID W BANNISTER
DB 8992 PG 746
BM 1938 PG 4

RALPH S HONEYCUTT TRUSTEE
DB 8312 PG 685
BM 1938 PG 4

ROBERT T MARKEY
DB 16356 PG 1160
BM 1938 PG 4

B CLARK CHATHAM
DB 14448 PG 1796
BM 1938 PG 4

SHAHAB NAIMEE
DB 16014 PG 1936
BM 1938 PG 4

SHAHAB NAIMEE
DB 15561 PG 1383
BM 1938 PG 4

KYLE WHITE ENTERPRISES LLC
DB 8718 PG 709
BM 1999 PG 1608

CHERYL A S RABBANI
WB 6E PG 569
BM 1938 PG 4

CHERYL A S RABBANI
WB 6E PG 569
BM 1938 PG 4

INEZ W SPENCER & ERMA W PARTOZES-HEIRS
BM 1938 PG 4
WB 8E PG 1947

CHERYL A S RABBANI
ERMA W PARTOZES-HEIRS
WB 8E PG 1947
BM 1938 PG 4

FOR -L- PROFILE SEE SHEET 12

11/2/2018
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rlanoque

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PROJECT REFERENCE NO.	SHEET NO.
U-5302	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y2-	-Y3-
PI Sta 10+21.13	PI Sta 11+54.23
Δ = 4° 56' 19.6" (RT)	Δ = 59° 49' 21.3" (RT)
D = 11° 41' 34.9"	D = 23° 52' 23.7"
L = 42.24'	L = 250.58'
T = 21.13'	T = 138.07'
R = 490.00'	R = 240.00'
e = Existing	e = 0.04
Runoff = N/A	Runoff = 112.00'

MATCHLINE -L- STA 51+00.00 SEE SHEET 6

MATCHLINE -L- STA 64+00.00 SEE SHEET 8

MATCHLINE -Y3- STA 12+00.00 SHEET 11

BEGIN CONSTRUCTION
-Y2- POT STA.10+02.00

END CONSTRUCTION
-Y4- POT STA.11+47.00

-Y2- PC Sta. 10+00.00

-Y2- PT Sta. 10+42.24

-L- STA 52+26.52
-Y2- POT Sta. 12+00.13
-Y3- POT Sta. 10+00.00

-Y3- PC Sta. 10+16.16

-L- Sta. 54+50.53
-Y4- POT Sta. 10+00.00

-Y3- 3 CENTER CURVE
63'-40'-400' RADII
6'-15' OFFSETS

3 CENTER CURVE
100'-40'-616' RADII
6'-15' OFFSETS

3 CENTER CURVE
150'-120'-600' RADII
9'-2' OFFSETS

RESIDUAL

ROADWAY EMBANKMENT

MYATTS CHAPEL CHURCH
DB 505 PG 357
BM 1920 PG 143

ERNEST MYATT PRESBETERIAN
2.5SBK CHURCH

J. L. BUFFALOE LLC
DB 15821PG 1648

LEE & HUDGINS ENTERPRISES LLC
DB 15616 PG 186

PLAYMAKER PROPERTIES LLC
DB 15679 PG 2138

PLAYMAKER PROPERTIES LLC
DB 15627 PG 1689

SENTER TRACTOR CO INC
DB 15837 PG 757

JOYCE C & JAMES MARCOM
DB 4408 PG 58

APPROX. LIMITS
TOWN OF GARNER
WAKE COUNTY

BM#2
-BL- STA. 58+26.63, 529' LEFT
ELEV=333.13'
"BENCH TIE" NAIL SET IN 30" PINE TREE

TRAFFIC DIAGRAM
(VOLUMES SHOWN IN 100'S)

-Y2- FARM RD: 8 / 10 — 2015 ADT / 2040 ADT
US 401: 2/4, 3/5; 345/480 — 427/593
13/26, 94/138
110/165 -Y3- OLD STAGE RD

FOR -L- PROFILE SEE SHEET 12
FOR -Y3- PROFILE SEE SHEET 15

★ PROPOSED SIGNAL

REVISIONS

8/17/9

11/2/2018
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rhodgdon

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PROJECT REFERENCE NO.	SHEET NO.
U-5302	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-L-	
PI Sta 65+76.47	PI Sta 68+50.92
Δ = 0°15' 55.6" (RT)	Δ = 0°15' 39.5" (LT)
D = 0°05' 50.8"	D = 0°05' 39.8"
L = 272.43'	L = 276.47'
T = 136.21'	T = 138.24'
R = 58,800.00'	R = 60,700.00'
e = Normal Crown	e = Normal Crown
Runoff = N/A	Runoff = N/A

-Y6-	
PI Sta 14+34.59	PI Sta 15+17.58
Δ = 7°00' 37.6" (LT)	Δ = 10°42' 14.4" (LT)
D = 14°19' 26.2"	D = 9°10' 02.4"
L = 48.94'	L = 116.76'
T = 24.50'	T = 58.55'
R = 400.00'	R = 625.00'
e = 0.02	e = Existing
Runoff = 46'	Runoff = N/A

MATCHLINE -L- STA 64+00.00 SEE SHEET 7

MATCHLINE -L- STA 77+00.00 SEE SHEET 9

-L- PC Sta. 64+40.26

-L- PRC Sta. 67+12.69

-L- PT Sta. 69+89.16

3 CENTER CURVE
170'-112'-500' RADII
6'-9' OFFSETS

BEGIN CONSTRUCTION
-Y5- POT STA. 10+60.00

-Y5- POT Sta. 10+00.00

3 CENTER CURVE
130'-45'-65' RADII
5'-6' OFFSETS

3 CENTER CURVE
700'-43'-200' RADII
2'-13' OFFSETS

3 CENTER CURVE
110'-90'-420' RADII
3'-10' OFFSETS

-L- Sta.70+59.82
-Y5- POT Sta. 13+17.95
-Y6- POT Sta. 10+00.00

-L- Sta.73+81.30
-Y7- POT Sta. 10+00.00

-Y7- POT Sta. 12+17.12

-Y6- PC Sta. 14+10.09

-Y6- PCC Sta. 14+59.03

END CONSTRUCTION
-Y6- POT STA. 12+30.00

END CONSTRUCTION
-Y7- POT STA. 11+30.00

RESIDUAL

ROADWAY EMBANKMENT

SAULS PROPERTIES LLC
DB 15075 PG 418
BM 2006 PG 2635

PLEASANT REALTY ILLC
DB 9816 PG 1301
BM 1981 PG 553

RED BALL HOLDINGS INC
DB 16616 PG 219
BM 1981 PG 553

ARCP MF RALEIGH NC LLC
DB 15780 PG 2502
BM 2014 PG 166

J. L. BUFFALOE LLC
DB 15821 PG 1648

JOYCE C. & JAMES MARCOM
DB 4408 PG 588

MIRA AUTO SALES LLC
DB 16064 PG 1749

ROBERTS & NEWELL LLC
DB 9943 PG 1121
BM 1993 PG 1329

ERIC M WILLIAMS & THOMAS E LYNN
DB 16213 PG 1425
BM 1993 PG 1329

PERRY BROTHERS PROPERTIES LLC
DB 14747 PG 1824
BM 2012 PG 416

ARC SBRLHNC001 LLC
DB 15211 PG 1972
BM 1996 PG 436

WILLIAM R AIKINS TRUSTEE
DB 11945 PG 1974
BM 1986 PG 1246

KIP-DELL HOMES INC
DB 15811 PG 818
BM 1986 PG 1758

USRP FUNDING 2001-A LP
DB 8790 PG 1170
BM 1996 PG 1540

SANDERSON FAMILY PROPERTIES LLC
DB 10861 PG 1141
BM 1996 PG 1540

BIG HAMMOCK PARTNERS LLC
DB 15891 PG 35
BM 1967 PG 278

WENDELL C PROPERTIES LLC
DB 15127 PG 2009
BM 2009 PG 467

APPROX. LIMITS
TOWN OF GARNER
WAKE COUNTY

ISBK BUS

MON WELL

BST PA

CONC PA

MTL CANOPY

ISBLK BUS

WOODS

POST

-BY7-100

-BY6-100

-BY8-100

-BL-107

-BL-108

-Y6-

-Y7-

-Y5-

-L-

PAINT MARK

EPK

EIP

REBAR

EXIST R/W

PROPOSED R/W

EXISTING R/W

BEGIN LT TAPER

END LT TAPER

BEGIN RT TAPER

END RT TAPER

BEGIN LT NARROWING

END LT NARROWING

BEGIN RT NARROWING

END RT NARROWING

215' TAPER

300' TAPER

190' TAPER

150' TAPER

2-6' C&G

30" C&G

24" C&G

18" C&G

MONO.CONC.ISL.

BMP MAINTENANCE EASEMENT

60' ACCESS EASEMENT

25' ACCESS EASEMENT

15' ACCESS EASEMENT

30' STORM DRAIN AND UTILITY EASEMENT

20' STORM DRAIN EASEMENT BM 1996 PG 436

15' UTILITY EASEMENT

2' SIDEWALK EASEMENT

20' SANITARY SEWER EASEMENT

TRAFFIC DIAGRAM
(VOLUMES SHOWN IN 100'S)

-Y5- PURSER DR: 88 / 110 — 2015 ADT / 2040 ADT
US 401: 38 / 49 (NB); 44 / 56 (SB); 439 / 610 (2015 ADT); 446 / 618 (2040 ADT)
-Y6- PINEWINDS DR: 10 / 14 (WB); 11 / 15 (EB); 27 / 34

FOR -L- PROFILE SEE SHEET 13

★ PROPOSED SIGNAL

REVISIONS

8/17/2018
11/2/2018
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rhood

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

PROJECT REFERENCE NO.	SHEET NO.
U-5302	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y10-
PI Sta 11+10.33
△ = 16°18' 54.1" (LT)
D = 22° 55' 05.9"
L = 71.19'
T = 35.84'
R = 250.00'
e = Existing
Runoff = N/A

STA 77+00.00 SEE SHEET 8

STA 90+00.00 SEE SHEET 10

MATCHLINE -L- STA 77+00.00

MATCHLINE -L- STA 90+00.00

BEGIN CONSTRUCTION
-DRI- POT STA.10+30.00

END CONSTRUCTION
-Y8- POT STA.11+70.00

END CONSTRUCTION
-Y9- POT STA.11+60.00

ROADWAY EMBANKMENT

RESIDUAL

RESIDUAL

WENDY'S PROPERTIES LLC
DB 16195 PG 223
BM 2009 PG 167

HALLE PROPERTIES LLC
DB 14588 PG 672
BM 2009 PG 167

BRIDGESTONE RETAIL OPERATIONS LLC
DB 15746 PG 1231

NORTHCROSS PROPERTY HOLDINGS LLC
DB 15160 PG 2328
BM 2001 PG 1140

SOAD PROPERTIES LLC
DB 16225 PG 380
BM 1995 PG 510

BIG HAMMOCK PARTNERS LLC
DB 15189 PG 35
BM 1967 PG 278

PAGE & BOLING & JESSUP CORP
DB 1238 PG 683

LOUISE B & ARDIE WATKINS
DB 15591PG 1452
BM 1959 PG 65

TIMOTHY W BUNN II & SARAH BOWDEN
DB 14451 PG 906
BM 1959 PG 65

JERAL L & ELIZABETH MOONEYHAM
DB 8280 PG 643
BM 1959 PG 65

EUGENE & SHIRLEY H DECOSTER
DB 6736 PG 792
BM 1959 PG 65

BV 184 LLC
DB 13562 PG 1787
BM 2005 PG 286

GREENBRIAR PROPERTIES LLC
DB 11609 PG 1477
BM 1993 PG 1471

GARNER FAYETTEVILLE ROAD PROPERTIES LLC
DB 11738 PG 573
BM 1963 PG 6

FOR -L- PROFILE SEE SHEETS 13

★ PROPOSED SIGNAL

REVISIONS

8/17/2018
11/21/2018
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Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

PROJECT REFERENCE NO.	SHEET NO.
U-5302	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-L-
PI Sta 92+81.83
△ = 4° 02' 51.7" (RT)
D = 1° 18' 07.8"
L = 310.84'
T = 155.49'
R = 4,400.00'
e = 3%
Runoff = 147'
PI Sta 96+17.77
△ = 1° 41' 55.9" (RT)
D = 0° 28' 13.5"
L = 361.14'
T = 180.58'
R = 12,180.00'
e = NC
Runoff = N/A

MATCHLINE -L- STA 90+00.00 SEE SHEET 9

PC Sta. 91+26.34

PCC Sta. 94+37.18

END TIP U-5302
-L- STA. 96+40.00

PT Sta. 97+98.32

BM#3
-BL- STA. 106+09.26, 286' LEFT
ELEV=354.00'
"BENCH TIE" NAIL SET IN 12" OAK TREE

RESIDUAL

ROADWAY EMBANKMENT
-EL-

U5302-5

U5302-7

TTM PROPERTIES LLC
DB 16614 PG 1590

P&N FOODSERVICE LLC
DB 14494 PG 1495
BM 1989 PG 482

OLD OAK ASSOCIATES LLC
DB 10533 PG 1251
BM 1994 PG 915

MARKET CROSSING LLC
DB 12073 PG 2065
BM 1994 PG 915

TRIPPS PROPERTIES II LTD PTNRP
DB 13659 PG 2464
BM 1994 PG 915

TRIPPS PROPERTIES II LTD PTNRP
DB 13659 PG 2464
BM 1983 PG 549

RDI, LLC.
DB 14135 PG 1512
BM 1986 PG 1957

GARNER FAYETTEVILLE ROAD PROPERTIES LLC
DB 11738 PG 573
BM 1963 PG 6

TELERENT LEASING CORPORATION
DB 2022 PG 347
BM 1963 PG 6

TELERENT LEASING CORPORATION
DB 6638 PG 576
BM 1963 PG 6

TELERENT LEASING CORPORATION
DB 4529 PG 499
BM 1956 PG 1556

PANSIE CAMERON EVERS
& H ALTON LEE JR
DB 15549 PG 2435

250' TAPER

BEGIN SYMMETRICAL WARRANTING

END SYMMETRICAL WARRANTING

FOR -L- PROFILE SEE SHEET 14

★ PROPOSED SIGNAL

REVISIONS

8/17/9

11/21/2018
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PROJECT REFERENCE NO.	SHEET NO.
U-5302	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/9

