SPRATT EMANUEL
ENGINEERING LTD.

2348 Yukon Street
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OBSERVATION REPORT

Project: **Strata Plan LMS 280 – Chateau Comox**
1272 Comox Street
Vancouver, B.C.

File No. S18-558
Report No. 7
Date: Jul 04, 2019
Weather: Overcast, 16°C

Client: Strata Plan LMS 280 – Chateau Comox
c/o Southview Property Management
110 – 7580 River Road
Richmond, B.C. V6X 1X6

Attention:	Mr. Kevin Green	kevingreen@telus.net
	Chateau Comox Strata Council	chateaucomox@gmail.com
	Mr. Chris Clark	dcclark333@gmail.com
	Mr. Don Davidson	dondavidson67@yahoo.ca
	Mr. Kevin Wice	krw@krw.ca

Contractor: Spectrum Painting Ltd.

Attention:	Mr. Adam Racanelli	adam@spectrumpaintingltd.com
	Mr. Sam Zukanovic	sam@spectrumpaintingltd.com

ITEM: Building Envelope Field Review

Item	Comment	Action By	Date Cleared	Cleared By
7.1	John Drinkwater, P.Eng. of Spratt Emanuel Engineering Ltd. (SEE) attended the above noted development on July 4, 2019 to conduct a building envelope field review. The following are the observations of the writer while on site.			
7.2	SEE reviewed completed work on Drops No. 4 and 5 with good workmanship observed. On Drop No. 5, a total of 100' of silicone 123 Tape has been installed at window and door jambs. These locations are within the re-caulking cope of work, caulking removal not required is credited at $15 per lineal foot per Appendix B to Bid, and extra silicone 123 Tape installation at $20 per lineal foot is substituted for a net extra of $5 per lineal foot in these work areas (Photos No. 7.1 to 7.3).			
7.3	At the Level 7 west balcony, Spectrum Painting has repainted rusted metal flashings, terminating at seams or joints neatly. Work appears good. SEE requested that the inside corner through-wall flashings also be repainted to address rusting which is occurring at the soldered joints (Photos No. 7.4 and 7.5).			

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7.4	At the southwest corner of the building, four of the balconies have exposed concrete with painted top horizontal surfaces. SEE recommends these balconies be recoated with polyurethane traffic membrane. SEE is submitting a Change Directive for pricing from the contractor under separate cover (Photo No. 7.6).	
7.5	Drop No. 5, Level 4: Spalled concrete and rusted steel reinforcement on the balcony parapet require repair by chipping and patching (Photo No. 7.7).	SP
7.6	Drop No. 5, Level 5: There are two instances of rusted reinforcing steel on the west face of the balcony. The steel reinforcement on the parapet upstand must be exposed with 1" clear space all around by chipping to remove the surrounding concrete. Concrete patching mortar followed by reapplication of new acrylic stucco finish shall follow. At the balcony soffit, the spalling due to rebar ends shall be repaired by patching, applying new acrylic finish, and repainting (Photos No. 7.8 to 7.10).	SP
7.7	SEE instructed Spectrum to paint the inside corner through-wall flashing joint which is beginning to rust (Photos No. 7.11 and 7.12).	
7.8	Spectrum Painting propose using BASF MasterEmaco N425 concrete patching mortar. This is an exterior grade vertical and overhead product with corrosion inhibitors, appropriate for use on the concrete spall repairs.	

