



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



May 7, 2020

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

Dear Mr. Dauphinais,

The following cement concrete mix design submittals have been reviewed by this section and are approved as specified below, for the duration of the annual approval cycle, and will expire on April 1, 2021. The approved mix designs are subject to performance at the plant, on the project or in the laboratory. Any changes will require new mix design submittals and trial batches.

Approved Plant Location and Mix Design Sheet Identification No.:

DAUPHINAIS CONCRETE - DOUGLAS, MA: 20-01-14-09-41-28

Approved Cementitious & Mitigating Materials:

C1: TYPE I / II LEHIGH - CANAKKALE, TURKEY | FA: TYPE F BORAL (FORMERLY HEADWATERS) - STRATTON, OH | SLAG: TYPE 120 LAFARGE NEWCEM - BALTIMORE, MD | SLAG: TYPE 120 LAFARGE NEWCEM - BALTIMORE, MD | SF: GRACE FORCE 10,000 D - CAMBRIDGE, MA

Approved Aggregates:

FINE 1 PYNE SAND AND GRAVEL - DOUGLAS, MA | 3/8"1 CUMBERLAND QUARRY - CUMBERLAND, RI | 3/8"2 PYNE SAND AND GRAVEL - DOUGLAS, MA | 3/4"1 CUMBERLAND QUARRY - CUMBERLAND, RI | 3/4"2 PYNE SAND AND GRAVEL - DOUGLAS, MA | 1.5"1 CUMBERLAND QUARRY - CUMBERLAND, RI

Approved Admixtures:

AD1 TYPE F GCP AT - ADVA 140M | AD2 TYPE AEA GCP AT - DAREX II AEA | AD3 TYPE F GCP AT - EXP 950 | AD4 TYPE S GCP AT - DCI-S | AD5 TYPE D GCP AT - RECOVER | AD6 TYPE S GCP AT - DARAFILL CLSM

Approved Mix Designs:

- 1.) 3000 PSI | 3/4"1 | C1: 259 LBS. | SLAG: 259 LBS. | WATER: 31 GAL. | AD1: 35 OZ. | AD2: 2 OZ.
- 2.) 3500 PSI | 1.5"1 | C1: 268 LBS. | SLAG: 268 LBS. | WATER: 30 GAL. | AD1: 37.2 OZ. | AD2: 1.3 OZ.
- 3.) 4000 PSI | 3/8"1 | C1: 331 LBS. | SLAG: 331 LBS. | WATER: 36 GAL. | AD1: 46 OZ. | AD2: 5 OZ.

- 4.) 4000 PSI | 3/8"2 | C1: 497 LBS. | SLAG: 165 LBS. | WATER: 36 GAL | AD1: 46 OZ. | AD2: 5 OZ.
5.) 4000 PSI | 3/4"1 | C1: 329 LBS. | SLAG: 329 LBS. | WATER: 35 GAL | AD1: 46 OZ. | AD2: 4 OZ.
6.) 4000 PSI | SIDEWALK | 3/4"2 | C1: 484 LBS. | SLAG: 161 LBS. | WATER: 35 GAL | AD1: 39 OZ. | AD2: 4 OZ.
7.) 4000 PSI | HP | 3/4"1 | C1: 293 LBS. | SLAG: 257 LBS. | SF: 35 LBS. | WATER: 28 GAL | AD2: 5.5 OZ. | AD3: 25 OZ. | AD4: 384 OZ. | AD5: 11 OZ.
- 8.) 4000 PSI | 1.5"1 | C1: 303 LBS. | SLAG: 303 LBS. | WATER: 33 GAL | AD1: 42 OZ. | AD2: 2.5 OZ.
- 9.) 5000 PSI | 3/4"1 | C1: 353 LBS. | SLAG: 353 LBS. | WATER: 34 GAL | AD1: 49.4 OZ. | AD2: 5 OZ.
10.) 5000 PSI | HP | 3/8"1 | C1: 358 LBS. | SLAG: 315 LBS. | SF: 43 LBS. | WATER: 35 GAL | AD2: 6.5 OZ. | AD3: 30 OZ. | AD4: 384 OZ. | AD5: 14 OZ.
11.) 5000 PSI | HP | 3/4"1 | C1: 343 LBS. | SLAG: 301 LBS. | SF: 43 LBS. | WATER: 33 GAL | AD2: 6 OZ. | AD3: 29 OZ. | AD4: 384 OZ. | AD5: 13 OZ.
12.) | CDF TYPE 1E | C1: 80 LBS. | WATER: 35 GAL | AD6: 1 OZ.
13.) | CDF TYPE 2 | C1: 200 LBS. | WATER: 35 GAL | AD6: 1 OZ.
14.) 3000 PSI | 3/4"1 | C1: 390 LBS. | FA: 130 LBS. | WATER: 32 GAL | AD1: 35 OZ. | AD2: 2 OZ.
15.) 4000 PSI | 3/8"1 | C1: 503 LBS. | FA: 167 LBS. | WATER: 36 GAL | AD1: 46 OZ. | AD2: 2.3 OZ.
16.) 4000 PSI | 3/4"1 | C1: 495 LBS. | FA: 165 LBS. | WATER: 35 GAL | AD1: 46 OZ. | AD2: 3 OZ.
17.) 4000 PSI | 1.5"1 | C1: 455 LBS. | FA: 151 LBS. | WATER: 32 GAL | AD1: 42 OZ. | AD2: 1.5 OZ.
18.) 4000 PSI | HP | 3/4"1 | C1: 439 LBS. | FA: 111 LBS. | SF: 35 LBS. | WATER: 28 GAL | AD2: 5 OZ. | AD3: 25 OZ. | AD4: 384 OZ. | AD5: 11 OZ.
- 19.) 5000 PSI | 3/4"1 | C1: 533 LBS. | FA: 177 LBS. | WATER: 34 GAL | AD1: 49.4 OZ. | AD2: 5.5 OZ.
20.) 5000 PSI | HP | 3/8"1 | C1: 537 LBS. | FA: 135 LBS. | SF: 43 LBS. | WATER: 32.5 GAL | AD2: 6 OZ. | AD3: 30 OZ. | AD4: 384 OZ. | AD5: 14 OZ.
21.) 5000 PSI | HP | 3/4"1 | C1: 514 LBS. | FA: 128 LBS. | SF: 43 LBS. | WATER: 30.5 GAL | AD2: 5 OZ. | AD3: 29 OZ. | AD4: 384 OZ. | AD5: 13 OZ.
22.) 5000 PSI | SIDEWALK | 3/4"2 | C1: 530 LBS. | SLAG: 176 LBS. | WATER: 34 GAL | AD1: 49 OZ. | AD2: 6 OZ.

