

REFERENCE: SF-220075

PROJECT: BP12.R002

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3	ROADWAY TITLE SHEET
4	SITE PLAN
5-6	PROFILE
7-10	CROSS SECTIONS
11-18	BORE LOGS & CORE REPORTS
19	SOIL TEST RESULTS
20-22	CONSOLIDATION TEST RESULTS
23+24	ROCK TEST RESULTS
25-26	CORE PHOTOGRAPHS
27	SITE PHOTOGRAPH

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY CLEVELAND
PROJECT DESCRIPTION BRIDGE NO. 75 ON POLKVILLE
ROAD (NC 226) OVER HINTON CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R002	1	27

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.

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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- 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.
 - 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

J. MILLWOOD

T. MILLER

B. KEBEA

B. GORDON

INVESTIGATED BY S&ME, Inc.

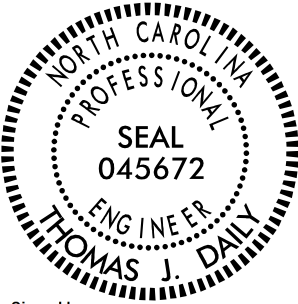
DRAWN BY C. CHANDLER

CHECKED BY L. CAMPOS

SUBMITTED BY J. DAILY

DATE APRIL 2024

8848 RED OAK BLVD, SUITE A
CHARLOTTE, NC 28217
(704) 523-4726



DocuSigned by:
Thomas J. Daily
F29CA6BB83F449F...
4/5/2024

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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																													
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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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.										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) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)										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 DISLOOGED 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 (ROD) - 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 (SROD) - 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.																													
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																																							
GENERAL CLASS. SILT-CLAY MATERIALS (< 35% PASSING #200) ORGANIC MATERIALS										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SL.) 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 (SL.) 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> 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. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i> 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. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i> 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.										THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. 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. COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.																			
SILT-CLAY MATERIALS (> 35% PASSING #200)										COMPRESSIBILITY										WEATHERING																																							
GROUP CLASS. A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-9, A-10, A-11, A-12, A-13, A-14, A-15, A-16, A-17, A-18, A-19, A-20, A-21, A-22, A-23, A-24, A-25, A-26, A-27, A-28, A-29, A-30, A-31, A-32, A-33, A-34, A-35, A-36, A-37, A-38, A-39, A-40, A-41, A-42, A-43, A-44, A-45, A-46, A-47, A-48, A-49, A-50, A-51, A-52, A-53, A-54, A-55, A-56, A-57, A-58, A-59, A-60, A-61, A-62, A-63, A-64, A-65, A-66, A-67, A-68, A-69, A-70, A-71, A-72, A-73, A-74, A-75, A-76, A-77, A-78, A-79, A-80, A-81, A-82, A-83, A-84, A-85, A-86, A-87, A-88, A-89, A-90, A-91, A-92, A-93, A-94, A-95, A-96, A-97, A-98, A-99, A-100, A-101, A-102, A-103, A-104, A-105, A-106, A-107, A-108, A-109, A-110, A-111, A-112, A-113, A-114, A-115, A-116, A-117, A-118, A-119, A-120, A-121, A-122, A-123, A-124, A-125, A-126, A-127, A-128, A-129, A-130, A-131, A-132, A-133, A-134, A-135, A-136, A-137, A-138, A-139, A-140, A-141, A-142, A-143, A-144, A-145, A-146, A-147, A-148, A-149, A-150, A-151, A-152, A-153, A-154, A-155, A-156, A-157, A-158, A-159, A-160, A-161, A-162, A-163, A-164, A-165, A-166, A-167, A-168, A-169, A-170, A-171, A-172, A-173, A-174, A-175, A-176, A-177, A-178, A-179, A-180, A-181, A-182, A-183, A-184, A-185, A-186, A-187, A-188, A-189, A-190, A-191, A-192, A-193, A-194, A-195, A-196, A-197, A-198, A-199, A-200, A-201, A-202, A-203, A-204, A-205, A-206, A-207, A-208, A-209, A-210, A-211, A-212, A-213, A-214, A-215, A-216, A-217, A-218, A-219, A-220, A-221, A-222, A-223, A-224, A-225, A-226, A-227, A-228, A-229, A-230, A-231, A-232, A-233, A-234, A-235, A-236, A-237, A-238, A-239, A-240, A-241, A-242, A-243, A-244, A-245, A-246, A-247, A-248, A-249, A-250, A-251, A-252, A-253, A-254, A-255, A-256, A-257, A-258, A-259, A-260, A-261, A-262, A-263, A-264, A-265, A-266, A-267, A-268, A-269, A-270, A-271, A-272, A-273, A-274, A-275, A-276, A-277, A-278, A-279, A-280, A-281, A-282, A-283, A-284, A-285, A-286, A-287, A-288, A-289, A-290, A-291, A-292, A-293, A-294, A-295, A-296, A-297, A-298, A-299, A-300, A-301, A-302, A-303, A-304, A-305, A-306, A-307, A-308, A-309, A-310, A-311, A-312, A-313, A-314, A-315, A-316, A-317, A-318, A-319, A-320, A-321, A-322, A-323, A-324, A-325, A-326, A-327, A-328, A-329, A-330, A-331, A-332, A-333, A-334, A-335, A-336, A-337, A-338, A-339, A-340, A-341, A-342, A-343, A-344, A-345, A-346, A-347, A-348, A-349, A-350, A-351, A-352, A-353, A-354, A-355, A-356, A-357, A-358, A-359, A-360, A-361, A-362, A-363, A-364, A-365, A-366, A-367, A-368, A-369, A-370, A-371, A-372, A-373, A-374, A-375, A-376, A-377, A-378, A-379, A-380, A-381, A-382, A-383, A-384, A-385, A-386, A-387, A-388, A-389, A-390, A-391, A-392, A-393, A-394, A-395, A-396, A-397, A-398, A-399, A-400, A-401, A-402, A-403, A-404, A-405, A-406, A-407, A-408, A-409, A-410, A-411, A-412, A-413, A-414, A-415, A-416, A-417, A-418, A-419, A-420, A-421, A-422, A-423, A-424, A-425, A-426, A-427, A-428, A-429, A-430, A-431, A-432, A-433, A-434, A-435, A-436, A-437, A-438, A-439, A-440, A-441, A-442, A-443, A-444, A-445, A-446, A-447, A-448, A-449, A-450, A-451, A-452, A-453, A-454, A-455, A-456, A-457, A-458, A-459, A-460, A-461, A-462, A-463, A-464, A-465, A-466, A-467, A-468, A-469, A-470, A-471, A-472, A-473, A-474, A-475, A-476, A-477, A-478, A-479, A-480, A-481, A-482, A-483, A-484, A-485, A-486, A-487, A-488, A-489, A-490, A-491, A-492, A-493, A-494, A-495, A-496, A-497, A-498, A-499, A-500, A-501, A-502, A-503, A-504, A-505, A-506, A-507, A-508, A-509, A-510, A-511, A-512, A-513, A-514, A-515, A-516, A-517, A-518, A-519, A-520, A-521, A-522, A-523, A-524, A-525, A-526, A-527, A-528, A-529, A-530, A-531, A-532, A-533, A-534, A-535, A-536, A-537, A-538, A-539, A-540, A-541, A-542, A-543, A-544, A-545, A-546, A-547, A-548, A-549, A-550, A-551, A-552, A-553, A-554, A-555, A-556, A-557, A-558, A-559, A-560, A-561, A-562, A-563, A-564, A-565, A-566, A-567, A-568, A-569, A-570, A-571, A-572, A-573, A-574, A-575, A-576, A-577, A-578, A-579, A-580, A-581, A-582, A-583, A-584, A-585, A-586, A-587, A-588, A-589, A-590, A-591, A-592, A-593, A-594, A-595, A-596, A-597, A-598, A-599, A-600, A-601, A-602, A-603, A-604, A-605, A-606, A-607, A-608, A-609, A-610, A-611, A-612, A-613, A-614, A-615, A-616, A-617, A-618, A-619, A-620, A-621, A-622, A-623, A-624, A-625, A-626, A-627, A-628, A-629, A-630, A-631, A-632, A-633, A-634, A-635, A-636, A-637, A-638, A-639, A-640, A-641, A-642, A-643, A-644, A-645, A-646, A-647, A-648, A-649, A-650, A-651, A-652, A-653, A-654, A-655, A-656, A-657, A-658, A-659, A-660, A-661, A-662, A-663, A-664, A-665, A-666, A-667, A-668, A-669, A-670, A-671, A-672, A-673, A-674, A-675, A-676, A-677, A-678, A-679, A-680, A-681, A-682, A-683, A-684, A-685, A-686, A-687, A-688, A-689, A-690, A-691, A-692, A-693, A-694, A-695, A-696, A-697, A-698, A-699, A-700, A-701, A-702, A-703, A-704, A-705, A-706, A-707, A-708, A-709, A-710, A-711, A-712, A-713, A-714, A-715, A-716, A-717, A-718, A-719, A-720, A-721, A-722, A-723, A-724, A-725, A-726, A-727, A-728, A-729, A-730, A-731, A-732, A-733, A-734, A-735, A-736, A-737, A-738, A-739, A-740, A-741, A-742, A-743, A-744, A-745, A-746, A-747, A-748, A-749, A-750, A-751, A-752, A-753, A-754, A-755, A-756, A-757, A-758, A-759, A-760, A-761, A-762, A-763, A-764, A-765, A-766, A-767, A-768, A-769, A-770, A-771, A-772, A-773, A-774, A-775, A-776, A-777, A-778, A-779, A-780, A-781, A-782, A-783, A-784, A-785, A-786, A-787, A-788, A-789, A-790, A-791, A-792, A-793, A-794, A-795, A-796, A-797, A-798, A-799, A-800, A-801, A-802, A-803, A-804, A-805, A-806, A-807, A-808, A-809, A-810, A-811, A-812, A-813, A-814, A-815, A-816, A-817, A-818, A-819, A-820, A-821, A-822, A-823, A-824, A-825, A-826, A-827, A-828, A-829, A-830, A-831, A-832, A-833, A-834, A-835, A-836, A-837, A-838, A-839, A-840, A-841, A-842, A-843, A-844, A-845, A-846, A-847, A-848, A-849, A-850, A-851, A-852, A-853, A-854, A-855, A-856, A-857, A-858, A-859, A-860, A-861, A-862, A-863, A-864, A-865, A-866, A-867, A-868, A-869, A-870, A-871, A-872, A-873, A-874, A-875, A-876, A-877, A-878, A-879, A-880, A-881, A-882, A-883, A-884, A-885, A-886, A-887, A-888, A-889, A-890, A-891, A-892, A-893, A-894, A-895, A-896, A-897, A-898, A-899, A-900, A-901, A-902, A-903, A-904, A-905, A-906, A-907, A-908, A-909, A-910, A-911, A-912, A-913, A-914, A-915, A-916, A-917, A-918, A-919, A-920, A-921, A-922, A-923, A-924, A-925, A-926, A-927, A-928, A-929, A-930, A-931, A-932, A-933, A-934, A-935, A-936, A-937, A-938, A-939, A-940, A-941, A-942, A-943, A-944, A-945, A-946, A-947, A-948, A-949, A-950, A-951, A-952, A-953, A-954, A-955, A-956, A-957, A-958, A-959, A-960, A-961, A-962, A-963, A-964, A-965, A-966, A-967, A-968, A-969, A-970, A-971, A-972, A-973, A-974, A-975, A-976, A-977, A-978, A-979, A-980, A-981, A-982, A-983, A-984, A-985, A-986, A-987, A-988, A-989, A-990, A-991, A-992, A-993, A-994, A-995, A-996, A-997, A-998, A-999, A-1000, A-1001, A-1002, A-1003, A-1004, A-1005, A-1006, A-1007, A-1008, A-1009, A-1010, A-1011, A-1012, A-1013, A-1014, A-1015, A-1016, A-1017, A-1018, A-1019, A-1020, A-1021, A-1022, A-1023, A-1024, A-1025, A-1026, A-1027, A-1028, A-1029, A-1030, A-1031, A-1032, A-1033, A-1034, A-1035, A-1036, A-1037, A-1038, A-1039, A-1040, A-1041, A-1042, A-1043, A-1044, A-1045, A-1046, A-1047, A-1048, A-1049, A-1050, A-1051, A-1052, A-1053, A-1054, A-1055, A-1056, A-1057, A-1058, A-1059, A-1060, A-1061, A-1062, A-1063, A-1064, A-1065, A-1066, A-1067, A-1068, A-1069, A-1070, A-1071, A-1072, A-1073, A-1074, A-1075, A-1076, A-1077, A-1078, A-1079, A-1080, A-1081, A-1082, A-1083, A-1084, A-1085, A-1086, A-1087, A-1088, A-1089, A-1090, A-1091, A-1092, A-1093, A-1094, A-1095, A-1096, A-1097, A-1098, A-1099, A-1100, A-1101, A-1102, A-1103, A-1104, A-1105, A-1106, A-1107, A-1108, A-1109, A-1110, A-1111, A-1112, A-1113, A-1114, A-1115, A-1116, A-1117, A-1118, A-1119, A-1120, A-1121, A-1122, A-1123, A-1124, A-1125, A-1126, A-1127, A-1128, A-1129, A-1130, A-1131, A-1132, A-1133, A-1134, A-1135, A-1136, A-1137, A-1138, A-1139, A-1140, A-1141, A-1142, A-1143, A-1144, A-1145, A-1146, A-1147, A-1148, A-1149, A-1150, A-1151, A-1152, A-1153, A-1154, A-1155, A-1156, A-1157, A-1158, A-1159, A-1160, A-1161, A-1162, A-1163, A-1164, A-1165, A-1166, A-1167, A-1168, A-1169, A-1170, A-1171, A-1172, A-1173, A-1174, A-1175, A-1176, A-1177, A-1178, A-1179, A-1180, A-1181, A-1182, A-1183, A-1184, A-1185, A-1186, A-1187, A-1188, A-1189, A-1190, A-1191, A-1192, A-1193, A-1194, A-1195, A-1196, A-1197, A-1198, A-1199, A-1200, A-1201, A-1202, A-1203, A-1204, A-1205, A-1206, A-1207, A-1208, A-1209, A-1210, A-1211, A-1212, A-1213, A-1214, A-1215, A-1216, A-1217, A-1218, A-1219, A-1220, A-1221, A-1222, A-1223, A-1224, A-1225, A-1226, A-1227, A-1228, A-1229, A-1230, A-1231, A-1232, A-1233, A-1234, A-1235, A-1236, A-1237, A-1238, A-1239, A-1240, A-1241, A-1242, A-1243, A-1244, A-1245, A-1246, A-1247, A-1248, A-1249, A-1250, A-1251, A-1252, A-1253, A-1254, A-1255, A-1256, A-1257, A-1258, A-1259, A-1260, A-1261, A-1262, A-1263, A-1264, A-1265, A-1266, A-1267, A-1268, A-1269, A-1270, A-1271, A-1272, A-1273, A-1274, A-1275, A-1276, A-1277, A-1278, A-1279, A-1280, A-1281, A-1282, A-1283, A-1284, A-1285, A-1286, A-1287, A-1288, A-1289, A-1290, A-1291, A-1292, A-1293, A-1294, A-1295, A-1296, A-1297, A-1298, A-1299, A-1300, A-1301, A-1302, A-1303, A-1304, A-1305, A-1306, A-1307, A-1308, A-1309, A-1310, A-1311, A-1312, A-1313, A-1314, A-1315, A-1316, A-1317, A-1318, A-1319, A-1320, A-1321, A-1322, A-1323, A-1324, A-1325, A-1326, A-1327, A-1328, A-1329, A-1330, A-1331, A-1332, A-1333, A-1334, A-1335, A-1336, A-1337, A-1338, A-1339, A-1340, A-1341, A-1342, A-1343, A-1344, A-1345, A-1346, A-1347, A-1348, A-1349, A-1350, A-1351, A-1352, A-1353, A-1354, A-1355, A-1356, A-1357, A-1358, A-1359, A-1360, A-1361, A-1362, A-1363, A-1364, A-1365, A-1366, A-1367, A-1368, A-1369, A-1370, A-1371, A-1372, A-1373, A-1374, A-1375, A-1376, A-1377, A-1378, A-1379, A-1380, A-1381, A-1382, A-1383, A-1384, A-1385, A-1386, A-1387, A-1388, A-1389, A-1390, A-1391, A-1392, A-1393, A-1394, A-1395, A-1396, A-1397, A-1398, A-1399, A-1400, A-1401, A-1402, A-1403, A-1404, A-1405, A-1406, A-1407, A-1408, A-1409, A-1410, A-1411, A-1412, A-1413, A-1414, A-1415, A-1416, A-1417, A-1418, A-1419, A-1420, A-1421, A-1422, A-1423, A-1424, A-1425, A-1426, A-1427, A-1428, A-1429, A-1430, A-1431, A-1432, A-1433, A-1434, A-1435, A-1436, A-1437, A-1438, A-1439, A-1440, A-1441, A-1442, A-1443, A-1444, A-1445, A-1446, A-1447, A-1448, A-1449, A-1450, A-1451, A-1452, A-1453, A-1454, A-1455, A-1456, A-1457, A-1458, A-1459, A-1460, A-1461, A-1462, A-1463, A-1464, A-1465, A-1466, A-1467, A-1468, A-1469, A-1470, A-1471, A-1472, A-1473, A-																																																											