PREVIOUS ACTIONABLE ITEMS

Item	Comment	Action By	Date Cleared	Cleared By
1.5	Drop No. 1, Level 8: Rusted steel and minor concrete spalls were uncovered along the concrete overhang and drip edge at the balcony. All loose concrete must be chipped away to expose 1" clear around the steel. The exposed steel shall be cleaned to a bright metal finish with a grinder then protected with a high zinc solid primer such as Galvacon. The concrete profile shall be reinstated with an overhead patching mortar such as Mapei Planitop and once secured, the acrylic stucco finish shall be reapplied (Photos No. 1.7 to 1.9).	SP		

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6.8 Drop No. 4: At the bottom of the barrel wall on the north face, there are three locations of exposed steel rebar of the concrete structure. At two locations on the wall face, SEE instructed the contractor to clean the steel to a bright metal finish, prime with a zinc rich primer then apply a patch of polyurethane sealant over and recoat with paint. The third spall located at the drip edge at the base of the barrel wall requires full concrete repair treatment. The concrete should be chipped away from the rusted steel to expose a minimum of 1" all sides. The steel should be cleaned to a bright finish and zinc rich primed, then new overhead concrete patching mortar shall be formed in place. Once secured, the concrete patch can be primed, new acrylic stucco finish laid overtop, and painted to match the walls (Photos No. 6.13 and 6.14). SP

OBSERVER:

John Drinkwater, P.Eng.

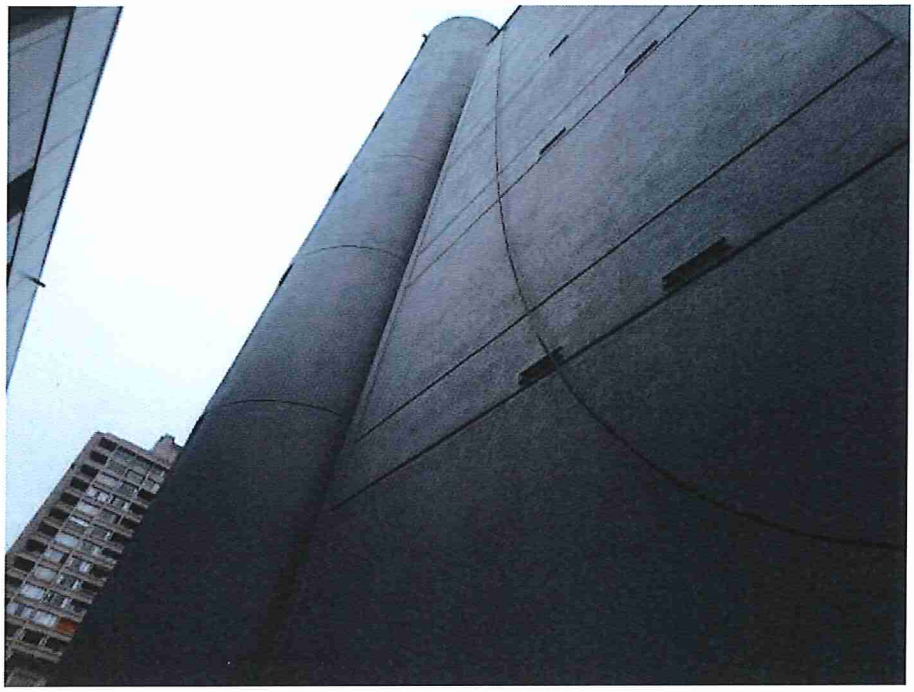
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. E. DRINKWATER
47087

REVIEWER:

