

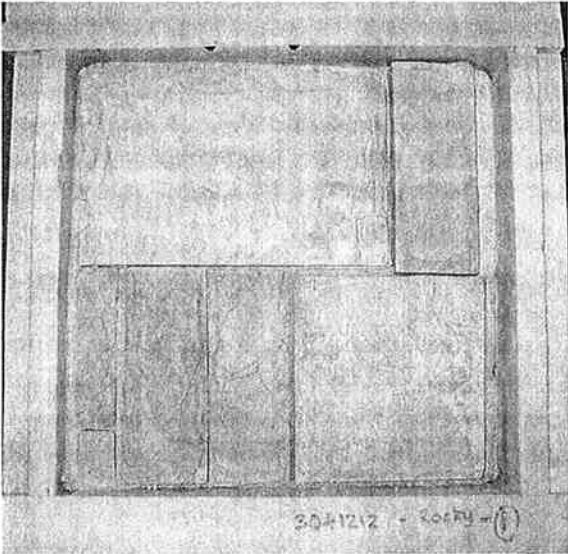


# ETL SEMKO

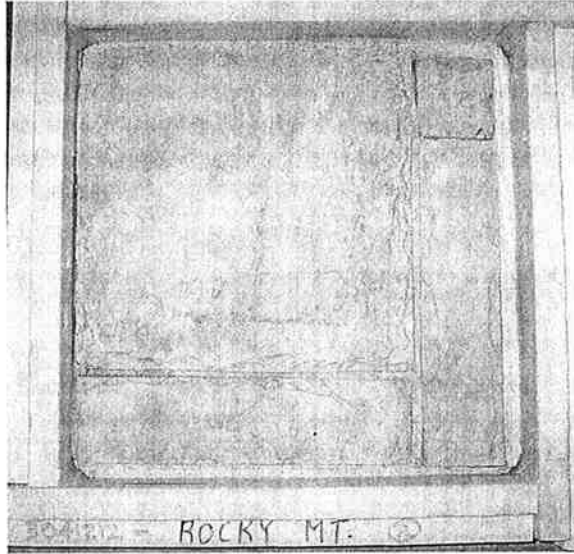
**Test:** Freeze Thaw  
**Date:** 03/08/21  
**Client:** Rocky Mountain Stone  
**Project No:** 3041212  
**Product:** Manufactured concrete stone  
**Test Method:** CCMC MasterFormat Number: 07483, section 6.5.5 (2001)  
 Cladding Systems Using Adhered Manufactured Concrete Stone  
**Conditioning:** August 21, 2003 - Commenced damp cure for 7 days at 23 ± 2°C  
 August 28, 2003 - 21 days at 23 ± 2°C and 50 ± 5% relative humidity  
**Exposure cycle:** Water immersion for 7 days at 20 ± 2°C  
 12 cycles, air temperature from +20 ± 5°C to -20 ± 3°C in 2.5 ± 1.5 hours  
 12 cycles, air temperature from 20 ± 5°C to -5 ± 1°C in 1.75 ± 0.75 hours  
**Equipment:** Ohaus balance (Intertek ID D2733)  
 Fluke 52II meter (Intertek ID D2679)  
 Cold Chamber (Intertek ID C04583)

Date (m/dd/yy hh:mm)	Measurement	Specimen 1	Specimen 2
10/2/03 5:00 PM	Initial Weight (lbs):	32.6	29.3
10/9/03 5:00 PM	Weight after 7 day immersion (lbs):	34.3	32.5
	Water Absorption (% by mass):	5.2	10.9
11/14/03 5:00 PM	Weight after freeze/thaw cycling (lbs):	36.2	33.1
---	Weight after drying (lbs):	---	---
7/23/04 8:30 AM	Weight after drying (lbs):	32.2	29.3
	Loss of mass (% by mass):	-1.23	0.00

