

Caithness Flagstone Limited

Laying and Maintenance Guide for Caithness Stone Paving and Setts

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Laying and Grouting Caithness Flagstone and Setts

Bedding

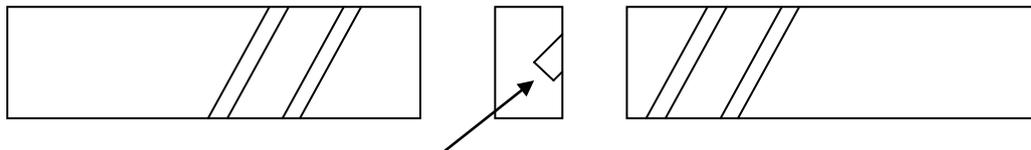
- Caithness flags or setts.
- 50mm thickness of 3:1 6mm to 0mm crushed aggregate: p.f.a cement (Blue Circles Phoenix) mix dry, no added water.
- 50mm of 20mm dense bituminous macadam to B.S.4987
- Graded aggregate to suit loading conditions – minimum 150mm

Joints

- Flags – 5mm joints in each direction
- Setts – 15mm joints in each direction

Expansion Joints

- For both setts and flags expansion joints in both directions every 6m.
- Joints made from texells for full depth of sett or flag
- Top 25mm of texells removed on completion of grouting and sealed with 2 pack Thioflex or similar grey colour



Nick cut in texell to facilitate removal of top 25mm

- Expansion joints in footway at building line
- Texells come in sheets 4ft x2ft
- Depth of sett or flag cut from the sheets

Laying

- At the end of each day's work, flags or setts are sprayed using a fine rosed hosepipe
- This removes any cement or aggregate from the flags and starts the hydration process in the bedding
- Laying continues for 5 or 6 days until such time that there is a large enough area for the squad to grout in a day

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Grouting

Material:

- Sieve out from aggregate all fractions greater than 3mm
- 3mm to 0mm crushed aggregate; p.f.a. cement in the ratio 3:1
- Material mixed in concrete mixer to a runny grout-like consistency

Method:

- Wet the work area. Pour the grout over the flags working into the joints with a stiff rubber squeegee. Allow time for the grout to settle. Spray area using a fine rosed hosepipe.
- Allow an hour for the grout to start to go off. Spray area and run off the surplus grout to an area of the work with a sponge double squeegee.
- Repeat the above process with the sponge squeegees until the flags are clean
- Spread fine sawdust (which does not contain any small pieces of wood) over the work. Use a 3ft wide soft brush to brush the sawdust over the area to soak up any further cement paste.
- Repeat the above process using fresh sawdust.
- Spread fresh sawdust over the area. Lighting layer if in dry conditions or windy conditions.
- Keep traffic off the area – if possible up to at least 4 days.

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Guidelines for the cleaning and maintenance of Caithness Flagstone Paving

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1.0 Scope

This document gives guidance and general cleaning advice for surfaces paved with Caithness Flagstone, laid in accordance with our laying specification or applicable British Codes of Practice.

2.0 General

These notes are intended for general guidance and are not intended to be exhaustive. Caithness Flagstone is a natural product providing a durable, hardwearing surface. All surfacing material may, during service, experience some degree of surface staining and therefore require regular maintenance and good cleaning practice to maintain the overall appearance of the paving.

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3.0 Health and Safety

Certain cleaning methods described, involve the use of chemicals. Therefore it is important that any safety warnings issued by the chemical suppliers should be carefully read and strictly adhered to at all times.

In general the following precautions should be taken:

- When using chemicals, protective clothing such as gloves, goggles, boots and overalls should be worn.
- Adequate ventilation is required when using chemicals in confined spaces.
- When using flammable materials i.e. cigarettes, naked flames and other sources of ignition should be carefully controlled.
- When diluting acids, ALWAYS add acid to water and not water to acid.
- Any clothing that is contaminated with chemicals should be disposed of safely.
- When using any chemicals, care must be taken not to damage, contaminate or stain any adjoining material, landscaping or finishes.
- Care must be taken to protect personnel operating in the area of the cleaning from any injury or hazard created by the cleaning. The appropriate First Aid must be available on-site.

NOTE: Before undertaking any cleaning operation, a trial should be carried out on a small, preferably inconspicuous area, to determine the effect of the chemicals before treating a large area.

4.0 Maintenance of Paving

4.1 Early trafficking of area of flexible paving

Once the flexibly laid surface is complete (including of all the unit to unit joints) generally it can be open to traffic. If the underlying bedding sand has been saturated by heavy rainfall, either during or immediately after compaction of the paving, trafficking should be delayed

If saturation has occurred, the paving should not be allowed until the laying course sand has been allowed to drain.