11/21/2018
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Reproduction

NAD 83/2011

MATCHLINE -Y3-
12+00.07
STA
SHEET 7

END CONSTRUCTION
-Y3- POT STA. 23+50.00

-Y3- POT Sta. 23+56.75

-Y3- SR 1006 OLD STAGE RD 24' BST

S 8°38'18" E

ROADWAY EMBANKMENT

RESIDUAL

-Y3- POT Sta. 19+94.16

-Y3A- POT Sta. 10+00.00

-Y3- PT Sta. 12+66.75

END CONSTRUCTION
-Y3A- POT STA. 12+80.00

-Y3A- POT Sta. 13+41.66

-Y3A- SR 2700 MACEDONIA CHURCH RD 22' BST

270' TAPER

50' TAPER

320' TAPER

100' TAPER

50' TAPER

2 CENTER CURVE
25'-160' RADII
0'-6' OFFSETS

2 CENTER CURVE
25'-160' RADII
0'-6' OFFSETS

BEGIN LT WIDENING +70.00

END LT WIDENING

-BY3-101

-BY3-102

-BY3-100

-Y3-

PI Sta 11+54.23
Δ = 59° 49' 21.3" (RT)
D = 23° 52' 23.7"
L = 250.58'
T = 138.07'
R = 240.00'
e = 0.04
Runoff = 112.00'

FOR -Y3- PROFILE SEE SHEET 15

PROPOSED SIGNAL

BHOLA NATH & RADHA L GUPTA DB 2631 PG 722 BM 1938 PG 4

BHOLA NATH & RADHA L GUPTA DB 8591 PG 1390 BM 1938 PG 4

JAMES E & LINDA BUMGARNER DB 10311 PG 1118 BM 1938 PG 4

JAMES E & LINDA BUMGARNER DB 8230 PG 1507 BM 1938 PG 4

WALTER K MERCER II DB 11649 PG 1218 BM 1938 PG 4

DEBRA ANN PELL DB 5594 PG 660 BM 1938 PG 4

KYLE WHITE ENTERPRISES LLC DB 8718 PG 709 BM 1999 PG 1608

ERMA W PARTOZES HEIRS WB 8E PG 1347 BM 1938 PG 4

INEZ W SPENCER & ERMA W PARTOZES HEIRS WB 8E PG 1347 BM 1938 PG 4

CHERYL A S RABBANI & ERMA W PARTOZES HEIRS WB 8E PG 1347 BM 1938 PG 4

JOSE A ROMERO-MARENCO & MARIA H CASTRO-CEDILLOS DB 13071 PG 2206 BM 1949 PG 4

BOBBY LEE CARROLL SR DB 4285 PG 640 BM 1949 PG 4

WALTER K MERCER II DB 516 PG 2527 BM 1949 PG 4

WALTER K MERCER II DB 4379 PG 937 BM 1949 PG 4

FELLOWSHIP BAPTIST CHURCH OF RAL DB 9033 PG 85

JUDY C COLLINS DB 3363 PG 581

JAMES B COLLINS DB 15485 PG 2156

SIDNEY P COLLINS DB 13819 PG 1572

PLAYMAKER PROPERTIES LLC DB 15679 PG 2138

FELLOWSHIP BAPTIST CHURCH OF RAL DB 6933 PG 279 BM 1994 PG 138

APPROX. LIMITS TOWN OF GARNER WAKE COUNTY

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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

SHEAR LINE

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY (A-6), MICACEOUS

38+00.00

37+50.00

37+00.00

36+50.00

36+00.00

6/23/1
11/21/2018
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ryan.p.doyle

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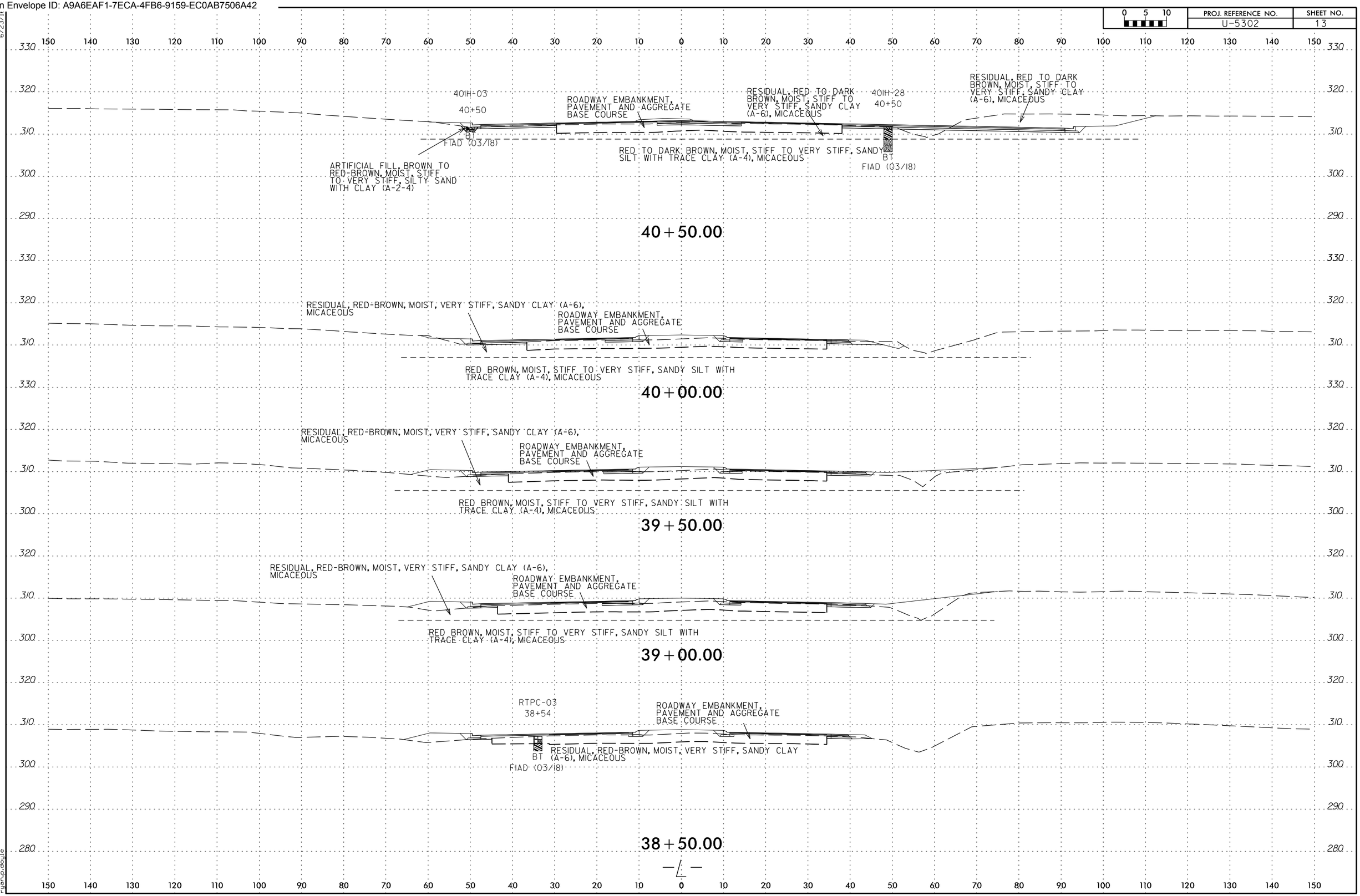

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ryan.doyle

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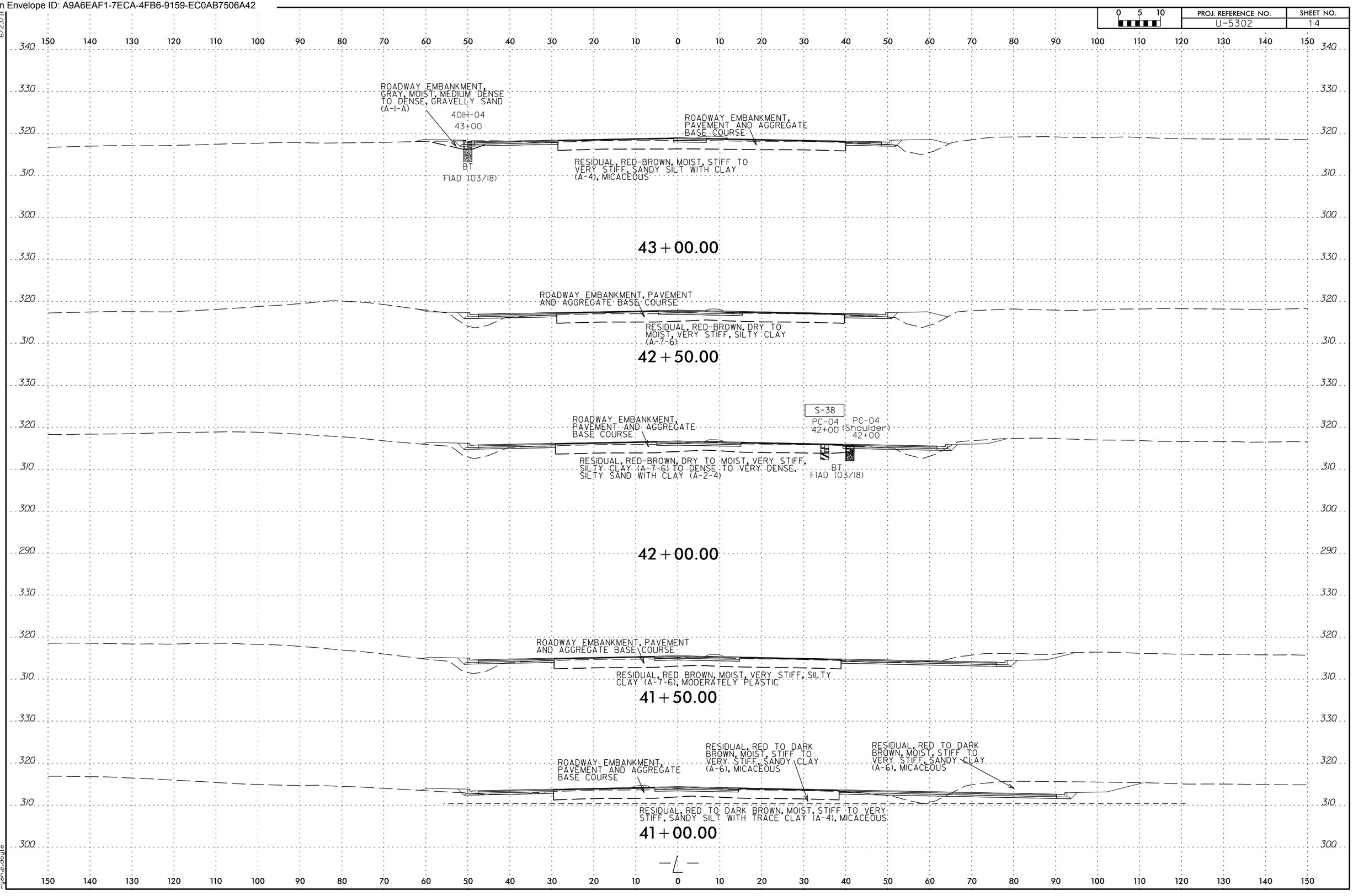

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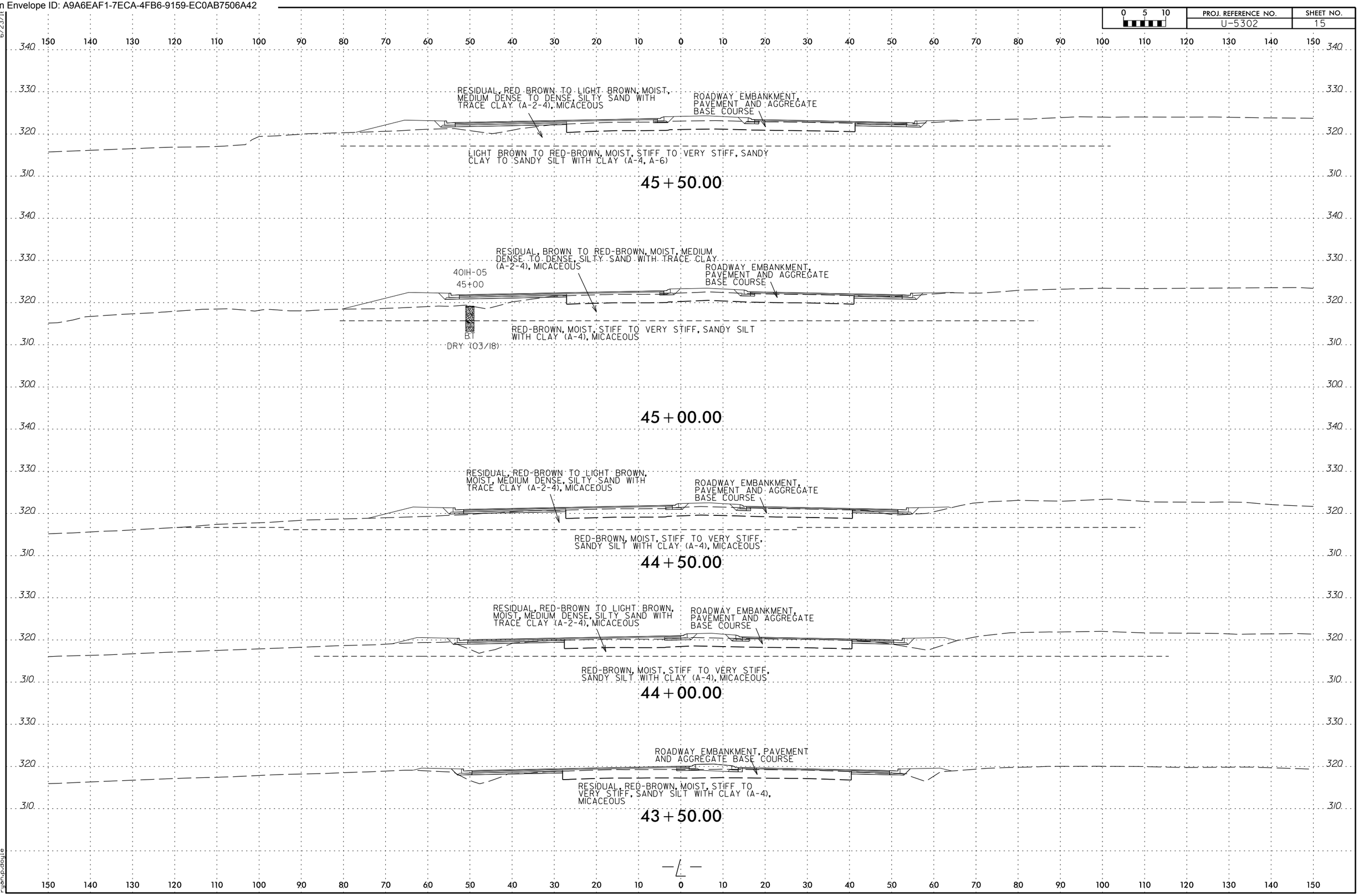

