

Engineering Properties

Madison County, Tennessee

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash.

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index | |
|--------------------------|-------|----------------------------|---------------------|---------------------|------------|-------------|--------------------------------|-----|--------|--------|--------------|------------------|-----|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | | |
| | | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | | |
| Ar: | | | | | | | | | | | | | |
| Arents | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban land | 0-60 | Variable | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ca: | | | | | | | | | | | | | |
| Calhoun | 0-19 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 15-31 | NP-10 | |
| | 19-50 | Silty clay loam, Silt loam | CL | A-6, A-7-6 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 30-45 | 11-24 | |
| | 50-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 90-100 | 87-100 | 25-40 | 5-20 | |
| Henry | 0-7 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 94-100 | 15-34 | NP-9 | |
| | 7-19 | Silt loam | CL, CL-ML, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 97-100 | 95-100 | 22-40 | 3-15 | |
| | 19-50 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 30-42 | 9-16 | |
| | 50-72 | Silt, Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 25-32 | 3-10 | |
| Co: | | | | | | | | | | | | | |
| Calloway | 0-26 | Silt loam | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 90-100 | 87-100 | 25-35 | 5-15 | |
| | 26-45 | Silty clay loam, Silt loam | CL | A-6 | 0 | 0 | 100 | 100 | 89-100 | 84-100 | 30-40 | 12-20 | |
| | 45-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 92-100 | 90-100 | 25-35 | 5-15 | |

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|--------------------------|-----------|----------------------------|---------------------|-------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| Cs: | | | | | | | | | | | | |
| Collins | 0-8 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 86-95 | 15-30 | NP-8 |
| | 8-72 | Silt, Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 82-95 | 15-35 | NP-10 |
| DuB: | | | | | | | | | | | | |
| Dulac | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 88-100 | 20-25 | 2-7 |
| | 6-23 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 88-98 | 30-45 | 11-25 |
| | 23-37 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 91-100 | 85-100 | 30-45 | 11-25 |
| | 37-72 | Clay, Silty clay | CH, MH | A-7 | 0 | 0 | 95-100 | 86-100 | 69-95 | 65-91 | 55-85 | 25-50 |
| DuB3: | | | | | | | | | | | | |
| Dulac | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 88-100 | 20-25 | 2-7 |
| | 6-18 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 88-98 | 30-45 | 11-25 |
| | 18-32 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 91-100 | 85-100 | 30-45 | 11-25 |
| | 32-72 | Clay, Silty clay | CH, MH | A-7 | 0 | 0 | 95-100 | 86-100 | 74-100 | 68-95 | 55-85 | 25-50 |

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|--------------------------|-------|----------------------------------|----------------|------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | | <i>In</i> | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| DuC3: | | | | | | | | | | | | |
| Dulac | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 88-100 | 20-25 | 2-7 |
| | 6-18 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 88-98 | 30-45 | 11-25 |
| | 18-32 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 91-100 | 85-100 | 30-45 | 11-25 |
| | 32-72 | Clay, Silty clay | CH, MH | A-7 | 0 | 0 | 95-100 | 86-100 | 74-100 | 68-95 | 55-85 | 25-50 |
| DuD3: | | | | | | | | | | | | |
| Dulac | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 88-100 | 20-25 | 2-7 |
| | 6-16 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 88-98 | 30-45 | 11-25 |
| | 16-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 91-100 | 85-100 | 30-45 | 11-25 |
| | 30-72 | Clay, Silty clay | CH, MH | A-7 | 0 | 0 | 95-100 | 86-100 | 74-100 | 68-95 | 55-85 | 25-50 |
| EuE: | | | | | | | | | | | | |
| Eustis | 0-8 | Loamy fine sand | SM, SP-SM | A-2-4, A-3 | 0 | 0 | 100 | 100 | 91-99 | 30-38 | --- | NP |
| | 8-45 | Fine sand, Loamy fine sand, Sand | SM, SP-SM | A-2-4, A-3 | 0 | 0 | 100 | 100 | 91-99 | 29-37 | --- | NP |
| | 45-72 | Loamy fine sand, Loamy sand | SM | A-2-4 | 0 | 0 | 100 | 100 | 76-84 | 18-26 | --- | NP |

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| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| Fa: | | | | | | | | | | | | |
| Falaya | 0-45 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 15-30 | NP-10 |
| | 45-72 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 87-100 | 85-100 | 25-43 | 7-16 |
| GrA: | | | | | | | | | | | | |
| Grenada | 0-8 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 25-31 | 4-7 |
| | 8-23 | Silty clay loam, Silt loam | CL | A-4, A-6 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 27-40 | 8-19 |
| | 23-29 | Silt loam | CL, CL-ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 20-30 | 5-10 |
| | 29-45 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| | 45-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |

