# FIG. 2-B

| BORING & SAMPLE No. | 130 | C-382-A | C-382-B | C-373-A | C-373-B | C-378 | C-383-A | C-383-B |
|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 5-23-40 | 9-17-41 | 8-25-41 | 8-7-41 | 8-7-41 | 8-12-41 | 9-17-41 | 8-25-41 |
| SAMPLED BY | Dewing | Meinke | Sheff | Sheff | Sheff | Rubey | Meinke | Sheff |
| DIST. OR CEN. LAB. TEST No. | VII-138.133 | VII-215.700 | VII-215.701 | VII-215.688 | VII-215.689 | VII-215.696 | VII-215.702 | VII-215.703 |
| MECHANICAL ANALYSIS TOTAL % PASSING: SQUARE OPENING (GRAVEL ETC. LARGER THAN 2000 MICRONS) | 3½"-100; 2½"-94 | 3"-100 | 4"-100 | 2½"-100 | 7"-100 | 2½"-100 | 2½"-100 | 2½"-100 |
| ¾" " " | 83 | 84 | 86 | 93 | 80 | 86 | 86 | 86 |
| 4 MESH (4760 MICRONS) | 74 | 65 | 67 | 81 | 70 | 65 | 69 | 69 |
| 8 " (2380 ") (SAND 50 TO 2000 MICRONS) | 72 | 60 | 62 | 77 | 67 | 60 | 65 | 66 |
| 50 " (297 ") | 49 | 23 | 19 | 50 | 45 | 16 | 26 | 19 |
| 100 " (149 ") | 35 | 16 | 9 | 31 | 32 | 9 | 15 | 10 |
| 200 " (74 ") | 22 | 11 | 7 | 21 | 20 | 6 | 10 | 6 |
| 270 " (53 ") SILT 5 to 50 MICRONS | 19 | 10 | 5 | 18 | 18 | 5 | 9 | 6 |
| 5 MICRONS CLAY 1 to 5 " | | 3 | 2 | 4 | 5 | 2 | 5 | 2 |
| 1 " COLLOIDS MINUS 1" | | 1 | 0.5 | 1 | 2 | 0.5 | 2 | 0.4 |
| CEMENTING VALUE | 320 | | | | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 9.8 | 9.0 | 7.0 | 9.4 | 8.2 | 7.5 | 8.4 | 8.4 |
| WEIGHT PER CU. FT. COMPACTED-LBS. | 121.9 | 123.3 | 123.0 | 122.5 | 125.9 | 123.6 | 122.5 | 125.3 |
| H₂O IN SPECIMEN AFTER SOAKING — TOP ONE INCH | | | | | | | | |
| H₂O IN SPECIMEN AFTER SOAKING — AVERAGE | 10.5 | 9.6 | 9.1 | 10.5 | 9.0 | 8.8 | 9.2 | 9.0 |
| SWELL-PERCENT | 0.1 | 0.1 | 0.1 | 0.5 | 0.2 | 0.0 | 0.1 | 0.1 |
| SOIL IN PLACE: MOISTURE % OF DRY WEIGHT | | 5.0 (C-420) | 6.0 | 10.2 | | 8.3 | 3.3 (C-445) | 9.1 |
| DRY WT. PER CU. FT. -- LBS. | | 125 | 128.0 | 124.5 | | 131.1 | 126.5 | 128.2 |
| RELATIVE COMPACTION -- % | | 98 | 101 | 102 | | 106 | 100 | 99. |
| U.S.P.R.A. CLASSIFICATION * | | A-2 | A-2 | A-2 | A-2 | A-3 | A-2 | A-2 |
| PLASTICITY INDEX | | 1 | 0 | 1 | 2 | 0 | 1 | 0 |
| LIQUID LIMIT | | 15 | 15 | 18 | 17 | 17 | 17 | 15 |
| SOIL TYPE (SEE CHART) | Grav. Sand | Grav. Sand | Grav. Sand | Grav. Sand | Grav. Sand | Grav. Sand | Grav. Sand | Grav. Sand |

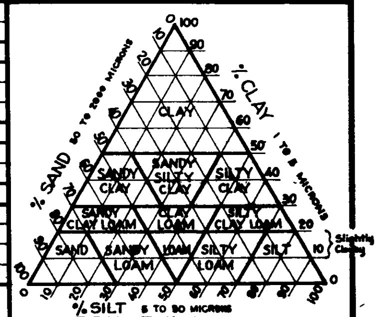
| BORING & SAMPLE No. | C-333 | C-384-A | C-384-B | 101 | C-348 | C-385-A | C-385-B | C-351 |
|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 7-24-41 | 9-17-41 | 8-25-41 | 4-22-40 | 7-28-41 | 9-17-41 | 8-25-41 | 7-29-41 |
| SAMPLED BY | Rubey | Meinke | Sheff | J.F. | Rubey | Meinke | Sheff | Rubey |
| DIST. OR CEN. LAB. TEST No. | VII-215.644 | VII-215.704 | VII-215.705 | VII-138.101 | VII-215.656 | VII-215.706 | VII-215.707 | VII-215.659 |
| SQUARE OPENING | 1½"-100 | 2½"-100 | 2"-100 | | | 2½"-100 | 2"-100 | |
| ¾" | 98 | 86 | 89 | 100 | 100 | 89 | 92 | |
| 4 MESH (4760 MICRONS) | 88 | 71 | 69 | 97 | 93 | 74 | 79 | 100 |
| 8 (2380) | 85 | 65 | 64 | 93 | 91 | 69 | 71 | 98 |
| 50 (297) | 66 | 27 | 25 | 82 | 74 | 27 | 23 | 90 |
| 100 (149) | 57 | 16 | 14 | 73 | 66 | 17 | 14 | 84 |
| 200 (74) | 45 | 11 | 9 | 60 | 53 | 12 | 9 | 66 |
| 270 (53) | 39 | 9 | 8 | 56 | 47 | 10 | 8 | 60 |
| 5 MICRONS | 9 | 4 | 3 | | 15 | 4 | 2 | 16 |
| 1 MICRON | 3 | 2 | 0.3 | | 6 | 1 | 1 | 5 |
| CEMENTING VALUE | | | | | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 9.7 | 6.0 | 7.8 | 10.9 | 9.9 | 9.2 | 9.4 | 12.0 |
| WEIGHT PER CU. FT. COMPACTED-LBS. | 123.9 | 120.8 | 127.1 | 124.5 | 125.0 | 121.7 | 121.7 | 119.0 |
| H₂O IN SPECIMEN AFTER SOAKING — TOP ONE INCH | | | | | | | | |
| H₂O IN SPECIMEN AFTER SOAKING — AVERAGE | 10.6 | 10.2 | 8.5 | 11.6 | 11.1 | 9.6 | 9.4 | 13.4 |
| SWELL-PERCENT | 0.6 | 0.1 | 0.2 | 1.9 | 2.2 | 0.1 | 0.0 | 1.7 |
| SOIL IN PLACE: MOISTURE % OF DRY WEIGHT | 7.7 | | 5.6 | | | 5.5 | 6.5 | 10.3 |
| DRY WT. PER CU. FT. -- LBS. | 114.3 | | 125.8 | | | 121.8 | 121.8 | 105.3 |
| RELATIVE COMPACTION -- % | 94 | | 95 | | | 97 | 98 | 91 |
| U.S.P.R.A. CLASSIFICATION * | A-2 | A-2 | A-2 | | A-2 ? | A-2 | A-2 | A-2 ? |
| PLASTICITY INDEX | 2 | 1 | 1 | | 6 | 1 | 1 | 8 |
| LIQUID LIMIT | 19 | 16 | 17 | | 21 | 14 | 15 | 22 |
| SOIL TYPE (SEE CHART) | Grav.Sdy.Lm. | Grav. Sand | Grav Sand | Loam | Loam | Grav. Sand | Grav. Sand | Loam |

BEARING VALUE TEST — % OF STANDARD (C = COMPACTED; C. S. = COMPACTED AND SOAKED)

| STD. PEN. | STANDARD LOADS C. | C. S. | 130 C. | 130 C.S. | C-382-A C. | C-382-A C.S. | C-382-B C. | C-382-B C.S. | C-373-A C. | C-373-A C.S. | C-373-B C. | C-373-B C.S. | C-378 C. | C-378 C.S. | C-383-A C. | C-383-A C.S. | C-383-B C. | C-383-B C.S. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1" | 2000 | 1000 | 27 | 70 | 26 | 64 | 32 | 74 | 29 | 38 | 38 | 81 | 30 | 28 | 29 | 58 | 31 | 61 |
| 0.2" | 2800 | 1500 | 16 | 45 | 13 | 39 | 15 | 32 | 30 | 43 | 33 | 53 | 16 | 23 | 15 | 26 | 19 | 30 |
| 0.3" | 3400 | 1900 | 15 | 27 | 9 | 21 | 9 | 22 | 24 | 38 | 27 | 38 | 9 | 19 | 9 | 14 | 13 | 22 |
| 0.4" | 3800 | 2300 | 17 | 24 | 8 | 14 | 8 | 20 | 23 | 31 | 24 | 31 | 8 | 17 | 8 | 11 | 13 | 18 |
| 0.5" | 4300 | 2600 | 17 | 21 | 9 | 12 | 9 | 22 | 21 | 26 | 21 | 30 | 8 | 17 | 8 | 10 | 13 | 17 |

| STD. PEN. | C-333 C. | C-333 C.S. | C-384-A C. | C-384-A C.S. | C-384-B C. | C-384-B C.S. | 101 C. | 101 C.S. | C-348 C. | C-348 C.S. | C-385-A C. | C-385-A C.S. | C-385-B C. | C-385-B C.S. | C-351 C. | C-351 C.S. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1" | 33 | 34 | 31 | 41 | 31 | 57 | 19 | 11 | 25 | 10 | 22 | 55 | 21 | 51 | 17 | 8 |
| 0.2" | 34 | 41 | 13 | 23 | 22 | 50 | 27 | 20 | 34 | 16 | 14 | 21 | 10 | 28 | 27 | 16 |
| 0.3" | 26 | 34 | 10 | 17 | 16 | 39 | 28 | 22 | 36 | 18 | 7 | 13 | 6 | 14 | 30 | 16 |
| 0.4" | 25 | 30 | 10 | 14 | 14 | 32 | 30 | 22 | 35 | 19 | 7 | 10 | 6 | 10 | 32 | 15 |
| 0.5" | 25 | 28 | 9 | 15 | 14 | 28 | 31 | 23 | 26 | 20 | 8 | 12 | 6 | 10 | 27 | 15 |

* U.S.P.R.A. Class. based on Hogentogler & Johnson Chart, Proc. Asph. Pav. Technologists Jan., 1937



SOIL TYPE CHART

**LEGEND AND ABBREVIATIONS**

SUBGRADE DENSITY SAMPLES: C101 — PLAN VIEW OF SAMPLE; MOIST. CONTENT - % OF DRY WT.; DENSITY - LBS/CU.FT.