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11/21/2018
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ryan.p.doyle

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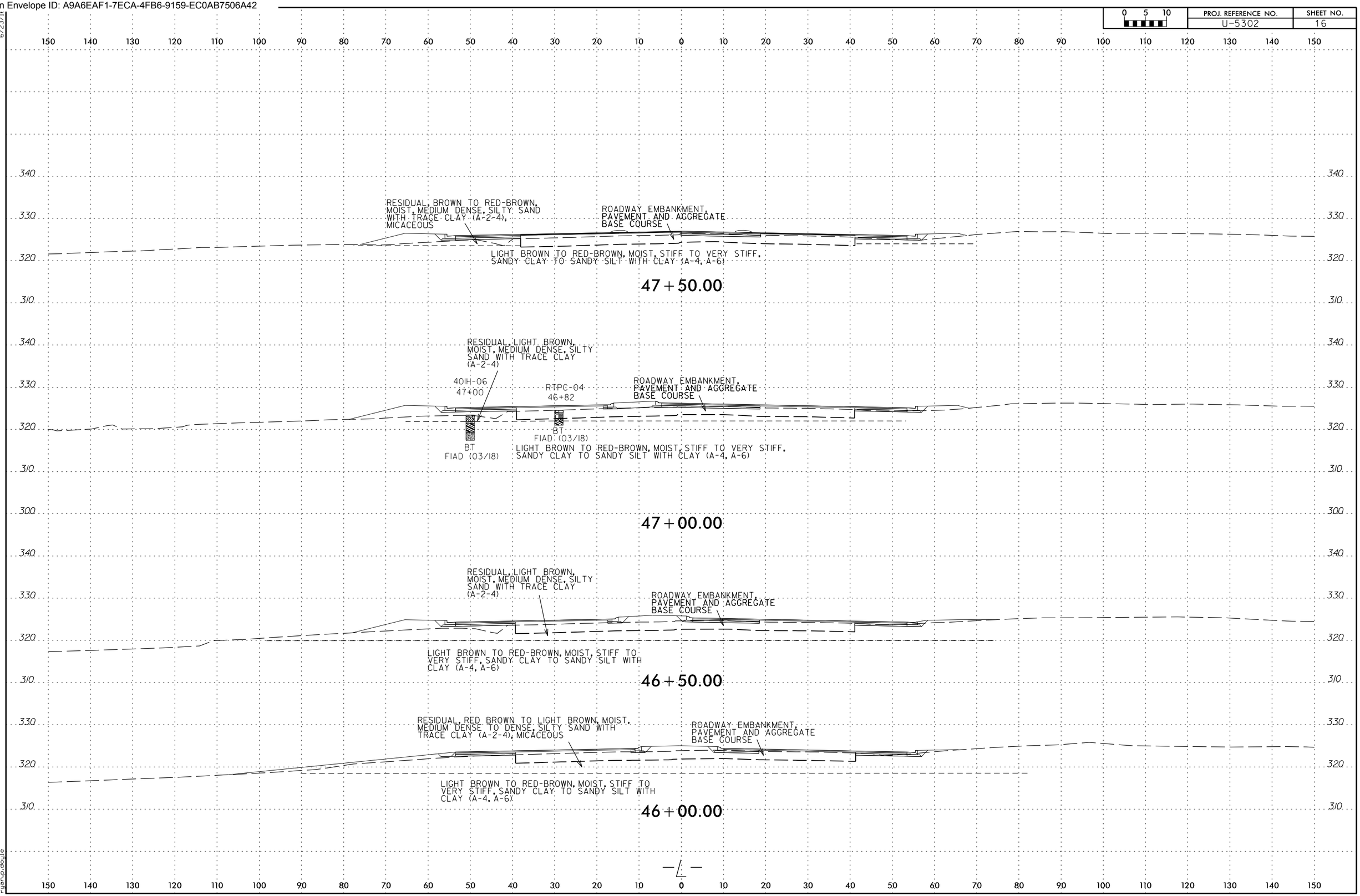

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11/21/2018
ryan.p.doyle

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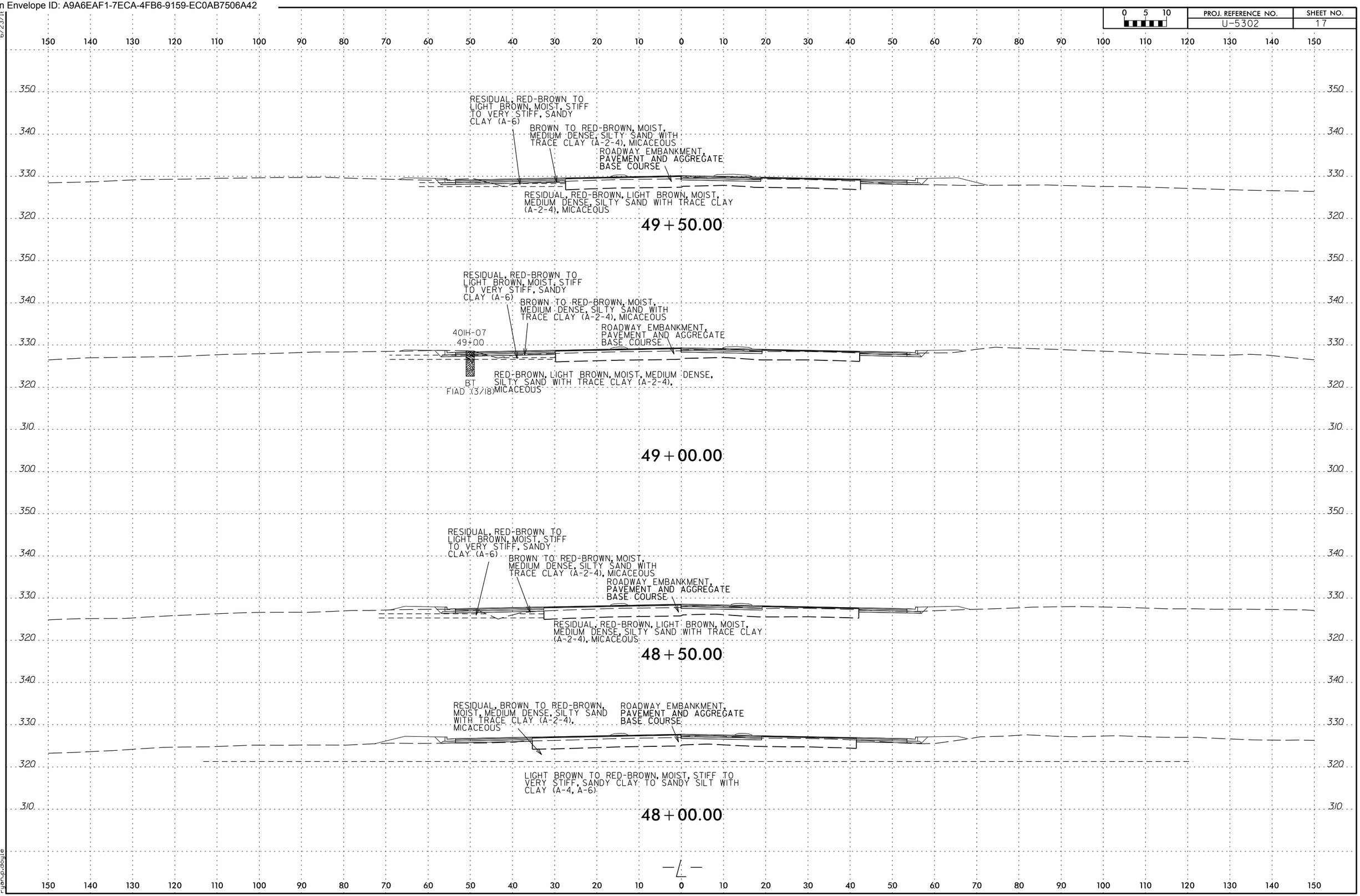

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11/21/2018
rjon.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

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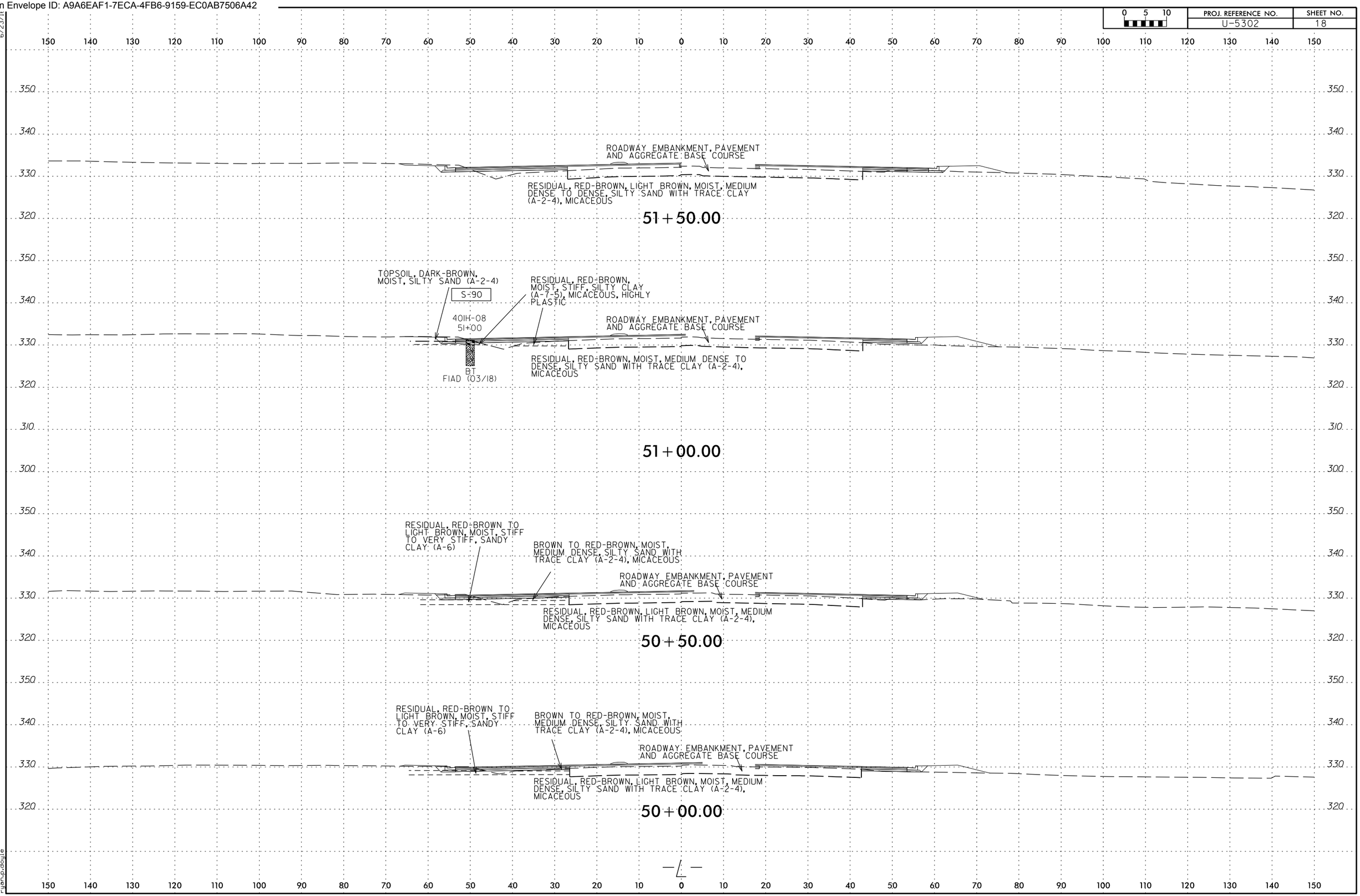

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11/21/2018
ryan.p.doyle

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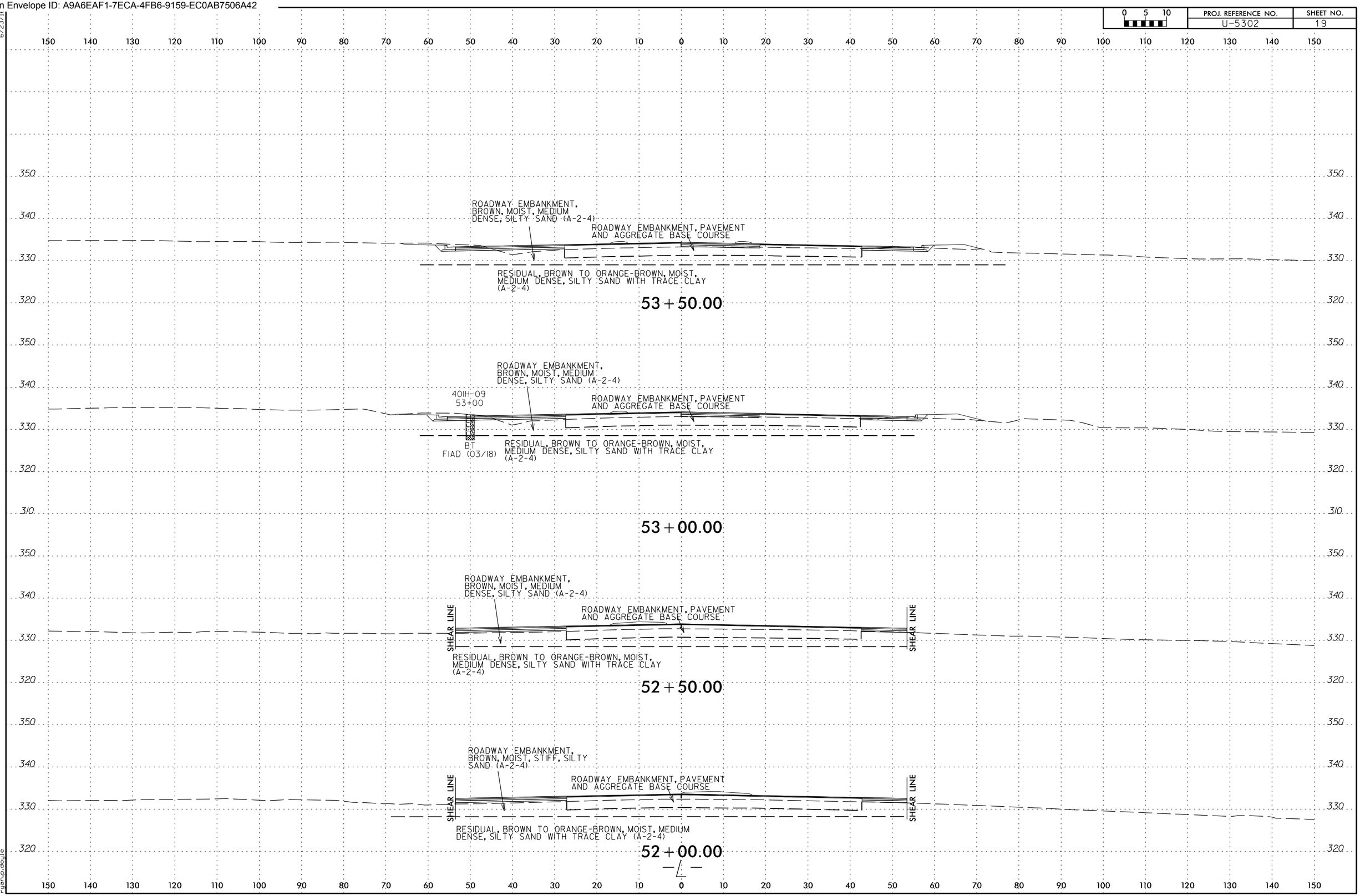

