

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4020	1	30
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35015.1.1	NHF-421(31)	PE	
35015.2.1	NHF-421(31)	RAW & UTIL	
35015.3.1	NHF-421(44)	CONSTRUCTION	

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ROADWAY  
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 35015.1.1 F.A. PROJ. NHF-421(31)  
COUNTY WATAUGA  
PROJECT DESCRIPTION US 421 (KING ST.) FROM US 321 (HARDIN ST.) TO NC 194 (JEFFERSON RD.) IN BOONE

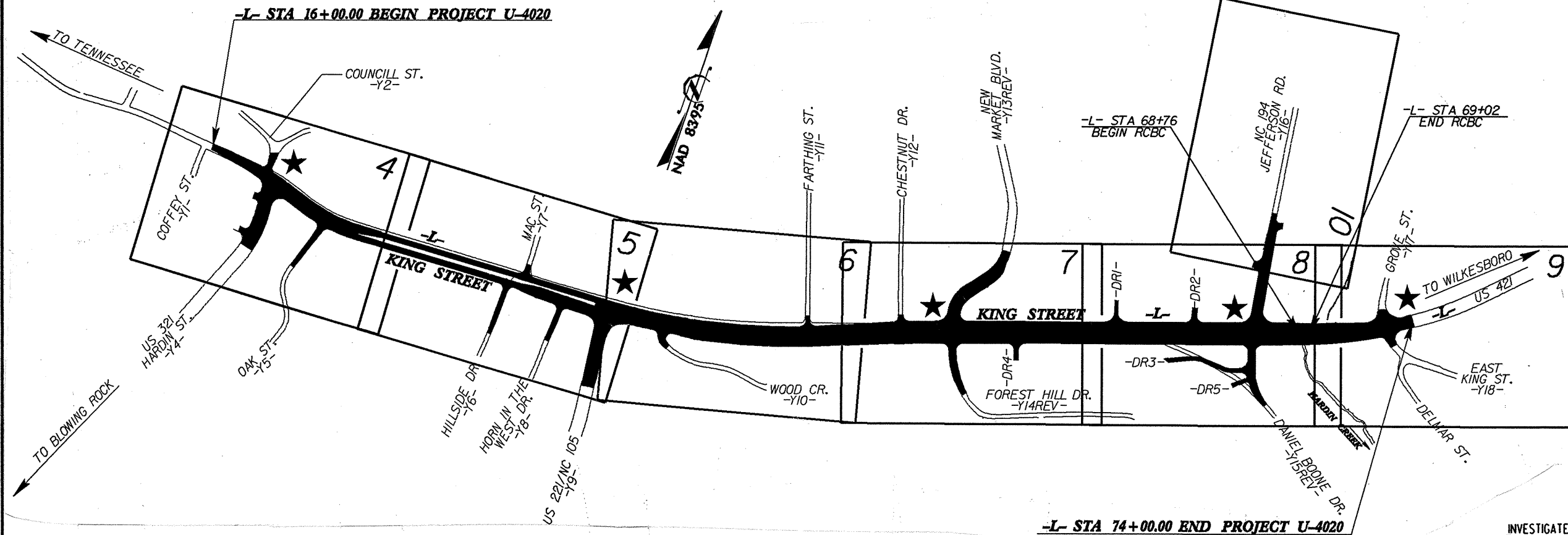
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THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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.

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 THIS 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.

INVENTORY

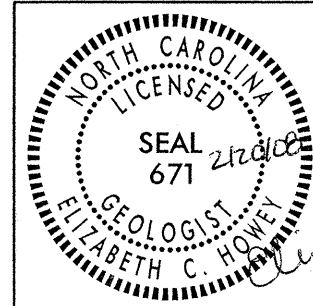


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INVESTIGATED BY F&R, Inc.  
CHECKED BY E.C. HOWEY, LG, PE  
SUBMITTED BY F&R, Inc.  
DATE 12/07

For Letting



*Elizabeth C. Howey*

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NOTE - 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.

CONTRACT: C202084 ID: U-4020

DRAWN BY: D. RACEY

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

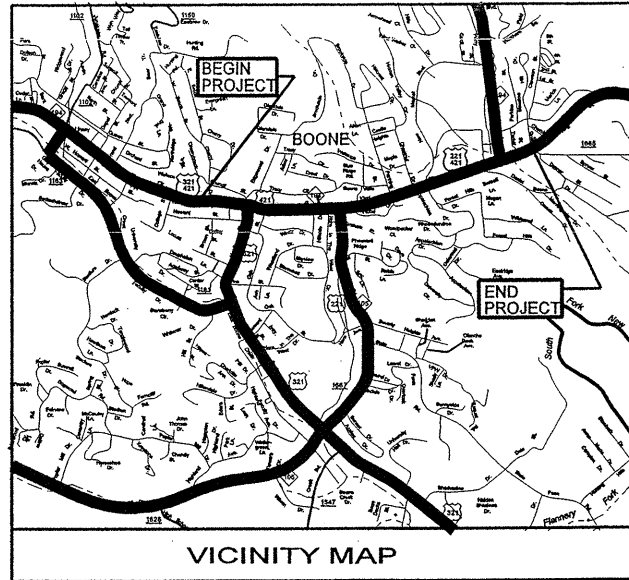
## SUBSURFACE INVESTIGATION

### SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS																																																																																																																																																																																																																																																																																															
<p>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:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>	<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  <b>UNIFORM</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)  <b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p style="text-align: center;"><b>ANGULARITY OF GRAINS</b></p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR</b>, <b>SUBANGULAR</b>, <b>SUBROUNDED</b>, OR <b>ROUNDED</b>.</p>	<p>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:</p> <p><b>WEATHERED ROCK (WR)</b>  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p> <p><b>CRYSTALLINE ROCK (CR)</b>  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p><b>NON-CRYSTALLINE ROCK (NCR)</b>  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p><b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>	<p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.  <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.  <b>ARTESIAN</b> - 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.  <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.  <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.  <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.  <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.  <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.  <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  <b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.  <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.  <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.  <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  <b>ROCK QUALITY DESIGNATION (RQD)</b> - 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.  <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.  <b>SILL</b> - 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 INTRODUCED ROCKS.  <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS IN 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.  <b>STRATA CORE RECOVERY (SREC)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - 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.  <b>TOPSOIL (TS)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																																																																															
<p style="text-align: center;"><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (&lt;= 35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th><th>A-3</th><th colspan="2">A-2</th><th colspan="2">A-4</th><th>A-5</th><th>A-6</th><th>A-7</th> <th>A-1, A-2</th><th>A-3</th><th>A-4, A-5</th><th>A-6, A-7</th> <th>A-1, A-2</th><th>A-3</th><th>A-4, A-5</th> <th>A-1, A-2</th><th>A-3</th><th>A-4, A-5</th> </tr> </thead> <tbody> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td><td>A-1-b</td><td>A-2-a</td><td>A-2-b</td><td>A-2-c</td><td>A-2-d</td><td>A-2-e</td><td>A-2-f</td><td>A-2-g</td> <td>A-4</td><td>A-5</td><td>A-6</td><td>A-7</td> <td>A-1, A-2</td><td>A-3</td><td>A-4, A-5</td> <td>A-1, A-2</td><td>A-3</td><td>A-4, A-5</td> </tr> <tr> <td>SYMBOL</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td> <td></td><td></td><td></td> </tr> <tr> <td>% PASSING</td> <td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td> <td>10</td><td>10</td><td>10</td><td>10</td> <td>10</td><td>10</td><td>10</td> <td>10</td><td>10</td><td>10</td> </tr> <tr> <td>LIQUID LIMIT</td> <td>5</td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td> <td>5</td><td>5</td><td>5</td><td>5</td> <td>5</td><td>5</td><td>5</td> <td>5</td><td>5</td><td>5</td> </tr> <tr> <td>PLASTIC INDEX</td> <td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS, GRAVEL, AND SAND</td><td>FINE SAND</td><td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td><td colspan="2">SILTY GRAVEL AND SAND</td><td colspan="2">SILTY SOILS</td><td>CLAYEY SOILS</td> <td colspan="3">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td>GRANULAR SOILS</td><td>SILT-CLAY SOILS</td><td>MUCK, PEAT</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GENERATING AS A SUBGRADE</td> <td colspan="7">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSATURABLE</td> <td colspan="3"></td> </tr> </tbody> </table> <p style="text-align: center;">PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS &gt; LL - 30</p>	GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)							ORGANIC MATERIALS			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-2	A-3	A-4, A-5	A-1, A-2	A-3	A-4, A-5	GROUP CLASS.	A-1-a	A-1-b	A-2-a	A-2-b	A-2-c	A-2-d	A-2-e	A-2-f	A-2-g	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-1, A-2	A-3	A-4, A-5	SYMBOL																				% PASSING	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	LIQUID LIMIT	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	PLASTIC INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER			GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT	HIGHLY ORGANIC SOILS			GENERATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR			FAIR TO POOR	POOR	UNSATURABLE				<p style="text-align: center;"><b>MINERALOGICAL COMPOSITION</b></p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>	<p style="text-align: center;"><b>WEATHERING</b></p> <p><b>FRESH</b> - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p><b>VERY SLIGHT (V SL.)</b> - 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.</p> <p><b>SLIGHT (SL.)</b> - 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.</p> <p><b>MODERATE (MOD.)</b> - 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.</p> <p><b>MODERATELY SEVERE (MOD. SEV.)</b> - 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p><b>SEVERE (SEV.)</b> - 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. <i>IF TESTED, YIELDS SPT N VALUES &gt; 100 BPF</i></p> <p><b>VERY SEVERE (V SEV.)</b> - 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. <i>IF TESTED, YIELDS SPT N VALUES &lt; 100 BPF</i></p> <p><b>COMPLETE</b> - 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.</p>	<p style="text-align: center;"><b>COMPRESSION</b></p> <p>SLIGHTLY COMPRESSIBLE          MODERATELY COMPRESSIBLE          HIGHLY COMPRESSIBLE</p> <p style="text-align: center;"><b>PERCENTAGE OF MATERIAL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> </thead> <tbody> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>&gt; 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>&gt; 10%</td> <td>&gt; 20%</td> <td>&gt; 20%</td> <td>&gt; 35%</td> </tr> </tbody> </table> <p style="text-align: center;"><b>GROUND WATER</b></p> <p> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p> STATIC WATER LEVEL AFTER 24 HOURS</p> <p> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p> SPRING OR SEEP</p>		ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	5 - 12%	LITTLE 10 - 20%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	12 - 20%	SOME 20 - 35%	MODERATELY ORGANIC	5 - 10%	12 - 20%	> 20%	HIGHLY 35% AND ABOVE	HIGHLY ORGANIC	> 10%	> 20%	> 20%	> 35%	<p style="text-align: center;"><b>MISCELLANEOUS SYMBOLS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td></td> <td>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td> <td></td> <td>SOIL SYMBOL</td> <td></td> <td>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td> <td></td> <td>INFERRED SOIL BOUNDARY</td> <td></td> <td>INFERRED ROCK LINE</td> <td></td> <td>ALLUVIAL SOIL BOUNDARY</td> <td></td> <td>DIP &amp; DIP DIRECTION OF ROCK STRUCTURES</td> <td></td> <td>SOUNDING ROD</td> </tr> <tr> <td></td> <td>TEST BORING</td> <td></td> <td>AUGER BORING</td> <td></td> <td>CORE BORING</td> <td></td> <td>MONITORING WELL</td> <td></td> <td>PIEZOMETER INSTALLATION</td> <td></td> <td>SLOPE INDICATOR INSTALLATION</td> <td></td> <td>SPT N-VALUE</td> <td></td> <td>SPT REFUSAL</td> </tr> </tbody> </table> <p style="text-align: center;"><b>ABBREVIATIONS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>AR - AUGER REFUSAL</td> <td>FRAGS. - FRAGMENTS</td> <td>SLI. - SLIGHTLY</td> </tr> <tr> <td>BRN. - BROWN</td> <td>HI. - HIGHLY</td> <td>TCR - TRICONE REFUSAL</td> </tr> <tr> <td>BT - BORING TERMINATED</td> <td>MED. - MEDIUM</td> <td>W - MOISTURE CONTENT</td> </tr> <tr> <td>CL - CLAY</td> <td>MICA - MICACEOUS</td> <td>V - VERY</td> </tr> <tr> <td>CPT - CONE PENETRATION TEST</td> <td>MOD. - MODERATELY</td> <td>VST - VANE SHEAR TEST</td> </tr> <tr> <td>CSE. - COARSE</td> <td>NP - NON PLASTIC</td> <td>WEA. - WEATHERED</td> </tr> <tr> <td>DMT - DILATOMETER TEST</td> <td>ORG. - ORGANIC</td> <td>W/ - WITH</td> </tr> <tr> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>PMT - PRESSUREMETER TEST</td> <td>γ - UNIT WEIGHT</td> </tr> <tr> <td>ε - VOID RATIO</td> <td>SAP. - SAPROLITIC</td> <td>γ<sub>d</sub> - DRY UNIT WEIGHT</td> </tr> <tr> <td>F - FINE</td> <td>SAT. - SATURATED</td> <td></td> </tr> <tr> <td>FOSS. - FOSSILIFEROUS</td> <td>SD. - SAND, SANDY</td> <td></td> </tr> <tr> <td>FRAC. - FRACTURED, FRACTURES</td> <td>SL. - SILT, SILTY</td> <td></td> </tr> </tbody> </table>		ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		SOIL SYMBOL		ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT		INFERRED SOIL BOUNDARY		INFERRED ROCK LINE		ALLUVIAL SOIL BOUNDARY		DIP & DIP DIRECTION OF ROCK STRUCTURES		SOUNDING ROD		TEST BORING		AUGER BORING		CORE BORING		MONITORING WELL		PIEZOMETER INSTALLATION		SLOPE INDICATOR INSTALLATION		SPT N-VALUE		SPT REFUSAL	AR - AUGER REFUSAL	FRAGS. - FRAGMENTS	SLI. - SLIGHTLY	BRN. - BROWN	HI. - HIGHLY	TCR - TRICONE REFUSAL	BT - BORING TERMINATED	MED. - MEDIUM	W - MOISTURE CONTENT	CL - CLAY	MICA - MICACEOUS	V - VERY	CPT - CONE PENETRATION TEST	MOD. - MODERATELY	VST - VANE SHEAR TEST	CSE. - COARSE	NP - NON PLASTIC	WEA. - WEATHERED	DMT - DILATOMETER TEST	ORG. - ORGANIC	W/ - WITH	DPT - DYNAMIC PENETRATION TEST	PMT - PRESSUREMETER TEST	γ - UNIT WEIGHT	ε - VOID RATIO	SAP. - SAPROLITIC	γ <sub>d</sub> - DRY UNIT WEIGHT	F - FINE	SAT. - SATURATED		FOSS. - FOSSILIFEROUS	SD. - SAND, SANDY		FRAC. - FRACTURED, FRACTURES	SL. - SILT, SILTY	
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CONTRACT: TIP PROJECT: U-4020

See Sheet 1-A For Index of Sheets



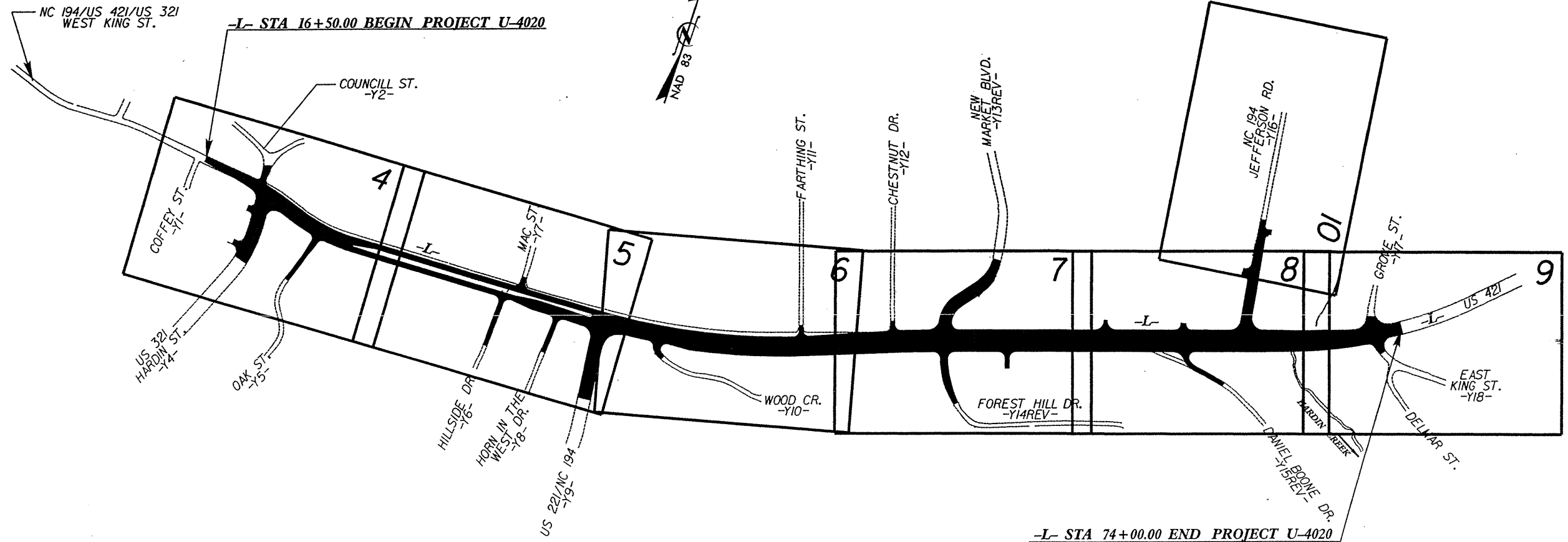
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WATAUGA COUNTY**

