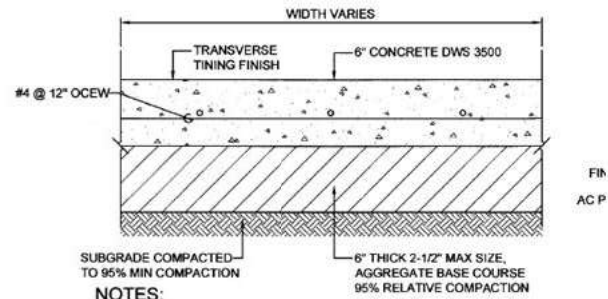


4. Pavement panels should be saw cut a minimum of 1/3 the depth of the pavement thickness with a pavement width to length ratio not exceeding 1:1.25 to control the pavement cracking. Pavement to have fine and rough brush finish surface treatment.

6" Portland Cement Concrete (PCC) 650 flexural strength design with 7.5 lbs per cubic yard of Macro structural fiber



NOTES:

1. TRANSVERSE JOINTS SHALL BE EITHER WEAKENED PLANE CONTRACTION JOINTS OR CONSTRUCTION JOINTS WITH DOWELS AND SHALL BE EVENLY SPACED A MAXIMUM OF 15 FEET APART.
2. LONGITUDINAL JOINTS SHALL BE EITHER WEAKENED PLANE JOINTS OR KEYED CONSTRUCTION JOINTS WITH TIE BARS. MAXIMUM SPACING BETWEEN JOINTS SHALL BE PROVIDED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
3. EXPANSION JOINTS WITH DOWELS SHALL BE LOCATED WHERE SHOWN ON PLANS.

CONCRETE PAVEMENT SECTION

SCALE: 1-1/2"=1'-0"

Portland Cement Concrete Mix Proportioning Summary



November 21, 2024

3443 Iwipo'o Rd, Lawai, HI 96765 808-332-6677

For: Hawaiian Dredging Construction Company
Project: Kalaheo Water System Improvements
Number: Job No. 09-01

Mix Class: 650 Flex
Mix Code: 650 FLEX-P4-F
Max Agg Size: 3/4"
Max Slump: 5 in **Air:** 3%
Placement Method: Tailgate

Weights per Cubic Yard

Material	Paste				Fine Aggregates		Coarse Aggregates		Total
	Cement	Water***	Admix	Air	Sand	Crushed Fines	3/8 Chips	3/4 Chips	
Source	Type IL Hawn Cem	County Dept of Water		3%	Mana	Kauai Agg	Kauai Agg	Kauai Agg	
SSD Weight, lbs.	642	283 lbs 33.9 gal	0.0 lbs 0.0 gal*		328	1317	297	1353	4220
Specific Gravity	3.14	1.00			2.60	2.87	2.88	2.95	
Absolute Volume, ft ³	3.28	4.53	0.00	0.81	2.02	7.35	1.65	7.35	27.00
Moisture, %									
Absorption, %					3.5	4.0	3.0	3.0	
Correction, %									
Correction, lbs.									
Batch Weight, lbs.	642	283	0		328	1317	297	1353	4227

W/C Ratio: 0.44

Sacks of Cement per CY = 6.8

Unit Weight: 156.6 pcf

Water per Sack of Cement = 5 gal

Admixtures:	Product	C494 Type	RANGE per cwt	RANGE fl oz per cy	Incl in W/C Ratio**	Product	C494 Type	RANGE per cwt	RANGE fl oz per cy	Incl in W/C Ratio**
ADVA 190	F	2.0 - 3.5	12.8 - 22.5	0	V-MAR 3	S	2 - 3.5	12.8 - 22.5	0	
EXP 950	F	0.0 - 1.0	0.0 - 6.4	0						
Total: 41.6 - 83.5 0										

Other:

Macro Fibers Strux 90/40 7.5 lb/cy

* Admixture quantity included in water/cement ratio

** dosage greater than 1/2 gallon per cubic yard included as free water (per HDOT 711.03)

*** ASTM C1602, 4.2, "Potable water is permitted to be used as mixing water in concrete without testing for conformance with the requirements of this specification." Source of Water is potable water from Kauai Department of Water Supply public main.

