

ASCC Regional Conference Minneapolis, MN

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Concrete Slabs on Ground Trends

2012







Trend

The general direction in which something tends to move

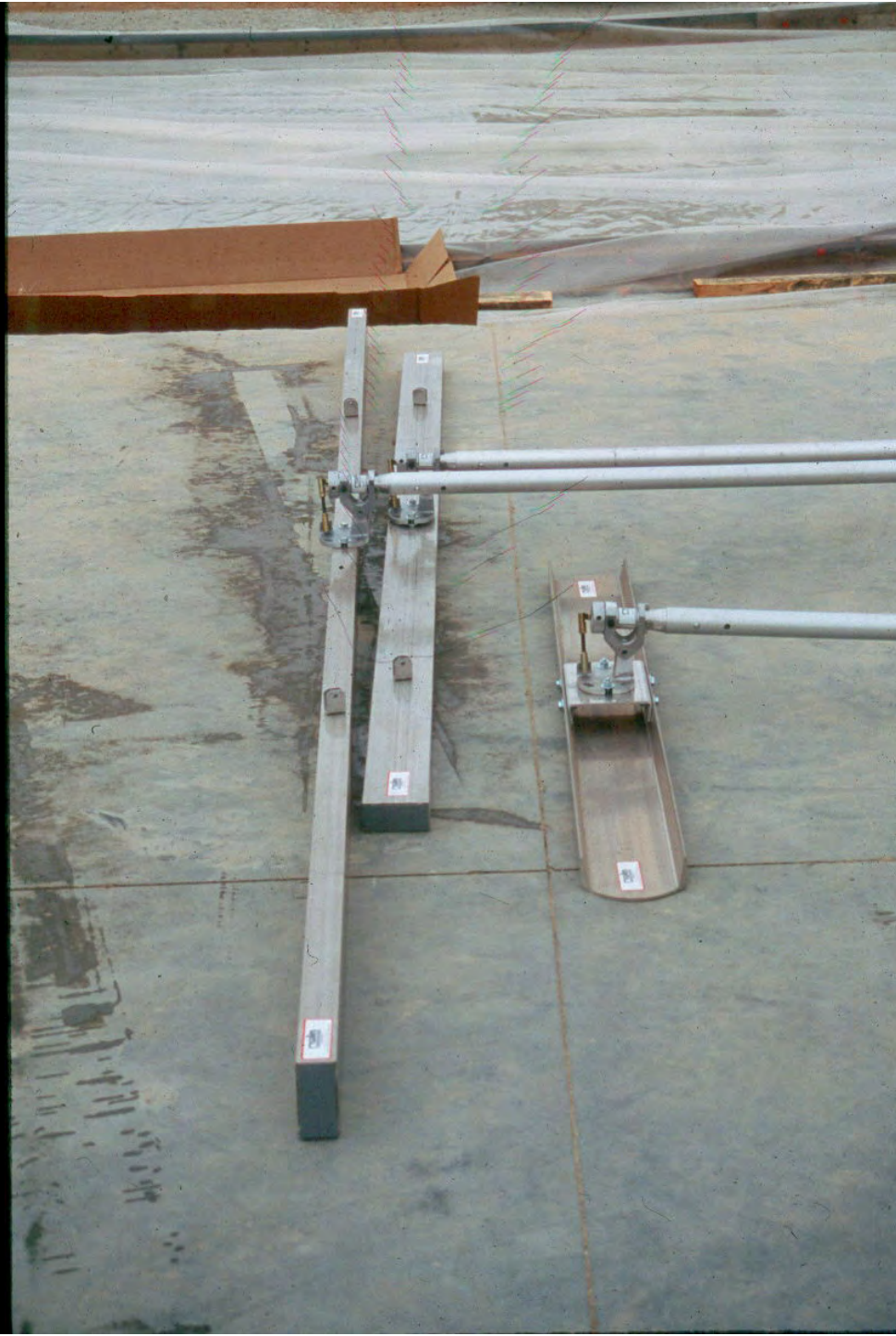
Placing and Finishing

















Concrete Materials





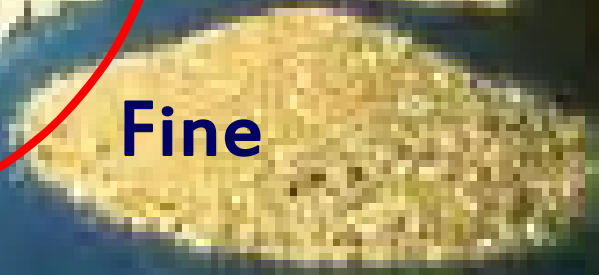
Water



Cement



Coarse



Fine



MIX DESIGN ANALYSIS

WM - Ashland, OH 1448 SC

	Density	Weight	Volume
Cement	3.150	520	2.65 (5.53 sks)
Pozzolan	2.350	-	- 0%
57	2.648	1,702	10.31
8	2.626	274	1.67
Stone 3	-	-	-
Sand	2.589	1,205	7.48
Sand 2	-	-	-
Water	8.345	278	4.42 (33.1 gal)
Total Air	1.50%	-	0.41
Pecan 757	1.850	12	0.10
Total		3,989	27.02

