



Submittal # 22-GRP-000620
GRP KEVIN DILL
6/15/2022

Version 1

TDM, LLC
PO BOX 1255
DRAPER UT 84020

Please find the enclosed mix designs listed below with current materials certification reports.

This submission contains the following mix designs:

<u>Mix Code</u>	<u>Description</u>
A6505A	6.5 ENG AIR

Please note, concrete strength and performance are guaranteed when tested and placed in accordance with all applicable ACI guidelines, AASHTO and ASTM Standard Specifications. Geneva Rock Products requests to be added to the distribution list for all test results. Please order by mix design number.

If you have any questions or concerns, do not hesitate to call us at (801)281-7900.

Respectfully Submitted,

KEVIN DILL



Concrete Mix Design Submittal

Date : 06/15/2022

No. 22-GRP-000620 Version 1

Mix Code : A6505A

Description : 6.5 ENG AIR

		<u>Design</u>	<u>Tolerance</u>
Customer	TDM, LLC	Air Content	6.3 +1.2/-1.3
Contact		Slump	4.00 +/-1
Office Phone	801-664-9351	Design Strength	4000 psi
Project Name	2022 Holladay City Overlay	Unit Weight	139.1 lb/ft ³
Project Contact		W/C Ratio	0.41
Usage/ Placement	Manholes/ Utilities		

Material Type	Description	Design Quantity	Specific Gravity	Volume (ft ³)
Cement	CEMENT ASTM C595 1L	489 lb	3.15	2.49
Fly Ash	TYPE F FLY ASH, ASTM C 618	122 lb	2.30	0.85
Coarse Aggregate	ROCK - 3/4" X #4 WASHED	1708 lb	2.58	10.61
Fine Aggregate	SAND - WASHED CONCRETE...	1148 lb	2.60	7.07
Water	POTABLE WATER	30.0 gal	1.00	4.01
Admixture	AE ADMIXTURE - ASTM C260	0.7 /cwt	-	-
Admixture	WATER REDUCER - ASTM C494 TYPE A, D	4.0 /cwt	-	-
		Air Content	6.30 %	1.68
		Yield	3717 lb	26.71

NOTES

Prepared By :

KEVIN DILL

STRENGTH PERFORMANCE REPORT

Mix : A6505A - 6.5 ENG AIR
Period : 04 Sep 2020 To 24 Nov 2021

	Air Content %	Concrete Temp deg F	Slump in	Strength28D psi
Count	24	24	24	24
Average	5.91	72	4.20	5620
STDEV	0.63	5	0.70	770
COV%	10.6	7.5	16.6	13.8
Range Min	5.00	60	3.00	4250
Range Max	7.00	80	6.00	6740

Date	Sam ple	Air Content %	Concrete Temp deg F	Slump in	Strength28D psi
11/24/2021	5199	5.20	64	6.00	5670
8/26/2021	4941	7.00	79	4.00	5320
7/29/2021	2957	5.70	80	3.50	6450
7/26/2021	2746	6.90	80	4.50	5820
6/30/2021	0805	5.00	79	3.00	6510
4/5/2021	6138	5.00	68	4.00	6630
3/29/2021	3755	5.30	69	4.00	6740
3/3/2021	1111	6.00	68	5.00	6360
2/9/2021	0645	5.30	70	3.00	6640
11/5/2020	2209	6.00	75	4.75	5090
10/29/2020	1486	5.70	76	4.50	4250
10/28/2020	1293	6.00	69	5.00	4820
10/27/2020	1145	6.20	71	5.00	4570
10/7/2020	1854	5.50	77	4.00	6590
9/28/2020	7961	6.40	68	4.00	5300
9/25/2020	7825	5.50	71	3.50	5980
9/23/2020	7472	5.70	73	3.50	5500
9/22/2020	7382	5.00	77	4.00	6070
9/21/2020	7245	6.90	71	4.00	4450
9/17/2020	6901	5.90	74	3.50	5510
9/11/2020	6253	6.20	65	4.50	5200
9/10/2020	6045	6.50	68	4.50	5290
9/9/2020	5931	6.20	60	4.50	5600
9/4/2020	5723	6.80	76	4.50	4480



GENEVA ROCK PRODUCTS, INC.