LOCATION: US 421 (KING STREET) FROM US 321 (HARDIN STREET) TO NC 194 (JEFFERSON ROAD) IN BOONE

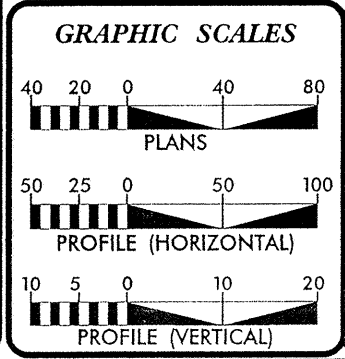
TYPE OF WORK: GRADING, PAVING, WIDENING, CURB AND GUTTER AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4020	2A	30
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35015.1.1	NHF-421(31)	PE	



**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF BOONE



**DESIGN DATA**

ADT 2004 =	39,700
ADT 2030 =	67,800
DHV =	9 %
D =	55 %
T =	6 % *
V =	40 MPH
* TTST 2% DUAL 4%	
FUNCTIONAL CLASSIFICATION	MINOR ARTERIAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-4020 =	1.089 MILES
TOTAL LENGTH OF TIP PROJECT U-4020 =	1.089 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
NOVEMBER 16, 2007

LETTING DATE:  
APRIL 21, 2009

G.E. BREW, P.E.  
PROJECT ENGINEER

I.T. YOUNIS  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DCN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$



**FROEHLING & ROBERTSON, INC.**  
 ENGINEERING • ENVIRONMENTAL • GEOTECHNICAL  
 310 HUBERT STREET, RALEIGH, NC 27603 | USA  
 T 919.828.3441 | F 919.828.5751

December 18, 2007

STATE PROJECT: 35015.1.1  
 TIP: U-4020  
 FEDERAL PROJECT: NHF-421 (31)  
 COUNTY: Watauga  
 DESCRIPTION: US 421 (King Street) from US 321 (Hardin Street) to NC 194  
 (Jefferson Road) in Boone  
 SUBJECT: Geotechnical Report – Inventory

Project Description:

The project involves widening existing US 421 for a distance of 1.089 miles in the town of Boone, NC. US 421 is proposed to be widened from an existing 4-lane roadway to a section varying from 73.5 feet to 109.0 feet. The majority of the widening will take place on the south side of existing US 421. The project begins near US 321, ends near NC 194, and extends through an area that contains mostly businesses with a few residences throughout its entire length. Due to the heavy development and numerous overhead and underground utilities, boring access was limited because of the utilities and the need to maintain access to the businesses. Proposed fills are generally less than 15 feet in height while proposed cuts are generally less than 20 feet in height. Four retaining walls are proposed toward the end of the project and subsurface information for these four walls is provided in separate reports.

The lines that were investigated are:

- Line -L- Station 18+00 to 65+50
- Line -Y9- Station 12+50 to 13+10

Areas of Special Geotechnical Interest:

The following sections were found to contain hard rock above the proposed grade:

Station 57+50± to Station 61+00±: Right side of existing slope in excavation for proposed retaining wall. Note that the other retaining walls may encounter rock in the excavation for the



anticipated soldier pile foundations, even though rock is not anticipated in the unclassified excavation for the wall itself.

Physiography and Geology:

The project is located in the Blue Ridge Belt of western North Carolina, in an area just outside of the Grandfather Mountain window. More specifically, it is located in an area mapped as biotite granitic gneiss. Crystalline rock recovered from our borings exhibits the characteristics of the mapped rock unit and is generally fine to medium grained. Soils weathered from the parent rock generally consist of silty, fine to coarse sands, and fine to coarse sandy silts.

The existing roadway runs generally east – west and is gently rolling. The elevation along the proposed centerline of the project corridor ranges from approximately 3138 feet to 3268 feet. Existing cuts and fills are generally less than 20 feet except in the area right of approximate Station 60+00, with a cut of nearly 35 feet in front of the existing hotel.

Soils Properties:

Note that due to the highly developed nature of the project corridor, much of the corridor surface consists of buildings, parking lots (paved and unpaved), and sidewalks. Many of our borings encountered 0.1 to 0.9 foot of pavement (asphalt/ABC/concrete); the thickness was most commonly 0.5 foot.

Residual Soil: The majority of the soils encountered on the project are residual and consist of silty fine to coarse sand (A-2-4) and fine to coarse sandy silt (A-4). The residual soil generally contains mica and is gray, brown, light brown, and orange in color. The tested soils are either non-plastic or contain low plasticity indices. The consistency of the residual soils ranges from loose to very dense for the sands (most commonly medium dense) and soft to hard for the silts (most commonly medium stiff to stiff).

Artificial Fill: Artificial fill was encountered throughout the project and was apparently placed to facilitate the development along the project corridor. This soil generally consists of fine to coarse sandy silt (A-4) with a few areas of fine to coarse sand (A-2-4, A-1-b). One area on -Y9- (Station 13+10) encountered clay (A-6). The fill is generally brown to reddish brown and frequently contains gravel. The tested soils are either non-plastic or contain low plasticity indices. The consistency of the artificial fill is generally medium stiff to stiff for the silt and loose for the sand.





Alluvial Soil: Alluvial soil was encountered at Station 26+50 beneath an area that is now a parking lot. The alluvium consists of brown and gray, fine to coarse sandy silt (A-4) and silty fine to coarse sand (A-2-4). The tested soils are either non-plastic or contain low plasticity indices. Some organics were noted in the alluvial deposits. The consistency of the alluvial soil is soft to medium stiff for the silt and very loose for the sand.

Rock Properties:

Both weathered rock and crystalline rock were encountered in the project corridor. The rock consists of brown, light brown, gray, and white biotite granitic gneiss. Rock was cored at the proposed wall locations toward the end of the project between Stations 53+50 and 60+40. Zones of weathered rock were frequently encountered within the core runs. Therefore, the core descriptions range from severely to very slightly weathered and soft to hard biotite granitic gneiss. Further, core recovery (REC) ranged from 0% (weathered rock zones) to 100%, while Rock Quality Designation (RQD) ranged from 0% to 98%. Four samples of the recovered core were trimmed and subjected to unconfined compressive strength testing; the strengths obtained ranged from 14,626 psi to 22,866 psi.

Groundwater Properties:

For safety reasons due to the location of the project in a heavily developed area, the borings were generally backfilled immediately after drilling. One boring at Station 54+50, 80 feet left encountered groundwater at an elevation of 3,166.5 feet, approximately 20 feet below proposed grade, after a stabilization period of 24 hours. Groundwater was generally not encountered in the borings and the recovered soil samples were generally described as dry to moist, except the wet to saturated alluvial soils encountered at Station 26+50.

Geotechnical Descriptive Analysis of the Project:

-L- Station 16+00 to 52+50:

This beginning and main portion of the project extends through an area of cuts on the order of 20 feet or less and fills of 15 feet or less. The soil types involved with this section consist mainly of residual sandy silts and silty sands with some artificial fill consisting of sandy silt, and alluvial silt and sand near Station 26+50.

-L- Station 52+50 to 63+80:

This area toward the end of the project contains four proposed retaining walls. Walls 1 and 2 are located on the left and will retain fill while Walls 3 and 4 are located on the right and will be in cut sections. All of the walls are anticipated to contain soldier piles, with or without tiebacks. Below is the material anticipated to be encountered in each wall excavation:

Wall 1 (left of -L- Station 53+40 to 60+12.13): Residual soil consisting of loose to dense sand and medium stiff to hard sandy silt, weathered rock, and crystalline rock were encountered within the anticipated soldier pile excavations. Note that toward the end of the wall, past approximate Station 57+00, the wall alignment is up above the toe of the existing cut. Boulders are visible at the ground surface and may be encountered in the excavations for the soldier piles in this section of wall.

Wall 2 (left of -L- Station 60+40 to 63+52.12): Residual soil consisting of stiff to hard sandy silt and medium dense sand is anticipated to be encountered in the soldier pile excavations.

Wall 3 (right of -L- Station 52+86.89 to 55+00): The unclassified excavation in front of the wall is anticipated to consist of loose to medium dense sand (residual soil) and medium stiff to stiff sandy silt (residual soil and artificial fill). Excavation for the soldier piles is anticipated to encounter the above soil along with weathered rock and crystalline rock.

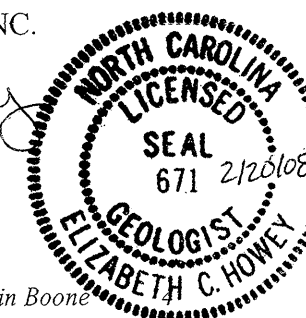
Wall 4 (right of -L- Station 55+81.73 to 61+40): The unclassified excavation in front of the wall is anticipated to consist of artificial fill (loose sand and stiff to very stiff sandy silt), residual soil (very dense sand and very stiff to hard sandy silt), weathered rock, and crystalline rock. Excavation for the anticipated soldier piles is also anticipated to encounter the above materials.

-Y9- Station 12+50 to 13+10

This -Y- line was originally proposed to contain retaining walls to replace the walls currently in place. However, right after our field investigation, the site was graded for a new development, the existing walls were removed, and the proposed walls have been eliminated. The soils encountered along -Y9- consist of artificial fill (medium stiff clay, stiff sandy silt, and fine to coarse sand and gravel) and residual soil (medium dense to dense sand and stiff sandy silt).

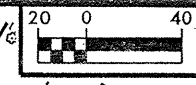
Sincerely,  
FROEHLING & ROBERTSON, INC.

*Elizabeth C. Howey*  
Elizabeth C. Howey, P.E., L.G.  
Project Engineer



LOCATION	EXCAVATION (CUBIC YARDS)					EMBANKMENT (CUBIC YARDS)				BORROW	WASTE (CUBIC YARDS)			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL EMBANKMENT	ROCK EMBANKMENT	EARTH EMBANKMENT	EMBANKMENT PLUS 15%		ROCK	SUITABLE	UNSUITABLE	TOTAL
<b>SUMMARY 1</b>														
LEFT SIDE														
-L- STA 16+00 to 46+50	290				290	2,551		2,551	2,934	2,644				
-Y2- STA 12+50 to 13+10	25				25	26		26	30	5				
RIGHT SIDE														
-L- STA 16+00 to 46+50	3,695				3,695	16,057		16,057	18,466	14,771				
-Y4- STA 10+75 to 13+50	16				16	327		327	376	360				
-Y5- STA 11+05 to 13+00	4				4	1,195		1,195	1,374	1,370				
-Y6- STA 11+00 to 12+20	3				3	289		289	332	329				
-Y8- STA 10+93 to 13+00	399				399	2		2	2		397		397	
-Y9- STA 11+00 to 14+50	142				142	113		113	130		12		12	
-Y10- STA 10+80 to 11+50	8				8	3		3	3		5		5	
<b>SUMMARY 1 TOTAL</b>	<b>4,582</b>				<b>4,582</b>	<b>20,563</b>		<b>20,563</b>	<b>23,647</b>	<b>19,479</b>	<b>414</b>		<b>414</b>	
<b>SUMMARY 2</b>														
LEFT SIDE														
-L- STA 46+50 to 74+50	1,478				1,478	6,545		6,545	7,527	6,049				
-Y13REV- STA 15+50 to 19+00	610				610	35		35	40		570		570	
-Y16- STA 15+50 to 19+95	246				246	135		135	155		91		91	
-DR1- STA 11+00 to 11+75	11				11	140		140	161	150				
-DR2- STA 10+50 to 11+00	3				3	43		43	49	46				
RIGHT SIDE														
-L- STA 46+50 to 74+50	28,285	4,563			23,722	1,262	1,262		1,262		3,301	23,722	27,023	
-Y14REV- STA 10+80 to 13+50	778				778	126		126	145			633	633	
-Y15REV- STA 10+65 to 13+50	414				414	502		502	577	163				
-Y18- STA 10+75 to 11+00	8				8	11		11	13	5				
-DR3- STA 10+40 to 14+20	845				845	1,874		1,874	2,155	1,310				
-DR4- STA 10+75 to 11+50	52				52	4		4	5		47		47	
<b>SUMMARY 2 TOTAL</b>	<b>32,730</b>	<b>4,563</b>			<b>28,167</b>	<b>10,677</b>	<b>1,262</b>	<b>9,415</b>	<b>12,089</b>	<b>7,723</b>	<b>3,301</b>	<b>25,063</b>	<b>28,364</b>	
<b>SUB-TOTAL</b>	<b>37,312</b>	<b>4,563</b>			<b>32,749</b>	<b>31,240</b>	<b>1,262</b>	<b>29,978</b>	<b>35,737</b>	<b>27,202</b>	<b>3,301</b>	<b>25,477</b>	<b>28,778</b>	
ROCK Waste to Replace Borrow							3,301	-3,301		-3,301	-3,301		-3,301	
Adjustment for Earth displaced by Rock									-495	-495				
Earth Waste to Replace Borrow										-23,406		-23,406	-23,406	
<b>TOTAL</b>	<b>37,312</b>	<b>4,563</b>			<b>32,749</b>	<b>31,240</b>	<b>4,563</b>	<b>26,677</b>	<b>35,242</b>	<b>0</b>		<b>2,071</b>	<b>2,071</b>	
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING ASPHALT PAVEMENT, REMOVAL OF EXISTING ASPHALT PAVEMENT, AND REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".														
<b>GRAND TOTAL</b>	<b>37,312</b>									<b>0</b>		<b>2,071</b>	<b>2,071</b>	
<b>SAY</b>	<b>37,500</b>													

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.