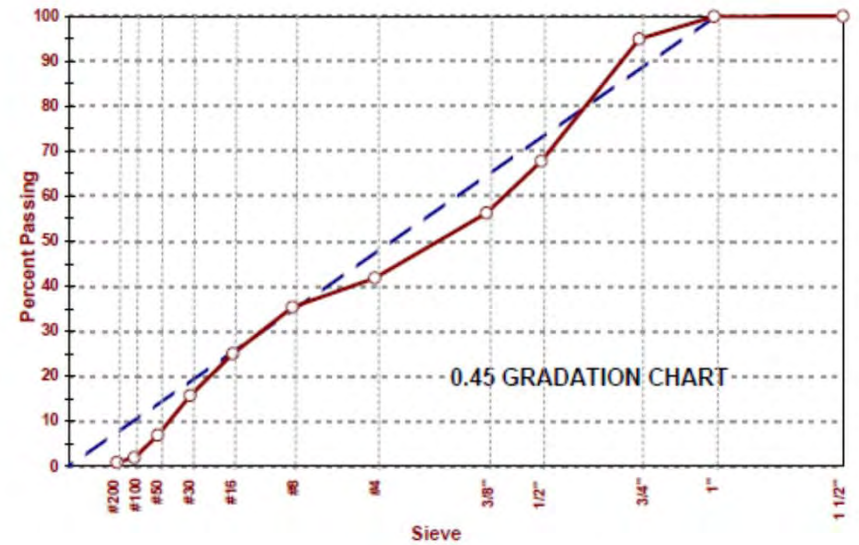
Analysis	
Design Strength	3,500 psi
W/C Ratio	0.531
Slump	8.0 inches
Unit Weight	147.6 lbs/cu ft
Total > #8	12.6 cf
Coarseness	67.7%
Workability	35.4%
Adj-Workability	34.2% 6.1%
Mortar Fraction	53.1%
Paste Fraction	26.2%
Total Finess Modulus	5.22

Admixture(s) 3.0 oz/owt Catexol 2000N

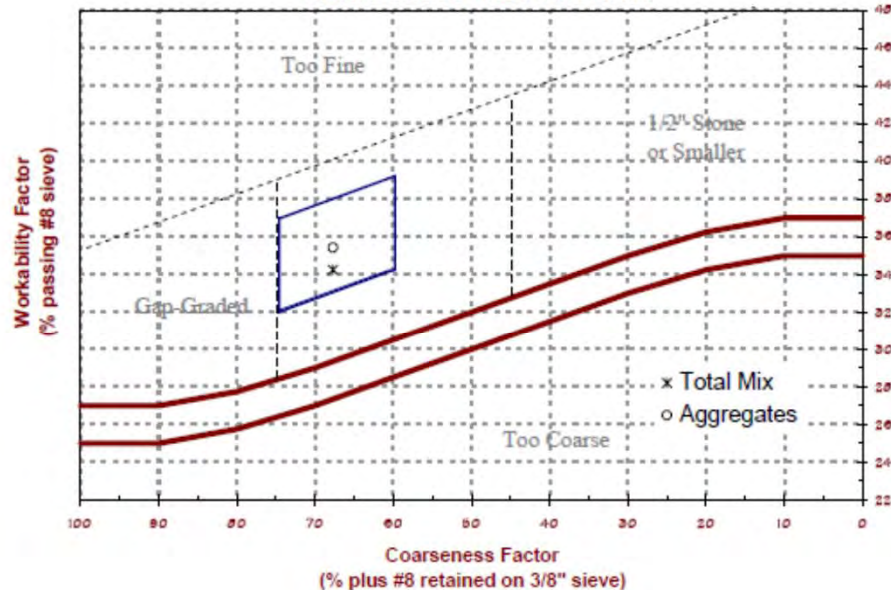
10% water reduction

Max Size Aggregate 1" ▼

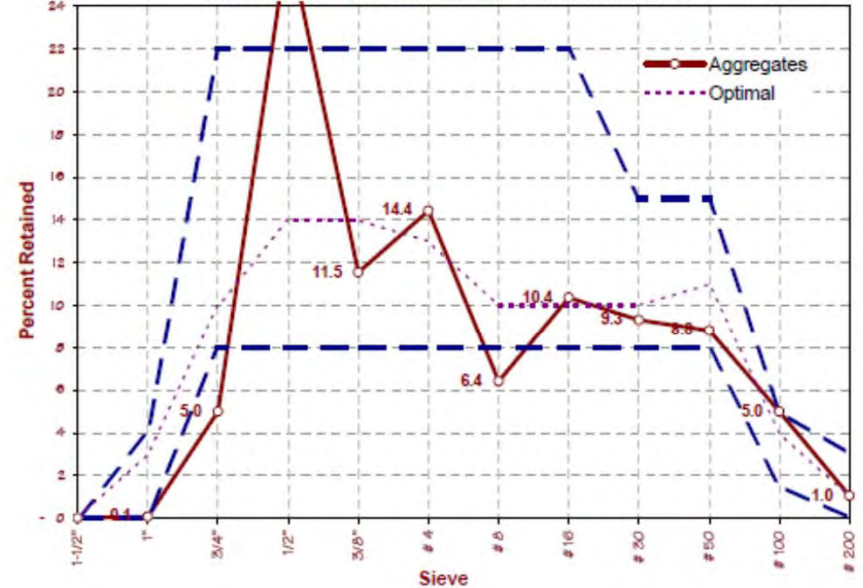
	57	8	Stone 3	Sand	Sand 2	% of Total Mix
% Passing 3/8" Sieve	19.0	90.9	-	100.0	100.0	57 38.2%
% Passing #8 Sieve	1.5	5.5	-	89.0	-	8 6.2%
Fineness Modulus	6.88	5.83	-	2.82	-	Stone 3 0.0%
% Total Aggregate	53.0%	8.6%	0.0%	38.4%	0.0%	Sand 27.6%
Blend	86.0%	14.0%	0.0%	100.0%	0.0%	Sand 2 0.0%
Rock/Sand			61.6%		38.4%	Paste+Air 27.7%
						Fiber 0.4%
						100.0%



