

Table of Contents – Aggregates

Section 1 – Physical Properties	Section 1-1
Physical Properties	Section 1-2
Texture.....	Section 1-4
Particle Shape	Section 1-6
Particle Size	Section 1-8
Earth Formation	Section 1-10
Physical Weathering.....	Section 1-11
Chemical Weathering.....	Section 1-12
Particle Size	Section 1-15
Fractionation.....	Section 1-17
Gradation	Section 1-19
Aggregate Gradation.....	Section 1-21
Phases of a Soil or Aggregate	Section 1-26
Important Phase Relationships.....	Section 1-27
Density	Section 1-30
Cohesion.....	Section 1-31
Consistency	Section 1-33
Atterburg System	Section 1-34
Permeability	Section 1-42
Strength	Section 1-44
“R” Value.....	Section 1-46
Durability.....	Section 1-48
Section 2 – Types and Uses	Section 2-1
Aggregate Types	Section 2-2
Natural Aggregates.....	Section 2-3
Manufactured Aggregates	Section 2-4
Reclaimed Asphalt Pavement	Section 2-7
Aggregate Crushing.....	Section 2-8
Impact.....	Section 2-9
Grinding	Section 2-10
Shear & Compression.....	Section 2-11
Compression & Impact	Section 2-12
Aggregate Crushing.....	Section 2-13
Aggregate Fractions	Section 2-14
Pavement Layers.....	Section 2-15
Aggregate Uses	Section 2-17

Section 3 – Tests	Section 3-1
Scales	Section 3-2
Balance Verification Worksheet	Section 3-5
Aggregate Tests	Section 3-7
Field Sample	Section 3-8
AASHTO T 27 – Sieve Analysis.....	Section 3-9
Aggregate Sizing: Sieve Screens.....	Section 3-10
AASHTO T 27 – (Coarse Aggregate Equipment).....	Section 3-12
Coarse Aggregate Gradation T 27	Section 3-13
Maximum Allowable Quantity.....	Section 3-19
Maximum Allowable Weight.....	Section 3-20
AASHTO T 11	Section 3-21
AASHTO T 27	Section 3-28
Maximum Allowable Quantity.....	Section 3-34
Aggregate Splitting.....	Section 3-35
Liquid Limit	Section 3-38
Plastic Limit	Section 3-53
Compaction Tests	Section 3-56
Moisture/Density	Section 3-59
AASHTO T 180	Section 3-63
AASHTO T 191.....	Section 3-64
AASHTO T 190	Section 3-65
ASTM D 5821	Section 3-68
AASHTO T 304.....	Section 3-70
ASTM D4791	Section 3-74
Measuring Flat and Elongated Particles	Section 3-75
AASHTO T 176	Section 3-76
Sand Equivalent Test.....	Section 3-77
AASHTO T 96	Section 3-79
AASHTO T 104	Section 3-81
AASHTO T 112	Section 3-82
Aggregate Tests Summary.....	Section 3-83
Homework.....	Section 3-84
Section 4 – Specifications	Section 4-1
Specifications	Section 4-2
Table 803.4.4-1	Section 4-9
Table 803.4.4-2	Section 4-10
Table 803.5.2-1	Section 4-12
Table 803.5.5-1	Section 4-18
Table 803.5.2-2	Section 4-19
Table 803.6.1-1	Section 4-21

Table 803.6.2-1	Section 4-23
Table 803.7-1	Section 4-26
Table 803.2.2-1	Section 4-29
Table 803.2.2-3	Section 4-30
Table 803.2.1-1	Section 4-31
Table 803.2.1-2	Section 4-32
Table 803.8-1	Section 4-34
Table 803.8-2	Section 4-35
Table 803.12.1	Section 4-38
Table 803.12.1-1	Section 4-42
Table 803.12.2-1	Section 4-44
Table 803.12.3-1	Section 4-46
Table 803.13.1-1	Section 4-49
Table 803.14-1	Section 4-52
Table 803.14.2	Section 4-53
Table 803.14.7-1	Section 4-55
Table 803.15-1	Section 4-57

Section 5 – Developing a Job Mix Formula Section 5-1

Developing A JMF	Section 5-2
Trial and Error Method	Section 5-4
Example 1a	Section 5-7
Example 1b	Section 5-8
Example 1c	Section 5-9
Example 1d	Section 5-10
Example 1e	Section 5-11
Example 2a	Section 5-12
Example 2b	Section 5-13

Section 6 – Construction and Points of Acceptance Section 6-1

Crushing and Stockpiling	Section 6-2
Compaction	Section 6-9
Sampling AASHTO T 2	Section 6-13
Points of Acceptance	Section 6-19
Point of Sampling	Section 6-21

Section 7 – Acceptance	Section 7-1
Quality Assurance.....	Section 7-2
Acceptance Methods	Section 7-4
Normal Probability Curve	Section 7-13
Normal Curve Calculations	Section 7-16
Table 113.1.1.....	Section 7-18
Pay Factor Calculations.....	Section 7-22
Table 113.1-2.....	Section 7-23
Pay Factor Worksheet #1	Section 7-25
Pay Factor Worksheet #2	Section 7-28
Pay Factor Worksheet #3	Section 7-29
Pay Factor Calculations	Section 7-32
Maximum Pay Factors	Section 7-33
Section 8 – Aggregate Gradation Calculations	Section 8-1
Aggregate Analysis T-166	Section 8-2
Correlation of Testing Technicians for Gradation.....	Section 8-7
Table 1. Allowable Range of Standard Deviation	Section 8-11
Correlation of Testing Technicians for Gradation	Section 8-12
Correlation of Aggregate Gradations	Section 8-15
Section 9 – Practice Problems	Section 9-1
Practice Problems	Section 9-2
Aggregate Analysis T-166	Section 9-3
Table 113.1-1	Section 9-4
Table 113.1-2.....	Section 9-5
Pay Factor Worksheet #4	Section 9-6
Pay Factor Worksheet #5	Section 9-7
Pay Factor Worksheet #6	Section 9-8
Pay Factor Worksheet #7	Section 9-9
Pay Factor Worksheet #8	Section 9-10
Pay Factor Worksheet Blank.....	Section 9-11
Atterberg Limits	Section 9-12