4.2 Initial Maintenance

During the very early life of flexibly laid pavements, the joints between the units will be relatively porous. The ingress of water can consolidate jointing sand and it is important that the joints are regularly “topped up” to replace the sand consolidated by rainwater or removed by other factors.

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The joints will soon become semi-impervious as the build up of surface detritus seals the joints. Until this has occurred the paving should only be brushed by hand. Mechanical sweepers and in particular sweepers with high suction forces, should not be used as there is a real risk of further loss of jointing sand.

4.3 Winter Maintenance

Normal de-icing salts can be applied to Caithness Flagstone, without risk of damage to the pavement, but once the pavement has dried out after any thaw, the pavement may be temporarily discoloured by the salt material, as for any paved area. Normal weathering should soon remove any discolouration.

If there is any concern to avoid temporary discolouration of paved area, then other de-icing material, such as “urea” should be used.

5.0 **Cleaning of Paving**

5.1 General Dirt and Detritus

To remove general dirt and detritus regular brushing is recommended. If detritus reduced the intensity of colour of the material then this can be re-established with a mild detergent e.g. washing up liquid, and hot water.

Ensure all detergent has been thoroughly washed from the surface on completion of the cleaning and the resulting run-off is carefully channelled to either drainage points or containers where it can be safely disposed of.

5.2 Moss, Lichens and Algae

Moss, Lichen, and Algae can be prevalent on hard surfaces where the area is heavily shaded, is under trees or is not laid to an adequate fall. If such growths do occur and are considered undesirable then the area should be treated with a proprietary weed or moss killer used in accordance with the manufacturers' instructions. Such products take some days to be effective and are most effective when applied during spell of dry weather. The washes work best if any thick growths are scraped off first and the wash is well brushed in. Some treatments leave a residue to discourage the re-growth of the Moss and Algae, but this will only be of limited value if the surrounding conditions leave the paving damp and in shade.

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5.3 Rust Stains

Initially action must be taken to eliminate the source of staining.

To remove the rust stain, the surface should first be wetted with clean water and then the affected area treated with a 7 to 10% dilution of Hydrochloric Acid solution.

5.4 Oil Stains

Oil can penetrate readily into hard surfacing materials, but it should not stain if any spillages are removed promptly with an absorbent material e.g. paper towels, cloth or absorbent granules.

Do not attempt to wipe the stain as this will drive the oil into the surface of the units and spread it over a wider area.

If the stain persists then an emulsifying degreaser should be employed. Brush the cleaner onto the affected area, leave for a period of time according to the manufactures instructions and then wash the emulsified oil away with plenty of clean water.

Alternatively the surface can be scrubbed with a detergent and hot water taking care to ensure that the strength of the detergent is not detrimental to the appearance of the paving. However, for persistent oil staining, steam cleaning may have to be considered.

5.5 Bitumen Stains

Fresh bitumen should be allowed to cool down before removing it with a paint scraper or similar. If it is particularly resistant, the use of ice to make the bitumen brittle may be required prior to scraping it from the paving. Any residue should be removed with an abrasive powder and finally the whole area rinsed with clean water. Certain proprietary cleaning agents are available to remove bitumen but these should be tested on an inconspicuous area of paving first.

5.6 Graffiti and Paint Stains

Both paint and graffiti are difficult to remove from most hard surfacing material. Fresh wet paint should be soaked up with absorbent material without wiping the paint, as this will spread the stain. It should then be treated with a suitable solvent, such as white spirit, and then the area washed with a de-greasing agent taking care in the disposal of run-off material.

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Dried paint should be scraped off as far as possible and then an appropriate paint remover applied.

NOTE: Paint manufacturers may often be able to give more detailed advice on the removal of paint and graffiti. Therefore they should be consulted directly for specific recommendations.

5.7 Epoxy and Polyester Stains

Areas of solidified epoxy or polyester resin can be removed by carefully burning off the area with a blowtorch. Care must be taken not to inhale any fumes given off.

If, after burning, a black stain remains, this can be removed by scrubbing with detergent and hot water. For larger areas grit blasting may have to be considered, however the effect of such treatment on the micro texture of the surface should be carefully considered. Again it is advised that a small area be tested before any large-scale operations are undertaken.

5.8 Smoke, Fire and Tobacco Stains

Normally such stains can be removed by scrubbing with detergent and hot water. Where the stain persists, a mixture of scouring powder and household bleach can be used. It is important the bleach is washed from the area with clean water once cleaning is complete and the run-off carefully disposed of.

5.9 Beverage Stains

These can normally be removed by scrubbing the stain with detergent and hot water. If the stain is persistent, apply a household bleach solution and then rinse the area with clean water taking care to dispose of the run-off safely.

5.10 Chewing Gum

Chewing gum is a particularly difficult substance to remove from hard surfaces.

