St. Eugene's Cathedral
Francis Street
Derry

Condition Survey

July 2012

STONE CONSERVATION SERVICES
CONSARC DESIGN GROUP

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APPENDICES

1.00 INTRODUCTION

1.01 At the request of Eoghan Devery of Exitoso, Stone Conservation Services were asked to investigate the damp issues within the tower and the church of St. Eugene's Cathedral in Derry.

Furthermore we were requested to look through the rest of the church to establish any other defects that should also be addressed.

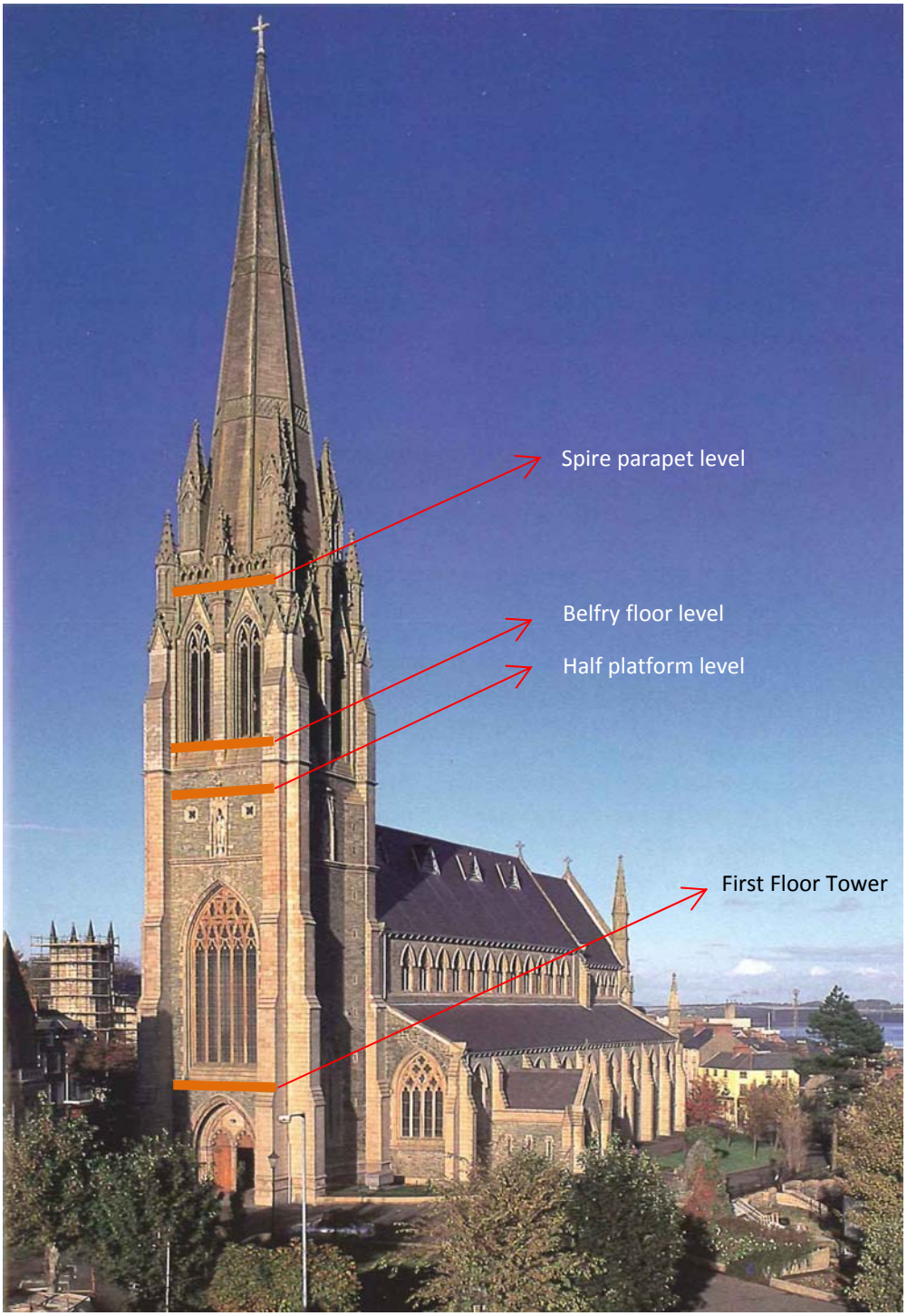

FIGURE 1

2.00 DAMP AND SALT EFFLORESCENCE TO TOWER

2.01 **First Floor Level (Refer to Figure 1 and Photographs 1 – 7)**

Damp is present in the tower at the level of the large feature tracery window. With such an exposed tower wind driven rain soaks through the Derry Schist and Giffnock Sandstone joints on the tracery window surround. This is a normal cycle and the water that enters into the wall should evaporate back to the external face over time.

However, given the internal environment of the tower is warmer than the outside and having the tracery window on the prevailing windward direction side and with a mass of wall removed to allow installation of the window, means that water from the outside has a short distance to travel to the inner face.

At some stage in the past 25 years this part of the tower has been rendered with a cement based render. This not only traps moisture within the wall but the Gypsum in the cement based renders creates salts when there is moisture behind. This is visible on the photographs.

It is important to get air movement within the tower. Once the front door is open, air can come into the lobby and move up past the space at the side windows and ceiling above (Photograph 5). However as there are no window openings or air passage through the above ceiling, the air in this section of tower is stagnant and not permitting the wall to dry quickly.