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

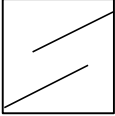
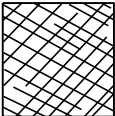
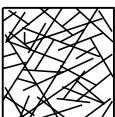
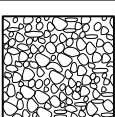
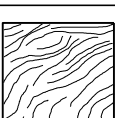
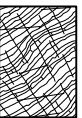
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

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

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

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

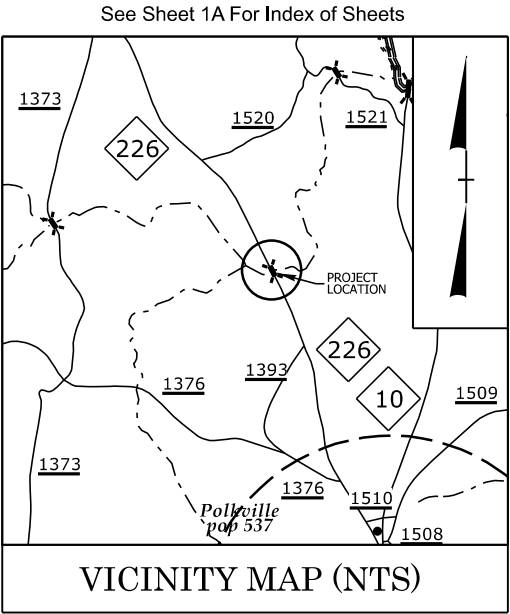
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000) From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.	SURFACE CONDITIONS VERY GOOD Very rough, fresh unweathered surfaces GOOD Rough, slightly weathered, iron stained surfaces FAIR Smooth, moderately weathered and altered surfaces POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings	STRUCTURE INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	DECREASING SURFACE QUALITY ➡ 90 80 70 60 50 40 30 20 10 N/A N/A	GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000) From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.	SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes) VERY GOOD - Very Rough, fresh unweathered surfaces GOOD - Rough, slightly weathered surfaces FAIR - Smooth, moderately weathered and altered surfaces POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings	COMPOSITION AND STRUCTURE A. Thick bedded, very blocky sandstone The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability. B. Sandstone with thin inter-layers of siltstone C. Sandstone and siltstone in similar amounts D. Siltstone or silty shale with sandstone layers E. Weak siltstone or clayey shale with sandstone layers F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces. — Means deformation after tectonic disturbance	70 60 50 40 30 20 10
---	--	---	---	---	---	--	---

09/08/99

PROJECT: BP12.R002

PROJECT: BP12.R002

CONTRACT: BP12.R002



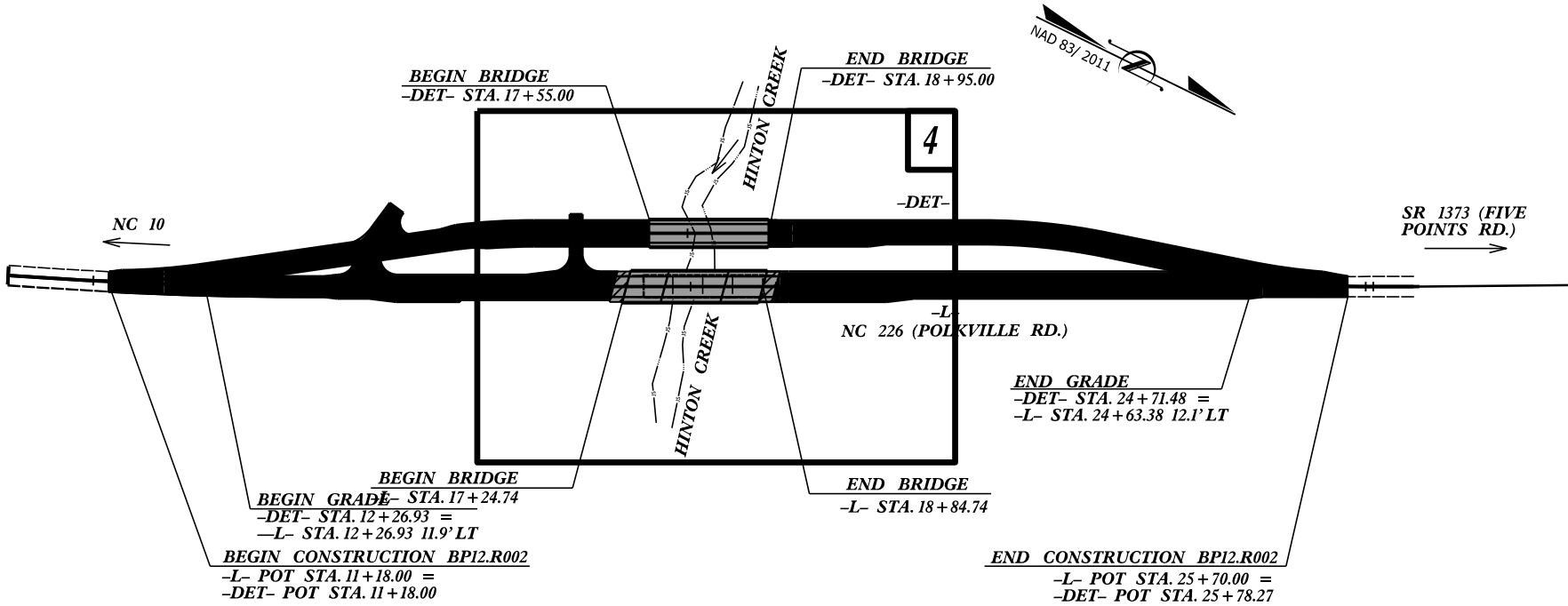
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

LOCATION: *BRIDGE NO. 220075 OVER HINTON CREEK
ON NC 226 (POLKVILLE RD.)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING
& STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R002	3	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
		PE	
		UTL & R/W	
		CONST	