- Notes:**
- Mix design subject to modification in accordance with ASTM C 94 in order to maintain proper yield, strength, workability, and set time. Upon arrival at jobsite, metered mixing water may be added to the truckload, with proper approval, on a one time basis - not more than 1 gallon per cubic yard - in the event the concrete slump is less than specified and if within ninety minutes from the time truckload was batched.
 - Water reducing admixtures may be adjusted to achieve desired workability. Retarding, hydration stabilizing, and/or viscosity modifying admixtures may be adjusted as needed to accommodate delivery conditions. Type F Water Reducing admixtures indicated above may be used on jobsite to adjust slump, if needed to facilitate construction, and dosed in accordance with ACI 301-20, 4.3.2.1 at not more than 64 oz per cy.
 - Aggregate physical properties can vary. Typically the aggregates will not vary enough to affect batching or yield tolerances. If we do encounter a variance that will affect batching or yield tolerances, batch weights shown will be adjusted to maintain aggregate proportioning and mix yield.

By: Scott Pingrey
Mix Designer

Combined Aggregate Gradation Kauai Concrete and Rock

Contractor: Hawaiian Dredging Construction Company
Concrete: 650 FLEX-P4-F
Project: Kalaheo Water System Improvements
Type: Tailgate

November 21, 2024

Max Agg Size:

3/4"

Aggregate Gradations - % Passing by Weight

Sieve Size	Coarse			Fine			Combined	
	3/4 Chips	3/8 Chips	% Passing	Crushed Fines	Screened Sand	% Passing	Total % Passing	Total % Retained
1"	100	100	100	100	100	100	100	
3/4"	100	100	100	100	100	100	100	0
1/2"	63	100	70	100	100	100	85	15
3/8"	20	100	35	100	100	100	68	17
#4	2.0	12	4	98	100	99	52	16
#8	1.5	2.5	1.7	68	99	75	39.0	13
#16		2.0	0.4	43	96	55	28	11
#30				28	80	39	20	8
#50				19	64	29	15	5
#100				13	9.4	12	6	9
#200	1.0	1.0	1.0	8.3	1.3	6.8	4	2
% Used in Combined	40	9	49%	40	11	51%	100%	

Absolute Volumes, ft³ **7.352** **1.654** **7.352** **2.022** = 18.38 Cubic Feet

Lbs per CY **1353** **297** **1317** **328** = 3295 Lbs Combined Agg Voids 25.0%

*SSD SG 2.95 2.88 2.937 2.87 2.60 2.812 Paste % 31.9%

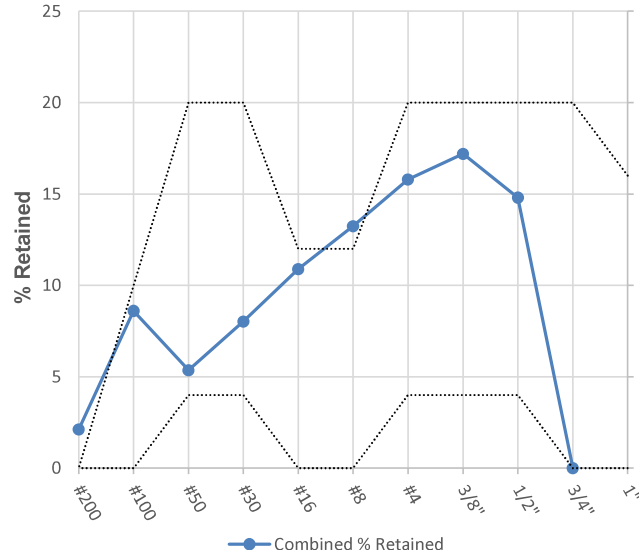
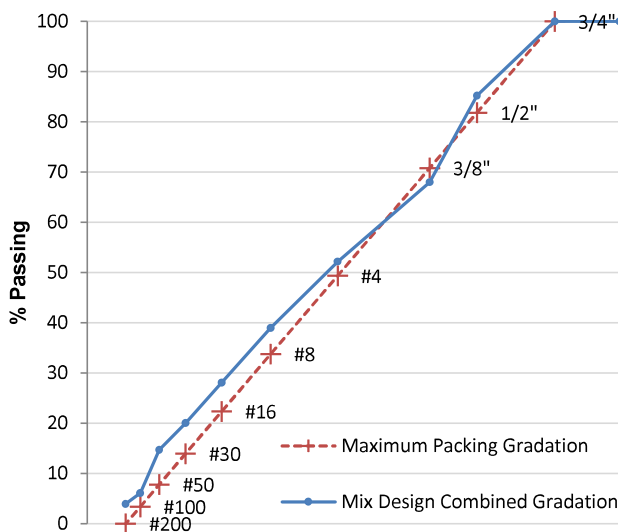
*Absorption % 3 4 3.2 4.0 3.5 3.9 Paste to Voids 1.28