COARSENESS FACTOR CHART



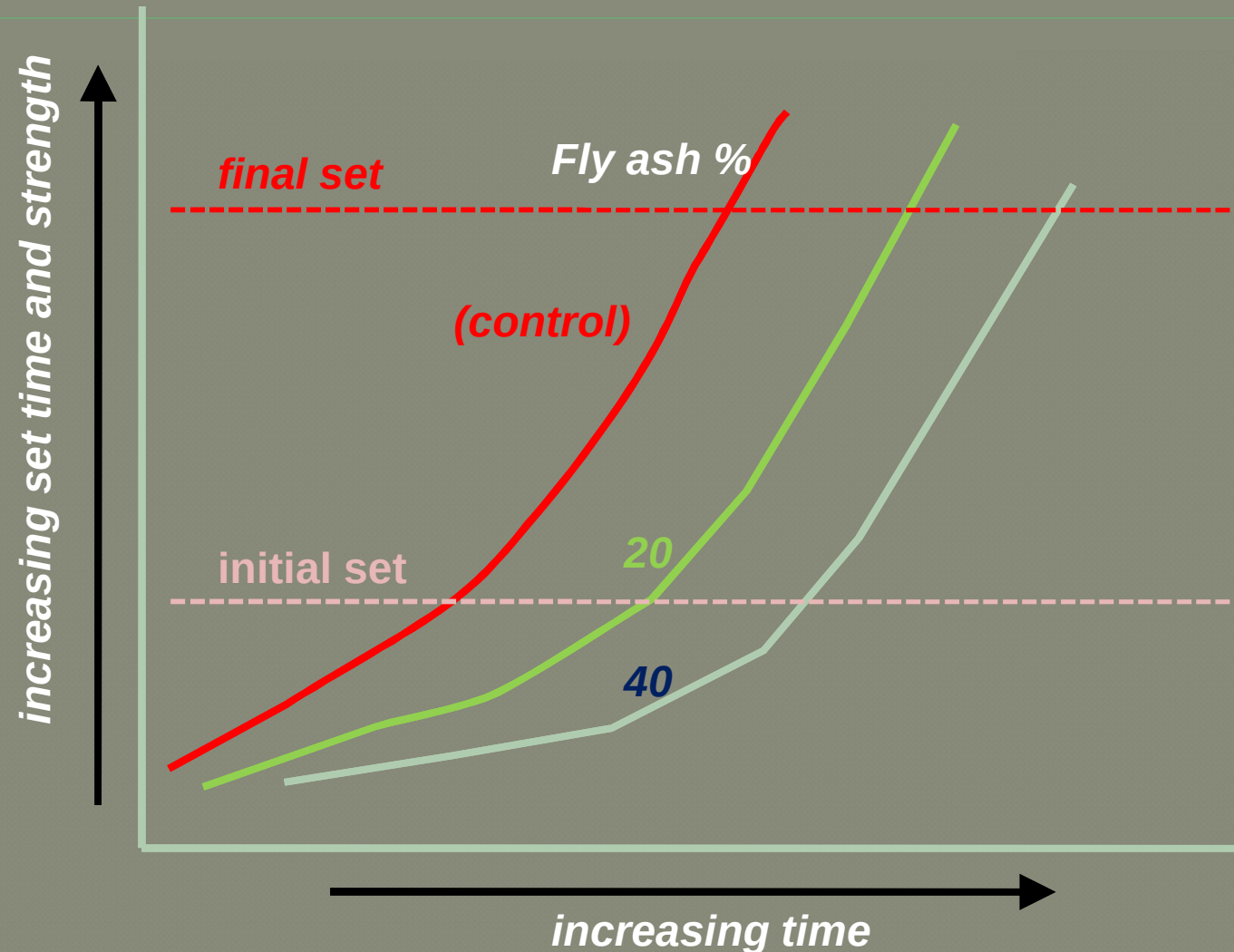
MATERIAL DISTRIBUTION CHART BY SIEVE



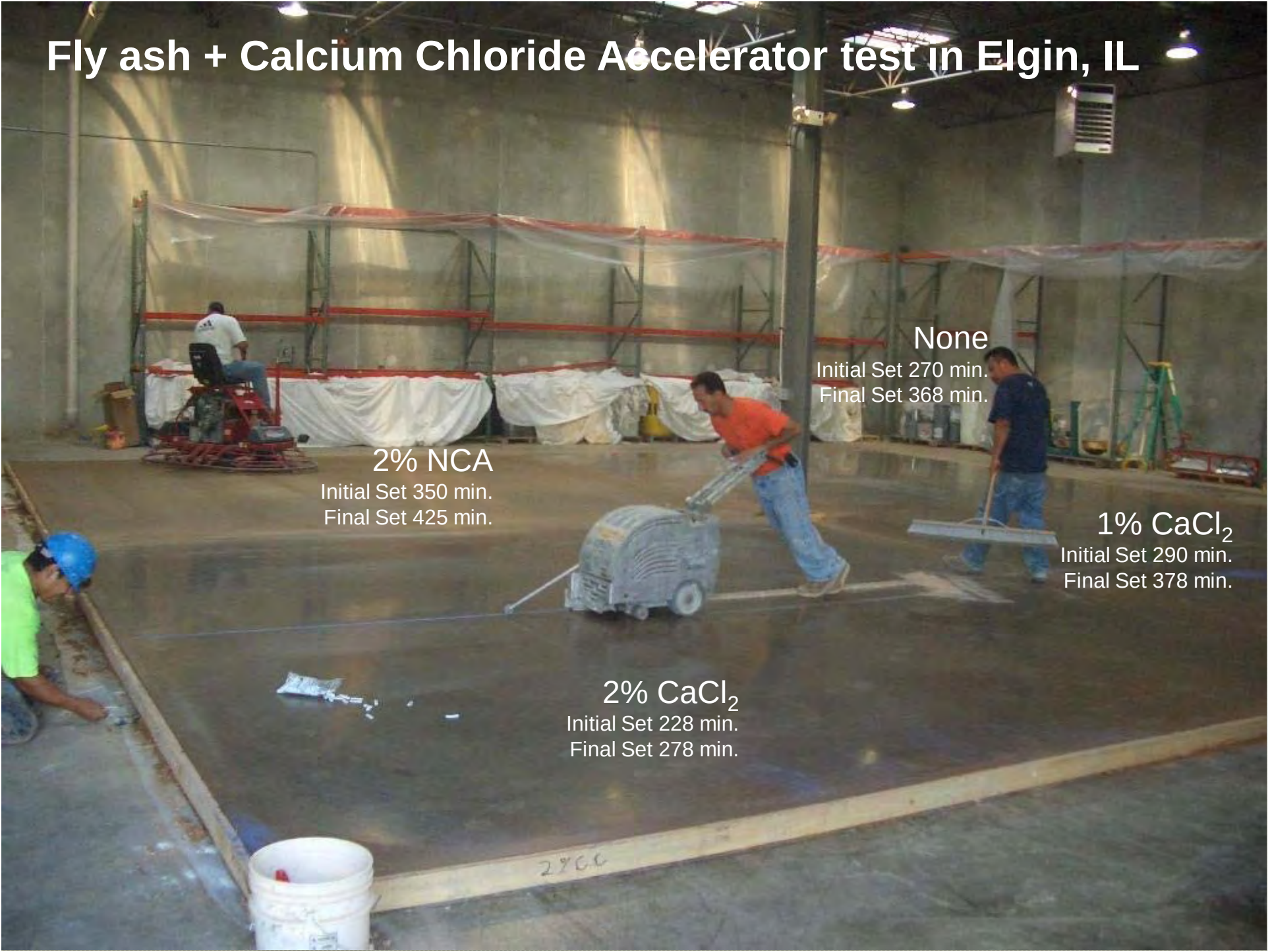
Sustainability

Supplementary Cementitious Materials

Effects of Fly Ash Replacement on Set Time



Fly ash + Calcium Chloride Accelerator test in Elgin, IL



None

Initial Set 270 min.
Final Set 368 min.

2% NCA

Initial Set 350 min.
Final Set 425 min.

1% CaCl_2

Initial Set 290 min.
Final Set 378 min.

2% CaCl_2

Initial Set 228 min.
Final Set 278 min.



Type II Cement	417 #/cy	
Type "C" Fly Ash	100 #/cy	(19%)
Total Cementitious	517 #/cy	



