

# Procter Cast Stone

Products, Specialist Installation & Technical Information

# **Technical Overview**

#### **Standards**

All cast stone products manufactured exceed BS1217 standards.

### **Material Type**

Vapour cured semi-dry cast stone.

# **Curing Method**

Vapour cured under controlled conditions in a curing chamber.

## **Cube Compressive Strength**

The cast stone shall have a minimum cube compressive strength of 35 MPa, which represents a strength at least 40% higher than the BS 1217 requirement.

# **Weathering Grade**

The permeability and durability of the cast stone, when tested in accordance with the Capilliary Absorption Test (CAT) shall not exceed 1.0mg/mm2.

# **Durability Against Freeze / Thaw**

Products complying with these requirements are deemed to be freeze / thaw resistant.

# **Bond Strength**

In accordance with BS EN 998-2 for general purpose mortar - the Characteristic Shear Strength is 0.15N/mm2.

### **Thermal Conductivity**

In accordance with BS EN 1745 –  $\lambda$  value for cast stone is in region of 1.2 to 1.7 W/mK for a 5% moisture content product.



# Welcome to Procter Cast Stone

Procter Cast Stone is part of Procter Bros - a family owned business established in 1740. Across our business and in all of our divisions, we put great emphasis on both high quality products and outstanding customer service.

At Procter Cast Stone, we manufacture and supply high quality standard and bespoke Cast Stone products for projects throughout the UK. These are used for a very wide range of residential, retail, religious, self-build, ornamental and restoration applications.

# What we do The Procter Cast Stone service 1. Technical consultation

This is where a project usually starts and our technical team provide free consultation to specifiers to help in the selection and design of all cast stone features.

Early involvement from us in project planning ensures the successful incorporation of the features to suit aesthetic, performance and budget parameters, as well as scheduling deliveries to suit the programme requirements.

# 2. Site survey

We are always very happy to meet our customers on site to discuss in detail the technical requirements for the features, take dimensions, assess quantities, agree schedules, match existing stonework colours etc. and give recommendations on handling and installation procedures.

### 3. Custom design service

In addition to our comprehensive range of standard designs, we very much specialise in the manufacture of individually designed cast stone features to meet specific project requirements.

Once these requirements are agreed, CAD drawings are prepared and submitted to the client for prior approval. Accurate production moulds are then manufactured.

### 4. Detailed quotation

Fully detailed quotations are provided from architects designs or bills of quantity to suit a customer's tender dates. Budget prices are also given when requested.

# 5. Manufacture

Once the full requirements are agreed and the quotation approved, we start the manufacturing process. This is carried out at our factory in Garforth, West Yorkshire, and under closely controlled conditions to ensure consistent high quality standards of production and curing.

Manufacture | Install | Aftercare | Trusted since 1740

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# Vapour curing technology

Cast stone must be cured correctly to ensure its long-term structural integrity, durability and good appearance. Furthermore, the high strength achieved by correct curing of cast stone provides resistance to damage during transportation, handling and installation.

A common misconception is that curing allows the cement-based product to dry, but sufficient moisture is essential for completion of the chemical reaction that gives the product its strength.

BS 1217, the British Standard for cast stone, specifies a minimum curing time of 14 days before cast stone should be transported or installed – and an extended period may be required for structural units. However, this time can be reduced if an accelerated curing process is employed.

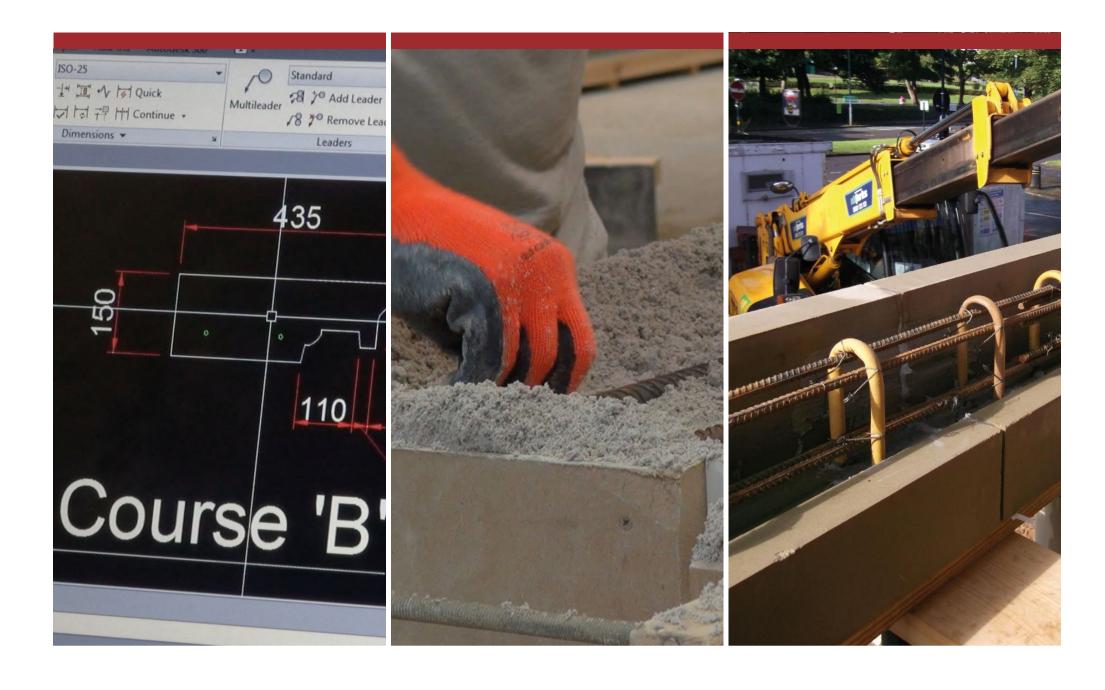
# The benefits of Vapour Curing

Procter Cast Stone has invested in a state-of-the-art vapour curing chamber that maintains the optimum temperature and humidity of the environment in which the units are placed for a defined time period after casting. This climatic control speeds the curing process and enables the total time to be reduced considerably from the conventional 14 days. This controlled method of curing ensures that all our products are cured evenly and are of an exceptional standard.