*Sand Equivalent 76 81 77.1

* Values shown are averages determined from our routine QC Lab testing results. Verification testing has been performed within thirty days of the date shown at the top of this page to assure current production conforms, within acceptable tolerances, to these averages. All testing has been performed in accordance with the following ASTM standard procedures: Aggregate Sieve Analysis per C136, C117; Specific Gravity per C127, C128; Sand Equivalent per D2419; Voids Content per C29.

Cement	Water	Paste	8.62 ft ³	#4 to #100 Fineness Modulus	Concrete Factors
641.955 lbs	283 lbs	Aggregates	18.38 ft ³	Sand	Coarseness
w/c = 0.44	Air = 3%	Total	27.00 ft ³	1.52	52
				Combined FA	Workability
				2.92	41
				#30 to #200 (24-40)	Mortar
				31%	58
				#8 to #30 (>20)	
				32%	

Packing Exponent: 0.45



Kauai Aggregates

PO Box 366 • Lawai, HI 96765 • 808-332-6677



Certificate of Compliance

November 21, 2024

To: Hawaiian Dredging Construction Company
Project: Kalaheo Water Systems Improvements

This letter is our certification that the aggregates designated as 3F, 3/8 Chips, and Crushed Fines on the Kauai Concrete mix proportioning form for your above referenced project are manufactured by Kauai Aggregates at our Wahiawa quarry. The material designated as Sand is natural sand mined from the Mana plain on the west end of Kauai and is processed at our quarry.

The material designated as 3F meets the specification for ASTM C 33 (and AASHTO) No. 57 coarse aggregate and will be blended with the 3/8 Chips such that the resulting blend will meet the specifications for ASTM C 33 (and AASHTO) No. 67 coarse aggregate.

The material designated as Crushed Fines conforms to HDOT Standard Specification Section 703.01, Fine Aggregate for Concrete, Table 703.01-4, when blended with our natural sand. The blended fine aggregate combination also meets the requirements of ASTM C 33 - 03, Section 6, Fine Aggregates, with emphasis on the Notes section. The sand is clean, free from sticks, dirt, organic matter or other deleterious substances.

Additionally, both fine and coarse aggregates demonstrate expansions of less than 0.04 percent at 28 days post-casting when evaluated in compliance with a modified ASTM C1260, due to the use of ASTM C595 Type IL Cement in the tests.

Also included in this submittal is a report from Construction Labs detailing further physical properties of the aforementioned materials listed on the Kauai Concrete Mix Design Proportioning Sheet.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Pingrey'. The signature is stylized with a large, looping 'P' and a horizontal line extending to the left.

