



APPENDIX B—MIXTURE PROPORTIONS

Mixture ID: Structural Elements				Design Proportions (Non SSD)		Actual Batched Proportions		Yielded Proportions	
Y _D	Design Batch Size (ft ³):		0.173						
Cementitious Materials			SG	Amount (lb/yd ³)	Volume (ft ³)	Amount (lb)	Volume (ft ³)	Amount (lb/yd ³)	Volume (ft ³)
CM1	White Portland Cement		3.15	484.01	2.462	3.10	0.016	435.51	2.216
CM2	White Silica Fume		2.20	28.49	0.208	0.18	0.001	25.63	0.187
CM3	Metakaolin		2.60	90.10	0.555	0.58	0.004	81.08	0.500
Total Cementitious Materials:				602.61	3.23	3.86	0.021	542.22	2.90
Fibers									
F1	PVA		1.30	31.99	0.394	0.20	0.003	28.78	0.355
Total Fibers:				31.99	0.39	0.20	0.003	28.78	0.35
Aggregates									
A1	3M™ K15	Abs: 0 %	0.15	69.76	7.453	0.45	0.048	62.77	6.706
A2	3M™ S38HS	Abs: 0 %	0.38	117.82	4.969	0.75	0.032	106.02	4.471
Total Aggregates:				187.59	12.42	1.20	0.080	168.79	11.18
Water									
W1	Water for CM Hydration (W1a + W1b)			426.09	6.828	2.73	0.044	383.39	6.144
	W1a. Water from Admixtures		1.00	426.09		2.73		383.39	
	W1b. Additional Water			0.00		0.00		0.00	
W2	Water for Aggregates, SSD		1.00	0.00		0.00		0.00	
Total Water (W1 + W2):				426.09	6.83	2.73	0.044	383.39	6.14
Solids Content of Latex Admixtures and Dyes									
S1	Latex (if used)		1.10	81.15	1.182	0.13	0.002	73.02	1.064
Total Solids of Admixtures:				81.15	1.18	0.13	0.002	73.02	1.06
Admixtures (including Pigments in Liquid Form)									
			% Solids	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)	Amount (fl oz)	Water in Admixture (lb)	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)
Ad1	Silpro C-21 Latex	9.2 lb/gal	20%	938.89	404.95	9.39	2.59	844.8	364.38
Ad2	ADVA Cast 575*	8.9 lb/gal	40%	19.58	8.17	0.20	0.05	17.6	7.35
Ad3	Eclipse* Floor 200	7.9 lb/gal	1%	34.85	12.96	0.35	0.08	31.4	11.66
Water from Admixtures (W1a):					426.09		2.73		383.39
Cement-Cementitious Materials Ratio				0.803		0.803		0.803	
Water-Cementitious Materials Ratio				0.60		0.60		0.60	
Slump, Slump Flow, in.				2.00		2.00		2.00	
M	Mass of Concrete, lbs			1329.42		8.13		1196.21	
V	Absolute Volume of Concrete, ft ³			24.05		0.15		21.64	
T	Theoretical Density, lb/ft ³ = (M/V)			55.27		54.77		55.27	
D	Design Density, lb/ft ³ = (M/27)			49.24					
D	Measured Density, lb/ft ³					42.300		42.300	
A	Air Content, % = [(T - D) / T x 100%]			10.92		22.76		23.47	
Y	Yield, ft ³ = (M/D)			27		0.1923		27	
Ry	Relative Yield = (Y/Y _D)					1.111			



VANGUARD



Mixture ID: Bulkhead				Design Proportions (Non SSD)		Actual Batched Proportions		Yielded Proportions	
Y _D	Design Batch Size (ft ³):		0.173	Amount (lb/yd ³)	Volume (ft ³)	Amount (lb)	Volume (ft ³)	Amount (lb/yd ³)	Volume (ft ³)
Cementitious Materials			SG						
CM1	White Portland Cement		3.15	385.50	1.961	2.47	0.013	337.53	1.717
CM2	White Silica Fume		2.20	22.67	0.165	0.15	0.001	19.85	0.145
CM3	Metakaolin		2.60	71.76	0.442	0.46	0.003	62.83	0.387
Total Cementitious Materials:				479.93	2.57	3.08	0.016	420.20	2.25
Fibers									
F1	PVA		1.30	48.99	0.604	0.31	0.004	42.89	0.529
Total Fibers:				48.99	0.60	0.31	0.004	42.89	0.53
Aggregates									
A1	3M™ K15	Abs: 0 %	0.15	75.75	8.093	0.49	0.052	66.32	7.086
A2	3M™ S38HS	Abs: 0 %	0.38	127.94	5.396	0.82	0.035	112.02	4.724
Total Aggregates:				203.69	13.49	1.31	0.086	178.34	11.81
Water									
W1	Water for CM Hydration (W1a + W1b)			393.33	6.303	2.52	0.040	344.38	5.519
	W1a. Water from Admixtures		1.00	393.33		2.52		344.38	
	W1b. Additional Water			0.00		0.00		0.00	
W2	Water for Aggregates, SSD		1.00	0.00		0.00		0.00	
Total Water (W1 + W2):				393.33	6.30	2.52	0.040	344.38	5.52
Solids Content of Latex Admixtures and Dyes									
S1	Latex (if used)		1.10	74.76	1.089	0.16	0.002	65.45	0.954
Total Solids of Admixtures:				74.76	1.09	0.16	0.002	65.45	0.95
Admixtures (including Pigments in Liquid Form)			% Solids	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)	Amount (fl oz)	Water in Admixture (lb)	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)
Ad1	Silpro C-21 Latex	9.2 lb/gal	20%	1085.98	373.04	10.86	2.39	950.8	326.62
Ad2	ADVA Cast 575*	8.9 lb/gal	40%	22.00	7.31	0.22	0.05	19.3	6.40
Ad3	Eclipse* Floor 200	7.9 lb/gal	1%	43.80	12.97	0.44	0.08	38.3	11.36
Water from Admixtures (W1a):					393.33		2.52		344.38
Cement-Cementitious Materials Ratio				0.803		0.803		0.803	
Water-Cementitious Materials Ratio				0.70		0.70		0.70	
Slump, Slump Flow, in.				≈ 0.00		≈ 0.00		≈ 0.00	
M	Mass of Concrete, lbs			1200.69		7.37		1051.27	
V	Absolute Volume of Concrete, ft ³			24.05		0.15		21.06	
T	Theoretical Density, lb/ft ³ = (M / V)			49.92		49.33		49.92	
D	Design Density, lb/ft ³ = (M / 27)			44.47					
D	Measured Density, lb/ft ³					37.300		37.300	
A	Air Content, % = [(T - D) / T x 100%]			10.91		24.38		25.28	
Y	Yield, ft ³ = (M / D)			27		0.1976		27	
Ry	Relative Yield = (Y / Y _D)					1.142			