1565 West 400 North • P.O. Box 538 • Orem, UT 84059 • (801) 765-7800 • Fax (801) 765-7830 • www.genevarock.com

AGGREGATE SUBMITTAL

ASTM C-33 - Report of Physical Properties

GRP Material Description: Washed, Concrete Sand

Report Date: January 20, 2022

GRP Material Code: SAND

Reviewed by: Dan McDaniel

Source Location/Code: Point of the Mtn. / 533

ASTM C-33 Report No.: 533SAND00122

TEST RESULTS					SIEVE ANALYSIS		
Standard	PHYSICAL PROPERTIES		Result	Test Source	ASTM C136 AASHTO T27		
ASTM C 29 AASHTO T19	Unit Weight	Unit Weight, lbs./cu.ft. =	106		Sieve Size	% Passing	Spec.
		Voids, % =	33		450 mm (18")		
		☐ Jigged ☐ Loose ☒ Rodded			375 mm (15")		
ASTM D1557 AASHTO T180	Modified Proctor	Max. density, lbs./cu.ft. =			300 mm (12")		
		Optimum Moisture, % =			250 mm (10")		
ASTM D698 AASHTO T99	Standard Proctor	Max. density, lbs./cu.ft. =	108.3		225 mm (9")		
		Optimum Moisture, % =	16.1		200 mm (8")		
ASTM D4318 AASHTO T89/90	Liquid Limit Plastic Limit Plasticity Index	Liquid Limit =	0		150 mm (6")		
		Plastic Limit =	0		125 mm (5")		
		Plasticity Index =	NP		100 mm (4")		
ASTM C131 AASHTO T96	L.A. Abrasion	Small Coarse Loss, % =			75.0 mm (3")		
		Grading/Revolutions, =			63.0 mm (2-1/2")		
ASTM C535	L.A. Abrasion	Large Coarse Loss, % =			50.0 mm (2")		
		Grading/Revolutions, =			37.5 mm (1-1/2")		
ASTM C 128 AASHTO T84	Fine Specific Gravity & Absorption	Bulk Specific Gravity (dry) =	2.543		25.0 mm (1")		
		Bulk Specific Gravity, SSD =	2.575		19.0 mm (3/4")		
		Apparent Specific Gravity =	2.626		12.5 mm (1/2")		
		Absorption, % =	1.2		9.5 mm (3/8")		
ASTM C 127 AASHTO T85	Coarse Specific Gravity & Absorption	Bulk Specific Gravity (dry) =			6.3 mm (1/4")		
		Bulk Specific Gravity, SSD =			4.75 mm (No.4)	100	
		Apparent Specific Gravity =			2.36 mm (No.8)	88	
		Absorption, % =			2.00 mm (No.10)		
ASTM D2419 AASHTO T176	Sand Equivalent	Sand Equivalent, % =	92		1.18 mm (No.16)	61	
					0.600 mm (No.30)	40	
ASTM C 88 AASHTO T104	Soundness	Coarse Soundness Loss, % =			0.425 mm (No.40)		
		Sodium Sulfate No. of Cycles =			0.300 mm (No.50)	21	
	Soundness	Fine Soundness Loss, % =	2		0.180 mm (No.80)		
		Sodium Sulfate No. of Cycles =	5		0.150 mm (No.100)	6	
ASTM C 1252 AASHTO T304	Fine Aggregate Angularity	Uncompacted Voids, % =	45.4		0.075 mm (No.200)	1.3	
		Method C (as received material)					
ASTM C40 AASHTO T21	Organic Impurities	Coarse Aggregate, % =					
		Fine Aggregate, % =	Lighter Plate #1				
ASTM C142 AASHTO T112	Clay / Friable Particles	Coarse Aggregate, % =			ASTM C566 AASHTO T255		
		Fine Aggregate, % =	0		Moisture Content, % =	6.8	
ASTM C123 AASHTO T113	Lightweight Pieces	Coarse Aggregate, % =			ASTM C136 AASHTO T27		
		Fine Aggregate, % =	0		Fineness Modulus (FM) =	2.84	
ASTM D1883 AASHTO T193	CBR	Surcharge = 10 lbs CBR @ 0.1" =			AASHTO M145		
		Swell% = 0.0% CBR @ 0.2" =			Classification of Soils =		
ASTM D5821	Fractured Face	1 or 2 Faces =			ASTM D4791	Ratio =	
		Fractured Face, % =			Flat & Elongated =		
ASTM D2487	Soil Classification	Group Symbol =					
		Group Name =					
ASTM D2488	Soil Description & Identification	Group Symbol =					
		Group Name =					



GENEVA ROCK PRODUCTS, INC.