It would be prudent to form clear sizeable openings in the floor and ceiling that are within the tower up to the belfry area. These could be designed with upstands and lids to prevent water entering.

As this section of the tower is not visible to the public the cement rendered reveals between the tracery window and the sandstone quoins should be removed which will expose the stone or brickwork. This may require localised pointing to open joints. This should be carried out using NHL 2.5 Hydraulic Lime Mortar.

The stack effect air movement within the tower will eliminate the visible damp to the internal face.

2.02 **Half Platform Balcony**

The walls in this section of the tower are covered in a sand cement mix. There is damp and salt efflorescence visible in localised areas (refer to photographs 6 – 8)

The ventilation openings that we are proposing would mean that there is air flow through this section of the tower. This is likely to drastically reduce the current damp and salts on the walls. However, if money was available the cement render could either be removed and the walls left exposed or rendered in NHL 2.5 hydraulic lime mortar.

2.03 **Second Floor Level**

At this level the floor is finished with timber boarding (refer to photographs 9 – 10). There is some staining from water to the boards but they are in a sound condition except where the end grain abuts the walls. It would be sensible to cut back the boarding 38mm from the perimeter with a power saw in these locations.

2.04 **Belfry Level**

Although a lot of work has been done to the bells and the support structure in recent years the frame has quite a bit of corrosion present (refer to photographs 11 – 14).

This steel frame needs to be cleaned down and painted with a proprietary paint system for exposed conditions such as Corroless Corrosion Control (refer to specification in Appendix B).

The asphalt floor is sound (refer to photograph 13 & 14), however should have guano removed.

The cast iron downpipes in this belfry will also need cleaned down and painted (refer to photographs 15 – 18). This should be the same paint specification as in the paragraph above, details in Appendix B.

There is an angle iron structural support rail at each spring point of the Gothic windows (refer to photograph 18). This should be painted in the same paint specification as noted in 2.04, appendix B. It is noted on photographs 15 and 16 that there is green staining on the wall in the area of the downpipe. This is due to a blocked pipe and the water building up and coming out of the hopper and the collars where it joints.
The pipe should be removed and blockage cleared.

2.05 The original access ladder that connects the belfry to the upper spring parapet level currently does not conform to any Health & Safety standards. There are no handrails and some of the members are quite corroded.

This access ladder should be replaced with a bespoke galvanised ladder. The ladder will either have hoops to prevent falling or a failsafe stainless steel wire rope should be connected to a harness before climbing up. There will need to be a platform and short ladder installed to gain access to the current hatch or the access opening moved to directly above the new access ladder on the wall. Appendix C shows a typical new access ladder specifically designed by Consarc for another church.

The floor to the upper spire parapet level is wooden boarding with lead covering. This is in a good condition (refer to photographs 19).

Externally at this level there is a decorative parapet on the granite wall. At the base of this wall a ceramic gutter goes round the spire. 'Sika' outlets have been bonded to these outlets which connect to the downpipes below. The majority of these outlets are blocked with dead bird bone skeletons and feathers (refer to photographs 20 – 23).

There is a number of design problems with this gutter that need addressed.

- The joints between the original semi-circular ceramic gutters are taking water into the structure.
- The current open size is around 60-65mm which is too small for the quantity of water that these gutters are taken in heavy rain conditions.
- There are cracks in the granite threshold stone at each of the doorway. This is again an entry point for water (refer to photograph 23).
- Appropriate guards need to be fitted to the outlets.

Given the above factors it would be prudent to increase the outlets. This may mean coring a larger hole or it may simply be that existing outlet holes can take bigger outlets. The gutter and threshold at each of the doors could be lined in liquid plastic (details in Appendix D). The surface needs to be clean and primed before applying such a product. The new outlets should have a patented guard.

However, maintenance checks should be carried out in this area every 6 months. It is likely that due to the unsafe condition of the current access ladder this has prevented maintenance to this area in recent years.

3.00 DAMP AND SALT EFFLORESCENCE ON INTERNAL OF CHURCH

3.01 There is damp and salt damage to the reveals of St. Patrick's window and St. Columba's window (refer to photographs 25 – 27).

This has been an ongoing problem dating back to when the church was built and is due to how water is discharged from the copings of the mono-pitch roofs onto the outside corner buttress and window reveal (refer to photographs 28 – 31).

There are a number of items that need addressed to solve the problem:

- There needs to be a new project specific detail formed at coping level. This will prevent water coming over the wall and spilling on to the corner buttress. We have been involved in designing these for other churches in the past.
- These corner buttresses should be re-pointed using NHL 5 hydraulic lime mortar.
- All open and retreated joints on the main walling of St. Columba's and St. Patrick's window need to be cut back to a minimum of 30mm and re-pointed in NHL 3.5 hydraulic lime mortar.
- **Internally** – the section of render that has damp or salts efflorescence needs to be removed. This should extend at least 1m beyond any visible damp or salts.
  However plaster directly back on to a solid stone wall that is now heavy salt laden will mean that salts will break through the plaster in a few years. The surface needs to be clean and surface sprayed with Technoseal DPM, specification in Appendix E.