The commonly used method adopted by others within the cast stone industry is a 14-day period from casting to transportation includes an initial curing period of 12-14 hours away from direct sunlight and winds that can cause a loss of water by evaporation. After the initial 12-14 hours, the product can be moved into protected storage, where it should remain until 14 days have elapsed. During this period the units can be affected by climatic conditions resulting in unevenly cured stone.

Our quality control, manufacturing process and vapour curing chamber result in our cast stone units having compressive strengths at least 40 percent higher than can be achieved by some of our competitors.





# We design, manufacture and can install high quality cast stone products

Procter Cast Stone is part of Procter Bros Ltd., a family owned business established in 1740. We are one of the UK's leading cast stone specialists, and offer you a comprehensive service to manufacture, supply and install high quality custom made products throughout the UK, as well as supplying a range of standard products from stock.

To ensure you get the best cast stone, great emphasis is placed on both high product quality and outstanding customer service. Our cast stone products are made from a semi-dry matrix that has been developed over many years, and is cost-effective and offers consistent quality and colour. This means you can use our products with confidence in a very wide range of applications, including residential, retail, commercial, religious, self-build, as well as restoration projects where stone detailing is required.

# What you can expect from Procter Cast Stone at a glance

- Outstanding expertise in cast stone with over 30 years of manufacturing excellence
- The ability to create custom designed products in virtually any stone colour
- Design advice in conjunction with using your architect's drawings
- Standard products kept in stock
- Full UK and Overseas coverage from our central base
- Expertise in all building types including residential, commercial, retail and religious
- Our own mould making studio is a key factor in providing you with very high quality products and is great value for money

# Are you new to cast stone?

Cast stone is an attractive and generally very cost-effective alternative to quarried stone. As its name suggests, cast stone is formed in moulds from a mix of natural raw materials making Procter Cast Stone virtually indistinguishable from quarried stone.





### Freedom of Design

Almost any three-dimensional geometric form can be cast, allowing architects to design elegant curves as well as straight-edged features. Additional details can also be incorporated into the surface, such as brick effects or channels. Furthermore, a variety of surface finishes and textures can be achieved in order to compliment brickwork, natural stone or rendering.

### Casting from a mould

This is a real advantage over quarried stone when multiple units of the same design are required. Once the mould is made, any number of identical cast stone units can easily be produced.

### Ease of handling

Whilst a degree of care is required for site handling of cast stone units, larger products can have threaded inserts cast-in to take lifting eyes. This facilitates mechanised lifting; simplifying site handling and minimising the risk of damage to the units during installation.

#### Replication of existing units

Moulds can be created to replicate existing stonework where a building is being restored or extended. As cast stone weathers in a similar way to natural stone, there is usually no problem with installing new cast stone units alongside existing originals.

#### Efficiency and time saving

Cast stone products can be delivered to site to an agreed schedule. Once a mould is made, individual products can quickly be produced.

# **Consistency of quality**

Procter cast stone is manufactured in accordance with strict quality assurance procedures to exceed BS1217 under closely controlled conditions. This means you can be assured of consistent quality, durability, colour and finish.

All of this helps to reduce project risk and keep schedules on target.

# Procter Cast Stone How we work for you

At Procter Cast Stone, our aim is to provide you with a full suite of services and to ensure that your experience with us is complete, efficient and as hassle-free as possible.

We split our service into six main areas...



# **Technical Consultation**

Our technical staff provide free help to architects, other specifiers and self-builders in order to ease the selection and design of all cast stone features. Involving us at an early stage in a project ensures that all issues can be taken into account such as design, technical performance and budget parameters, as well as scheduling deliveries to suit building programme requirements.

Our team has many years of experience, and this can be invaluable to our customers. This is helpful because for many of the people we deal with, cast stone features are a very infrequent purchase - or, for some, may even be a one-off purchase. As a consequence, this relatively specialist building product is not something which everyone knows a great deal about, and therefore having technical experts on hand is obviously very important and useful.

### Our technical consultation service provides:

# Initial advice on the suitability of cast stone for the project

No matter what project you have in mind - be it new build or restoration - an initial discussion with us will determine suitability and cost-effectiveness. It may also offer some new ideas on the use of standard products helping to keep your costs under control.

## More detailed input on design for specific features

Once the decision is made to use cast stone within your building project, a more detailed assessment is sometimes needed and from here, our experts can help with the design of specific features. At this point, we'd also consider performance factors such as weight loading, and if the project was a building restoration then we would normally meet our customer on site.

#### Site meetings

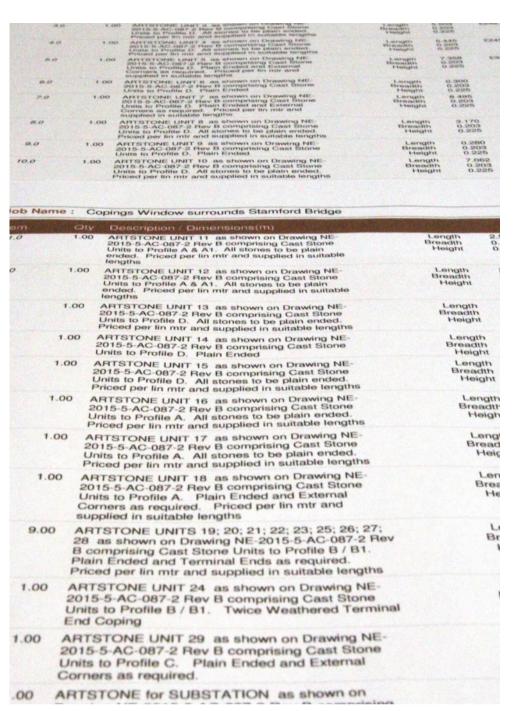
We are very happy to meet you on site to discuss in detail the technical requirements for the cast stone features you need. During these meetings, we often address other related questions concerning technical advice and answer questions about general cast stone. Where the project is a building renovation and where there are a number of different designs of cast stone feature to be installed, a site meeting with us is generally recommended.

#### Final specification on all features needed

With the above complete and your order placed, we will agree the final design and specification of the individual cast stone products with you prior to manufacture.

# Production, delivery and installation

An important element of the support service we provide concerns the timing of production and delivery to site, plus advice on handling, pointing of joints and installation. We understand from our considerable experience the length of time each stone takes to make, this means we can advise you on the exact timings to ensure the cast stone products are ready on the day that they're needed. We also offer a specialist installation service for certain items and can advise for the peace of mind that this offers.

