PRECAST / READY-MIX CONCRETE

J. P. CARRARA & SONS, INC

CONCRETE CONTRACTORS

ARCHITECTURAL / STRUCTURAL PRECAST CONTRACTORS

2464 Case Street
MIDDLEBURY, VT 05753
TEL (802) 388-6363
FAX (802) 388-9010

CROWN POINT, NY 12928
TEL (518) 597-3680

RT 7 SO.
NO. CLARENDON, VT 05701
TEL (802) 775-2301
FAX (802) 775-1048

CONCRETE MIX DESIGN

DATE :	February 23, 2016					
PROJECT :	VAOT Annual Mix Qualification				VT	
ENGINEER :						
CONTRACTOR :						
CONCRETE SUPPLIER :	J.P. Carrara & Sons, Inc., Middlebury, VT					$G_{s,\ SSD}$
CEMENT SOURCE & TYPE :	Lafarge Type III					3.103
FLY ASH SOURCE & CLASS:	Headwaters Resources - Class F - Brayton Point					2.36
COARSE AGGREGATE(1):	J.P. Carrara & Sons, Inc., Middlebury, VT	P-stone (3/4")		ABS =	1.22%	2.586
FINE AGGREGATE :	J.P. Carrara & Sons, Inc., Middlebury, VT	JPC sand		ABS =	1.03%	2.607
AIR ENTRAINING AGENT :	Sika AEA-14					
RETARDING AGENT :	Sika Plastiment					
SELF-CONSOLIDATING ADMIX:	Sika Viscocrete 6100		HRWR + Superplasticizer			
VISCOSITY MODIFIER:	Sika Stabilizer 4R		Not Required; Dosed as needed			

QUANTITIES PER CUBIC YARD

Identification # : 425M-NoDCI

Mix Description : SCC Bridge - 4,000psi Release

								Yield
SPECIFICATIONS REQUIREMENT,	28	Day Strength (psi)	5,000	800 # Total Cementious (CM)				
Lafarge Type III		(lbs)	600					3.10
Fly Ash, Class F		(lbs)	200	25% by weight of CM				1.36
P-stone (3/4")		(lbs)(SSD)	1400	51% by weight of total agg.				8.68
JPC sand		(lbs)(SSD)	1320	49% by weight of total agg.				8.11
WATER (gallons) : (Maximum Water =	32.6	gal.+ CI)	31.0					4.14
W/C RATIO (lbs/lb) : (Max W/C =	0.34	)	0.32					
Sika AEA-14	(2-20 range)	(oz/yd^3)	5.5	7.0%	+ / --	2.0%		1.89
Sika Plastiment	(0-6 range)	(oz/cwt)	3.0					
Sika Viscocrete 6100	(7-11 range)	(oz/cwt)	7.6	24"	spread	+ / --	4"	
Sika Stabilizer 4R	(0-7 range)	(oz/cwt)	0.0	Not Required; Dosed as needed				
								27.3

Mix Properties: Unit Wt. (#/ft^3) 138.5

Prepared By:

Benjamin L. Cota, Precast Production Engineer

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CONCRETE MIX DESIGN

DATE :	February 29, 2016				
PROJECT :	VAOT 2016 Mix Qualification		STATE:	VT	
ENGINEER :					
CONTRACTOR :					
CONCRETE SUPPLIER :	J.P. Carrara & Sons, Inc., Middlebury, VT				$G_{s,\ SSD}$
CEMENT SOURCE & TYPE :	Lafarge Type III				3.103
FLY ASH SOURCE & CLASS:	Headwaters Resources - Class F - Brayton Point				2.36
COARSE AGGREGATE(1):	J.P. Carrara & Sons, Inc., Middlebury, VT	P-stone (3/4")		ABS = 1.22%	2.586
FINE AGGREGATE :	J.P. Carrara & Sons, Inc., Middlebury, VT	JPC sand		ABS = 1.03%	2.607
AIR ENTRAINING AGENT :	Sika AEA-14				
RETARDING AGENT :	Sika Plastiment				
SELF-CONSOLIDATING ADMIX:	Sika Viscocrete 6100		HRWR + Superplasticizer		
CORROSION INHIBITOR:	W.R. Grace DCI		Minimum 30% Calcium Nitrite		
VISCOSITY MODIFIER:	Sika Stabilizer 4R		Not Required; Dosed on an as needed basis		