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|--------------------------|-----------|----------------------------|----------------|---------------|------------|-------------|--------------------------------|-----|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| GrB: | | | | | | | | | | | | |
| Grenada | 0-8 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 25-31 | 4-7 |
| | 8-23 | Silty clay loam, Silt loam | CL | A-4, A-6 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 27-40 | 8-19 |
| | 23-29 | Silt loam | CL, CL-ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 20-30 | 5-10 |
| | 29-45 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| | 45-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| GrB3: | | | | | | | | | | | | |
| Grenada | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 25-31 | 4-7 |
| | 6-18 | Silty clay loam, Silt loam | CL | A-4, A-6 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 27-40 | 8-19 |
| | 18-22 | Silt loam | CL, CL-ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 20-30 | 5-10 |
| | 22-55 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| | 55-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |

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|--------------------------|-----------|----------------------------------|----------------------|---------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| GrC3: | | | | | | | | | | | | |
| Grenada | 0-6 | Silt loam | CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 25-31 | 4-7 |
| | 6-18 | Silty clay loam, Silt loam | CL | A-4, A-6 | 0 | 0 | 100 | 100 | 94-100 | 92-100 | 27-40 | 8-19 |
| | 18-21 | Silt loam | CL, CL-ML | A-4 | 0 | 0 | 100 | 100 | 98-100 | 96-100 | 20-30 | 5-10 |
| | 21-50 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| | 50-72 | Silty clay loam, Silt loam | CL, CL-ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 91-100 | 90-100 | 25-45 | 5-24 |
| lu: | | | | | | | | | | | | |
| luka | 0-33 | Fine sandy loam | CL-ML, ML, SC-SM, SM | A-2, A-4 | 0 | 0 | 95-100 | 84-100 | 69-91 | 37-53 | 15-20 | NP-7 |
| | 33-50 | Loam, Silt loam, Sandy loam | CL-ML, ML, SC-SM, SM | A-4 | 0 | 0 | 95-100 | 79-100 | 72-100 | 55-80 | 15-30 | NP-7 |
| | 50-72 | Fine sandy loam, Loam, Silt loam | ML, SM | A-2, A-4 | 0 | 0 | 95-100 | 85-100 | 76-100 | 56-76 | 15-30 | NP-7 |

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|--------------------------|-----------|-----------------------------------|-------------------------------|---------------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LeB: | | | | | | | | | | | | |
| Lexington | 0-7 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 7-38 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 38-50 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 50-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 64-89 | 36-59 | 22-35 | 5-15 |
| LeB3: | | | | | | | | | | | | |
| Lexington | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 6-34 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 86-100 | 80-97 | 27-45 | 11-25 |
| | 34-45 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 45-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 64-88 | 36-59 | 22-35 | 5-15 |

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|--------------------------|-----------|-----------------------------------|-------------------------------|---------------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LeC: | | | | | | | | | | | | |
| Lexington | 0-9 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | --- | --- | 25-42 | 5-16 |
| | 9-31 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | --- | --- | 27-45 | 11-25 |
| | 31-48 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | --- | --- | 22-35 | 5-15 |
| | 48-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | --- | --- | 22-35 | 5-15 |
| LeC3: | | | | | | | | | | | | |
| Lexington | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 6-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 30-45 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 45-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 73-98 | 35-58 | 22-35 | 5-15 |

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| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LeD: | | | | | | | | | | | | |
| Lexington | 0-9 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 9-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 30-45 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 45-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 73-98 | 35-58 | 22-35 | 5-15 |
| LeD3: | | | | | | | | | | | | |
| Lexington | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 6-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 30-45 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 45-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 64-89 | 36-59 | 22-35 | 5-15 |

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| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LeE: | | | | | | | | | | | | |
| Lexington | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 6-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 30-45 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 45-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 64-89 | 36-59 | 22-35 | 5-15 |
| LgC: | | | | | | | | | | | | |
| Lexington | 0-7 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 7-38 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 38-50 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 50-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 65-90 | 37-60 | 22-35 | 5-15 |
| Urban land | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LmE3: | | | | | | | | | | | | |
| Lexington | 0-5 | Silt loam | CL, CL-ML, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 94-100 | 85-100 | 80-100 | 25-42 | 5-16 |
| | 5-24 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 84-100 | 78-95 | 27-45 | 11-25 |
| | 24-42 | Loam, Silt loam, Sandy loam | CL, CL-ML, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 71-90 | 44-61 | 22-35 | 5-15 |
| | 42-72 | Clay loam, Loamy sand, Sandy loam | SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 100 | 94-100 | 65-90 | 37-60 | 22-35 | 5-15 |
| Smithdale | 0-4 | Silt loam | SC-SM, SM | A-2, A-4 | 0 | 0 | 100 | 85-100 | 72-98 | 57-81 | 15-20 | NP-5 |
| | 4-72 | Clay loam, Loam, Sandy clay loam | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0 | 100 | 85-100 | 69-96 | 41-63 | 23-38 | 7-16 |
| LoB: | | | | | | | | | | | | |
| Loring | 0-7 | Silt loam | CL, CL-ML, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 93-100 | 15-35 | NP-15 |
| | 7-35 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 87-100 | 86-100 | 32-48 | 10-20 |
| | 35-47 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 91-100 | 30-45 | 10-22 |
| | 47-65 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 92-100 | 89-100 | 28-40 | 7-16 |