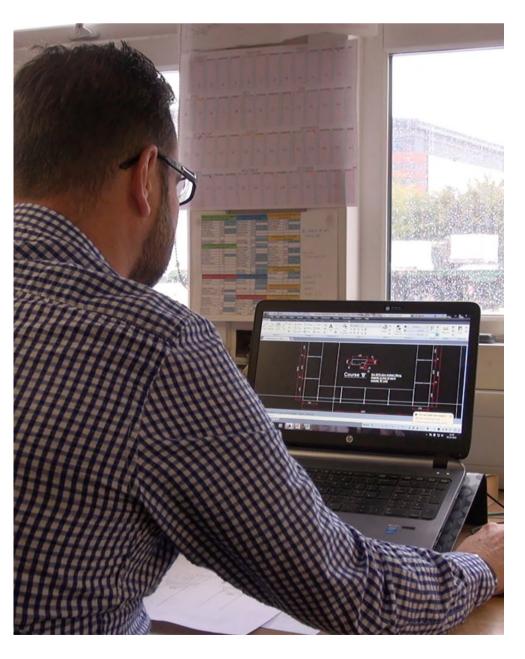


# **Detailed Quotations**

For any aspect or element of a new building or renovation, it is clearly vital to know what the cost is going to be. For cast stone architectural features, we can provide you with an accurate cost at the design stage assuming all details are available, or it may be possible to provide a budget price if they are not. For fully detailed quotations, we can use architect's designs, bills of quantity or, best of all, a stonework schedule. For budget costings, we can work from basic information such as a number and type of features that are likely to be required, along with length, breadth and height dimensions. A rough sketch always helps too.

We cover every aspect of the job, and central to what we do is ensuring that there are no hidden extras for you. Every aspect is fully detailed to ensure you know exactly what the final total will be - assuming the requirements don't change, of course.

All quotations include dimensions of the products quoted and total weight of the items to be supplied. If material samples are needed, we can also supply these to show the colour and finish of the product quoted.



# Custom design

We very much specialise in the manufacture of individually designed cast stone features to meet specific project requirements. The overall design of these units comes either from the architect's drawings or from pictures you may provide. We are often asked to produce a design based on rough visuals, a variation of one of our standard products, or just from a verbal brief. We always aim to help as much as we can.

This approach of carrying out custom design for cast stone features is typically more cost effective for you, as our in-depth knowledge on a technical level means we are able to take all factors into account - not just aesthetics. These factors include the practicalities and economy of mould manufacture and stonework production, along with how stonework design may impact on the build.

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# Manufacture

The quality of products you can buy from Procter Cast Stone is excellent as the unique mix design that we use has been developed over many, many years.

There are five main stages to the manufacturing process:









#### **Moulds**

Moulds are made to the exact dimensions taken from your architect's drawings or our workshop drawings. Unlike some cast stone manufacturers, we have our own team of highly skilled, directly employed craftsmen to make the moulds needed for your project. This gives you extra confidence as we have total control over the intricacies of a very important stage of the manufacturing process. Once the moulds have been tested and checked to ensure they are perfect, they are approved and ready for the next stage.

### Preparation of the cast stone mixture

This is an especially critical part of the process because there are a number of key factors that we have to take into consideration, including the relative quantities of different loose materials which go into the mix, which have to be exactly right to ensure the end product is of the correct finish, strength and colour.

### Filling the moulds

A process involving more skill than you might think! The filling of moulds, adding reinforcing bars and compacting the mixture using mechanical tools is the next element of the manufacturing cycle. It is the part of the procedure that forms the stone's surface.

#### Curing

Originally, Procter Cast Stone used an early version of an open curing area to ensure that the stone cured correctly. However, although better than relying on variable natural conditions, this proved to be a very inexact science. As a result, in 2015, the company introduced a brand new vapour curing system that gives the stone the equivalent of fourteen days strength overnight. This guarantees your stone will be uniformly cured, no matter what the weather is throwing at us.

### Final quality checks

Once fully cured, final quality checks are carried out on the stone before approving the product and packing on pallets with shrink wrapping, ready for delivery or collection.

# Specialist Installation



It is essential that the installation method chosen by our clients matches the exceptional quality of our products. Quality craftsmenship and attention to detail are essential when choosing a contractor to install any type of stone product.

Procter cast stone employ our own professional experts that will ensure that your cast stone is installed in-line with our high standards and meets every client's expectations.

You will also have the peace of mind that the cast stone remains our responsibility right up until the installation is complete and signed off. In this aspect, there's an added reassurance that your investment remains secure throughout the install.

All installation projects include site surveys, site meetings, full set of drawings and all materials required to carry out the project.

We specialise in and commonly install:

- Porticos
- Columns
- Survey

- Facades
- Colanades
- Restorations

- Ballustrade
- Orangeries
- Historical buildings

- Pediments
- Copings
- Religious buildings

By retaining us as a specialist installer, you can be sure that we will get the job done right first time. This can, in the long run, save you money and lower the risk of using someone whose experience in handling and installing cast stone is limited.

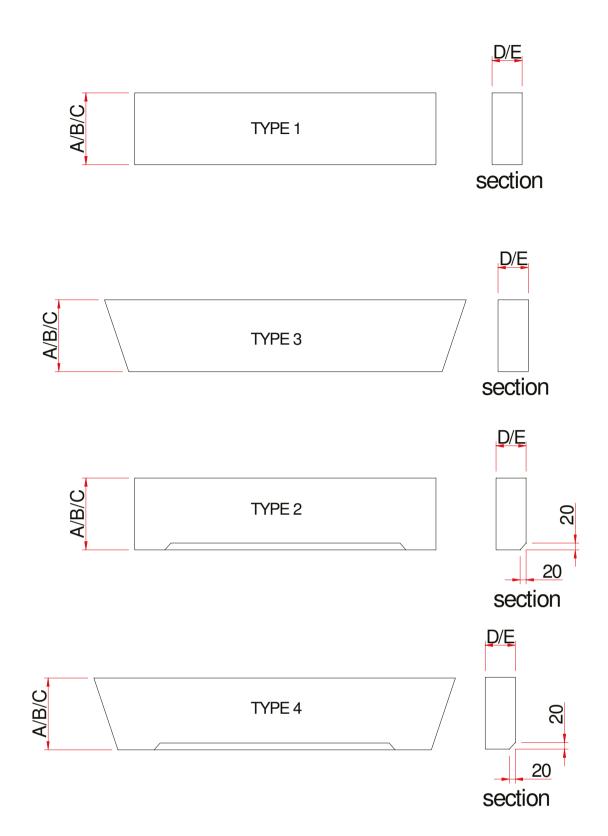






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# **Lintel heights**

A = 140mm B = 215mm C = 290mm

# **Lintel depths**

D = 100mm E = 120mm

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140mm & 150mm depths also available.