  This product isolates the salts from the new render. The render is most likely lime however it has been re-rendered in the past and that may be done with a cement based mix. We would advise that it may be more prudent to remove all render from the ceiling down in the areas of St. Columba's and St. Patrick's windows. This will also avoid the patchy effect that usually appears when tying into existing plaster. The new plaster should be hydraulic lime plaster, refer to Appendix F for the specification.

- **Internally** – the LHS reveal of St. Patrick's window from the cill to the springing point of the arch has a render applied finish (refer to photograph 25). This finish appears to only be 2-3mm thick.
  We would suggest that a stone masonry company such as S. McConnell & Sons are engaged to redress these salts affected reveals with a mechanical diamond wheel disk and hand diamond pads. On completion of the redressing the two windows should be cleaned using Finalit No. 9 so it all ties in. S. McConnell & Sons are also the local supplier for the Finalit Range.

3.02 The side arch between the Sistine Madonna window and Holy Family window that is now used as storage area has rising damp and heavy salts is present on the plaster (refer to photographs 31 – 34). Given the extent of this in this porch it would be prudent to remove all existing render. Once removal is completed, a damp proofing membrane should be applied such as Newlath 2000 or similar.

This product isolates plaster from the stone background and prevents damp and salts from reaching the surface, refer to the Specification in Appendix G.

The membrane should be fitted by an approve installer such as Ulster Damp Proofing Group . It is important that the pole mould features around the windows are recreated when re-plastering on the Newlath 2000.

3.03 In the area of the choir adjacent to St. Joseph, the Immaculate Heart of Mary and St. Anthony of Padua window the plaster is boast and affected by salts.

The plaster in this area needs to be cut back at least 1m beyond the extent of the affected area. The walls should be cleaned down to the stone and Technoseal DPM spray applied to the surface as previously discussed for St. Patrick's and St. Columba's window.

The new plaster to be hydraulic lime mortar, refer to specification in Appendix F.

The salts and boast plaster are a result of moisture movement through the stone wall from the outside (refer to Photograph 34, showing salt efflorescence on the face of the stone in the same location as the internal salts).

It would be prudent to re-point this location on the external face in NHL 3.5 hydraulic lime mortar. It may be result of leaking joint from the gutter directly above. This should be investigated and repaired if required.

4.00 STRUCTURAL MOVEMENT NOTED IN CHURCH

4.01 There is some evidence of structural movement within the church however this appears to be historic.
The movement is on the Gothic arches and above St. Columba's window (Refer to Photographs 41 & 42 and to Figure 2 for the location).

