



CONSTRUCTION LEADERS

LETTER OF TRANSMITTAL	
DATE: April 3, 2015	PCL JOB NO: 5515002
ATTN: Chris Barker	TRANSMITTAL NO: 051

To: **State of Vermont Agency of Transportation**
One National Life Drive

(802) 828-0053

Re: Hartford Lateral Slide
Project No.: IM 091-2(79)
Contract ID.: 12A132

County: Windsor

PCL FILE NO: 5515002-28.1

WE ARE SENDING Attached Under separate cover via Email & SP the following:

Shop drawings Prints Plans Samples Specifications

Copy of Letter Change Order Other

COPIES	SPEC.	REVISION	DESCRIPTION
1	707.03	1	Type IV Mortar

TRANSMITTED for as checked below:

For approval Approved as submitted Resubmit 1 Copies for approval

For your use Approved as noted Submit Copies for distribution

As requested Returned for corrections Return Corrected prints

For review and comment

Remarks:

The included mix design for type IV mortar has been revised to incorporate the use of MasterRoc FLC 100 as the admixture. If the Agency finds this mix design acceptable (pending final testing results) PCL will proceed with the required testing and results will be provided to the Agency for final approval.

Please return an email of this approved submittal to Erich Heymann (ewheymann@pcl.com) and Jeremy Mackling (jmackling@pcl.com).

We request the review and return of this submittal within 2 days. Please advise if this request cannot be met so we can plan accordingly.

By: **Erich Heymann**, Project Engineer

COPY TO: Project Files



CONSTRUCTION LEADERS

SUBMITTAL NO. : 28.1
Type IV Mortar

Item No.	Specification	Description
1	707.03	Type IV Mortar

PROJECT:
HARTFORD LATERAL SLIDE
PROJECT NO.: IM 091-2(79)
CONTRACT ID.: 12A132

OWNER:
STATE OF VERMONT AGENCY OF TRANSPORTATION

ENGINEER OF RECORD:
STATE OF VERMONT AGENCY OF TRANSPORTATION

CONTRACTOR:
PCL CIVIL CONSTRUCTORS, INC.

APRIL 3, 2015

**STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIAL AND RESEARCH SECTION - STRUCTURAL CONCRETE UNIT**

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Concrete class: Grout/Mortar
 Additional Description _____
 Ready Mix Supplier: CARROLL CONCRETE - W LEBANON, NH - RT 12A
 Designed By Scott Jordan
 Design strength _____ 5000 _____ PSI
 Mix Design Style: Conventional
 Agg weight - SSD or Dry: SSD

Agency Use Only	
Mix ID	GM00-0
Mix Design #	_____
Approved by	_____
Approved Date	_____
Spec Book Year	2011

Mix designs are valid for a 12 month period from date of approval or unless there is a change in material, material property or design parameter.