# **Typical weights**

140mm x 100mm - Approx 30kg per LM 215mm x 100mm - Approx 46kg per LM 290mm x 100mm - Approx 69kg per LM 140mm x 120mm - Approx 36kg per LM 215mm x 120mm - Approx 55kg per LM 290mm x 120mm - Approx 75kg per LM

Units can be supplied with cast in lifting sockets if specified. Units exceeding slenderness ratio with be supplied sectional (please consult sales team).

Splayed lintels incorporate an 80mm splay to each end. Semi-dry cast lintels are non load bearing and should be used in conjunction with a suitable structural lintel as per recommendations.



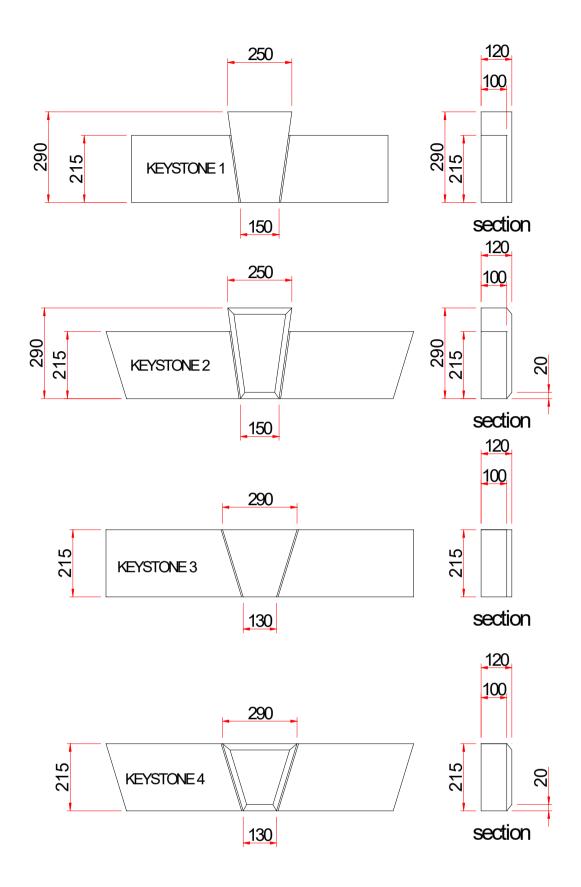












- Non-standard keystones manufactured to order.
- Keystones to suit lintels in render also available.
- Keystone type 1 & 2 to be used only with lintels 215mm or 290mm high. (The former achieving a projected keystone as illustrated).
- Keystone type 3 & 4 to be used only with lintels 140mm or 215mm high. (The latter achieving a flush keystone as illustrated).
- Keystones shown can be used in conjunction with all standard head types.
- Where a projecting keystone is required (keystone types 1 & 2), the head will be supplied in a minimum of 3 pcs.
- Lintels comprising of Keystone Type 3 and 4 can be supplied in 1pc subject to requirements and restrictions.
- All heads are non-load bearing components and must be used in conjection with a suitable load relieving lintel.

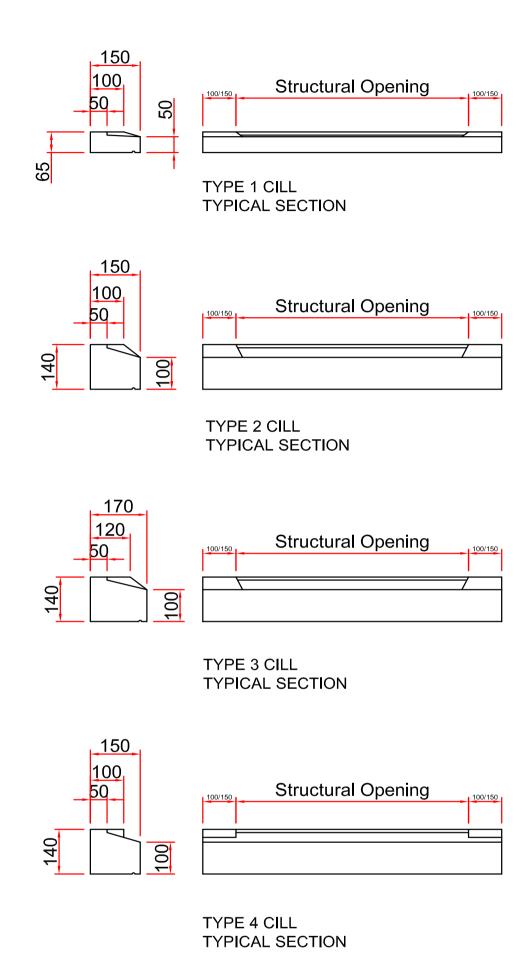












- All Type 1 cills over 780mm long will be supplied sectional unless previously agreed.
- All Type 2, 3 and 4 cills over 1200mm long will be supplied sectional unless previously agreed.
- Standard structural opening sizes include 488mm, 630mm, 915mm, 1200mm and 1770mm.
- Non-standard lengths and sections manufactured to order.
- 10mm rainwater drip located to front underside of all projecting cills.
- Type 3 cill recommended for rendered brickwork finishes.