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GEO_RDWY\CADD_GEOTECH\xsc\U5302_GEO_XS1_L_17.5to96.5.dgn
11/21/2018
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ryan.p.doyle

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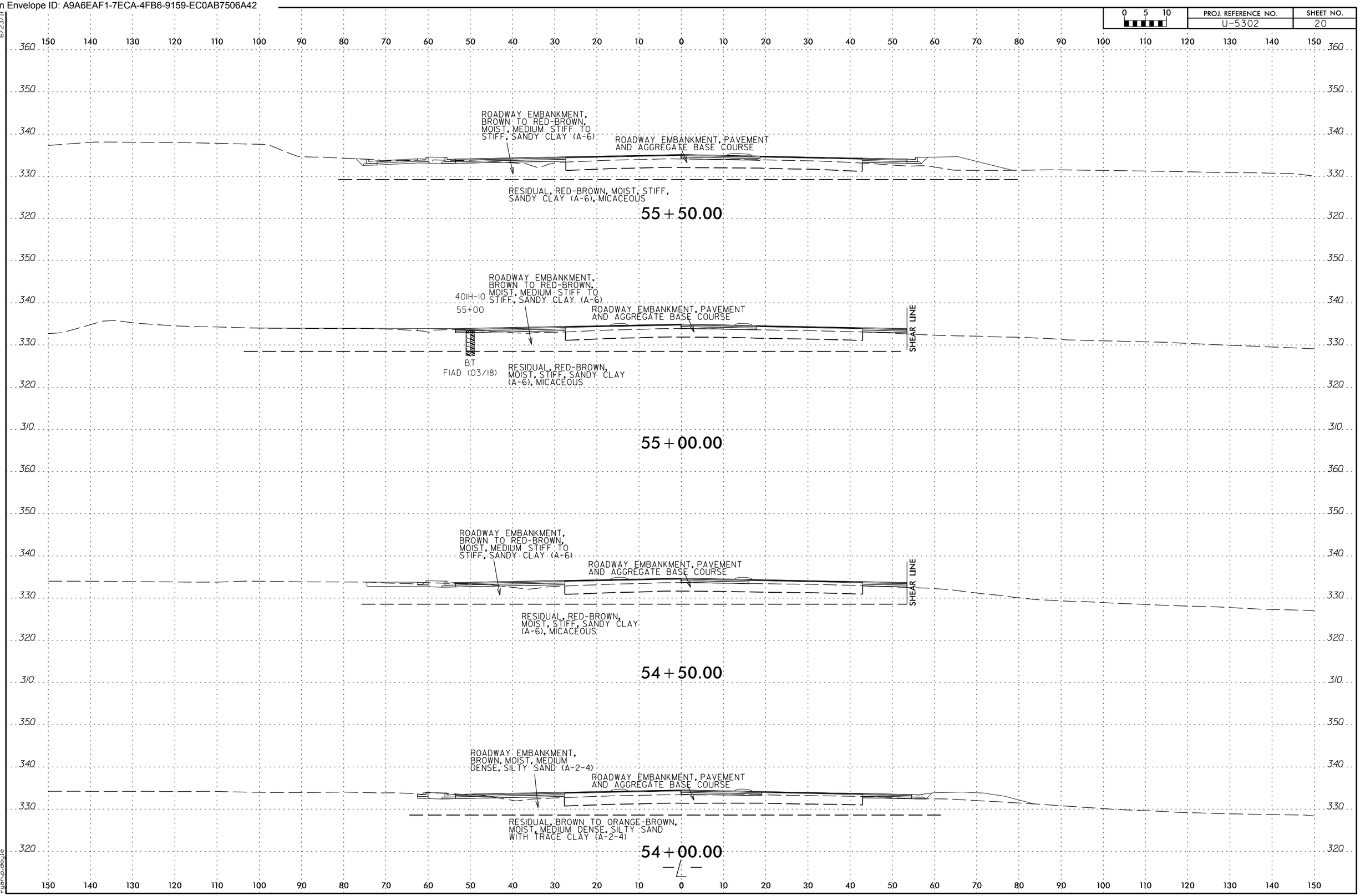

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11/21/2018
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ryan.p.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

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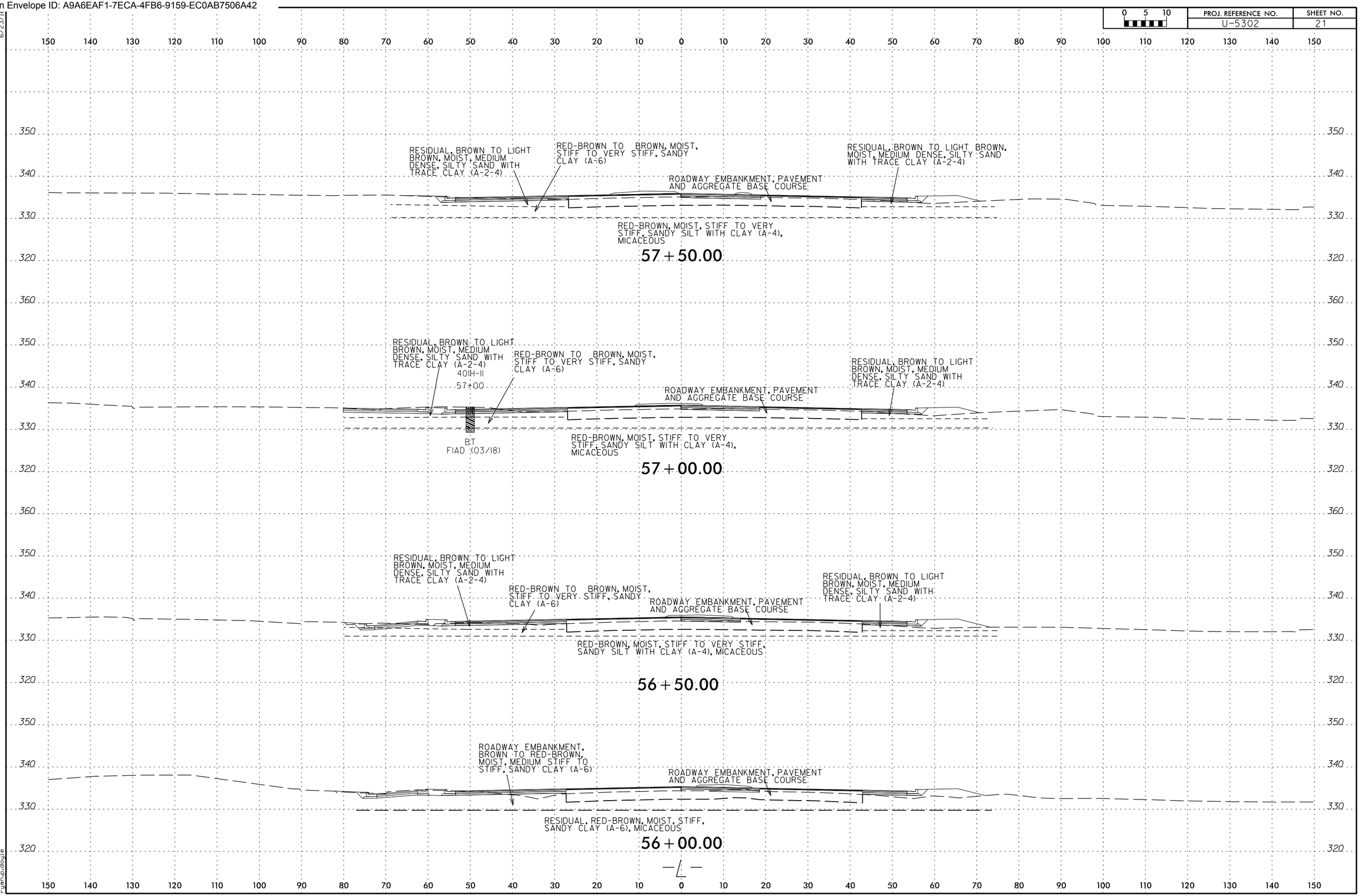

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11/21/2018
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rgan.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

PROJ. REFERENCE NO.	SHEET NO.
U-5302	22

0 5 10

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

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6)

59+50.00

401H-12
59+00

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

BT
FIAD (03/18)

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6)

59+00.00

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6)

58+50.00

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6)

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND WITH TRACE CLAY (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT WITH CLAY (A-4), MICACEOUS

58+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

6/23/1

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11/21/2018
rjenp.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

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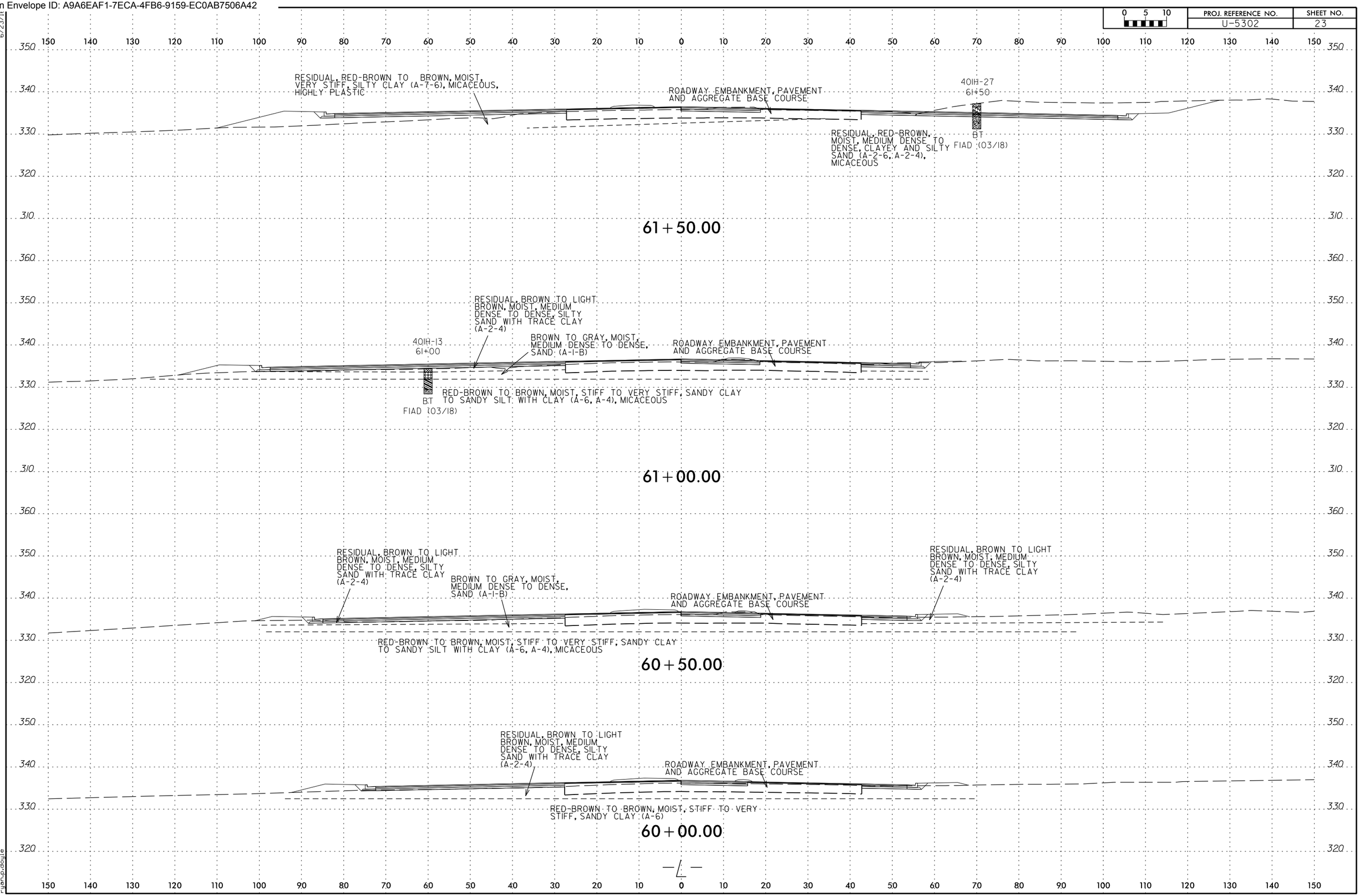