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| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| LoB3: | | | | | | | | | | | | |
| Loring | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 93-100 | 15-35 | NP-15 |
| | 6-38 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 88-100 | 86-100 | 32-48 | 10-20 |
| | 38-45 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 91-100 | 30-45 | 10-22 |
| | 45-65 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 92-100 | 89-100 | 28-40 | 7-16 |
| LoC3: | | | | | | | | | | | | |
| Loring | 0-6 | Silt loam | CL, CL-ML, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 93-100 | 15-35 | NP-15 |
| | 6-24 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 88-100 | 86-100 | 32-48 | 10-20 |
| | 24-42 | Silty clay loam, Silt loam | CL, ML | A-4, A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 91-100 | 30-45 | 10-22 |
| | 42-65 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 92-100 | 89-100 | 28-40 | 7-16 |

Engineering Properties

Madison County, Tennessee

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index |
|--------------------------|-----------|----------------------------------|-------------------------------|-------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| Ma: | | | | | | | | | | | | |
| Mantachie | 0-13 | Fine sandy loam | CL-ML, ML, SC-SM, SM | A-4 | 0 | 0-5 | 95-100 | 85-100 | 71-95 | 40-59 | 15-20 | NP-5 |
| | 13-73 | Clay loam, Loam, Sandy clay loam | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0-5 | 95-100 | 85-100 | 69-98 | 50-75 | 20-40 | 5-15 |
| MeA: | | | | | | | | | | | | |
| Memphis | 0-8 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 15-30 | NP-10 |
| | 8-22 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 90-100 | 35-48 | 15-25 |
| | 22-72 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 93-100 | 92-100 | 30-40 | 6-15 |
| MeB: | | | | | | | | | | | | |
| Memphis | 0-7 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 15-30 | NP-10 |
| | 7-19 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 90-100 | 35-48 | 15-25 |
| | 19-72 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 93-100 | 92-100 | 30-40 | 6-15 |

Engineering Properties

Madison County, Tennessee

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index |
|--------------------------|-----------|---|-------------------------------|-------------|------------|-------------|--------------------------------|--------|--------|--------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| MeB2: | | | | | | | | | | | | |
| Memphis | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 15-30 | NP-10 |
| | 6-14 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 90-100 | 35-48 | 15-25 |
| | 14-72 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 93-100 | 92-100 | 30-40 | 6-15 |
| MeC3: | | | | | | | | | | | | |
| Memphis | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 91-100 | 15-30 | NP-10 |
| | 6-12 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 92-100 | 90-100 | 35-48 | 15-25 |
| | 12-72 | Silt loam | CL, ML | A-4, A-6 | 0 | 0 | 100 | 100 | 93-100 | 92-100 | 30-40 | 6-15 |
| Oc: | | | | | | | | | | | | |
| Ochlockonee | 0-31 | Fine sandy loam | CL-ML, ML, SC-SM, SM | A-2, A-4 | 0 | 0 | 100 | 95-100 | 75-94 | 39-56 | 15-26 | NP-5 |
| | 31-46 | Fine sandy loam, Silt loam, Sandy loam | CL, ML, SC, SM | A-4 | 0 | 0 | 100 | 95-100 | 83-98 | 67-80 | 15-32 | NP-9 |
| | 46-72 | Loamy sand, Silt loam, Sandy loam | CL, ML, SC, SM | A-2, A-4 | 0 | 0 | 100 | 95-100 | 79-98 | 60-79 | 15-32 | NP-9 |