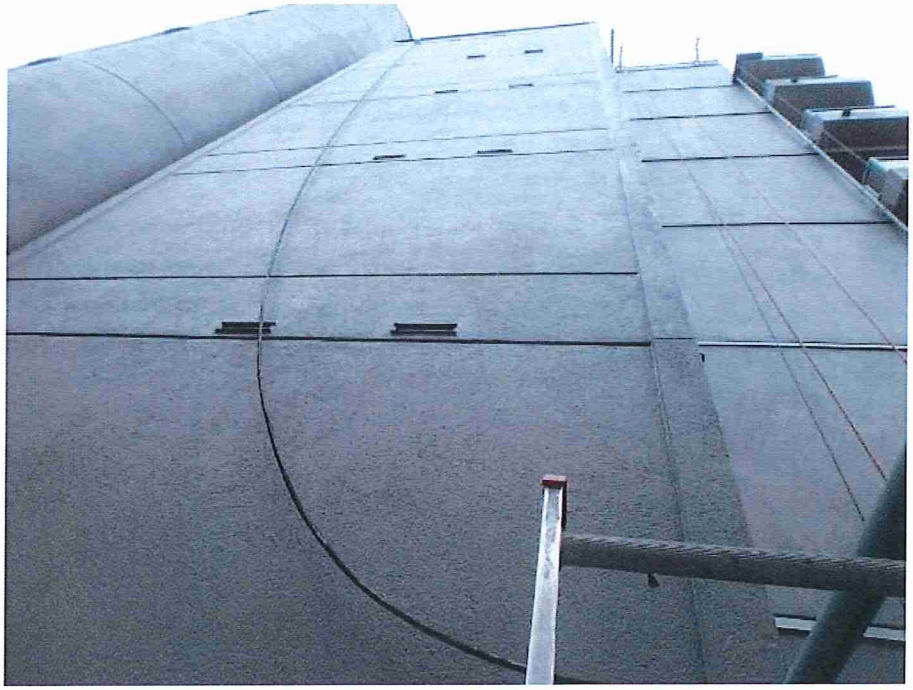
Mark W. Emanuel, P.Eng., Principal

JD / ke

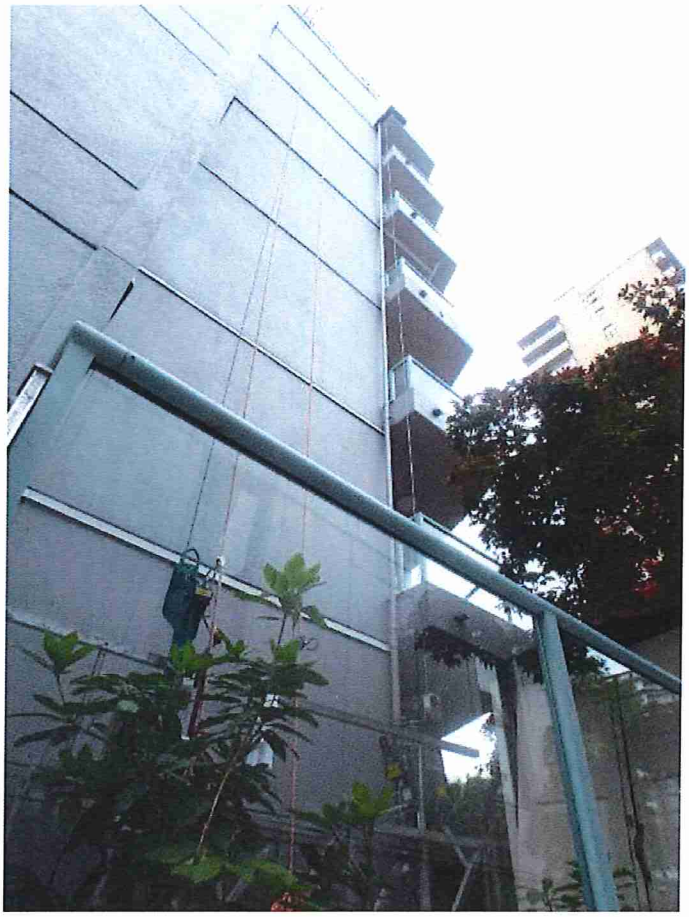
STRATA PLAN LMS 280 - CHATEAU COMOX
1272 COMOX STREET, VANCOUVER, B.C.
PHOTOGRAPHS TAKEN BY JOHN DRINKWATER, P.ENG.
ON JULY 4, 2019