RELATIVE COMPACTION SAMPLES: THESE SAMPLES NOT SHOWN IN PLAN; MOISTURE CONTENT - % OF DRY WT; DENSITY - LBS./CU.FT.; RELATIVE COMPACTION - %

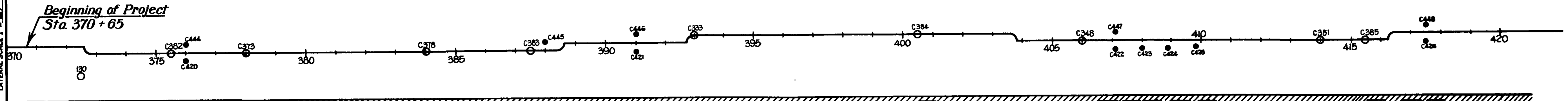
SOIL SAMPLES FOR COMPLETE TESTS: C-416 PLAN VIEW OF SAMPLE; BV = BEARING VALUE @ 0.1" SOAKED; MOIST. CONT. - % OF DRY WT.; DENSITY - LBS./CU.FT; RELATIVE COMPACTION

QUALITY OF MATERIAL FOR SUBGRADE (BV%): 80%+; 50%-79%; 30%-49%; 20%-29%; 6%-19%; 0%-5%

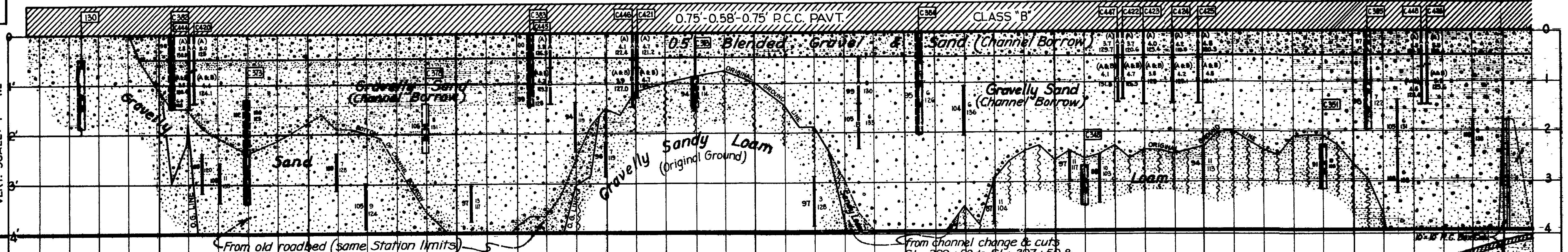
LEGEND OF ROCK AND SOIL TYPES: HARD ROCK; SOFT ROCK; SANDSTONE; SHALE; SAND; GRAVEL; CLAY; LOAM, CLAY LOAM, SANDY LOAM, SILTY LOAM, CLAYEY SAND, SILTY CLAY LOAMS, ETC. (RELATIVE AMOUNTS OF CLAY INDICATED BY SPACING OF CLAY LINES)

QUALITY

PLAN OF BORINGS




DIAGRAMMATIC PROFILE OF SUBGRADE — VERT. SCALE: 1" = 1.2'




CENTER LINE PROFILE & GRADE — VERT. SCALE: 1" = 6'

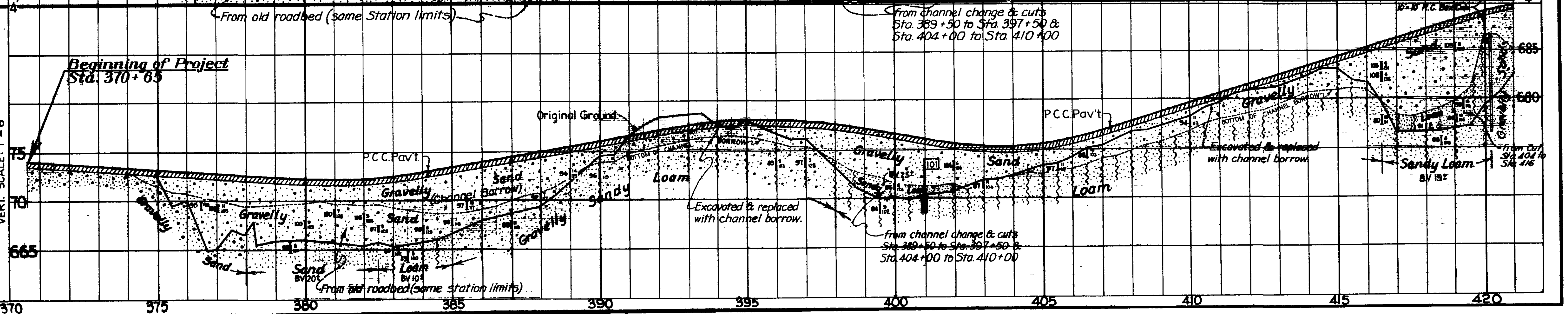



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FIG. 3-B

| | C-353 | C-386-A | C-386-B | C-377 | C-387-A | C-387-B | C-371 | C-388-A | C-388-B | C-335 |
|---|---|---|---|---|---|---|---|---|---|---|
| BORING & SAMPLE No. | C-353 | C-386-A | C-386-B | C-377 | C-387-A | C-387-B | C-371 | C-388-A | C-388-B | C-335 |
| DATE SAMPLED | 7-29-41 | 9-18-41 | 8-25-41 | 8-11-41 | 9-26-41 | 8-25-41 | 8-6-41 | 9-26-41 | 8-26-41 | 7-24-41 |
| SAMPLED BY | Rubey | Marlowe | Sheff | Rubey | Marlowe | Sheff | Rubey | Marlowe | Sheff | Rubey |
| DIST. OR GEN. LAB. TEST No. | VII-215,661 | VII-215,706 | VII-215,709 | VII-215,696 | VII-215,710 | VII-215,711 | VII-215,695 | VII-215,712 | VII-215,713 | VII-215,646 |
| SIEVE ANALYSIS — SQUARE OPENINGS | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 | 2" - 100 |
| | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 | 1½" - 100 |
| | ¾" - 93 | ¾" - 91 | ¾" - 89 | ¾" - 100 | ¾" - 89 | ¾" - 78 | ¾" - 98 | ¾" - 92 | ¾" - 89 | ¾" - 95 |
| | ⅜" - 69 | ⅜" - 72 | ⅜" - 72 | ⅜" - 98 | ⅜" - 72 | ⅜" - 57 | ⅜" - 93 | ⅜" - 71 | ⅜" - 72 | ⅜" - 81 |
| | #4 (4.760 MM) - 61 | #4 - 65 | #4 - 68 | #4 - 97 | #4 - 63 | #4 - 55 | #4 - 92 | #4 - 63 | #4 - 66 | #4 - 76 |
| | #8 (2.380 MM) - 50 | #8 - 50 | #8 - 52 | #8 - 96 | #8 - 48 | #8 - 43 | #8 - 84 | #8 - 48 | #8 - 49 | #8 - 54 |
| | #16 (1.190 MM) - 43 | #16 - 22 | #16 - 17 | #16 - 75 | #16 - 11 | #16 - 7 | #16 - 78 | #16 - 16 | #16 - 10 | #16 - 47 |
| | #30 (0.595 MM) - 36 | #30 - 12 | #30 - 13 | #30 - 54 | #30 - 8 | #30 - 6 | #30 - 63 | #30 - 13 | #30 - 7 | #30 - 36 |
| | #50 (0.297 MM) - 23 | #50 - 15 | #50 - 11 | #50 - 45 | #50 - 7 | #50 - 5 | #50 - 53 | #50 - 11 | #50 - 6 | #50 - 29 |
| | #100 (0.149 MM) - 14 | #100 - 11 | #100 - 12 | #100 - 11 | #100 - 7 | #100 - 1 | #100 - 12 | #100 - 4 | #100 - 1 | #100 - 8 |
| | #200 (0.074 MM) - 12 | #200 - 5 | #200 - 4 | #200 - 4 | #200 - 1 | #200 - 0.3 | #200 - 3 | #200 - 2 | #200 - 0.4 | #200 - 3 |
| | 270 (0.053 MM) - 12 | BELT-O-SO GRADING | BELT-O-SO GRADING | | | | | | | |
| | 5 MICRONS - 3 | SILT & CLAY | SILT & CLAY | | | | | | | |
| | 1 MICRON - 3 | VOLUME WHICH I | VOLUME WHICH I | | | | | | | |
| CEMENTING VALUE | | | | | | | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 7.9 | 7 | 8.1 | 10.2 | 9.1 | 7.2 | 10.8 | 7.6 | 8.1 | 9.1 |
| WEIGHT PER CU. FT. COMPACTED LBS. | 123.9 | 122.5 | 123.0 | 129.6 | 124.2 | 124.8 | 121.1 | 127.7 | 128.8 | 127.7 |
| % OF STANDARD | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. | C | C.S. |
| C — COMPACTED | B.T. 2000 / 1000 | 18 | 47 | 27 | 46 | 27 | 56 | 29 | 21 | 28 | 18 | 29 | 61 | 38 | 15 | 34 | 83 | 29 | 77 | 39 | 32 | 43 | 15 |
| | B.T. 2000 / 1000 | 21 | 40 | 17 | 23 | 14 | 29 | 32 | 20 | 13 | 37 | 15 | 38 | 20 | 53 | 15 | 37 | 33 | 48 | 45 | 26 |
| | B.T. 3000 / 1000 | 23 | 39 | 10 | 14 | 8 | 18 | 23 | 29 | 9 | 19 | 11 | 23 | 37 | 23 | 14 | 34 | 10 | 16 | 28 | 41 | 41 | 25 |
| C.S. — COMPACTED AND SOAKED | B.T. 3000 / 2000 | 22 | 35 | 8 | 14 | 7 | 14 | 19 | 25 | 9 | 16 | 10 | 15 | 28 | 23 | 16 | 26 | 7 | 12 | 30 | 37 | 30 | 24 |
| | B.T. 4000 / 2000 | 19 | 36 | 8 | 16 | 7 | 14 | 19 | 24 | 10 | 16 | 10 | 20 | 28 | 23 | 15 | 26 | 6 | 15 | 27 | 36 | 32 | 24 |
| % H₂O IN SPECIMEN AFTER SOAKING | TOP ONE INCH | | | 9.0 | 9.6 | | | 9.1 | 8.9 | 8.5 | | | | 12.3 | | 8.0 | 9.3 | 9.3 | | | | 12.6 | |
| | AVERAGE | 7.7 | | 9.0 | 9.6 | | | 9.1 | 8.9 | 8.5 | | | | 12.3 | | 8.0 | 9.3 | 9.3 | | | | 12.6 | |
| | SWELL PERCENT | 0.1 | | 0.1 | | | | 0.7 | 0.1 | 0.1 | | | | 1.0 | | 0.1 | 0.1 | 0.6 | | | | 2.4 | |
| MOISTURE % OF DRY WEIGHT | | 3.8 | | 4.9 | | 8.3 | | 3.3 | 4.3 | 4.5 | | | | 9.6 | | 6.8 | 11.6 | 8.8 | | | | | |
| DRY WT. PER CU. FT. — LBS. | | 128.8 | | 120.1 | | 130.3 | | 111.4 | 124.5 | 123.7 | 131.9 | | | 110.1 | | 126.3 | 125.0 | 115.6 | | | | | |
| RELATIVE COMPACTION — % | | 100 | | 95 | | 104 | | 94 | 98 | 100 | | | | 90 | | 97 | 95 | 95 | | | | | |
| U.S.P.R.A. CLASSIFICATION (SEE SOIL CHART) | | A-2 | | A-2 | | A-2 | | A-2 | A-2 | A-2 | | | | A-2 | | A-2 | A-2 | A-2 | | | | | |
| PLASTICITY INDEX | | | | 2 | | 0 | | | 5 | 0 | | | | 5 | | 2 | | 5 | | | | | |
| LIQUID LIMIT | | | | 15 | | 15 | | 19 | 14 | 15 | | | | 22 | | 14 | 14 | 17 | | | | | |
| SOIL TYPE (SEE CHART SHT. 1) | Grav Sand | | | Grav Sand | | Grav Sand | | Sdy. Lm. | Grav Sand | Grav Sand | | | | Loam | | Grav Sand | Grav Sand | Grav Sdy Lm | | | | Loam | |

**LEGEND AND ABBREVIATIONS**

SUBGRADE DENSITY SAMPLES — PLAN VIEW OF SAMPLE; MOIST. CONTENT - % OF DRY WT.; DENSITY - LBS./CU.FT.