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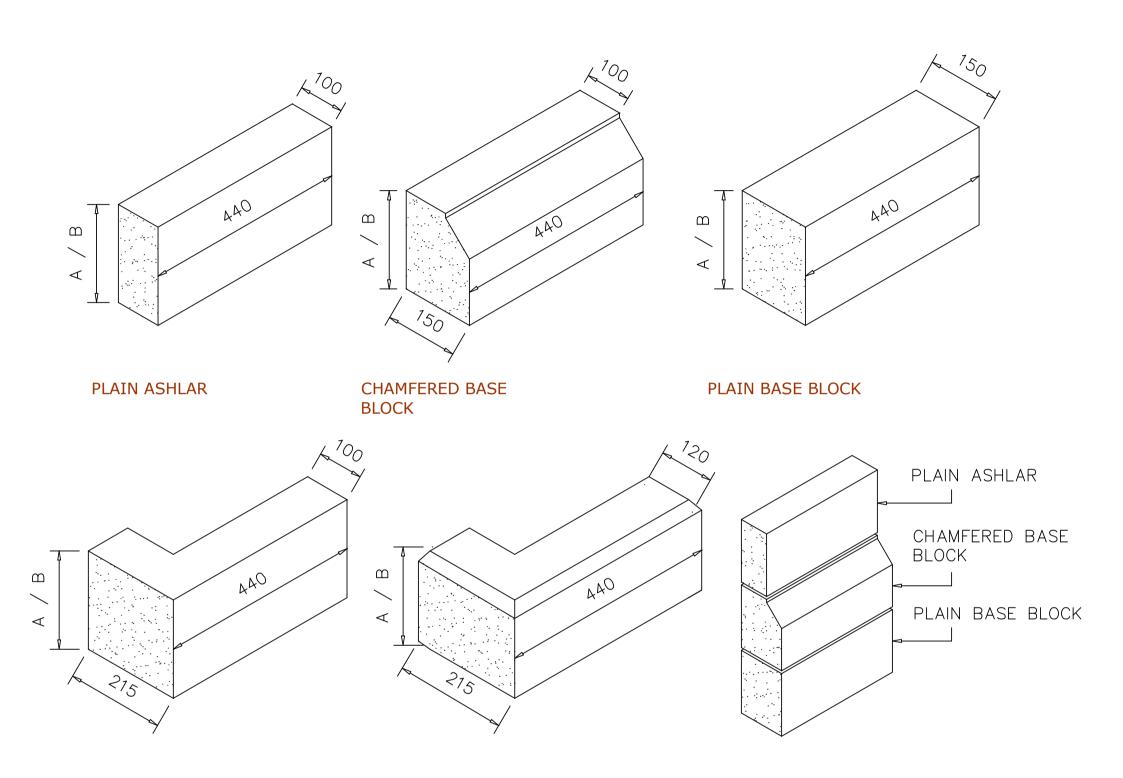








# Ashlar & Quoins



Dim A - 215mm high Dim B - 290mm high

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- Chamfered quions manufactured with 20 x 20mm chamfer to 6 edges
- Quoins may be widened to suit thickness of walling
- Chamfered base block manufactured with 50 x 50mm chamfer
- Plain base block to suit chamfered base block
- Non standard dimensions and designs manufactured to order

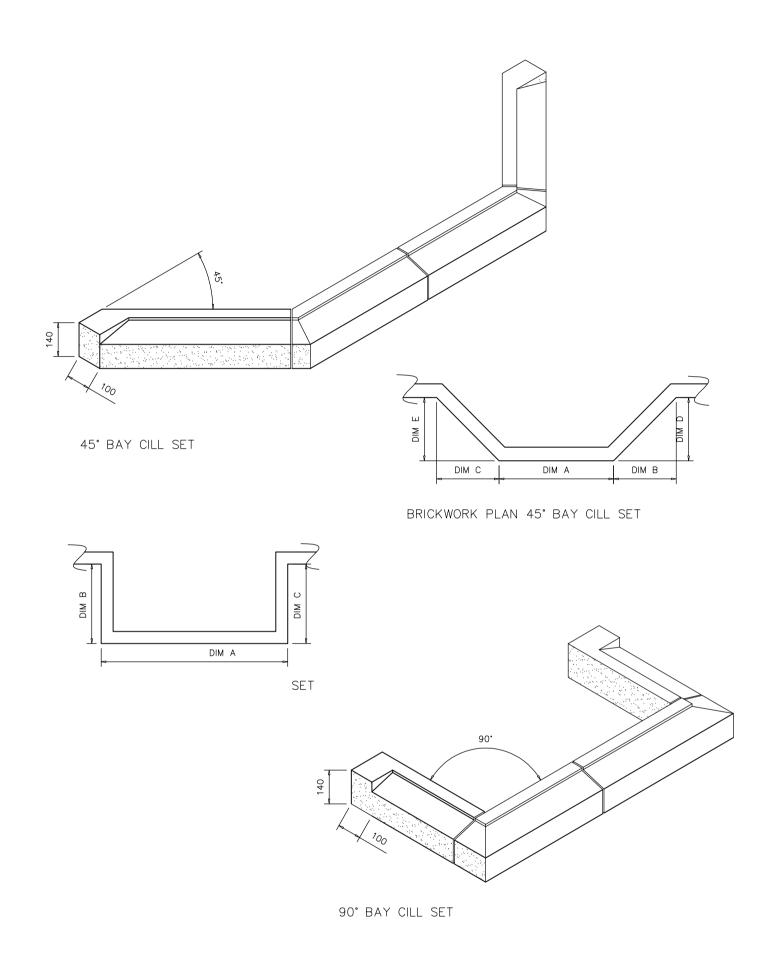
Product name	Weight (approx.)
Plain Ashlar	22kg
Chamfered Base Block	31kg
Plain Base Block	27kg
Plain 215mm Quoin Block	27kg
Plain 290mm Quoin Block	37kg
Chamfered 215mm Quoin Block	33kg
Chamfered 290mm Quoin Block	45kg











- Bay cill sets available in all cill types.
- Non-standard cill types manufactured to order.
- External brickwork dimensions to be supplied by client prior to manufacture.
- For intermediate stoolings to bay cill sets, please confirm all window opening sizes.
- Bay cill sets supplied sectional.
- Quantity of pieces dependant on brickwork dimensions and compliance with slenderness ratio.





