

ENX Inc.  
 Acheson Terminal  
 10798 HWY 60  
 Acheson, AB T7X 6N5

Report Date: July 30, 2021  
 Project Number: 19-01608-002  
 Revision: 0

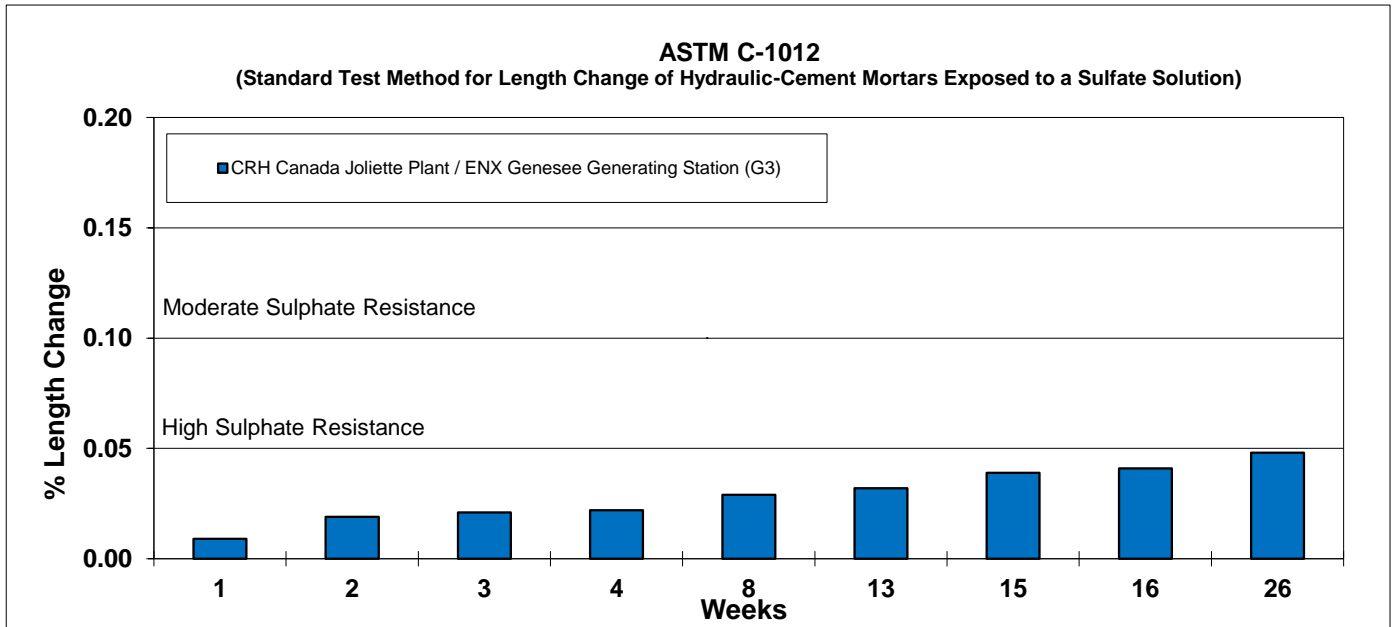
Attention: Mr. Paul Johnson

<b>Cement Type</b>	<b>CRH Canada Joliette Plant, CSA Type GU</b>
<b>Fly Ash Type</b>	<b>ENX Genesee Generating Station (G3), Type F</b>

TEST MIX PROPORTIONS		SPECIFICATIONS	
Cement, CSA Type GU (g)	592	Test Start Date	January 6, 2021
Fly Ash, CSA Type F (g)	148	Compressive Strength (min)	20 MPa (2850 psi)
Standard Graded Sand (g)	2035	For Moderate Sulphate Resistance	<b>Expansion &lt; 0.10% at 6-months</b>
Water (ml)	341	For High Sulphate Resistance	<b>Expansion &lt; 0.05% at 6-months</b>
Water/Cementitious Ratio	0.461		
Flow (%)	110		


SULPHATE EXPANSION TEST RESULTS										
Age	Initial	1 Week	2 Weeks	3 Weeks	4 Weeks	8 Weeks	13 Weeks	15 Weeks	4 Months	6 Months
# Weeks	0	1	2	3	4	8	13	15	16	26
<b>Length Change (%)</b>	-	<b>0.009</b>	<b>0.019</b>	<b>0.021</b>	<b>0.022</b>	<b>0.029</b>	<b>0.032</b>	<b>0.039</b>	<b>0.041</b>	<b>0.048</b>

- (1) Six mortar bars were prepared for the test mix in accordance with the procedures described in ASTM C1012. Mix proportions are reported above.  
 (2) The specimens were then stored in sulphate solution at  $23.0 \pm 2.0^\circ\text{C}$  ( $73.5 \pm 3.5^\circ\text{F}$ ) for six (6) months.  
 (3) Visual condition after taking the 6-month measurement; the samples did not show any signs of bowing, mottling or surface deposits.



- Comments:
- The average expansion for the specimens after six (6) months is 0.048% which is below the maximum expansion limit of 0.05% as per CSA A23.1-19 clause 4.1.1.6. Results show that the proposed combination with 20% fly ash is effective to provide high sulphate resistance.
  - Testing performed in accordance with CSA, ASTM and Concrete Reference Laboratory (CCRL) certification requirements.

Reported by: TM

Reviewed by:   
 G. Lecuyer, P. Eng. - Materials Engineer



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