MITSUBISHI CEMENT CORPORATION

CERTIFICATE OF TEST

Source: Cushenbury Plant **Portland Cement – Type III** **Date: 04/12/2022**

ASTM designation: C 150 – 16 for Type III low alkali cement

CALTRANS Specification: Section 90 – 1.02B(2) for Type III

NDOT Specification: Section 701 – 3.01 for Type III

AZDOT Specifications Subsection 1006-2.01 for Type III

Production Period

From: 3/07/2022

To: 3/10/2022

Chemical Composition:

	ASTM C-150 Limits Type III		Test Results
Silicon Dioxide (SiO_2), %	----		19.6
Aluminum Oxide (Al_2O_3), %	----		5.9
Ferric Oxide (Fe_2O_3), %	----		1.3
Calcium Oxide (CaO), %	----		62.6
Magnesium Oxide (MgO), %	6.0	Max.	3.4
Sulfur Trioxide (SO_3), %	4.5	Max.	3.6
Loss on Ignition, %	3.0	Max.	1.5
Insoluble Residue, %	1.5	Max.	0.10
Total Alkali (%Na_2O + 0.658 * %K_2O), %	0.60	Max.	0.47
Tricalcium Silicate (C_3S), %	----		54
Tricalcium Aluminate (C_3A), %	15	Max.	13
Limestone, %	5.0	Max.	0.0
Free Lime, %	----		1.1

PHYSICAL RESULTS:

Blaine Fineness Average (m^2/kg)	----		560
325 Mesh (% Passing)	----		99.1
Autoclave Expansion (%)	0.80	Max.	0.25
Time of Set Initial Vicat (minutes)	45 / 375	Min. / Max.	50
Air Entrainment (% by Volume)	12	Max.	8.1
C-1702 Heat of Hydration at 7 Days (J/g)	----	(a)	401
False Set (%)	50	Min.	62
Color (L value)	----	(a)	75

Compressive Strength Test:

	Type III MPA	psi		MPA	PSI
1 Day	12.0	1740	Min.	24.2	3510
3 Day	24.0	3480	Min.	31.8	4610
7 Day	----	----		36.5	5300
28 Day Mar 2022	----	----		43.6	6330

This cement has been sampled and tested in accordance with ASTM standard methods and procedures. All tests results are certified to comply with the type specification designated above. No other warranty is made or implied. We are not responsible for improper use or workmanship. The MCC laboratory is AASHTO accredited. (a) For information only.

MITSUBISHI CEMENT CORPORATION
Cushenbury plant

Evan Coss
Quality Control Superintendent