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ryan.p.doyle

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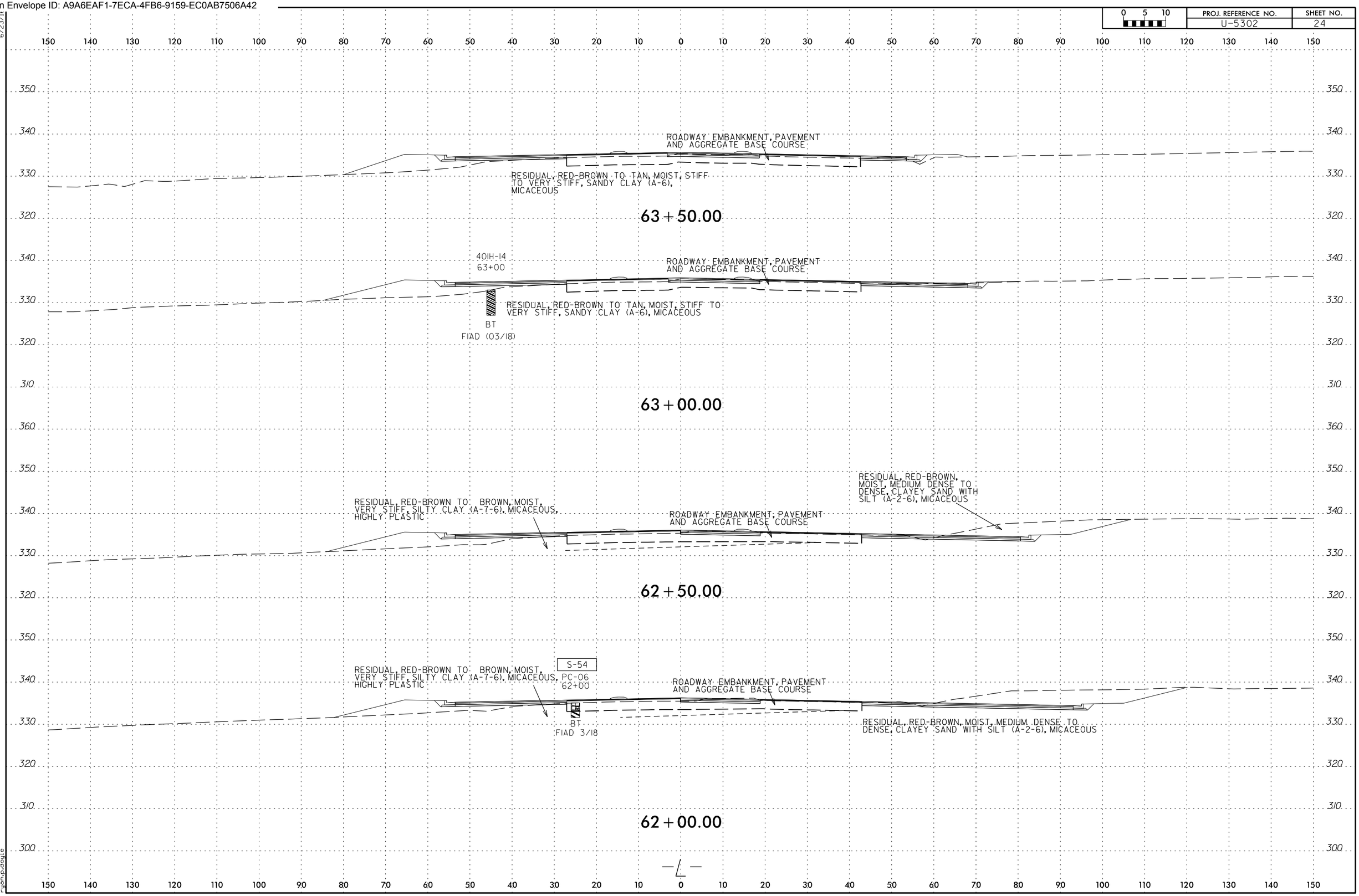

6/23/1

11/21/2018
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ryan.p.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5302	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

350 340 330 320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF AND VERY STIFF, SANDY SILT AND SANDY CLAY WITH SOME COARSE SAND LENSES (A-4, A-6), MICACEOUS

66+00.00

350 340 330 320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT AND SANDY CLAY WITH SOME COARSE SAND LENSES (A-4, A-6), MICACEOUS

65+50.00

340 330 320 310

401H-15
65+00

BT

FIAD (03/18)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT AND SANDY CLAY WITH SOME COARSE SAND LENSES (A-4, A-6), MICACEOUS

65+00.00

350 340 330 320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT AND SANDY CLAY WITH SOME COARSE SAND LENSES (A-4, A-6), MICACEOUS

64+50.00

340 330 320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT AND SANDY CLAY WITH SOME COARSE SAND LENSES (A-4, A-6), MICACEOUS

64+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

6/23/1
11/21/2018
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ryan.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5302	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

360
350
340
330
320
310

ROADWAY EMBANKMENT, RED-BROWN TO TAN, MEDIUM DENSE TO DENSE, MOIST, SILTY SAND WITH TRACE CLAY AND COARSE GRAVEL (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, WET, STIFF, SANDY CLAY (A-6)

RESIDUAL, RED-BROWN TO BROWN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH CLAY (A-2-4), TRACE MICA

68 + 00.00

ROADWAY EMBANKMENT, RED-BROWN TO TAN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH TRACE CLAY AND COARSE GRAVEL (A-2-4)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, SANDY CLAY (A-6)

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT (A-4), MICACEOUS

67 + 50.00

ROADWAY EMBANKMENT, RED-BROWN TO TAN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH TRACE CLAY AND COARSE GRAVEL (A-2-4)

401H-16
67+00
BT
FIAD (03/18)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT (A-4), MICACEOUS

67 + 00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, SANDY SILT (A-4), MICACEOUS

66 + 50.00

6/23/1
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11/21/2018
rjon.doyle

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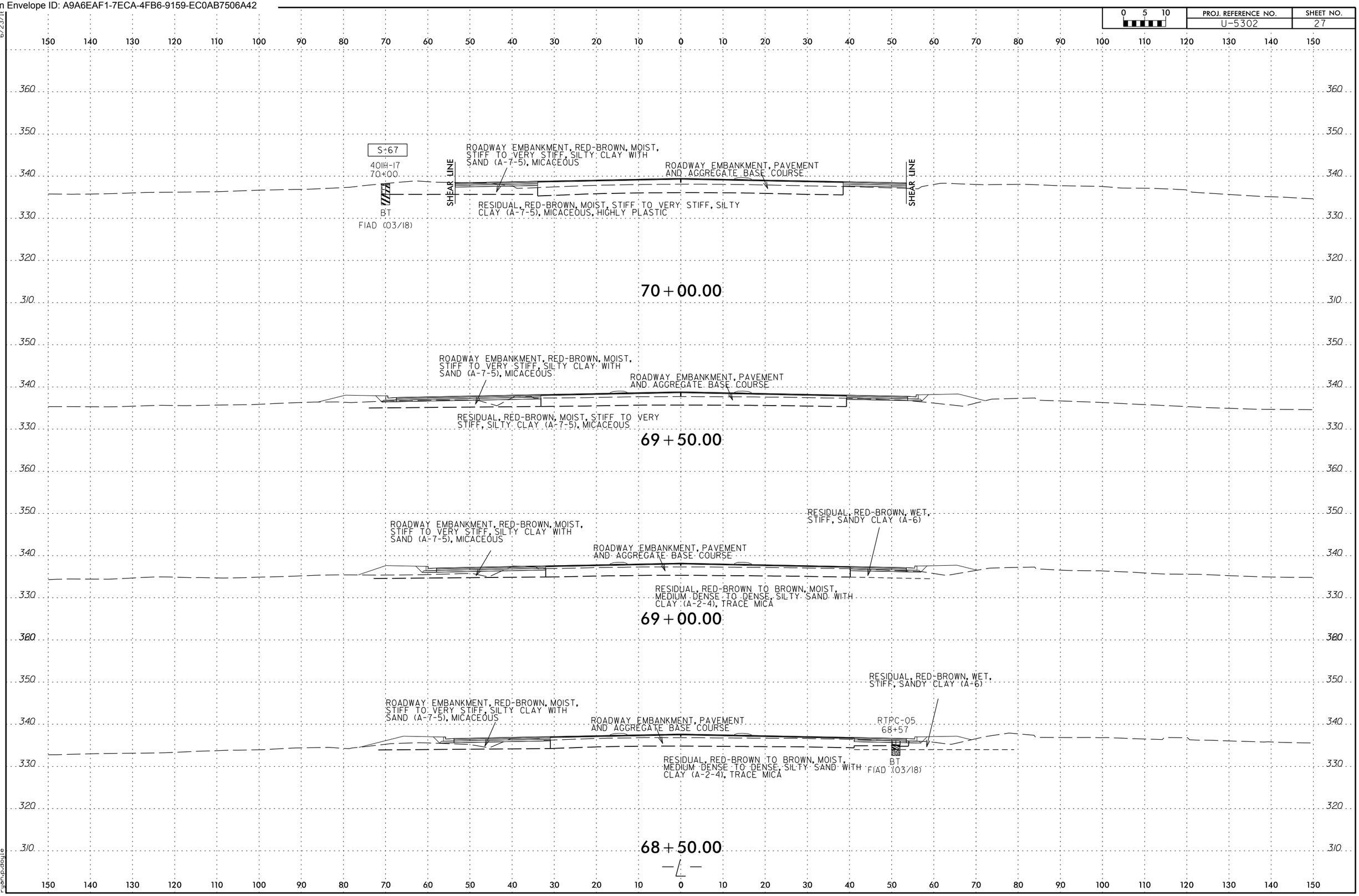

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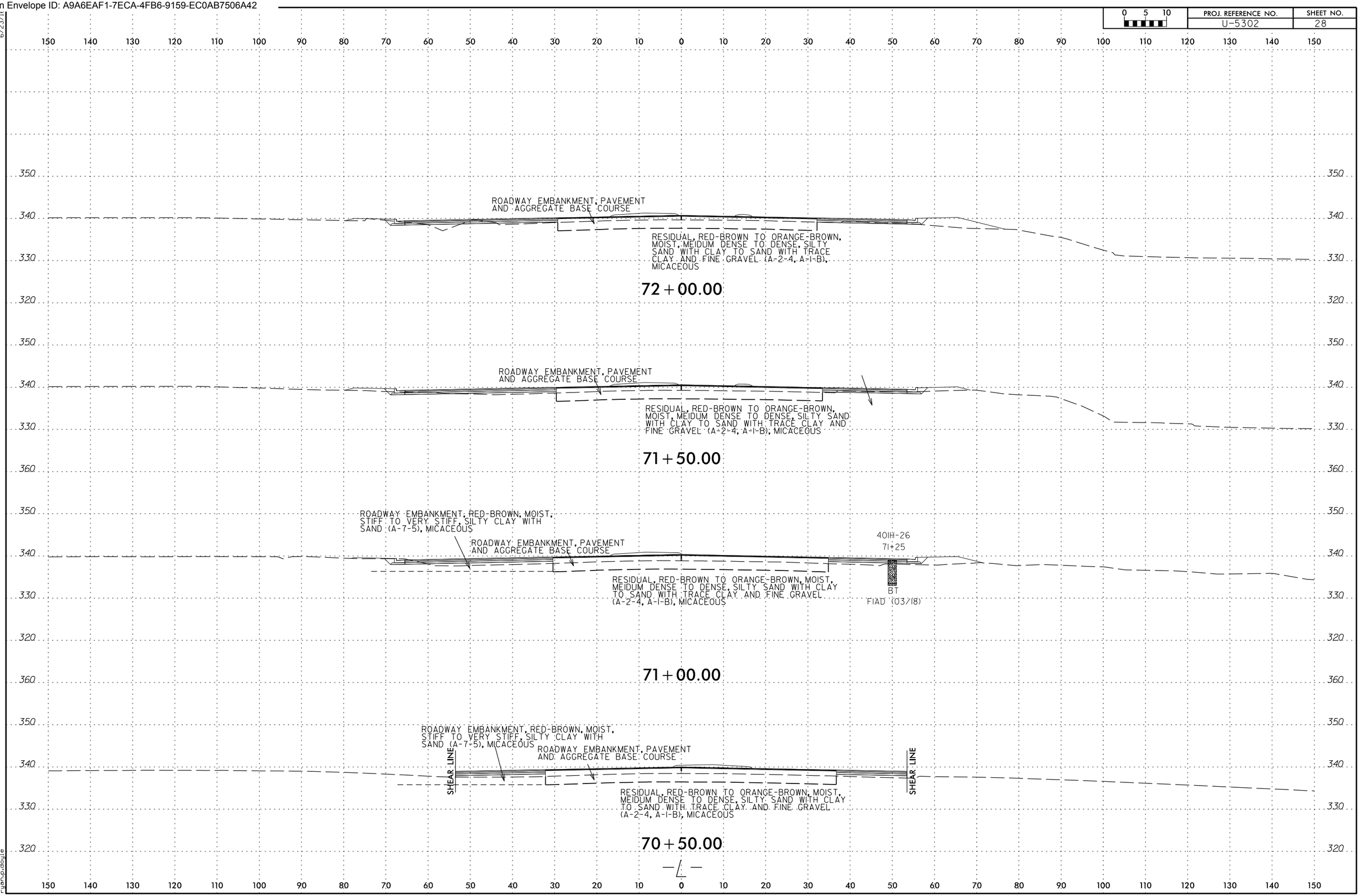

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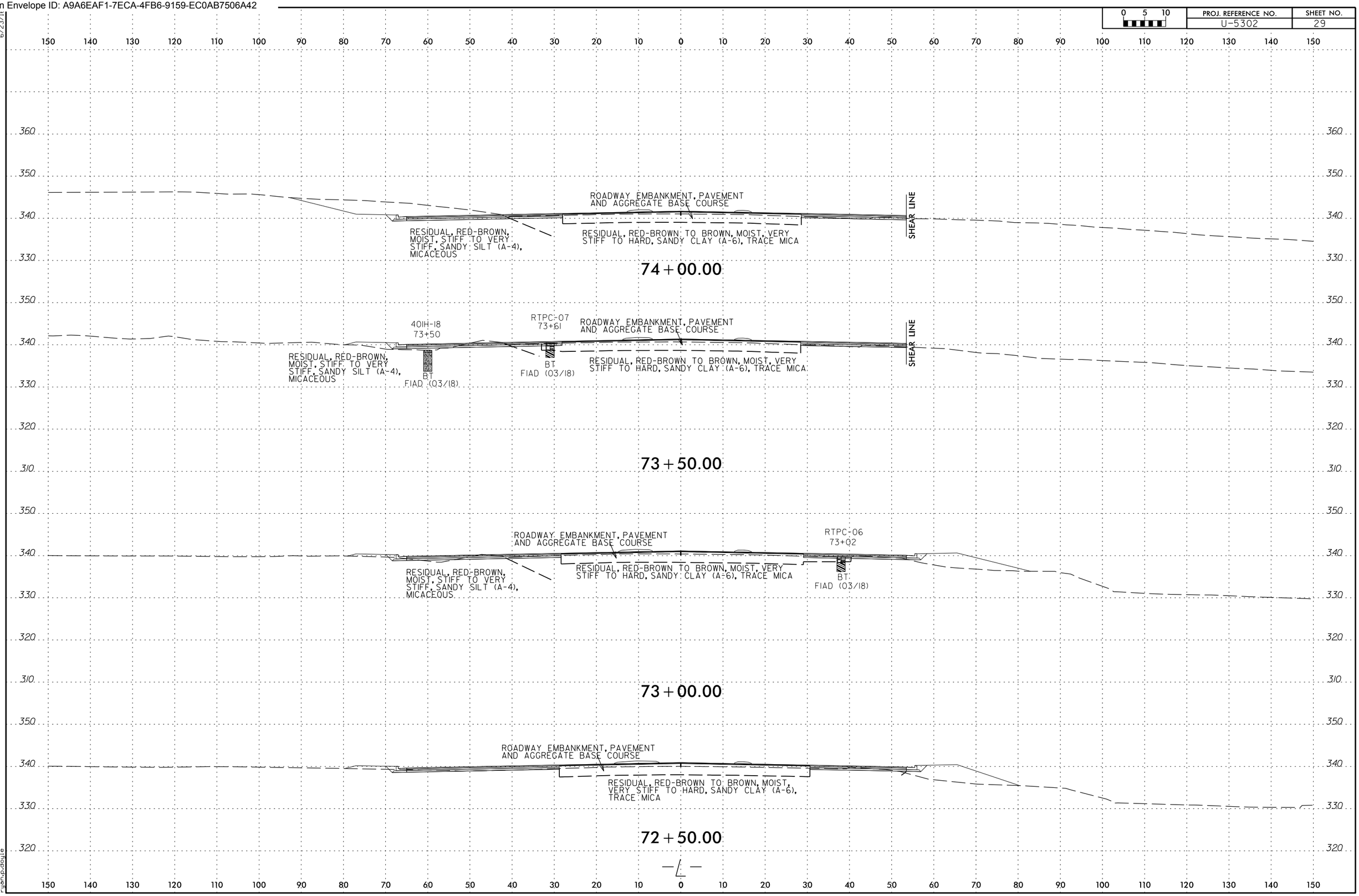