1565 West 400 North • P.O. Box 538 • Orem, UT 84059 • (801) 765-7800 • Fax (801) 765-7830 • www.genevarock.com

AGGREGATE SUBMITTAL

ASTM C-33 Report of Physical Properties

GRP Material Description: Washed, Concrete Rock

Report Date: January 21, 2022

GRP Material Code: ROCA

Reviewed by: Dan McDaniel

Source Location/Code: Point of the Mtn / 525

Report No. 525ROCA00122

TEST RESULTS					SIEVE ANALYSIS		
Standard	PHYSICAL PROPERTIES		Result	Test Source	ASTM C136 AASHTO T27		
ASTM C 29 AASHTO T19	Unit Weight	Unit Weight, lbs./cu.ft. =	93		Sieve Size	% Passing	Spec.
	Weight	Voids, % =	41		450 mm (18")		
		☐ Jigged ☐ Loose ☒ Rodded			375 mm (15")		
ASTM D1557 AASHTO T180	Modified Proctor	Max. density, lbs./cu.ft. =			300 mm (12")		
		Optimum Moisture, % =			250 mm (10")		
ASTM D698 AASHTO T99	Standard Proctor	Max. density, lbs./cu.ft. =			225 mm (9")		
		Optimum Moisture, % =			200 mm (8")		
ASTM D4318 AASHTO T89/90	Liquid Limit Plastic Limit Plasticity Index	Liquid Limit = Plastic Limit = Plasticity Index =			150 mm (6")		
					125 mm (5")		
					100 mm (4")		
ASTM C131 AASHTO T96	L.A. Abrasion	Small Coarse Loss, % = Grading/Revolutions, =	22 B/500		75.0 mm (3")		
ASTM C535	L.A. Abrasion	Large Coarse Loss, % = Grading/Revolutions, =			63.0 mm (2-1/2")		
					50.0 mm (2")		
					37.5 mm (1-1/2")		
ASTM C 128 AASHTO T84	Fine Specific Gravity & Absorption	Bulk Specific Gravity (dry) = Bulk Specific Gravity, SSD = Apparent Specific Gravity = Absorption, % =			25.0 mm (1")	100	
					19.0 mm (3/4")	97	
					12.5 mm (1/2")	58	
					9.5 mm (3/8")	26	
ASTM C 127 AASHTO T85	Coarse Specific Gravity & Absorption	Bulk Specific Gravity (dry) = Bulk Specific Gravity, SSD = Apparent Specific Gravity = Absorption, % =	2.552 2.580 2.624 1.1		6.3 mm (1/4")		
					4.75 mm (No.4)	2	
					2.36 mm (No.8)	1	
					2.00 mm (No.10)		
ASTM D2419 AASHTO T176	Sand Equivalent	Sand Equivalent, % =			1.18 mm (No.16)		
					0.600 mm (No.30)		
ASTM C 88 AASHTO T104	Soundness	Coarse Soundness Loss, % = Sodium Sulfate No. of Cycles =	2 5		0.425 mm (No.40)		
	Soundness	Fine Soundness Loss, % = Magnesium No. of Cycles =			0.300 mm (No.50)		
					0.180 mm (No.80)		
					0.150 mm (No.100)		
ASTM C 1252 AASHTO T304	Fine Aggregate Angularity	Uncompacted Voids, % = Method C (as received material)			0.075 mm (No.200)	0.5	
ASTM C40 AASHTO T21	Organic Impurities	Coarse Aggregate, % = Fine Aggregate, % =	Lighter Plate #1		ASTM D422		
					Hydrometer =		
ASTM C142 AASHTO T112	Clay / Friable Particles	Coarse Aggregate, % = Fine Aggregate, % =	0		ASTM C566 AASHTO T255		
					Moisture Content, % =		
ASTM C123 AASHTO T113	Lightweight Pieces	Coarse Aggregate, % = Fine Aggregate, % =	0		ASTM C136 AASHTO T27		
					Fineness Modulus (FM) =		
ASTM D1883 AASHTO T193	CBR	Surcharge = 10 lbs CBR @ 0.1" = Swell% = 0.0% CBR @ 0.2" =			AASHTO M145		
					Classification of Soils =		
ASTM D5821	Fractured Face	1 or 2 Faces = Fractured Face, % =	1 = 100 2 = 99		ASTM D4791	Ratio =	5:1
					Flat & Elongated % =	0	
ASTM D2487	Soil Classification	Group Symbol = Group Name =					
ASTM D2488	Soil Description & Identification	Group Symbol = Group Name =					