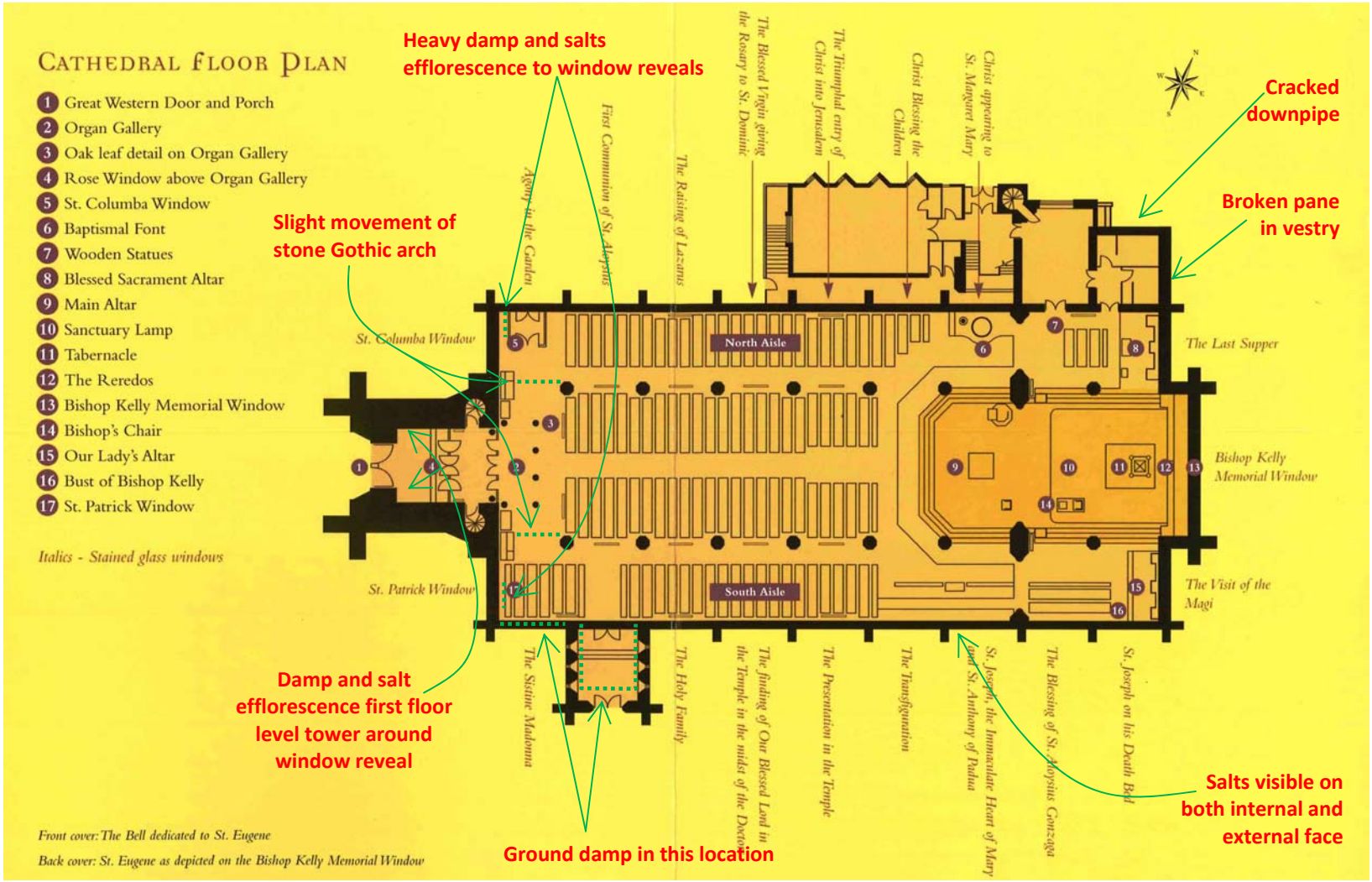

FIGURE 2

5.00 EXTERNAL DEFECTS NOTED

5.01 The rear elevation adjacent to The Last Supper window pane is broken and should be repaired (refer to Photograph 36).

5.02 There is a cracked cast iron downpipe beside steps that go into the vestry (refer to Photograph 37). This downpipe section needs replaced.

5.03 The cast iron downpipe that comes down and over the monopitched roof above the Sistine Madonna window has damp staining on the wall and a crack to the cast iron pipe that runs over the monopitched roof (Refer to Photograph 38).

The pipe needs to be checked for blockages and cracked sections of the cast iron downpipe replaced.

5.04 All external gullies need to be checked and if blocked cleared or repaired. It would appear from the ground below the Sistine Madonna Window that gullies overflows as the ground in this area is very damp (refer to photograph 39).

5.05 The solid stone chimney (refer to Photograph 40) above the vestry has no lead tray and therefore provides a path for moisture to the internal fabric of the church. The internal plaster in this location can be repaired as stated in Section 3.01 of this report. The chimney needs to be checked to ensure all joins are correctly pointed. If joints are good then a clear breathable water repellent such as Keim Lotexan should be applied as per manufacturer's directions, details in Appendix H.

6.00 CONCLUSION

6.01 This report highlights problems noted during the survey of St. Eugene's Cathedral and suggests appropriate remedial measures.

Some of these remedial measures may need further detailing but this is beyond the extent of this report.

Further detailing could come in the form of a Schedule of Works and full specification.

If all the items noted are addressed it will eliminate and reduce the damp and salts present within the Cathedral.

Appendix A

Survey Photographs

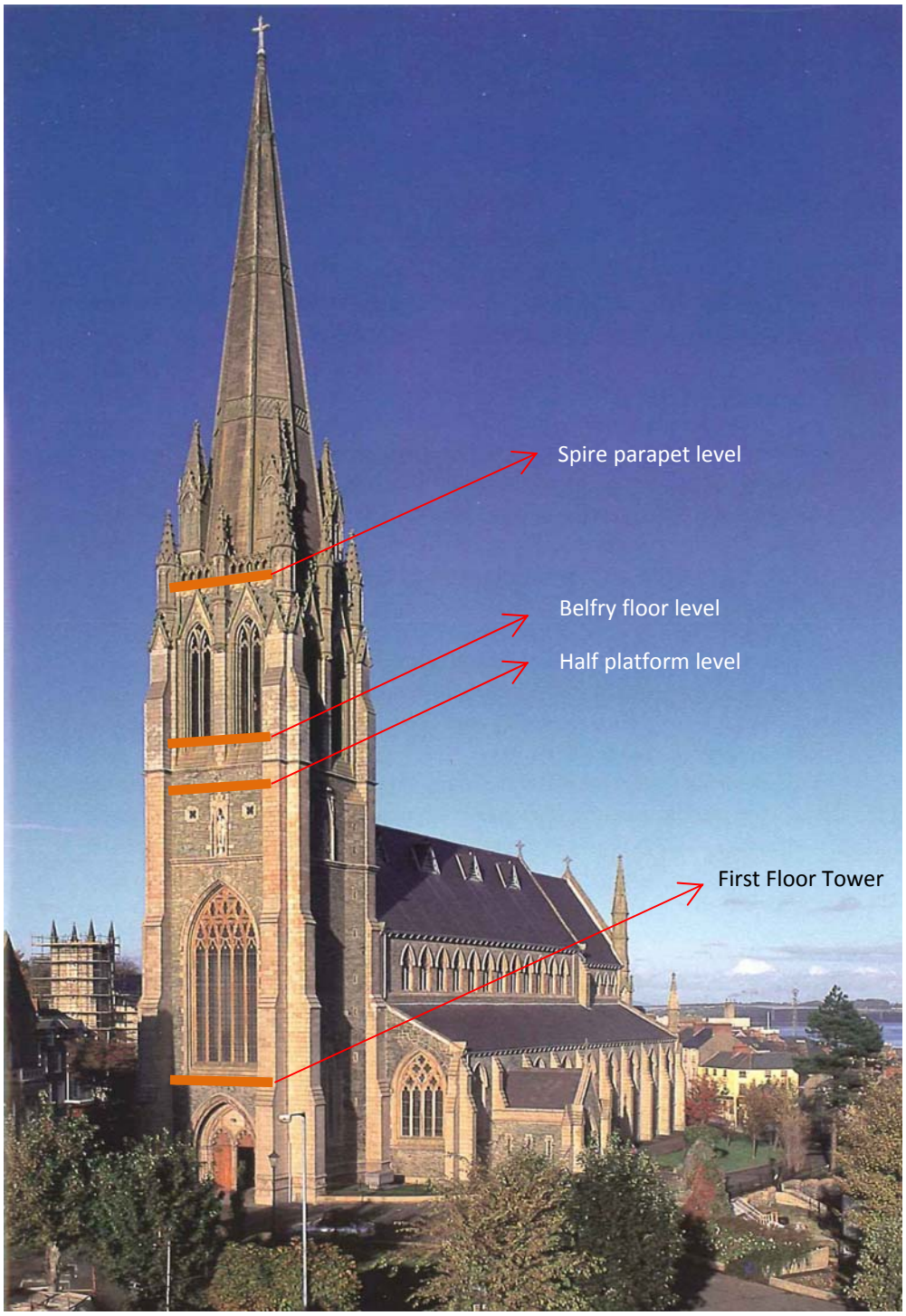
Spire parapet level
Belfry floor level
Half platform level
First Floor Tower