RELATIVE COMPACTION SAMPLES — THESE SAMPLES NOT SHOWN IN PLAN; MOISTURE CONTENT - % OF DRY WT.; DENSITY - LBS/CU.FT.; RELATIVE COMPACTION - %

SOIL SAMPLES FOR COMPLETE TESTS — PLAN VIEW OF SAMPLE; BEARING VALUE - ø-0.1/3SAKED; MOIST. CONT. - % OF DRY WT.; DENSITY - LBS./CU.FT.; RELATIVE COMPACTION - %

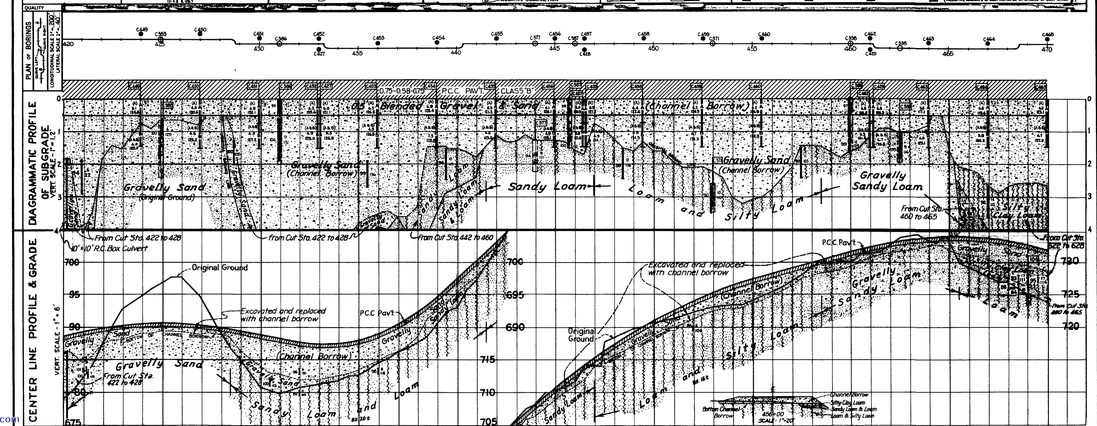
QUALITY OF MATERIAL FOR SUBGRADE (B.V.)

| | |
|---|---|
| 80-5+ | 80%-49% |
| 50% - 79% | 8% - 19% |
| 50% - 49% | 0% - 5% |

**LEGEND OF ROCK AND SOIL TYPES**

HARD ROCK, SOFT ROCK, SANDSTONE, SHALE, SAND, GRAVEL, CLAY, SILT, LOAM, SILTY LOAM, CLAYEY LOAM, SILTY CLAY LOAM, ETC. (ALL LOAMS WITH SILT AND CLAY MIXTURES OF UNKNOWN OR LIGHT LIMITS)

See SOIL TYPE CHART on Sheet 1

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# FIG. 4-B

| BORING & SAMPLE No. | C-312 | C-408-A | C-408-B | C-374 | C-409-A | C-409-B |
|---|---|---|---|---|---|---|
| DATE SAMPLED | 7-17-41 | 9-28-41 | 9-12-41 | 8-7-41 | 9-28-41 | 9-13-41 |
| SAMPLED BY | Rubey | Rubey | Meinke | Rubey | Rubey | Meinke |
| DIST OR CEN LAB TEST No | VII-215.623 | VII-215.735 | VII-215.736 | VII-215.690 | VII-215.737 | VII-215.738 |
| MECHANICAL ANALYSIS TOTAL % PASSING: SQUARE OPENING (GRAVEL ETC. LARGER THAN 2000 MICRONS) | | 3"-100 | 2"-100 | 2½"-100 | 3"-100 | 2½"-100 |
| 3/4" " " | | 89 | 87 | 91 | 82 | 88 |
| 4 MESH (4760 MICRONS) | | 70 | 67 | 73 | 61 | 67 |
| 8 " (2380 ") (SAND 50 TO 2000 MICRONS) | #30-100 | 64 | 61 | 65 | 51 | 62 |
| 50 " (297 ") | 99 | 25 | 28 | 14 | 13 | 21 |
| 100 " (149 ") | 99 | 16 | 21 | 8 | 8 | 11 |
| 200 " (74 ") | 98 | 12 | 17 | 5 | 6 | 7 |
| 270 " (53 ") SILT 5 to 50 MICRONS | 93 | 11 | 16 | 5 | 5 | 6 |
| 5 MICRONS (CLAY 1 to 5 ") | 28 | 25 | 7 | 1 | 1 | 3 |
| 1 " (COLLOIDS MINUS 1") | 8 | 1 | 3 | 0.5 | 0.4 | 1 |
| CEMENTING VALUE | | | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | |
| LINEAL SHRINKAGE % | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 109 | 8.8 | 70 | 8.1 | 7.4 | 8.7 |
| WEIGHT PER CU. FT COMPACTED-LBS | 125 3 | 124.8 | 1347 | 121.9 | 126.2 | 123.6 |
| H₂O IN SPECIMEN AFTER SOAKING: TOP ONE INCH | | | | | | |
| H₂O IN SPECIMEN AFTER SOAKING: AVERAGE | 14.9 | 8.8 | 7.2 | 9.5 | 81 | 9.4 |
| SWELL-PERCENT | 6.8 | 0.1 | 0.2 | 0.0 | 0.1 | 0.1 |
| SOIL IN PLACE: MOISTURE % OF DRY WEIGHT | 13.5 | 3.7 (C-466) | 8.7 | | 4.7 (C-470) | 4.1 |
| DRY WT. PER CU. FT -- LBS. | 114.4 | 120.4 (C-466) | 1405 | | 126.9 (C-470) | 131.6 |
| RELATIVE COMPACTION -- % | 95 | 94 | 102 | | 96 | 104 |
| U.S.P.R.A. CLASSIFICATION (SEE SHT 1) | A-7 | A-2 | A-2 | A-2 | A-2 | A-2 |
| PLASTICITY INDEX | 17 | 2 | 10 | 0 | 0+ | 1 |
| LIQUID LIMIT | 38 | 14 | 25 | 15 | 15 | 15 |
| SOIL TYPE (SEE CHART SHT.-1) | Sty.Cl. Lm | Grav.Sand | Grav Sand | Grav.Sand | Grav Sand | Grav. Sand |

| BORING & SAMPLE No. | C-298 | 106 | C-43 | C-410-A | C-410-B | C-306 |
|---|---|---|---|---|---|---|
| DATE SAMPLED | 7-15-41 | 4-23-40 | 4-15-41 | 9-28-41 | 9-13-41 | 7-16-41 |
| SAMPLED BY | Meinke | J.F. | Meinke | Rubey | Meinke | Rubey |
| DIST OR CEN LAB TEST No | VII-215.609 | VII-138.107 | VII-215 50 | VII-215.739 | VII-215.740 | VII-215.617 |
| SQUARE OPENING | | | | 3"-100 | 2½"-100 | 1½"-100 |
| 3/4" | | 100 | | 89 | 90 | 96 |
| 4 MESH (4760 MICRONS) | | 99 | | 70 | 73 | 89 |
| 8 (2380) | 100 | 98 | | 61 | 68 | 88 |
| 50 (297) | 99 | 95 | | 15 | 24 | 79 |
| 100 (149) | 98 | 91 | | 9 | 13 | 74 |
| 200 (74) | 95 | 80 | | 6 | 8 | 59 |
| 270 (53) | 94 | 75 | | 5 | 7 | 56 |
| 5 MICRONS | 33 | | | 1 | 4 | 18 |
| 1 MICRON | 16 | | | 0.3 | 2 | 5 |
| CEMENTING VALUE | | 597 | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | |
| LINEAL SHRINKAGE % | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 11.4 | 9.8 | 10.3 | 8.1 | 8.5 | 8 6 |
| WEIGHT PER CU. FT COMPACTED-LBS | 124.5 | 123.9 | 127.7 | 123.6 | 125.3 | 129.9 |
| H₂O AFTER SOAKING: TOP ONE INCH | | | | | | |
| H₂O AFTER SOAKING: AVERAGE | 15.9 | 9.9 | 13 1 | 8.9 | 9.0 | 11.4 |
| SWELL-PERCENT | 7.0 | 51 | 5.6 | 0.1 | 0.1 | 45 |
| MOISTURE % OF DRY WEIGHT | 13.5 | | | | 5.8 | 11.4 |
| DRY WT. PER CU. FT -- LBS. | 115.9 | | | | 130.9 | 114.6 |
| RELATIVE COMPACTION -- % | 97 | | | | 102 | 93 |
| U.S.P.R.A. CLASSIFICATION | BORDERLINE A-6:A-7 | | | A-2 | A-2 | BORDERLINE A-2:A-4 |
| PLASTICITY INDEX | 18 | | | 1 | 1 | 9 |
| LIQUID LIMIT | 35 | | | 14 | 16 | 24 |
| SOIL TYPE | Sty.Clay | Clay Loam | Clay Loam | Grav. Sand | Grav Sand | Clay Loam |

| BORING & SAMPLE No. | C-411-A | C-411-B | C-42 | C-38 | C-397 | 107 | C-412-A | C-412-B |
|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 9-28-41 | 9-18-41 | 4-15-41 | 4-14-41 | 9-8-41 | 4-23-41 | 10-1-41 | 9-18-41 |
| SAMPLED BY | Rubey | Meinke | Meinke | Meinke | Meinke | J.F. | Rubey | Meinke |
| DIST OR CEN LAB TEST No | VII-215.741 | VII-215.742 | VII-215 49 | VII-215.44 | VII-215.724 | VII-138.108 | VII-215.743 | VII-215.744 |
| SQUARE OPENING | 2"-100 | 2½"-100 | | | | | 2½"-100 | 3"-100 |
| 3/4" | 90 | 93 | 3/8"-100 | | 3/8"-100 | 100 | 92 | 93 |
| 4 MESH (4760 MICRONS) | 73 | 80 | 98 | | 99 | 96 | 75 | 86 |
| 8 (2380) | 67 | 76 | 95 | | 98 | 95 | 67 | 83 |
| 50 (297) | 20 | 45 | 82 | | 64 | 92 | 24 | 46 |
| 100 (149) | 9 | 34 | 74 | | 41 | 85 | 12 | 25 |
| 200 (74) | 6 | 25 | 62 | | 28 | 77 | 7 | 15 |
| 270 (53) | 5 | 21 | 57 | | | 73 | 6 | 12 |
| 5 MICRONS | 2 | 7 | 22 | | | | 2 | 4 |
| 1 MICRON | 1 | 3 | 9 | | | | 1 | 2 |
| CEMENTING VALUE | | | 207 | 199 | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 8.7 | 10.1 | 9.4 | 10.3 | 12.2 | 11.4 | 8.5 | 11.9 |
| WEIGHT PER CU. FT COMPACTED-LBS | 121.9 | 120.8 | 126.2 | 127.4 | 115.4 | 122.8 | 124.5 | 114.2 |
| H₂O AFTER SOAKING: TOP ONE INCH | | | | | | | | |
| H₂O AFTER SOAKING: AVERAGE | 9.4 | 10.6 | 10.8 | 12.2 | 13.4 | 14.5 | 9.1 | 12.3 |
| SWELL-PERCENT | 0.1 | 0.2 | 2.2 | 4.1 | 0.7 | 7.2 | 0.1 | 0.2 |
| MOISTURE % OF DRY WEIGHT | 5.8 (C-473, C-432) | 8.2 | | | 15.4 | | 4.8 (C-474, C-433) | 9.3 |
| DRY WT. PER CU. FT -- LBS. | 117.8 (C-473, C-432) | 116.6 | | | 101.1 | | 122.6 (C-474, C-433) | 1145 |
| RELATIVE COMPACTION -- % | 94 | 95 | | | 90 | | 96 | 99 |
| U.S.P.R.A. CLASSIFICATION | A-2 | A-2 | | | | | A-2 | A-2 |
| PLASTICITY INDEX | 0 | 3 | | | | | 0 | 2 |
| LIQUID LIMIT | 14 | 16 | | | | | 14 | 14 |
| SOIL TYPE | Grav. Sand | Grav Sand | Clay Lm. | Clay Loam | Sand | Clay Loam | Grav. Sand | Grav.Sand |