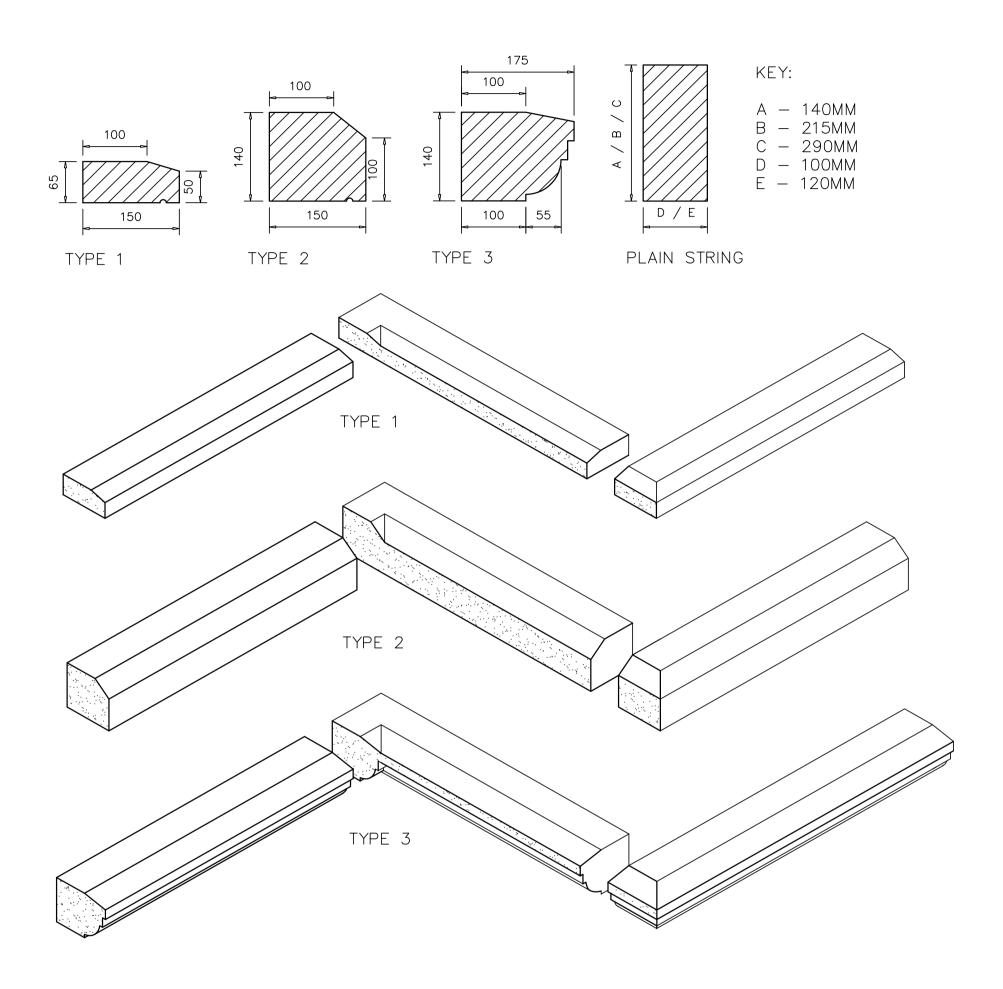


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# Stringcourse



All string course types available with special as follows:

90 Internal and external returns 45 Internal and external returns Stop end units

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- Bespoke angle returns manufactured to order.
- All string course supplied to a maximum length of 890mm.
- All non-standard sizes and profiles manufactured to order.

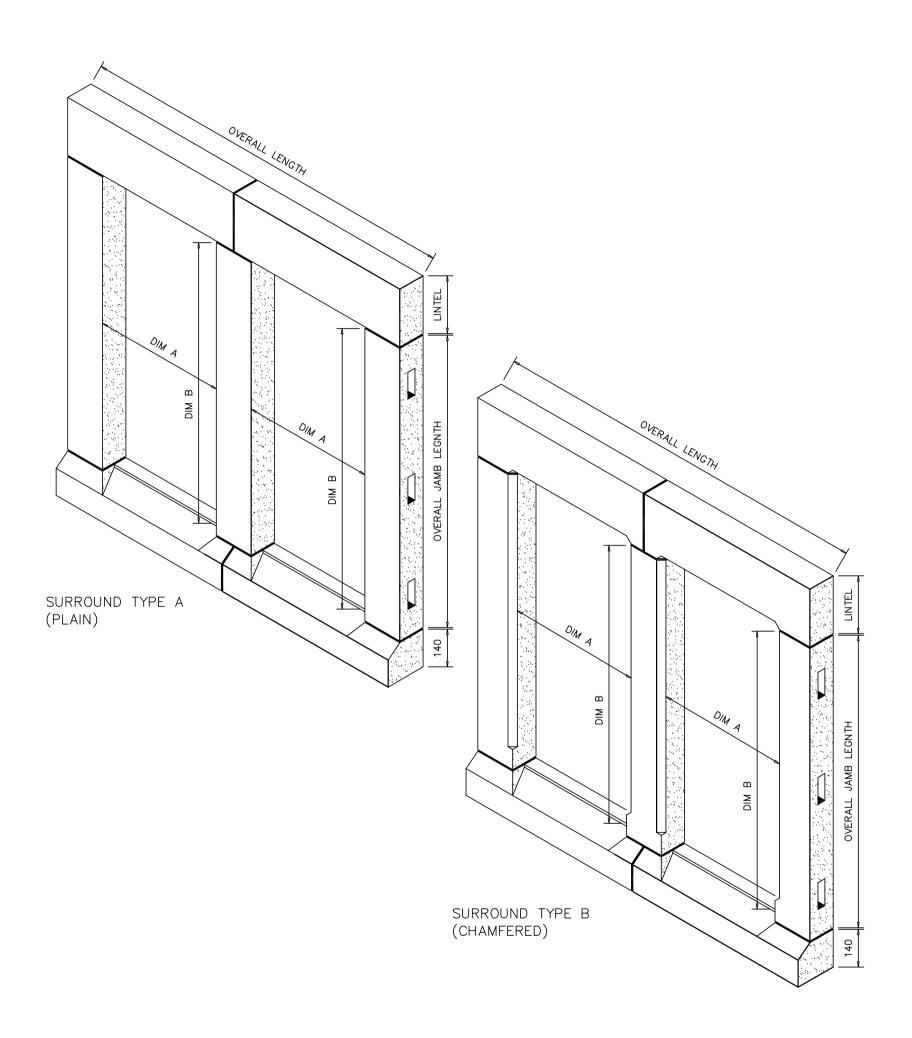












- Surrounds comprise of cills, heads and jambs as per requirements.
- Jambs manufactured complete with abbey slots to secure back to adjoining brickwork with standard fishtail ties.