FIGURE 1

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Air from lobby
below getting up
into first floor
level of tower.

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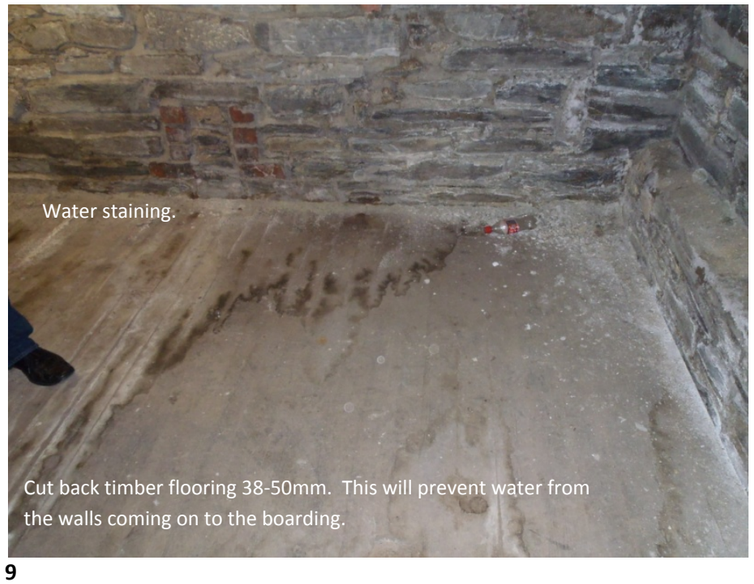
Water staining.
Cut back timber flooring 38-50mm. This will prevent water from the walls coming on to the boarding.

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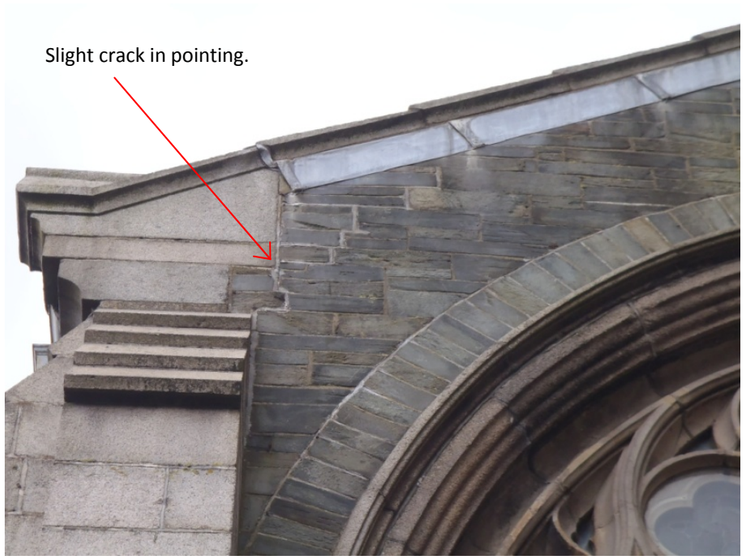

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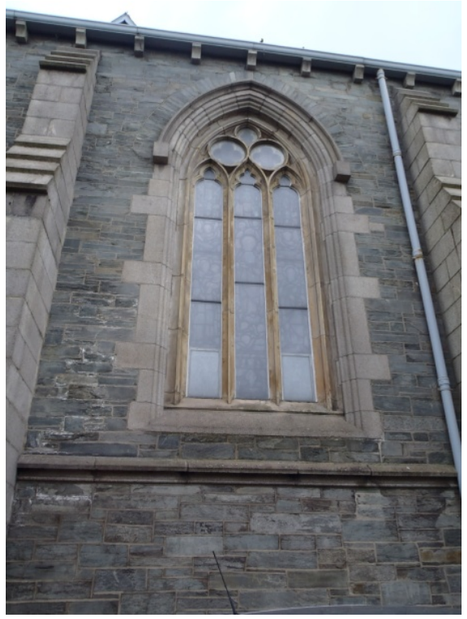

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Damp staining may be due to blockage in pipe.
Pipe appears to be cracked.