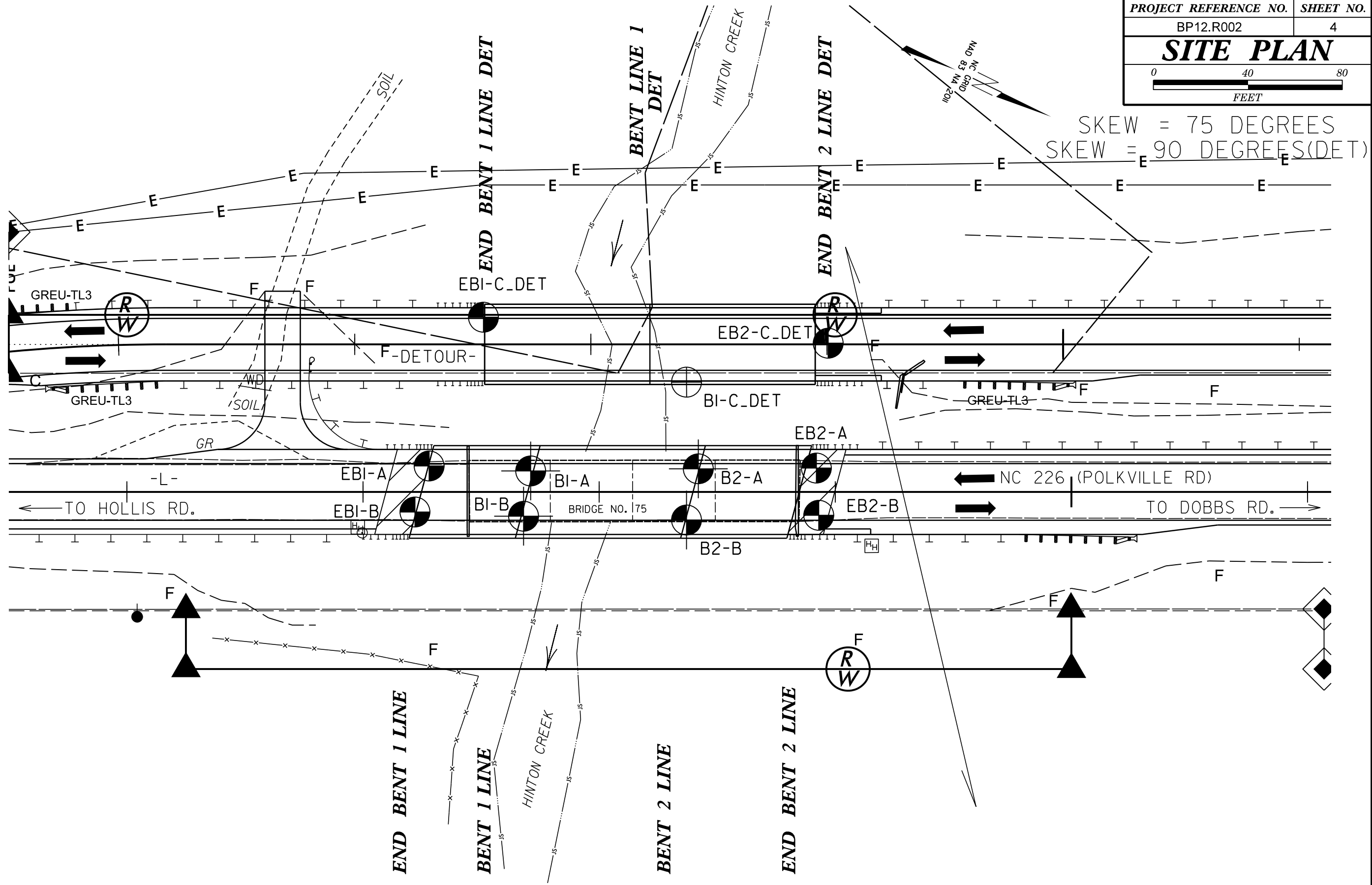


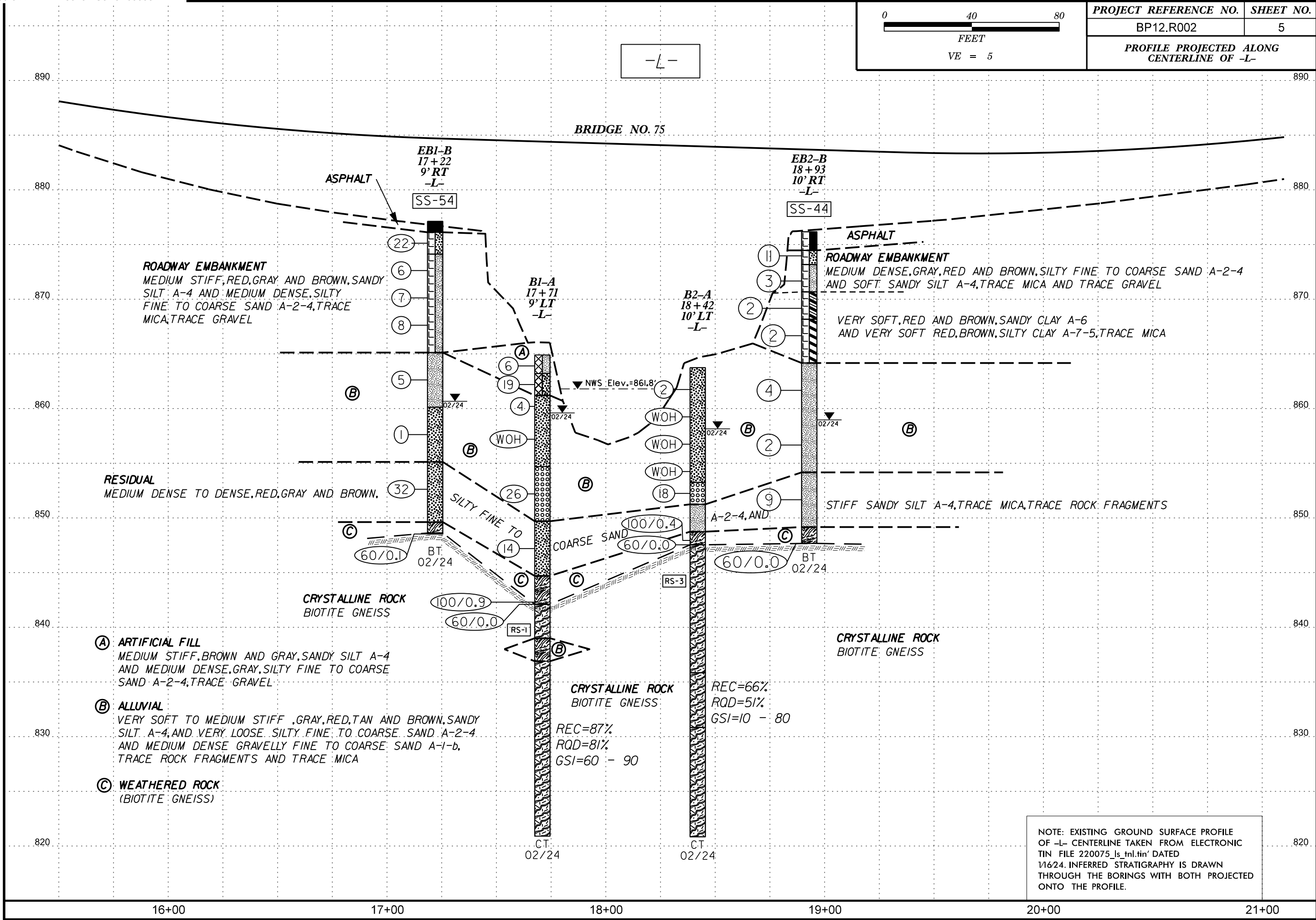
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

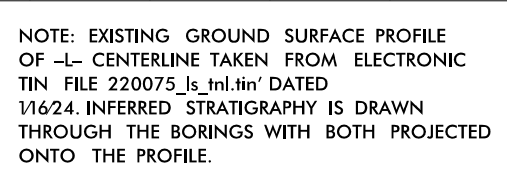
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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 2025 = 3030 ADT 2045 = 4500 T = 7 % * V = 60 MPH * TTST =3.5% DUAL =3.5% FUNC CLASS = MAJOR COLLECTOR REGIONAL TIER	PROJECT LENGTH <table><tr><td>LENGTH ROADWAY PROJECT BP12.R002 =</td><td>0.245 MILES</td></tr><tr><td>LENGTH STRUCTURE PROJECT BP12.R002 =</td><td>0.030 MILES</td></tr><tr><td>TOTAL LENGTH PROJECT BP12.R002 =</td><td>0.275 MILES</td></tr></table> NCDOT CONTACT: JOSHUA WHITE, PE DIVISION 12 DIVISION BRIDGE MANAGER	LENGTH ROADWAY PROJECT BP12.R002 =	0.245 MILES	LENGTH STRUCTURE PROJECT BP12.R002 =	0.030 MILES	TOTAL LENGTH PROJECT BP12.R002 =	0.275 MILES	Prepared for the Office of: DIVISION OF HIGHWAYS - DIV. 12 1710 E. Marion St., Shelby NC, 28151 2024 STANDARD SPECIFICATIONS <table><tr><td>RIGHT OF WAY DATE: TBD</td><td>GREG S. PURVIS, PE PROJECT ENGINEER</td></tr><tr><td>LETTING DATE: 10/14/25</td><td>FARRELL NICHOLSON, PE PROJECT DESIGN ENGINEER</td></tr></table>	RIGHT OF WAY DATE: TBD	GREG S. PURVIS, PE PROJECT ENGINEER	LETTING DATE: 10/14/25	FARRELL NICHOLSON, PE PROJECT DESIGN ENGINEER	HYDRAULICS ENGINEER SIGNATURE: P.E. ROADWAY DESIGN ENGINEER SIGNATURE: P.E.	
LENGTH ROADWAY PROJECT BP12.R002 =	0.245 MILES														
LENGTH STRUCTURE PROJECT BP12.R002 =	0.030 MILES														
TOTAL LENGTH PROJECT BP12.R002 =	0.275 MILES														
RIGHT OF WAY DATE: TBD	GREG S. PURVIS, PE PROJECT ENGINEER														
LETTING DATE: 10/14/25	FARRELL NICHOLSON, PE PROJECT DESIGN ENGINEER														