ASH GROVE CEMENT COMPANY



A CRH COMPANY

PO Box 38069 HWY 132
Leamington, Utah 84638
Phone: 435-857-1212
FAX: 435-857-1288

Type IL (10) MS

Production Period: December 1 thru December 31, 2021

Date: 1/5/2022

The following information is based on average test data during the production period. The data is typical of cement shipped from the Leamington, Utah plant.
Individual shipments may vary.

STANDARD REQUIREMENTS ASTM C595

CHEMICAL				PHYSICAL			
A.S.T.M. Test				A.S.T.M. Test			
Item	Method	Spec. Limit	Test Result	Item	Method	Spec. Limit	Test Result
SiO ₂ (%)	C114	A	18.83	Air content of mortar (volume %)	C185	12 max	9
Al ₂ O ₃ (%)	C114	A	3.74	% Passing 325 mesh	A	A	98
Fe ₂ O ₃ (%)	C114	A	3.43	Fineness (cm ² /g):			
CaO (%)	C114	A	61.45	Air permeability	C204	A	4945
MgO (%)	C114	A	2.27	Autoclave expansion (%)	C151	0.80 max	0.03
SO ₃ (%) ^D	C114	3.0 max	2.70	Compressive strength (psi)			
Loss on ignition (%)	C114	10 max	5.68	1 Day	C109	A	2161
Na ₂ O (%)	C114	A	0.05	3 Days	C109	1890 min	3837
K ₂ O (%)	C114	A	0.60	7 Days	C109	2900 min	4906
Equivalent alkalies (%)	C114	A	0.45	28 Days	C109	3620 min	6300
Insoluble Residue (%)	C114	A	0.57	Time of setting (minutes)			
CO ₂ (%)	C114	A	4.29	(Vicat)			
Limestone (%)	C114	>5 and ≤15	10.5	Initial: Not less than	C191	45	112
CaCO ₃ in limestone (%)	C114	70 min	93.3	Not more than		420	112
Potential compounds (%)				Mortar Bar Expansion (%)	C1038	0.020 max	0.008
C ₃ S	C114	A	48	Sulfate Resistance @180 days (%)	C1012	0.10 max	0.05
C ₂ S	C114	A	18	Cement Density (g/cm ³)	A	A	3.06
C ₃ A	C114	A	4				
C ₄ AF	C114	A	10				
C ₄ AF + 2(C ₃ A)	C114	A	18				

OPTIONAL REQUIREMENTS ASTM C595

CHEMICAL				PHYSICAL			
A.S.T.M. Test				A.S.T.M. Test			
Item	Method	Spec. Limit	Test Result	Item	Method	Spec. Limit	Test Result
				False set (%)	C451	A	81
				Heat of hydration (kJ /kg)			
				7 days	C186	A	C

A = Not applicable.

B = Limit not specified by purchaser, test result provided for information only.

C = Test results for this period not available.

D = C 1038 expansion in water does not exceed 0.02% at 14 days

E = Test results are for the previous month.

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C595 (Type IL) or (other) _____ specification.

Signature:

Kurt Lindstrom

Title: Chief Chemist

ASH GROVE CEMENT COMPANY



A CRH COMPANY

PO Box 38069 HWY 132
Leamington, Utah 84638
Phone: 435-857-1212
FAX: 435-857-1288

Type IL (10) MS

Production Period: December 1 thru December 31, 2021

Date: 1/5/2022

The following information is based on average test data during the production period. The data is typical of cement shipped from the Leamington, Utah plant.
Individual shipments may vary.