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Ground damp in this location

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Appendix B

Corroless Corrosion Control Paint Specification

Appendix B
Corroless Corrosion Control Paint Specification

Painting

Repainting of all metalwork as identified in the Schedule to be with Corroless Rustkiller and Top Coat of RF16 system shall be used.

This product is available from:

CORROLESS Corrosion Control
Kelvin Way
West Bromwich
West Midlands B70 7JZ
United Kingdom
Tel: +44 (0)121 524 2235
E-mail: contact@corroless.com

Preparation:

Remove loose rust and scale using a wire brush.
Oil grease, chemical and salt contamination must be removed.
Apply Corroless RUSTKILLER brush following manufacturer's instructions
Apply Top Coat such as Corroless RF16 or equal and approved (colour to be selected by the architect).

Appendix C

Typical Access Ladder Arrangement
(*Consarc Conservation*)

Appendix C
Typical Access Ladder Arrangement

Appendix C
Typical Access Ladder Arrangement

Appendix D

Liquid Plastic Specification

Appendix D
Liquid Plastic Specification

Liquid Plastics

A polyurethane coating which forms an effective barrier to water penetration to be applied to the ceramic parapet gutter to tower.

This is to be Decothane Beta 10 (or equal and approved)

Application of Decothane Beta 10 to be as per manufacturer's instructions:
Ensure the surface is clean and keyed in accordance with the manufacturer's instructions
Initial coat of Decothane EC
Into which Reemat standard GRM is laid and embedded using rolling techniques
Once dry a top coat of Decothane SP applied and allowed to cure.

All work is to be carried out by an approved contractor.

For your information one of the approved contractors is EAMS Protective Coating Tel; 0850 689653, however you may use any approved contractor.

Appendix E

Technoseal DPM Data Sheet

Application

The background surface should be smooth or have a light even texture. Any masonry should be flush pointed and defects in existing surfaces made good.

The surface needs to be clean, sound and free of dust, loose material or surface water. The membrane should not be applied in wet conditions or where these conditions are likely to occur before the membrane has dried. The membrane should not be applied when the temperature of the background, or the air temperature, is below 7°C.

It is sometimes advantageous to pre-wet concrete or masonry backgrounds so that these are damp but free from any water glistening on the surface, to aid the wetting out of the background.

Because of the wide variety of background types and site conditions it is always advisable to check adhesion to the background by testing on a sample area before starting any job.

The membrane may be applied by brush, roller or airless spray*. If necessary the compound can be diluted with up to 10% water. However, care should be taken to ensure that the correct dry coat thickness is applied.

The thickness of the dried membrane per coat depends on the method of application. For a single dry coat thickness of more than 0.3mm it is recommended that the membrane be applied by airless spray. If airless spray is used, single dry coat thicknesses of up to 1mm can be obtained. (Note: A single coat of 0.6mm dry thickness or more will require a greater drying time than for an equivalent multicoat application.)

If two coats are being applied it is recommended that the coats be applied at right angles to each other.

Before applying the second coat it is necessary to let the first coat become touch dry. This will vary according to site conditions but will typically be in the order of 1 hour.

The second coat should be applied within 24 hours. After all coats have been applied, the membrane should be left for at least 4 days before attempting any ponding tests.

Under unfavourable drying conditions this period may need to be extended. Whilst most applications to concrete roofs have been successful, blistering (shortly after application of the membrane to the roof) has occasionally occurred.

This blistering is caused by the heat from the sun causing a vapour pressure build up below the membrane. The problem is exacerbated if the background concrete is wet.

The risk of blistering can be minimised by ensuring a very good bond to the background and avoiding application of the membrane in, or shortly prior to, strong sunlight. Techniques for maximising bond are:

a. Vigorously brush the first coat into the background concrete using a stiff bristled broom.

or

b. Prime the roof with a slurry of Wykamol SBR latex and cement (see separate data sheet). Allow this slurry to harden for 2 days before applying the membrane.

Applications

- **Floors:** Under/above screeds to provide a damp proof membrane.
- **Basements:** As part of a waterproofing system beneath ground level.
- **Walls:** Can be used under render or plaster as a water barrier or vapour barrier.
- **Ponds:** can also be used for aquatic life in ponds etc as a waterproof lining.
- **Tiling:** As secondary protection under tiles in wet areas e.g. bathrooms, food processing areas, balconies, etc.
- **Water Storage:** The membranes perform well in our tests even when continuously immersed in water.
- **Silage Storage:** The membrane protects concrete from silage attack.

In some situations e.g. at high stress points such as wall/floor junctions it is beneficial to use polypropylene fabric (skrim) reinforcement. By choosing a suitable reinforcement it is possible to achieve good control of the coating thickness

i.e. by choosing a fabric approximately 0.5mm thick and ensuring that the mesh is completely filled and covered, the minimum coating thickness of 0.6mm will be automatically achieved.

The incorporation of fabric usually increases the tensile strength but decreases the extensibility.

The fabric is rolled into the wet first coat, and then coated with additional membrane after allowing the first coat to dry to a tacky condition.

- (e.g. "Aro" gun, model 651533, on a "Clemco" pot. Compressed air supply pressure 5.6N/mm² (800psi) and compression ratio 28:1. Tip size 0.64mm (25/1000").
  Fan width 200mm (8").