Scott Pingrey

O. Thronas, Inc.
PO Box 269
Lawai, HI 96765

Date: 05/07/2024
Report: 12331.001

TEST REPORT

Project: Aggregate Qualification	W.O. No. 12331
Client: O. Thronas, Inc.	Received: 3/08/2024
Source: Kauai Quarry	Sample #: 12331

Sieve Analysis C136, C117	<i>106/206 - 3/4 Chips</i>		<i>110 - 3/8 Chips</i>		<i>108 - Crushed Fines</i>	
	#5 113	3 Fine #57 #67	Chips #8 3/8	4 Fine 108	Screened Sand	
Screen	Result	Result	Result	Result	Result	Result
1 1/2"	100					
1"	87	100				
3/4"	36	100				
1/2"	4	59	100			
3/8"	2	26	100	100	100	100
#4	1	2	12	97	100	100
#8	1	2	2	58	99	99
#16		1	1	36	95	95
#30				25	79	79
#50				18	62	62
#100				12	14	14
#200	0.3	0.3	0.7	8.4	0.8	0.8
SE D2419				81	94	94
Specific Gravity C127, C128	#5 113	3 Fine #57	Chips #8	4 Fine 108	Screened Sand	
Apparent	2.962	2.977	3.047	3.134	2.759	
SSD	2.803	2.866	2.907	2.978	2.608	
Bulk Dry	2.722	2.810	2.838	2.906	2.523	
Absorption %	3.0	2.0	2.4	2.5	3.4	
LA Abrasion % C131	23.6	19.2	18.8	N/A	N/A	
Fractures Faces %	100	100	100	N/A	N/A	
Organic Impurities C40	N/A	N/A	N/A	0**	0**	
Soundness Loss % C88	4.2	3.1	3.4	7.9	8.3	
Cleanliness Value CT227	98	98	98	98	98	

**Lighter than Standard Color

CONSTRUCTION ENGINEERING LABS, INC.



By: Ronald A. Pickering II
Its: President

Lab report included to show the physical properties and test results for the aggregates, highlighted in red.

Refer to "Combined Aggregate Gradation" sheet for current gradations of mix components

**PORTLAND LIMESTONE CEMENT CONFORMING TO
ASTM C595/C595M-21 TYPE IL, SCG Bangkok Thailand**

Physical properties	Unit	Specification	Test Results	Test Method
Air content of mortar	%	12 Max	7.8	ASTM C 185
Autoclave expansion	%	0.80 Max	0.03	ASTM C151/C151M
Blaine	cm ² /g	A	4410	ASTM C 204
Mass density	g/cm ³	A	3.14	ASTM C 188
Heat of Hydration	J/g(cal/g)	**	301	ASTM C1702
Mortar Bar Expansion *	%	< 0.020	0.004	ASTM C1038
Sulfate Resistance	%	0.10 Max ***	0.07	ASTM C1012
Compressive Strength				
3 days	PSI/MPa	1890 (13.0)	5470 (37.7)	ASTM C 109/C109M
7 days		2900 (20.0)	5900 (40.7)	
28 days		3620 (25.0)	7210 (49.7)	
Time of setting (Vicat)				
Initial set	Minutes	45 Min	120	ASTM C 191
Final set		420 Max	180	
Retained content on				
.+Sieve 45µm	%	10.0 Max	1.45	ASTM C 430
Chemical properties				
MgO	%	A	1.3	ASTM C114
SO ₃	%	3.0 Max*	2.7	
Loss on ignition (LOI)	%	10 Max	4.8	
Insoluble Residue	%	A	Mill Cert-0.47	
Limestone in cement	%	5.0-15.0	8.36	
CaCO ₂ in Limestone	%	70 or >	96.17	
SiO ₂	%	A	19.3	
Al ₂ O ₃	%	A	3.7	
Fe ₂ O ₃	%	A	2.8	
CaO	%	A	65.5	
K ₂ O	%	A	0.49	
Na ₂ O	%	A	0.24	
R ₂ O (Total alkalis)	%	A	0.56	
Chloride content	%	A	0.04	

Remark:

This cement meets ASTM C595 and AASHTO M240 Specification for Type IL Portland Limestone Cement.

