



APPENDIX B – MIXTURE PROPORTIONS

MIXTURE DESIGNATION: *FLINTLOCK* (COLOR VARIES, MIX WITH RED PIGMENT IS SHOWN)

CEMENTITIOUS MATERIALS							
Component	Specific Gravity	Volume (ft ³)	Amount of CM (mass/volume) (lb/yd ³)				
Type 1 White Portland Cement	3.15	3.05	598.98	Total Amount of cementitious materials 800.00 lb/yd ³ c/cm ratio 0.75			
White Silica Fume	2.20	0.44	59.76				
High-Reactivity Metakaolin	2.60	0.87	141.26				
FIBERS							
Component	Specific Gravity	Volume (ft ³)	Amount of Fibers (mass/volume) (lb/yd ³)				
.375" PVA Fibers	1.3	0.39	31.78	Total Amount of Fibers 31.78 lb/yd ³			
AGGREGATES							
Aggregates	ASTM C330*	Abs (%)	SG _{OD}	SG _{SSD}	Base Quantity (lb/yd ³)		Volume (ft ³)
					OD	SSD	
3M™ K15	N	0	0.15	0.15	79.76	79.76	8.52
Expanded Shale	Y	18.25	1.6	1.92	283.59	335.35	2.84
ADMIXTURES							
Admixture	lb/gal	Dosage (fl. oz / cwt)	% Solids	Amount of Water in Admixture (lb/yd ³)			
Silpro C-21 Latex	9.2	759.09	20%	364.36	Total Water from Admixtures, $\sum W_{adm}$ 384.41 lb/yd ³		
ADVA ® Cast 575 HRWR	8.9	20.77	40%	7.16			
Eclipse ® Floor 200 SRA	7.7	26.21	1%	12.89			
SOLIDS (LATEX, DYES AND POWDERED ADMIXTURES ONLY)							
Component	Specific Gravity	Volume (ft ³)	Amount (mass/volume) (lb/yd ³)				
Silpro C-21 Latex	1.87	0.75	87.30	Total Solids from Admixtures 111.30 lb/yd ³			
Red Pigment	4.90	0.08	24.00				
WATER							
				Amount (mass/volume) (lb/yd ³)		Volume (ft ³)	
Water, lb/yd ³				w: 343.63		5.51	
Total Free Water from All Aggregates, lb/yd ³				$\sum W_{free}$: -40.78			
Total Water from All Admixtures, lb/yd ³				$\sum W_{adm}$: 384.41			
Batch Water, lb/yd ³				w _{batch} : 0.00			
DENSITIES, AIR CONTENT, RATIOS AND SLUMP							
	Cm	fibers	aggregates	solids	water	Total	
Mass of Concrete, M, (lb)	800.00	31.78	415.11	111.30	343.63	$\sum M$:1701.82	
Absolute Volume of Concrete, V, (ft ³)	4.36	0.39	11.36	0.83	5.02	$\sum V$:21.96	
Theoretical Density, T, (= $\sum M / \sum V$)	77.50 lb/ft ³		Air Content [= (T – D)/T x 100%]			24.54 %	
Measured Density, D	58.48 lb/ft ³		Slump, Slump flow			0.5 in.	
water/cement ratio, w/c:	0.57		water/cementitious material ratio, w/cm:			0.43	