Storage:

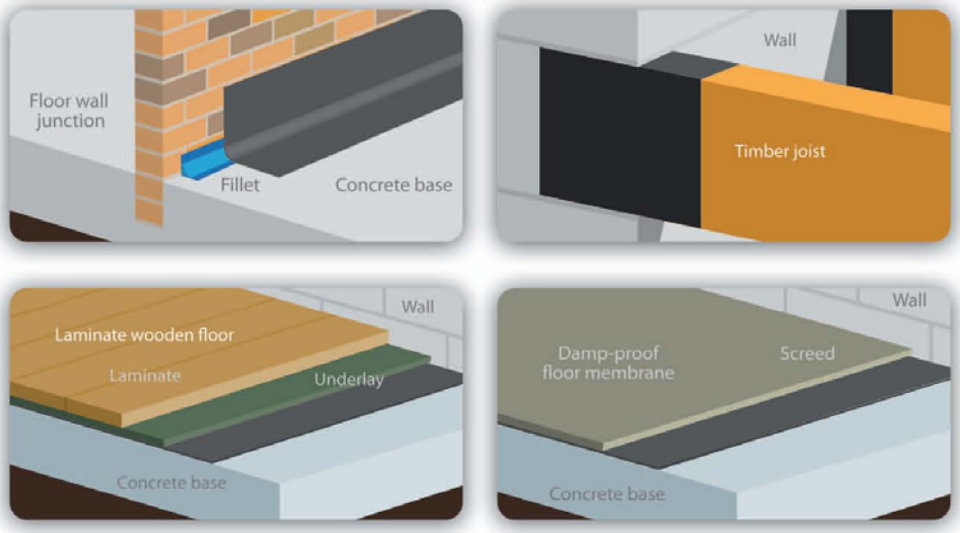
In a sealed container between +5 °C and +35 °C and protected from frost and direct sunlight.

Coverage:

A minimum dried coat thickness of 0.6mm is needed to provide a vapour barrier. This should be applied in a minimum of two coats. For the final dried membrane thickness of 0.6mm a coverage rate of 1.20kg/m² is required (this is the total for all coats). This corresponds to approx 1 litre/m².

Colour:

Available in white or black. The colour of the liquid compound will differ slightly from the colour of the dried membrane. The colour shade may vary batch to batch. The membrane dries to a tough semi-gloss finish.



Advantages

- Single pack system
- Water based compounds that can be applied even to damp backgrounds
- Non-toxic, non hazardous, solvent and plasticiser free
- Gas barrier for carbon dioxide, methane and radon
- Toughness, high flexibility, extensibility and good crack bridging properties
- Low water vapour permeability
- Alkali resistant, can be applied to alkaline surfaces
- Resistant to silage acids
- Non staining and stain blocking
- Available in white or black
- Quick drying. Typically touch dry in 1 hour

Appendix F

Hydraulic Lime Mortar Plastering Specification

Appendix F
Hydraulic Lime Mortar Plastering Specification

Replastering areas of boast Lime Plaster

Damaged and deteriorated patches of internal plasterwork should be stripped and cut back to sound plaster.

i. **A scud coat** of lime mortar (1:3) using non-hydraulic or feebly hydraulic lime (NHL 2). This is to be applied to exposed brickwork. Firstly the walls to be brushed down and wetted slightly a couple of hours prior to applying scud coat.
ii. **A scratch coat** to be applied the following day or any time after that. This scratch coat to be (1:3) Lime mortar with horsehair or equivalent teased into mix. This should have approximately 25 fibres per square inch.
iii. **Finish coat**. This is to be pure lime putty or (1:1) Lime putty mixed with silver sand (to be approved by architect following trials). Surface finish to be rubbed up using wooden float for smooth finish. A Sample panel of surface finish to be approved by architect.

The above lime plaster mixes can be obtained from:

Roundtower Natural Hydraulic Limes
Distributed by:

Heritage Traditional Building Products
46-48 Doury Road
Ballymena
T: 028 2587 9373

Traditional Lime Company
Rath
Shillelagh Road
Tullow
Co. Carlow
T: 0503 51750

This rendering to be under taken by plasters that have worked with lime renders previously. A list of previous lime render job(s) that they have worked on will be asked for.

Appendix G

Newlath 2000 Specification

DATA SHEET

NEWLATH 2000

Damp-proofing Membrane & Plaster Base

JOHN NEWTON
& COMPANY LIMITED (EST. 1848)

CI/SfB (21.9) Ln6 (L34)

Rev 2.1 - 17 February 2010

PRODUCT CODE - M9 & M10

INTRODUCTION

Newlath 2000 is made from inherently stable, high density polypropylene 0.5mm thick formed into a pattern of raised studs linked by reinforcing ribs. Polythene mesh is heat welded in the manufacturing process to the surface on one side. The studs 5mm high face the wall and create air channels. On the face the mesh provides a rot proof key for plasters and renders.

Newlath 2000 is light, clean and easy to handle. It can be cut with a sharp knife or shears. Damaged or crumbling plaster should if possible be removed to expose brickwork. It is recommended that the Newlath 2000 be fixed using the specially designed polypropylene plugs available with the material. Newlath 2000 with the mesh facing outwards can be fixed vertically from ceiling to floor or horizontally.

Newlath 2000 can be applied internally with a dot and dab plasterboard or direct plaster/render finish. In addition, the product can be applied externally on properties which are suffering from penetrating dampness through failed mortar joints. For full finishing specifications please contact our technical department. Newlath 2000 can also be applied to timber frame houses. Use galvanised clout nails at 100mm centres.