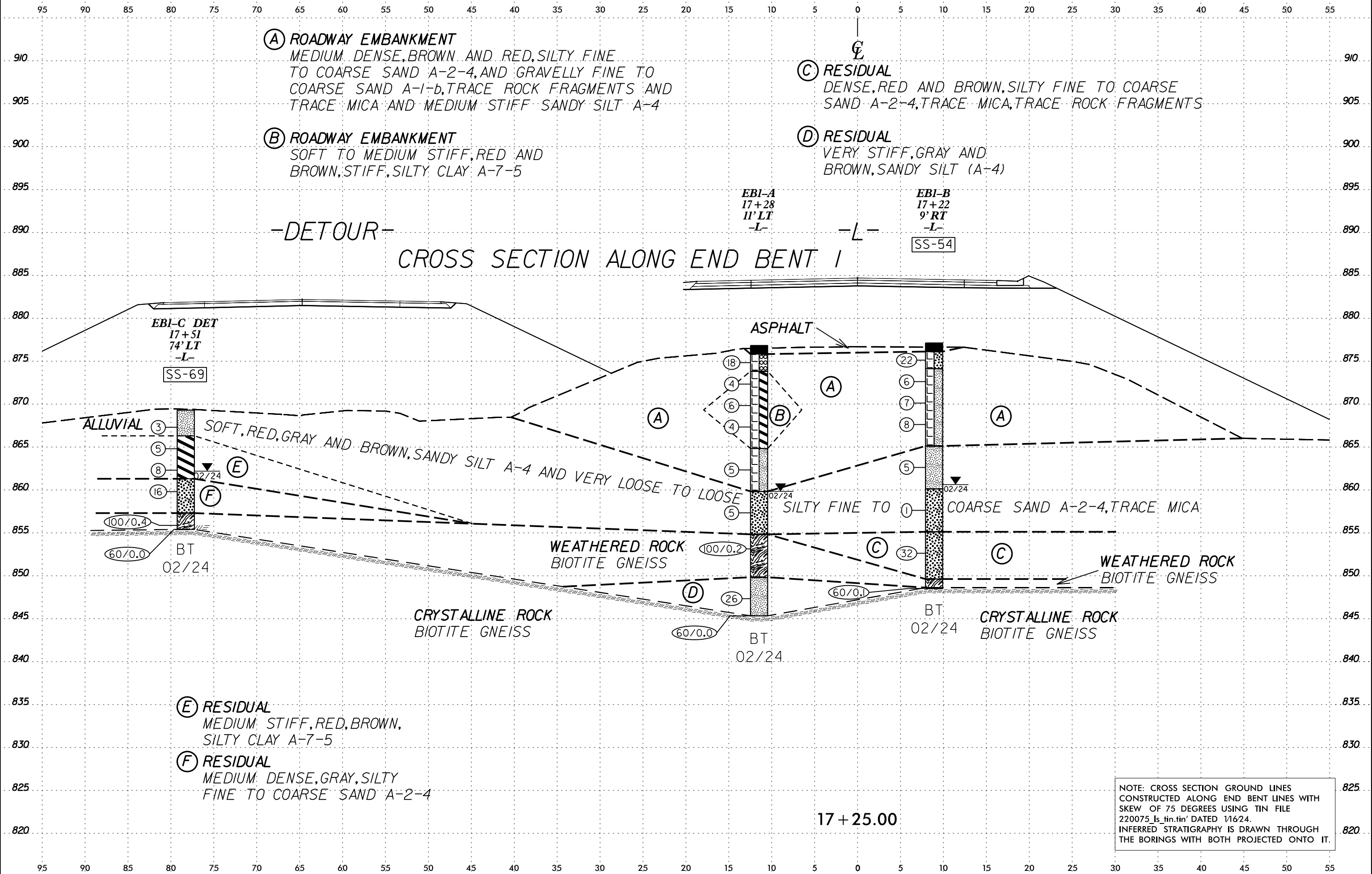
PROJECT REFERENCE NO.	SHEET NO.
BP12.R002	4
SITE PLAN	
0 40 80 FEET	



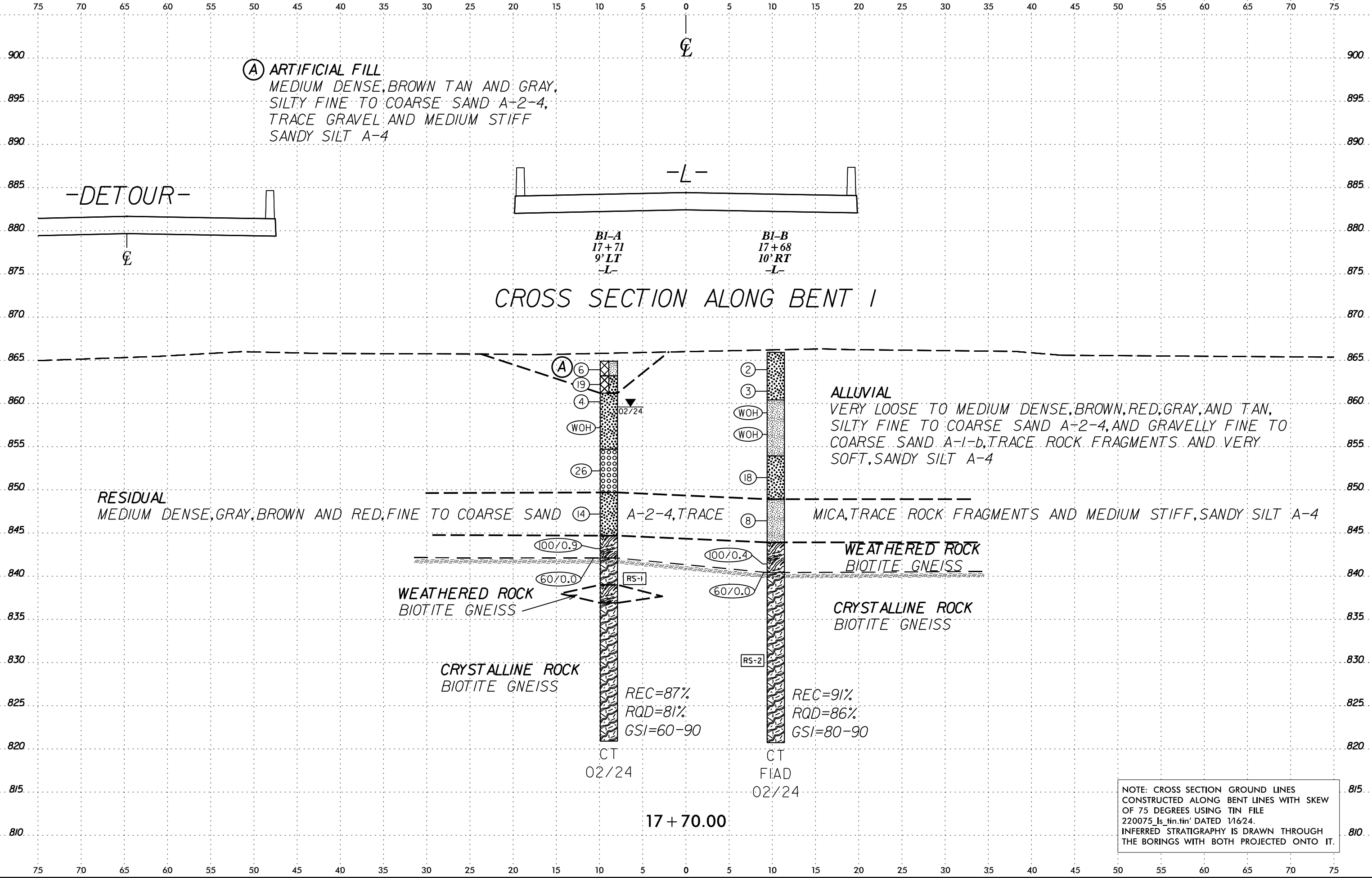




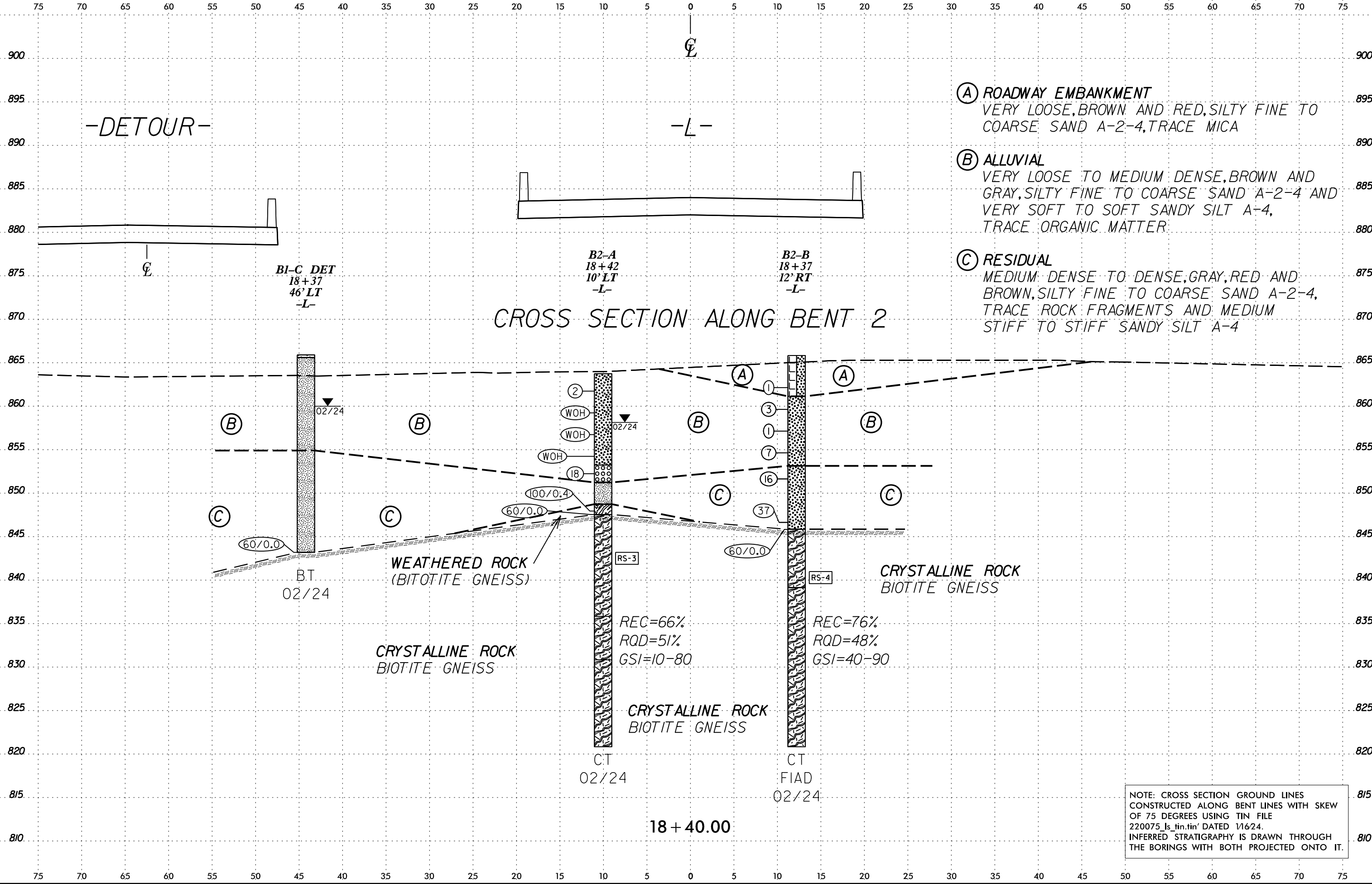
6/23/16

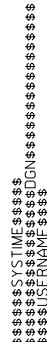


6/23/16



6/23/16





GEOTECHNICAL BORING REPORT
BORE LOG

WBS			BP12.R002			TIP			N/A			COUNTY			CLEVELAND			GEOLOGIST			Kebea, B.																																																																																																																																																																																																																																																																																																																																																																																																																																																											
SITE DESCRIPTION															BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK										GROUND WTR (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																							
BORING NO.				EB1-A				STATION				17+28				OFFSET				11 ft LT				ALIGNMENT				-L-				0 HR.		N/A																																																																																																																																																																																																																																																																																																																																																																																																																																														
COLLAR ELEV.				876.8 ft				TOTAL DEPTH				31.5 ft				NORTHING				624,332				EASTING				1,210,006				24 HR.		17.0																																																																																																																																																																																																																																																																																																																																																																																																																																														
DRILL RIG/HAMMER EFF./DATE												SME0382 DIEDRICH D-50 89% 03/04/2022												DRILL METHOD						Mud Rotary						HAMMER TYPE				Automatic																																																																																																																																																																																																																																																																																																																																																																																																																																								
DRILLER						Millwood, J.						START DATE						02/06/24						COMP. DATE						02/06/24						SURFACE WATER DEPTH										N/A																																																																																																																																																																																																																																																																																																																																																																																																																																		
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION															DEPTH (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
880																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
875	875.8	1.0		15	12	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

WBS BP12.R002				TIP N/A		COUNTY CLEVELAND				GEOLOGIST Kebea, B.				
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK										GROUND WTR (ft)				
BORING NO. EB1-B			STATION 17+22			OFFSET 9 ft RT			ALIGNMENT -L-			0 HR.	N/A	
COLLAR ELEV. 877.1 ft			TOTAL DEPTH 28.6 ft			NORTHING 624,335			EASTING 1,210,026			24 HR.	16.5	
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic				
DRILLER Millwood, J.			START DATE 02/09/24			COMP. DATE 02/09/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
880														
875	876.1	1.0	12	12	10									877.1 ROADWAY SURFACE 0.0
														876.1 ASPHALT - 12 " 1.0
870	873.6	3.5	3	3	3						M			874.1 ROADWAY EMBANKMENT 3.0
	871.1	6.0	2	4	3						M			MEDIUM DENSE, BROWN, SILTY FINE TO COARSE SAND A-2-4, TRACE GRAVEL
865	868.6	8.5	3	5	3						M			MEDIUM STIFF, RED BROWN, SANDY SILT A-4, TRACE MICA, TRACE GRAVEL
											M			
860	863.6	13.5	2	2	3							W		865.1 ALLUVIAL 12.0
												▼		MEDIUM STIFF, RED BROWN, SANDY SILT A-4, TRACE MICA
855	858.6	18.5	WOH	WOH	1						SS-54	Sat.		860.1 VERY LOOSE, GRAY, SILTY FINE TO COARSE SAND A-2-4 17.0
850	853.6	23.5	13	14	18							M		855.1 RESIDUAL 22.0
														DENSE, RED BROWN, SILTY FINE TO COARSE SAND A-2-4, TRACE MICA, TRACE ROCK FRAGMENTS
	848.6	28.5	60/0.1											849.6 WEATHERED ROCK 27.5
														848.6 CRYSTALLINE ROCK 28.5
														848.5 (BIOTITE GNEISS) 28.6
														CRYSTALLINE ROCK (BIOTITE GNEISS)
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 848.5 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/3/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS BP12.R002			TIP N/A		COUNTY CLEVELAND			GEOLOGIST Kebea, B.								
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK										GROUND WTR (ft)						
BORING NO. B1-A			STATION 17+71			OFFSET 9 ft LT			ALIGNMENT -L-		0 HR. N/A					
COLLAR ELEV. 864.9 ft			TOTAL DEPTH 44.0 ft			NORTHING 624,372			EASTING 1,209,988		24 HR. 5.3					
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022						DRILL METHOD NW Casing W/SPT & Core				HAMMER TYPE Automatic						
DRILLER Millwood, J.			START DATE 02/07/24			COMP. DATE 02/07/24			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	L O G	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
865														864.9	GROUND SURFACE 0.0	
860	864.9	0.0	1	4	2						M		863.2	ARTIFICIAL FILL 1.7		
	863.2	1.7	3	10	9								861.2	MEDIUM STIFF, BROWN GRAY, SANDY SILT A-4, TRACE GRAVEL 3.7		
	861.2	3.7														
855			1	2	2						Sat.			MEDIUM DENSE, TAN BROWN, SILTY FINE TO COARSE SAND A-2-4, TRACE GRAVEL		
	858.2	6.7	WOH	WOH	WOH								854.7	ALLUVIAL 10.2		
850											Sat.			VERY LOOSE TO LOOSE, BROWN, SILTY FINE TO COARSE SAND A-2-4		
	853.2	11.7	10	14	12								849.7	MEDIUM DENSE, GRAY TAN, GRAVELLY FINE TO COARSE SAND A-1-b 15.2		
845											M			RESIDUAL 15.2		
	848.2	16.7	7	8	6								844.7	MEDIUM DENSE, GRAY, SILTY FINE TO COARSE SAND A-2-4 20.2		
		843.2	21.7											842.1	WEATHERED ROCK (BIOTITE GNEISS) 22.8	
840	842.1	22.8	23	77/0.4							RS-1			CRYSTALLINE ROCK 26.3		
			60/0.0										838.6	BLUE GRAY, VERY HARD TO MEDIUM HARD, FRESH TO MODERATELY SEVERE WEATHERING, VERY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS 28.0		
													836.9			
835											RS-1			REC = 100% RQD = 89%		
														WEATHERED ROCK (BIOTITE GNEISS)		
																BLUE GRAY, VERY HARD TO HARD, FRESH TO VERY SLIGHT WEATHERING, VERY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS
830											RS-1			REC = 94% RQD = 88%		
825											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					
											RS-1					