PROJECT REFERENCE NO. <b>U-4020</b>	SHEET NO. <b>4</b>
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b>	
DO NOT USE FOR CONSTRUCTION	

**BEGIN TIP PROJECT U-4020**  
**-L- POT STA. 16+00.00**

TURNHART ACQUISITION CORPORATION  
 NB 038 PG 038

**-L- PT 15+40.34**

**-Y1- POT 10+00.00**

**-L- POT 16+11.69**

**-Y1- PC 10+92.35**

**-Y1- POT 11+46.38**

**-Y1- POT 11+46.38**

**-Y1-**

PI Sta 11+19.39  
 $\Delta = 5' 24'' 09.4''$  (LT)  
 $D = 10' 00'' 00.0''$   
 $L = 540.3'$   
 $T = 27.03'$   
 $R = 572.96'$

**-Y4-**

PI Sta 13+04.04  
 $\Delta = 26' 29'' 25.5''$  (RT)  
 $D = 10' 00'' 00.0''$   
 $L = 264.90'$   
 $T = 134.86'$   
 $R = 572.96'$

**-L-**

PI Sta 18+55.55  
 $\Delta = 12' 34'' 10.0''$  (RT)  
 $D = 7' 09'' 43.1''$   
 $L = 175.50'$   
 $T = 88.10'$   
 $R = 800.00'$   
 e = SEE PLANS

PI Sta 22+97.16  
 $\Delta = 20' 36'' 57.1''$  (LT)  
 $D = 7' 09'' 43.1''$   
 $L = 287.85'$   
 $T = 145.50'$   
 $R = 800.00'$   
 e = SEE PLANS

PI Sta 2+29.23  
 $\Delta = 69' 48'' 33.0''$  (RT)  
 $D = 49' 59'' 59.9''$   
 $L = 139.62'$   
 $T = 79.95'$   
 $R = 114.59'$

**-Y2- POT 12+88.90**

**-Y4- POT 11+17.51**

**-L- POT 19+48.39**

**-L- PC 21+51.66**

**-L- PC 17+67.45**

**-Y4- PC 11+69.18**

**-Y4- PC 13+50.00**

**-Y5- STA. 13+00.00**

**-Y5- PC 13+40.65**

**-Y5- RT 13+81.46**

**-Y5- POT 13+81.71**

PI Sta 11+01.36  
 $\Delta = 3' 53'' 24.2''$  (RT)  
 $D = 5' 00'' 00.0''$   
 $L = 77.80'$   
 $T = 38.92'$   
 $R = 1145.92'$

PI Sta 13+15.35  
 $\Delta = 4' 07'' 50.8''$  (LT)  
 $D = 25' 00'' 00.0''$   
 $L = 16.52'$   
 $T = 8.27'$   
 $R = 229.18'$   
 e = SEE PLANS

PI Sta 13+61.27  
 $\Delta = 20' 24'' 17.7''$  (LT)  
 $D = 50' 00'' 00.0''$   
 $L = 40.81'$   
 $T = 20.62'$   
 $R = 114.59'$

5' MONOLITHIC CONC. ISLAND  
 4' CONC. SIDEWALK

SEE SHEET 2-H FOR INTERSECTION TRAFFIC DATA

SEE SHEET 11 FOR PROFILE OF -L-  
 SEE SHEET 13 FOR PROFILE OF -Y2-  
 SEE SHEET 13 FOR PROFILE OF -Y4-  
 SEE SHEET 14 FOR PROFILE OF -Y5-

MATCHLINE -L- STA. 26+00.00 SEE SHEET 5

REVISIONS

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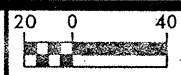


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4" CONC. SIDEWALK  
5" MONOLITHIC CONC. ISLAND

SEE SHEET 2-H FOR INTERSECTION TRAFFIC DATA

"SBG" DENOTES SHOULDER BERM GUTTER



PROJECT REFERENCE NO. U-4020	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

SEE SHEET 11 FOR PROFILE OF -L-  
SEE SHEET 14 FOR PROFILE OF -Y6-  
SEE SHEET 14 FOR PROFILE OF -Y7-  
SEE SHEET 14 FOR PROFILE OF -Y8-  
SEE SHEET 15 FOR PROFILE OF -Y9-

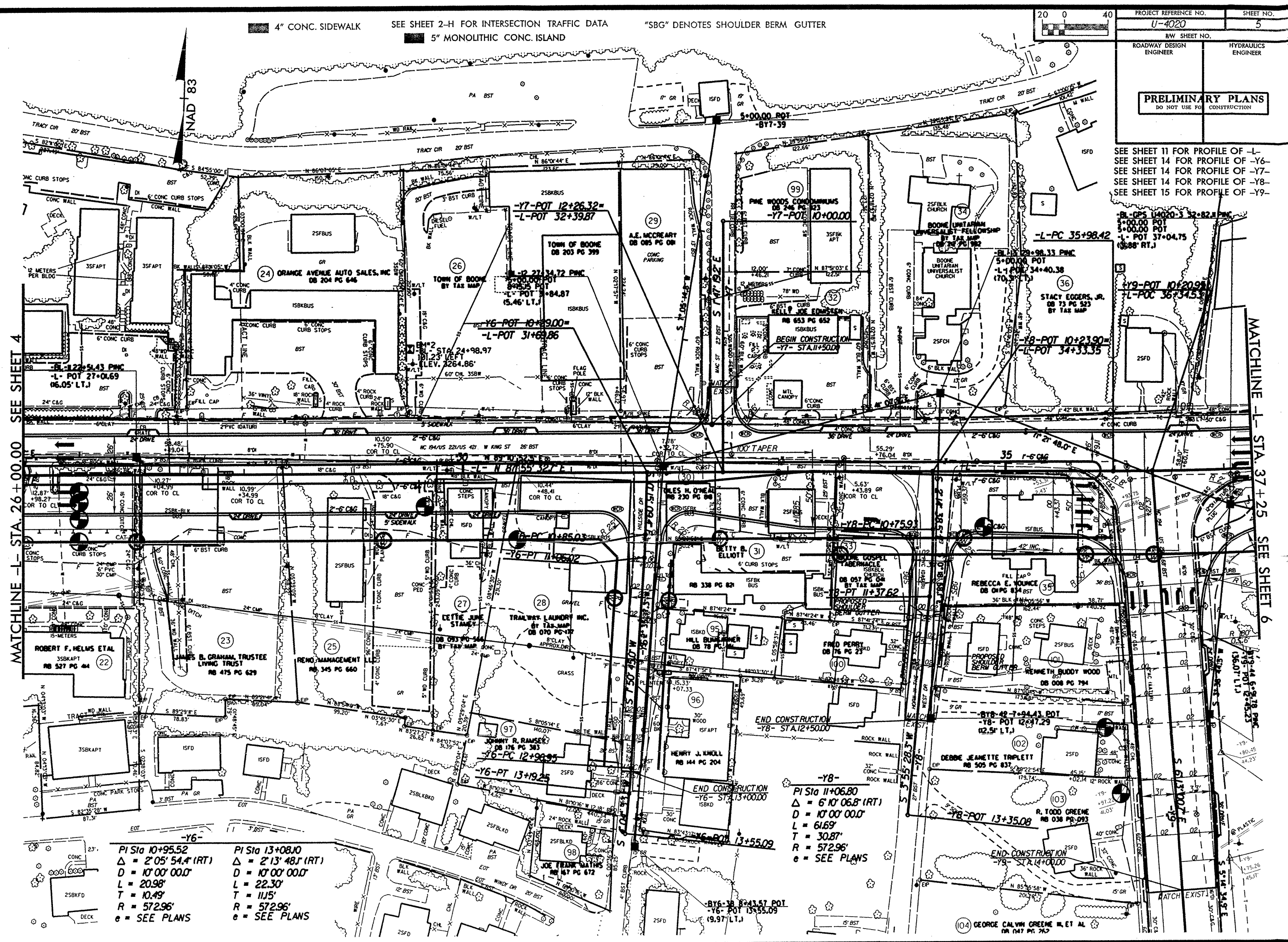
MATCHLINE -L- STA. 26+00.00 SEE SHEET 4

MATCHLINE -L- STA. 37+25 SEE SHEET 6

MATCHLINE -L- STA. 26+00.00

MATCHLINE -L- STA. 37+25

<p><b>-Y6-</b></p> <p>PI Sta 10+95.52 Δ = 2' 05" 54.4" (RT) D = 10' 00" 00.0" L = 20.98' T = 10.49' R = 572.96' e = SEE PLANS</p>	<p><b>-Y6-</b></p> <p>PI Sta 13+08.10 Δ = 2' 13" 48.1" (RT) D = 10' 00" 00.0" L = 22.30' T = 11.15' R = 572.96' e = SEE PLANS</p>
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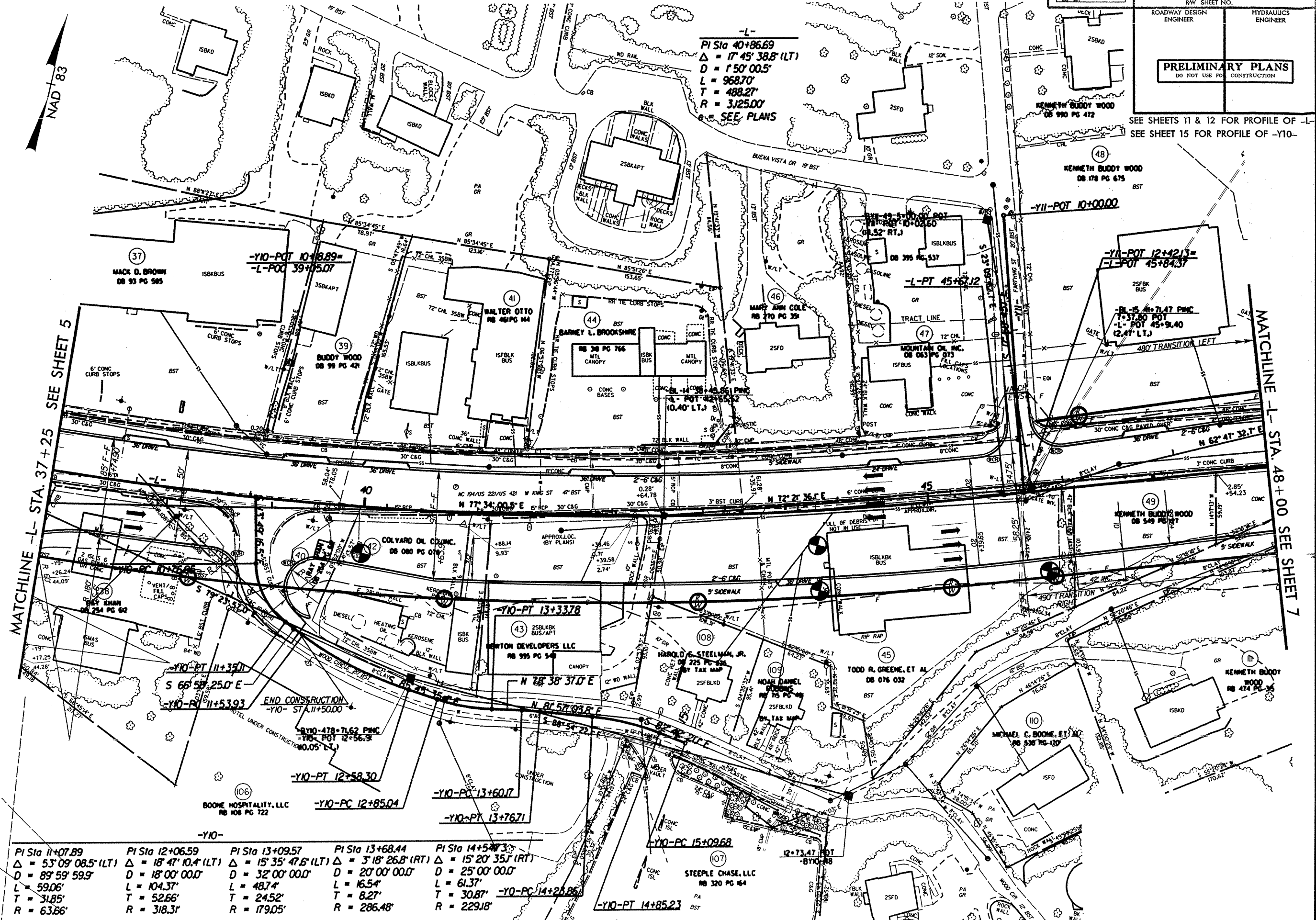
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APPROVED: [Signature]

**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

SEE SHEETS 11 & 12 FOR PROFILE OF -L-  
 SEE SHEET 15 FOR PROFILE OF -Y10-

-L-  
 PI Sta 40+86.69  
 $\Delta = 17' 45" 38.8' (LT)$   
 $D = 150' 00.5'$   
 $L = 968.70'$   
 $T = 488.27'$   
 $R = 3,125.00'$   
 SEE PLANS



PI Sta 11+07.89 $\Delta = 53' 09" 08.5' (LT)$ $D = 89' 59" 59.9'$ $L = 59.06'$ $T = 31.85'$ $R = 63.86'$	PI Sta 12+06.59 $\Delta = 18' 47" 10.4' (LT)$ $D = 18' 00" 00.0'$ $L = 104.37'$ $T = 52.66'$ $R = 318.31'$	PI Sta 13+09.57 $\Delta = 15' 35" 47.6' (LT)$ $D = 32' 00" 00.0'$ $L = 48.74'$ $T = 24.52'$ $R = 179.05'$	PI Sta 13+68.44 $\Delta = 3' 18" 26.8' (RT)$ $D = 20' 00" 00.0'$ $L = 16.54'$ $T = 8.27'$ $R = 286.48'$	PI Sta 14+54.33 $\Delta = 15' 20" 35.1' (RT)$ $D = 25' 00" 00.0'$ $L = 61.37'$ $T = 30.87'$ $R = 229.18'$
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5" MONOLITHIC CONC. ISLAND  
 4" CONC. SIDEWALK

MATCHLINE -L- STA. 37+25 SEE SHEET 5

MATCHLINE -L- STA. 48+00 SEE SHEET 7

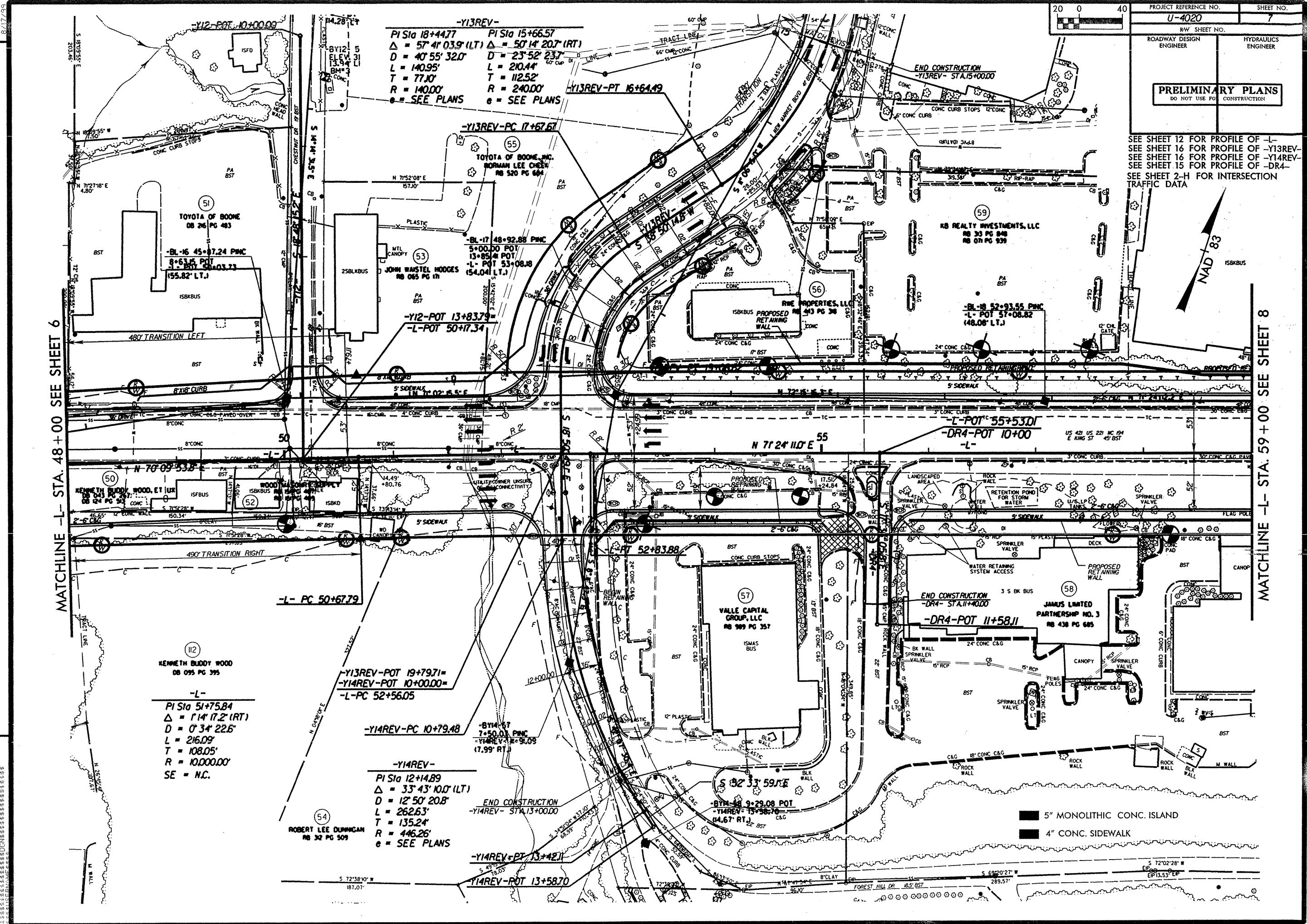
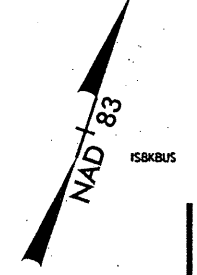
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**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