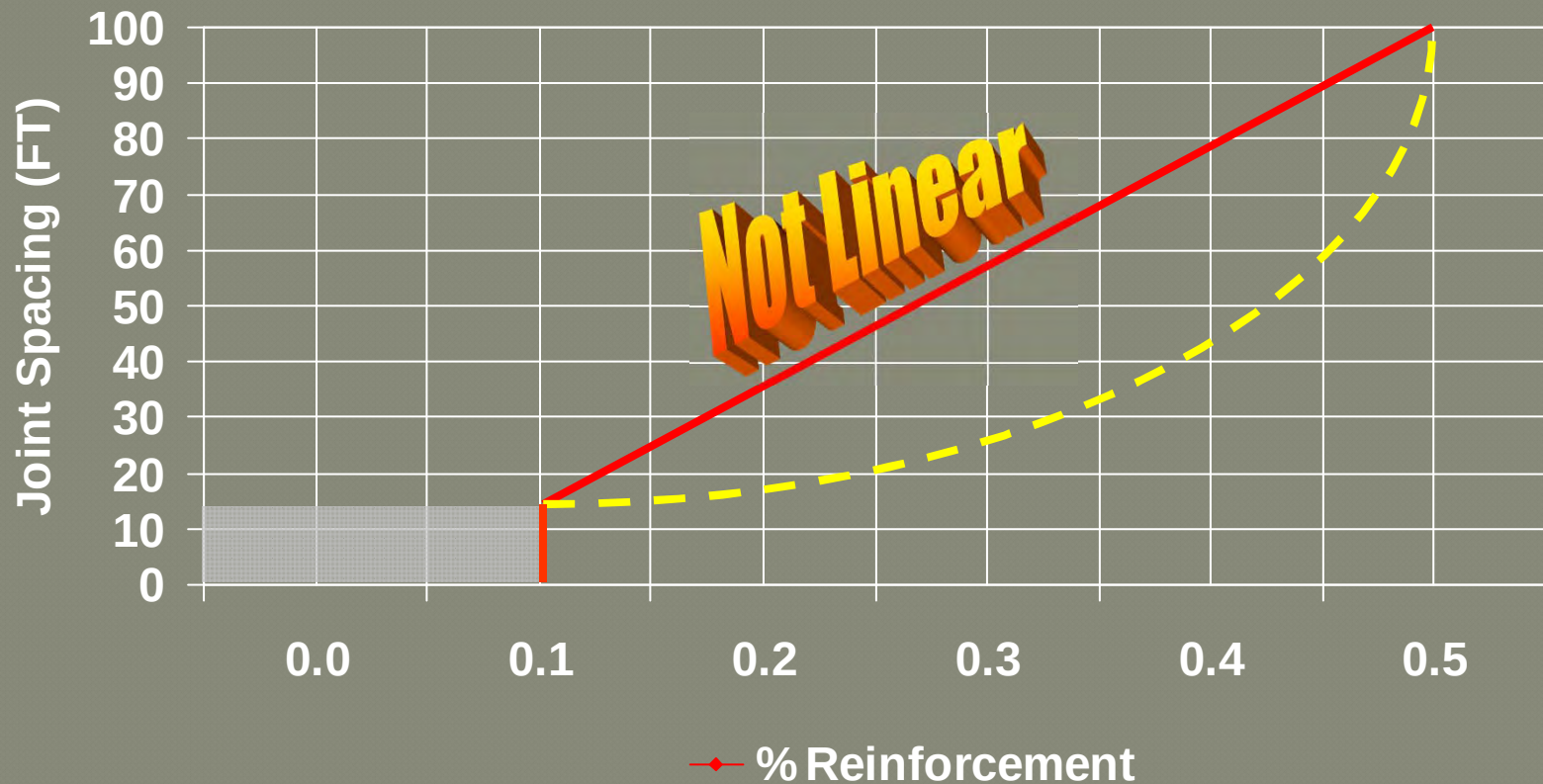
CaCl_2

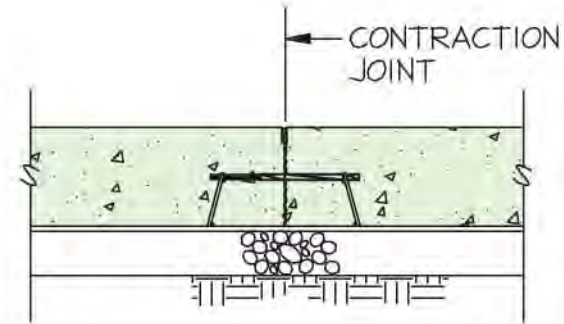
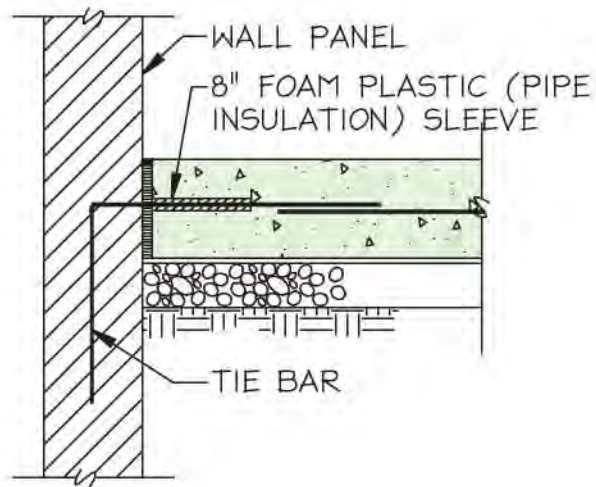