Engineering Properties

Madison County, Tennessee

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index |
|--------------------------|-------|----------------------------------|---------------------|-------------|------------|-------------|--------------------------------|--------|--------|-------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | | <i>In</i> | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| PrB: | | | | | | | | | | | | |
| Providence | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 96-100 | 88-95 | 15-30 | NP-10 |
| | 6-30 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 87-99 | 78-90 | 30-45 | 11-20 |
| | 30-45 | Silty clay loam, Silt loam | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 83-93 | 25-40 | 11-20 |
| | 45-72 | Clay loam, Loam, Sandy clay loam | CL, SC | A-4, A-6 | 0 | 0 | 100 | 95-100 | 78-100 | 61-82 | 20-35 | 8-18 |
| PrC3: | | | | | | | | | | | | |
| Providence | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 96-100 | 88-95 | 15-30 | NP-10 |
| | 6-20 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 87-99 | 78-90 | 30-45 | 11-20 |
| | 20-37 | Silty clay loam, Silt loam | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 83-93 | 25-40 | 11-20 |
| | 37-72 | Clay loam, Loam, Sandy clay loam | CL, SC | A-4, A-6 | 0 | 0 | 100 | 95-100 | 78-100 | 61-82 | 20-35 | 8-18 |
| PrD3: | | | | | | | | | | | | |
| Providence | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 96-100 | 88-95 | 15-30 | NP-10 |
| | 6-18 | Silty clay loam, Silt loam | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 87-99 | 78-90 | 30-45 | 11-20 |
| | 18-35 | Silty clay loam, Silt loam | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 83-93 | 25-40 | 11-20 |
| | 35-72 | Clay loam, Loam, Sandy clay loam | CL, SC | A-4, A-6 | 0 | 0 | 100 | 95-100 | 78-100 | 61-82 | 20-35 | 8-18 |

Engineering Properties

Madison County, Tennessee

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index |
|--------------------------|-----------|-----------------------------------|-------------------------------|-------------|------------|-------------|--------------------------------|--------|--------|-------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | <i>In</i> | | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| SmE: | | | | | | | | | | | | |
| Smithdale | 0-21 | Fine sandy loam | SC-SM, SM | A-2, A-4 | 0 | 0 | 100 | 85-100 | 69-94 | 39-59 | 15-20 | NP-5 |
| | 21-72 | Clay loam, Loam, Sandy clay loam | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0 | 100 | 85-100 | 67-93 | 33-54 | 23-38 | 7-16 |
| SmF: | | | | | | | | | | | | |
| Smithdale | 0-21 | Fine sandy loam | SC-SM, SM | A-2, A-4 | 0 | 0 | 100 | 85-100 | 69-94 | 39-59 | 15-20 | NP-5 |
| | 21-72 | Clay loam, Sandy clay loam | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0 | 100 | 85-100 | 67-93 | 33-54 | 23-38 | 7-16 |
| SwD: | | | | | | | | | | | | |
| Sweatman | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 86-100 | 75-90 | 15-35 | NP-10 |
| | 6-45 | Clay, Silty clay, Silty clay loam | MH | A-7 | 0 | 0 | 95-100 | 90-100 | 70-98 | 66-93 | 60-80 | 25-40 |
| | 45-72 | Clay, Silty clay | CH, CL, MH | A-6, A-7 | 0 | 0 | 95-100 | 77-100 | 60-98 | 57-93 | 30-70 | 12-30 |

Engineering Properties

Madison County, Tennessee

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percent passing sieve number-- | | | | Liquid limit | Plasticity index |
|--------------------------|-------|---------------------------------------|---------------------|-------------|------------|-------------|--------------------------------|--------|--------|-------|--------------|------------------|
| | | | Unified | AASHTO | >10 Inches | 3-10 Inches | 4 | 10 | 40 | 200 | | |
| | | <i>In</i> | | | <i>Pct</i> | <i>Pct</i> | | | | | <i>Pct</i> | |
| SwE: | | | | | | | | | | | | |
| Sweatman | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 86-100 | 75-90 | 15-35 | NP-10 |
| | 6-45 | Clay, Silty clay, Silty clay loam | MH | A-7 | 0 | 0 | 95-100 | 90-100 | 70-98 | 66-93 | 60-80 | 25-40 |
| | 45-72 | Clay, Silty clay | CH, CL, MH | A-6, A-7 | 0 | 0 | 95-100 | 77-100 | 60-98 | 57-93 | 30-70 | 12-30 |
| Vk: | | | | | | | | | | | | |
| Vicksburg | 0-7 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 86-99 | 15-35 | NP-10 |
| | 7-55 | Silt, Silt loam, Very fine sandy loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 93-100 | 86-99 | 15-35 | NP-10 |
| Wa: | | | | | | | | | | | | |
| Waverly | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 86-98 | 15-25 | NP-9 |
| | 6-72 | Silt, Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 88-96 | 20-30 | 3-10 |
| Wf: | | | | | | | | | | | | |
| Waverly | 0-6 | Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 94-100 | 86-98 | 15-25 | NP-9 |
| | 6-72 | Silt, Silt loam | CL, CL-ML, ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 88-96 | 20-30 | 3-10 |

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

"Depth" to the upper and lower boundaries of each layer is indicated.

"Texture" is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

"Classification" of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

"Rock fragments" larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

"Percentage (of soil particles) passing designated sieves" is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

"Liquid limit" and "plasticity index" (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.