GEOTECHNICAL BORING REPORT

CORE LOG

NCDOT BORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/4/24

NCDOT CORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/4/24

GEOTECHNICAL BORING REPORT

CORE LOG

[illegible]

NCDOT BORE DOUBLE BP12.R002 GEO BRIDGE0075.GPJ NC DOT.GDT 4/4/24

NCDOT CORE DOUBLE BP12.R002 GEO BRIDGE0075.GPJ NC DOT.GDT 4/4/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS BP12.R002				TIP N/A		COUNTY CLEVELAND				GEOLOGIST Kebea, B.						
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK										GROUND WTR (ft)						
BORING NO. EB2-A				STATION 18+92				OFFSET 10 ft LT				ALIGNMENT -L-		0 HR. N/A		
COLLAR ELEV. 876.1 ft				TOTAL DEPTH 40.1 ft				NORTHING 624,480				EASTING 1,209,934		24 HR. 16.5		
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic				
DRILLER Millwood, J.				START DATE 02/06/24				COMP. DATE 02/06/24				SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
880																
875	875.1	1.0														876.1 ROADWAY SURFACE 0.0
																875.1 ASPHALT - 12 " 1.0
	872.6	3.5	10	9	7											873.1 ROADWAY EMBANKMENT 3.0
870	870.1	6.0	2	1	2											MEDIUM DENSE, BROWN, SILTY FINE TO COARSE SAND A-2-4, TRACE GRAVEL
			1	1	1											SOFT TO VERY SOFT, BROWN, SANDY SILT A-4, TRACE MICA, TRACE GRAVEL
	867.6	8.5														
865			1	1	1											
	862.6	13.5														864.1 12.0
860			WOH	WOH	WOH						SS-5					ALLUVIAL VERY SOFT, GRAY, SANDY CLAY A-6
	857.6	18.5														
855			1	1	1											
	852.6	23.5														854.1 22.0
850			2	1	2											SOFT TO STIFF, GRAY, SANDY SILT A-4, TRACE MICA
	847.6	28.5														
845			4	4	5											844.1 32.0
	842.6	33.5														RESIDUAL HARD, BROWN GRAY, SANDY SILT A-4, TRACE MICA
840			5	9	38											839.1 37.0
	837.6	38.5														WEATHERED ROCK (BIOTITE GNEISS)
	836.2	39.9	26	38	62/0.3											836.1 40.0
			60/0.1													836.0 40.1
																CRYSTALLINE ROCK (BIOTITE GNEISS)
																Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 836.0 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

WBS BP12.R002				TIP N/A		COUNTY CLEVELAND				GEOLOGIST Kebea, B.					
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK										GROUND WTR (ft)					
BORING NO. EB2-B				STATION 18+93				OFFSET 10 ft RT				ALIGNMENT -L-		0 HR. N/A	
COLLAR ELEV. 876.2 ft				TOTAL DEPTH 28.5 ft				NORTHING 624,490				EASTING 1,209,951		24 HR. 17.2	
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic			
DRILLER Millwood, J.				START DATE 02/09/24				COMP. DATE 02/09/24				SURFACE WATER DEPTH N/A			
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
880															
875	875.0	1.2												876.2 ROADWAY SURFACE 0.0	
														874.5 ASPHALT - 14 " AND STONE - 6 " 1.7	
	872.7	3.5	11	7	4									873.2 ROADWAY EMBANKMENT 3.0	
			1	2	1									MEDIUM DENSE, GRAY, SILTY FINE TO COARSE SAND A-2-4, TRACE GRAVEL	
870	870.2	6.0												870.7 5.5	
			1	1	1									SOFT, RED BROWN, SANDY SILT A-4, TRACE MICA	
	867.7	8.5												868.2 8.0	
			2	1	1									VERY SOFT, RED BROWN, SANDY CLAY A-6, TRACE MICA	
865														VERY SOFT, RED BROWN, SILTY CLAY A-7-5, TRACE MICA 12.0	
	862.7	13.5	1	2	2									ALLUVIAL	
860														SOFT TO VERY SOFT, BROWN GRAY, SANDY SILT A-4, TRACE MICA	
	857.7	18.5													
			WOH	WOH	2										
855														854.2 22.0	
	852.7	23.5												RESIDUAL	
850			6	5	4									STIFF, BROWN, SANDY SILT A-4, TRACE MICA	
	847.7	28.5												849.2 27.0	
			60/0.0											847.7 28.5	
														WEATHERED ROCK (BIOTITE GNEISS)	
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 847.7 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)	

NCDOT BORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/4/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS BP12.R002				TIP N/A		COUNTY CLEVELAND		GEOLOGIST Gordan, B.							
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK											GROUND WTR (ft)				
BORING NO. EB1-C DET			STATION 17+51			OFFSET 74 ft LT			ALIGNMENT -L-		0 HR.	N/A			
COLLAR ELEV. 869.3 ft			TOTAL DEPTH 13.9 ft			NORTHING 624,325			EASTING 1,209,939		24 HR.	7.1			
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic					
DRILLER Miller, T.			START DATE 02/26/24			COMP. DATE 02/26/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
870															
	868.3	1.0	2	1	2							M	869.3 GROUND SURFACE	0.0	
	865.8	3.5	2	2	3							M	866.3 ALLUVIAL SOFT, RED BROWN, SANDY SILT A-4	3.0	
865											SS-69			866.3 MEDIUM STIFF, RED BROWN, SILTY CLAY A-7-5	
	863.3	6.0	5	4	4										
	860.8	8.5	4	8	8							M		861.3 RESIDUAL MEDIUM DENSE, GRAY, SILTY FINE TO COARSE SAND A-2-4	8.0
860														857.3 WEATHERED ROCK (BIOTITE GNEISS)	12.0
	855.8	13.5	100/0.4											855.4 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 855.4 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)	13.9
	855.4	13.9	60/0.0											TOPSOIL - 3"	

WBS BP12.R002				TIP N/A		COUNTY CLEVELAND				GEOLOGIST Gordan, B.						
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK												GROUND WTR (ft)				
BORING NO. B1-C DET				STATION 18+37				OFFSET 46 ft LT				ALIGNMENT -L-		0 HR.	N/A	
COLLAR ELEV. 865.9 ft				TOTAL DEPTH 22.7 ft				NORTHING 624,414				EASTING 1,209,926		24 HR.	5.9	
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic				
DRILLER Miller, T.				START DATE 02/26/24				COMP. DATE 02/26/24				SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
870																
865													865.9	GROUND SURFACE	0.0	
860														ALLUVIAL MUD ROTARY PROBE		
855													854.9			
850															RESIDUAL	
845																
	843.2	22.7											843.2		22.7	
			60/0.0							60/0.0				Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 843.2 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)		
														TOPSOIL - 3" and Alluvial/Residual contact is inferred		

NCDOT BORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/4/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS BP12.R002			TIP N/A			COUNTY CLEVELAND			GEOLOGIST Gordan, B.						
SITE DESCRIPTION BRIDGE NO. 75 ON NC 226 OVER HINTON CREEK									GROUND WTR (ft)						
BORING NO. EB2-C DET			STATION 18+96			OFFSET 63 ft LT			ALIGNMENT -L-			0 HR. N/A			
COLLAR ELEV. 866.9 ft			TOTAL DEPTH 29.7 ft			NORTHING 624,461			EASTING 1,209,884			24 HR. 9.5			
DRILL RIG/HAMMER EFF./DATE SME0382 DIEDRICH D-50 89% 03/04/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER Miller, T.			START DATE 02/26/24			COMP. DATE 02/26/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
870															
865	865.9	1.0												866.9	0.0
	863.4	3.5	1	1	1							M		GROUND SURFACE	
	863.4		3	2	2							M		ALLUVIAL VERY SOFT TO SOFT, RED BROWN, SANDY SILT A-4	
	860.9	6.0												861.4	5.5
860			WOH	WOH	WOH							W		VERY LOOSE TO LOOSE, TAN GRAY, GRAVELLY FINE TO COARSE SAND A-1-b	
	858.4	8.5													
	858.4		3	3	3										
855															
	853.4	13.5		1	2							M		854.9	12.0
850															
	848.4	18.5	7	8	7							M		RESIDUAL SOFT TO STIFF, TAN GRAY BROWN, SANDY SILT A-4, TRACE MICA	
845															
	843.4	23.5										M			
840			3	4	4										
	838.4	28.5												839.9	27.0
	837.2	29.7	100/0.4											WEATHERED ROCK (BIOTITE GNEISS)	
			60/0.0											837.2	29.7
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 837.2 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)	
														TOPSOIL - 3"	

NCDOT BORE DOUBLE BP12.R002_GEO_BRIDGE0075.GPJ NC_DOT.GDT 4/4/24

CONSOLIDATION TEST DATA

4/2/2024

Client: NCDOT

Project: Replace Bridge No.75 on Polkville Rd. over Hilton Creek

Project Number: 6235-17-005

Location: NI

Depth: 6-8'

Material Description: A-1-b

Liquid Limit: NP

AASHTO: A-1-b

Figure No.: EB2-C ST-1

Testing Remarks: AASHTO T-216

Method B Inundated

NP: Non-Plastic

NI: No Information Provided

Specific Gravity Assumed

Sample Number: EB2-C ST-1

Plasticity Index: NP

Tested by: Karen Warner

Checked by: Lilma Schimmel

Test Specimen Data

NATURAL MOISTURE

Wet w+t = 704.11 g.

Dry w+t = 596.27 g.

Tare Wt. = 124.40 g.

Moisture = 22.9 %

VOID RATIO

Spec. Gr. = 2.70

Est. Ht. Solids = 0.549 in.

Init. V.R. = 0.819

Init. Sat. = 75.3 %

AFTER TEST

Wet w+t = 245.85 g.

Dry w+t = 216.41 g.

Tare Wt. = 98.13 g.

Moisture = 24.9 %

UNIT WEIGHT

Height = 0.998 in.

Diameter = 2.491 in.

Weight = 149.28 g.

Dry Dens. = 95.2 pcf

TEST START

Height = 0.998 in.

Diameter = 2.491 in.

Dry Wt. =118.28* g.

End-Of-Load Summary

Pressure (ksf)	Final Dial (in.)	Deformation (in.)	C _v (ft.2/day)	C _α	Void Ratio	% Strain
start	0.00000	0.00000			0.819	
0.25	0.00880	0.00880	0.449		0.803	0.9 Compr.
0.50	0.01620	0.01620	1.383		0.790	1.6 Compr.
1.00	0.02700	0.02700	1.211		0.770	2.7 Compr.
2.00	0.04330	0.04330	1.368		0.740	4.3 Compr.
4.00	0.06310	0.06310	1.230		0.704	6.3 Compr.
1.00	0.05930	0.05930	0.941		0.711	5.9 Compr.
4.00	0.06560	0.06560	0.083		0.700	6.6 Compr.
8.00	0.08660	0.08660	0.975		0.661	8.7 Compr.
16.00	0.11520	0.11520	0.994		0.609	11.5 Compr.

Compression index (C_c), ksf = 0.16

Preconsolidation pressure (P_p), ksf = 1.5

Void ratio at P_p (e_m) = 0.752

Recompression index (C_r) = 0.07

S & ME, INC.

Pressure: 0.25 ksf

TEST READINGS

Load No. 1

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:00	0.00000	11	+0 00:60:00	0.00800
2	+0 00:00:06	0.00630	12	+0 02:00:00	0.00810
3	+0 00:00:15	0.00640	13	+0 04:00:00	0.00820
4	+0 00:00:30	0.00650	14	+0 08:00:00	0.00840
5	+0 00:00:60	0.00670	15	+0 15:00:00	0.00860
6	+0 00:02:00	0.00700	16	+0 18:00:51	0.00880
7	+0 00:04:00	0.00720			
8	+0 00:08:00	0.00730			
9	+0 00:15:00	0.00760			
10	+0 00:30:00	0.00780			

Void Ratio = 0.803

Compression = 0.9%

D₀ = 0.0061

D₉₀ = 0.0072

D₁₀₀ = 0.0073

C_v at 4.67 min. = 0.449 ft.2/day

Pressure: 0.50 ksf

TEST READINGS

Load No. 2

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.00880	11	+0 00:60:00	0.01500
2	+0 00:00:06	0.01290	12	+0 02:00:00	0.01520
3	+0 00:00:15	0.01320	13	+0 04:00:00	0.01530
4	+0 00:00:30	0.01350	14	+0 18:02:51	0.01620
5	+0 00:00:60	0.01360			
6	+0 00:02:00	0.01370			
7	+0 00:04:00	0.01400			
8	+0 00:08:00	0.01430			
9	+0 00:15:00	0.01450			
10	+0 00:30:00	0.01460			

Void Ratio = 0.790

Compression = 1.6%

D₀ = 0.0128

D₉₀ = 0.0137

D₁₀₀ = 0.0137

C_v at 1.49 min. = 1.383 ft.2/day

S & ME, INC.