SEE SHEET 12 FOR PROFILE OF -L-  
SEE SHEET 16 FOR PROFILE OF -Y13REV-  
SEE SHEET 16 FOR PROFILE OF -Y14REV-  
SEE SHEET 15 FOR PROFILE OF -DR4-  
SEE SHEET 2-H FOR INTERSECTION TRAFFIC DATA



**-Y13REV-**  
PI Sta 18+44.77 PI Sta 15+66.57  
 $\Delta = 57' 41'' 03.9''$  (LT)  $\Delta = 50' 14'' 20.7''$  (RT)  
 $D = 40' 55'' 32.0''$   $D = 23' 52'' 23.7''$   
 $L = 140.95'$   $L = 20.44'$   
 $T = 77.10'$   $T = 112.52'$   
 $R = 140.00'$   $R = 240.00'$   
e = SEE PLANS e = SEE PLANS

**-Y13REV-PC 17+67.67**

**-Y13REV-PT 16+64.49**

**-BL-17 48+92.88 PWC**  
5+00.00 POT  
13+85.41 POT  
-L- POT 53+08.88  
(54.04' LT.)

**-Y12-POT 13+83.79**  
-L-POT 50+17.34

**-Y12-PC 50+67.79**

**-Y13REV-POT 19+79.71**  
-Y14REV-POT 10+00.00=  
-L-PC 52+56.05

**-Y14REV-PC 10+79.48**

**-Y14REV-**  
PI Sta 12+14.89  
 $\Delta = 33' 43'' 10.0''$  (LT)  
 $D = 12' 50'' 20.8''$   
 $L = 262.63'$   
 $T = 135.24'$   
 $R = 446.26'$   
e = SEE PLANS

**-Y14REV-PT 13+42.11**

**-Y14REV-POT 13+58.70**

**TOYOTA OF BOONE**  
DB 26 PG 483  
-BL-16 45+17.24 PWC  
8+63.5 POT  
155.82' LT.

**JOHN WASTEL WOODS**  
NB 065 PG 17

**RMC PROPERTIES, LLC**  
NB 43 PG 38

**KB REALTY INVESTMENTS, LLC**  
NB 33 PG 848  
NB 07 PG 939

**-BL-18 52+93.55 PWC**  
-L- POT 57+08.82  
(48.08' LT.)

**KENNETH BUDDY WOOD, ET UX**  
DB 04 PG 52

**WOODMAN COMPANY**  
ISBKBUS

**VALLE CAPITAL GROUP, LLC**  
NB 909 PG 357

**JAMAL'S LIMITED PARTNERSHIP NO. 3**  
NB 438 PG 685

**KENNETH BUDDY WOOD**  
DB 095 PG 395

**-L-**  
PI Sta 51+75.84  
 $\Delta = 1' 14'' 17.2''$  (RT)  
 $D = 0' 34'' 22.6''$   
 $L = 216.09'$   
 $T = 108.05'$   
 $R = 10,000.00'$   
SE = NC.

**ROBERT LEE DUNNIGAN**  
NB 32 PG 509

5" MONOLITHIC CONC. ISLAND  
4" CONC. SIDEWALK

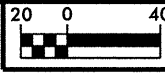
MATCHLINE -L- STA. 48+00 SEE SHEET 6

MATCHLINE -L- STA. 59+00 SEE SHEET 8

REVISIONS

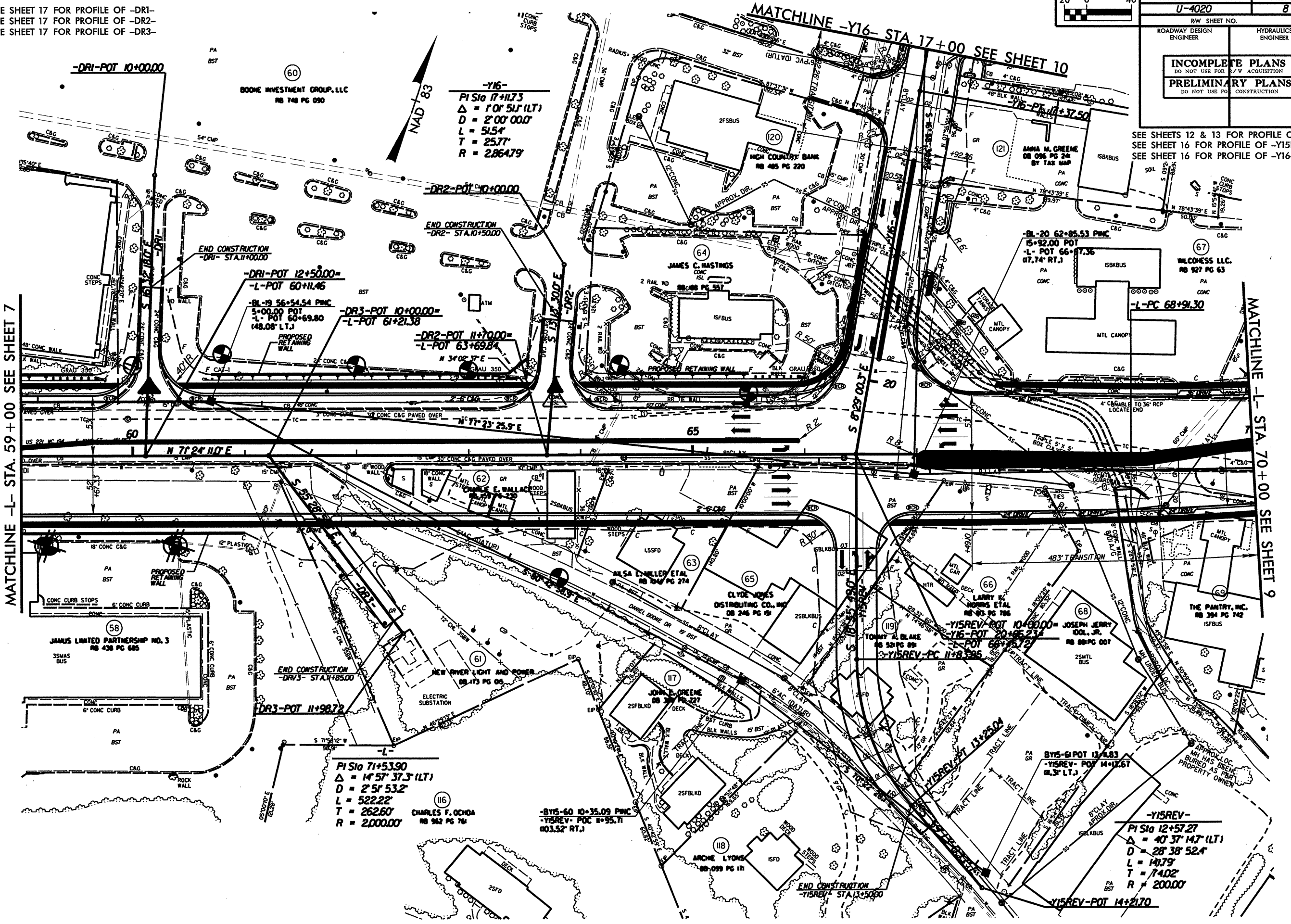
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SEE SHEET 17 FOR PROFILE OF -DR1-  
SEE SHEET 17 FOR PROFILE OF -DR2-  
SEE SHEET 17 FOR PROFILE OF -DR3-



PROJECT REFERENCE NO. <b>U-4020</b>		SHEET NO. <b>8</b>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			

SEE SHEETS 12 & 13 FOR PROFILE OF -L-  
SEE SHEET 16 FOR PROFILE OF -Y15REV-  
SEE SHEET 16 FOR PROFILE OF -Y16-



**PI Sta 71+53.90**  
 $\Delta = 14^{\circ} 57' 37.3" (LT)$   
 $D = 2^{\circ} 5' 53.2"$   
 $L = 522.22'$   
 $T = 262.60'$   
 $R = 2000.00'$

**-BY5-60 10+35.09 PNC**  
 -Y15REV-PC 10+35.09  
 003.52' RT.J

**-Y15REV-**  
 $PI Sta 12+57.27$   
 $\Delta = 40^{\circ} 37' 14.7" (LT)$   
 $D = 28^{\circ} 38' 52.4"$   
 $L = 141.79'$   
 $T = 74.02'$   
 $R = 2000.00'$

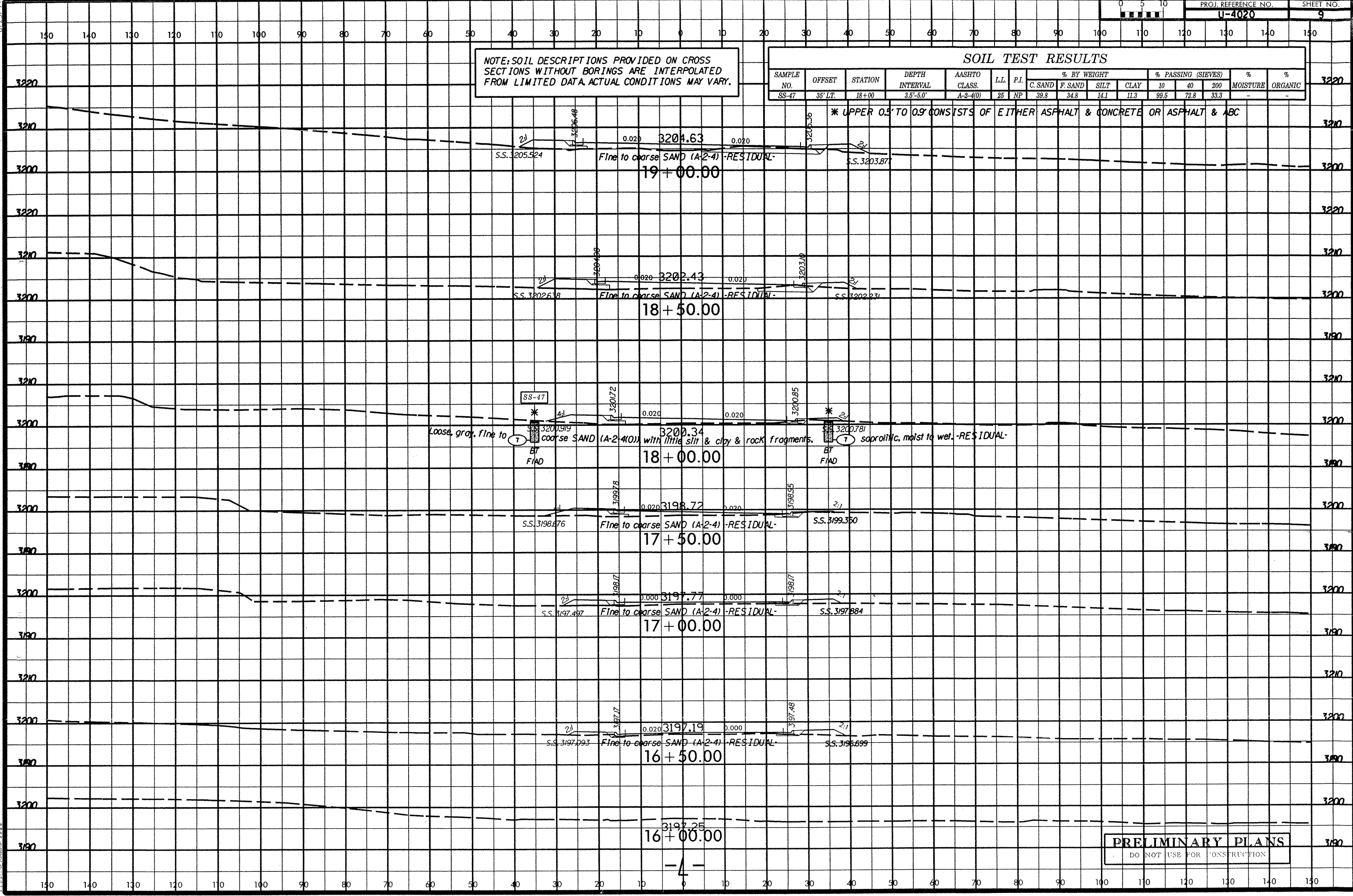
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SYSTIME  
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8/23/99

NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-47	35' LT.	18+00	3.5'-5.0'	A-2-4(0)	25	NP	39.8	34.8	14.1	11.3	99.5	72.8	33.3	-	-

\* UPPER 0.5' TO 0.9' CONSISTS OF EITHER ASPHALT & CONCRETE OR ASPHALT & ABC



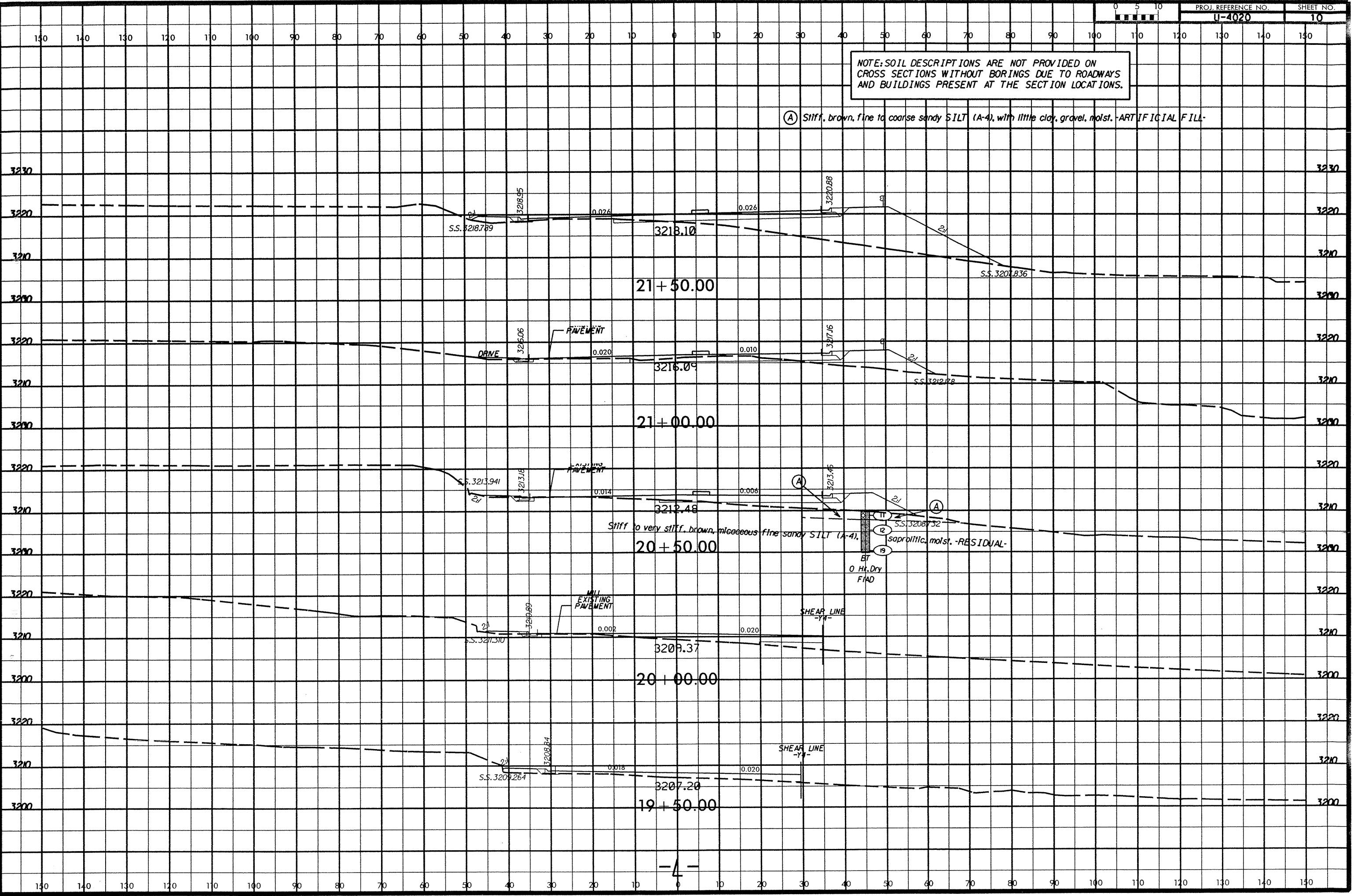
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



8/23/99



NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO ROADWAYS AND BUILDINGS PRESENT AT THE SECTION LOCATIONS.