QUANTITIES PER CUBIC YARD

Identification # : 430M w/ 5.0 gal DCI

Mix Description : SCC Bridge - 10ksi design, 8ksi release

							Yield
SPECIFICATIONS REQUIREMENT,	28	Day Strength (psi)	10,000	900 # Total Cementious (CM)			
Lafarge Type III		(lbs)	720				3.72
Fly Ash, Class F		(lbs)	180	20% by weight of CM			1.22
P-stone (3/4")		(lbs)(SSD)	1420	54% by weight of total agg.			8.80
JPC sand		(lbs)(SSD)	1200	46% by weight of total agg.			7.38
WATER (gallons) : (Maximum Water =	30.3	Gal.+ DCI)	28.0				3.74
W/C RATIO (lbs/lb) : (Max W/C =	0.32	w/ DCI)	0.30				
Sika AEA-14	(2-20 range)	(oz/yd^3)	9.0	7.0%	+ / --	2.0%	1.89
Sika Plastiment	(2-6 range)	(oz/cwt)	3.0				
Sika Viscocrete 6100	(7-11 range)	(oz/cwt)	9.0	25" spread	+ / --	3"	
W.R. Grace DCI		(gal/yd^3)	5.0	(84% accounted for as mix water)			0.56
Sika Stabilizer 4R	(0-7 range)	(oz/cwt)	0.0	Not Required; Dosed on an as needed basis			
							27.3

Mix Properties:

Mix Density (#/ft^3) 138.7

Prepared By:

Benjamin L. Cota, Precast Production Engineer

Approved by [illegible]
VAOT Structural Concrete Engineer 3/7/16

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CONCRETE MIX DESIGN

DATE :	February 16, 2016					
PROJECT :	VAOT Annual Mix Qualification			STATE:	VT	
ENGINEER/ARCH :						
CONTRACTOR :						
CONCRETE SUPPLIER :	J.P. Carrara & Sons, Inc., Middlebury, VT					$G_{s,\ SSD}$
CEMENT SOURCE & TYPE :	Lafarge Type III					3.103
FLY ASH SOURCE & CLASS:	Headwaters Resources - Class F - Brayton Point					2.36
COARSE AGGREGATE(1):	J.P. Carrara & Sons, Inc., Middlebury, VT	P-stone (3/4")		ABS =	1.22%	2.586
FINE AGGREGATE :	J.P. Carrara & Sons, Inc., Middlebury, VT	JPC sand		ABS =	1.03%	2.607
AIR ENTRAINING AGENT :	Sika AEA-14					
RETARDING AGENT :	Sika Plastiment					
SELF-CONSOLIDATING ADMIX:	Sika Viscocrete 6100		HRWR + Superplasticizer			
VISCOSITY MODIFIER:	Sika Stabilizer 4R		Not Required; Dosed on an as needed basis			

QUANTITIES PER CUBIC YARD

Identification # : 445MSCC

Mix Description : Standard SCC - 3,500psi @ 18hrs

								Yield
SPECIFICATIONS REQUIREMENT,	28	Day Strength (psi)	5,000	750 # Total Cementious (CM)				
Lafarge Type III		(lbs)	563					2.91
Fly Ash, Class F		(lbs)	188	25% by weight of CM				1.27
P-stone (3/4")		(lbs)(SSD)	1320	48% by weight of total agg.				8.18
JPC sand		(lbs)(SSD)	1440	52% by weight of total agg.				8.85
WATER (gallons) : (Maximum Water =	33.3	Gal.)	31.5					4.21
W/C RATIO (lbs/lb) : (Max W/C =	0.37	)	0.35					
Sika AEA-14	(0-20 range)	(oz/yd3)	4.5	7.0%	+ / --	2.0%		1.89
Sika Plastiment	(0-6 range)	(oz/cwt)	2.0					
Sika Viscocrete 6100	(6-11 range)	(oz/cwt)	8.5	24"	spread	+ / --	4"	
Sika Stabilizer 4R	(0-7 range)	(oz/cwt)	0.0	Not Required; Dosed on an as needed basis				

27.3

Mix Properties: unit wt (#/ft^3)

138.2

Prepared By:

Benjamin L. Cota, Precast Production Engineer

Approved by James Wild, VAOT Structural Concrete Engineer 2/22/16