**GCC of America**
600 S. Cherry Street, Suite 1000, Glendale, CO 80246
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# MATERIAL CERTIFICATION REPORT

**Plant:** Trident

**Address:** 4070 Trident Road
Three Forks, MT 59752

**Contact:** Zach Gill

**Phone:** (406) 285-3988

**Cement Type:** 1157 GU / 595-1L

**Date Issued:** 12-Oct-18

**Production Period:** 1-Aug-18

**To:** 30-Sep-18

## STANDARD REQUIREMENTS ASTM C150/ASTM C1157/ASTM C595

Trident is and ISO 9001 Certified Facility

**CHEMICAL**

| Item | ASTM Test Method | ASTM C595 Spec. Limit | Test Result |
|---|---|---|---|
| $SO_3$ (%) | C114 | 3.0 max[A] | 2.6 |
| Loss On Ignition (%) | C114 | 10.0 max | 5.7 |

**PHYSICAL**

| Item | ASTM Test Method | ASTM C595 Spec. Limit | ASTM C1157 Spec. Limit | Test Result | |
|---|---|---|---|---|---|
| Air Content (%) | C185 | 12 max | 12 max | 7 | |
| Blaine Fineness ($m^2$/kg) | C204 | - | - | 433 | |
| Residue 45 µm (No.325) Sieve (%) | C430 | - | - | 1.8 | |
| Autoclave Expansion (%) | C151 | 0.80 max; 0.2 max contraction | 0.80 max | -0.01 | |
| Compressive Strength | | | | | |
| 3 days, MPa (psi) | C109 | 13.0 (1890) min | 13.0 (1890) min | 29.6 | (4290) |
| 7 days, MPa (psi) | C109 | 20.0 (2900) min | 20.0 (2900) min | 36.7 | (5320) |
| 28 days, MPa (psi)[C] | C109 | 28.0 (4060) min | 28.0 (4060) min | 45.0 | (6560) |
| Time of Setting, Initial Vicat (min) | C191 | 45 min / 420 max | 45 min / 420 max | 135 | |
| Mortar Bar Expansion (%) | C1038 | - | 0.020 max | -0.005 | |

**ADDITIONAL DATA**

| Type | Limestone | Test Method | Base Phase Composition | ASTM Test Method | Test Result |
|---|---|---|---|---|---|

## OPTIONAL REQUIREMENTS ASTM C150/ASTM C1157

**CHEMICAL**

| Item | ASTM Test Method | ASTM C150 Spec. Limit | Test Result |
|---|---|---|---|
| Equivalent Alkalies (%) | C114 | 0.60 max | 0.33 |

**PHYSICAL**

| Item | ASTM Test Method | ASTM C150 Spec. Limit | ASTM C1157 Spec. Limit | Test Result |
|---|---|---|---|---|

[A] It is permissible to exceed the specification limit provided that ASTM C1038 Mortar Bar Expansion does not exceed 0.020 % at 14 days.

[C] Test result of prior month

GCC of America Cement is warranted to conform at the time of shipment with current ASTM C150/ASTM C1157/ASTM C595. No other warranty is made or implied. Having no control over the use of its cements, GCC of America does not guarantee finished work.