BEARING VALUE TEST — % OF STANDARD; C = COMPACTED; C.S. = COMPACTED AND SOAKED

| STD. PEN | STANDARD LOADS C. | STANDARD LOADS C.S. | C-312 C. | C-312 C.S. | C-408-A C. | C-408-A C.S. | C-408-B C. | C-408-B C.S. | C-374 C. | C-374 C.S. | C-409-A C. | C-409-A C.S. | C-409-B C. | C-409-B C.S. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1" | 2000 | 1000 | 55 | 3 | 30 | 74 | 52 | 85 | 24 | 35 | 30 | 68 | 29 | 31 |
| 0.2" | 2800 | 1500 | 60 | 4 | 16 | 60 | 55 | 86 | 15 | 20 | 18 | 45 | 14 | 23 |
| 0.3" | 3400 | 1900 | 62 | 5 | 10 | 39 | 57 | 83 | 8 | 15 | 13 | 33 | 9 | 18 |
| 0.4" | 3800 | 2300 | 64 | 5 | 8 | 30 | 56 | 80 | 7 | 16 | 14 | 24 | 9 | 15 |
| 0.5" | 4300 | 2600 | 62 | 6 | 8 | 27 | 51 | 79 | 7 | 14 | 13 | 20 | 10 | 15 |

| STD. PEN | C-298 C. | C-298 C.S. | 106 C. | 106 C.S. | C-43 C. | C-43 C.S. | C-410-A C. | C-410-A C.S. | C-410-B C. | C-410-B C.S. | C-306 C. | C-306 C.S. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1" | 47 | 3 | 46 | 5 | 63 | 5 | 26 | 65 | 36 | 62 | 73 | 6 |
| 0.2" | 57 | 5 | 49 | 7 | 61 | 7 | 13 | 40 | 18 | 41 | 74 | 9 |
| 0.3" | 60 | 5 | 50 | 9 | 58 | 8 | 10 | 28 | 12 | 25 | 72 | 11 |
| 0.4" | 63 | 7 | 49 | 9 | 56 | 9 | 10 | 22 | 11 | 20 | 70 | 12 |
| 0.5" | 62 | 8 | 48 | 10 | 44 | 9 | 9 | 16 | 12 | 20 | 60 | 14 |

| STD. PEN | C-411-A C. | C-411-A C.S. | C-411-B C. | C-411-B C.S. | C-42 C. | C-42 C.S. | C-38 C. | C-38 C.S. | C-397 C. | C-397 C.S. | 107 C. | 107 C.S. | C-412-A C. | C-412-A C.S. | C-412-B C. | C-412-B C.S. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1" | 27 | 55 | 22 | 39 | 52 | 16 | 49 | 7 | 10 | 16 | 49 | 4 | 27 | 44 | 18 | 25 |
| 0.2" | 12 | 28 | 16 | 27 | 57 | 28 | 54 | 11 | 20 | 25 | 51 | 4 | 14 | 32 | 11 | 23 |
| 0.3" | 8 | 17 | 11 | 23 | 60 | 28 | 53 | 13 | 16 | 18 | 47 | 5 | 9 | 26 | 7 | 13 |
| 0.4" | 8 | 11 | 11 | 14 | 61 | 29 | 51 | 14 | 12 | 14 | 47 | 5 | 10 | 24 | 7 | 10 |
| 0.5" | 8 | 11 | 11 | 17 | 39 | 29 | 40 | 15 | 11 | 15 | 41 | 5 | 11 | 20 | 7 | 10 |

LEGEND AND ABBREVIATIONS

SUBGRADE DENSITY SAMPLES — C101 PLAN VIEW OF SAMPLE; MOIST CONTENT-% OF DRY WT; DENSITY-LBS/CU FT.

RELATIVE COMPACTION SAMPLES — THESE SAMPLES NOT SHOWN IN PLAN; MOISTURE CONTENT-% OF DRY WT; DENSITY LBS/CU FT; RELATIVE COMPACTION-%

SOIL SAMPLES FOR COMPLETE TESTS — C416 PLAN VIEW OF SAMPLE; BV = BEARING VALUE @ 0.1" SOAKED; MOIST CONT-% OF DRY WT; DENSITY-LBS/CU FT; RELATIVE COMPACTION

QUALITY OF MATERIAL FOR SUBGRADE (BV-%): 80% +; 50%-79%; 30%-49%; 20%-29%; 6%-19%; 0%-5%

LEGEND OF ROCK AND SOIL TYPES: HARD ROCK; SOFT ROCK; SANDSTONE; SHALE; SAND; GRAVEL; CLAY See SOIL TYPE CHART on Sheet 1; LOAM, CLAY LOAM, SANDY LOAM, SILTY LOAM, CLAYEY SAND, SILTY CLAY LOAM, ETC. (RELATIVE AMOUNTS OF CLAY INDICATED BY SPACING OF CLAY LINES)