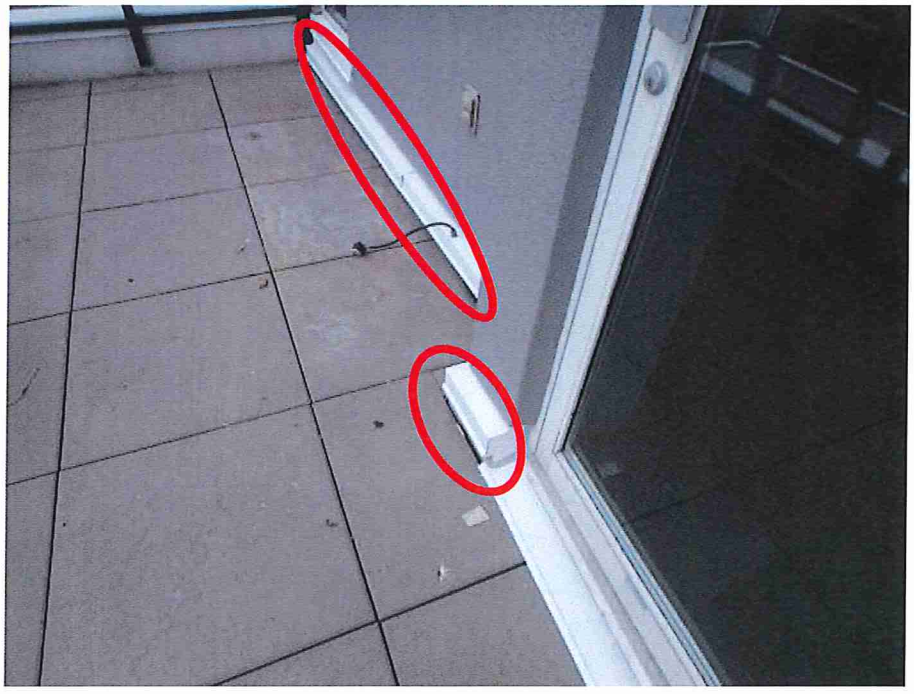
Photos No. 7.1 and 7.2



July 4, 2019

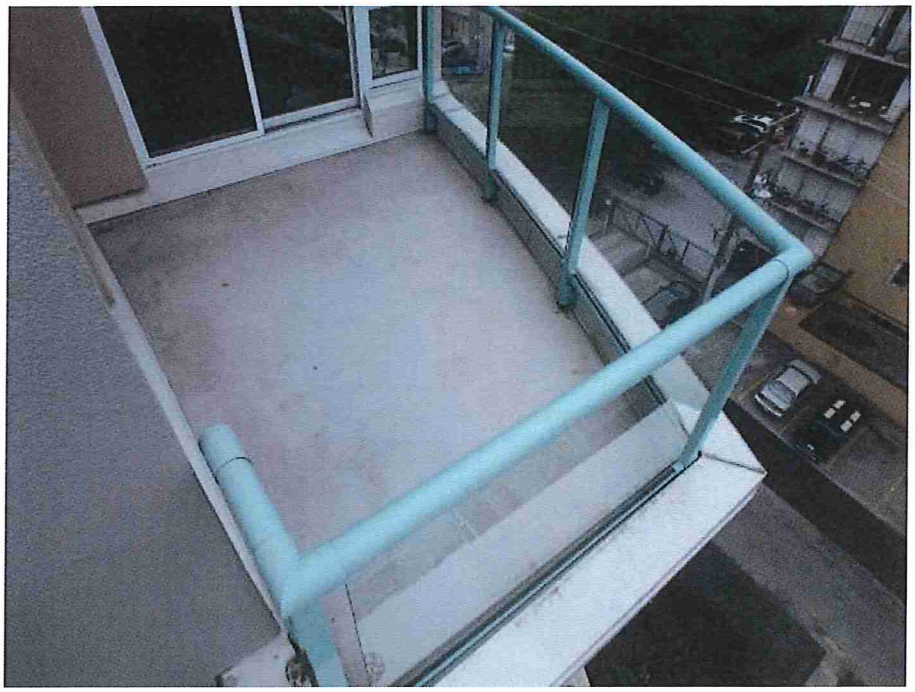


Photos No. 7.3 and 7.4



July 4, 2019

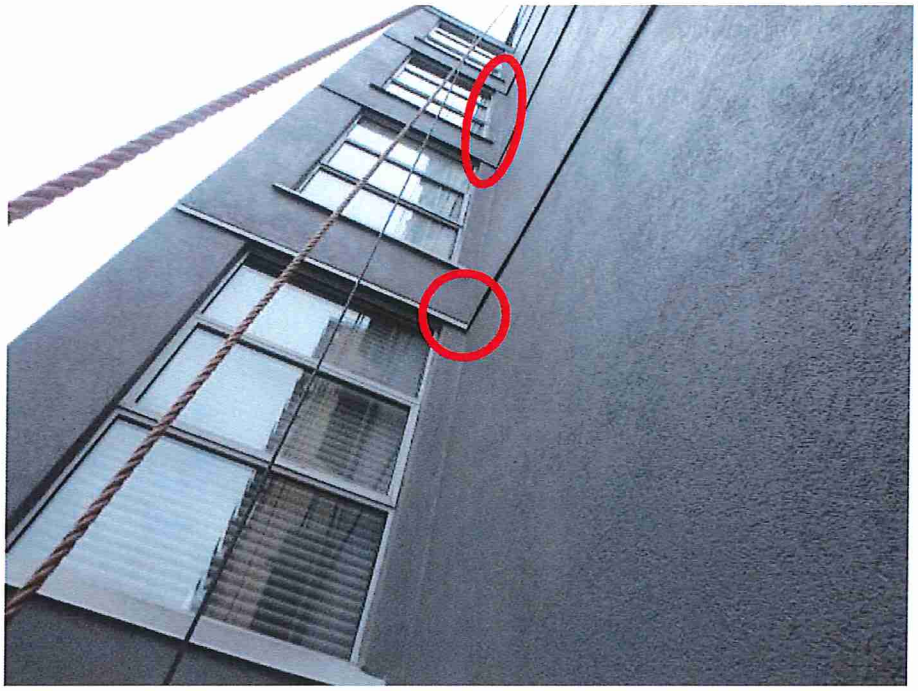
Photos No. 7.5 and 7.6



Photos No. 7.7 and 7.8

Photos No. 7.9 and 7.10

July 4, 2019



Photos No. 7.11 and 7.12

BASF

We create chemistry

Technical Data Guide

3 | 03 01 00
Maintenance of Concrete

MasterEmaco® N 425

Non-sag concrete repair mortar with integral corrosion inhibitor for vertical and overhead applications

FORMERLY GEL PATCH

PACKAGING
43 lb (19.5 kg) polyethylene-lined bags

YIELD
0.43 ft³ per 43 lb bag
(0.012 m³/19.5 kg)

STORAGE
Store in unopened containers in a cool, clean, dry area

SHELF LIFE
12 months when properly stored

VOC CONTENT
0 g/L less water and exempt solvents

DESCRIPTION
MasterEmaco N 425 is a trowel-grade, lightweight, polymer-modified, silica fume-enhanced repair mortar with an integral corrosion inhibitor.

PRODUCT HIGHLIGHTS
- Non-sag consistency able to be placed in 2" (51 mm) thick lifts
- Readily sculpted, shaved, and finished to match existing substrate
- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Only requires the addition of potable water
- Low shrinkage produces stable, durable bond
- Lightweight microscopic beads improve vertical and overhead workability
- Polymer modification improves adhesion and provides increased freeze/thaw stability

APPLICATIONS
- Interior and exterior
- Vertical and overhead
- Above and below grade
- Spalls or holes in concrete
- Deteriorated edges

SUBSTRATES
- Concrete
- Masonry
- Structural Concrete

HOW TO APPLY

SURFACE PREPARATION
1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of ¼" (6 mm).
3. The surface to be repaired must be clean, free of laitance and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 to permit proper bond.

REINFORCING STEEL
1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP.

Technical Data

Composition

MasterEmaco N 425 is composed of crystalline (quartz) silica and Portland cement.