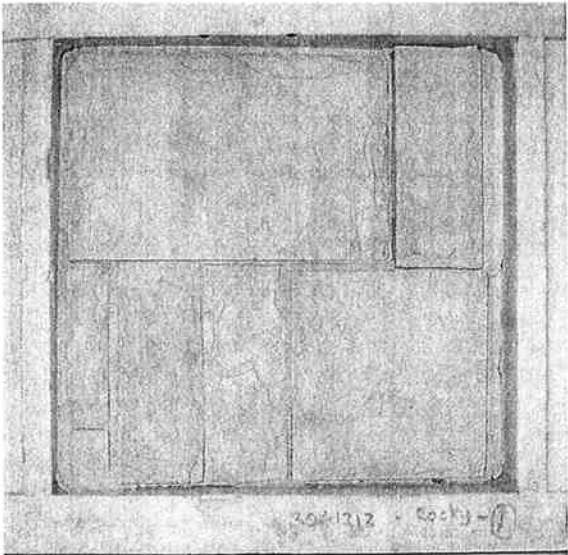
Test: **Freeze Thaw**  
Date: 03/10/02  
Client: Rocky Mountain Stone  
Project No: 3041212  
Product: Manufactured concrete stone



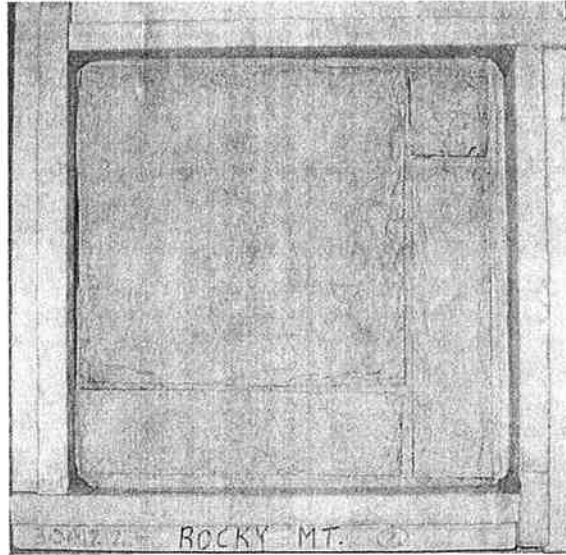
Specimen 1 - initial



Specimen 2 - initial



Specimen 1 - final



Specimen 2 - final

Test: **Freeze Thaw**  
 Date: 03/10/09  
 Client: Rocky Mountain Stone  
 Project No: 3041212  
 Product: Manufactured concrete stone

Date	Cycle	Air temperature (°C)	Freezing phase	Thawing phase		Draining phase		Freezing phase	
			Out (hh:mm)	In (hh:mm)	Out (hh:mm)	In (hh:mm)	Out (hh:mm)	In (hh:mm)	
9-Oct-03	1	-20				11:15 AM	11:30 AM	11:30 AM	
10-Oct-03			8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
11-Oct-03									
12-Oct-03									
13-Oct-03									
14-Oct-03	2	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
15-Oct-03	3	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
16-Oct-03	4	-26	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
17-Oct-03	5	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
18-Oct-03									
19-Oct-03									
20-Oct-03	6	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
21-Oct-03	7	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
22-Oct-03	8	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
23-Oct-03	9	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
24-Oct-03	10	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
25-Oct-03									
26-Oct-03									
27-Oct-03	11	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM	
28-Oct-03	12	-20	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM		

Visual examination: No change

Test: **Freeze Thaw**  
 Date: 03/10/29  
 Client: Rocky Mountain Stone  
 Project No: 3041212  
 Product: Manufactured concrete stone

Date	Cycle	Air temperature (°C)	Freezing phase	Thawing phase		Draining phase		Freezing phase
			Out (hh:mm)	In (hh:mm)	Out (hh:mm)	In (hh:mm)	Out (hh:mm)	In (hh:mm)
	1	-5						12:15 PM
29-Oct-03		-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
30-Oct-03	2	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
31-Oct-03	3	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
1-Nov-03								
2-Nov-03								
3-Nov-03	4	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
4-Nov-03	5	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
5-Nov-03	6	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
6-Nov-03	7	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
7-Nov-03	8	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
8-Nov-03								
9-Nov-03								
10-Nov-03	10	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
11-Nov-03								
12-Nov-03	11	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM
13-Nov-03	12	-5	8:00 AM	8:00 AM	12:00 PM	12:00 PM	12:15 PM	12:15 PM

Visual examination: No signs of delamination, cracking or spalling.  
 Some colour change apparent.