

KUBRICKY CONSTRUCTION CORP.
269 BALLARD ROAD

WILTON, NY 12831
518 792-5864



Rutland City BRF 3000 (2014036)
SUBMITTAL 17.4

Issued 04/09/15
Respond by 04/16/15

To

Timothy Pockette, PE

Topic	Drilled Shaft Contingency - Flowable Fill Plan
Status	For Approval
Spec section	900.640
Responsibility	(16) River Street
Received from submitter	4/8/15
Sent to approver	4/9/15
Required from approver	4/16/15

Message

Tim,
As you know, we have started using slurry to advance our hole for the drilled shaft. Buffalo Drilling would like to have the attached procedure for using flowable fill reviewed as a contingency plan. At this point we do not plan to use flowable fill but would like to know if this procedure would be acceptable to VTrans.
Thank You,
Volker

From

Volker H.D. Burkowski

Signed by

Date

4/9/15

Proceed as Indicated

Owner Authorized Representative

Date

April 6th, 2015

Mr. Donald Bortle
Buffalo Drilling Company
10440 Main Street
Clarence, NY 14031

Dear Mr. Bortle,

Here is a procedure that works when running sands or aquifer situations arise during drilling.

Flowable Fill Procedures

In the event that polymer slurry is not capable of holding caving sands or flowing aquifers, flowable fill is required to fill the hole or a specific zone of the shaft. After the flowable fill has set up drilling resumes and when the flowable fill is excavated it creates a fill type casing. Below are the steps typically used to complete the process.

- The hole is typically full or almost full of slurry. A tremie pipe is lowered to the bottom of the hole and flowable fill is pumped from the bottom up.
- As the hole fills, the slurry will be pushed back up through the top. A pump is placed at the top and the slurry is pumped back into a baker/adler tank for reuse.
- The bottom 10 feet of slurry is discarded since it is typically contaminated beyond repair from contact with the with cement.
- When the hole or specified zone is filled, general cure time is dependent on the size of the shaft and the curing rate of the slurry.
- When the fill is ready to be re-drilled, sodium bicarb is needed on site. It is pH neutral and will help the slurry from breaking down with the high pH fill.
- When drilling commences and slurry is added back to the hole, sodium bicarb is added at 3 to 5 lbs per 1,000 gal. This should be sufficient to treat any pH problems.
- If either permanent or temporary casing are being used, the casing can be left in place, raised to an elevation above the zone to be flow filled, or completely removed if the entire shaft is to be filled. We will be raising the casing up five to ten feet as the flowable fill is pumped into the shaft and will leave the temporary casing resting a couple of inches into the freshly poured fill to be drilled out when drilling resumes.

Best Regards,

Bridger Cottle
Certified CETCO Slurry Consultant

North America: 847.851.1800 | 800.527.9948 | www.CETCO.com

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

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Concrete class: Flowable Fill
 Additional Description _____
 Ready Mix Supplier: CARRARA, JP & SONS INC - E MIDDLEBURY, VT
 Designed By Robert Carrara
 Design strength _____ 115 _____ PSI
 Design by dry weight or saturated surface dry: SSD

Agency Use Only	
Mix ID	FF00-0
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>3.150</u>	<u>100</u> lb/cy	<u>0.51</u> cf
701.02	Source: <u>LEHIGH NORTHEAST CEMENT CO - CATSKILL, NY</u> Brand Name: <u>Type II</u>				
Cement Type III:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
701.04	Source: _____ Brand Name: _____				
Blended Cement:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
701.06	Source: _____ Brand Name: _____				
Cement with Slag:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
701.07	Source: _____ Brand Name: _____				
Pozzolan:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
725.03(a)	Source: _____ Brand Name: _____				
Fly Ash:		Specific Gravity	<u>2.320</u>	<u>200</u> lb/cy	<u>1.38</u> cf
725.03(a)	Source: <u>HEADWATERS RESOURCES - BRAYTON POINT, MA</u> Brand Name: <u>Class F</u>				
Silica Fume:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
725.03(b)	Source: _____ Brand Name: _____				
Slag:		Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
725.03(c)	Source: _____ Brand Name: _____				
Water			<u>27</u> gals	<u>225.32</u> lb/cy	<u>3.61</u> cf
Air Content Target			<u>30.0</u> %		<u>8.1</u> cf
Coarse Aggregate 3/8"	Absorption _____	Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
704.02A	Source: _____				
Coarse Aggregate 3/4"	Absorption _____	Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
704.02B	Source: _____				
Coarse Aggregate 1 1/2"	Absorption _____	Specific Gravity	_____	_____ lb/cy	<u>0.00</u> cf
704.02C	Source: _____				
Fine Aggregate:	Absorption <u>1.05</u>	Specific Gravity	<u>2.663</u>	<u>2227</u> lb/cy	<u>13.40</u> cf
704.01	Source: <u>PIKE IND PIT - DANBY, VT</u> Fineness Modulus <u>2.85</u>				
Air Entrainment Admixture		Specific Gravity	_____	<u>3</u> oz/cy	
725.02(b)	Source: <u>W.R. GRACE & CO. - CAMBRIDGE, MA</u> Brand Name: <u>Darafill</u>				
Retarder Admixture:		Specific Gravity	_____	_____ oz/cwt	
725.02(c)	Source: _____ Brand Name: _____				
High Range Water Reducer Admixture:		Specific Gravity	_____	_____ oz/cwt	
725.02(h)	Source: _____ Brand Name: _____				
Other Admixtures:		Specific Gravity	_____	_____	<u>0.00</u> cf
	Source: _____ Brand Name: _____				
		Specific Gravity	_____	_____	<u>0.00</u> cf
	Source: _____ Brand Name: _____				
		Specific Gravity	_____	_____	<u>0.00</u> cf
	Source: _____ Brand Name: _____				
		TOTAL	<u>61.983</u>	<u>2752.3</u> lb	<u>27.00</u> cf
		Maximum Water/Cementitious Ratio	<u>0.83</u>		
		Maximum Water (gal/cy)	<u>29.8</u>		
		Slump Min/Max (inch)	_____ min	<u>7.0</u> max	
		Air Content Min/Max (%)	<u>10.0</u> min	<u>40.0</u> max	
		Design Unit Wt. (lb/cf)	<u>101.94</u>		

Notes: