



**MEMO**

**TO:** Teck Chua  
 Technical Services, Northern Concrete Division

**FROM:** Darmawan Ludirdja  
 Technical Services Center

**DATE:** July 30, 2010

**SUBJECT:** Project 11-12.12 CRCA\* Edsall Plant – Coarse Aggregate – Proctor & CBR  
**CC:** Teck Chua, Clark Lamb, Daniel Thomas, Don Powell

The proctor and CBR tests have been completed. The results are shown in tables and figures below.

Table 1. Summary of test results

Test Methods	CRCA Edsall Rd
AASHTO T 85 Specific gravity & Absorption	
Apparent specific gravity, Gsa	2.69
Bulk specific gravity, Gsb	2.27
Bulk SSD specific gravity, Gsb ssd	2.43
Absorption, %	6.9%
AASHTO T-265, Moisture Content, %	11.2%
VTM 7(AASHTO T-89 & T-90), Plasticity Index	NP

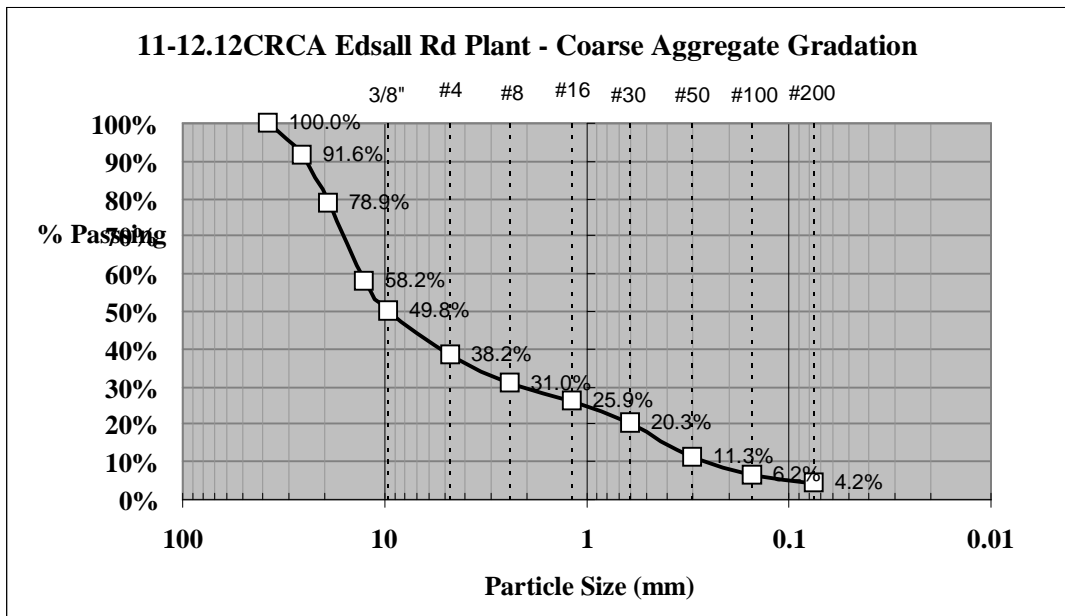


Figure 1. Gradation of CRCA Edsall Road Plant - Coarse Aggregate (FM=5.4)

\* CRCA – Crushed Returned Concrete Aggregate, a.k.a. CCA – Crushed Concrete Aggregate.

