

TECHNICAL INFORMATION

All installations should be detailed and constructed in accordance with the relevant standards, including.

Specifications:

UKCSA Specification for cast stone

BS 1217:1997 specification for cast stone

BS 5642: Part 1: 1978 'Window Cills'

BS 5642: Part 2: 1983 'Copings'

BS 6457: 1984 'Reconstructed stone masonry'

CODES OF PRACTICE

BS 5628: Part 3: 2005 'Use of Masonry'

BS 8000: Part 3: 2005 'Workmanship on building sites – code of practice for masonry'

BS 8110: Part 1:1997 'Code of practice for design and construction'

For additional general guidance on aspects of installation design, the UK Cast Stone Association has produced a technical manual for cast stone. A copy can be obtained from UKCSA via www.uksca.co.uk.

COMPOSITION

Cast stone comprising:

BS EN 12620:2002 – 'Aggregates for concrete'

Ordinary Portland Cement (to BS EN 197: Part 1: 2000)

Colouring pigments (to BS EN 1278: 1999)

Appropriate admixtures

MANUFACTURE

All components are manufactured with care and precision in accordance with quality management systems. Albury Lodge stone is manufactured with a fine textured face mix and where appropriate structural backing mix.

WEATHERING

Like natural stone, these products will weather over time. The nature and extent of such changes to appearance will typically be dependent on a combination of the following:

Architectural detailing

Location

Prevailing weather/environment

Degree of exposure

Quality of installation

PROPERTIES

Density: 1950-2050 kg/m³ at 5% moisture content by volume, dependent on unit/section size.

Compressive strength: Not less than 35 N/mm² when tested in accordance with BS EN 12390-3:2002.

Modulus of elasticity: 20-25 Kn/mm².

Water vapour resistivity: 100-150 MNs/g.

Water absorption: when tested in accordance with the UKCSA specification for cast stone, the mean coefficient of water absorption due to capillary action of three samples shall not exceed 1.0mg/mm² with no individual value exceeding 1.3mg/mm².

Thermal conductivity (k value): 1.22 W/Mk for protected positions, 1.31 w/mk for exposed positions (in accordance with Table 3:1 of the CIBSE Guide A.)

Moisture movement 'drying shrinkage': Less than 0.06% all in accordance with BS EN 772-4.

A Secondary glazing system is required in conjunction with Traditional window surrounds with mullions to minimise the cold bridging effect of the surrounds. Without such a system, condensation and/or dampness may occur on the internal surfaces of the window surround.

SITEWORK

Ensure that all required, and/or recommended damp proof coursing has been provided. Omission may cause costly and time-consuming problems.

Maintain recommended jointing widths. Consistency is especially important for assemblies of multiple components (eg. Window or door surrounds) to avoid detracting from resulting overall appearance.

After installation in position, ensure that adequate protection is provided to prevent damage by following trades.

INSTALLATION NOTES

Where cast stone interfaces with other materials, due allowance must be made to cater for the different movement characteristics of each material, for example, at the interface between clay brickwork and cast stone lintols or cills, a movement control joint to accommodate differential movement between the two materials should be incorporated, or the cast stone units should be flexible jointed, otherwise cracking may occur. The incorporation of a movement control joint within a wall structure should be in accordance with BS 5628: Part 3: 2005 – ‘Code of practice for use of masonry’.

Wherever horizontal cavity trays are built in, they must extend at least 150 mm beyond each end of the lintel or other cast stone element below. Trays must have formed ends to prevent water seepage into the cavity below. Weep holes, to drain the tray and prevent water build up over it, must be provided at each end at intervals along the tray.

Flexible sealant must be of high quality (conventional mastics are often suitable), selected for good durability and compatibility with the materials with which it is in contact. It must be used strictly in accordance with its manufacture’s recommendations, especially relating to the use of primers. Polysulphide sealants have been used with success in the past, but the choice of sealant should be guided by the advice of the sealant manufacturer and will be project specific.

FIXINGS

All continuous jambs incorporate dovetail slots to facilitate fixing of the jambs to the masonry walling. All horizontal joints and door surrounds are connected using stainless steel dowels.

Mortar should be prepared in accordance with BS 5628: Part 3: 2005 which makes recommendations concerning mortar suitability under varying environments. This standard suggests that mortar should be no stronger than is necessary for design purposes. Albury Lodge experience confirms this suggestion. Accordingly, it is recommended that mortars containing lime are used where practicable, as follows; cement;lime;sand (1:1:5-6 mix). Mortar designation compressive strength class M4.

In most cases, dressings may be bed-jointed using the same colour mortar as used for surrounding masonry. However, if that colour represents an unacceptably large contrast in shade (for example, dictated by certain shades of brickwork), alternative proprietary mortar shades may be preferred.

Albury Lodge Stone is delivered on shrink wrapped pallets on the vehicle to minimise damage in transit and to protect the product against adverse environmental conditions.

Generally, goods are despatched on vehicles with offloading facilities. Care should be taken always to avoid damage to edges and faces. Pallets must be stored on a hard, level surface and should never be stacked. Always cover opened pallets to prevent ingress of water, dust and dirt.

HANDLING & STORAGE

The following are general principles of good site practice which will contribute to successful installations:

Ensure that all users are aware Of Health and Safety requirements for the manhandling of loads.

Always unload palletised deliveries of cast stone using fork- lift vehicles. Do not use slings, scaffold poles, etc.

Store pallets on flat, level, dry ground at a safe distance from other trades, roadways, access and exits etc. Do not stack pallets.

To minimise risk of damage to cast stone products on site (eg. from transport or mobile plant), and to ensure cast stone components are kept dry before being built into the works., do not remove packaging materials until immediately before the products are required for use.

