

## **CONCRETE PROPORTIONING AND ADMIXTURE QUALIFICATION**

As authorized by Section 1904.1 of the 2020 Los Angeles Building Code (2020 LABC) and Section 26.4.3.1(b) of ACI 318-14, the following alternate method of proportioning concrete is approved.

### **1) Arbitrary Mix**

The arbitrary mix herein specified may be used without the performance of preliminary tests when complying with the following conditions. Per 1904.1, these mix designs shall only apply to the concrete in basement walls, foundation walls, exterior walls and other vertical surfaces exposed to the weather in Group R-2 and R-3 occupancy buildings not more than three stories in height:

- a) The combined grading of aggregate shall be within the limits set forth in Table 1 of this Bulletin.
- b) The amount of Portland cement shall not be less than that specified in Table 2 of this Bulletin. Straight line interpolation of cement contents is permitted for values between the aggregate sizes or strengths listed.
- c) The maximum water content shall not exceed that specified in Table 2 and shall be adjusted so that the slump shall not exceed four inches when measured at the point of discharge from the mixer.
- d) The required average compressive strength,  $f'_{cr}$ , of concrete produced with materials similar to those which were proposed for use shall be at least 1,200psi greater than the specified compressing strength,  $f'_c$ .
- e) This arbitrary mix shall not be used for concrete with  $f'_c$  greater than 5,000psi, and it shall not be less than 3000 psi .
- f) Where exposure categories at a specific project site are found to be more severe than 'Not Applicable', a Licensed Design Professional shall refine the concrete mix design to meet the durability requirements of Section 19.3.1 of ACI 318-14.

**Table 1 – Gradation Requirements for Combined Aggregate**

Sieve Size	Percentage Passing Sieve by Weight of Aggregate		
	3/8 in. Aggregate	1 in. Aggregate	1 1/2 in. Aggregate
2 inch			100
1 1/2 inch		100	90 to 100
1 inch		90 to 100	60 to 85
3/4 inch	100	70 to 90	50 to 75
3/8 inch	92 to 100	45 to 65	39 to 55
No. 4	42 to 60	35 to 52	32 to 44
No. 8	33 to 47	22 to 42	23 to 35
No. 16	27 to 37	17 to 33	17 to 27
No. 30	17 to 25	10 to 19	10 to 19
No. 50	6 to 11	3 to 10	3 to 10
No. 100	1 to 5	1 to 8	1 to 6
No. 200	0 to 3	0 to 3	0 to 3

**Table 2 – Arbitrary Mix Proportions**

<b>Specified Compressive Strength, <math>f'_c</math> (psi)</b>	<b>Maximum Aggregate Size (inches)</b>	<b>Minimum Cement Content, Sacks per Cubic Yard</b>	<b>Maximum Water Content, Gallons per Sack of Cement</b>
5,000	1	8.5	4.5
	3/8	9.2	5.0
4,000	1 1/2	6.0	6.2
	1	6.2	6.2
	3/8	6.8	6.2
3,000	1 1/2	6.0	6.2
	1	6.2	6.2
	3/8	6.8	6.2
2,500	1 1/2	5.4	7.0
	1	5.5	7.0
	3/8	6.3	7.0

**2) Admixture Qualification:**

In accordance with Section 26.4.1.4.1(b) of ACI 318-14, admixtures shall be subject to prior review by the Licensed Design Professional for the project.