CaCl_2

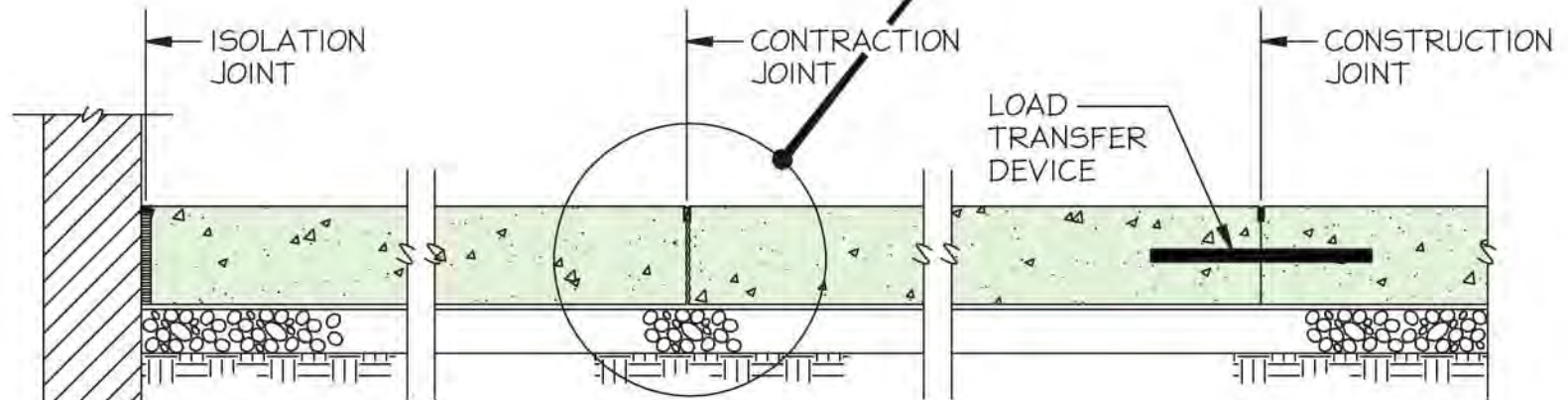
Reinforcing

Slab on Ground Reinforcing





- ALTERNATIVELY, CONTRACTION JOINTS MAY BE DOWELED FOR LOAD TRANSFER

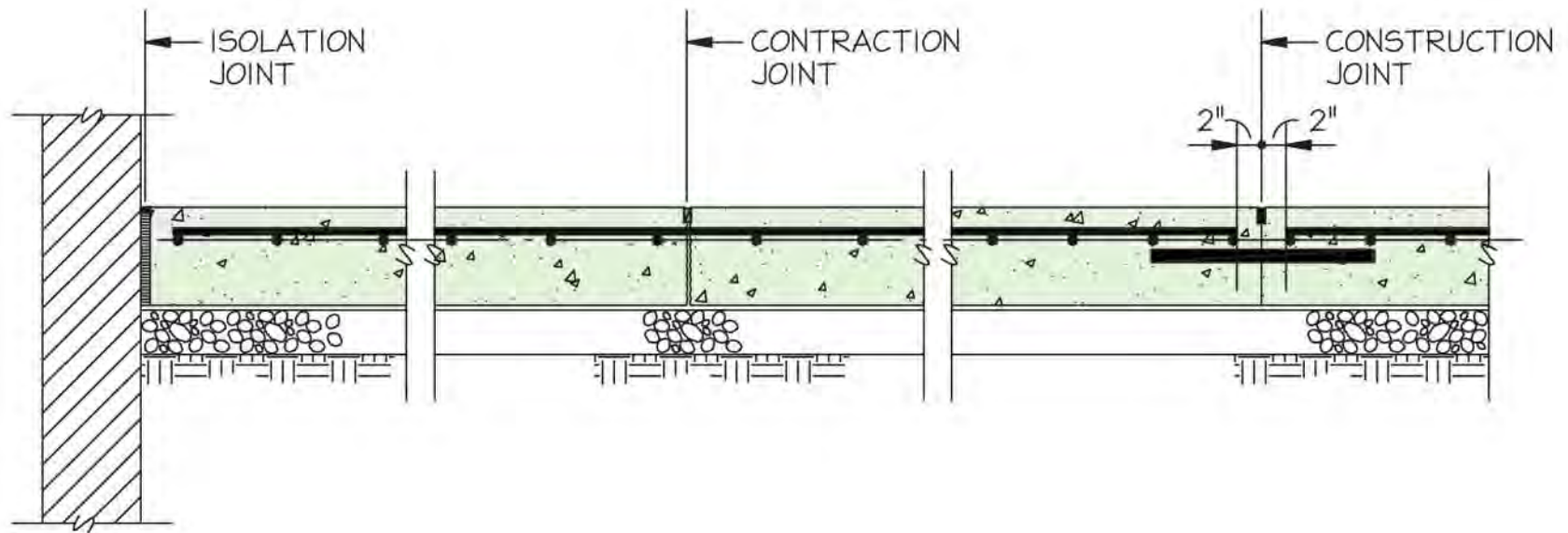


- NORMAL WEIGHT, PORTLAND CEMENT CONCRETE
- PLAIN UNREINFORCED SLAB
- AGGREGATE INTERLOCK AT CONTRACTION JOINT
- DOWEL/LOAD TRANSFER DEVICE AT CONSTRUCTION JOINT
- JOINTS AT 15' OR LESS

UNREINFORCED CONCRETE SLAB