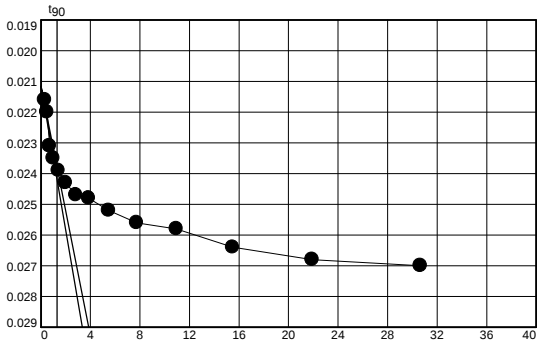
Pressure: 1.00 ksf

TEST READINGS

Load No. 3

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.01620	11	+0 00:60:00	0.02560
2	+0 00:00:06	0.02160	12	+0 02:00:00	0.02580
3	+0 00:00:15	0.02200	13	+0 04:00:00	0.02640
4	+0 00:00:30	0.02310	14	+0 08:00:0	0.02680
5	+0 00:00:60	0.02350	15	+0 15:39:50	0.02700
6	+0 00:02:00	0.02390			
7	+0 00:04:00	0.02430			
8	+0 00:08:00	0.02470			
9	+0 00:15:00	0.02480			
10	+0 00:30:00	0.02520			

Clock Time (min)	Dial Reading
0	0.01620
6	0.02160
15	0.02200
30	0.02310
60	0.02350
120	0.02390
240	0.02430
480	0.02470
900	0.02480
1800	0.02520
3600	0.02560
7200	0.02580
14400	0.02640
28800	0.02680
54000	0.02700



Void Ratio = 0.770 Compression = 2.7%
D₀ = 0.0212 D₉₀ = 0.0238 D₁₀₀ = 0.0241 C_v at 1.67 min. = 1.211 ft.²/day

Pressure: 2.00 ksf

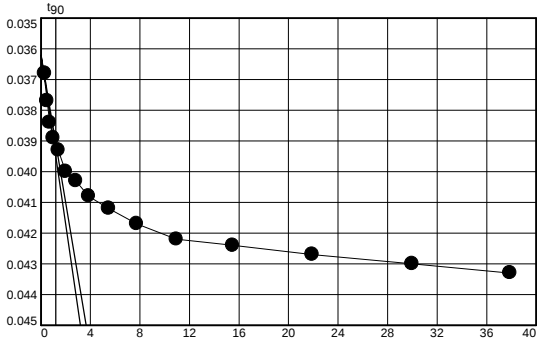
TEST READINGS

Load No. 4

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.02700	11	+0 00:60:00	0.04170
2	+0 00:00:06	0.03680	12	+0 02:00:00	0.04220
3	+0 00:00:15	0.03770	13	+0 04:00:00	0.04240
4	+0 00:00:30	0.03840	14	+0 08:00:00	0.04270
5	+0 00:00:60	0.03890	15	+0 15:00:00	0.04300
6	+0 00:02:00	0.03930	16	+0 23:56:34	0.04330
7	+0 00:04:00	0.04000			
8	+0 00:08:00	0.04030			
9	+0 00:15:00	0.04080			
10	+0 00:30:00	0.04120			

Graph showing Dial Reading (Y-axis, 0.035 to 0.045) versus Clock Time (X-axis, 0 to 40 minutes) for Load No. 4. The data points show a decreasing trend in Dial Reading over time, starting from 0.02700 at 0 minutes and reaching 0.04330 at 23:56:34. A curve is drawn through the data points, showing a rapid initial decrease followed by a slower, more linear decrease.

Clock Time	Dial Reading
0	0.02700
+0 00:00:06	0.03680
+0 00:00:15	0.03770
+0 00:00:30	0.03840
+0 00:00:60	0.03890
+0 00:02:00	0.03930
+0 00:04:00	0.04000
+0 00:08:00	0.04030
+0 00:15:00	0.04080
+0 00:30:00	0.04120
+0 00:60:00	0.04170
+0 02:00:00	0.04220
+0 04:00:00	0.04240
+0 08:00:00	0.04270
+0 15:00:00	0.04300
+0 23:56:34	0.04330



Void Ratio = 0.740 Compression = 4.3%
D₀ = 0.0362 D₉₀ = 0.0391 D₁₀₀ = 0.0394 C_v at 1.44 min. = 1.368 ft.²/day

S & ME, INC.

Pressure: 4.00 ksf

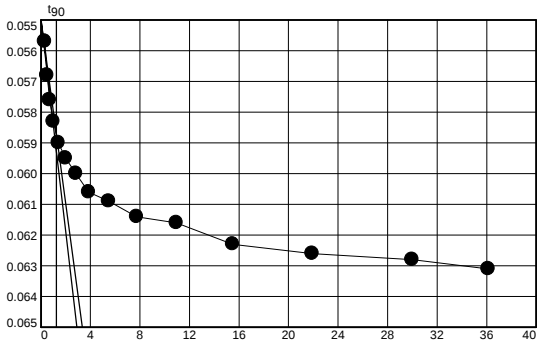
TEST READINGS

Load No. 5

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.04330	11	+0 00:60:00	0.06140
2	+0 00:00:06	0.05570	12	+0 02:00:00	0.06160
3	+0 00:00:15	0.05680	13	+0 04:00:00	0.06230
4	+0 00:00:30	0.05760	14	+0 08:00:00	0.06260
5	+0 00:00:60	0.05830	15	+0 15:00:00	0.06280
6	+0 00:02:00	0.05900	16	+0 21:45:11	0.06310
7	+0 00:04:00	0.05950			
8	+0 00:08:00	0.06000			
9	+0 00:15:00	0.06060			
10	+0 00:30:00	0.06090			

Graph showing Dial Reading (Y-axis, 0.055 to 0.065) versus Clock Time (X-axis, 0 to 40). The curve illustrates the relationship between the two variables over time.

Clock Time	Dial Reading
0	0.04330
6	0.05570
15	0.05680
30	0.05760
60	0.05830
120	0.05900
180	0.05950
240	0.06000
300	0.06060
360	0.06090
420	0.06140
480	0.06160
540	0.06230
600	0.06260
660	0.06280
720	0.06310



Void Ratio = 0.704 Compression = 6.3%
D₀ = 0.0550 D₉₀ = 0.0587 D₁₀₀ = 0.0591 C_v at 1.54 min. = 1.230 ft.²/day

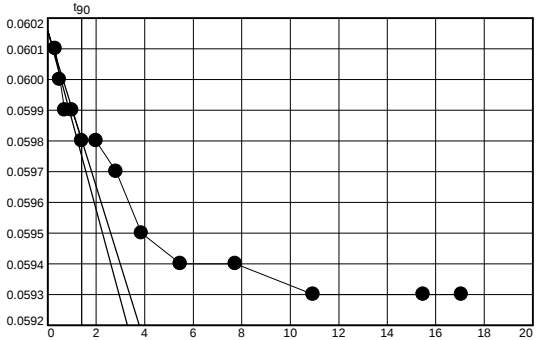
Pressure: 1.00 ksf

TEST READINGS

Load No. 6

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.06310	11	+0 00:60:00	0.05940
2	+0 00:00:06	0.06010	12	+0 02:00:00	0.05930
3	+0 00:00:15	0.06000	13	+0 04:00:00	0.05930
4	+0 00:00:30	0.05990	14	+0 04:51:11	0.05930
5	+0 00:00:60	0.05990			
6	+0 00:02:00	0.05980			
7	+0 00:04:00	0.05980			
8	+0 00:08:00	0.05970			
9	+0 00:15:00	0.05950			
10	+0 00:30:00	0.05940			

Time (t90)	Dial Reading
0	0.06310
0.1	0.06010
0.25	0.06000
0.5	0.05990
1	0.05990
2	0.05980
4	0.05980
4.5	0.05970
6	0.05950
8	0.05940
11	0.05930
15	0.05930
17	0.05930



Void Ratio = 0.711 Compression = 5.9%
D₀ = 0.0602 D₉₀ = 0.0598 D₁₀₀ = 0.0598 C_v at 1.98 min. = 0.941 ft.²/day

S & ME, INC.

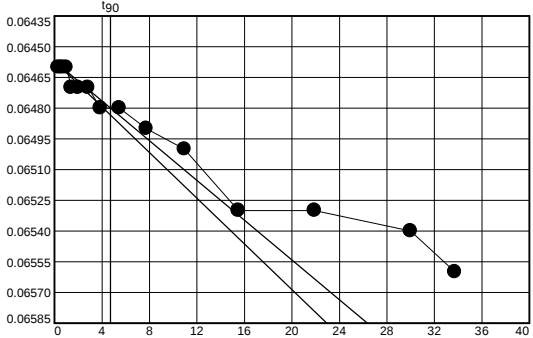
Pressure: 4.00 ksf

TEST READINGS

Load No. 7

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.05930	11	+0 00:00:00	0.06490
2	+0 00:00:06	0.06460	12	+0 02:00:00	0.06500
3	+0 00:00:15	0.06460	13	+0 04:00:00	0.06530
4	+0 00:00:30	0.06460	14	+0 08:00:00	0.06530
5	+0 00:00:60	0.06460	15	+0 15:00:00	0.06540
6	+0 00:02:00	0.06470	16	+0 18:58:02	0.06560
7	+0 00:04:00	0.06470			
8	+0 00:08:00	0.06470			
9	+0 00:15:00	0.06480			
10	+0 00:30:00	0.06480			

