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# RE-PAINTING FOR EXISTING EXTERNAL MASONRY WALLS

## **PAM Practice Notes**

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## GUIDE FOR RE-PAINTING OF EXISTING EXTERNAL MASONRY WALLS

COMMON FAULTS AND DEFECTS TO EXISTING EXTERNAL MASONRY WALL	DIAGNOSIS AND DESCRIPTION OF FAULTS (INEXHAUSTIVE)		SURFACE PREPARATION (MAY VARY ACCORDING TO SITE CONDITIONS)	REPAINTING SYSTEMS
	DESCRIPTION OF FAULT AND DEFECTS	POSSIBLE CAUSES		
<b>CRACKS TO EXTERNAL WALLS</b>				
HAIRLINE	Fine surface cracks, crazed lines, egg shell pattern may or may not be hollow or delaminated. Diagnosis with DG1 & DG3	Incorrect plastering mix, excessive thickness resulting in shrinkage during curing. Vibrations.	SP1 or SP5 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
CONCRETE SPALLING	Insufficient cover to RC. Increased frequency particularly in wet areas. Diagnosis with DG1, DG2, DG3, DG4, D6, DG8	Incorrect concrete cover during concrete casting or post-casting hacking.	SP1 or SP2, SP9	RP1, RP2, RP3.
PLASTERING <2MM WIDTH	Surface cracks diagonal or crazed lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incorrect plastering mix, excessive thickness resulting in shrinkage during curing. Incomplete brickwork workmanship.	SP1 or SP5 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
PLASTERING >2MM WIDTH	Surface cracks diagonal or crazed lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incomplete brickwork workmanship. Settlement of structure. Differential settlement, movement.	SP1 or SP2, SP7, SP8, SP9 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
SHRINKAGE BETWEEN WALL & RC	Surface cracks horizontal or vertical lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incomplete brickwork workmanship. Shrinkage between RC and masonry wall.	SP1 or SP2, SP6, SP8, SP9 depending on severity and location	RP1, RP2, RP3.
<b>HOLLOWNESS TO WALL PLASTERING</b>				
PLASTERING (over masonry or concrete surfaces)	Hollowness to plastering may be seen with or without visible cracks. Diagnosis with DG1, DG2, DG3, DG8.	Incomplete plastering workmanship. Shrinkage between RC and masonry wall. Settlement, moisture, shrinkage or vibrations.	SP1 or SP2, SP5, SP8 depending on severity and location	RP1, RP2, RP3. (RP4 if applicable)
<b>DAMPNESS TO EXTERNAL WALLS</b>				
LEAKS FROM WET AREAS	Lateral or falling damp, leaks, moisture leading to stains, algae, fungi, delamination, hollowness, peeling, efflorescence. Diagnosis with DG4, DG8	Incomplete or damaged waterproofing, lack of DPC, burst fittings, damaged roofing, concrete integrity (honeycombing, cracks, cold joints).	SP1 or SP2, SP3, SP4 depending on severity and location	RP1, RP2, RP3. Only after leaks are mitigated.
PONDING AT LEDGES & SILLS	Ponding leading to stains, algae, fungi, delamination, hollowness, peeling, efflorescence. Diagnosis with DG1, DG2, DG4, DG8	Insufficient gradient or falls, lack of regular maintenance.	SP1 or SP2, SP3, SP4 and General Contractor to provide sufficient gradient for ledges & sills. General maintenance.	RP1, RP2, RP3. Only after ponding is mitigated.
MILDEW ALGAE FUNGI	Lateral or falling damp, leaks, ponding, moisture leading to stains, algae, fungi. Diagnosis with DG1, DG2, DG4, DG8	Incomplete or damaged waterproofing, lack of DPC, burst fittings, damaged roofing, concrete integrity (honeycombing, cracks, cold joints), continuously high humidity and temperature, limited ventilation, cracks.	SP1 or SP2, SP3, SP4	RP1, RP2, RP3. Only after leaks, ponding or other causes are mitigated.
<b>PAINT FAILURE TO EXTERNAL WALLS</b>				
EFFLORESCENCE	Crusty white salt deposit seen as whitish fluffy stains, which causes damage to colour pigment. Diagnosis with DG1, DG2, DG4, DG7	Leeching of dissolved salts from mortar, bricks, concrete and plastering through cracks and hollowness in wall plastering. Adulteration of primer coat.	SP1, SP5, SP6, SP7 or SP8	RP1, RP2, RP3. only after cracks and other causes are mitigated.
CHAULKING	Loose powdery white deposits on wall surfaces. Diagnosis with DG1, DG2, DG4, DG7	Adulteration of primer and top layer coating systems with calcium carbonate powder or other substances.	SP1 or SP2 depending on severity	RP1, RP2, RP3.
PEELING	Loss of adhesion between coats or between primer and masonry wall. Diagnosis with DG1 DG2, DG5	Application not to manufacturer's specifications, seepage of water, cracks, incorrect surface preparation, application over wet surfaces(>14%WME).	SP1 or SP2 depending on severity, SP4 if required	RP1, RP2, RP3.