(A) Stiff, brown, fine to coarse sandy SILT (A-4), with little clay, gravel, moist. -ARTIFICIAL FILL-

21+50.00

21+00.00

20+50.00

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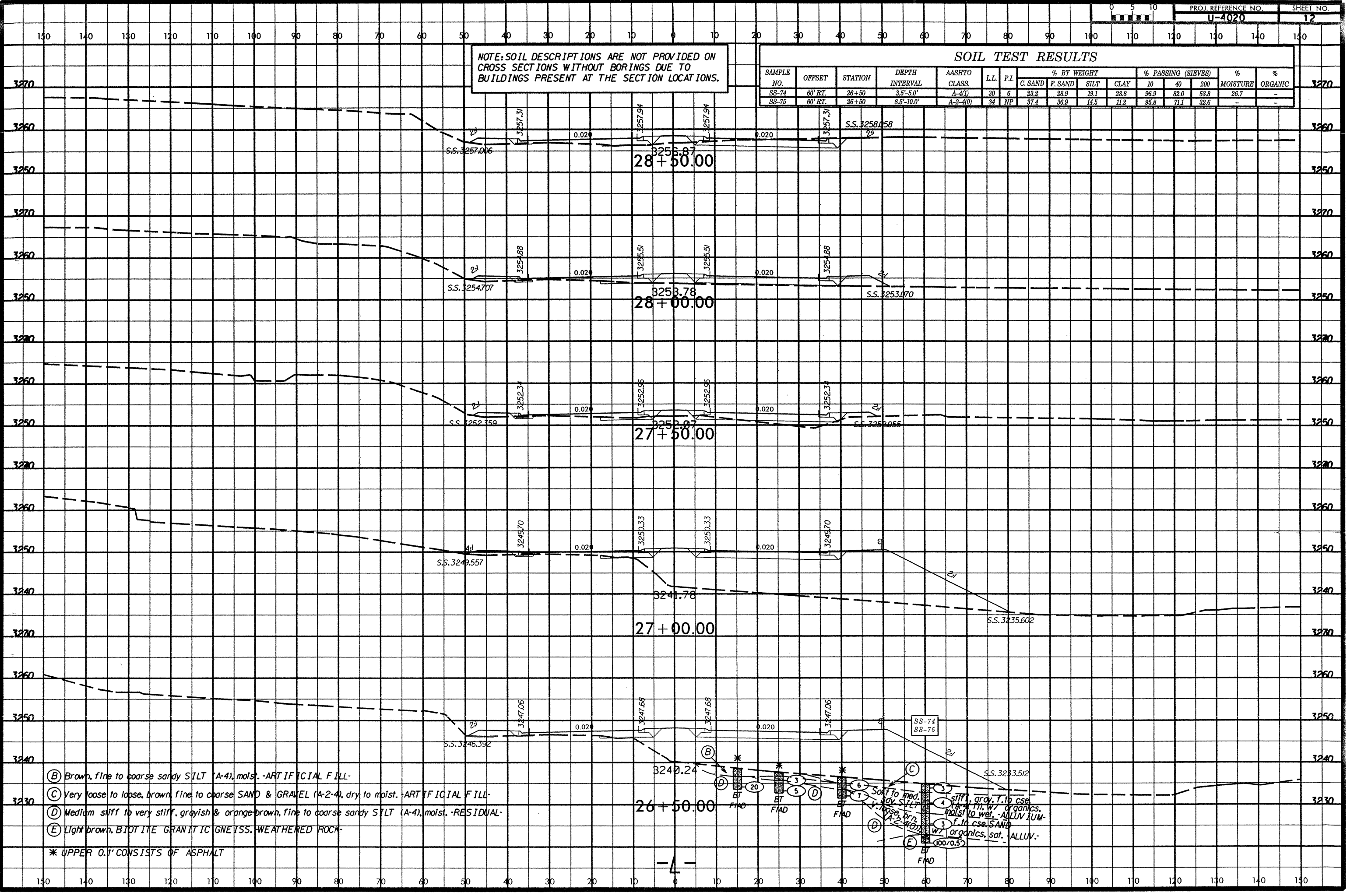
19+50.00



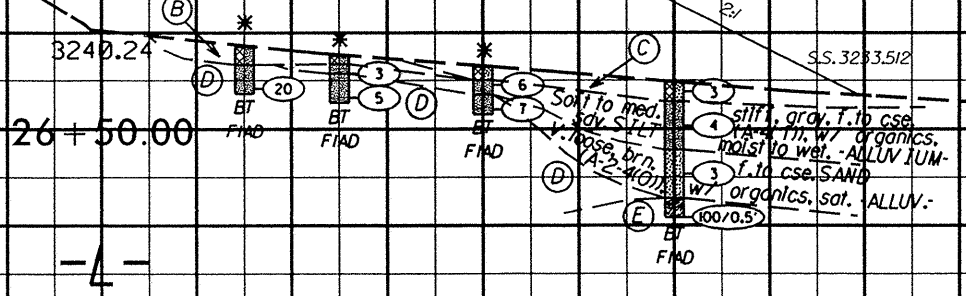


NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO BUILDINGS PRESENT AT THE SECTION LOCATIONS.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-74	60' RT.	26+50	3.5'-5.0'	A-4(1)	30	6	23.2	28.9	19.1	28.8	96.9	82.0	53.8	26.7	-
SS-75	60' RT.	26+50	8.5'-10.0'	A-2-4(0)	34	NP	37.4	36.9	14.5	11.2	95.8	71.1	32.6	-	



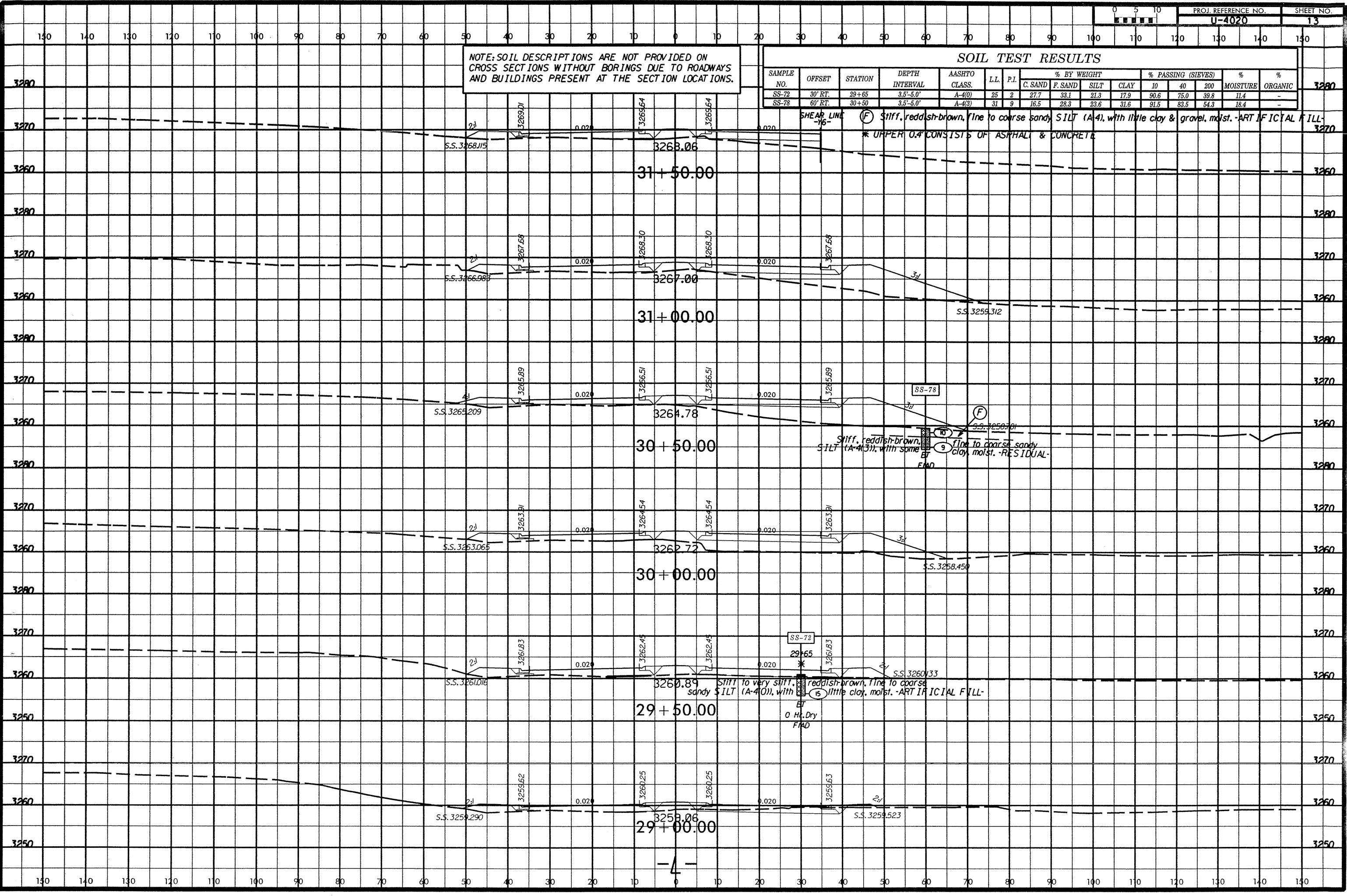
- (B) Brown, fine to coarse sandy SILT (A-4), moist. -ARTIFICIAL FILL-
  - (C) Very loose to loose, brown fine to coarse SAND & GRAVEL (A-2-4), dry to moist. -ARTIFICIAL FILL-
  - (D) Medium stiff to very stiff, greyish & orange-brown, fine to coarse sandy SILT (A-4), moist. -RESIDUAL-
  - (E) Light brown, BIOTITE GRANITIC GNEISS, WEATHERED ROCK-
- \* UPPER 0.1' CONSISTS OF ASPHALT



PROJECT: U-4020  
 SHEET: 12  
 DATE: 11/15/05  
 DRAWN BY: J. J. [unreadable]  
 CHECKED BY: [unreadable]

NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO ROADWAYS AND BUILDINGS PRESENT AT THE SECTION LOCATIONS.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-72	30' RT.	29+65	3.5'-5.0'	A-4(0)	25	2	27.7	33.1	21.3	17.9	90.6	75.0	39.8	11.4	-
SS-78	60' RT.	30+50	3.5'-5.0'	A-4(3)	31	9	16.5	28.3	23.6	31.6	91.5	83.5	54.3	18.4	-



SHEAR LINE -16- (F) Stiff, reddish-brown, fine to coarse sandy SILT (A-4), with little clay & gravel, moist. - ARTIFICIAL FILL - UPPER 0.4' CONSISTS OF ASPHALT & CONCRETE

Stiff, reddish-brown, fine to coarse sandy SILT (A-4(3)), with some clay, moist. - RESIDUAL

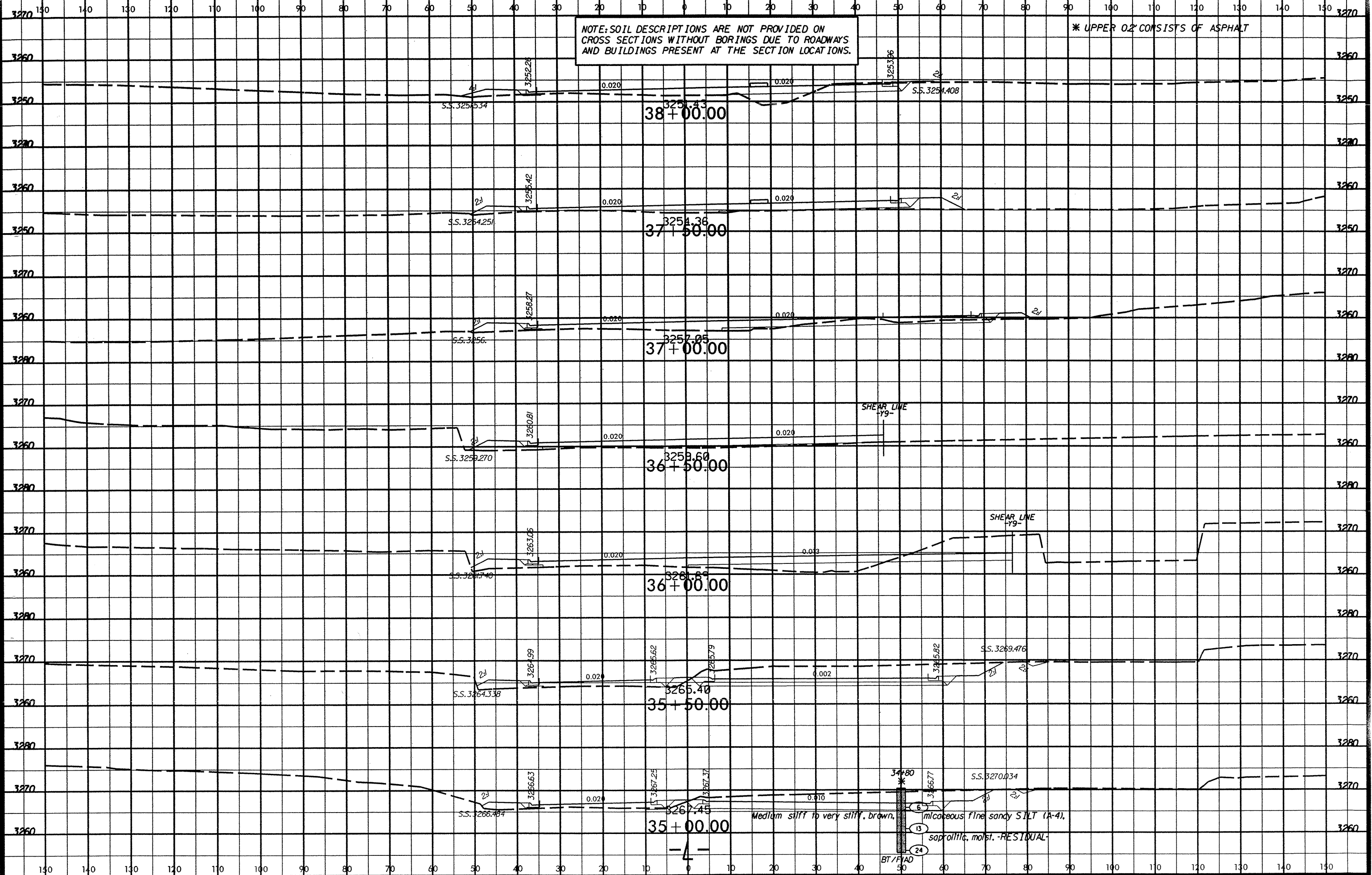
Stiff to very stiff, reddish-brown, fine to coarse sandy SILT (A-4(0)), with little clay, moist. - ARTIFICIAL FILL

8/23/96



NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO ROADWAYS AND BUILDINGS PRESENT AT THE SECTION LOCATIONS.