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ryan.p.doyle

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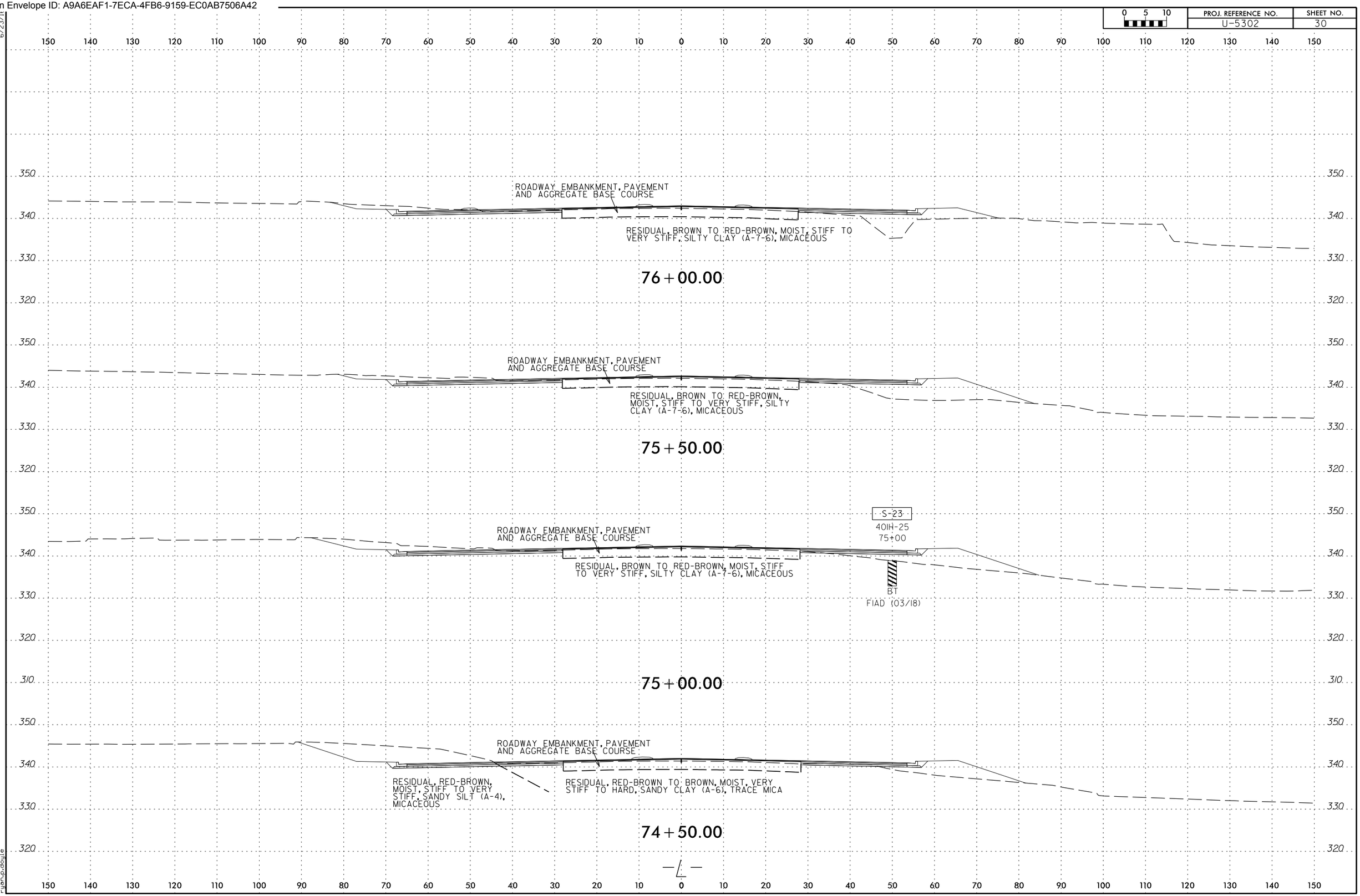

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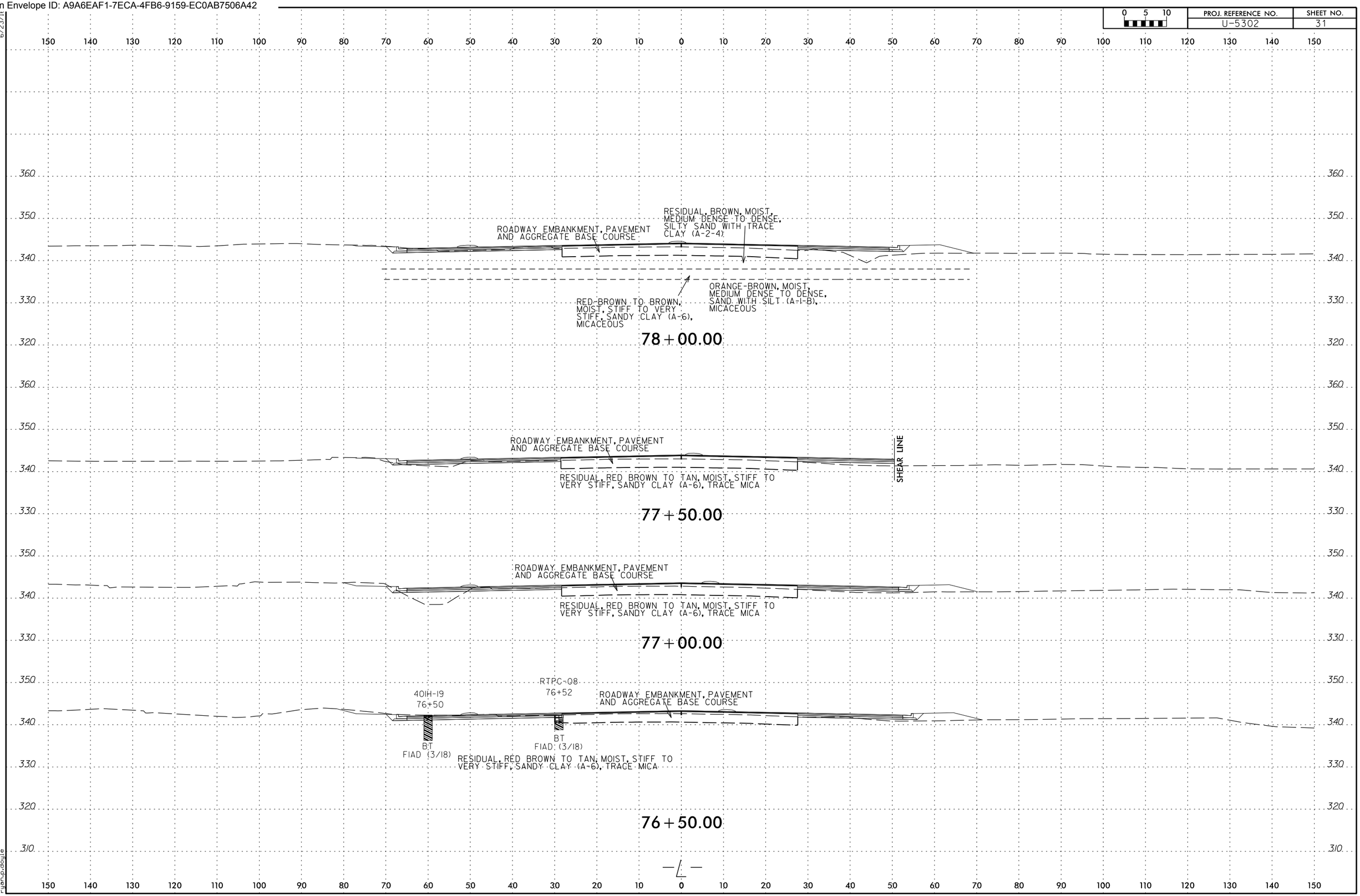

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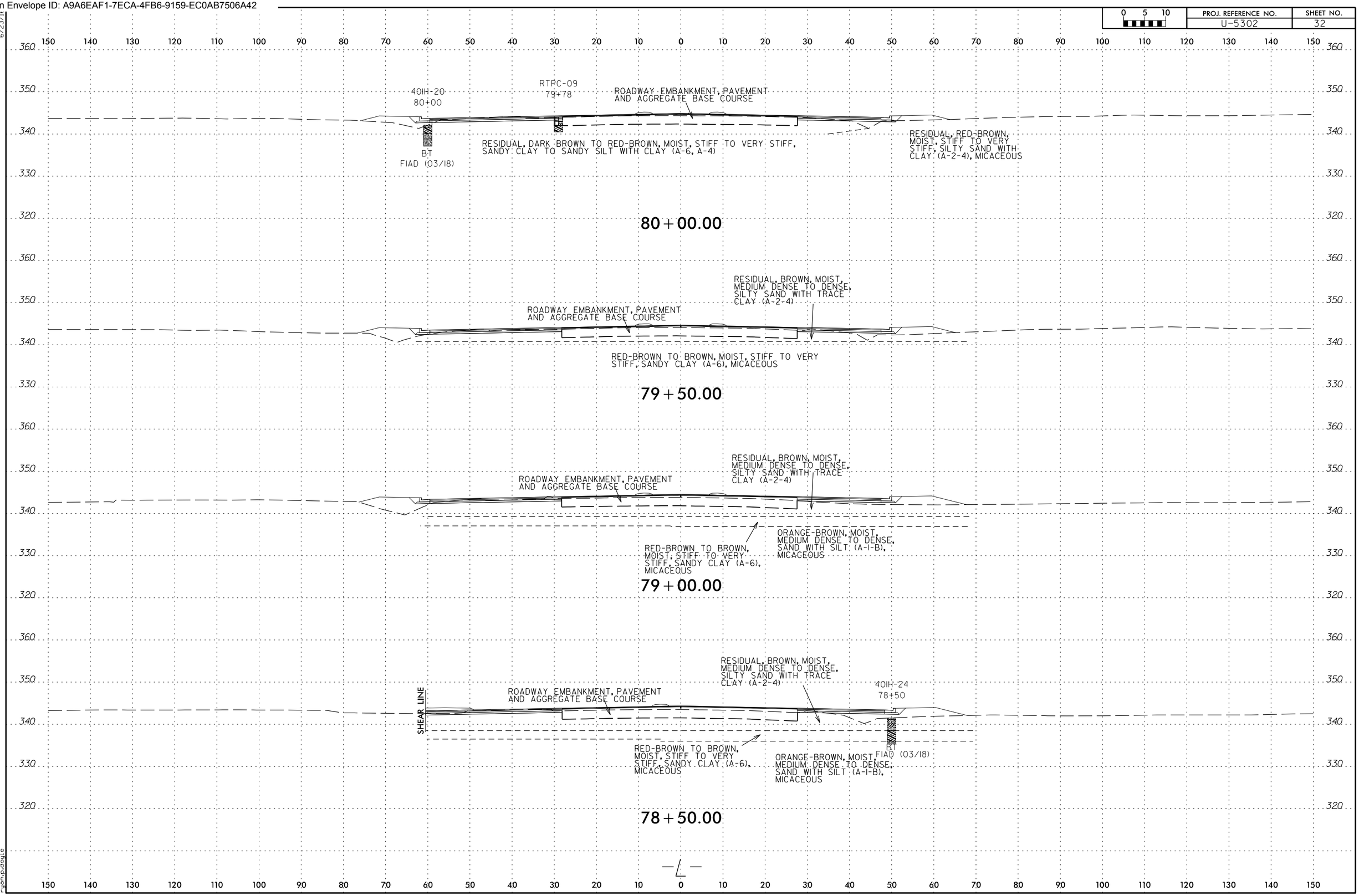