Typical Properties

PROPERTY	VALUE
Working time, min at 70° F (21° C)	20–30

Test Data

PROPERTY	RESULTS	TEST METHODS
Compressive strength, psi (MPa)		ASTM C 109, modified*
1 day	2,150 (14.8)	
7 days	5,600 (38.6)	
28 days	6,750 (46.5)	
Modulus of elasticity, psi (MPa)	5.6×10^5 (3,861)	ASTM C 215
Splitting tensile strength, psi (MPa)		ASTM C 496, modified* (wet cure)
1 day	310 (2.1)	
7 days	560 (3.9)	
28 days	610 (4.2)	
Flexural strength, psi (MPa)		ASTM C 348, modified*
1 day	500 (3.4)	
7 days	800 (5.5)	
28 days	1,110 (7.7)	
Bond strength, psi (MPa)		ASTM C 882, modified* (mortar scrubbed into substrate)
1 day	900 (6.2)	
7 days	1,900 (13.1)	
28 days	2,450 (16.9)	
Water absorption, %, 28 days	4	ASTM C 642
Chloride permeability, coulombs	Very low range	AASHTO T-277 (According to ASTM C 1202, table 1)
Length change, %, in/in, wet cure		ASTM C 157
1 day	+0.019	
7 days	+0.028	
28 day	+0.034	
Length change, %, in/in, dry cure*		ASTM C 157
1 day	–0.026	
7 days	–0.11	
28 days	–0.15	
Linear coefficient of thermal expansion, in/in/° F	5.3×10^{-6}	ASTM C 531
Freeze / Thaw Resistance, % RDM	98.8%	ASTM C 666 A
Scaling Resistance, lbs/ft² (kg/m²) 50 Cycles	0.0 (0.0) No Scaling	ASTM C 672

*At 50% relative humidity

Test results are averages obtained under laboratory conditions. Reasonable variations can be expected.

MIXING

1. Precondition material to 70° F ±5° (21° C ±3°) before mixing.
2. Mechanically mix at slow speed with a ¾" drill and mixing paddle.
3. Add approximately 2¾ quarts (2.6 L) of potable water into a clean mixing container. Gradually sift in powder ⅓ at a time while mixing continuously at slow speed (high speeds may entrain air). Mix for a minimum of 3 minutes to ensure a uniform, lump-free consistency. Do not exceed a total of 3 quarts (2.8 L) of mixing water per 43 lb (19.8 kg) bag.

APPLICATION

1. Dampen the surface with potable water; it must be saturated surface-dry (SSD) with no standing water.
2. With a gloved hand, scrub a small quantity of mixed material into the SSD substrate. Thoroughly key in and work the material throughout the cavity to promote bond. Do not apply more of the bond coat than can be covered with mortar before the bond coat dries.
3. Apply material in lifts of ¼–2" (6–51 mm). Avoid featheredging. For optimum mechanical bond on successive lifts, thoroughly score each lift and allow to reach initial set before the next layer is applied. Placement time is 20–30 minutes at 70° F (21° C) and 50% relative humidity.
4. Trowel, shave or shape material to the desired finish after initial set.
5. The recommended application range of MasterEmaco N 425 is from 40 to 90° F (4 to 32° C). Follow ACI 305 and 306 for hot or cold weather guidelines.

CURING

Cure with an approved water based curing compound compliant with ASTM C 309 or preferably ASTM C 1315. If the repair area will receive a coating, wet curing is recommended.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

FOR BEST PERFORMANCE

- Do not bridge moving cracks or joints.
- Do not overwork material
- Do not add plasticizers, accelerators, retarders, or other additives.
- Do not extend with aggregate.
- Bonding agents are recommended for large areas as well as permanently damp areas.
- Protect from freezing for 24 hours after application.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit www.master-builders-solutions.BASF.us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbscst@basf.com or calling 1(800)433-9517. Use only as directed. **For medical emergencies only, call ChemTrec® 1(800) 424-9300.**

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