A = Not applicable.

** = Default table maximum may be exceeded if C1038/C1038M limit is met.*

*** = Meets 3d Moderate Heat – MH*

****=Meets 180d Moderate Sulfate – MS*

October 22, 2024

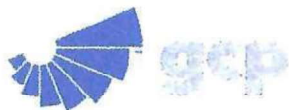


Daniel K. Paaaina III

Chemist

1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile



January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **ADVA 190**

This is to certify that **ADVA 190**, a high range and water reducing admixture, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Standard Specification for Chemical Admixtures for Concrete, ASTM C 494 Type A and F (AASHTO M 194 Type A and F) and ASTM C1017.

ADVA 190 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

A handwritten signature in black ink, appearing to read 'Robert J. Hoopes', is written over a horizontal line.

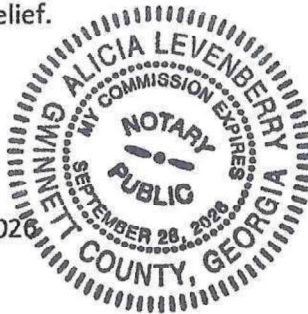
Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

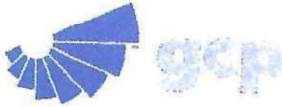
STATE OF GEORGIA
COUNTY OF FULTON

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

A handwritten signature in blue ink, appearing to read 'Alicia Levenberry', is written over a horizontal line.
Notary Public

My commission expires: _____ September 28, 2026





1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile

January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **EXP 950**

This is to certify that **EXP 950**, a high range and water reducing admixture, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Standard Specification for Chemical Admixtures for Concrete, ASTM C 494 Type A and F (AASHTO M 194 Type A and F) and ASTM C1017.

EXP 950 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

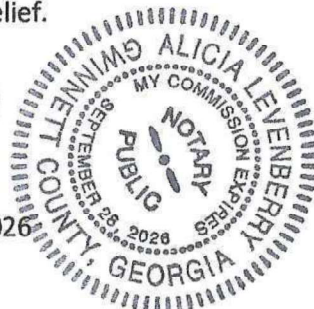
Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

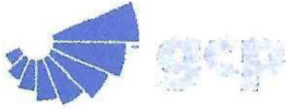
**STATE OF GEORGIA
COUNTY OF FULTON**

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

Notary Public

My commission expires: _____ September 28, 2026





1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile

January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **Recover**

This is to certify that **Recover**, a water reducing and retarding admixture, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Standard Specification for Chemical Admixtures for Concrete, ASTM C 494 Type D (AASHTO M 194 Type D) .

Recover does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

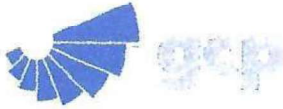
**STATE OF GEORGIA
COUNTY OF FULTON**

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

Notary Public

My commission expires: _____ September 28, 2026





1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile

January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **VMAR-3**

This is to certify that **VMAR-3**, a rheology modifying admixture, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Standard Specification for Chemical Admixtures for Concrete, ASTM C 494 Type S (AASHTO M 194 Type S) Specific Performance.

VMAR-3 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

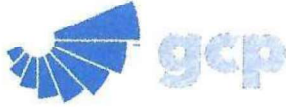
STATE OF GEORGIA
COUNTY OF FULTON

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

Notary Public

My commission expires: _____ September 28, 2026





1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile

January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **ZYLA 610**

This is to certify that **ZYLA 610**, a water reducing and retarding admixture, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Standard Specification for Chemical Admixtures for Concrete, ASTM C 494 Type A and D (AASHTO M 194 Type A and D).