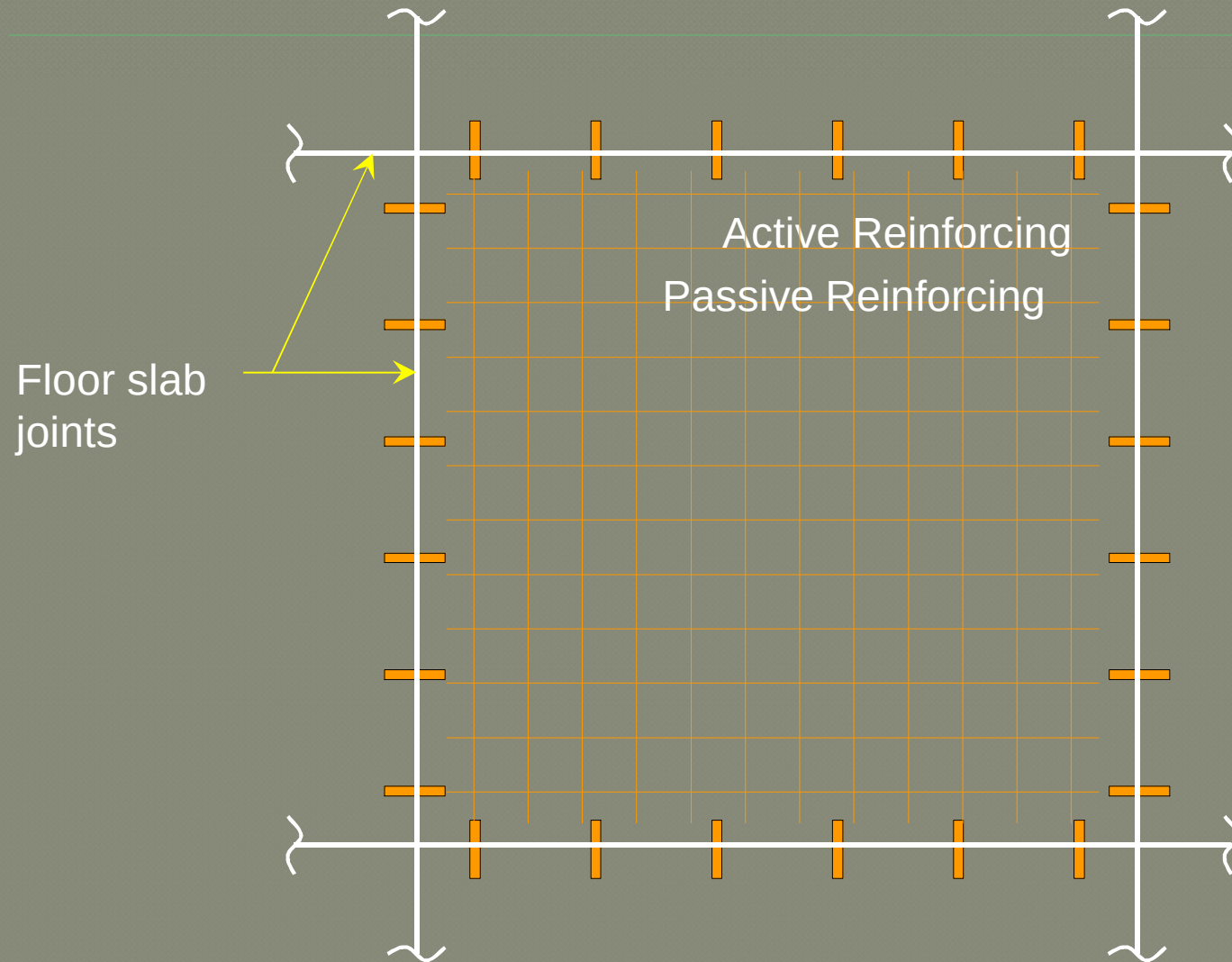


- NORMAL WEIGHT, PORTLAND CEMENT CONCRETE
- CONVENTIONAL REINFORCING AT **0.10%**
OR EQUIVALENT STEEL OR MACRO POLYMERIC FIBERS
- AGGREGATE INTERLOCK AT CONTRACTION JOINT
- DOWEL/LOAD TRANSFER DEVICE AT CONSTRUCTION JOINT
- JOINTS AT 15' OR LESS

REINFORCED TO LIMIT CRACK WIDTHS,
ENHANCE AGGREGATE INTERLOCK AND/OR
MINIMIZE DOMINANT JOINT BEHAVIOR
AT CONTRACTION JOINTS