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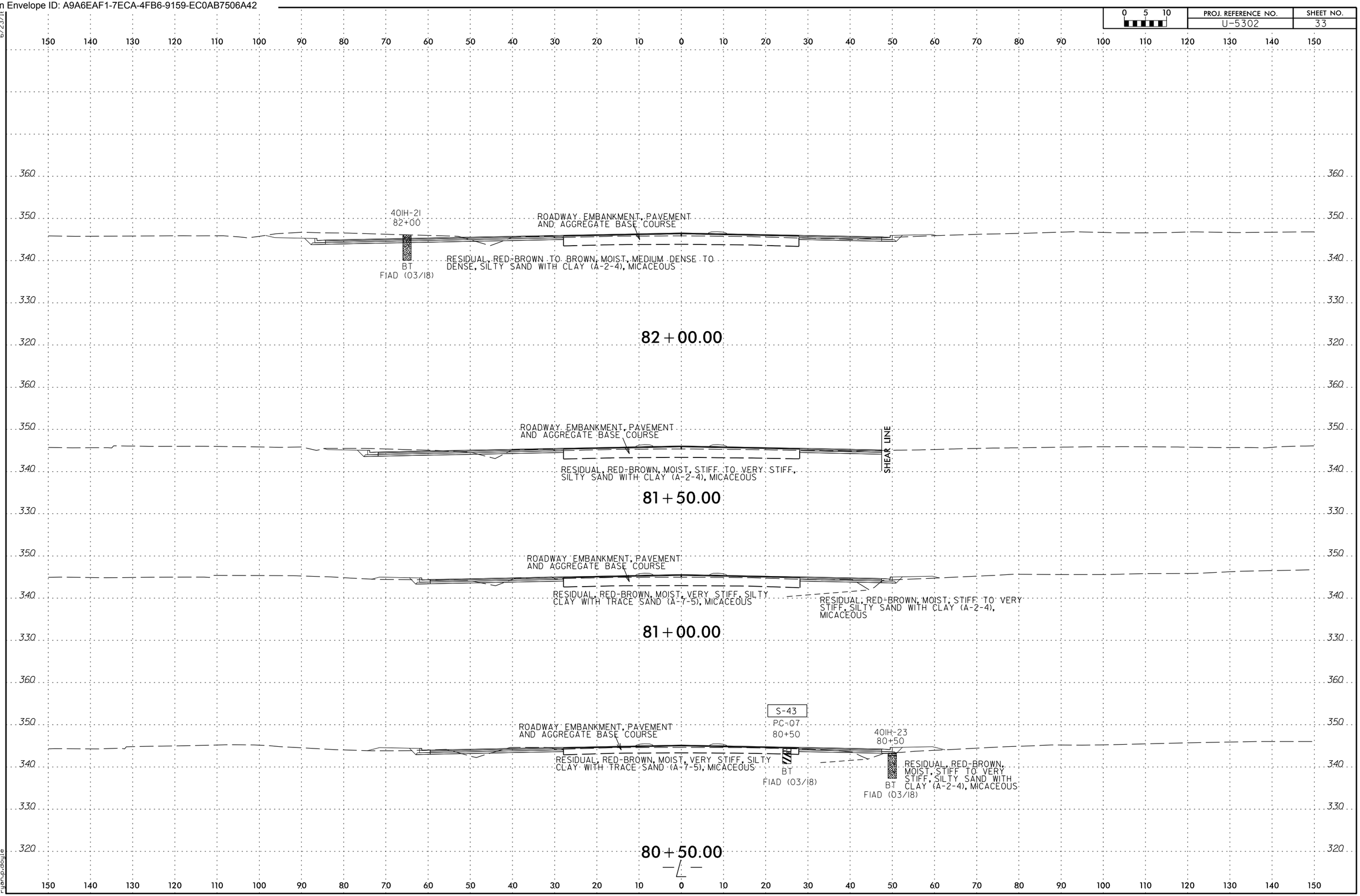

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ryan.doyle

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5302	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

360
350
340
330
320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RTPC-10
83+95

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS BT
FHAD (3/18)

84+00.00

360
350

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

83+50.00

340
360
350

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH CLAY (A-2-4), MICACEOUS

83+00.00

340
330
360
350

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO BROWN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH CLAY (A-2-4), MICACEOUS

82+50.00

340
330

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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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5302	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

360 350 340 370 360 350 340 370 360 350 340 370 360 350 340 330 320

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

86+50.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

86+00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

85+50.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

85+00.00

RTPC-II
84+28

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

BT RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

FIAD. (3/18)

84+50.00

6/23/1
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11/21/2018
rjon.doyle

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

PROJ. REFERENCE NO.	SHEET NO.
U-5302	36

0 5 10

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

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RTPC-13
38+54
BT
FIAD (03/18)

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

89+00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

88+50.00

88+00 ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

BT
FIAD (03/18)

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

88+00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

87+50.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY (A-6), MICACEOUS

87+00.00

6/23/1
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11/21/2018
rjenkins.doyle

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5302	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

370
360
350
340

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN TO ORANGE, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND WITH TRACE CLAY (A-2-4), MICACEOUS

91+50.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

91+00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

90+50.00

RTPC-14
89+89
FIAD (03/18)

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

90+00.00

ROADWAY EMBANKMENT, PAVEMENT AND AGGREGATE BASE COURSE

RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS

89+50.00

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11/21/2018
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ryan.doyle

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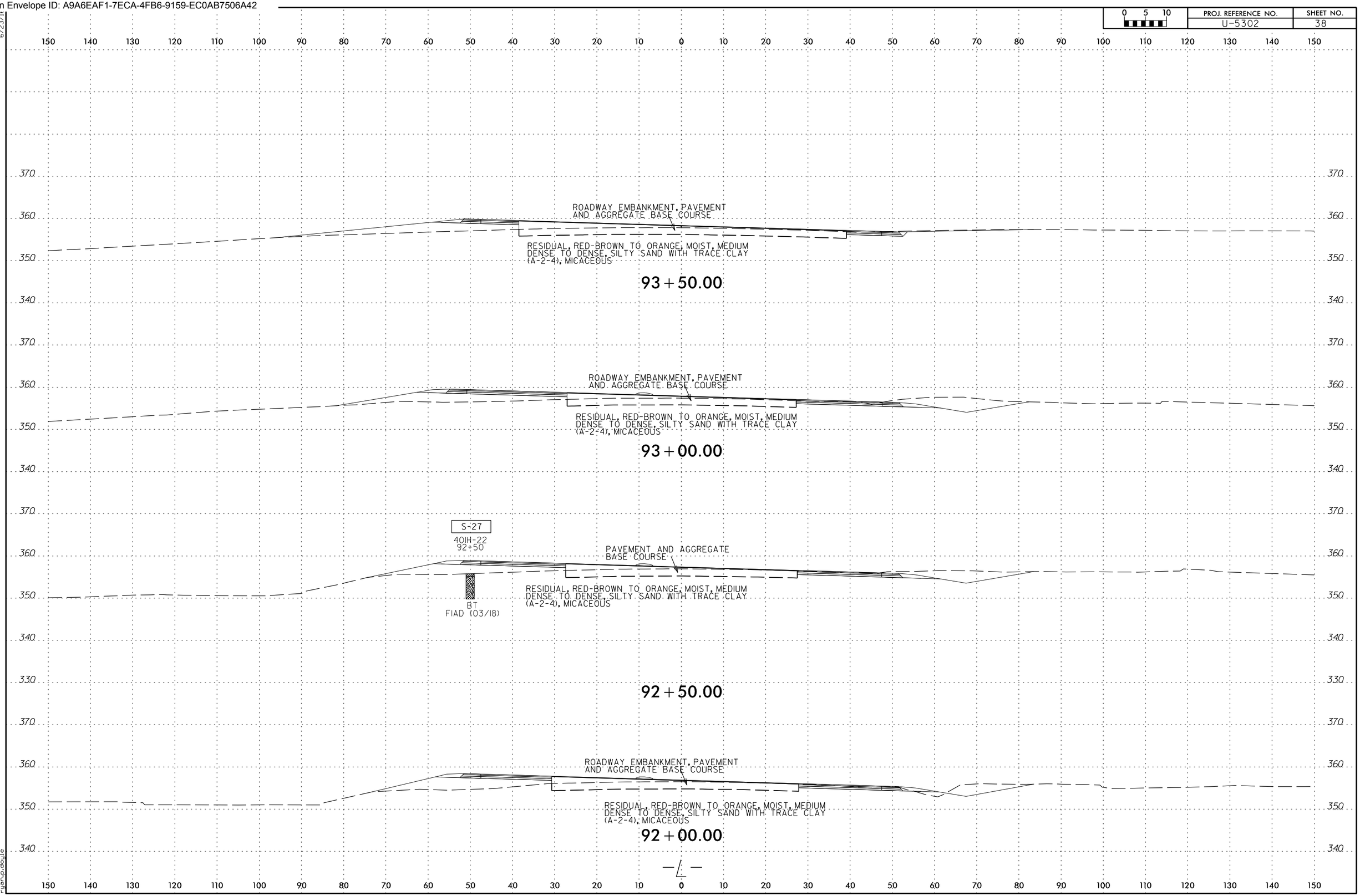

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11/21/2018
ryan.p.doyle

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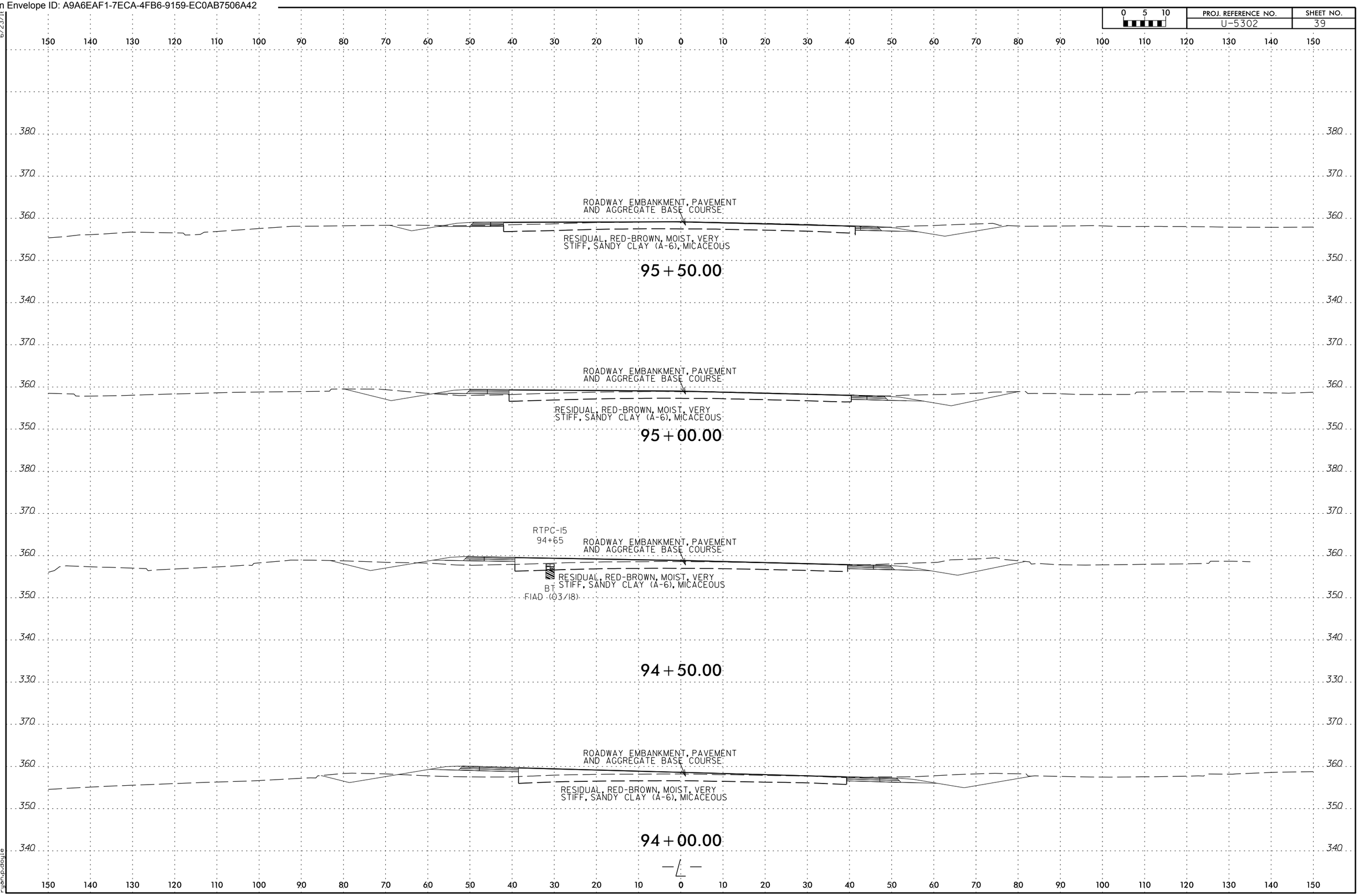

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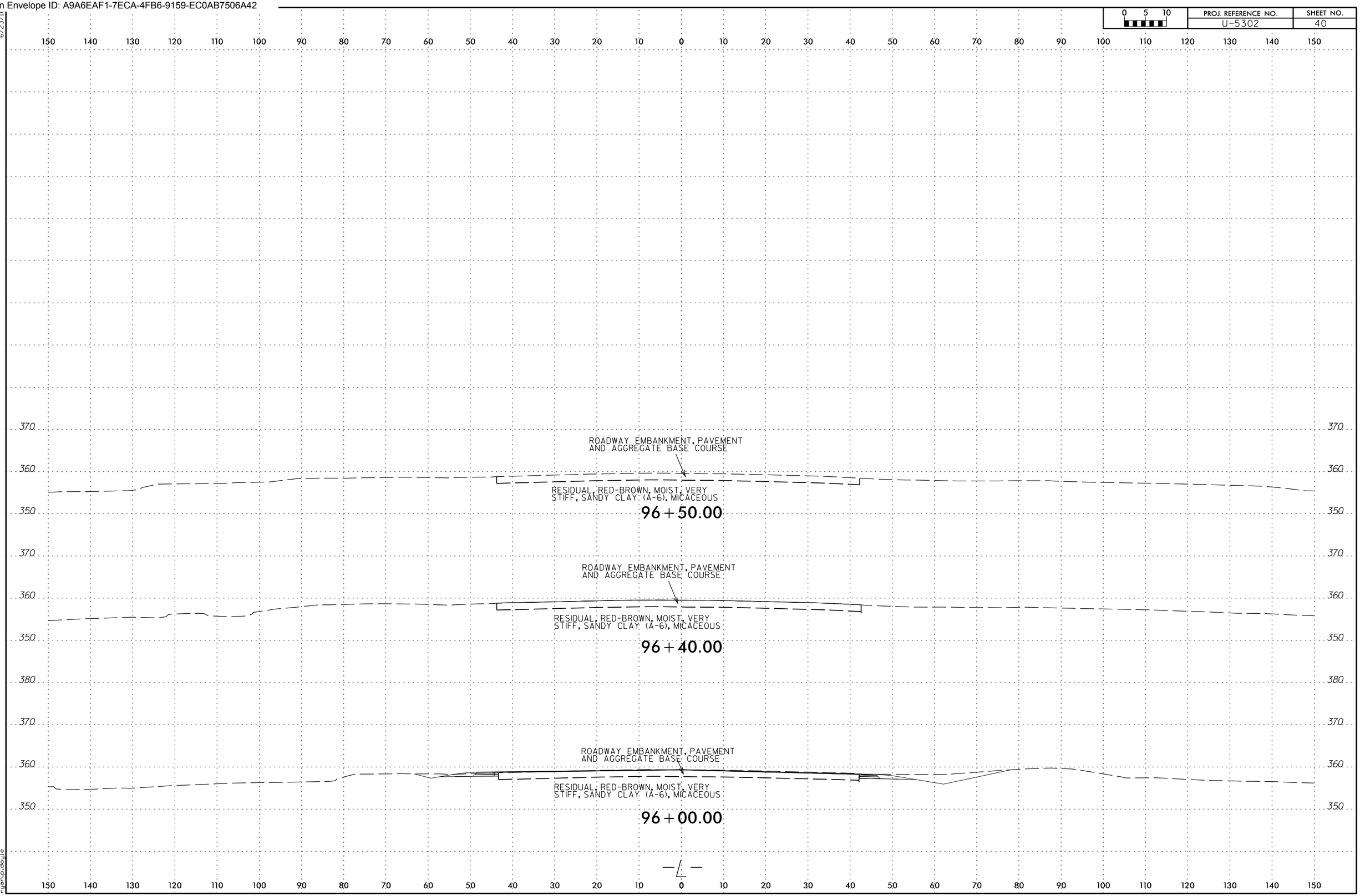

