

LEHIGH

HEIDELBERGCEMENT Group

TECHNICAL SERVICES

SALES & MARKETING

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PLANT LOCATION

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CEMENT TEST REPORT

Cement: ASTM C150-09 Type II-V, Low Alkali, Premium Grind

Date Shipped: July 2011

Report Date: 8/17/2011

Destination: Lot #1249

STANDARD CHEMICAL REQUIREMENTS ASTM C 114	TEST RESULTS	ASTM C 150 SPECIFICATIONS	
		TYPE I	TYPE II
Silicon Dioxide (SiO ₂), %	20.7	----	20.0 Min
Aluminum Oxide (Al ₂ O ₃), %	4.6	----	6.0 Max
Ferric Oxide (Fe ₂ O ₃), %	4.2	----	6.0 Max
Calcium Oxide (CaO), %	64.8	----	----
Magnesium Oxide (MgO), %	1.6	6.0 Max	6.0 Max
Sulfur Trioxide (SO ₃), %	2.3	3.0 Max	3.0 Max
Loss on Ignition (LOI), %	1.4	3.0 Max	3.0 Max
Insoluble Residue, %	0.34	0.75 Max	0.75 Max
Alkalies (Na ₂ O equivalent), %	0.32	0.60 Max	0.60 Max
Tricalcium Silicate (C ₃ S), % ^a	63	----	----
Dicalcium Silicate (C ₂ S), % ^a	12	----	----
Tricalcium Aluminate (C ₃ A), % ^a	5	----	8 Max
Tetracalcium Aluminoferrite (C ₄ AF), % ^a	13	----	----
C ₃ S + 4.75*C ₃ A, %	87	----	100 Max
2 (C ₃ A) + C ₄ AF, %	23	----	----
PHYSICAL REQUIREMENTS			
(ASTM C 204) Blaine Fineness, m ² /gm	306	280 Min	280 - 340*
(ASTM C 430) -325 Mesh, %	79.3	----	----
(ASTM C 114) Limestone, %	0.0	5 Max	5 Max
(ASTM C 191) Time of Setting - Initial (Vicat)	110	45 Min	45 Min
(ASTM C 191) Time of Setting - Final (Vicat)	240	375 Max	375 Max
(ASTM C 451) False Set, %	87	----	----
(ASTM C 185) Air Content, %	7.6	12 Max	12 Max
(ASTM C 151) Autoclave Expansion, %	0.04	0.80 Max	0.80 Max
(ASTM C 187) Normal Consistency, %	23.4	----	----
(ASTM C 109) Compressive Strength, psi (MPa)			
1 Day	1570 (10.8)	----	----
3 Day	2626 (18.1)	1800 (12.4) Min	1560 (10.3) Min
7 Day	3301 (22.7)	2800 (19.3) Min	2500 (17.2) Min
28 Day (previous month)	4600 (31.7)	----	----

This cement meets the requirements of specification:

Albert J. Cornibe, Jr.

Albert J. Cornibe
Quality Manager

ASTM C150-09 Type I-II, Low alkali

Caltrans Section 90-2.01 - Type II Modified

NDOT Section 701 - Type II Low Alk

* 340 maximum not ASTM

^aAdjusted per ASTM C-150-09 Section A1.6

ASTM C 1157 Portland Cement Type HS

AASHTO Practice R18 accredited laboratory