ZYLA 610 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

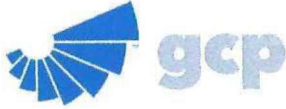
**STATE OF GEORGIA
COUNTY OF FULTON**

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

Notary Public

My commission expires: _____ September 28, 2026





1000 Research Drive
Wilmington, MA 01887

Robert J. Hoopes
Product Development Engineer
(617) 498-4816 Office
(508) 878-2397 Mobile

January 5th, 2024

To whom it may concern
Bomat Holdings Co., Bonded Materials
91-400 Komohama Street
Kapotei, Hawaii 96707

Project Name: Annual Recertification
Product Selected: **STRUX® 90/40**

This is to certify that **STRUX® 90/40** Synthetic Macro Fiber Reinforcement is a monofilament fiber and has been designed specifically for use in concrete and is manufactured from a blend of polypropylene and polyethylene.

STRUX 90/40 Synthetic Macro Fiber Reinforcement complies with ASTM C 1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete, Section 4.1.3, Synthetic Fiber-Reinforced Concrete or Shotcrete.

STRUX 90/40 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts as contributed from the process water used in manufacturing.

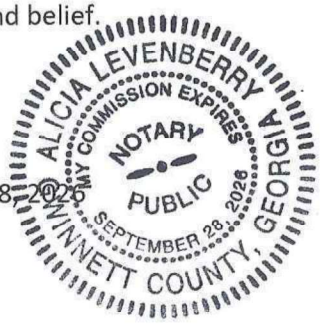
Robert J. Hoopes
Product Development Engineer
GCP Applied Technologies Inc.

**STATE OF GEORGIA
COUNTY OF FULTON**

On this 26th day of October 2023, before me, the undersigned Notary Public, appeared ___ Robert Hoopes __, proved to me through personal knowledge of identity to be the person whose name is signed on this document, and who swore to me that the contents of this document are truthful and accurate to the best of his knowledge and belief.

Notary Public

My commission expires: _____ September 28, 2026





November 21, 2024

To: Hawaiian Dredging Construction Company
Regarding: Slump for Portland Cement Concrete Pavement

The attached concrete mix proportioning forms for Portland cement pavement concrete show a maximum slump of 5 inches, which is higher than the maximum stipulated in Table 601.03-3.

To offset the risk of issues that might occur at the higher slump we have added the viscosity modifier V-Mar 3, which increases viscosity and, accordingly, cohesiveness (mix stickiness). The dosage is the same as we apply to higher slump pump mixes to prevent segregation without inhibiting workability.

Attached is product literature for V-Mar 3, which explains the benefits of this admixture.

Sincerely,

A handwritten signature in black ink that reads "Sarah Correa". The signature is written in a cursive style.

Sarah Correa

V-MAR[®] 3 Data Sheet

Concrete rheology-modifying admixture ASTM C494 Type S

Product Description

V-MAR[®]3 is a high efficiency, liquid admixture designed to enable production of self-consolidating concrete (SCC) by modifying the rheology of concrete. V-MAR[®]3 works by increasing the viscosity of the concrete while still allowing the concrete to flow without segregation. V-MAR[®]3 is based on a unique, patented biopolymer and is manufactured under closely controlled conditions to provide uniform, predictable performance.

The V-MAR[®]3 admixture is supplied as a ready-to-use milky white liquid. One gallon weighs approximately 8.5 lbs (one liter weighs approximately 1.02 kg). V-MAR[®]3 admixture does not contain intentionally added chlorides.

Uses

V-MAR[®]3 is recommended for use in conjunction with ADVA[®]series superplasticizers to produce SCC.

V-MAR[®]3 enhances the ability to manufacture SCC by allowing for variations in aggregate gradations and moisture contents. This can greatly reduce the time required to develop SCC mixes, and to update and test new mix designs if raw materials change. In addition, V-MAR[®]3 allows for the production of SCC in applications where mix designs and materials can not be modified for SCC properties, such as exposed aggregate concrete.

V-MAR[®]3 can also be used to reduce pump pressures when pumping concrete and for underwater, antiwashout concrete applications.