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340 330 320 310

RESIDUAL, LIGHT BROWN TO BROWN, STIFF TO VERY STIFF, SANDY SILT WITH CLAY (A-4), MICACEOUS

BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

13+00.00

RESIDUAL, LIGHT BROWN TO BROWN, STIFF TO VERY STIFF, SANDY SILT WITH CLAY (A-4), MICACEOUS

BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

12+50.00

RESIDUAL, BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

12+00.00

RESIDUAL, BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

11+50.00

SHEAR ZONE

RESIDUAL, BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

11+00.00

SHEAR ZONE SHEAR ZONE

RESIDUAL, BROWN TO RED-BROWN, MOIST TO DRY, MEDIUM DENSE TO DENSE, CLAYEY SAND TO SILTY SAND (A-2-6, A-2-4), MICACEOUS

10+53.65

-Y3-

6/23/1
11/21/2018
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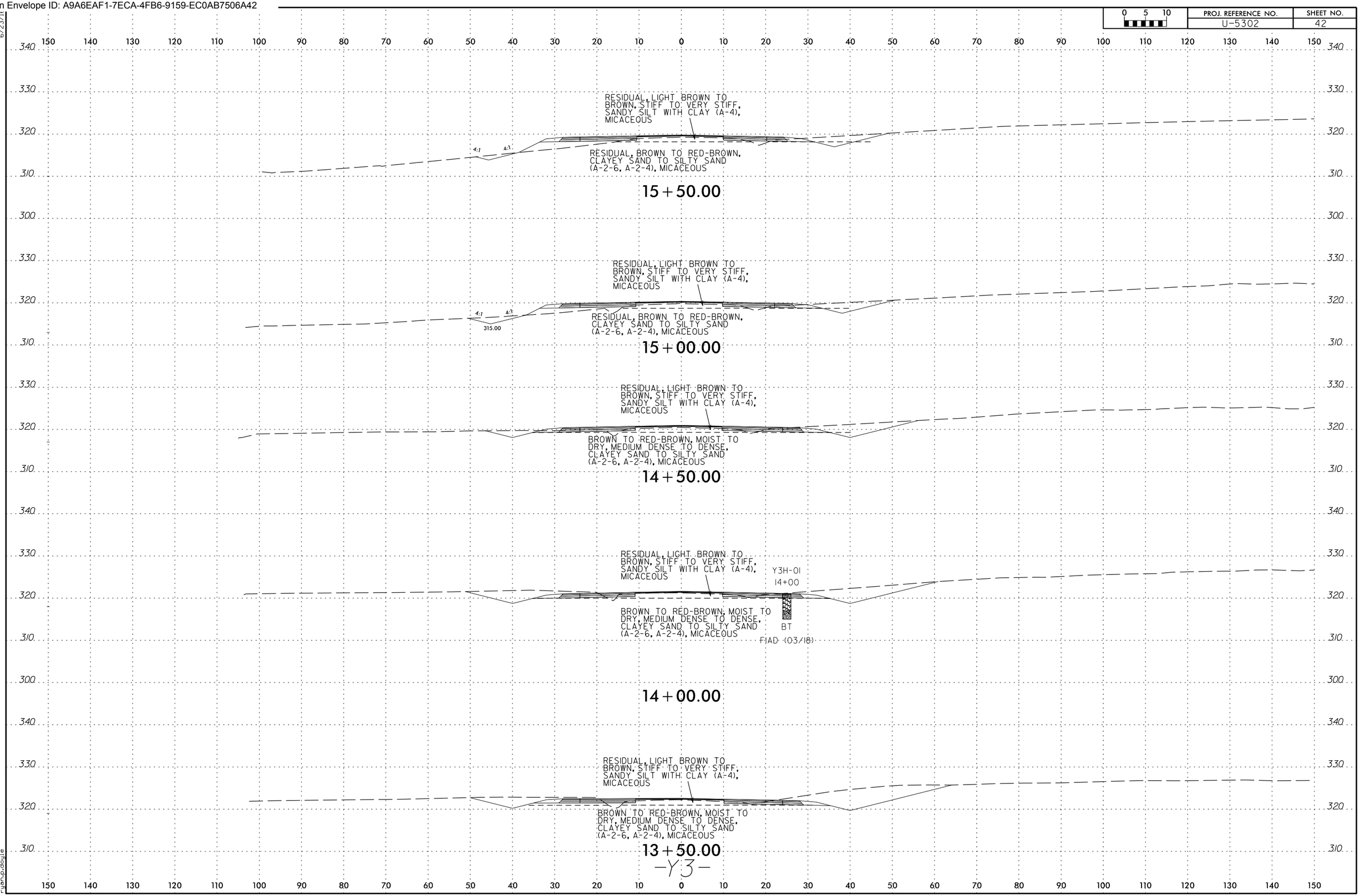

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ryan.p.doyle

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RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

18+50.00

Y3H-02
17+75

BT
DRY (03/18)

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

18+00.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

17+50.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

17+00.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

16+50.00

RESIDUAL, LIGHT BROWN TO BROWN, STIFF TO VERY STIFF, SANDY SILT WITH CLAY (A-4), MICACEOUS

4:1 4:1

312.70

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

16+00.00

-Y3-

330 320 310 300

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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rjenp.doyle

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PROJ. REFERENCE NO.	SHEET NO.
U-5302	44

0 5 10

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

21+50.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

21+00.00

Y3H-03
20+50
BT
FIAD (03/18)

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

20+50.00

SHEAR LINE

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

20+00.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

19+50.00

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

19+00.00

-Y3-

6/23/1

11/21/2018
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ryan.p.doyle

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320
310
300

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

23+50.00

320
310
300

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

23+00.00

320
310
300

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

22+50.00

320
310
300

RESIDUAL, BROWN TO RED-BROWN, MOIST, STIFF TO VERY STIFF, =SANDY CLAY TO SANDY SILT (A-6, A-4), MICACEOUS

22+00.00

-Y3-

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

11/21/2018
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ryan.doyle

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PROJECT REFERENCE NO.	SHEET NO.
U–5302	46

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
SOIL TEST RESULTS

REFERENCE: U–5302

PROJECT: 48000

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PROJECT REFERENCE NO.	SHEET
U-5302	47

SOIL TEST RESULTS

BORING NO.	SAMPLE NO.	OFFSET	STATION	ALIGNMENT	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE
									GRAVEL	C. SAND	F. SAND	FINES	10	40	200	
401H-01	S-3	70' RT	20+50	-L-	1.0-2.0	A-4(0)	28	2	9.6	15.9	36.3	38.2	90.4	74.5	38.2	12.8
401H-25	S-23	50' RT	75+00	-L-	1.0-2.0	A-7-6(11)	53	24	3.5	10.7	31.0	54.8	96.5	85.7	54.8	14.3
401H-22	S-27	50' LT	92+50	-L-	1.5-3.5	A-2-4(0)	19	5	5.4	24.7	44.9	25.1	94.6	70.0	25.1	7.4
PC-04	S-38	35' RT	42+00	-L-	2.0-3.5	A-7-6(11)	43	23	1.3	11.4	29.3	58.1	98.8	87.4	58.1	13.5
PC-07	S-43	25' RT	80+50	-L-	2.0-3.5	A-7-5(34)	85	42	1.1	13.2	13.0	72.7	98.9	85.7	72.7	24.8
PC-06	S-54	25' LT	62+00	-L-	1.8-3.0	A-7-6(12)	46	26	3.2	13.8	26.3	56.7	96.8	83.0	56.7	13.4
401H-17	S-67	70' LT	70+00	-L-	3.0-4.0	A-7-5(24)	69	33	0.3	9.4	21.7	68.6	99.7	90.3	68.6	21.9
401H-08	S-90	50' LT	51+00	-L-	0.2-1.0	A-7-5(18)	64	27	0.7	12.4	22.7	64.2	99.3	86.9	64.2	21.3

TESTED BY: Michael P. Sm

NCDOT NO.: 129-03-0411

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PROJECT REFERENCE NO.	SHEET NO.
U–5302	48

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
BORING LOGS

REFERENCE: U–5302

PROJECT: 48000

Docusign Envelope ID: A9A6EAF1-7ECA-4FB6-9159-EC0AB7506A42

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. 401H-01	**STATION** 20+50	**OFFSET** 70 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 287.0 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 711,558	**EASTING** 2,100,155	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A - Hand Auger		**DRILL METHOD** Hand Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/05/18	**COMP. DATE** 03/05/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
290											
										287.0 GROUND SURFACE	0.0
										286.8 **TOPSOIL** DARK BROWN, SANDY CLAY (A-6)	0.2
285							S-3	D		**RESIDUAL** LIGHT BROWN TO TAN, MEDIUM DENSE TO DENSE, SANDY SILT (A-4), MICACEOUS, FINE TO MEDIUM GRAINED	
										281.0	6.0
										Boring Terminated at Elevation 281.0 ft in sandy silt	

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. 401H-02	**STATION** 30+00	**OFFSET** 70 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 291.5 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 712,306	**EASTING** 2,100,720	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A - Hand Auger		**DRILL METHOD** Hand Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/14/18	**COMP. DATE** 03/14/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
295										
										291.5 GROUND SURFACE 0.0
										291.0 **TOPSOIL** DARK BROWN, SANDY CLAY (A-6) 0.5
290								M		**ROADWAY EMBANKMENT** BROWN, STIFF TO VERY STIFF, SANDY CLAY (A-6), FINE TO MEDIUM GRAINED
										286.5 5.0
								M		285.5 **RESIDUAL** 6.0 ORANGE TO TAN, MEDIUM DENSE TO DENSE, CLAYEY SAND (A-2-6), MEDIUM GRAINED, WELL GRADED
										Boring Terminated at Elevation 285.5 ft in sand

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. PC-02	**STATION** 24+00	**OFFSET** 30 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 293.2 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 711,787	**EASTING** 2,100,430	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM3359 CME-450 81% 11/09/2016		**DRILL METHOD** Pavement Core, 4" O.D. Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/07/18	**COMP. DATE** 03/07/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
295											
										293.2 GROUND SURFACE	0.0
										292.3 **ROADWAY EMBANKMENT** ASPHALT	0.9
										291.2 AGGREGATE BASE COURSE	2.0
290								M		**RESIDUAL**	
										287.2 RED-BROWN, MEDIUM DENSE TO VERY DENSE, SILTY SAND (A-2-4), MICACEOUS, FINE TO MEDIUM GRAINED	6.0
										Boring Terminated at Elevation 287.2 ft in silty sand	

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. PC-02 (Shoulder)	**STATION** 24+00	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 293.9 ft	**TOTAL DEPTH** 3.5 ft	**NORTHING** 711,780	**EASTING** 2,100,435	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM3359 CME-450 81% 11/09/2016		**DRILL METHOD** Pavement Core, 4" O.D. Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/07/18	**COMP. DATE** 03/07/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
295										
										293.9 GROUND SURFACE 0.0
										293.4 0.5
										ROADWAY EMBANKMENT
										291.9 ASPHALT 2.0
								D		290.4 AGGREGATE BASE COURSE 3.5
										RESIDUAL
										TAN TO BROWN, MEDIUM DENSE TO DENSE, SILTY SAND (A-2-4), FINE TO MEDIUM GRAINED
										Boring Terminated at Elevation 290.4 ft in silty sand

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. PC-03	**STATION** 32+79	**OFFSET** 30 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 296.7 ft	**TOTAL DEPTH** 3.5 ft	**NORTHING** 712,543	**EASTING** 2,100,863	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM3359 CME-450 81% 11/09/2016		**DRILL METHOD** Pavement Core, 4" O.D. Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/09/18	**COMP. DATE** 03/09/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
300											
										296.7 GROUND SURFACE	0.0
295								M		295.9 **ROADWAY EMBANKMENT**	0.8
								M		294.7 ASPHALT	2.0
										294.2 AGGREGATE BASE COURSE	2.5
										293.2 **RESIDUAL** BROWN, DENSE TO VERY DENSE, SILTY SAND WITH TRACE CLAY (A-2-4), FINE TO MEDIUM GRAINED RED-BROWN, VERY STIFF TO HARD, SANDY CLAY (A-6), MICACEOUS Boring Terminated at Elevation 293.2 ft in silty clay	3.5

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION US 401 between Legend Rd and Annaron Ct				**GROUND WTR (ft)**
BORING NO. PC-03 (Shoulder)	**STATION** 32+79	**OFFSET** 37 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 296.4 ft	**TOTAL DEPTH** 3.5 ft	**NORTHING** 712,546	**EASTING** 2,100,856	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM3359 CME-450 81% 11/09/2016		**DRILL METHOD** Pavement Core, 4" O.D. Auger	**HAMMER TYPE** N/A	
DRILLER Mike Moseley	**START DATE** 03/09/18	**COMP. DATE** 03/09/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
300										
										296.4 GROUND SURFACE 0.0
295										296.0 **ROADWAY EMBANKMENT** 0.4
										294.4 ASPHALT 2.0
										292.9 AGGREGATE BASE COURSE 3.5
										RESIDUAL BROWN, DENSE TO VERY DENSE, SILTY SAND WITH TRACE CLAY (A-2-4), FINE TO MEDIUM GRAINED Boring Terminated at Elevation 292.9 ft in silty sand

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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48000.1.1	**TIP** U-5302	**COUNTY** WAKE	**GEOLOGIST** Sean Buchanan	
SITE DESCRIPTION Legend Rd				**GROUND WTR (ft)**
BORING NO. Y1H-01	**STATION** 13+00	**OFFSET** 15 ft LT	**ALIGNMENT** -Y1-	**0 HR.** Dry
COLLAR ELEV. 283.4 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 711,374	**EASTING** 2,100,263	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A - Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Mike Moseley	**START DATE** 03/05/18	**COMP. DATE** 03/05/18	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
285										283.4 GROUND SURFACE	0.0
										282.9 **TOPSOIL** BROWN, SANDY CLAY (A-6)	0.5
280								M		**RESIDUAL** RED TO DARK BROWN, STIFF TO VERY STIFF, SANDY CLAY (A-6), MICACEOUS	
								M		279.4 DARK BROWN TO DARK RED, STIFF TO VERY STIFF, SANDY SILT WITH TRACE CLAY (A-4), MICACEOUS	4.0
										277.4 Boring Terminated at Elevation 277.4 ft in sandy silt	6.0

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