Additional Data

Inorganic Processing Addition Data

Type	Limestone
Amount(%)	10.45
SiO ₂ (%)	9.78
Al ₂ O ₃ (%)	2.77
Fe ₂ O ₃ (%)	1.55
CaO (%)	44.94
SO ₃ (%)	0.06

Base Cement Phase Composition

C ₃ S	58
C ₂ S	14
C ₃ A	5
C ₄ AF	10

Signature:

Kurt Lindstrom

Title: Chief Chemist

ASTM C618-19 - Chemical and Physical Analyses - Fly Ash/Pozzolans

CTL Ticket: 22000	Plant of Origin: Bridger	Sample Date Range: 11/15/2021
CTL Project: CT16927	Sample ID: Bridger FA BSL-012-21	to: 12/15/2021
Report Date: 02/21/2022	Supplier: Bridgesource	Date Received: 01/03/2022

Chemical Composition (%)

(by Wyoming Analytical Laboratories, Inc.)

ASTM C618-19

		Class N	Class F	Class C
Silicon Dioxide:	61.7			
Aluminum Oxide:	19.6			
Iron Oxide:	4.2			
Total Silica, Aluminum, Iron:	85.5	≥70.0%	≥50.0%	≥50.0%
Sulfur Trioxide:	0.6	≤4.0%	≤5.0%	≤5.0%
Calcium Oxide:	5.6	N/A	≤18.0%	>18.0%
Magnesium Oxide:	2.00	N/A	N/A	N/A
Total Alkalis, as Na ₂ O:	3.25			
Sodium:	2.36	Product Class:	Class F	
Potassium:	1.36	Conforms to Class:	Yes	

Volatile Composition (Mass%)

Moisture Content:	0.1	≤3.0%	≤3.0%	≤3.0%
Loss on Ignition:	0.4	≤10.0%	≤6.0%	≤6.0%

Physical Test Results

Fineness, Retained on #325 Sieve (%):	22.3	≤34%	≤34%	≤34%
Strength Activity Index (%) *		* No 7-day limit if 28-day meets		
Percent of Control @ 7 Days:	84	≥75%	≥75%	≥75%
Percent of Control @ 28 Days:	89	≥75%	≥75%	≥75%
Water Requirement, % of Control:	97	≤115%	≤105%	≤105%
Soundness, Autoclave Expansion (%):	-0.03	≤0.8%	≤0.8%	≤0.8%
Density (g/cm ³):	2.28	N/A	N/A	N/A

Uniformity Established from 10 previous tests

Average Fineness:	25.7	Difference: 3.4(%)	±5(%)	±5(%)	±5(%)
Average Density:	2.36	Difference: -3.42%	±5%	±5%	±5%

Supplementary Requirements

Available Alkalis, as Na ₂ O	1.47%			
Sodium Oxide:	1.15%	Drying Shrinkage %:	0.00	Max 0.03%
Potassium Oxide:	0.49%			

Comments: Meets ASTM and AASHTO

CTL | Thompson Materials Engineers, Inc.


 Orville R. Werner, P.E.
 

22 Lipan Street | Denver, Colorado 80223 | Telephone: 303-825-0777 Fax: 303-893-1568

This test report relates only to the items tested and shall not be reproduced, except in full, without written approval of CTL Thompson, Inc.

January 17, 2022

John Archibald
CTL Thompson, Materials Engineers, Inc.
22 Lipan St.
Denver, CO 80223

Mineral Division 41503
WAL Sample #: S6869
Customer Sample Bridge Source BSL-012-21 11/15/2021-12/15/2021 CT 26927.000 CTL 22000
PO#:
Project#:

Date Received: 1/7/2022

Sample Matrix: fly ash

CHEMICAL ANALYSIS
WT%, DRY BASIS

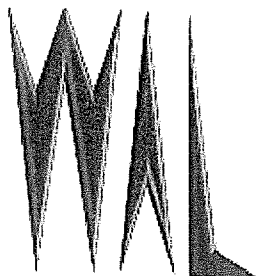
Silicon Dioxide, SiO ₂	61.70
Aluminum Oxide, Al ₂ O ₃	19.62
Iron Oxide, Fe ₂ O ₃	4.19
Total (SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃)	85.52
Calcium Oxide, CaO	5.57
Magnesium Oxide, MgO	2.00
Sodium Oxide, Na ₂ O	2.36
Potassium Oxide, K ₂ O	1.36
Total Alkalies as Na ₂ O	3.26
Titanium Dioxide, TiO ₂	0.96
Manganese Dioxide, MnO ₂	0.04
Phosphorus Pentoxide, P ₂ O ₅	0.63
Strontium Oxide, SrO	0.22
Barium Oxide, BaO	0.35
Sulfur Trioxide, SO ₃	0.58
Loss on Ignition	0.42
Total	100.00
Moisture (105°C), as Received	0.05

