Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

MassDOT
Massachusetts Department of Transportation
Highway Division

May 2, 2025

Mr. Chris Dauphinais
President
Dauphinais Concrete
P.O. Box 461
Sutton, MA 01590

Dear Mr. Dauphinais,

Your proposed cement concrete mix design formulations have been reviewed by the MassDOT Research and Materials Section (RMS) and are approved as identified on the enclosed RMS 043 Cement Concrete Mix Design Sheet, for the duration of the annual approval cycle, and will **expire on April 1, 2026**.

Approved Plant: DAUPHINAIS CONCRETE
Approved Plant Location: DOUGLAS, MA
Mix Design Sheet Identification No.: 24-02-28-12-11-13

Modifications to the approved mix design formulations, including source of constituent materials, design proportions, mix type, combined aggregate system targets, paste system targets, slump targets, air content targets, and compressive strength targets are prohibited. At no point shall the water-cementitious (w/cm) ratio exceed the design target. Approval is subject to performance at the plant and project site, as well as conformance to MassDOT protocols and specifications.

Sincerely,

Jason M. Robertson

Jason M. Robertson
Director of Research and Materials

RFM
Richard Mulcahy

JMR/rfm
Enclosures
CC: District Materials Engineer

Five Macadam Road, Hopkinton, MA 01748
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massDOT Massachusetts Department of Transportation Highway Division

Rev. 03/24/2025

2025 CEMENT CONCRETE MIX DESIGN SHEET

RMS 043

PLANT INFORMATION		MAILING ADDRESS			MIX DESIGN SHEET IDENTIFICATION	
PLANT NAME	LOCATION	STREET NO. & ADDRESS	CITY/TOWN	EMAIL ADDRESS	CONTRACT	SHEET IDENTIFICATION NO.
DAUPHINAIS CONCRETE	DOUGLAS, MA	P.O. Box 461	Sutton, MA 01590	chris@dauphinaisconcrete.com		24-02-28-12-11-13

CONSTITUENT MATERIALS

	AGGREGATE						UW_{DR}	VC	PERCENT PASSING BY MASS (%)											
ID	SOURCE	LOCATION	NMAS	DESCRIPTION	SPEC.	SG	(PCF)	(%)	2 IN.	1 1/2 IN.	1 IN.	3/4 IN.	1/2 IN.	3/8 IN.	#4	#8	#16	#30	#50	#100	#200	FM
FINE	PYNE SAND AND GRAVEL	DOUGLAS, MA	FINE	NORMAL WEIGHT	M 6	2.66	102.5	38.1	100.0	100.0	100.0	100.0	100.0	100.0	96.8	80.9	68.5	49.9	28.0	8.6	2.5	2.67
CA1	KIMBALL SAND COMPANY	BLACKSTONE, MA	3/4 IN.	NORMAL WEIGHT - 6	M 80	2.71	106.5	36.9	100.0	100.0	100.0	90.6	28.8	8.3	1.5	1.0	0.8	0.8	0.6	0.6	0.6	6.96
CA2	KIMBALL SAND COMPANY	BLACKSTONE, MA	3/8 IN.	NORMAL WEIGHT - 8	M 80	2.70	108.1	35.7	100.0	100.0	100.0	100.0	100.0	91.3	13.5	3.4	3.0	1.8	1.6	0.9	0.9	5.85
CA3	KIMBALL SAND COMPANY	BLACKSTONE, MA	1 1/2 IN.	NORMAL WEIGHT - 4	M 80	2.73	101.5	40.3	100.0	98.6	50.1	13.7	5.2	3.8	1.9	1.2	1.2	1.1	1.1	1.0	1.0	7.76

	CEMENT; SUPPLEMENTARY CEMENTITIOUS MATERIALS; PACKAGED; FIBERS						CHEMICAL ADMIXTURES						V_S
ID	SOURCE	LOCATION / PRODUCT	TYPE	DESCRIPTION	SPEC.	SG	ID	SOURCE	PRODUCT	TYPE	DESCRIPTION	SPEC.	(%)
CEM	HEIDELBERG MATERIALS	CANAKKALE, TURKEY (I / II)	I / II	GENERAL / MOD. SULFATE	M 85	3.15	AD1	GCP APPLIED TECHNOLOGIES	DAREX II AEA	AEA	AIR ENTRAINING	M 154	9.90
SCM1	ECO MATERIAL TECHNOLOGIES	WASHINGTONVILLE, PA	FA-F	LOW CALCIUM (F)	M 295	2.46	AD2	GCP APPLIED TECHNOLOGIES	ADVA 140M	F	HIGH RANGE WATER REDUCING	M 194	12.66
SCM2	HEIDELBERG MATERIALS	CAMDEN, NJ	S-120	HIGH ACTIVITY (120)	M 302	2.92	AD3	GCP APPLIED TECHNOLOGIES	ADVA CAST 600	F	HIGH RANGE WATER REDUCING	M 194	34.22
SCM3							AD4	GCP APPLIED TECHNOLOGIES	RECOVER	D	ATER REDUCING AND RETARDIN	M 194	15.53
PKG							AD5	GCP APPLIED TECHNOLOGIES	DCI-S	CIA	CORROSION INHIBITING	C1582	22.00
FIBER							AD6						