Newlath 2000 is guaranteed against deterioration for 30 years, and has a life expectancy of at least 50 years

The membrane is inert and is highly resistant to water, alkalies, saline solutions and organic acids, and it is not effected by minerals. It is also resistant to bacteria, fungi and other small organisms.

Newlath 2000 holds BBA Certification Certificate Number 00/3716

Width (m)	2.00/1.5
Length (m)	20.00/10.00
Area (m^2)	40.00/15.00
Weight (kg)	19.00/7.95
Colour	Clear
Raw material	High Density Polypropylene
Thickness (mm)	0.50
Stud height (mm)	5.00
Compressive strength	>80 kN/m^2
Vapour permeability	0.046g/m^2 x hr x mmHg
Thermal resistance	0.078m^2 K/W
Thermal conductivity	0.461 W/m K
Air volume between studs	0.41 $litres/m^2$
Drainage capacity	N/A
Vicat softening temperature	148 °C

ASSOCIATED PRODUCTS

- Newton Newlath Plugs - A16 (bags of 250)
- Newton Mastic - A18, prime plug holes with mastic prior to hammering home fixing. Used for jointing material with dpm behind butt joint or overlap - re-commned 4 tubes per 1 small roll and 12 per large
- Newton Profile Strip - A19, white 2m lengths sold as stop bead to prevent bridging with damp surfaces.

© John Newton & Co. Ltd. 12 Verney Road, London SE16 3DH - 020 7237 1217 - www.newton-membranes.co.uk - info@newton-membranes.co.uk

Appendix H

Keim Lotexan Specification

Technical Data Sheet Issue 04/04

KEIM Lotexan®
Water repellent

1. Product description

Colourless, siloxane-based water repellent final treatment.

2. Field of application

KEIM Lotexan® is suitable as a water repellent protective treatment for mineral renders and coatings, fair-faced concrete, prefabricated concrete elements, exposed aggregate concrete, calcareous sandstone and fibre-cement boards. KEIM Lotexan® provides protection from water, acid rain and atmospheric pollution.

3. Product properties

Due to its very small particle size, KEIM Lotexan® penetrates deep into the pores of building materials. Once the solvent has evaporated, the active ingredient is deposited on the walls of the pores and develops its water repellency by reacting chemically with the moisture normally present in the building material and the atmosphere. The pores remain open and the building material's water vapour permeability is retained.

- highly water-repellent
- non-film-forming
- complete water vapour permeability
- penetrates deep into the material
- elevated alkali resistance
- reduces soiling, growth of moss and algae
- weathering resistant

Material characteristics
Physical form: colourless liquid
Specific weight: approx. 0.8 g/cm³

4. Application instructions

The substrate must be dry, absorbent, clean and free of dust and grease.
The surfaces to be treated are soaked to saturation twice wet-on-wet with an interval of approx. 10 minutes with KEIM Lotexan® using a brush or, better, by flooding (do not spray).

Note
At least 8 days must elapse after application of the finishing coat of KEIM Purkristalat® coatings before carrying out treatment with KEIM Lotexan®.

Depth of penetration
A minimum depth of penetration of 2 mm is normally necessary in order to achieve effective water-repellency.

Application conditions
Ambient and substrate temperature > +5°C.
Do not apply in direct sunlight or onto sun-heated substrates.

Consumption
In order to achieve the minimum depth of penetration, consumption values for saturating the substrate twice range, depending on pore volume, between 0.2 l and 0.8 l/m².0.4 l/m² is usually sufficient. The stated consumption values are for guidance and depend on the nature of the substrate. Exact consumption values can only be determined by painting trial areas on the structure to be coated.

Cleaning of tools
In a bucket of water with a few drops of detergent. Rewash under running water.

5. Packaging

5 l and 25 l containers

6. Storage

KEIM Lotexan® has a shelf life of 12 months under cool, dry conditions. Protect from heat and direct sunlight. Always carefully seal opened containers. It is essential to avoid contact with moisture. Keep away from oxidising agents.

→

7. Hazardous Substances Ordinance class

Xn	Harmful
N	Dangerous for the environment, contains aromatic hydrocarbons
R10:	Flammable
R51/53:	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65:	Harmful: may cause lung damage if swallowed.
S2:	Keep out of reach of children.
S13:	Keep away from food, drink and animal feeding stuffs.
S23:	Do not breathe gas/fumes/vapour/aerosol.
S36:	Wear suitable protective clothing.
S43:	In case of fire, use extinguishing powder, never use water.
S57:	Use appropriate container to avoid environmental contamination.

Classification according to Flammable Liquids Ordinance
A II

8. Transport hazard class

Class: 3
Packaging group: III
UN No.: 1993

9. Disposal

EC Waste Code no. 08 01 11
Any residues must be emptied out of containers before recycling.

10. Safety instructions

Provide appropriate protection for surfaces which are not to be coated (e.g. glass, natural stone, ceramics, wood etc.). Any splashes on surrounding surfaces or traffic areas must be rinsed off immediately with plenty of water. Protect the eyes and skin from splashes. When using, do not eat, drink or smoke. Keep out of reach of children.

Product code: n/a

KEIMFARBEN GmbH & Co. KG
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