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## Cement Mill Certificate of Analysis

Alaska Basic Industries hereby certify that cement represented by this analysis complies with the current requirements for Type I and Type II of **ASTM C150-11** specifications, and **AASHTO M85-11**.

Portland Cement: Type III Low Alkali

Date Shipped: 6-25-18

Meets: ASTM C150-11 AASHTO M85-11

Lot # / Ship: #III062518 MV Indigo Lake

<u>Chemical Composition:</u>	<u>Results:</u>	<u>Type III Requirments</u>
Silicon Dioxide (SiO <sub>2</sub> ):	20.2%	---
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ): %Max	4.7%	---
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ):% Max	3.2%	---
Calcium Oxide (CaO):	62.1%	---
Magnesium Oxide (MgO): % Max	3.8%	6.0%
Sulfur Trioxide (SO <sub>3</sub> ):% Max	3.4%	3.5%
Loss On Ignition% Max:	1.2%	3.0%
Insoluble Residue:% Max	0.20%	0.75%
Tricalcium Silicate (C <sub>3</sub> S):	52	--
Dicalcium Silicate (C <sub>2</sub> S):	18	--
Tricalcium Aluminate (C <sub>3</sub> A):% Max	7.0%	15.0%
Tetracalcium Aluminoferrite (C <sub>4</sub> AF):	10.00%	--
Total Alkali as NaEq:% Max	0.54%	0.60%
Limestone, 5 % max	1.7%	5.0%
CaCO <sub>3</sub> in Limestone, 70% min	86%	70%

### Physical Properties:

Blaine (min m <sup>2</sup> /kg.):	549	260
Vicat, Initial Set (mins.) Min	100	45
Vicat, Final Set (mins.): Max	245	375
Autoclave Expansion:% Max	0.02%	0.80%
False Set:	79%	--
Air Content (% Max by vol.):	7.00%	12.00%

### Mortar Cube Breaks:

Compressive Strength (PSI):		
1 Day _____	3050	1740
3 Days _____	4790	3480
7 Days _____	5760	0

### Notes

1. **Test Results:** This mill test represents typical data.
2. The percent of Limestone is slowly being increased, which has no effect on the performance of concrete

Patrick Walter

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# Type III

Terminals in  
Anchorage • Fairbanks