VANGUARD



Mixture ID: Hull/Patch				Design Proportions (Non SSD)		Actual Batched Proportions		Yielded Proportions	
Y _D	Design Batch Size (ft ³):		0.173						
Cementitious Materials			SG	Amount (lb/yd ³)	Volume (ft ³)	Amount (lb)	Volume (ft ³)	Amount (lb/yd ³)	Volume (ft ³)
CM1	White Portland Cement		3.15	382.22	1.945	2.45	0.012	318.47	1.620
CM2	White Silica Fume		2.20	22.48	0.164	0.14	0.001	18.73	0.136
CM3	Metakaolin		2.60	71.15	0.439	0.46	0.003	59.28	0.365
Total Cementitious Materials:				475.85	2.55	3.05	0.016	396.48	2.12
Fibers									
F1	PVA		1.30	28.34	0.349	0.18	0.002	23.61	0.291
Total Fibers:				28.34	0.35	0.18	0.002	23.61	0.29
Aggregates									
A1	3M™ K15	Abs: 0 %	0.15	76.51	8.174	0.49	0.052	63.75	6.811
A2	3M™ S38HS	Abs: 0 %	0.38	129.22	5.450	0.83	0.035	107.67	4.541
Total Aggregates:				205.73	13.62	1.32	0.087	171.42	11.35
Water									
W1	Water for CM Hydration (W1a + W1b)			393.25	6.302	2.52	0.040	327.66	5.251
	W1a. Water from Admixtures		1.00	393.25		2.52		327.66	
	W1b. Additional Water			0.00		0.00		0.00	
W2	Water for Aggregates, SSD		1.00	0.00		0.00		0.00	
Total Water (W1 + W2):				393.25	6.30	2.52	0.040	327.66	5.25
Solids Content of Latex Admixtures and Dyes									
S1	Latex (if used)		1.10	74.76	1.089	0.16	0.002	62.29	0.908
Total Solids of Admixtures:				74.76	1.09	0.16	0.002	62.29	0.91
Admixtures (including Pigments in Liquid Form)			% Solids	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)	Amount (fl oz)	Water in Admixture (lb)	Dosage (fl oz/cwt)	Water in Admixture (lb/yd ³)
Ad1	Silpro C-21 Latex	9.2 lb/gal	20%	1095.38	373.07	10.95	2.39	912.7	310.85
Ad2	ADVA Cast 575*	8.9 lb/gal	40%	21.85	7.20	0.22	0.05	18.2	6.00
Ad3	Eclipse* Floor 200	7.9 lb/gal	1%	44.17	12.97	0.44	0.08	36.8	10.81
Water from Admixtures (W1a):					393.25		2.52		327.66
Cement-Cementitious Materials Ratio					0.803		0.803		0.803
Water-Cementitious Materials Ratio					0.70		0.70		0.70
Slump, Slump Flow, in.					3.00 ± 1		3.00 ± 1		3.00 ± 1
M	Mass of Concrete, lbs				1177.93		7.23		981.46
V	Absolute Volume of Concrete, ft ³				23.91		0.15		19.92
T	Theoretical Density, lb/ft ³ = (M / V)				49.26		48.65		49.26
D	Design Density, lb/ft ³ = (M / 27)				43.63				
D	Measured Density, lb/ft ³						34.800		34.800
A	Air Content, % = [(T - D) / T x 100%]				11.44		28.47		29.36
Y	Yield, ft ³ = (M / D)				27		0.2076		27
Ry	Relative Yield = (Y / Y _D)						1.200		