Newly discarded gum can be scraped off by using a mechanical scraper but hardened gum can only be removed by both freezing the gum and chiselling it from the surface of the paving, or utilising a hot water/steam cleaner.

For specific advice on chewing gum removal it is recommended that specialist contract cleaning companies be contacted directly for further details.

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5.11 Scuff Marks from Vehicle Tyres

These can normally be removed by steam cleaning, or by scrubbing the area with detergent and hot water.

5.12 Cement and Lime Staining

Both types of staining can occur on paved surfaces, usually as a result of contamination from other sources, such as concrete street furniture or the use of onsite mortars and concrete.

6.0 Acid Washing

Stubborn and persistent stains that will not generally weather away naturally will require the application of a specific acid cleaning treatment to remove them.

Prior to any acid cleaner being applied, the surface must be thoroughly wetted with clean water to prevent the acid being absorbed directly into the paving. A dilution of 7 to 10% of Hydrochloric Acid should then be prepared and applied to the affected stain.

As the staining begins to dissolve, some frothing may be apparent, which should be followed by agitation using a stiff bristle brush to completely remove all trace of the stain.

Once this process is complete the whole surface should be rinsed thoroughly with clean water taking care to dispose of the run off safely. In the vast majority of cases, re-treatment may be required.

When using any form of chemical treatment the following guidelines should be strictly adhered to:

- With deeper stains, the degree of acid treatment may result in an acid etched appearance.
- Protective clothing should be worn at all times when using chemicals and the appropriate first aid measures must be available on-site.
- Take care to ensure that the surrounding materials and landscaping are protected. Soft landscaping and exposed materials can be severely affected by chemical treatments.
- It is better to treat several times with the correct dilute solution than to use concentrated acid, which many damage the surface of the unit.
- When diluting acids, always add acid to water and not water to acid.

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7.0 Sealants

Proprietary sealing agents are commonly used on paved surfaces to reduce moisture penetration of the laying course material, and minimise staining from spillages.

In any form of surface sealing is used on the pavers it must be applied in strict accordance with the manufacturer's instructions and it must be accepted that it may have an effect on the colour and appearance of the paving, its slip/skid resistance and may require on-going maintenance during the life of the paving. It is important that the surfaces of the pavers are dry and clean before any sealer is applied.

8.0 The Use of Mechanical Sweepers on Paved Areas

The following recommendations deal with vehicles and associated equipment for use on paved footways/footpaths/pedestrian areas and roads.

The equipment should be purpose designed to sweep the particular area and surfacing product. If there is any doubt, the vehicle manufacturer should be consulted.

Where possible, low ground pressure tyres should be fitted to reduce the risk of breaking or cracking of flags.

Tyres should be inflated according to the manufacturer's recommendations, again to ensure minimum weight distribution per square mm.

Polypropylene, not wire, brushes should be used.

Sweeping brush pressure should be set to the minimum required to suit the particular task, i.e. surfaces swept regularly will require a lower setting than those swept infrequently or those covered with heavy deposits.

When sweeping, engine revolutions should be set at the minimum required to maintain vacuum (suction) pressure.

Operators, including reliefs, should be trained to manufacturer's recommendations and tyre and brush pressures should be regularly checked.

Advice should be given to operators that, when equipment is stationary or left attended, suction, brush rotation and water jetting equipment should be switched off to avoid the risk of damage to the area below the stationary equipment.

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In new or re-laid areas, agreement should be reached on a period of manual cleaning (at least four weeks) to allow the paving to settle and the joints to seal. This period may be reduced by using either a water based bonding agent or elastomeric prepolymer sealant and by agreement with the cleansing authority or an appropriate sweeping regime. Following the use of mechanical cleaning operations, re-sanding of the joints in flexibly laid areas may be necessary.

9.0 The Use of Power Washing Equipment on Paved Areas

To aid in the removal of surface staining, power washing equipment is often considered. Whilst such techniques offer certain benefits, particularly for larger areas, it is important that care is taken in their use to avoid damage to the structural integrity of the paving.

When using any form of power washer the following guidelines should be strictly adhered to:

The power washer should be used on a setting, which is sufficient to remove the dirt without causing further distress. A low-pressure setting is recommended.

Do not direct the power lance directly down on to the paving, as this can result in loss of jointing material.

Ideally a spraying movement should be adopted holding the power lance at a shallow angle, not greater than 30 degrees across the diagonal (i.e. not parallel to joints)

Certain high-pressure jetting machines have been known to mark/damage the surface of certain types of paving material. It is therefore prudent to carry out a small test area before commencing on a larger area.

This area should be inspected after cleaning to sure joints are full.

10.0 Further Reference

In all instances, reference should be made to current British Standards and Codes of Practice as appropriate to the work to be performed.

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STATS Certificate of Test