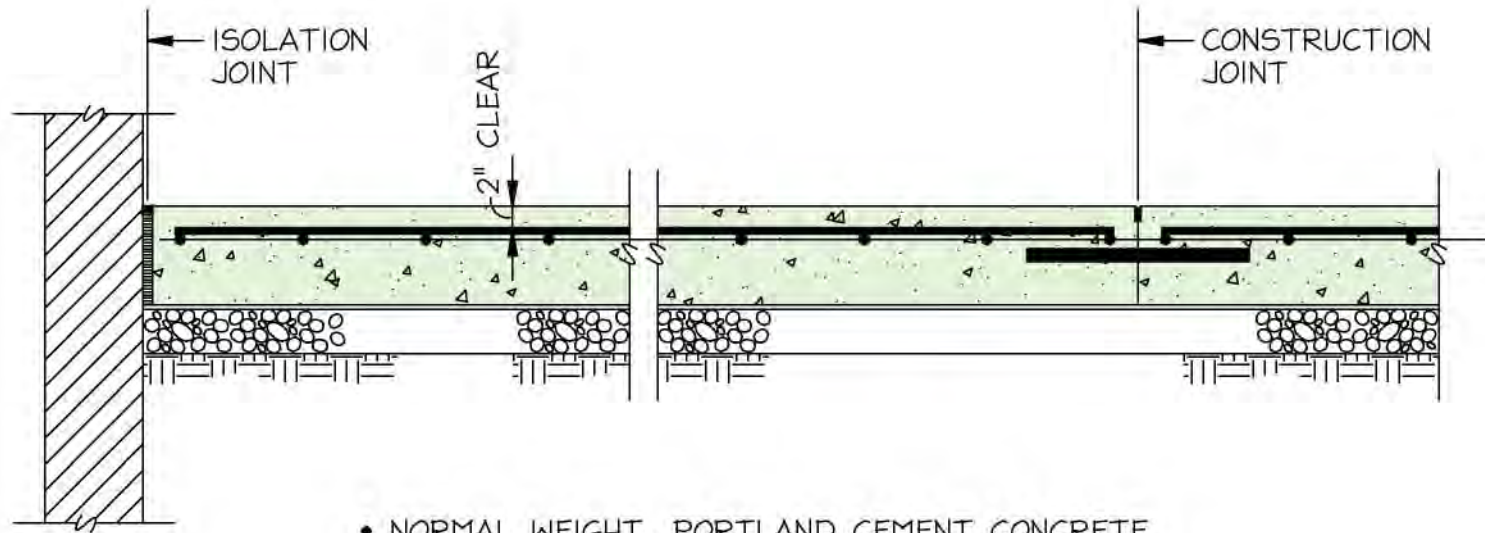


Reinforcement Value







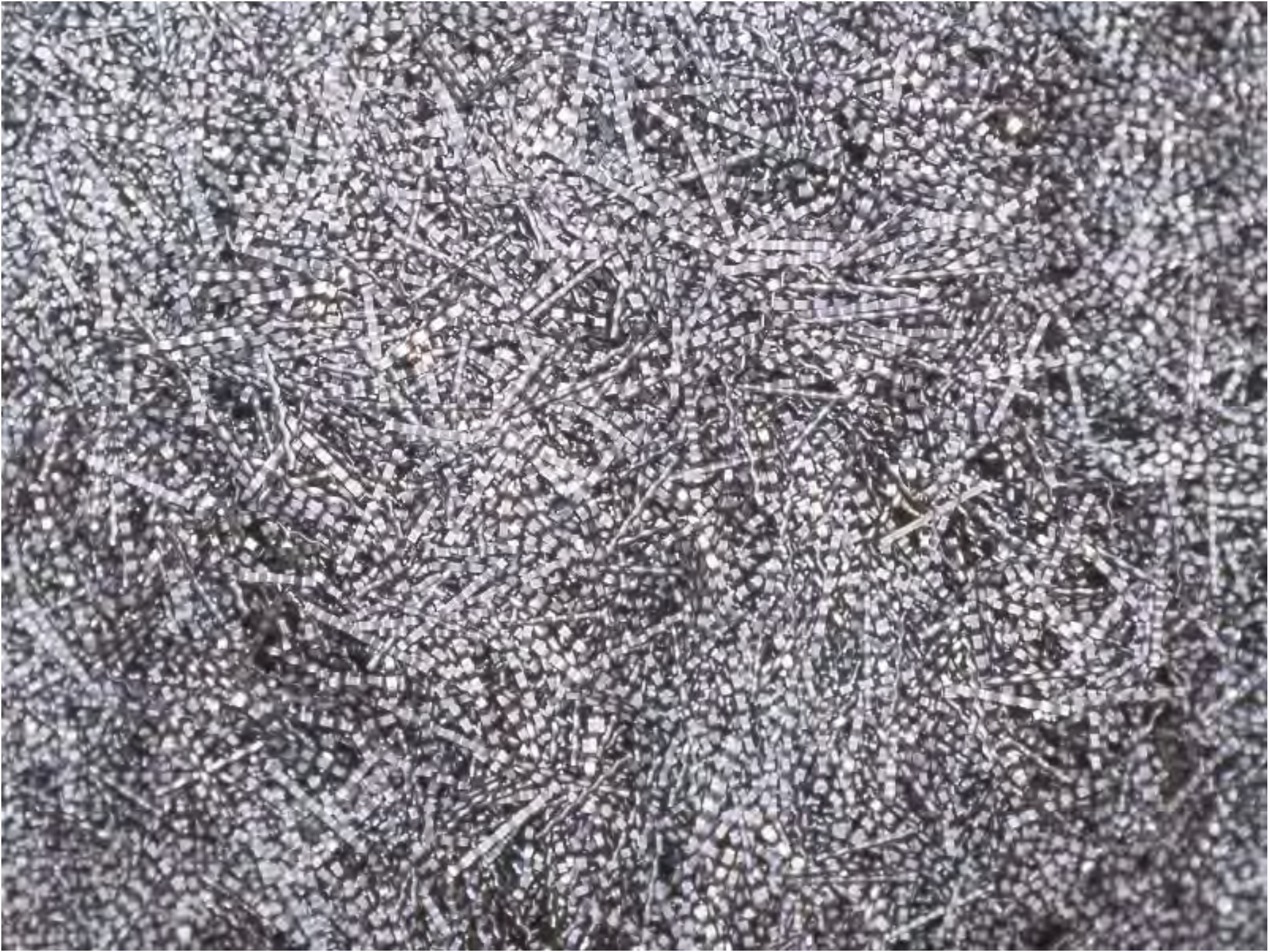


- NORMAL WEIGHT, PORTLAND CEMENT CONCRETE
 - CONTINUOUS REINFORCING AT **0.50%** OR MORE
 - NO CONTRACTION JOINTS REQUIRED
 - DOWEL/LOAD TRANSFER DEVICE AT CONSTRUCTION JOINT
 - JOINTS AT 120' OR LESS
-
- **OR** USE SHRINKAGE COMPENSATING CONCRETE REINFORCED TO BALANCE EXPANSION.
 - NO CONTRACTION JOINTS REQUIRED
 - CONSTRUCTION JOINT SPACING 120' - 150'

