

**Lab report due: October 1<sup>st</sup> 2008**

The following tests will be conducted during the laboratory:

1. Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate.
2. Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. Specific Gravity and Absorption of Coarse Aggregates.
4. Fine aggregate angularity – uncompacted air voids

**Test I:** A bulk specific gravity of compacted aggregates will be calculated for one aggregate type as per ASTM C29 or AASHTO T 19 (Experiment # 9) Grey granite 3/4” maximum size. Each group will test two replicates. An oven dry sample will be used for each replicate. The groups will present the data as shown in the Calculation and Report section of ASTM C29 or AASHTO T19.

**Test II:** A sieve analysis of fine and aggregates will be conducted on crushed sand as per ASTM C136 or AASHTO T 27(Experiment # 6).

Each group will test one replicate. Follow all the Analysis and Results and Reporting data guidelines of Experiment number 6.

**Test III:** Specific Gravity and Absorption of Coarse Aggregates (ASTM C127/AASHTO T85 - Experiment number 7) of gray granite 3/4” maximum size.

Each group will test two replicates. Follow all the Analysis and Results and Reporting data guidelines of Experiment number 7.

**Test IV:** Calculate the fine aggregate angularity using un-compacted air-voids (AASHTO T304). Each group will test one replicate of sand. Follow all the Analysis and Results and Reporting data guidelines of AASHTO T304.

One of the parameters to be reported:

1. *List the possible errors in obtaining accurate and precise measurements*
2. *List different ways of increasing accuracy and precision in these measurements.*

**Homework # 1****Due: October 1<sup>st</sup> 2008****Total 30 points**

Submit one per group. Some of the homework problems are from last year's exam. Each member of the group should make an effort towards answering **all** the homework problems to ensure proper understanding of the subject matter and eventually good performance in the exams and the course. If any member of the group does not sufficiently contribute, please bring it to the instructor's attention.

1. Calculate percent passing of the following aggregate **7 points**

Sieve Size, mm	Amount Retained, g	Cumulative Percent Passing
25mm	0	
9.5mm	35.2	
4.75mm	299.6	
2.00mm	149.7	
0.425mm	125.8	
0.075mm	60.4	
Pan	7.3	

2. Why is angularity more desirable in asphalt concrete than cement concrete? **2 points**
3. What is a gradation curve, restricted zone and control points? **3 points**
4. Problems 5.2 and 5.3 **4 points**
5. Problem 5.6 **2 points**
6. Problem 5.15 **2 points**
7. Problem 5.28 **2 points**
8. Problem 5.30 **2 points**
9. Problem 5.31 **2 points**
10. Problem 5.32 **2 points**
11. Problem 5.33 **2 points**

**Tutorials # 1**

5.19, 5.20, 5.23, 5.26, 5.27, 5.29

**Total: 30 points**