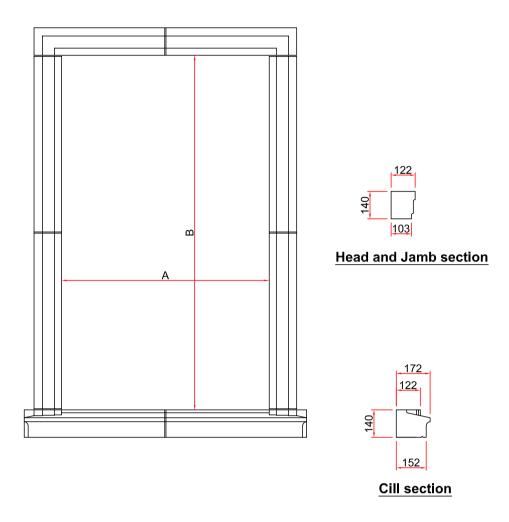


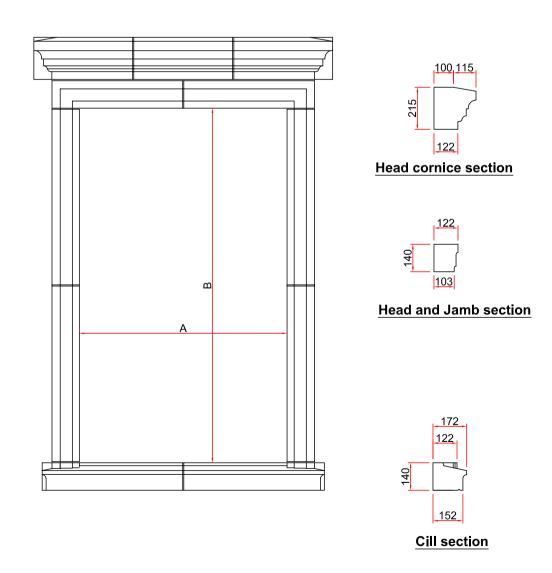






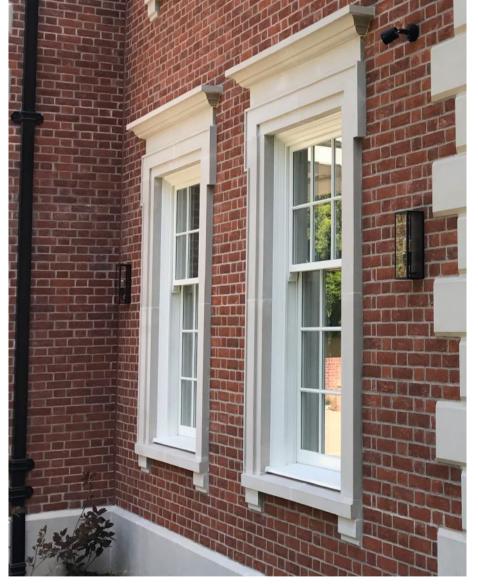
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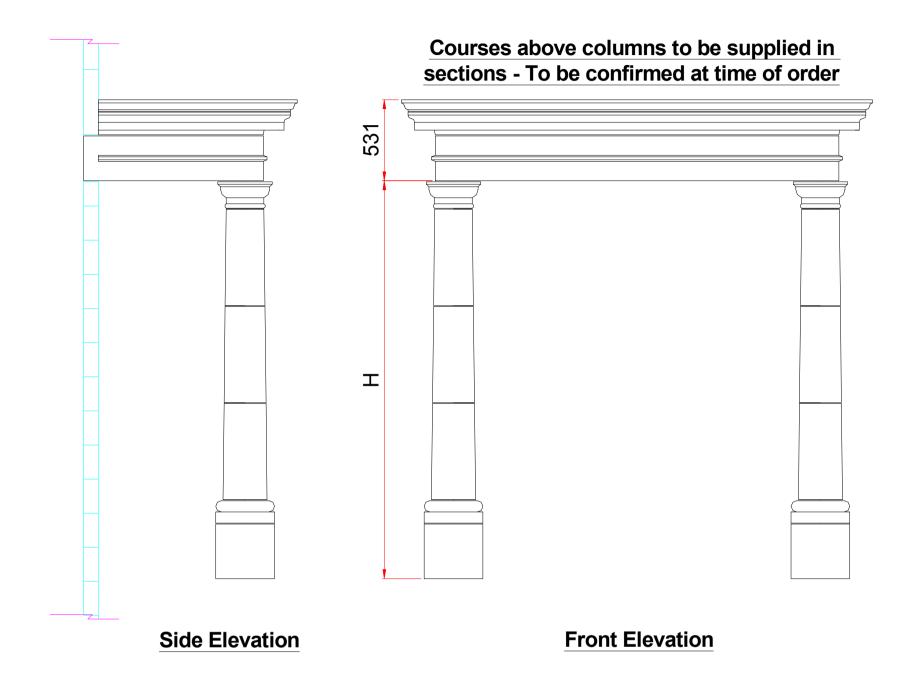


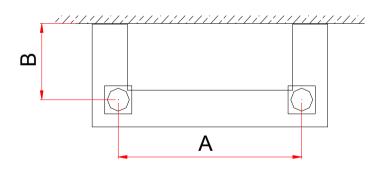


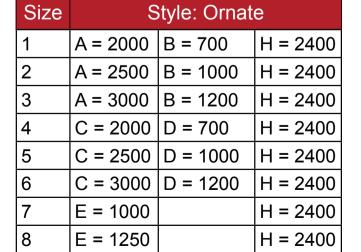
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# Portico - Ornate