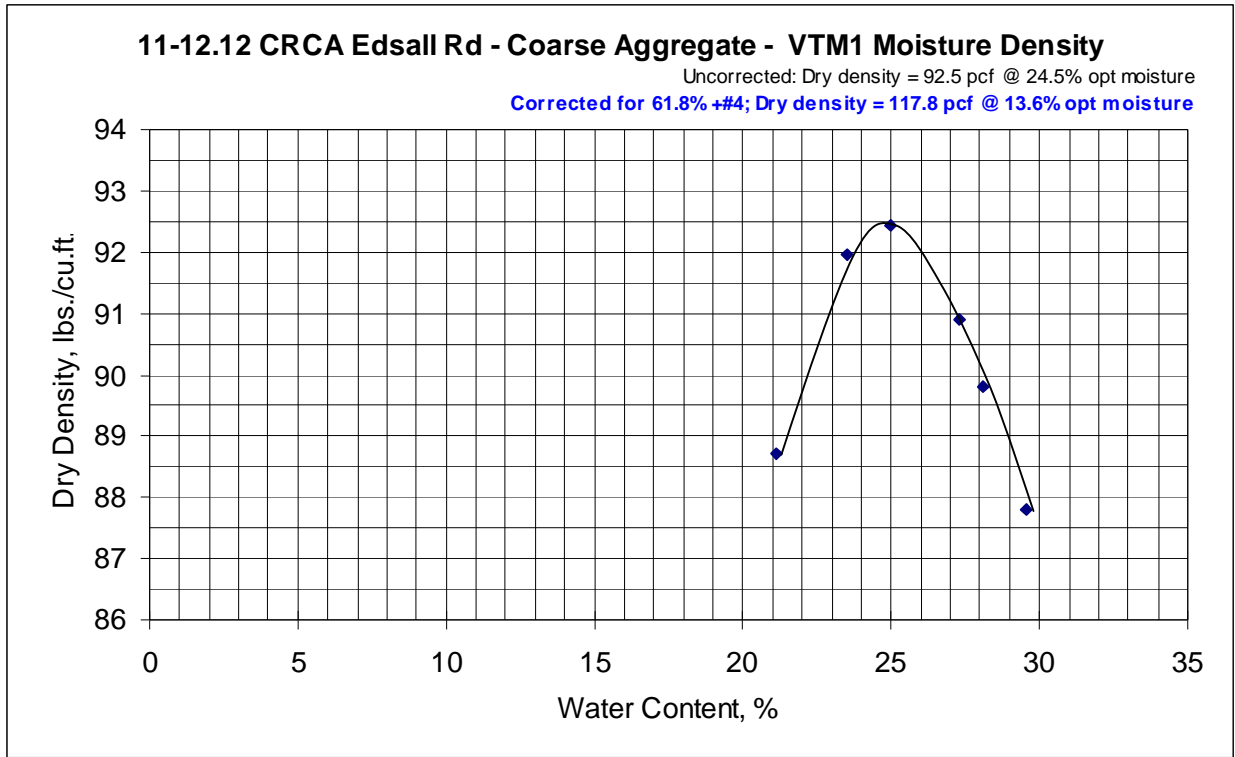


Figure 2. VTM-1 moisture density relation for CRCA Edsall Road coarse aggregate

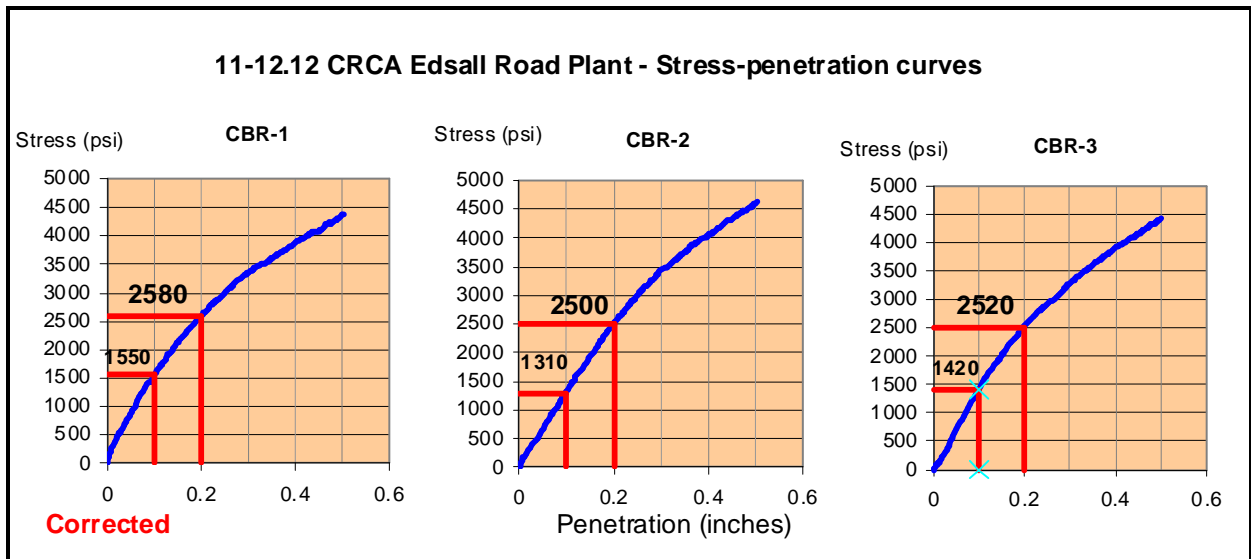


Figure 3. CBR Stress – penetration curves



Table 2. AASHTO T 193 CBR test results. Note compaction was done by ASTM D 698.

Data Before Soak				
Sample identification	CBR-1	CBR-2	CBR-3	
Moist density, (lbs./cu.ft.)	127.5	127.9	127.6	
Dry density, (lbs./cu.ft.)	110.9	110.7	111.2	
Water Contents				
Sample Identification	1	2	3	
Water content	14.9%	15.6%	14.7%	
Data After Soak				
Sample identification	CBR-1	CBR-2	CBR-3	
Moist density, (lbs./cu.ft.)	129.3	129.9	129.3	
Dry density, (lbs./cu.ft.)	111.6	110.8	110.5	
Water Contents from Top 1" of Sample				
Sample Identification	CBR-1	CBR-2	CBR-3	
Water content, (%)	15.9%	17.3%	17.0%	
Swell				
Swell, (%)	-0.04	0.00	0.00	
AASHTO T-193 CBR Values, after correction, (%)				AVG
<b>0.1 in.</b>	155.0	131.0	142.0	<b>142.7</b>
<b>0.2 in.</b>	172.0	167.0	168.0	<b>169.0</b>

Based on the ASTM D 2487, Classification of Soils for Engineering Purposes (USCS), the material is classified as well graded gravel (**GW**).

This completes all of the testing for the project. Please let me know if you have any question / comment.