Sincerely,

Clement W. Fung
Digitally signed by
Clement W. Fung
Date: 2020.05.07
13:25:39 -0400

Clement W. Fung, P.E.

Acting Director of Research and Materials

AB/ds/rfm **Richard Mulcahy**
Attachments Digitally signed by
Richard Mulcahy
Date: 2020.05.07
13:18:15 -0400

C: District 3 Materials Engineer

R&M Job File



2020 CEMENT CONCRETE MIX DESIGN SHEET RMS 043

Rev. 01/02/2020

PLANT INFORMATION			MAILING ADDRESS			STREET NO. & ADDRESS			CITY/TOWN, XX			EMAIL ADDRESS			MIX SHEET IDENTIFICATION								
DAUPHINIS CONCRETE			DOUGLAS, MA			P.O. Box 481			DOUGLAS, XX			CITY@DAUPHINISCONCRETE.COM			CONTRACT								
SOURCE			LOCATION			SOURCE			LEHIGH			CITY/TOWN, XX			SHEET IDENTIFICATION NO.								
AGGREGATE SOURCES			CEMENTITIOUS & SUPPLEMENTARY MATERIALS (SCM) SOURCES			CEMENTITIOUS & SUPPLEMENTARY MATERIALS (SCM) SOURCES			CITY/TOWN, XX			CITY/TOWN, XX			20-01-14-09-41-28								
ID	SOURCE	LOCATION	S.G.	ID	LOCATION	SOURCE	LEHIGH	1 1/2"	1"	3/4"	3/8"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	F.M.	L.A.	
FINE1	PYNE SAND AND GRAVEL	DOUGLAS, MA	2.61	C1																			
FINE2	CUMBERLAND QUARRY	CUMBERLAND, RI	2.77	C3																			
3/8"1	PYNE SAND AND GRAVEL	DOUGLAS, MA	2.64	CA																			
3/8"2	CUMBERLAND QUARRY	CUMBERLAND, RI	2.77	FA																			
3/4"1	PYNE SAND AND GRAVEL	DOUGLAS, MA	2.68	SLAG																			
3/4"2	CUMBERLAND QUARRY	CUMBERLAND, RI	2.77	SF																			
1.5"1																							
1.5"2																							