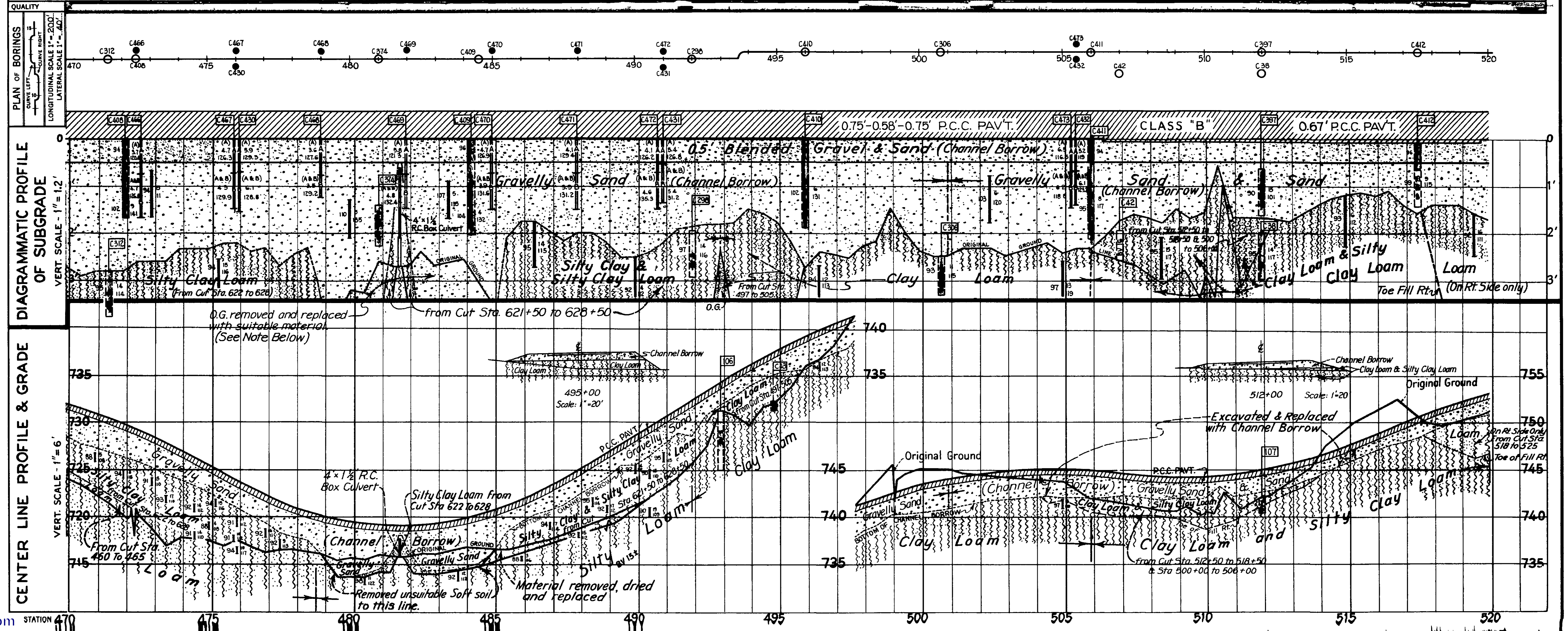


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FIG. 5-B

| BORING & SAMPLE No. | C-324 | C-398 | C-413-A | C-413-B | C-322 | C-414 | C-415-A | C-415-B | C-296 | 113 | C-289 | C-419-A | C-419-B | 115-A | 115-B | C-292 | 117-A | 117-B | 118-A | C-357-A | C-357-B | C-274 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 7-21-41 | 9-8-41 | 10-1-41 | 9-18-41 | 7-21-41 | 9-18-41 | 10-2-41 | 9-18-41 | 7-15-41 | 5-6-40 | 7-12-41 | 10-2-41 | 9-19-41 | 5-6-40 | 5-6-40 | 7-14-41 | 5-8-40 | 5-8-40 | 5-8-40 | 10-3-41 | 7-30-41 | 7-9-41 |
| SAMPLED BY | Rubey | Meinke | Rubey | Meinke | Rubey | Meinke | Rubey | Meinke | Rubey | J.F. | Rubey | Rubey | Meinke | J.F. | J.F. | Sheff | J.F. | J.F. | J.F. | Rubey | Rubey | Sheff |
| DIST. OR CEN. LAB. TEST No. | VII-215.633 | VII-215.725 | VII-215.745 | VII-215.746 | VII-215.631 | VII-215.747 | VII-215.748 | VII-215.749 | VII-215.330 | VII-138.116 | VII-215.328 | VII-215.155 | VII-215.156 | VII-138.118 | VII-138.119 | VII-215.329 | VII-138.121 | VII-138.122 | VII-138.123 | VII-215.666 | VII-215.667 | VII-215.324 |
| MECHANICAL ANALYSIS TOTAL % PASSING — SQUARE OPENING — GRAVEL ETC. | | | 2½"-100 | 1½"-100 | | 2"-100 | 2½"-100 | 2"-100 | | | 2"-100 | 3"-100 | 2½"-100 | | | 1"-100 | | | | 3"-100 | 2"-100 | 2"-100 |
| ¾" " " | 100 | 100 | 88 | 97 | | 95 | 92 | 88 | | | 98 | 90 | 92 | | | 99 | | | | 93 | 86 | 88 |
| 4 MESH (4760 MICRONS) — LARGER THAN 2000 MICRONS | 97 | 97 | 70 | 90 | | 86 | 75 | 67 | 100 | | 84 | 75 | 74 | | | 87 | | 100 | | 81 | 68 | 65 |
| 8 " (2380 ") — SAND | 96 | 95 | 62 | 88 | | 84 | 66 | 62 | 98 | | 83 | 68 | 70 | | | 85 | 100 | 99 | 100 | 72 | 62 | 64 |
| 50 " (297 ") — SAND | 85 | 58 | 19 | 58 | | 63 | 23 | 30 | 91 | | 75 | 25 | 39 | | | 70 | 85 | 33 | 90 | 28 | 28 | 61 |
| 100 " (149 ") — SAND | 73 | 43 | 10 | 43 | | 46 | 14 | 23 | 87 | | 72 | 14 | 30 | | | 65 | 61 | 17 | 62 | 15 | 21 | 53 |
| 200 " (74 ") — SAND | 60 | 25 | 6 | 31 | | 33 | 10 | 18 | 80 | | 65 | 9 | 23 | | | 52 | 37 | 8 | 46 | 11 | 17 | 49 |
| 270 " (53 ") — SILT 5 to 50 MICRONS | 53 | | 6 | 26 | | 27 | 8 | 17 | 75 | | 58 | 8 | 21 | | | 50 | 31 | 7 | 40 | 11 | 16 | 46 |
| 5 MICRONS — CLAY 1 to 5 " | 17 | | 2 | 10 | | 9 | 3 | 7 | 22 | | 23 | 2 | 8 | | | 16 | | | | 1 | 4 | 15 |
| 1 " — COLLOIDS MINUS 1 " | 5 | | 1 | 3 | | 5 | 15 | 3 | 8 | | 11 | 0.6 | 3 | | | 5 | | | | 0.6 | 1 | 6 |
| CEMENTING VALUE | | | | | | | | | | | | | | | | | | | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | | | | | | | | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | | | | | | | | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 9.9 | 11.5 | 7.3 | 10.5 | 12.4 | 9.2 | 8.7 | 7.7 | 10.1 | 13.9 | 10.0 | 8.5 | 8.2 | 10.7 | 13.0 | 8.2 | 14.8 | 10.7 | 13.4 | 8.3 | 7.3 | 10.6 |
| WEIGHT PER CU. FT. COMPACTED-LBS. | 127.7 | 117.7 | 123.6 | 117.2 | 121.4 | 119.5 | 120.0 | 130.5 | 127.7 | 110.2 | 127.7 | 121.4 | 128.3 | 123.6 | 107.3 | 128.6 | 105.9 | 113.0 | 107.8 | 119.5 | 134.4 | 125.0 |
| BEARING VALUE TEST — STD. PER C. — STANDARD LOADS C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. | C. C.S. |
| % OF STANDARD — 0.1" | 2000 | 1000 | 41 5 | 11 21 | 29 42 | 16 32 | 50 3 | 16 36 | 22 52 | 33 62 | 59 5 | 14 16 | 45 5 | 25 35 | 32 65 | 54 9 | 23 42 | 41 24 | 16 22 | 29 34 | 26 35 | 22 45 |
| C – COMPACTED — 0.2" | 2800 | 1500 | 48 9 | 21 29 | 14 20 | 17 31 | 59 5 | 18 27 | 11 31 | 28 65 | 57 7 | 25 26 | 51 9 | 13 28 | 35 57 | 60 11 | 13 46 | 52 40 | 15 27 | 13 25 | 13 39 | 10 17 |
| C.S. – COMPACTED AND SOAKED — 0.3" | 3400 | 1900 | 48 11 | 16 19 | 9 14 | 11 16 | 60 6 | 11 19 | 7 18 | 26 52 | 58 8 | 23 23 | 51 10 | 7 18 | 35 40 | 61 12 | 8 24 | 56 38 | 9 20 | 11 13 | 10 28 | 8 9 |
| 0.4" | 3800 | 2300 | 48 11 | 14 17 | 9 13 | 10 13 | 62 7 | 10 17 | 6 16 | 26 43 | 58 8 | 16 20 | 50 10 | 6 14 | 33 33 | 61 12 | 10 19 | 53 37 | 9 15 | 11 14 | 12 18 | 8 8 |
| 0.5" | 4300 | 2600 | 36 12 | 13 18 | 10 15 | 10 15 | 62 7 | 10 17 | 6 12 | 26 40 | 49 9 | 13 20 | 45 12 | 7 12 | 35 32 | 58 13 | 11 18 | 41 37 | 9 16 | 11 16 | 13 19 | 8 10 |
| $H_2O$ IN SPECIMEN — TOP ONE INCH | | | | | | | | | | | | | | | | | | | | | | |
| AFTER SOAKING — AVERAGE | 11.8 | 12.3 | 9.0 | 11.4 | 16.4 | 11.4 | 9.8 | 7.9 | 12.9 | 15.7 | 12.2 | 9.4 | 8.3 | 13.9 | 16.0 | 9.7 | 16.2 | 13.8 | 15.1 | 10.0 | 7.1 | 13.8 |
| SWELL-PERCENT | 3.8 | 0.4 | 0.1 | 0.3 | 6.3 | 0.5 | 0.1 | 0.1 | 5.1 | 1.3 | 4.5 | 0.1 | 0.3 | 5.0 | 0.5 | 1.7 | 0.4 | 0.1 | 0.5 | 0.1 | 0.1 | 5.0 |
| MOISTURE DENSITY TEST — MOISTURE % OF DRY WEIGHT | 12.7 | 14.6 | 4.0 | 6.8 | 15.9 | 10.0 | 4.6 | 9.0 | 15.2 | | 13.1 | 4.9 | 8.5 | | | 7.6 | | | | 5.2 | 4.5 | 12.5 |
| DRY WT. PER CU. FT. – LBS. | 110.2 | 107.2 | 120.8 | 115.6 | 118.2 | 112.7 | 120.6 | 129.0 | 114.8 | | 122.4 | 127.6 | 130.1 | | | 126.3 | | | | 127.4 | 134.3 | 120.2 |
| RELATIVE COMPACTION – % | 90 | 92 | 95 | 99 | 100 | 93 | 98 | 96 | 95 | | 100 | 102 | 99 | | | 99 | | | | 104 | 103 | 99 |
| U.S.P.R.A. CLASSIFICATION (SEE SHT. 1) | BORDERLINE A-2 & A-4 | | A-2 | A-2 | A-6 ? | A-2 | A-2 | A-2 | A-4 ? 6 ? ? ? | | A-2 ? | A-2 | A-2 | | | A-2 | | | | A-2 | A-1 | A-4 |
| PLASTICITY INDEX | 8 | | 1 | 2 | 17 | 3 | 1 | 2 | 15 | | 11 | 2 | 2 | | | 9 | | | | 2 | 3 | 5 |
| LIQUID LIMIT | 22 | | 15 | 15 | 33 | 15 | 15 | 15 | 31 | | 24 | 14 | 16 | | | 23 | | | | 14 | 19 | 25 |
| SOIL TYPE (SEE CHART SHT. 1) | Loam | Sand | Grav Sand | Grav. Sand | Sty. Cl. Loam | Sandy Loam | Grav. Sand | Grav. Sand | Sty. Cl Loam | Loam | Grav Cl. Loam | Grav. Sand | Grav. Sdy Lm. | Grav. Cl. Loam | Sandy Loam | Grav. Loam | Sandy Loam | Sand | Sandy Loam | Grav. Sand | Grav. Sand | Grav. Clay Lm. |

LEGEND AND ABBREVIATIONS

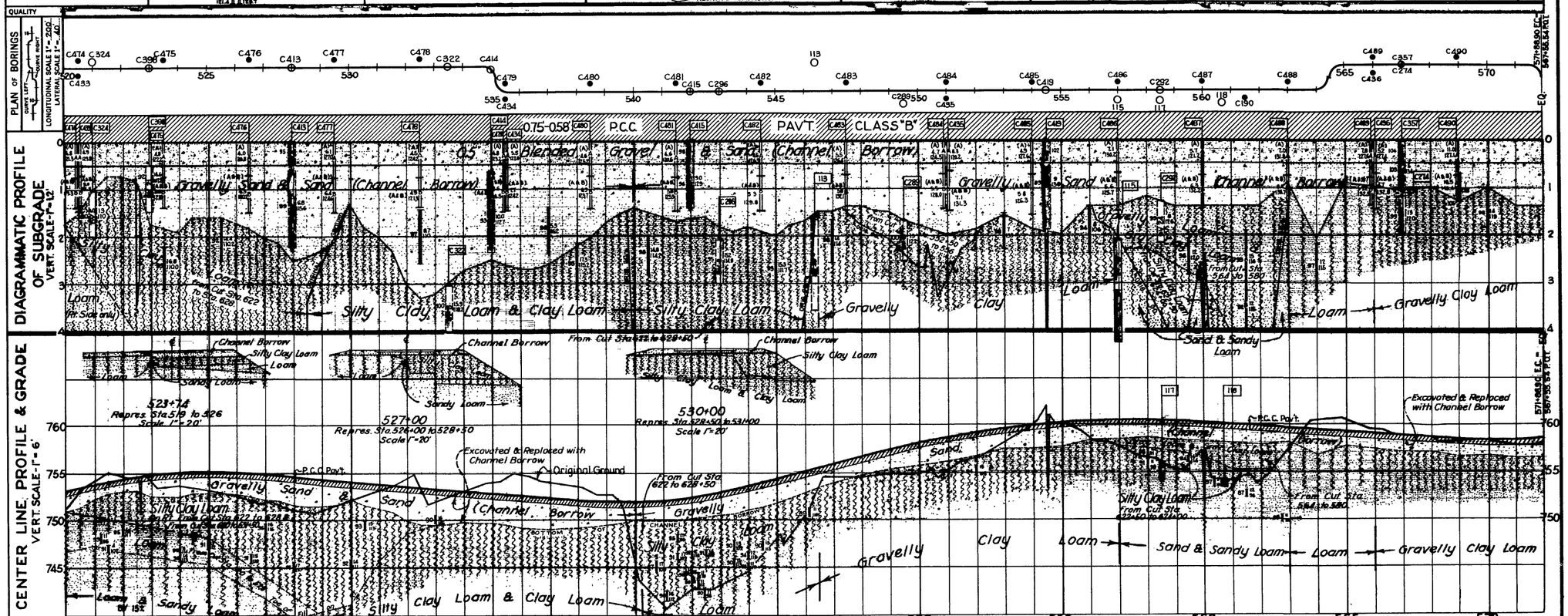
SUBGRADE DENSITY SAMPLES — C101 PLAN VIEW OF SAMPLE; MOIST. CONTENT-% OF DRY WT.; DENSITY - LBS./CU.FT.

