

MILL TEST REPORT

Cement Type: **CSA Type GU**
Low Alkali Portland Cement

Plant: **Delta, BC**

Certificate #: D1-380

| Production Period: | Dec 01 2009 Dec 31 2009 | Test Result | CSA A3001 Specification |
|-------------------------|----------------------------|----------------|-------------------------------|
| SiO2 (%) | CSA A3003 | 20.0 | - |
| Al2O3 (%) | CSA A3003 | 5.04 | - |
| Fe2O3 (%) | CSA A3003 | 3.72 | - |
| CaO (%) | CSA A3003 | 65.0 | - |
| MgO (%) | CSA A3003 | 0.85 | max. 5.0 |
| SO3 (%) | CSA A3003 | 2.78 | max. 3.0 |
| Na2O (%) | CSA A3003 | 0.33 | - |
| K2O (%) | CSA A3003 | 0.37 | - |
| TiO2 (%) | CSA A3003 | 0.24 | - |
| C3S (%) | ASTM C150 | 66 | - |
| C2S (%) | ASTM C150 | 8 | - |
| C3A (%) | CSA A3003 | 7.1 | - |
| C4AF (%) | ASTM C150 | 11.3 | - |
| Equivalent Alkalies (%) | ASTM C150 | 0.58 | - |
| Loss on Ignition (%) | CSA A3003 | 3.0 | max. 3.0 |
| Insoluble Residue (%) | CSA A3003 | 0.21 | max. 1.5 |
| Free Calcium Oxide (%) | CSA A3003 | 0.60 | - |
| Vicat Setting Time | | | |
| Initial (minutes) | CSA A3004-B2 | 112 | min. 45 max. 375 |
| Final (minutes) | CSA A3004-B2 | 219 | - |
| Blaine Fineness (m2/kg) | ASTM C204 | 390 | - |
| +325 mesh | CSA A3004-A3 | 1.5 | max. 28 |
| Air Content (%) | CSA A3004-C4 | 6.96 | - |
| Autoclave Expansion (%) | CSA A3004-B5 | -0.01 | max. 1.0 |
| Compressive Strength | | MPa / psi | |
| 3 Day | CSA A3004-C2 | 28.1 / 4073 | min. 14.5 |
| 7 Day | CSA A3004-C2 | 33.4 / 4847 | min. 20.0 |
| 28 Day (previous month) | CSA A3004-C2 | 44.4 / 6443 | min. 26.5 |

This will certify that the above described cement meets the standard chemical and physical requirements of CSA Specification A3001-08 for Type GU Portland Cement.