\* UPPER 0.2' CONSISTS OF ASPHALT



SYSTEMS TIME 8/23/96

38+00.00

37+50.00

37+00.00

36+50.00

36+00.00

35+50.00

35+00.00

SHEAR LINE -Y9-

SHEAR LINE -Y9-

Medium stiff to very stiff, brown, micaceous fine sandy SILT (A-4), saprolitic, moist. -RESIDUAL-

BT/FYAD

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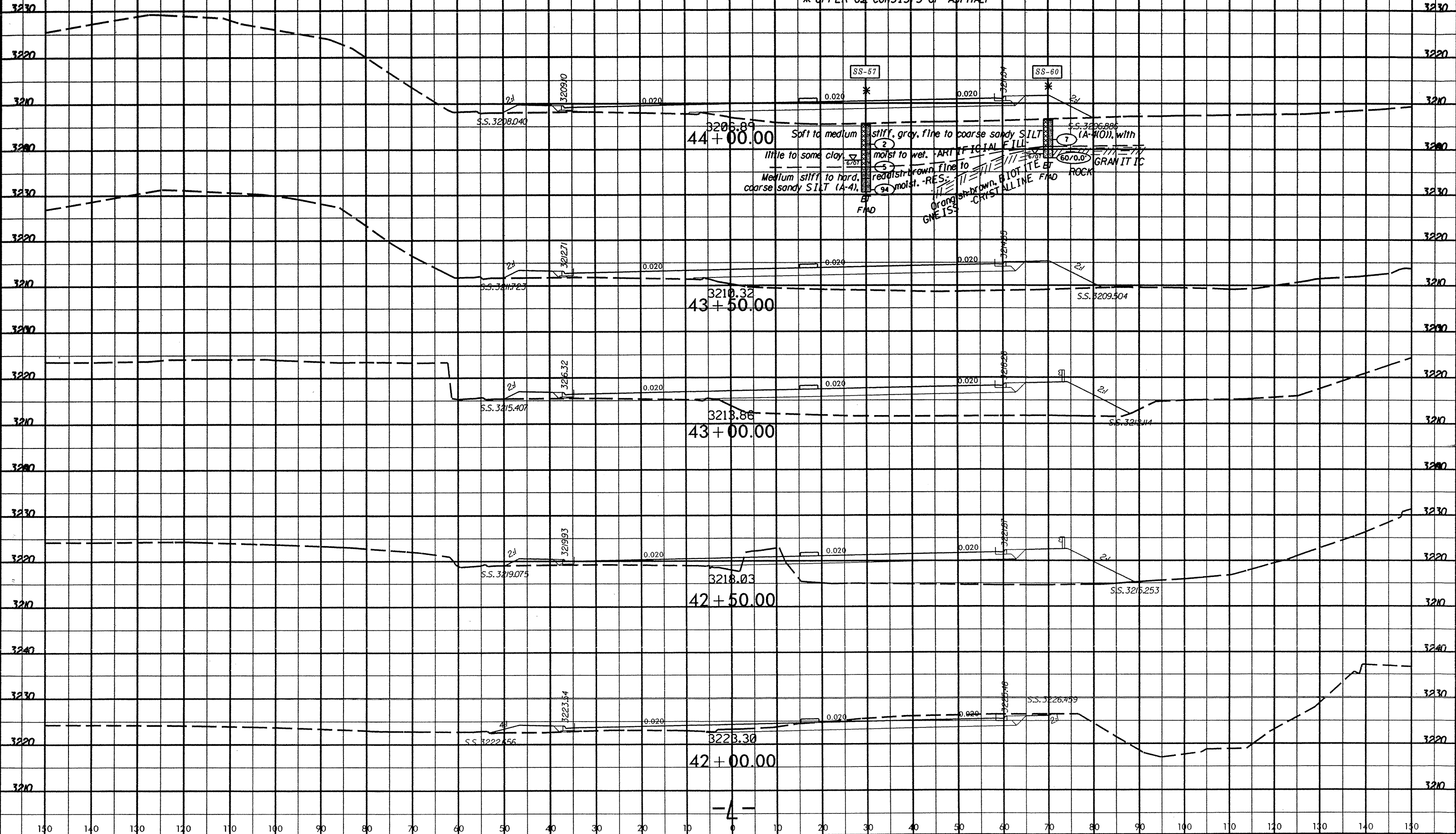
8/23/94

NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO BUILDINGS PRESENT AT THE SECTION LOCATIONS.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-57	30' RT.	44+00	3.5'-5.0'	A-4(0)	28	2	24.8	31.3	15.0	28.9	94.4	77.4	49.0	29.1	-
SS-60	70' RT.	44+00	3.5'-5.0'	A-4(0)	25	NP	22.9	39.7	22.5	14.9	99.1	84.9	48.5	24.8	-

\* UPPER 0.2' CONSISTS OF ASPHALT

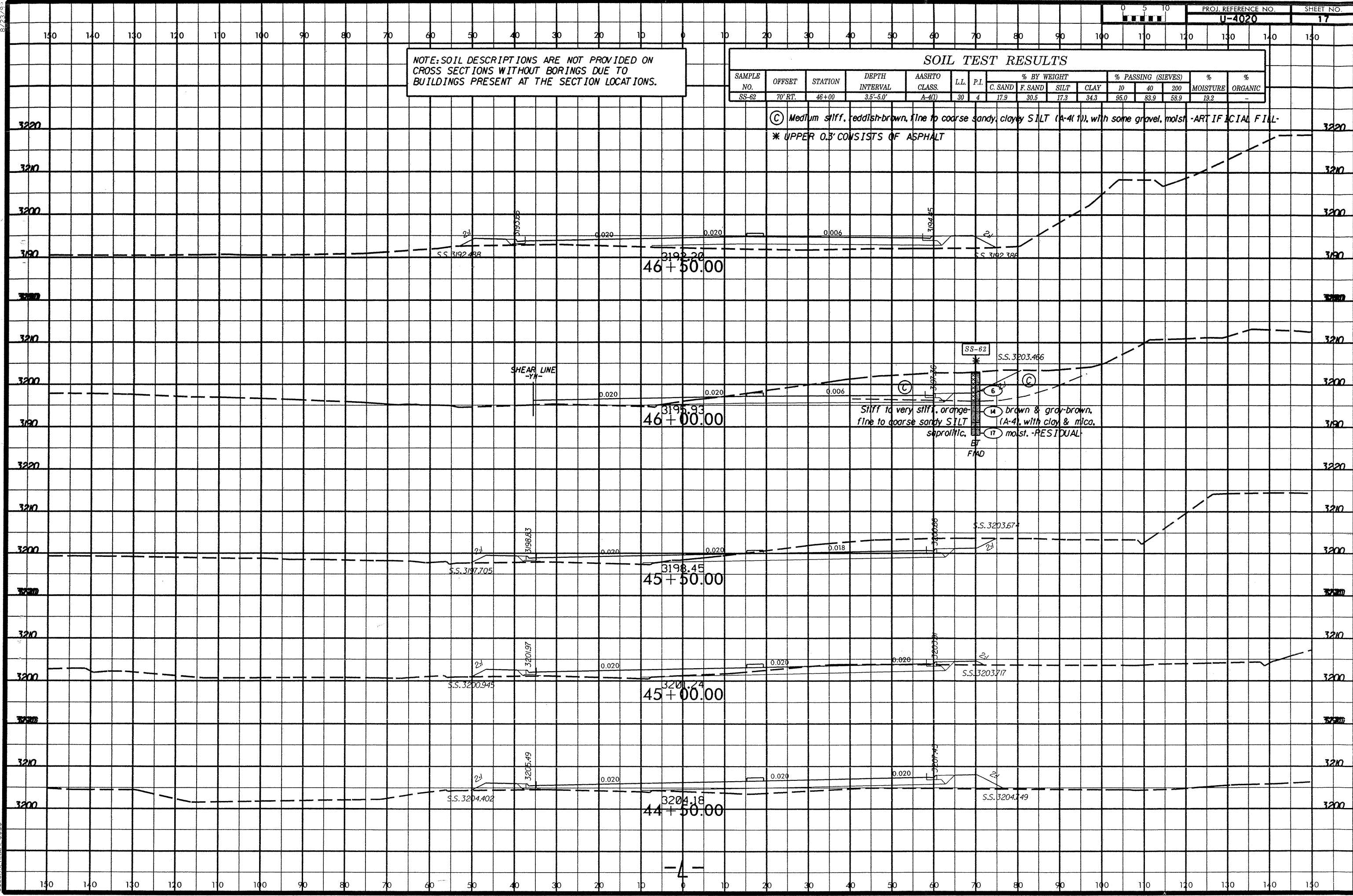




NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO BUILDINGS PRESENT AT THE SECTION LOCATIONS.

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-62	70' RT.	46+00	3.5'-5.0'	A-4(1)	30	4	17.9	30.5	17.3	34.3	95.0	83.9	58.9	19.2	-

Ⓒ Medium stiff, reddish-brown, fine to coarse sandy, clayey SILT (A-4(1)), with some gravel, moist. -ARTIFICIAL FILL-  
 \* UPPER 0.3' CONSISTS OF ASPHALT



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 999  
 1000



NOTE: SOIL AND ROCK DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.

⑥ Fine to coarse sandy SILT (A-4). -ARTIFICIAL FILL-

SHEAR LINE -13REV-

⑥  
Fine to coarse SAND (A-2-4). -RESIDUAL-  
Fine to coarse SAND (A-2-4). -RESIDUAL-

318.79  
53+00.00

SHEAR LINE -13REV-

SHEAR LINE -14REV-

318.22  
52+50.00

3180.27  
52+00.00

3180.14  
51+50.00

3180.74  
51+00.00

3181.43  
50+50.00

3180.74  
Fine to coarse SAND (A-2-4). -RESIDUAL-  
BIOTITE GRANITIC GNEISS  
CRYSTALLINE ROCK

3181.39  
Fine to coarse SAND (A-2-4). -RESIDUAL-  
BIOTITE GRANITIC GNEISS  
CRYSTALLINE ROCK

8/23/54  
SYSTEMS  
CONSTRUCTION

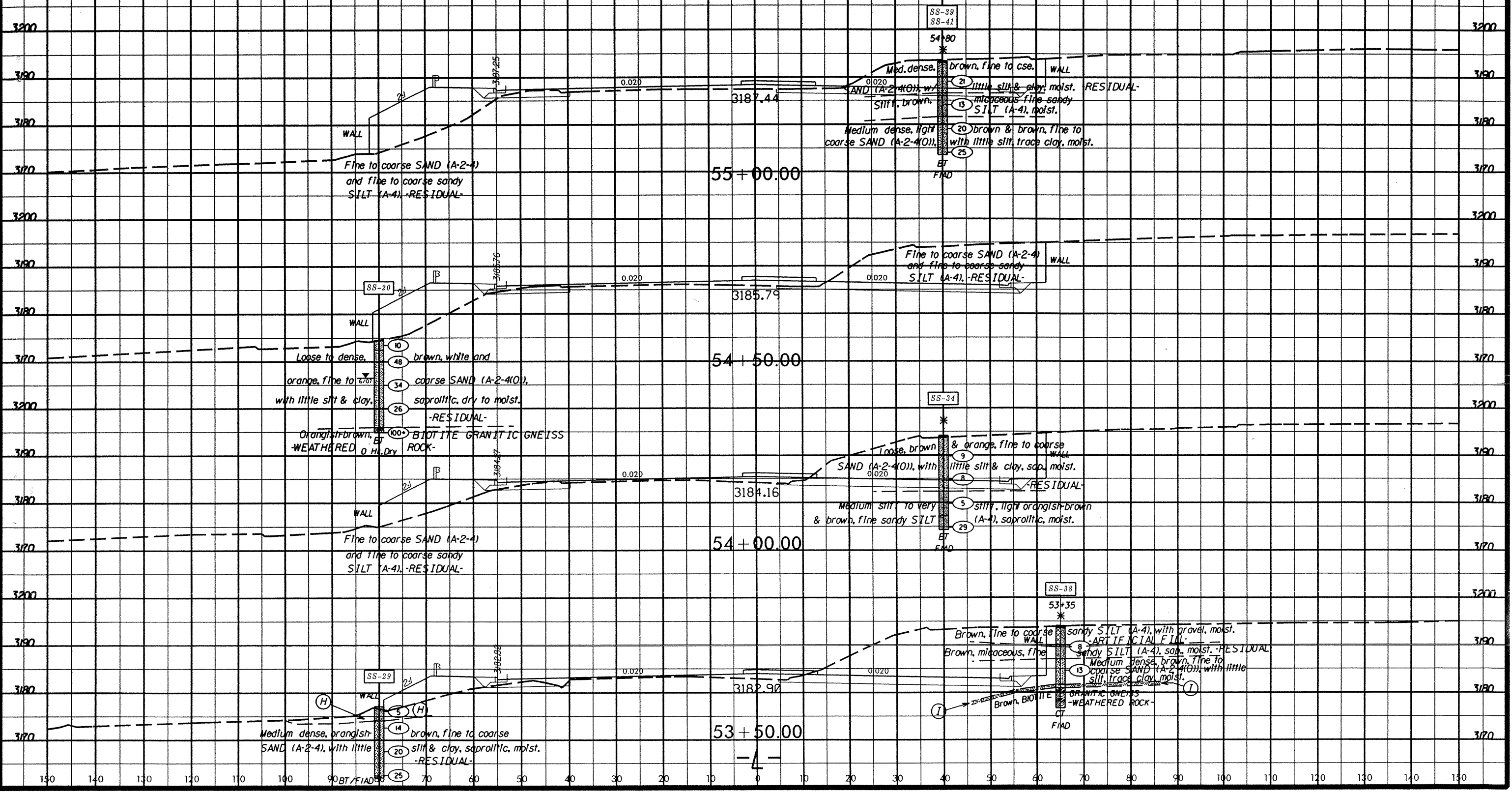


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-38	65' RT.	53+35	8.5'-10.0'	A-2-4(0)	30	NP	22.9	52.4	17.3	7.4	96.9	85.5	33.5	-	-
SS-29	80' LT.	53+50	0.0'-1.5'	A-4(0)	27	NP	27.3	37.8	20.3	14.6	92.2	74.5	41.3	12.2	-
SS-34	65' RT.	54+00	8.5'-10.0'	A-2-4(0)	25	NP	25.5	46.2	17.2	11.1	96.5	84.8	35.0	-	-
SS-20	80' LT.	54+50	8.5'-10.0'	A-2-4(0)	23	NP	31.3	43.1	13.1	12.5	86.6	69.5	29.5	-	-
SS-39	40' RT.	54+80	3.5'-5.0'	A-2-4(0)	24	NP	34.5	41.0	13.8	10.7	98.5	76.7	31.6	-	-
SS-41	40' RT.	54+80	13.5'-15.0'	A-2-4(0)	21	NP	39.2	33.2	14.8	7.8	94.2	68.5	28.4	-	-

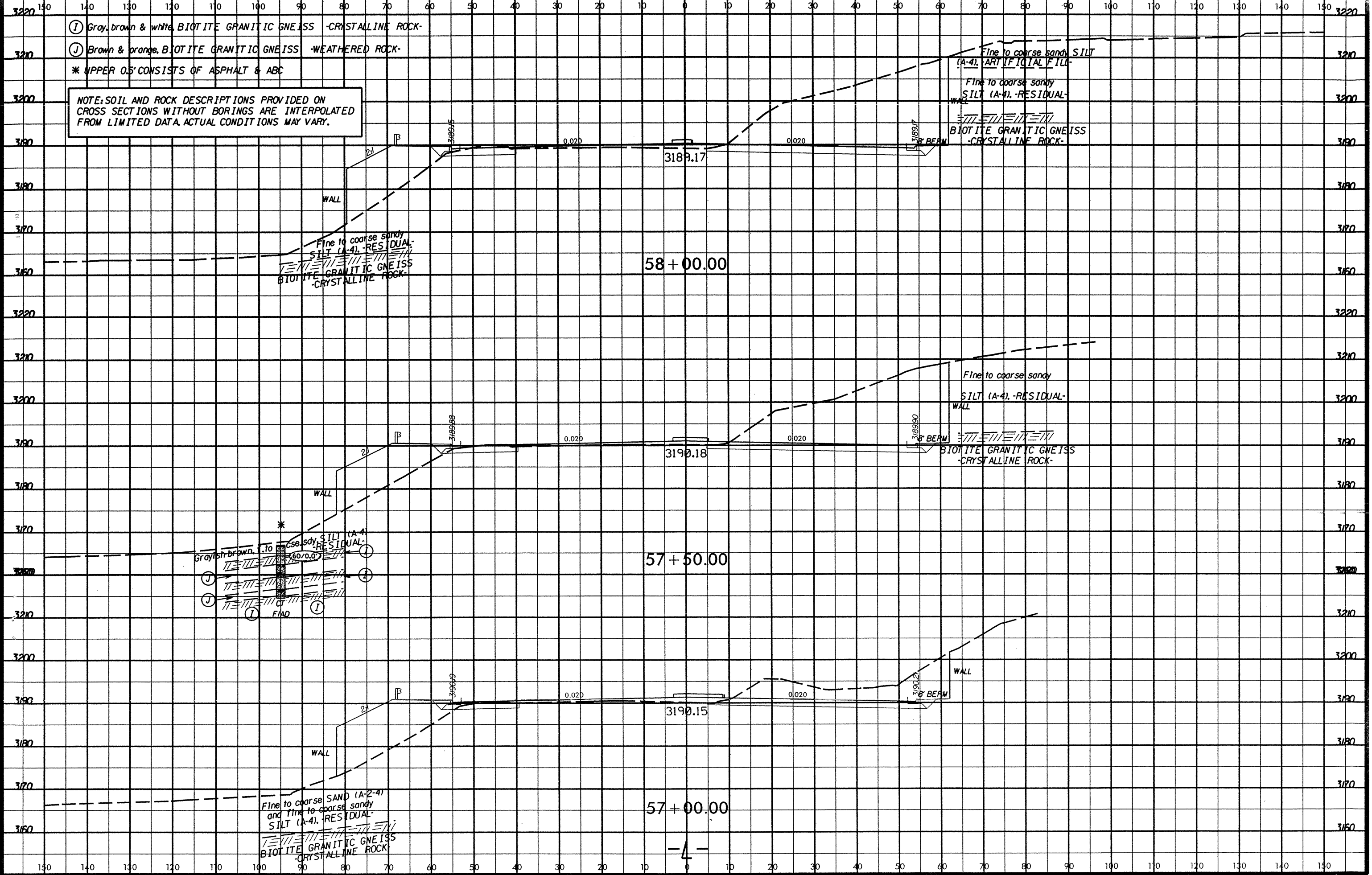
- (H) Medium stiff, orangish-brown, fine to coarse sandy SILT (A-4(0)), with little clay, saprolitic, dry to moist. RESIDUAL-
- (I) Brown, white & gray, BIOTITE GRANITIC GNEISS -CRYSTALLINE ROCK-
- \* UPPER 0.5' CONSISTS OF ASPHALT & AEC

NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.