CLASSIFICATION OF CONCRETE		AGGREGATE (LBS.)												CEMENT (LBS.)												SCM (LBS.)												WATER (GAL) AND ADMIXTURES (OZ.)												CALCULATION											
ID NO.	PSI	TYPE	1.5"1	1.5"2	3/4"1	3/4"2	3/8"1	3/8"2	#4	#8	#16	#30	#50	FINE1	FINE2	C1	C2	C3	C4	FA	SLAG	SF	WTR.	AD1	AD2	AD3	AD4	AD5	AD6	AD7	AD8	W/C	AIR	PASTE																											
1	3000		3/4"1	1313	1313	438	438	1313	1313	1313	438	438	1313	1365	1365	259	259	259	259	259	259	31.0	35.0	2.0								0.50	5.6%	25.6%																											
2	3500		1.5"1	810	810	180	180	810	810	810	180	180	810	1364	1364	268	268	268	268	268	268	30.0	37.2	1.3								0.47	4.9%	25.5%																											
3	4000		3/8"1	1189	1189	1650	1650	1189	1189	1189	1650	1650	1189	1189	1189	331	331	331	331	331	331	36.0	46.0	5.0								0.45	6.6%	31.0%																											
4	4000		3/8"2	1145	1145	1650	1650	1145	1145	1145	1650	1650	1145	1125	1125	497	497	497	497	497	497	36.0	46.0	5.0								0.45	6.6%	30.7%																											
5	4000		3/4"1	1145	1145	438	438	1145	1145	1145	438	438	1145	1145	1145	329	329	329	329	329	329	35.0	46.0	4.0								0.44	6.0%	30.4%																											
6	4000	SIDEWALK	3/4"2	1310	1310	438	438	1310	1310	1310	438	438	1310	1148	1148	484	484	484	484	484	484	35.0	39.0	4.0								0.45	4.9%	29.9%																											
7	4000	HP	3/4"1	1230	1230	540	540	1230	1230	1230	540	540	1230	1234	1234	293	293	293	293	293	293	35.0	28.0	5.5	25.0	394.0	11.0					0.40	6.9%	27.2%																											
8	4000		1.5"1	810	810	180	180	810	810	810	180	180	810	1250	1250	303	303	303	303	303	303	33.0	42.0	2.5								0.45	4.8%	28.4%																											
9	5000		3/4"1	1313	1313	438	438	1313	1313	1313	438	438	1313	1141	1141	353	353	353	353	353	353	34.0	49.4	5.0								0.40	5.7%	30.9%																											
10	5000	HP	3/8"1	1650	1650	180	180	1650	1650	1650	180	180	1650	1145	1145	358	358	358	358	358	358	43	35.0	6.5	30.0	384.0	14.0					0.41	5.3%	33.3%																											
11	5000	HP	3/4"1	1230	1230	540	540	1230	1230	1230	540	540	1230	1102	1102	343	343	343	343	343	343	43	33.0	6.0	28.0	384.0	13.0					0.40	5.3%	31.7%																											
12		CDF TYPE 1E												2470	2470	80	80	80	80	80	80	35.0										3.65	25.0%	18.9%																											
13		CDF TYPE 2												2598	2598	200	200	200	200	200	200	35.0										1.46	19.9%	21.1%																											
14	3000		3/4"1	1313	1313	438	438	1313	1313	1313	438	438	1313	1350	1350	390	390	390	390	390	390	32.0	35.0	2.0								0.51	5.2%	28.6%																											
15	4000		3/8"1	1189	1189	1650	1650	1189	1189	1189	1650	1650	1189	1189	1189	503	503	503	503	503	503	36.0	46.0	2.3								0.45	6.0%	31.9%																											
16	4000		3/4"1	1145	1145	438	438	1145	1145	1145	438	438	1145	1145	1145	495	495	495	495	495	495	35.0	46.0	3.0								0.44	5.5%	30.9%																											
17	4000		1.5"1	810	810	180	180	810	810	810	180	180	810	1220	1220	455	455	455	455	455	455	32.0	42.0	1.5								0.44	5.4%	28.3%																											
18	4000	HP	3/4"1	1230	1230	540	540	1230	1230	1230	540	540	1230	1234	1234	439	439	439	439	439	439	35	28.0	5.0	25.0	384.0	11.0					0.40	6.8%	27.4%																											
19	5000		3/4"1	1313	1313	438	438	1313	1313	1313	438	438	1313	1159	1159	533	533	533	533	533	533	34.0	49.4	5.5								0.40	4.7%	31.5%																											
20	5000	HP	3/8"1	1650	1650	180	180	1650	1650	1650	180	180	1650	1145	1145	537	537	537	537	537	537	43	32.5	6.0	30.0	384.0	14.0					0.38	6.2%	32.6%																											
21	5000	HP	3/4"1	1230	1230	540	540	1230	1230	1230	540	540	1230	1102	1102	514	514	514	514	514	514	43	30.5	5.0	29.0	384.0	13.0					0.37	6.3%	30.8%																											
22	5000	SIDEWALK	3/4"2	1310	1310	438	438	1310	1310	1310	438	438	1310	1141	1141	530	530	530	530	530	530	34.0	49.0	6.0								0.40	4.4%	30.6%																											

We agree to furnish notes to MassDOT projects that are produced from only the referenced materials listed on the RMS 043 Cement Concrete Mix Design Sheet. We also understand that designs are to be submitted annually, prior to production for state work, and any subsequent change in materials or design will require resubmission for approval.

Mr. Chris Daughinis
NAME

President
TITLE

AUTHORIZED SIGNATURE

DATE