Cement:		Specific Gravity	<u>3.110</u>	<u>705</u> lb/cy	<u>3.63</u> cf
701.02	Source: <u>LAFARGE CANADA - ST CONSTANT, QUEBEC</u> Brand Name: _____				
Cement Type III:		Specific Gravity	_____	_____ lb/cy	_____ cf
701.04	Source: _____ Brand Name: _____				
Blended Cement:		Specific Gravity	_____	_____ lb/cy	_____ cf
701.06	Source: _____ Brand Name: _____				
Cement with Slag:		Specific Gravity	_____	_____ lb/cy	_____ cf
701.07	Source: _____ Brand Name: _____				
Pozzolan:		Specific Gravity	_____	_____ lb/cy	_____ cf
725.03(a)	Source: _____ Brand Name: _____				
Fly Ash:		Specific Gravity	_____	_____ lb/cy	_____ cf
725.03(a)	Source: _____ Brand Name: _____				
Silica Fume:		Specific Gravity	_____	_____ lb/cy	_____ cf
725.03(b)	Source: _____ Brand Name: _____				
Slag:		Specific Gravity	<u>2.930</u>	<u>235</u> lb/cy	<u>1.29</u> cf
725.03(c)	Source: <u>LAFARGE - NEWCEM SLAG - BALT, MD</u> Brand Name: _____				
Water			<u>45</u> gals	<u>375.53</u> lb/cy	<u>6.02</u> cf
Air Content Target			<u>3.0</u> %		<u>0.81</u> cf
Coarse Aggregate 3/8"	Absorption _____	Specific Gravity	_____	_____ lb/cy	_____ cf
704.02A	Source: _____				
Coarse Aggregate 3/4"	Absorption _____	Specific Gravity	_____	_____ lb/cy	_____ cf
704.02B	Source: _____				
Coarse Aggregate 1 1/2"	Absorption _____	Specific Gravity	_____	_____ lb/cy	_____ cf
704.02C	Source: _____				
Fine Aggregate:	Absorption <u>1.40</u>	Specific Gravity	<u>2.700</u>	<u>2529</u> lb/cy	<u>15.01</u> cf
704.01	Source: <u>LEBANON CRUSHED STONE - W LEBANON, N</u> Fineness Modulus <u>2.78</u>				
Air Entrainment Admixture		Specific Gravity	_____	_____ oz/cy	
725.02(b)	Source: _____ Brand Name: _____				
Retarder Admixture:		Specific Gravity	_____	<u>0.5</u> oz/cwt	
725.02(c)	Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u> Brand Name: <u>MasterSet R100</u>				
High Range Water Reducer Admixture:		Specific Gravity	_____	<u>4</u> oz/cwt	
725.02(h)	Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u> Brand Name: <u>MasterGlenium 7500</u>				
Other Admixtures:		Specific Gravity	<u>1.690</u>	<u>25</u> lb/cy	<u>0.24</u> cf
Specific performance admixture					
725.02(i)	Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u> Brand Name: <u>MasterRoc FLC 100</u>				
	Source: _____ Brand Name: _____	Specific Gravity	_____	_____ oz/cwt	_____ cf
	Source: _____ Brand Name: _____	Specific Gravity	_____	_____	_____ cf
	Source: _____ Brand Name: _____	Specific Gravity	_____	_____	_____ cf
		TOTAL	<u>55.320</u>	<u>3869.5</u> lb	<u>27.00</u> cf
		Maximum Water/Cementitious Ratio	_____		
		Maximum Water (gal/cy)	<u>0.0</u>		
		Slump Min/Max (inch)	<u>6.0</u> min	<u>11.0</u> max	
		Air Content Min/Max (%)	<u>2.0</u> min	<u>6.0</u> max	
		Design Unit Wt. (lb/cf)	<u>143.32</u>		

Notes:

MasterRoc[®] FLC 100

Powdered Additive for Cementitious Grouts

Formerly MEYCO Flowcable*

Description

MasterRoc FLC 100 is a special multicomponent rheoplastic additive used in cement-based grouts to reduce the mixing water requirements and produce a flowable, pumpable, thixotropic, non-shrink, non-segregating, high-strength grout with any type of portland cement. MasterRoc FLC 100 additive is used in grouts for rock and ground support and stabilization, as well as grout used for the protection of post-tensioned cables in prestressed concrete and for full encapsulation of tunnel and mine rock bolts and anchors.

Applications

Recommended for use in:

- Neat cement or cement-sand grouts for anchoring applications in rock and concrete
- Grouts used in tunneling, dams, mining or other geotechnical operations
- Preplaced aggregate grouting
- Contact and consolidation grouting

Features

When used in the recommended applications, MasterRoc FLC 100 additive produces a thixotropic grout with the following unique properties:

- Low water-cement ratio
- Bleedwater control
- High-early strength¹
- Long potlife (open time)¹
- High ultimate strength¹

¹ These parameters are dependent upon the type of cement used in the grout.

Benefits

- Pumps and places more easily
- Shrinkage-compensating
- Dense and compact, ensuring maximum protection of steel members against corrosion caused by aggressive agents

Performance Characteristics

Dosage: MasterRoc FLC 100 additive is formulated to be used at a dosage in the range of 2.5-6.0 lb/cwt (2.5-6.0 kg/100 kg) of cementitious material. Dosages may vary according to application and desired concrete properties. For dosages outside the recommended range, contact your local sales representative.

Mixing: MasterRoc FLC 100 additive should be uniformly distributed in the mixing water when possible before the other solids are added.

Product Notes

MasterRoc FLC 100 additive is not recommended for precision grouting of machinery, column bases, etc.

Storage and Handling

Storage Temperature: MasterRoc FLC 100 additive should be stored in unopened packaging in clean, sheltered, dry conditions between 50 and 90 °F (10 and 32 °C).

Shelf Life: MasterRoc FLC 100 additive has a shelf life of 12 months when properly stored. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use if the shelf life of MasterRoc FLC 100 additive has been exceeded.

Packaging

MasterRoc FLC 100 additive is supplied as a dry powder in 25 lb (11.4 kg) moisture resistant bags.

Related Documents

Safety Data Sheets: MasterRoc FLC 100 additive.

Additional Information

For additional information on MasterRoc FLC 100 additive, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.

Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

* MEYCO Flowcable became MasterRoc FLC 100 under the Master Builders Solutions brand, effective October 1, 2013.