SLAB CONTINUOUSLY REINFORCED TO LIMIT CRACK WIDTHS

High Volume Fibers

Steel or Macro Synthetic







7.5 lbs/cy





McNeilus

LOLA

GABRIELLI
TRUCK SALES LTD.

GABRIELLI
TRUCK SALES LTD.

Roman
800-972-0000
HELP WANTED









T. Levette Bagwell / Staff



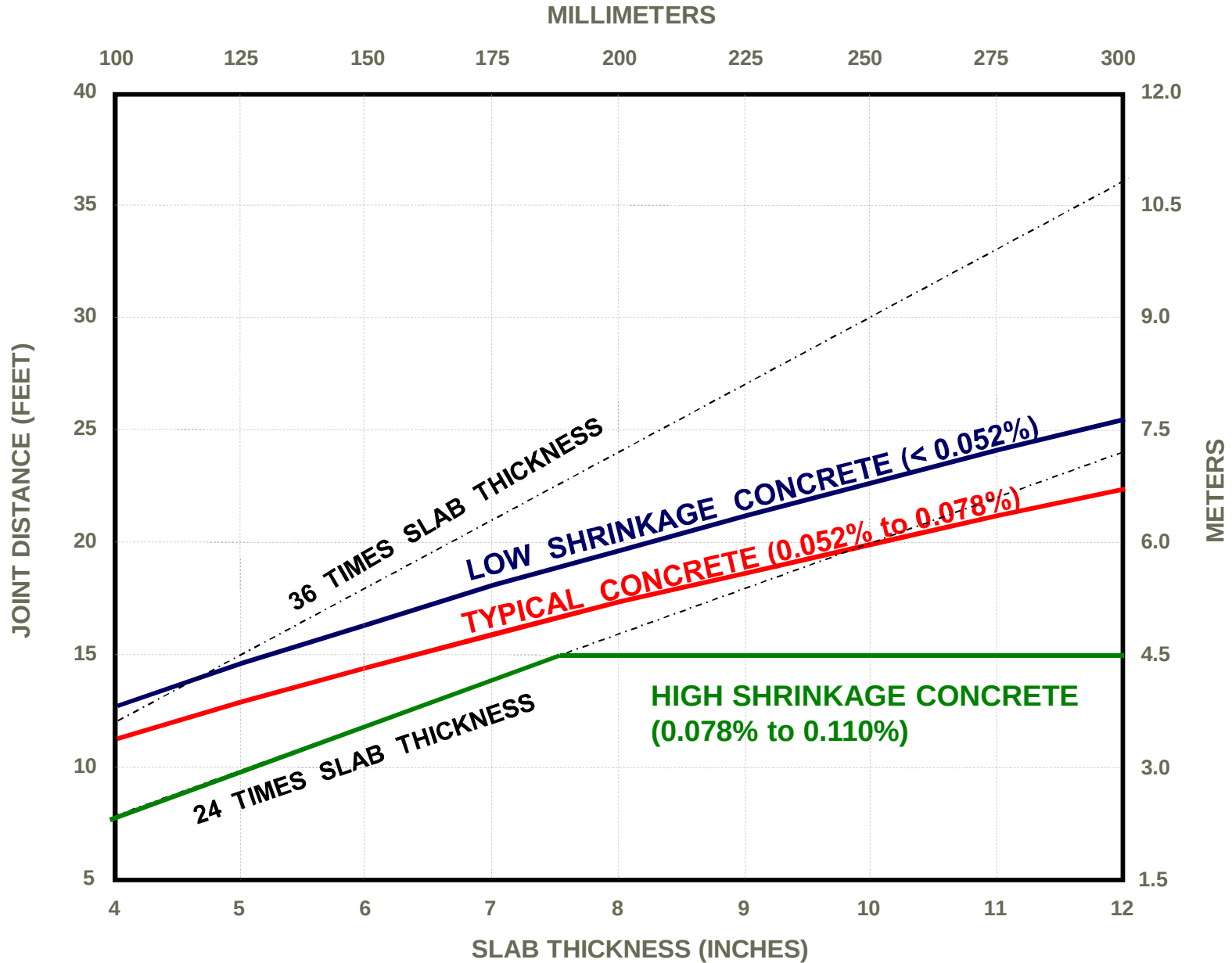


Joint Spacing and Detailing

Owners don't remember the added joint

RECOMMENDED JOINT SPACING FOR UNREINFORCED SLABS

ACI 360R-06 — Figure 5.6



Exposed Decorative Slabs









