Mix ID Number:	4000Paving	Date:	3/19/202
Design Strength:	4000 psi	Plant:	Estacada
		Designed By:	Ben Weber - Ash Grove
		English Units	

MIX DESIGN QUANTITIES

Material	Product/Source	Spec Grav	Weight lb	Volume (ft3)
Cement	Ash Grove Durkee Type IL	3.12	630	3.23
Water (Total)	Municipal Well Source	1.00	270	4.33
1 1/2" - 3/4	Estacada Pit	2.68*	600	3.59
3/4" - #4	Estacada Pit	2.65*	1250	7.55
Fine Aggregate	Estacada Pit	2.52*	1115	7.09
	Total Mix Weight		3865	
	Air (Entrap/Entrain)	4.5% ±1.5		1.21
	Total Mix Volume			27.00

ADMIXTURES

Product	Product Name / Type	Dosage Rates	Dosage (English)
Air Entrainment	Euclid AEA 92S	0.75 oz/cwt**	4.7 oz/cy**
Water Reducer	Euclid Econ WR91	4.00 oz/cwt**	25.2 oz/cy**
Superplasticizer	Euclid Plastol 6400	0.00 oz/cwt**	0.0 oz/cy**
Waterproofing		0.00 oz/cwt**	0.0 oz/cy**
Hydration Stabilizer		0.00 oz/cwt**	0.0 oz/cy**
Fibers		0 lb/cy**	0.0 lb/cy**

MIX DESIGN PROPERTIES

Aggregate Properties:		SG	Abs	FM	Dry Rodded Unit Wt	
	1 1/2" - 3/4	2.87	2.1%	n/a	101.5	pcf
	3/4" - #4	2.87	3.1%	n/a	104.5	pcf
	Fine Aggregate	2.52	6.0%	2.90	n/a	

Plastic Properties:	Slump:	4.0 ±	1.0"			
	Air Content:	4.5 ±	1.5%			
	Unit Weight:	143.15	pcf		2290.37	kg/m3
Design Properties:	Total Cementitious:	630	lb		375	kg
	Slag Replacement:	0.00	%	W/C Ratio:	0.43	(Incl Admix)

Project:	
Contractor:	
Comments:	This mix design will exceed the required laboratory strength when slumps 5.0" or less.
Footnotes:	*SSD Weights and Spec Gravities. **Admixture dosage rates will be adjusted according to manufacturers recommendations to accommodate varying field conditions.

ASH GROVE CEMENT COMPANY

Durkee Plant
33060 Shirttail Creek Rd
Durkee, Oregon 97905
Phone #: (541)-877-2607

Blended Cement Type: IL(8) (HS)

Production Period June 1, 2024 - June 30, 2024 Date: July 10, 2024

ASTM C595/C595M
REQUIREMENTS

Lot: #624

CHEMICAL

Item	Spec. Limit	Test Result
Sulfate as SO_3 (%)	3.0 max[A]	3.0
Loss on ignition (%)	10.0 max	4.4
Equivalent alkali content of portland cement (Na_2O_{eq} %)[E]	[B]	0.53
Limestone (%)	>5 and ≤15	7.6
$CaCO_3$ in limestone (%)	70 min	96
Optional information		
Equivalent alkali content of finished cement (Na_2O_{eq} %)	[B]	0.48

PHYSICAL

Item	Spec. Limit	Test Result
Air content of mortar (volume %)	12 max	2.8
Blaine fineness (m^2/kg)	[B]	414
Fineness, No. 325 sieve (% retained)	[B]	1.7
Density (g/cm^3)	[B]	3.12
Compressive strength (psi)		
1 day	[B]	2,240
3 days	1,890 min	4,340
7 days	2,900 min	5,710
28 days[C]	3,620 min	7,000
Time of initial setting (Vicat)		
Not less than (minutes)	45	111
Not more than (minutes)	420	
Heat of hydration, C1702/C1702M, (kJ/kg)[C]		
3 days	[B]	
Mortar bar expansion, C1038/C1038M, (%)[C]	0.020 max[D]	0.008
Sulfate resistance, C1012/C1012M, (%)[C]		
Expansion at 180 days	0.05 max	0.03

[A] Default table maximum may be exceeded if Test Method ASTM C1038/C1038M limit is met.

[B] Not applicable.

[C] Test results for this production period may not be available and most recent test results provided (some data may be for information only).

[D] Required only if percent SO_3 exceeds the limit in Table 1.

[E] As per ASTM C1778, Portland Cement is defined as "Clinker + Gypsum" constituents and is to be used for calculating equivalent alkalis in the base cement.

We certify that the above described blended cement, at the time of shipment, meets the chemical and physical requirements of the ASTM C595/C595M Type IL(HS) and AASHTO M240 Blended Hydraulic Cement specifications.

Signature: _____ Title: Laboratory Supervisor

Name: Lucky Mclean