Product Advantages

- Enables concrete and SCC mix flexibility when using less-than-optimal aggregate gradation and in presence of fluctuation of moisture content
- Modifies concrete rheological properties for improved workability
- Reduces segregation and bleed
- Enhances surface appearance
- Easy to dispense liquid admixture
- Normal set times
- Minimal impact on air entrainment

Advantages

Self-consolidating concrete produced with V-MAR[®]3 and ADVA[®]superplasticizers offers the following advantages:

- Moisture variation — consistent production of SCC even with normal moisture variation from batch to batch
- Self placement — vibration can be eliminated because SCC is highly flowable and will change shape under its own weight to self level and self consolidate within formwork
- No segregation — SCC is a flowable yet highly cohesive material that will not segregate and has significantly reduced bleeding
- No blocking — SCC can pass freely through narrow openings and congested reinforcement without aggregate “blocking” behind obstructions that stop the flow of concrete
- Reduced labor and improved productivity through faster and easier concrete placement with no vibration
- Improved labor safety, reduced plant noise levels and improved work environment
- Reduced wear and tear on forms by eliminating vibration
- Achievement of complete consolidation throughout concrete elements, even in thin walled, highly reinforced units

Addition Rates

V-MAR[®]3 is typically used at an addition rate of 10 to 40 fl oz/ yd³ (390 to 1550 mL/m³) of concrete.

Dosage requirements are based on water content in the mix. As water content increases, the V-MAR[®]3 requirement will increase. Typical water contents for SCC mixes are 280 to 320 lbs/ yd³ (166 to 190 kg/m³). At lower water content, use V-MAR[®]3 at the lower dosage range; at higher water content, dosage rates will be higher.

V-MAR[®]3 dosage requirements may also be affected by mix design, cementitious content, aggregate gradations and SCC application.

Use of ADVA[®]series superplasticizers is highly recommended for SCC production. Dosage rate requirements for superplasticizers are typically higher for SCC than for conventional concrete mixes. When producing SCC, admixtures (excluding air entrainers) should be added after the addition of the cementitious material and water.

Pre-placement testing and testing when materials or quantities change are recommended to determine the optimum admixture addition rate. Factors that influence optimum addition rate include other concrete mix components, aggregate gradations, form geometry and reinforcement configurations. Please consult your local GCP Applied Technologies representative for assistance with developing mix designs, admixture combinations and SCC production.

Compatibility with Other Admixtures

V-MAR[®]3 is intended for use with ADVA[®]series superplasticizers and in combination with all air-entraining agents. All applications should be tested prior to use. Each admixture should be added separately into the concrete mix and not come in contact with each other prior to entering the mix.

Packaging & Handling

V-MAR[®]3 is available in bulk, in totes, drums and pails.

V-MAR[®]3 will freeze at about 28 °F (-2 °C) but will return to full functionality after thawing and thorough mechanical agitation.

Dispensing Equipment

A complete line of accurate, automatic dispensing equipment is available.

Health and Safety

See V-MAR[®]3 SDS (Safety Data Sheet) or consult GCP Applied Technologies.

gcpat.com | North America Customer Service: 1 877-4AD-MIX1 (1 877-423-6491)

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

V-MAR and ADVA are trademarks, which may be registered in the United States and/or other countries, of GCP Applied Technologies, Inc. This trademark list has been compiled using available published information as of the publication date and may not accurately reflect current trademark ownership or status.

© Copyright 2018 GCP Applied Technologies, Inc. All rights reserved.

GCP Applied Technologies Inc., 2325 Lakeview Parkway, Suite 450, Alpharetta, GA 30009, USA

GCP Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6

This document is only current as of the last updated date stated below and is valid only for use in the United States. It is important that you always refer to the currently available information at the URL below to provide the most current product information at the time of use. Additional literature such as Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations and other relevant documents are also available on www.gcpat.com. Information found on other websites must not be relied upon, as they may not be up-to-date or applicable to the conditions in your location and we do not accept any responsibility for their content. If there are any conflicts or if you need more information, please contact GCP Customer Service.

Last Updated: 2022-08-17

gcpat.com/solutions/products/v-mar-admixtures/v-mar-3-data-sheet