Remove shrink wrapping carefully, cover opened pallets to prevent ingress of water, dirt or dust. Wherever possible, re-use interior packing to protect exposed faces, arrises etc, when units are removed from the pallet.

Never stick cast stone units face to face without an appropriate interface material.

CLEANING

The following instructions are provided for guidance purposes only. A final wash is recommended prior to the handover of the building.

All cleaning processes should be carried out in accordance with BS 8221-1:2000 'Code of practice for cleaning and surface repair of buildings.

Any cleaning method should be tested on unfixed material or a concealed part of the finished structure prior to overall cleaning. This will establish that the selected cleaning process is compatible with the products to be cleaned.

A fibreglass or stiff bristle brush can be used to remove any light deposits such as mortar, wire or metallic brushes are not recommended as they may permanently damage or mark the face of the cast stone units.

Washing with water is a very simple and effective process for removal of water-soluble materials. Bucket and brush, or a low-pressure hosepipe (not greater than 100 bar or 1400npsi) are both suitable.

For more stubborn stains, we recommend a mild detergent such as sugar soap diluted in water and then thoroughly rinsed with clean water. Avoid saturating the stone which may cause over wetting (where dirty water dries out) or efflorescence.

Power washing is not recommended and can cause damage to the fine surface of the cast stone or the mortar joints.

Whilst popular and effective, care must be taken and correct procedures followed.

Hydrochloric acid can be used to remove mortar stains and deposits or lime bloom. Dilute to 7-10% and follow the manufactures instructions. The stone and surrounding surfaces should be wetted through out with water prior to any acid cleaning to prevent surface burning.

Such chemical cleaners can affect stone colour and texture. We recommend, therefore, that complete stone planes are treated first (rather than a small section of a larger area). Successful areas can be treated to give uniformity of appearance.

Remove surface debris before cleaning with a plastic or wooden scraper (do not use metal tools).

Stains such as paint or greases can be cleaned using the same procedures as those recommended for concrete. We recommend advice should be sought from a specialist cleaning company prior to work being carried out.

Albury Lodge Limited

Wet cast Technical Specification

Composition

Wet Cast components are manufactured in accordance with BS 1217:1997 and BS 8110 in a homogenous wet cast mix. Using natural occurring aggregates, sand, Portland cement and pigments are added where necessary.

All products used are manufactured to the following current British Standards.

Portland cement to BS12:1989

Aggregates to BS882:1983 and tested in accordance with BS812

Sands to BS1200

Water Repellent Additives to BS1014: 1975

Pigments to BS1014

Structural Use

Heads are suitable for structural use up to 1500mm (including 150mm bearings), or greater. But this must be confirmed by your Structural Engineers.

Quoins, Plinths and String Courses can be used in load bearing situations when used in compression. All units are reinforced as follows: except where stated otherwise.

All reinforcement used is mild steel, galvanized or stainless steel available subject to additional costs.

Compressive Strength

When tested in accordance with BS1881: Part 116: 1983 and BS1217: 1997 and the United Kingdom

cast Stone Association, the cast stone was tested over three 150mm cubes giving an average crushing.

strength well more than 35KN/mm².

Density

Initial Surface Absorption

When tested in accordance with BS1217: 1997 the average result over three samples was generally in accordance with Grade A.

When tested in accordance with the UKCSA specification with an immersion time of ten minutes, the mean water absorption due to capillary action of three samples

Was: <3gcm⁻² min^{-1/2}

Manufacturing Tolerances

The actual dimensions of individual regular units should conform to the stated dimensions subject to the Tolerances below:

Length

Tolerance in MM Length Width Thickness

Up to 600mm +/-2 +/-2 +/-2

Over 600mm to 1000mm +/-3 +/-3 +/-3

Over 1000mm to 2500mm +/-4 +/-4 +/-4

Over 2500mm to 4000mm +/-5 +/-5 +/-5

Over 4000mm +/-6 +/-6 +/-6

Fire Resistance

Units manufactured in accordance with the standard are non-flammable, non-combustible and do not give off toxic gases and can provide a barrier to the spread of smoke and flames.

Weathering

Many factors influence the way cast stone weathers, such as design, exposure, climate and surrounding.

All pigments used are durable and confirm to BS1014. Wet Cast architectural dressings will weather in a similar manner to natural stone, when exposed to similar conditions.

Cementitious Efflorescence

As with all reconstructed stone and cement-based products there is the possibility that the temporary

Phenomenon known as efflorescence will occur causing lightening of colour. This will reduce over a period of time with natural weathering.

Resistance to Rain Penetration

As with all facing masonry, (reconstructed stone walling bricks, natural stone etc) external skins of

Cavity walls are not totally impervious to heavy driving rain as there is the possibility that water penetration will take place through the mortar joints. To avoid this, normal good building practice should be observed. Provision of any enactment or regulation or the working rules of the industry are complied with.

Surface Finish

The colour and texture of the exposed face of the cast stone should be agreed between the client/architect and ourselves. As with differences in the way units are manufactured this lends itself to subtle variation in the colour. Cement and aggregates used are carefully chosen for their quality and consistency, are all obtained from natural sources and are therefore subject to variations beyond our control. We do and always make every effort to ensure consistency in colour and texture of units manufactured but no guarantees can be given.

British Standards

The following British Standards give guidelines and information on the various aspects of design,

construction and usage of Cast Stone:

BS 5628 - Codes of Practice for the Use of Masonry Part 3:1985 Materials and components, design and workmanship.

BS 6457 1984 - Specification for Reconstructed Masonry Units.

BS 6073:1981 - Specification for Precast Concrete Masonry Units.

BS8000:1989 - Workmanship on Building Sites Part 3 Code of Practice for Masonry.

BS 5642 1978 - Specification for Window Cills & Copings, Precast Concrete or Cast Stone.