Clock Time (min)	Dial Reading
0	0.05930
6	0.06460
15	0.06460
30	0.06460
45	0.06460
60	0.06460
75	0.06460
90	0.06460
105	0.06460
120	0.06460
135	0.06460
150	0.06460
165	0.06460
180	0.06460
195	0.06460
210	0.06460
225	0.06460
240	0.06460
255	0.06460
270	0.06460
285	0.06460
300	0.06460
315	0.06460
330	0.06460
345	0.06460
360	0.06460
375	0.06460
390	0.06460
405	0.06460
420	0.06460
435	0.06460
450	0.06460
465	0.06460
480	0.06460
495	0.06460
510	0.06460
525	0.06460
540	0.06460
555	0.06460
570	0.06460
585	0.06460
600	0.06460
615	0.06460
630	0.06460
645	0.06460
660	0.06460
675	0.06460
690	0.06460
705	0.06460
720	0.06460
735	0.06460
750	0.06460
765	0.06460
780	0.06460
795	0.06460
810	0.06460
825	0.06460
840	0.06460
855	0.06460
870	0.06460
885	0.06460
900	0.06460
915	0.06460
930	0.06460
945	0.06460
960	0.06460
975	0.06460
990	0.06460
1005	0.06460
1020	0.06460
1035	0.06460
1050	0.06460
1065	0.06460
1080	0.06460
1095	0.06460
1110	0.06460
1125	0.06460
1140	0.06460
1155	0.06460
1170	0.06460
1185	0.06460
1200	0.06460
1215	0.06460
1230	0.06460
1245	0.06460
1260	0.06460
1275	0.06460
1290	0.06460
1305	0.06460
1320	0.06460
1335	0.06460
1350	0.06460
1365	0.06460
1380	0.06460
1395	0.06460
1410	0.06460
1425	0.06460
1440	0.06460
1455	0.06460
1470	0.06460
1485	0.06460
1500	0.06460
1515	0.06460
1530	0.06460
1545	0.06460
1560	0.06460
1575	0.06460
1590	0.06460
1605	0.06460
1620	0.06460
1635	0.06460
1650	0.06460
1665	0.06460
1680	0.06460
1695	0.06460
1710	0.06460
1725	0.06460
1740	0.06460
1755	0.06460
1770	0.06460
1785	0.06460
1800	0.06460
1815	0.06460
1830	0.06460
1845	0.06460
1860	0.06460
1875	0.06460
1890	0.06460
1905	0.06460
1920	0.06460
1935	0.06460
1950	0.06460
1965	0.06460
1980	0.06460
1995	0.06460
2010	0.06460
2025	0.06460
2040	0.06460
2055	0.06460
2070	0.06460
2085	0.06460
2100	0.06460
2115	0.06460
2130	0.06460
2145	0.06460
2160	0.06460
2175	0.06460
2190	0.06460
2205	0.06460
2220	0.06460
2235	0.06460
2250	0.06460
2265	0.06460
2280	0.06460
2295	0.06460
2310	0.06460
2325	0.06460
2340	0.06460
2355	0.06460
2370	0.06460
2385	0.06460
2400	0.06460
2415	0.06460
2430	0.06460
2445	0.06460
2460	0.06460
2475	0.06460
2490	0.06460
2505	0.06460
2520	0.06460
2535	0.06460
2550	0.06460
2565	0.06460
2580	0.06460
2595	0.06460
2610	0.06460
2625	0.06460
2640	0.06460
2655	0.06460
2670	0.06460
2685	0.06460
2700	0.06460
2715	0.06460
2730	0.06460
2745	0.06460
2760	0.06460
2775	0.06460
2790	0.06460
2805	0.06460
2820	0.06460
2835	0.06460
2850	0.06460
2865	0.06460
2880	0.06460
2895	0.06460
2910	0.06460
2925	0.06460
2940	0.06460
2955	0.06460
2970	0.06460
2985	0.06460
3000	0.06460
3015	0.06460
3030	0.06460
3045	0.06460
3060	0.06460
3075	0.06460
3090	0.06460
3105	0.06460
3120	0.06460
3135	0.06460
3150	0.06460
3165	0.06460
3180	0.06460
3195	0.06460
3210	0.06460
3225	0.06460
3240	0.06460
3255	0.06460
3270	0.06460
3285	0.06460
3300	0.06460
3315	0.06460
3330	0.06460
3345	0.06460
3360	0.06460
3375	0.06460
3390	0.06460
3405	0.06460
3420	0.06460
3435	0.06460
3450	0.06460
3465	0.06460
3480	0.06460
3495	0.06460
3510	0.06460
3525	0.06460
3540	0.06460
3555	0.06460
3570	0.06460
3585	0.06460
3600	0.06460
3615	0.06460
3630	0.06460
3645	0.06460
3660	0.06460
3675	0.06460
3690	0.06460
3705	0.06460
3720	0.06460
3735	0.06460
3750	0.06460
3765	0.06460
3780	0.06460
3795	0.06460
3810	0.06460
3825	0.06460
3840	0.06460
3855	0.06460
3870	0.06460
3885	0.06460
3900	0.06460
3915	0.06460
3930	0.06460
3945	0.06460
3960	0.06460
3975	0.06460
3990	0.06460
4005	0.06460
4020	0.06460
4035	0.06460
4050	0.06460
4065	0.06460
4080	0.06460
4095	0.06460
4110	0.06460
4125	0.06460
4140	0.06460
4155	0.06460
4170	0.06460
4185	0.06460
4200	0.06460
4215	0.06460
4230	0.06460
4245	0.06460
4260	0.06460
4275	0.06460
4290	0.06460
4305	0.06460
4320	0.06460
4335	0.06460
4350	0.06460
4365	0.06460
4380	0.06460
4395	0.06460
4410	0.06460
4425	0.06460
4440	0.06460
4455	0.06460
4470	0.06460
4485	0.06460
4500	0.06460
4515	0.06460
4530	0.06460
4545	0.06460
4560	0.06460
4575	0.06460
4590	0.06460
4605	0.06460
4620	0.06460
4635	0.06460
4650	0.06460
4665	0.06460
4680	0.06460
4695	0.06460
4710	0.06460
4725	0.06460
4740	0.06460
4755	0.06460
4770	0.06460
4785	0.06460
4800	0.06460
4815	0.06460
4830	0.06460
4845	0.06460
4860	0.06460
4875	0.06460
4890	0.06460
4905	0.06460
4920	0.06460
4935	0.06460
4950	0.06460
4965	0.06460
4980	0.06460
4995	0.06460
5010	0.06460
5025	0.06460
5040	0.06460
5055	0.06460
5070	0.06460
5085	0.06460
5100	0.06460
5115	0.06460
5130	0.06460
5145	0.06460
5160	0.06460
5175	0.06460
5190	0.06460
5205	0.06460
5220	0.06460
5235	0.06460
5250	0.06460
5265	0.06460
5280	0.06460
5295	0.06460
5310	0.06460
5325	0.06460
5340	0.06460
5355	0.06460
5370	0.06460
5385	0.06460
5400	0.06460
5415	0.06460
5430	0.06460
5445	0.06460
5460	0.06460
5475	0.06460
5490	0.06460
5505	0.06460
5520	0.06460
5535	0.06460
5550	0.06460
5565	0.06460
5580	0.06460
5595	0.06460
5610	0.06460
5625	0.06460
5640	0.06460
5655	0.06460
5670	0.06460
5685	0.06460
5700	0.06460
5715	0.06460
5730	0.06460
5745	0.06460
5760	0.06460
5775	0.06460
5790	0.06460
5805	0.06460
5820	0.06460
5835	0.06460
5850	0.06460
5865	0.06460
5880	0.06460
5895	0.06460
5910	0.06460
5925	0.06460
5940	0.06460
5955	0.06460
5970	0.06460
5985	0.06460
6000	0.06460
6015	0.06460
6030	0.06460
6045	0.06460
6060	0.06460
6075	0.06460
6090	0.06460
6105	0.06460
6120	0.06460
6135	0.06460
6150	0.06460
6165	0.06460
6180	0.06460
6195	0.06460
6210	0.06460
6225	0.06460
6240	0.06460
6255	0.06460
6270	0.06460
6285	0.06460
6300	0.06460
6315	0.06460
6330	0.06460
6345	0.06460
6360	0.06460
6375	0.06460
6390	0.06460
6405	0.06460
6420	0.06460
6435	0.06460
6450	0.06460
6465	0.06460
6480	0.06460
6495	0.06460
6510	0.06460
6525	0.06460
6540	0.06460
6555	0.06460
6570	0.06460
6585	0.06460
6600	0.06460
6615	0.06460
6630	0.06460
6645	0.06460
6660	0.06460
6675	0.06460
6690	0.06460
6705	0.06460
6720	0.06460
6735	0.06460
6750	0.06460
6765	0.06460
6780	0.06460
6795	0.06460
6810	0.06460
6825	0.06460
6840	0.06460
6855	0.06460
6870	0.06460
6885	0.06460
6900	0.06460
6915	0.06460
6930	0.06460
6	



Void Ratio = 0.700 Compression = 6.6%
D₀ = 0.0646 D₉₀ = 0.0648 D₁₀₀ = 0.0648 C_v at 22.30 min. = 0.083 ft.²/day

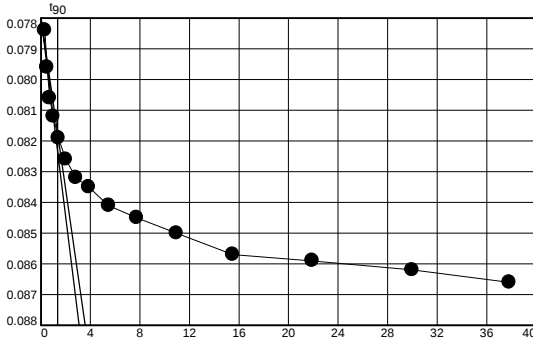
Pressure: 8.00 ksf

TEST READINGS

Load No. 8

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.06560	11	+0 00:00:00	0.08450
2	+0 00:00:06	0.07840	12	+0 02:00:00	0.08500
3	+0 00:00:15	0.07960	13	+0 04:00:00	0.08570
4	+0 00:00:30	0.08060	14	+0 08:00:00	0.08590
5	+0 00:00:60	0.08120	15	+0 15:00:00	0.08620
6	+0 00:02:00	0.08190	16	+0 23:51:29	0.08660
7	+0 00:04:00	0.08260			
8	+0 00:08:00	0.08320			
9	+0 00:15:00	0.08350			
10	+0 00:30:00	0.08410			

Clock Time	Dial Reading
0	0.06560
6	0.07840
15	0.07960
30	0.08060
60	0.08120
120	0.08190
240	0.08260
480	0.08320
900	0.08350
1800	0.08410
0	0.08450
2	0.08500
4	0.08570
8	0.08590
15	0.08620
23.5129	0.08660



Void Ratio = 0.661 Compression = 8.7%
D₀ = 0.0780 D₉₀ = 0.0818 D₁₀₀ = 0.0822 C_v at 1.85 min. = 0.975 ft.²/day

S & ME, INC.

Pressure: 16.00 ksf

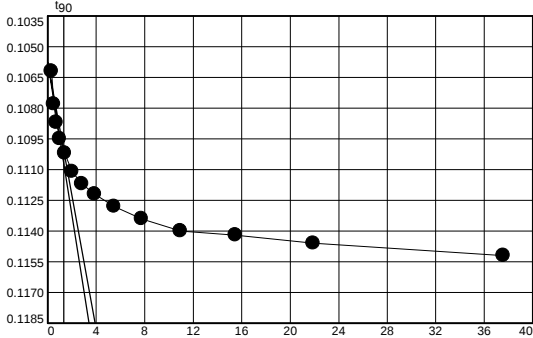
TEST READINGS

Load No. 9

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.08660	11	+0 00:00:00	0.11340
2	+0 00:00:06	0.10620	12	+0 02:00:00	0.11400
3	+0 00:00:15	0.10780	13	+0 04:00:00	0.11420
4	+0 00:00:30	0.10870	14	+0 08:00:00	0.11460
5	+0 00:00:60	0.10950	15	+0 23:32:47	0.11520
6	+0 00:02:00	0.11020			
7	+0 00:04:00	0.11110			
8	+0 00:08:00	0.11170			
9	+0 00:15:00	0.11220			
10	+0 00:30:00	0.11280			

The graph plots log₁₀ (Y-axis, ranging from 0.1035 to 0.1185) against Time in minutes (X-axis, ranging from 0 to 40). The data points show a rapid initial decrease in log₁₀ values, followed by a slower, more linear decrease. A fitted curve is shown, starting at approximately (0, 0.1045) and ending at approximately (37, 0.1152).

Time (min)	log ₁₀
0	0.1045
1	0.1055
2	0.1065
3	0.1075
4	0.1085
5	0.1095
6	0.1105
8	0.1115
10	0.1125
12	0.1135
14	0.1145
16	0.1155
18	0.1165
20	0.1175
22	0.1185
24	0.1195
26	0.1205
28	0.1215
30	0.1225
32	0.1235
34	0.1245
36	0.1255
37	0.1152



Void Ratio = 0.609 Compression = 11.5%
D₀ = 0.1058 D₉₀ = 0.1100 D₁₀₀ = 0.1105 C_v at 1.72 min. = 0.994 ft.²/day

S & ME, INC.

Form No. TR-43-D7012C-02
Revision No. : 0
Revision Date: 08/22/18

UNCONFINED COMPRESSION
(ASTM D7012 Method C)



S&ME, Inc. - Knoxville 1413 Topside Road, Louisville, TN 37777

Project Name: Bridge No. 75 on Polkville Rd over Hinton Creek

Project Number: 6235-17-005

Report Date: March 15, 2024

Reviewed By: Victoria Igoe



Boring No.	Sample No.	Depth (ft)	Dimensions, in.		Shape (See Key)	Area (in ²)	Unit Weight (lbs/ft ³)	Loading Rate (psi/sec)	Maximum Load (lbs)	Strength (psi)	Moisture (%)
			Length	Diameter							
B1-A	RS-1	24.6 - 25.0	4.48	1.96	A	3.02	172.1	67	26,250	8,692	0.0
B1-B	RS-2	30.5 - 30.9	4.42	1.97	A	3.05	174.3	68	16,700	5,475	0.1
B2-A	RS-3	18.2 - 18.6	4.18	1.97	A	3.05	171.4	80	35,998	11,803	0.0
B2-B	RS-4	25.0 - 25.4	4.61	1.97	A	3.05	173.6	92	53,742	17,620	0.0

NOTES: Effective (as received) unit weight as determined by RTH 109-93.
Loading rates were selected to target reaching failure between 2 and 15 minutes.
Test results for specimens not meeting the requirements of ASTM D4543-19 may differ from a test specimen that meets the requirements of ASTM D4543.

SHAPE KEY

ASTM D4543-19 Standard Practice for Preparing Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional and Shape Tolerance Section 1.2 - "Rock is a complex engineering material that can vary greatly as a function of lithology, stress history, weathering, moisture content and chemistry, and other natural geologic processes. As such, it is not always possible to obtain or prepare rock core specimens that satisfy the desirable tolerances given in this practice. Most commonly, this situation presents itself with weaker, more porous, and poorly cemented rock types and rock types containing significant or weak (or both) structural features. For rock types which are difficult to prepare, all reasonable efforts shall be made to prepare a specimen in accordance with this practice and for the intended test procedure. However, when it has been determined by trial and error that this is not possible, prepare the rock specimen to the closest tolerances practicable and consider this to be the best effort and report it as such and if allowable or necessary for the intended test, capping the ends of the specimen as discussed in this practice is permitted."