RELATIVE COMPACTION SAMPLES — THESE SAMPLES NOT SHOWN IN PLAN: MOISTURE CONTENT-% OF DRY WT.; DENSITY - LBS./CU.FT.; RELATIVE COMPACTION-%

SOIL SAMPLES FOR COMPLETE TESTS — C289 PLAN VIEW OF SAMPLE; BV+ BEARING VALUE @ 0.1" SOAKED; MOIST. CONT. - % OF DRY WT.; DENSITY - LBS./CU.FT.; RELATIVE COMPACTION

QUALITY OF MATERIAL FOR SUBGRADE (BV-%): 80%+; 50%-79%; 30%-49%; 20%-29%; 6%-19%; 0%-5%

LEGEND OF ROCK AND SOIL TYPES: HARD ROCK; SOFT ROCK; SANDSTONE; SHALE; SAND; GRAVEL; CLAY See SOIL TYPE CHART on Sheet 1; LOAM, CLAY LOAM, SANDY LOAM, SILTY LOAM, CLAYEY SAND, SILTY CLAY LOAM, ETC. (RELATIVE AMOUNTS OF CLAY INDICATED BY SPACING OF CLAY LINES)

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CONT. NO. ... **STANDARD SOIL SURVEY SHEET** DATE January 7, 1942

| 2 | CAL | 380-C(1) | | VII | VEN-LA | 79 | C-A | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|

FIG. 6-B

| BORING & SAMPLE No. | C-271 | C-356-A | C-356-B | C-329-A | C-329-B | C-45 | C-281 | 122-A | 122-B |
|---|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 7-10-41 | 10-3-41 | 7-29-41 | 10-6-41 | 7-23-41 | 4-15-41 | 7-11-41 | 5-8-40 | 5-8-40 |
| SAMPLED BY | Sheff | Rubey | Sheff | Rubey | Rubey | Meinke | Rubey | J.F. | J.F. |
| DIST OR CEN. LAB. TEST No. | VII-215-323 | VII-215.664 | VII-215.665 | VII-215.638 | VII-215.639 | VII-215-52 | VII-215-325 | VII-138-127 | VII-138-128 |
| Mechanical analysis, total % passing: Square opening (gravel etc., larger than 2000 microns) | | 3"-100 | 2"-100 | 2½-100 | 2"-100 | | | | |
| 3/4" | 3/8"-100 | 91 | 91 | 89 | 95 | 3/8"-100 | 100 | | |
| 4 mesh (4760 microns) | 99 | 77 | 72 | 72 | 78 | 99 | 92 | | |
| 8 mesh (2380 microns) (sand, 50 to 2000 microns) | 97 | 71 | 68 | 62 | 73 | 97 | 88 | | 100 |
| 50 (297 microns) | 89 | 31 | 21 | 14 | 20 | 87 | 73 | | 99 |
| 100 (149 microns) | 85 | 22 | 11 | 8 | 10 | 81 | 67 | | 94 |
| 200 (74 microns) | 79 | 17 | 7 | 5 | 8 | 74 | 59 | | 81 |
| 270 (53 microns) (silt 5 to 50 microns) | 72 | 16 | 6 | 5 | 7 | 71 | 57 | | 66 |
| 5 microns (clay 1 to 5 ") | 26 | 2 | 2 | 1 | 2 | 22 | 10 | | 62 |
| 1 micron (colloids minus 1") | 10 | 1 | 1 | 0.3 | 1 | 6 | 3 | | |
| CEMENTING VALUE | | | | | | 279 | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 10.6 | 8.3 | 6.5 | 8.8 | 7.6 | 10.1 | 9.1 | 11.8 | 12.0 |
| WEIGHT PER CU FT. COMPACTED-LBS. | 126.8 | 124.8 | 122.8 | 122.5 | 120.0 | 127.7 | 128.3 | 108.7 | 117.2 |
| Bearing value test, % of standard (C. / C.S.): 0.1" pen., standard C. 2000, C.S. 1000 | 43 / 4 | 22 / 58 | 13 / 30 | 25 / 56 | 23 / 64 | 54 / 6 | 37 / 19 | 13 / 19 | 30 / 19 |
| 0.2" (2800 / 1500) C = compacted | 46 / 7 | 11 / 34 | 15 / 18 | 16 / 35 | 13 / 23 | 55 / 10 | 38 / 24 | 22 / 27 | 37 / 30 |
| 0.3" (3400 / 1900) | 46 / 9 | 8 / 22 | 10 / 16 | 13 / 18 | 9 / 13 | 55 / 11 | 41 / 24 | 14 / 19 | 34 / 28 |
| 0.4" (3800 / 2300) C.S. = compacted and soaked | 46 / 10 | 8 / 16 | 9 / 15 | 10 / 13 | 8 / 11 | 54 / 12 | 42 / 24 | 11 / 17 | 24 / 25 |
| 0.5" (4300 / 2600) | 38 / 10 | 9 / 15 | 9 / 13 | 10 / 12 | 8 / 10 | 37 / 14 | 39 / 24 | 10 / 16 | 22 / 24 |
| H₂O IN SPECIMEN AFTER SOAKING: TOP ONE INCH | | | | | | | | | |
| AVERAGE | 13.3 | 8.9 | 9.0 | 9.1 | 9.3 | 11.9 | 10.3 | 15.6 | 13.2 |
| SWELL-PERCENT | 4.9 | 0.1 | 0.1 | 0.1 | 0.0 | 4.0 | 1.9 | 1.4 | 1.5 |
| Soil in place: MOISTURE % OF DRY WEIGHT | 13.6 | (C-491, C-437) | 4.2 | 7.7 (C-492) | 8.3 | | 11.9 | | |
| DRY WT. PER CU. FT. -- LBS. | 123.0 | 122.0 | 135.0 | 123.1 | 131.4 | | 117.4 | | |
| RELATIVE COMPACTION -- % | 99 | 96 | 104 | 98 | 105 | | 96 | | |
| U.S.P.R.A. CLASSIFICATION (SEE SHT. 1) | A-4 | A-2 | A-2 | A-2 | A-2 | | A-2 ? | | |
| PLASTICITY INDEX | 8 | 2 | 0 | 1 | 0 | | 9 | | |
| LIQUID LIMIT | 30 | 14 | 16 | 14 | 16 | | 22 | | |
| SOIL TYPE (SEE CHART SHT.-1) | Clay Loam | Grav. Sand | Grav. Sand | Grav Sand | Grav. Sand | Sty Clay Lm. | Sty. Loam | | Loam |

| BORING & SAMPLE No. | C-331-A | C-331-B | C-287 | C-49 | C-345-A | C-345-B | C-288 | C-318 |
|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 10-6-41 | 7-23-41 | 7-12-41 | 4-16-41 | 10-7-41 | 7-28-41 | 7-12-41 | 7-18-41 |
| SAMPLED BY | Rubey | Rubey | Sheff | Meinke | Rubey | Sheff | Sheff | Rubey |
| DIST OR CEN. LAB. TEST No. | VII-215.641 | VII-215.642 | VII-215-326 | VII-215-56 | VII-215.652 | VII-215.653 | VII-215-327 | VII-215.627 |
| Square opening | 3"-100 | 3"-100 | | | 3"-100 | 2"-100 | | |
| 3/4" | 86 | 91 | | | 89 | 93 | | |
| 4 mesh (4760 microns) | 71 | 74 | 100 | 100 | 75 | 74 | | |
| 8 mesh (2380 microns) | 63 | 67 | 99 | 98 | 71 | 69 | 100 | 100 |
| 50 (297 microns) | 18 | 19 | 96 | 89 | 37 | 19 | 98 | 94 |
| 100 (149 microns) | 10 | 9 | 94 | 83 | 23 | 10 | 96 | 92 |
| 200 (74 microns) | 6 | 5 | 88 | 75 | 17 | 6 | 91 | 87 |
| 270 (53 microns) | 5 | 4 | 86 | 72 | 16 | 5 | 88 | 82 |
| 5 microns | 1 | 1 | 24 | 25 | 3 | 2 | 29 | 29 |
| 1 micron | 0.3 | 0.4 | 8 | 8 | 1.5 | 1 | 8 | 9 |
| CEMENTING VALUE | | | | 171 | | | | |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | |
| MOISTURE USED IN COMPACTING SPECIMEN % | 8.9 | 8.8 | 8.8 | 9.2 | 9.1 | 8.1 | 11.6 | 9.3 |
| WEIGHT PER CU FT. COMPACTED-LBS. | 122.2 | 118.7 | 128.0 | 127.7 | 121.9 | 120.8 | 126.2 | 127.4 |
| 0.1" (C. / C.S.) | 24 / 62 | 22 / 44 | 73 / 3 | 67 / 3 | 20 / 59 | 26 / 44 | 56 / 2 | 63 / 3 |
| 0.2" | 11 / 33 | 8 / 27 | 73 / 3 | 69 / 4 | 11 / 29 | 14 / 17 | 49 / 3 | 71 / 4 |
| 0.3" | 9 / 17 | 6 / 22 | 72 / 4 | 68 / 5 | 6 / 15 | 9 / 13 | 44 / 3 | 71 / 5 |
| 0.4" | 8 / 13 | 7 / 15 | 73 / 4 | 68 / 6 | 6 / 13 | 8 / 10 | 41 / 3 | 71 / 6 |
| 0.5" | 8 / 12 | 9 / 17 | 70 / 4 | 57 / 6 | 6 / 14 | 8 / 10 | 38 / 3 | 64 / 6 |
| H₂O AFTER SOAKING: TOP ONE INCH | | | | | | | | |
| AVERAGE | 9.3 | 10.1 | 14.0 | 12.2 | 9.4 | 9.6 | 14.9 | 12.3 |
| SWELL-PERCENT | 0.1 | 0.1 | 7.8 | 6.0 | 0.1 | 0.0 | 7.9 | 5.8 |
| MOISTURE % OF DRY WEIGHT | 4.6 (C-438) | 3.7 | 12.7 | | 6.7 (C-494) | 6.3 | 11.3 | 16.6 |
| DRY WT. PER CU. FT. -- LBS. | 125.1 | 126.6 | 114.2 | | 122.7 | 128.0 | 108.1 | 114.2 |
| RELATIVE COMPACTION -- % | 99 | 103 | 94 | | 98 | 104 | 93 | 96 |
| U.S.P.R.A. CLASSIFICATION | A-2 | | A-7? | | A-2 | A-2 | Borderline A-6; A-7 | A-4 |
| PLASTICITY INDEX | 1 | 0 | 13 | | 2 | 0 | 18 | 4 |
| LIQUID LIMIT | 14 | 12 | 31 | | 15 | 15 | 35 | 29 |
| SOIL TYPE | Grav. Sand | Grav. Sand | Sty. Clay Lm. | Clay Loam | Grav. Sand | Grav. Sand | Sty Clay Lm. | Sty. Clay Lm. |