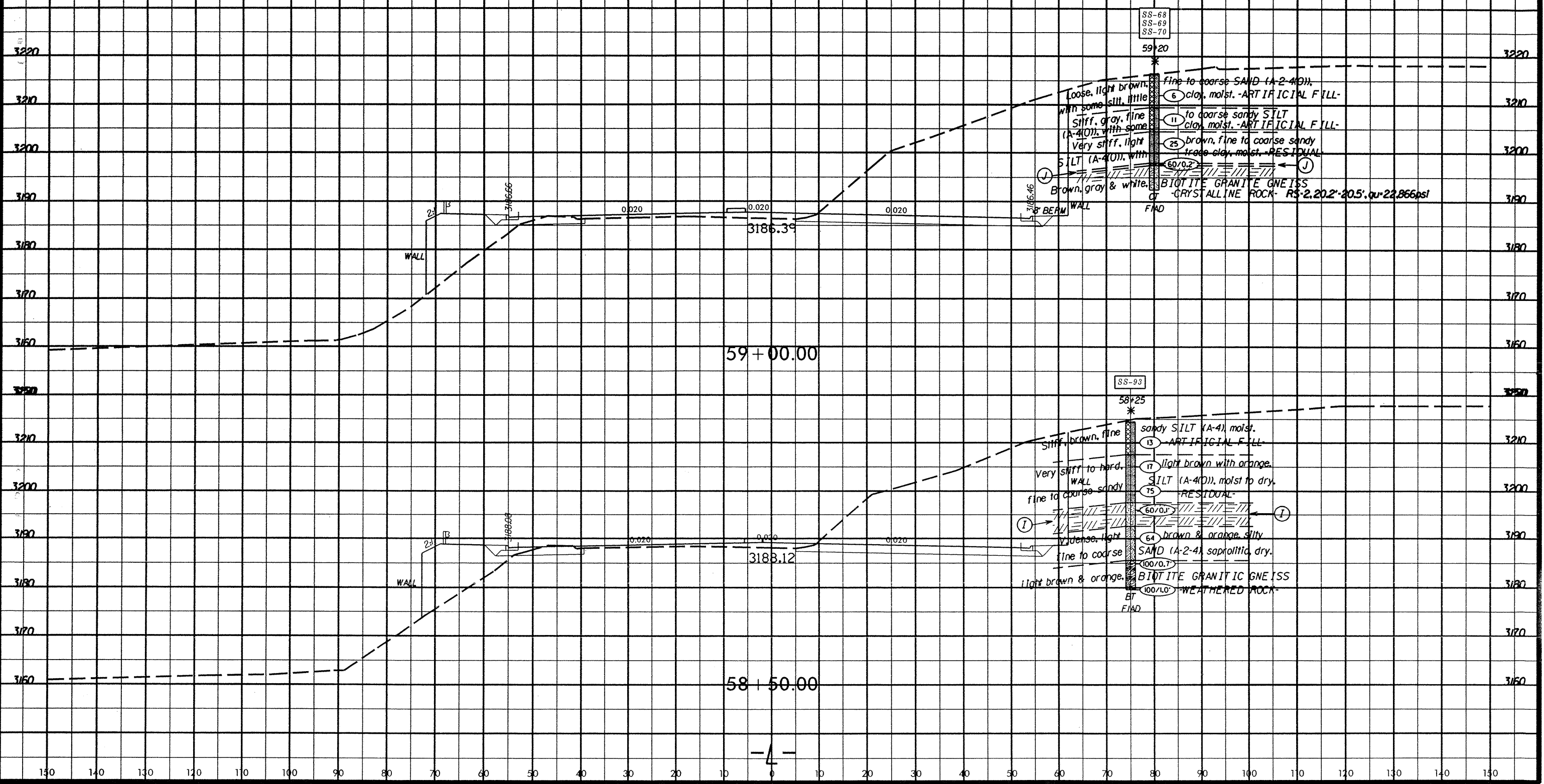


NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO BUILDINGS PRESENT AT THE SECTION LOCATIONS.

### SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40			200
SS-93	75' RT.	58+25	8.5'-10.0'	A-4(0)	26	NP	22.3	41.2	21.4	15.1	99.2	89.0	41.8	12.8	-
SS-68	80' RT.	59+20	3.5'-5.0'	A-2-4(0)	26	NP	30.1	34.3	24.6	11.0	82.8	66.8	32.4	-	-
SS-69	80' RT.	59+20	8.5'-10.0'	A-4(0)	26	5	16.9	36.6	22.2	24.3	99.6	92.1	51.7	16.4	-
SS-70	80' RT.	59+20	13.5'-15.0'	A-4(0)	28	NP	16.4	45.7	29.5	8.4	99.9	93.3	45.3	9.3	-

- (I) Light brown, BIOTITE GRANITIC GNEISS -CRYSTALLINE ROCK-
- (J) Light brown, BIOTITE GRANITIC GNEISS -WEATHERED ROCK-
- \* UPPER 0.2' CONSISTS OF ASPHALT

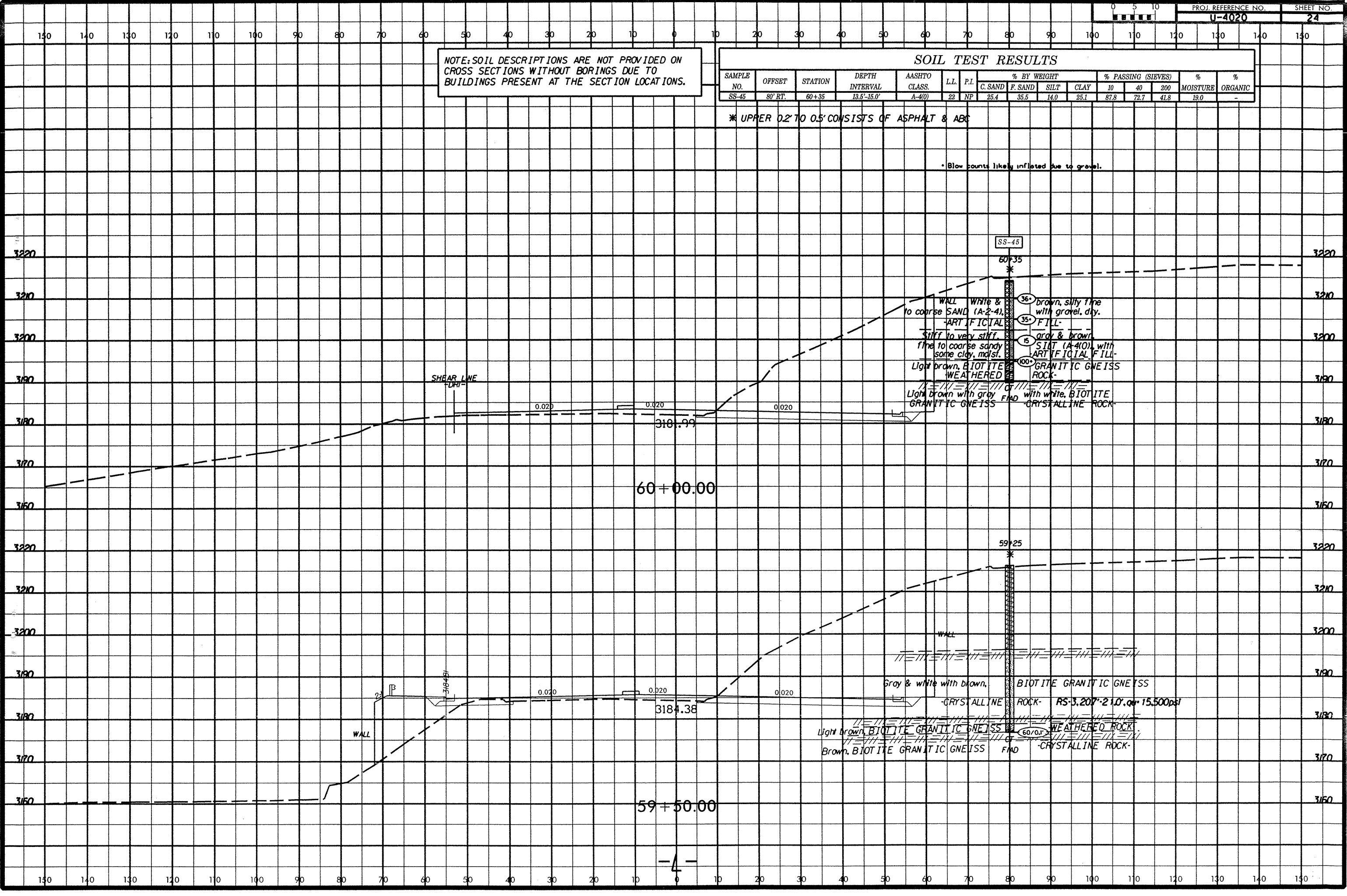


NOTE: SOIL DESCRIPTIONS ARE NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS DUE TO BUILDINGS PRESENT AT THE SECTION LOCATIONS.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-45	80' RT.	60+35	13.5'-15.0'	A-4(0)	22	NP	25.4	35.5	14.0	25.1	87.8	72.7	41.8	19.0	-

\* UPPER 0.2' TO 0.5' CONSISTS OF ASPHALT & ABC

\* Blow counts likely inflated due to gravel.



60+00.00

59+50.00

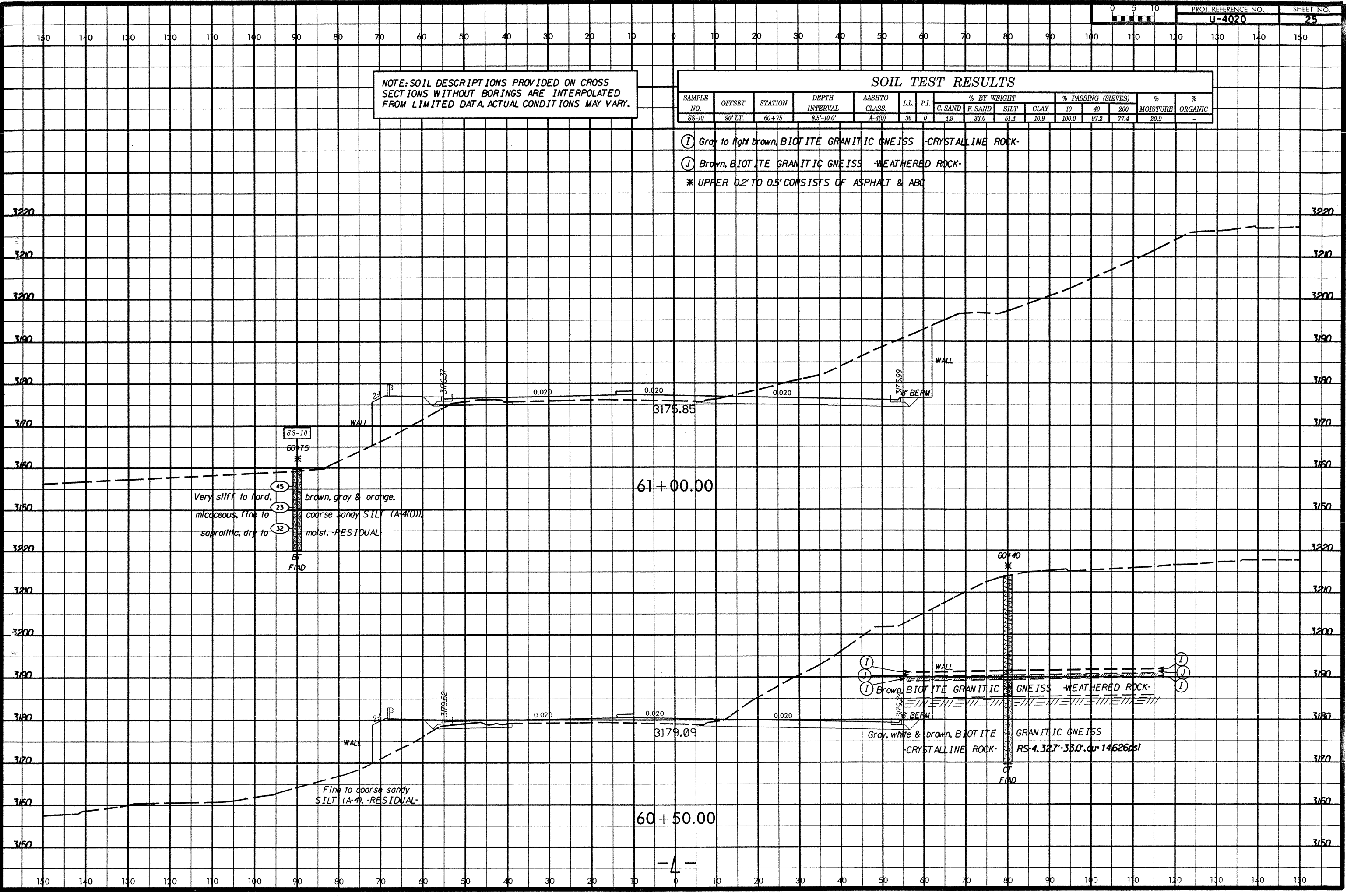


NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-10	90' LT.	60+75	8.5'-10.0'	A-4(0)	36	0	4.9	33.0	51.2	10.9	100.0	97.2	77.4	20.9	-

- (I) Gray to light brown, BIOTITE GRANITIC GNEISS -CRYSTALLINE ROCK-
- (J) Brown, BIOTITE GRANITIC GNEISS -WEATHERED ROCK-
- \* UPPER 0.2' TO 0.5' CONSISTS OF ASPHALT & ABC