- A

Test specimen measurements met the desired shape tolerances of ASTM D4543-19 (side straightness, end flatness & parallelism, and end perpendicularity to axis)
- B

Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism, and end perpendicularity to axis. Specimen did not meet the desired tolerance for side straightness. Specimen prepared to closest tolerances practicable.
- C

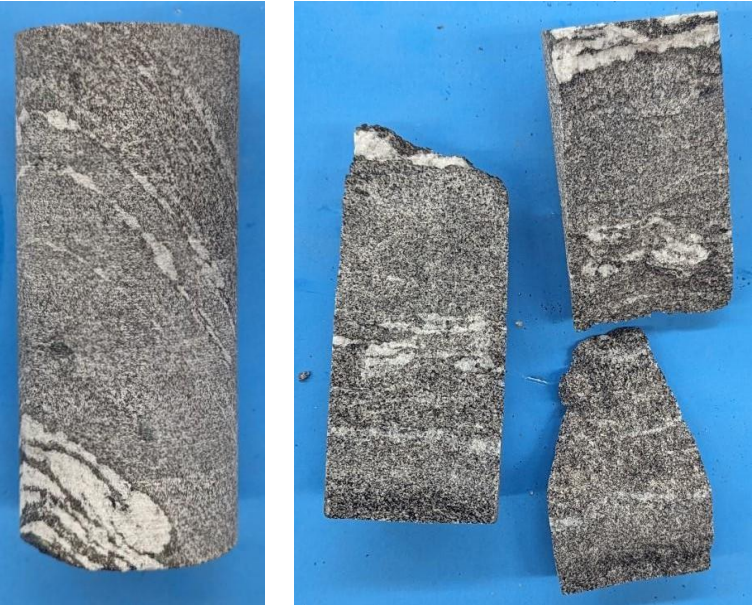
Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism. Specimen did not meet the desired tolerances for side straightness and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.
- D

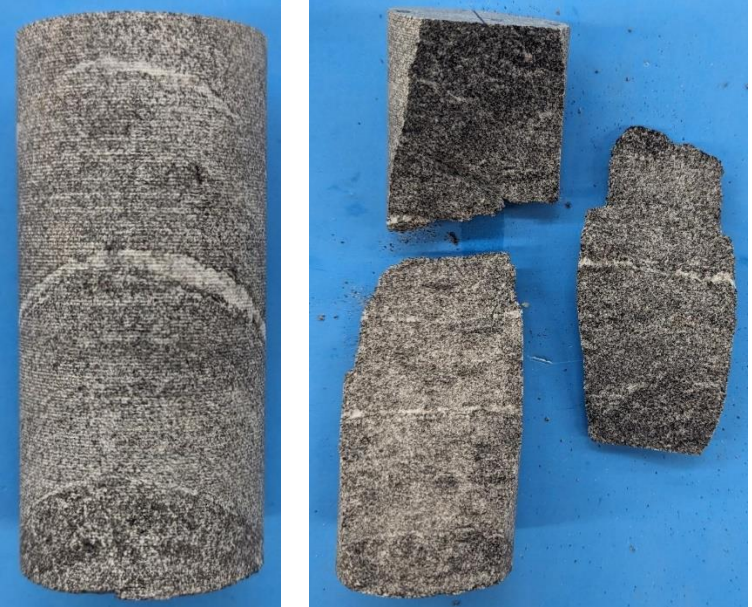
Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness. Specimen did not meet the desired tolerances for side straightness, parallelism and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.
- E

Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness and end perpendicularity to axis. Specimen did not meet the desired tolerance for side straightness and parallelism. Specimen prepared to closest tolerances practicable.

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.



			Date: 03/14/2024
Photographer: Ryan Skinner			
1	Location / Orientation	B1-A, RS-1 (24.6' – 25.0')	
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)	

			Date: 03/14/2024
Photographer: Ryan Skinner			
3	Location / Orientation	B2-A, RS-3 (18.2' – 18.6')	
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)	

			Date: 03/14/2024
Photographer: Ryan Skinner			
1	Location / Orientation	B1-B, RS-2 (30.5' – 30.9')	
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)	

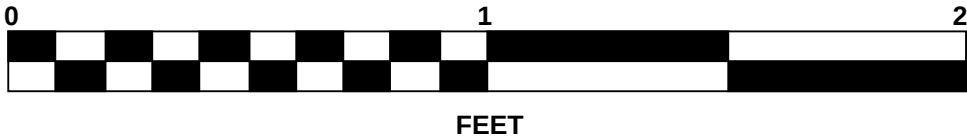
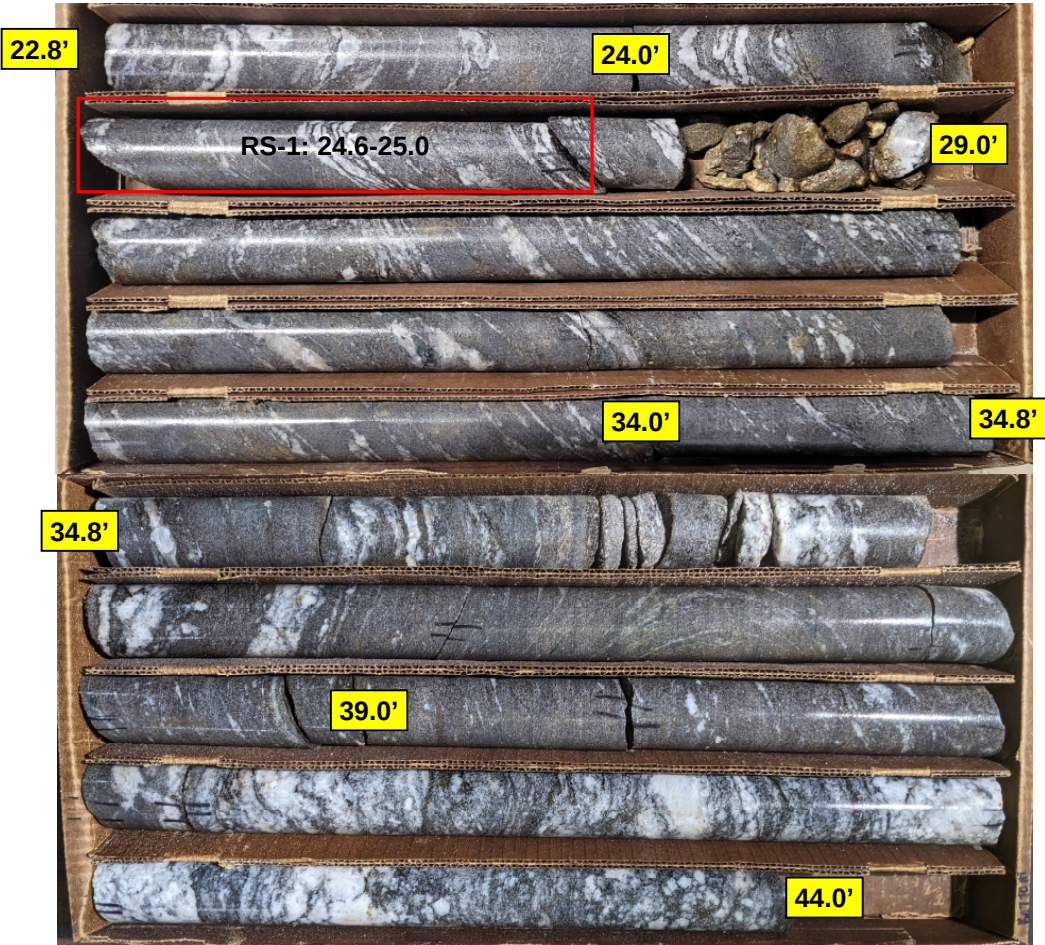
			Date: 03/14/2024
Photographer: Ryan Skinner			
4	Location / Orientation	B2-B, RS-4 (25.0' – 25.4')	
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)	



CORE PHOTOGRAPHS

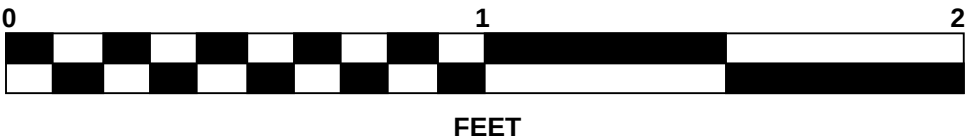
B1-A

BOXES 1 & 2: 22.8 – 44.0 FEET



B1-B

BOXES 1 & 2: 25.5 – 45.2 FEET

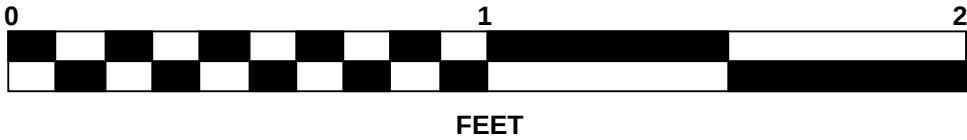
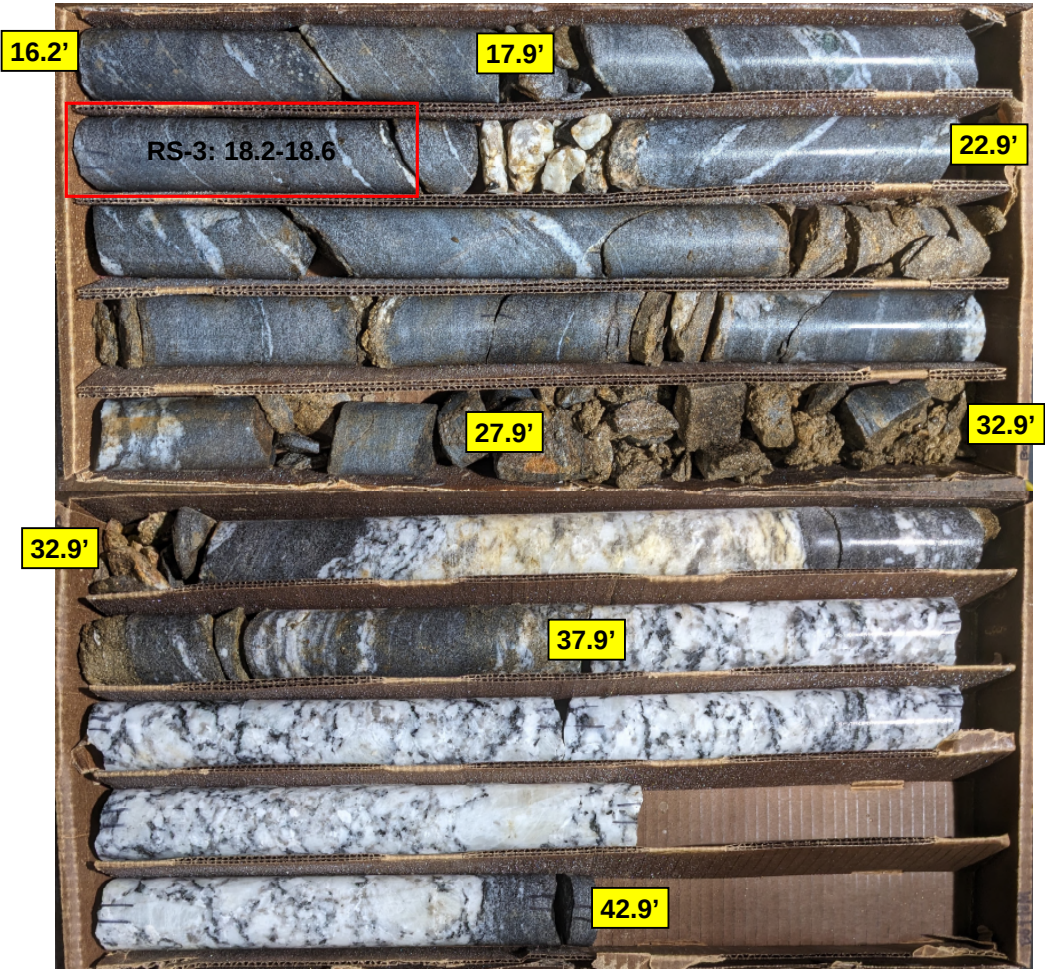




CORE PHOTOGRAPHS

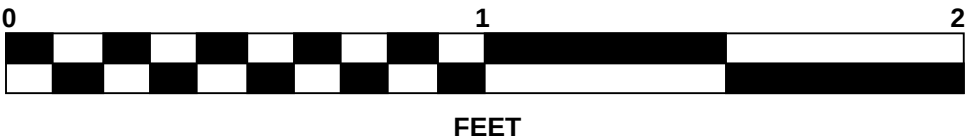
B2-A

BOXES 1 & 2: 16.2 – 42.9 FEET



B2-B

BOXES 1 & 2: 20.0 – 45.0 FEET



SITE PHOTOGRAPHS

Bridge No. 75 on –L– (SR 226) over Hinton Creek



Looking South