Analysis per ASTM C 311/XRF
Analyst CRW/ 1/11/22 1:02 PM


Charles R. Wilson
Mineral Manager

End of Report
rrj

Monte L. Ellis
Laboratory Manager



WYOMING ANALYTICAL LABORATORIES, INC

1660 Harrison Street
Laramie, WY 82070

www.wal-lab.com
laramie@wal-lab.com

ph: 307-742-7995
fax: 307-721-8956



Concrete Crack Disclaimer

The propensity to crack is inherent in concrete materials and cracking is expected to occur as concrete materials undergo volume changes and associated strains. As a result, Geneva Rock Products does not provide a guarantee of any kind, express or implied, that the ready-mixed concrete products that it supplies will not crack. This includes, but is not limited to, plastic shrinkage, drying shrinkage, cracking due to volume changes from temperature variations, and load induced cracking. The planning, mitigation, and control of unwanted random cracking is the responsibility of the placing contractor and designer/owner. Please refer to NRMCA Concrete in Practice for additional information and best practices. (<https://www.nrmca.org/association-resources/research-and-engineering/cip/>).

Master Builders Solutions Admixtures US, LLC



March 04, 2022

**Geneva Rock
302 West 5400 South
Suite 200**

Attention: Frank Houston
Project: Various
Project location: Various

Certificate of Conformance
MasterAir® AE 90 Admixture (formerly MB-AE 90)
Admixture for Concrete

I, Richard Hubbard, Sr. Technical Specialist for Master Builders Solutions US LLC, Cleveland, Ohio, certify:

That MasterAir AE 90 admixture is a Master Builders Solutions Air-Entraining Admixture for concrete; and

That MasterAir AE 90 and MB AE 90 admixture are the same product having identical composition, differing only in designation; and

That no calcium chloride or chloride based ingredient is used in the manufacture of MasterAir AE 90 admixture; and

That MasterAir AE 90 admixture, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.000068 percent (0.68 ppm) chloride ions by weight of the cement when used at the rate of 65 mL per 100 kg (1 fluid ounce per 100 pounds) of cement; and

That MasterAir AE 90 admixture meets the requirements of ASTM C260, the Standard Specification for Air-Entraining Admixtures for Concrete, as well as the requirements for air-entraining admixtures as specified in Corps of Engineers' CRD-C 13 and AASHTO M154.

A handwritten signature in black ink that reads "Richard Hubbard III".

Richard Hubbard
Sr. Technical Specialist

Master Builders Solutions Admixtures US, LLC



March 04, 2022

**Geneva Rock
302 West 5400 South
Suite 200**

Attention: Frank Houston
Project: Various
Project location: Various

Certificate of Conformance
MasterPozzolith® 322
Master Builders Solutions Admixture

I, Richard Hubbard, Sr. Technical Marketing Specialist for Master Builders Solutions, Cleveland, Ohio, certify:

That MasterPozzolith 322 admixture is a Master Builders Solutions Water-Reducing Admixture for concrete; and

That MasterPozzolith 322 and Pozzolith 322N admixture are the same product having identical composition, differing only in designation; and

That no calcium chloride or chloride based ingredient is used in the manufacture of MasterPozzolith 322 admixture; and

That MasterPozzolith 322 admixture, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.00024 percent (2.4 ppm) chloride ions by weight of the cement when used at the rate of 65 mL per 100 kg (1 fluid ounce per 100 pounds) of cement; and

That MasterPozzolith 322 admixture meets the requirements for a Type A, Water Reducing, Type B, Retarding, and Type D, Water Reducing and Retarding Admixture specified in ASTM C494/C494M and AASHTO M194, the Standard Specification for Chemical Admixtures for Concrete, as well as the requirements for Type A, Type B and Type D admixtures as specified in Corps of Engineers' CRD-C 87.

A handwritten signature in black ink that reads "Richard Hubbard III".

Richard Hubbard
Sr. Technical Specialist