8/23/98

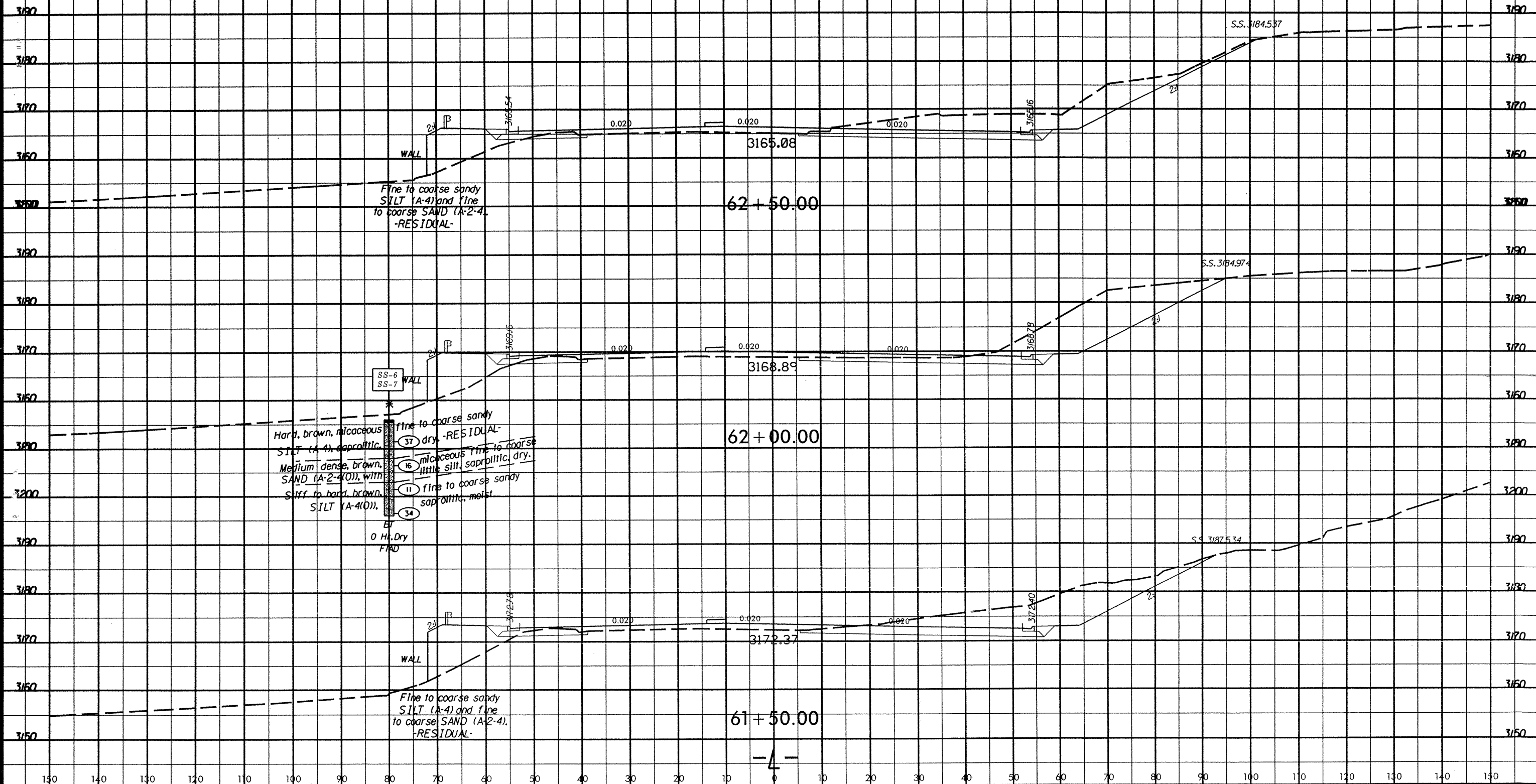


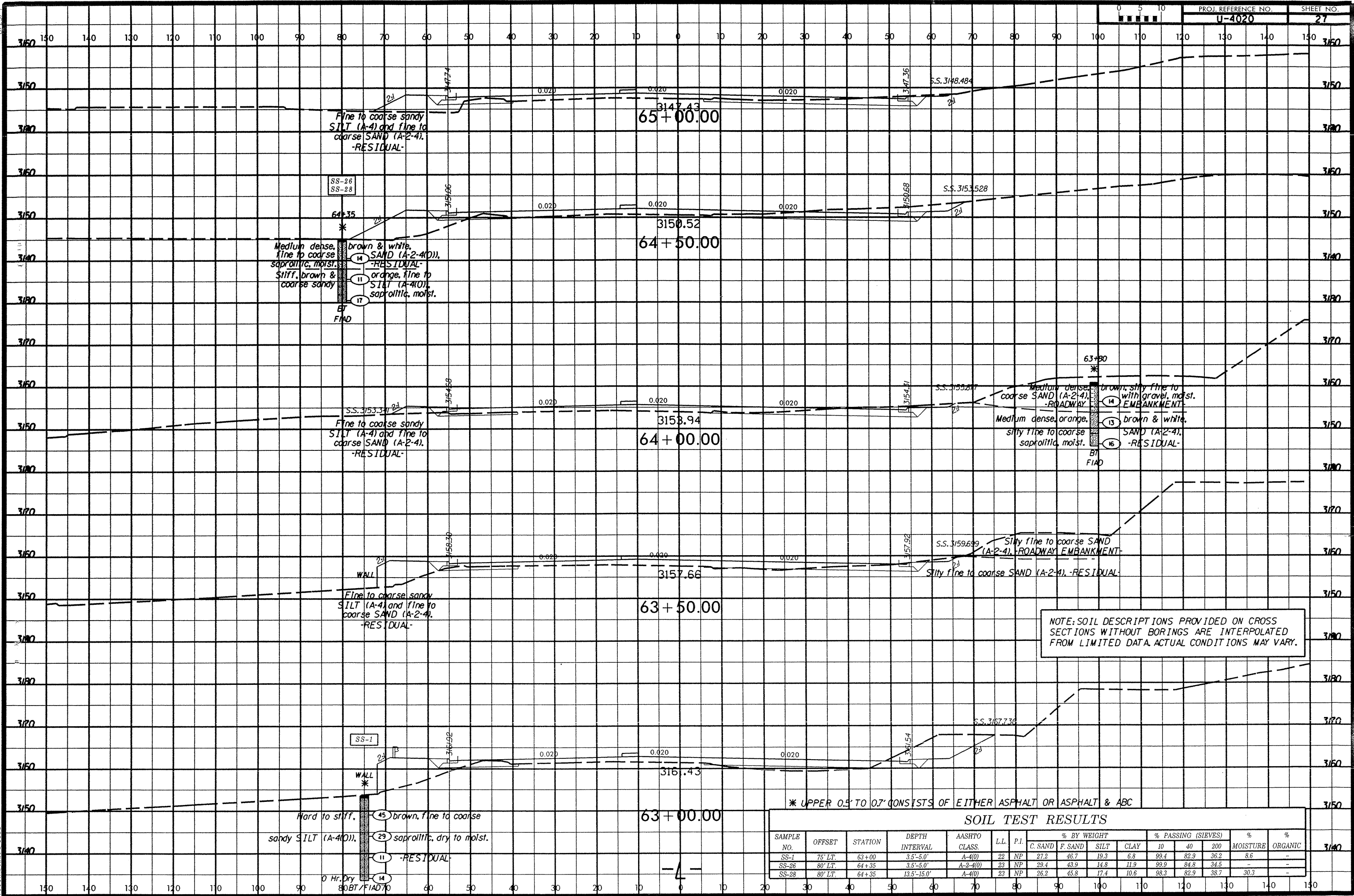
8/23/95  
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 DATE  
 TIME  
 USER  
 NAME

NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-6	80' LT.	62+00	8.5'-10.0'	A-2-4(0)	24	NP	33.0	41.3	18.5	7.2	90.2	71.3	30.5	-	-
SS-7	80' LT.	62+00	13.5'-15.0'	A-4(0)	40	NP	9.1	46.0	33.4	11.5	98.2	93.8	58.4	33.8	-

\* UPPER 0.5' CONSISTS OF ASPHALT & ABC





NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.

\* UPPER 0.5' TO 0.7' CONSISTS OF EITHER ASPHALT OR ASPHALT & ABC

SOIL TEST RESULTS

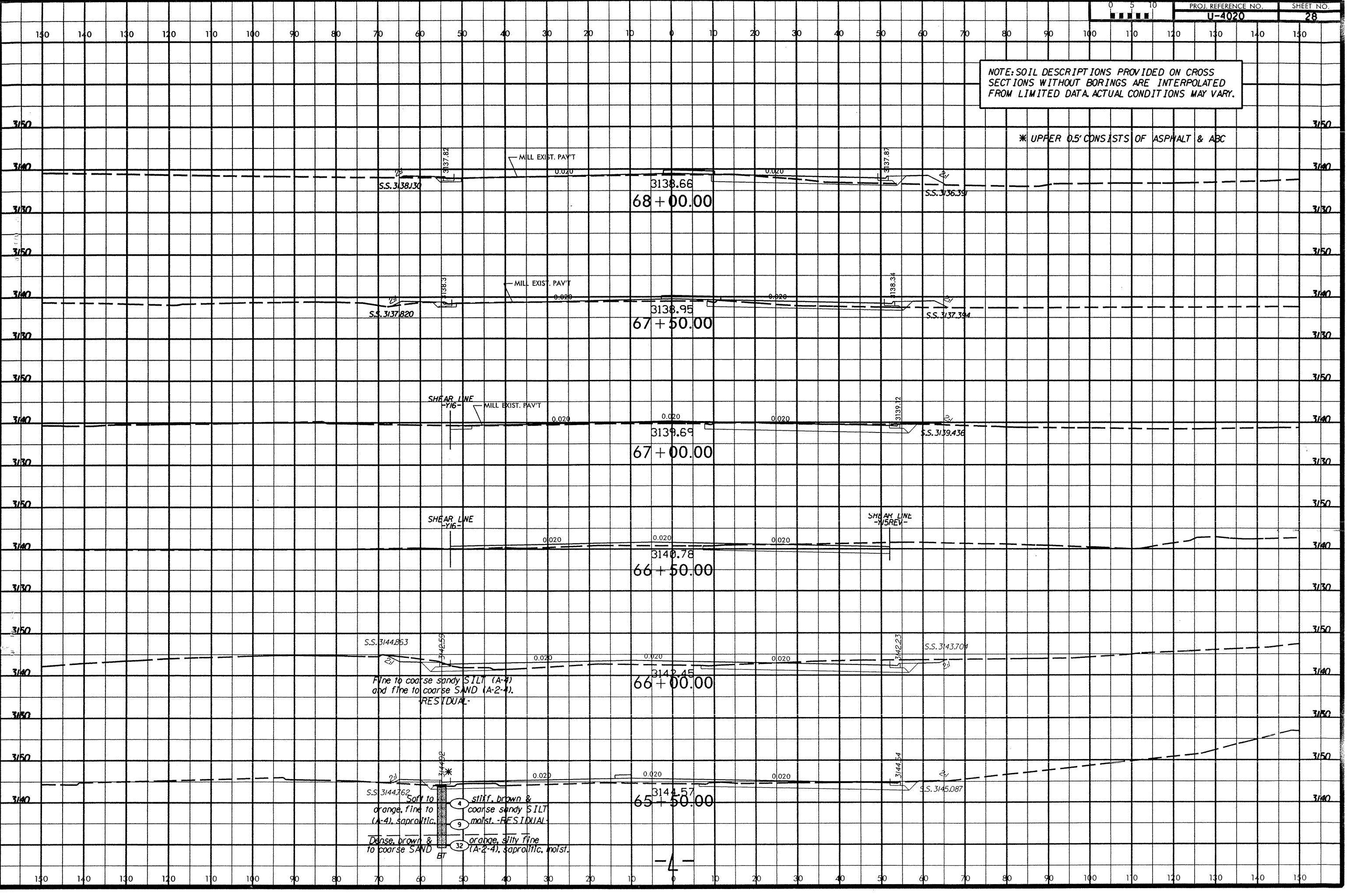
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	75' LT.	63+00	3.5'-5.0'	A-4(0)	22	NP	27.2	46.7	19.3	6.8	99.4	82.9	36.2	8.6	-
SS-26	80' LT.	64+35	3.5'-5.0'	A-2-4(0)	23	NP	29.4	43.9	14.8	11.9	99.9	84.8	34.5	-	-
SS-28	80' LT.	64+35	13.5'-15.0'	A-4(0)	23	NP	26.2	45.8	17.4	10.6	98.3	82.9	38.7	30.3	-

8/23/94

B.23/33



NOTE: SOIL DESCRIPTIONS PROVIDED ON CROSS SECTIONS WITHOUT BORINGS ARE INTERPOLATED FROM LIMITED DATA. ACTUAL CONDITIONS MAY VARY.



\* UPPER 0.5' CONSISTS OF ASPHALT & ABC

Fine to coarse sandy SILT (A-4) and fine to coarse SAND (A-2-4). RESIDUAL

Soft to stiff, brown & orange, fine to coarse sandy SILT (A-4), saprolitic, moist. RESIDUAL  
Dense, brown & orange, silty fine to coarse SAND (A-2-4), saprolitic, moist.

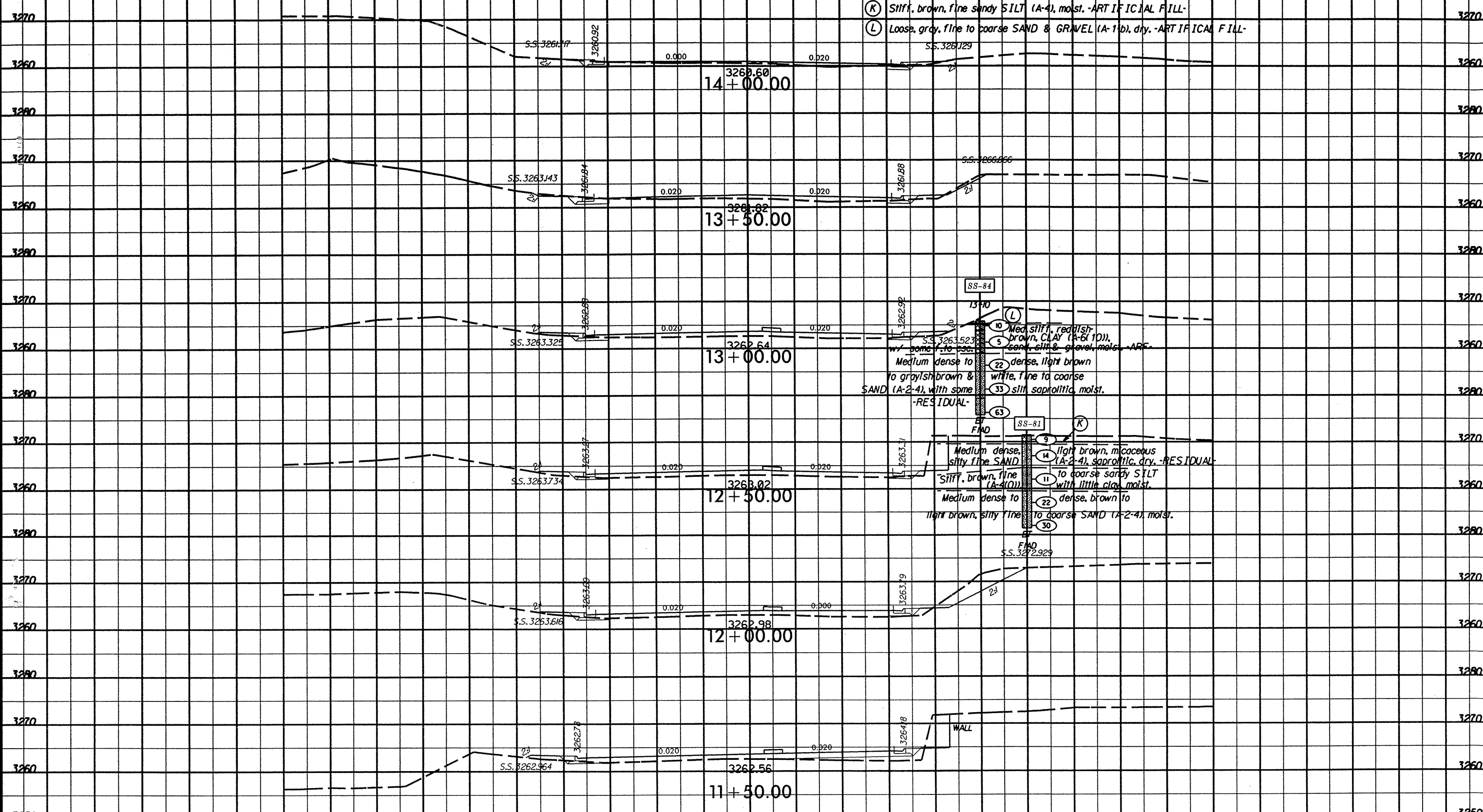


8/23/95



NOTE: SOIL DESCRIPTIONS NOT PROVIDED ON CROSS SECTIONS WITHOUT BORINGS SINCE THE SITE HAS BEEN REGRADED SINCE THE BORINGS WERE ADVANCED AND THE UPPER SOILS HAVE BEEN REMOVED.

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-81	60' RT.	12+50	8.5'-10.0'	A-4(0)	33	NP	11.4	48.7	29.0	10.9	99.4	93.1	66.2	16.9	-
SS-84	50' RT.	13+10	0.5'-1.5'	A-6(10)	45	10	8.9	20.2	24.0	46.9	99.9	94.4	79.7	26.6	-



NOTE: THE SITE HAS BEEN RECENTLY GRADED AND THE EXISTING WALLS WERE REMOVED AFTER THE CROSS SECTIONS WERE DRAWN. SO THE PROPOSED WALLS SHOWN ON THESE PLANS HAVE BEEN ELIMINATED.

-Y9-

VERTICAL SCALE: 1" = 10'