### LEGEND AND ABBREVIATION

DIAGNOSIS METHODOLOGY, TOOLS AND INSTRUMENTS	<b>DG1</b> Visual inspection (within 3 m height) <b>DG2</b> High level visual inspection with safe access <b>DG3</b> Tapper rod for hollowness and cracks <b>DG4</b> Protimeter (%WME) <b>DG5</b> Water jet cleaning ( < 1.5 Bar) <b>DG6</b> High pressure water jet cleaning ( > 1.5 Bar) <b>DG7</b> PH paper <b>DG8</b> Thermographic camera
HIGH LEVEL ACCESS - (SITE CONDITION WILL DETERMINE THE APPROPRIATE EQUIPMENT)	<b>AC1</b> Ladder <b>AC2</b> Skylifts <b>AC3</b> Scaffoldings <b>AC4</b> Scan climbers <b>AC5</b> Gondola <b>AC6</b> Elevated platforms <b>AC7</b> Building maintenance unit (bmu) <b>AC8</b> Other specialists access equipment
SURFACE PREPARATIONS	<b>SP1</b> Wash surface with high pressure water jet Cleaning ( < 1.5 Bar) <b>SP2</b> Wash surface with high pressure water jet cleaning ( >1.5 Bar) to remove existing paint coatings, peeling paint and loose plaster. <b>SP3</b> Soak surface with low toxicity bacteria, algae, fungi pre-treatment mixture, rinse thoroughly with clean water. <b>SP4</b> Repair waterproofing and mitigate migration of all types of water & dampness from source (leaking bathroom slabs, balcony, rc flat roof, broken rwdp, gutters, eaves, spout pipes etc. <b>SP5</b> Cut out loose, hollow and delaminated wall plastering; re-plaster with premixed non-shrink grouting wall plaster to manufacturer's specification <b>SP6</b> Diamond wheel cut out 50-100 mm wide wall plastering (>2mm crack width) between RC and masonry wall, install high-ribbed mesh over cracks, re-plaster with premixed non-shrink grouting wall plaster to manuf specification <b>SP7</b> Diamond wheel cut out large wall cracks (>2mm crack width) pressure grout cracks to specialists specifications; re-plaster with premixed non-shrink grouting wall plaster to manufacturer's specification <b>SP8</b> Wall repairs to specialist's methodology applicable for serious faults found in external wall plastering <b>SP9</b> Concrete repairs to specialist's methodology applicable for spalling and faults found in concrete
RE-PAINTING SYSTEMS	<b>RP1</b> Alkaline resistant primer coat <b>RP2</b> Patch coat 'bridging' membrane to affected areas <b>RP3</b> 2 coats of complementary premium grade acrylic external wall coating system <b>RP4</b> 1 coat of textured spray tile to match existing wall surface where applicable only
LIMITATIONS AND EXCLUSIONS	<ol style="list-style-type: none"> <li><b>1</b> Guide applicable for external masonry wall using conventional method of construction. Not applicable for internal wall surfaces</li> <li><b>2</b> Severe conditions related to structural deficiencies resulting in paint failure refer to sp9 prior to other architectural remedy</li> <li><b>3</b> Subject to specific manufacturer's specification, surface preparation, performance and product warranties</li> <li><b>4</b> Faults and defects may exist in isolation or in combination, therefore a comprehensive condition assessment is recommended</li> <li><b>5</b> Performance warranties are usually subject to acceptable surface preparation for re-painting works</li> <li><b>6</b> For additional fault diagnosis information and details, refer to architect centre or <a href="http://www.architectcentre.com.my">www.architectcentre.com.my</a></li> </ol>

## CRACKS TO MASONRY WALL



## EFFLORESCENCE



## MILDEW ALGAE FUNGI



## DAMPNESS



## PEELING



## HIGH DIRT RETENTION



## CONCRETE SPALLING



## EQUIPMENT USED FOR FAULT DIAGNOSIS