LEGEND AND ABBREVIATIONS

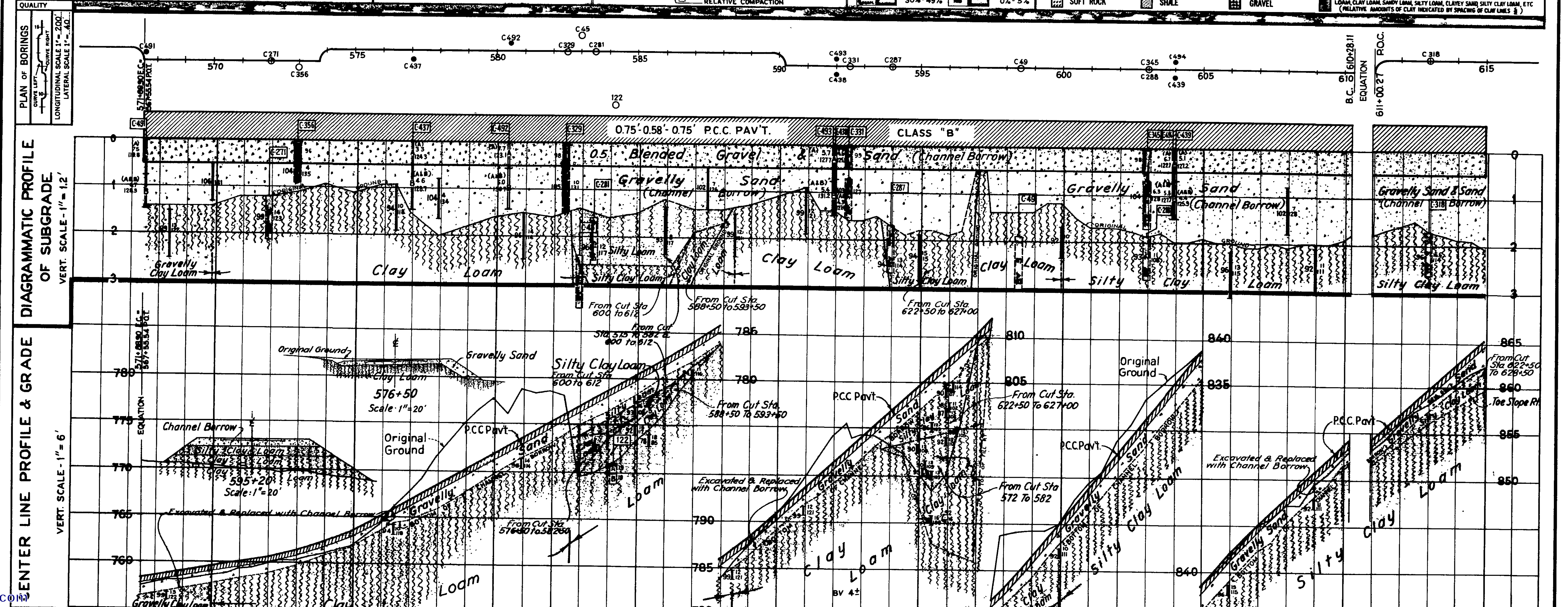
SUBGRADE DENSITY SAMPLES — PLAN VIEW OF SAMPLE; MOIST CONTENT-% OF DRY WT.; DENSITY-LBS/CU.FT.

RELATIVE COMPACTION — THESE SAMPLES NOT SHOWN IN PLAN; MOISTURE CONTENT-% OF DRY WT; DENSITY-LBS/CU.FT.; RELATIVE COMPACTION-%

SOIL SAMPLES FOR COMPLETE TESTS — PLAN VIEW OF SAMPLE; BV = BEARING VALUE @ 0.1" SOAKED; MOIST CONT. % OF DRY WT.; DENSITY LBS/CU.FT.; RELATIVE COMPACTION

QUALITY OF MATERIAL FOR SUBGRADE (BV%): 80%+; 50%-79%; 30%-49%; 20%-29%; 6%-19%; 0%-5%

LEGEND OF ROCK AND SOIL TYPES: HARD ROCK; SOFT ROCK; SANDSTONE; SHALE; SAND; GRAVEL; CLAY — See SOIL TYPE CHART on Sheet 1

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CONTRACTOR Fredricksen & Westbrook CONT. NO. 27 XC 7 **STANDARD SOIL SURVEY SHEET** FIG. 7-B

| BORING & SAMPLE No. | 1 | C-416-A | C-416-B | C-37-A | C-36 | C-375 | 9 | C-417 | C-418-A | C-418-B | C-376 | 24-A | C-200 | C-394-A | C-394-B | C-201 | C-395-A | C-395-B | C-199 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE SAMPLED | 6-22-39 | 10-7-41 | 9-19-41 | 4-10-41 | 4-10-41 | 8-8-41 | 6-23-39 | 9-19-41 | 10-8-41 | 9-19-41 | 8-8-41 | 9-19-39 | 6-20-41 | 10-8-41 | 9-4-41 | 6-20-41 | 10-8-41 | 9-4-41 | 6-20-41 |
| SAMPLED BY | J.F. | Rubey | Meinke | Meinke | Meinke | Rubey | J.F. | Meinke | Rubey | Meinke | Rubey | J.F. | Meinke | Rubey | Sheff | Meinke | Rubey | Sheff | Rubey |
| DIST OR CEN LAB TEST No | VII-138-01 | VII-215.750 | VII-215.751 | VII-215-42 | VII-215-41 | VII-215691 | VII-138.03 | VII-215.752 | VII-215.753 | VII-215.754 | VII-215694 | VII-138-11 | VII-215.321 | VII-215.719 | VII-215.720 | VII-215.322 | VII-215 721 | VII-215.722 | VII-215-320 |
| MECHANICAL ANALYSIS TOTAL % PASSING — SQUARE OPENING — GRAVEL ETC. LARGER THAN 2000 MICRONS | | 2½"-100 | 2½"-100 | | | | | 2½"-100 | 3"-100 | 3"-100 | | | | 2½"-100 | 1½"-100 | 3"-100 | 2½"-100 | 2"-100 | |
| ¾" " " | | 83 | 93 | | | | | 87 | 86 | 91 | | | | 89 | 90 | 96 | 91 | 94 | |
| 4 MESH (4760 MICRONS) | 100 | 64 | 81 | 100 | | 100 | | 65 | 67 | 76 | | | 100 | 73 | 73 | 92 | 78 | 74 | |
| SAND 50 TO 2000 MICRONS — 8 " (2380 ") | 99 | 57 | 75 | 99 | | 99 | 100 | 62 | 58 | 68 | 100 | | 99 | 66 | 67 | 90 | 72 | 64 | 100 |
| 50 " (297 ") | 93 | 20 | 42 | 97 | | 92 | 99 | 29 | 19 | 18 | 99 | | 97 | 24 | 22 | 81 | 30 | 14 | 97 |
| 100 " (149 ") | 91 | 15 | 15 | 96 | | 86 | 99 | 18 | 12 | 10 | 99 | | 96 | 17 | 12 | 76 | 19 | 7 | 94 |
| 200 " (74 ") | 85 | 11 | 9 | 92 | | 76 | 96 | 12 | 8 | 6 | 96 | | 94 | 12 | 7 | 67 | 13 | 4 | 85 |
| SILT 5 to 50 MICRONS — 270 " (53 ") | 83 | 10 | 8 | 88 | | 68 | 93 | 11 | 7 | 6 | 92 | | 91 | 12 | 7 | 61 | 12 | 4 | 78 |
| CLAY 1 to 5 " — 5 MICRONS | | 2 | 3 | 27 | | 17 | | 4 | 2 | 2 | 31 | | 30 | 4 | 2 | 20 | 3 | 1 | 24 |
| COLLOIDS MINUS 1" — 1 " | | 1 | 2 | 8 | | 4 | | 1 | 0.5 | 1 | 14 | | 14 | 1 | 0.5 | 8 | 1 | 0.5 | 7 |
| CEMENTING VALUE | | | | 211 | | | | | | | | | 701 | | | 928 | | | 878 |
| FIELD MOISTURE EQUIVALENT % | | | | | | | | | | | | | | | | | | | |
| LINEAL SHRINKAGE % | | | | | | | | | | | | | | | | | | | |
| BEARING VALUE TEST — MOISTURE USED IN COMPACTING SPECIMEN % | 10.2 | 8.0 | 9.7 | 10.6 | 10.7 | 9.2 | 10.5 | 7.2 | 8.5 | 9.4 | 10.2 | 8.8 | 10.2 | 8.8 | 8.3 | 9.7 | 9.4 | 8.5 | 11.6 |
| WEIGHT PER CU. FT. COMPACTED-LBS. | 127.1 | 127.1 | 120.6 | 125.6 | 126.8 | 127.7 | 127.4 | 128.6 | 123.0 | 120.0 | 124.2 | 124.7 | 126.2 | 121.9 | 124.5 | 126.5 | 120.6 | 121.7 | 123.6 |
| % OF STANDARD — C = COMPACTED — 0.1" 2000 1000 | C. C.S. 61 4 | C. C.S. 26 66 | C. C.S. 25 32 | C. C.S. 57 3 | C. C.S. 47 4 | C. C.S. 75 3 | C. C.S. 64 4 | C. C.S. 37 64 | C. C.S. 26 59 | C. C.S. 25 54 | C. C.S. 70 3 | C. C.S. 82 8 | C. C.S. 57 3 | C. C.S. 22 57 | C. C.S. 31 73 | C. C.S. 45 5 | C. C.S. 22 45 | C. C.S. 25 42 | C. C.S. 44 3 |
| 0.2" 2800 1500 | 66 4 | 21 46 | 14 28 | 59 4 | 57 5 | 72 5 | 66 5 | 27 53 | 12 41 | 9 31 | 72 4 | 80 11 | 61 7 | 15 31 | 15 48 | 52 10 | 12 32 | 15 32 | 47 6 |
| 0.3" 3400 1900 | 60 6 | 16 26 | 11 14 | 61 5 | 57 6 | 69 5 | 63 7 | 24 40 | 7 23 | 9 23 | 73 5 | 81 13 | 60 6 | 12 21 | 11 24 | 59 11 | 8 15 | 12 21 | 45 7 |
| C. S. = COMPACTED AND SOAKED — 0.4" 3800 2300 | 59 6 | 13 20 | 10 11 | 62 6 | 58 7 | 64 5 | 59 7 | 25 32 | 7 18 | 8 16 | 75 5 | 83 14 | 59 8 | 11 16 | 11 17 | 59 12 | 6 10 | 11 17 | 45 10 |
| 0.5" 4300 2600 | 52 7 | 12 17 | 10 12 | 55 7 | 56 7 | 51 6 | 56 8 | 26 30 | 8 17 | 8 15 | 73 6 | 83 15 | 56 7 | 10 15 | 12 19 | 57 13 | 7 10 | 10 12 | 42 9 |
| $H_2O$ IN SPECIMEN AFTER SOAKING — TOP ONE INCH — AVERAGE | 12.7 | 8.1 | 10.1 | 15.0 | 13.8 | 13.1 | 17.1 | 7.8 | 9.1 | 9.9 | 16.5 | 13.8 | 15.2 | 9.3 | 8.7 | 12.7 | 9.5 | 9.8 | 13.8 |
| SWELL-PERCENT | 4.7 | 0.1 | 0.1 | 7.0 | 6.0 | 6.2 | 5.0 | 0.1 | 0.1 | 0.1 | 8.2 | 4.7 | 5.5 | 0.1 | 0.1 | 4.8 | 0.0 | 0.1 | 4.5 |
| SOIL IN PLACE — MOISTURE % OF DRY WEIGHT | | C.S. 5.8 | | | | 9.6 | | 6.2 | 6.4 C.S. | 4.7 | 17.1 | | 15.4 | 4.5 C.S. | 7.4 | 12.7 | 5.0 C.S. | 4.0 C.S. | 19.3 |
| DRY WT. PER CU. FT. -- LBS. | | 123.5 C.S. | 120.4 | | | 100.6 | | 129.0 | 123.1 C.S. | 126.4 | 112.8 | | 111.5 | 124.4 C.S. | 125.9 | 111.3 | 125.2 C.S. | 122.4 | 107.8 |
| RELATIVE COMPACTION -- % | | 94 | 98 | | | 86 | | 98 | 96 | 104 | 96 | | 94 | 99 | 99 | 93 | 101 | 99 | 92 |
| U.S.P.R.A. CLASSIFICATION (SEE SHT 1) | | A-2 | A-2 | | | BORDER LINE A-6 & A-7 | | A-2 | A-2 | A-2 | A-7 | | A-7? | A-2 | A-2 | A-2?A-4? | A-2 | A-3 | A-2?A-4? |
| PLASTICITY INDEX | | 2 | 1 | | | 11 | | 1 | 0 | 2 | 17 | | 14 | 0 | 0 | 11 | 0 | 0 | 13 |
| LIQUID LIMIT | | 15 | 14 | | | 31 | | 14 | 15 | 14 | 36 | | 33 | 15 | 17 | 29 | 15 | 15 | 32 |
| SOIL TYPE (SEE CHART SHT-1) | Sty.Clay Lm. | Grav. Sand | Grav Sand | Sty.Clay Lm. | Sty.Clay Lm. | Silty Loam | Silty Clay Loam | Grav. Sand | Grav. Sand | Grav Sand | Silty Clay | | Silty Clay | Grav. Sand | Grav Sand | Clay Loam | Grav. Sand | Grav. Sand | Sty.Clay Lm. |