MIX DESIGN FORMULATION

MIX IDENTIFICATION NO.			C	NMAS	S	AC	W/CM	PC	AGGREGATE (LBS.)				CEMENTITIOUS; PACKAGED; FIBER (LBS.)						TOTAL WATER (GAL.); ADMIXTURES (FL. OZ.)							YIELD
MASSDOT	PRODUCER	MIX DESIGN TYPE	(PSI)	(IN.)	(IN.)	(%)	RATIO	(%)	FINE	CA1	CA2	CA3	CEM	SCM1	SCM2	SCM3	PKG	FIBER	W_T	AD1	AD2	AD3	AD4	AD5	AD6	(CF)
24-02-28-12-11-13-01	3034MHD	CC	3000	3/4	5.00	6.0	0.53	26.6	1297.0	1250.0	500.0		442.0	78.0					33.0	2.0	30.0					27.00
24-02-28-12-11-13-02	3015MHD	CC	3000	1 1/2	5.00	5.5	0.53	25.7	1237.0	710.0	450.0	720.0	425.0	75.0					32.0	2.0	30.0					27.00
24-02-28-12-11-13-03	4034MHD	CC	4000	3/4	5.00	6.0	0.45	28.8	1198.0	1250.0	500.0		527.0	93.0					33.5	3.0	36.0					27.00
24-02-28-12-11-13-04	4038MHD	CC	4000	3/8	5.00	7.5	0.45	30.6	1168.0		1625.0		561.0	99.0					35.6	3.0	40.0					27.00
24-02-28-12-11-13-05	4015MHD	CC	4000	1 1/2	5.00	5.5	0.45	28.1	1158.0	700.0	450.0	700.0	515.0	91.0					32.7	3.0	36.0					27.00
24-02-28-12-11-13-06	5034MHD	CC	5000	3/4	5.00	6.0	0.40	30.7	1111.0	1250.0	500.0		599.0	106.0					34.0	4.0	42.0					27.00
24-02-28-12-11-13-07	5034HEMHD	HPC HESC	5000	3/4	8.00	6.0	0.39	29.2	1165.0	1250.0	500.0		423.0		262.0				32.0	5.0		35.0	16.0	384.0		27.00
24-02-28-12-11-13-08	5038HEMHD	HPC HESC	5000	3/8	8.00	7.0	0.37	29.6	1196.0		1650.0		438.0		272.0				31.8	5.0		36.0	16.0	384.0		27.00

COMBINED AGGREGATE AND PASTE SYSTEM

MIX IDENTIFICATION NO.		PERCENT BY MASS PASSING (%)													GRADATION OPTIMIZATION		VOID CONTENT (%)				PC_A /	PC_A /	SCM (%)			UW
MASSDOT	PRODUCER	2 IN.	1 1/2 IN.	1 IN.	3/4 IN.	1/2 IN.	3/8 IN.	#4	#8	#16	#30	#50	#100	#200	TARANTULA	SHILSTONE	VC_0	VC_{0M}	VC_C	VC_{CM}	VC_{0M}	VC_{CM}	SCM1	SCM2	SCM3	(PCF)
24-02-28-12-11-13-01	3034MHD	100.0	100.0	100.0	96.1	70.8	61.0	44.0	35.4	30.0	21.9	12.4	4.1	1.5	OUTSIDE	II: 3/4 - 2 IN.	37.2	25.1			1.30		15.0	0.0	0.0	142.3
24-02-28-12-11-13-02	3015MHD	100.0	99.7	88.5	77.9	61.9	55.6	41.1	33.1	28.1	20.5	11.7	3.9	1.5	OUTSIDE	II: 3/4 - 2 IN.	38.0	26.1			1.20		15.0	0.0	0.0	143.9
24-02-28-12-11-13-03	4034MHD	100.0	100.0	100.0	96.0	69.8	59.6	42.3	33.9	28.7	20.9	11.9	3.9	1.4	OUTSIDE	II: 3/4 - 2 IN.	37.2	24.3			1.43		15.0	0.0	0.0	142.5
24-02-28-12-11-13-04	4038MHD	100.0	100.0	100.0	100.0	100.0	94.9	48.3	35.8	30.4	21.9	12.6	4.1	1.6	OUTSIDE	III: < 3/4 IN.	36.7	22.7			1.68		15.0	0.0	0.0	138.9
24-02-28-12-11-13-05	4015MHD	100.0	99.7	88.4	77.7	61.4	55.0	40.1	32.2	27.3	19.9	11.4	3.8	1.5	OUTSIDE	II: 3/4 - 2 IN.	38.0	25.2			1.33		15.0	0.0	0.0	144.0
24-02-28-12-11-13-06	5034MHD	100.0	100.0	100.0	95.9	68.9	58.4	40.6	32.4	27.5	20.0	11.4	3.8	1.4	OUTSIDE	II: 3/4 - 2 IN.	37.2	23.5			1.56		15.0	0.0	0.0	142.6
24-02-28-12-11-13-07	5034HEMHD	100.0	100.0	100.0	96.0	69.5	59.2	41.6	33.3	28.2	20.6	11.7	3.8	1.4	OUTSIDE	II: 3/4 - 2 IN.	37.2	24.0			1.47		0.0	38.2	0.0	143.6
24-02-28-12-11-13-08	5038HEMHD	100.0	100.0	100.0	100.0	100.0	95.0	48.5	36.0	30.5	22.0	12.7	4.1	1.6	OUTSIDE	III: < 3/4 IN.	36.7	23.1			1.58		0.0	38.3	0.0	142.0

We agree to produce cement concrete mix designs per the precise proportions, quantities, types, and sources of constituent materials identified on the approved RMS 043 Cement Concrete Mix Design Sheet for MassDOT construction contracts.

Mr. Chris Dauphinais	President	Signature in producer file	5/2/2025
NAME	*TITLE*	*AUTHORIZED SIGNATURE*	*DATE*