



Revised: September 1, 2011

**ORCA WASHED GRAVEL 1/2" x No.4 (12.5 x 4.75mm)**

The Orca concrete aggregates are produced at the Orca Quarry, Port McNeill, B.C., in a modern and efficient washing and processing plant opened in March 2007 and distributed via ocean-going ships or barges.

The California Department of Transportation has established that aggregates from this source are innocuous with respect to Alkali Silica Reactivity and has approved them for use in reduced mineral admixture concrete. Caltrans # 10-Can-OR-3 ([www.dot.ca.gov/hq/esc/approved\\_products\\_list/pdf/Aggregate\\_List\\_04\\_5\\_10.doc](http://www.dot.ca.gov/hq/esc/approved_products_list/pdf/Aggregate_List_04_5_10.doc))

**GRADATION – PERCENTAGE PASSING**

| SIEVE SIZE     | ORCA GRAVEL<br>(Typical Values) | SPECIFICATIONS                  |                       |
|----------------|---------------------------------|---------------------------------|-----------------------|
|                |                                 | CALTRANS<br>Per: 90-3.01 (2006) | ASTM C33-03<br>Type 7 |
| 19.0 mm (3/4") | 100                             | 100                             | 100                   |
| 12.5 mm (1/2") | 98                              | 82 – 100                        | 90 – 100              |
| 9.5 mm (3/8")  | 65 X = 70                       | 55 – 85 X ± 15                  | 40 – 70               |
| 4.75 mm (#4)   | 2                               | 0 – 15                          | 0 – 15                |
| 2.36 mm (#8)   | <1                              | 0 – 6                           | 0 – 5                 |

**PROPERTIES**

|                                      | TEST   | ORCA      | SPECIFICATIONS |            |
|--------------------------------------|--------|-----------|----------------|------------|
|                                      |        |           | CALTRANS       | ASTM       |
| Specific Gravity, bulk SSD           | CT 206 | 2.88      |                |            |
| Absorption                           | CT 206 | 0.5       |                |            |
| Dry Rodded Unit Weight, pcf          | CT 212 | 115       |                |            |
| Cleanness Value                      | CT 227 | >80       | 75 Min.        |            |
| Durability                           | CT 229 | 90        |                |            |
| Sodium Sulfate Soundness             | C-214  | <1%       | 10% Max.       | 12% Max.   |
| Magnesium Sulfate Soundness          | C-88   | <1%       |                | 18% Max.   |
| Los Angeles Abrasion (500 Revs)      | C-535  | 5%        | 45% Max.       | 50% Max.   |
| Materials Finer Than No. 200         | C-117  | <0.5%     |                | 1.0% Max.  |
| Lightweight Pieces (Coal or Lignite) | C-123  | 0.0%      |                | 0.5% Max.  |
| Lightweight Pieces (Chert & Shale)   | C-123  | <0.5%     |                | 5.0% Max.  |
| Clay Lumps and Friable Particles     | C-142  | <0.5%     |                | 5.0% Max.  |
| Alkali Silica Reactivity             | C-1260 | Innocuous | 0.15% Max.     | 0.10% Max. |
| Alkali Silica Reactivity             | C-1293 | Innocuous | 0.04% Max.     | 0.04% Max. |

Ken Palko, P. Eng.  
Vice President, Operations