**LEGEND AND ABBREVIATIONS**

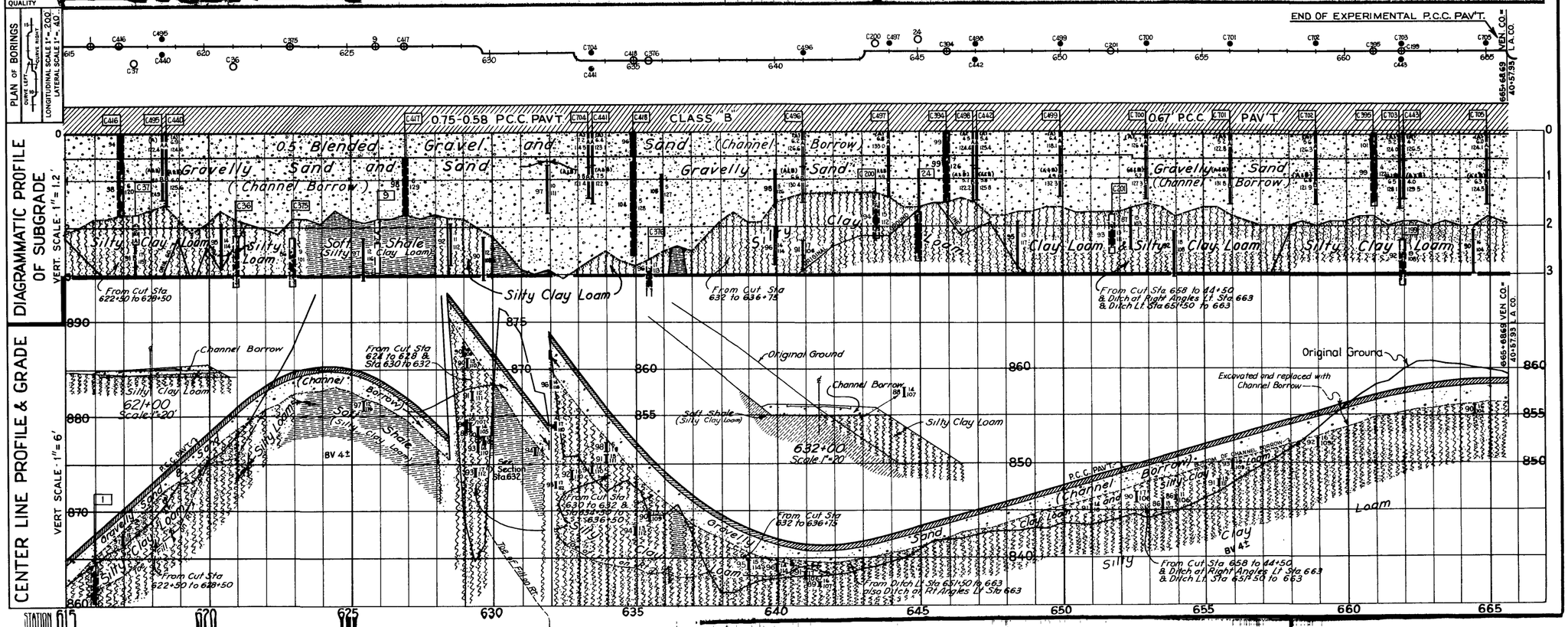
SUBGRADE DENSITY SAMPLES — C101 — PLAN VIEW OF SAMPLE — MOIST. CONTENT-% OF DRY WT — DENSITY-LBS/CU.FT

RELATIVE COMPACTION SAMPLES — THESE SAMPLES NOT SHOWN IN PLAN — MOISTURE CONTENT-% OF DRY WT — DENSITY-LBS/CU.FT — RELATIVE COMPACTION-%

SOIL SAMPLES FOR COMPLETE TESTS — C416 — PLAN VIEW OF SAMPLE — BV = BEARING VALUE @ 0.1" SOAKED — MOIST CONT-% OF DRY WT — DENSITY-LBS/CU FT — RELATIVE COMPACTION

QUALITY OF MATERIAL FOR SUBGRADE (BV-%): 80%+ / 50%-79% / 30%-49% / 20%-29% / 6%-19% / 0%-5%

LEGEND OF ROCK AND SOIL TYPES: HARD ROCK, SOFT ROCK, SANDSTONE, SHALE, SAND, GRAVEL, CLAY — See SOIL TYPE CHART on Sheet 1 — LOAM, CLAY LOAM, SANDY LOAM, SILTY LOAM, CLAYEY SAND, SILTY CLAY LOAM, ETC (RELATIVE AMOUNTS OF CLAY INDICATED BY SPACING OF CLAY LINES)

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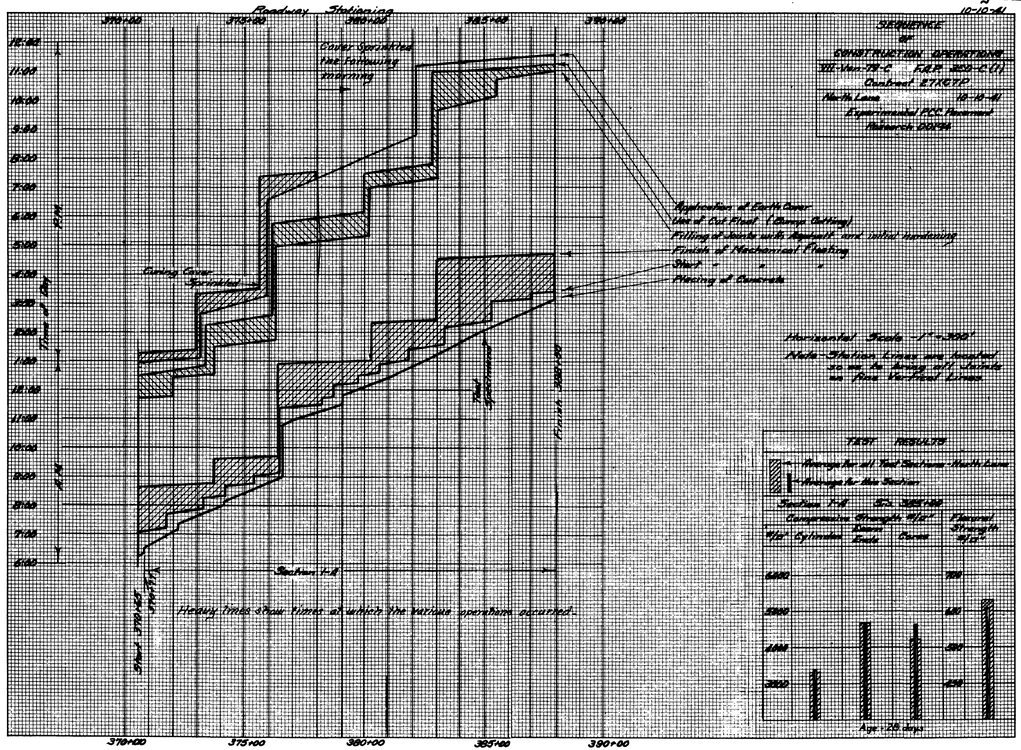


SEQUENCE OF CONSTRUCTION OPERATIONS
III-Mo-79-2 FAP 303-C(1)
Overhead STRUTTS
North Lane 15-9-41
Experimental PCC Pavement
Pulaski County

10-10-41

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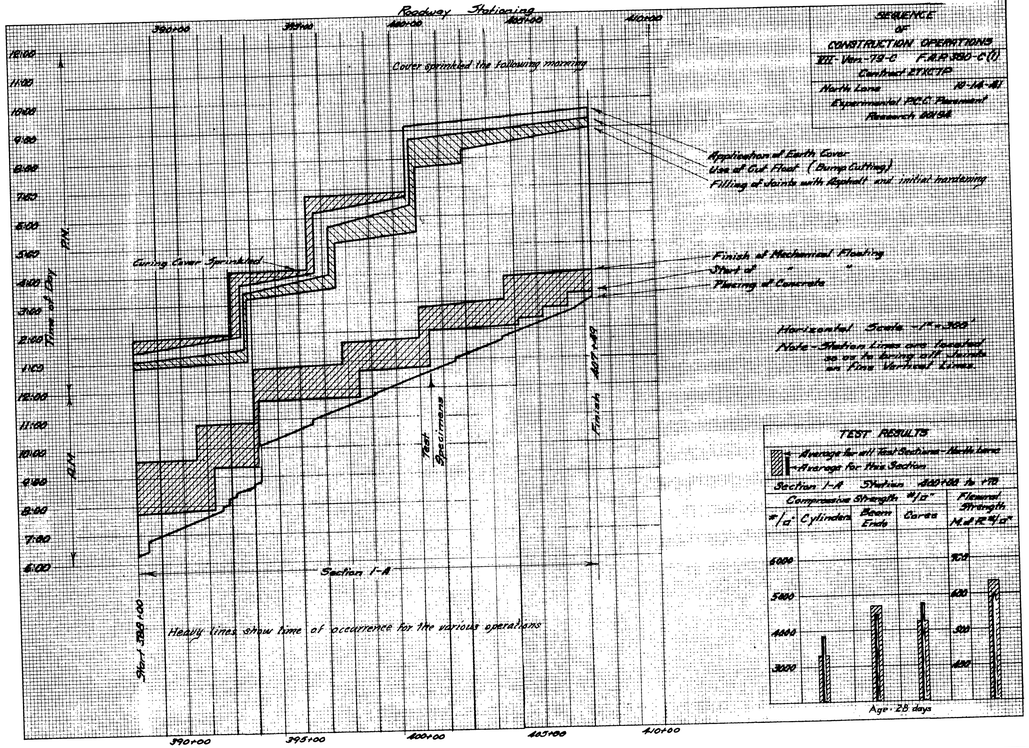


SEQUENCE
OF
CONSTRUCTION OPERATIONS
III-Ven-79-C F.A.P. 330-C(1)
Contract 27XC79
North Lane
Experimental P.C.C. Pavement
Research 20198

Horizontal Scale 1" = 300'
Note - Medium Lines are Specified as are the Curing of Joints are Five Vertical Lines.

TEST RESULTS

Average for all Test Sections - North Lane
Average for this Section

| Section 1-A | Stations | 390+00 to +70 | |
|---|---|---|---|
| Compressive Strength #/□" | | | Flexural Strength M.R. #/□" |
| #/□" | Cylinder | Beam Ends | Cores |
| 5000 | | | 700 |
| 4000 | | | 600 |
| 3000 | | | 500 |
| | | | 400 |

Age - 28 days

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