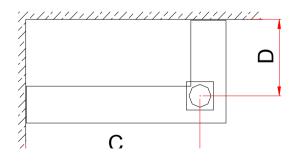


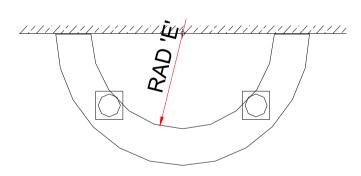
H = 2400

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E = 1500





Plan views to show configurations



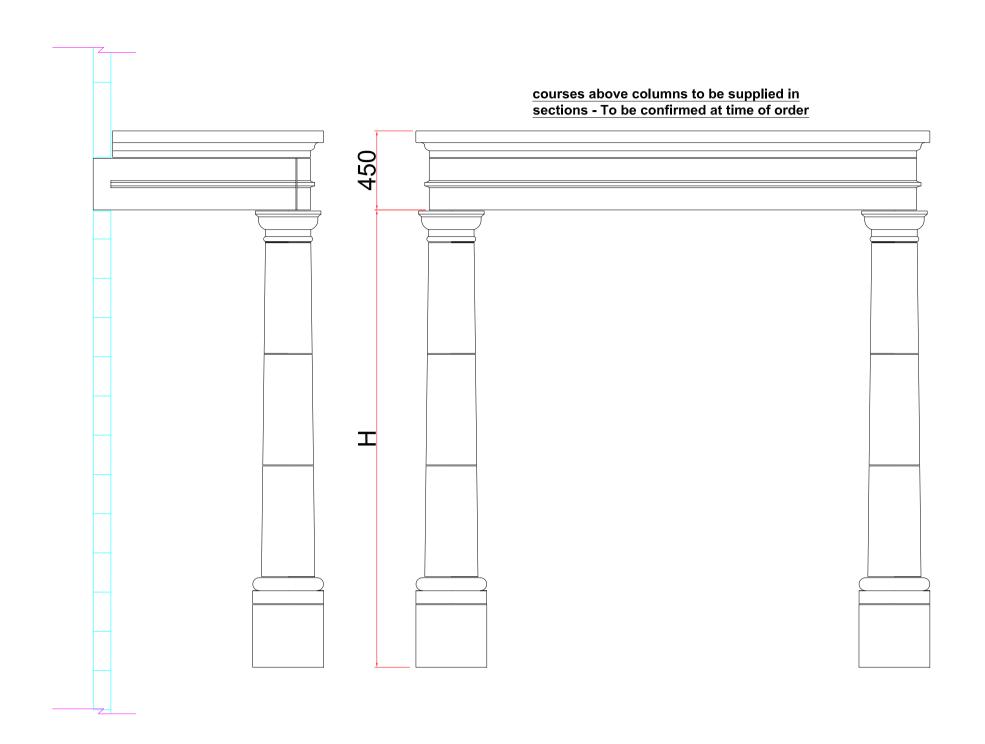


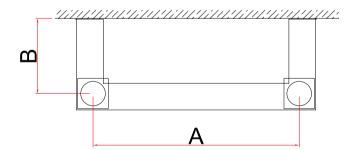


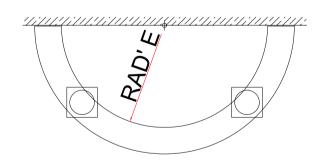




# Portico - Elegant



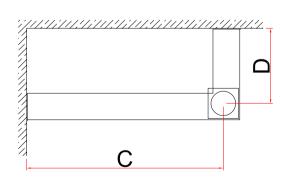




Plan views to show configurations

Size	Style: Elegant		
1	A = 2000	B = 700	H = 2400
2	A = 2500	B = 1000	H = 2400
3	A = 3000	B = 1200	H = 2400
4	C = 2000	D = 700	H = 2400
5	C = 2500	D = 1000	H = 2400
6	C = 3000	D = 1200	H = 2400
7	E = 1000		H = 2400
8	E = 1250		H = 2400
9	E = 1500		H = 2400

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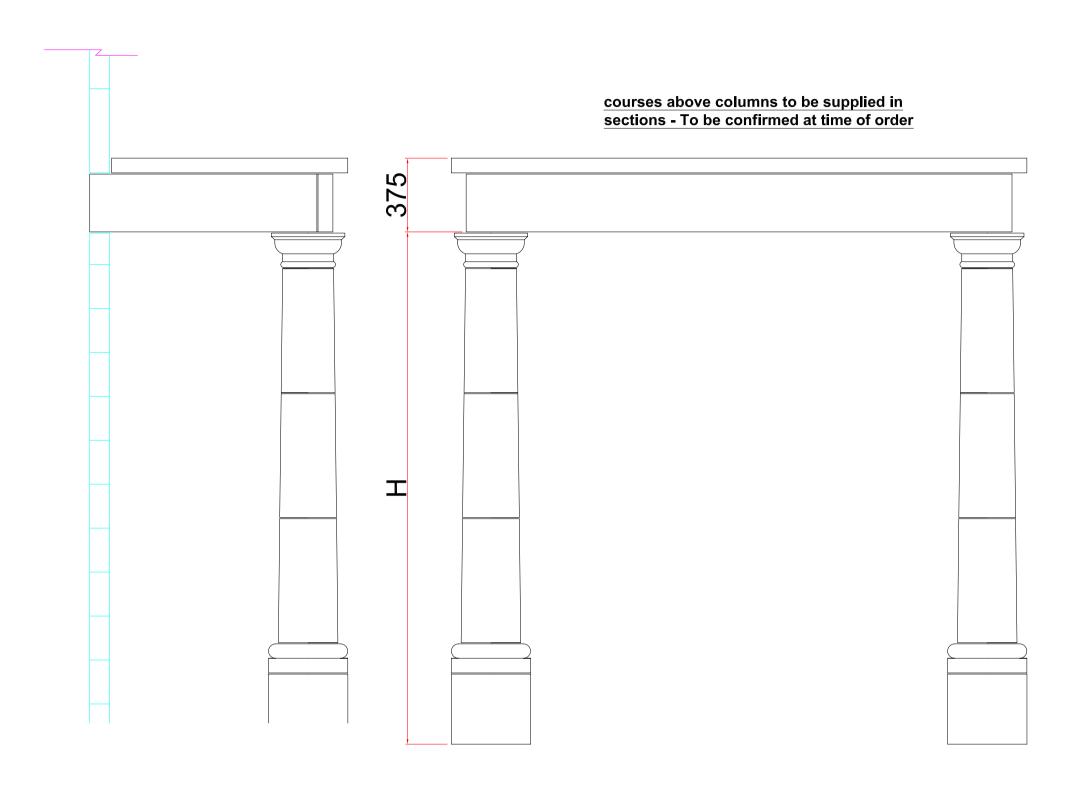




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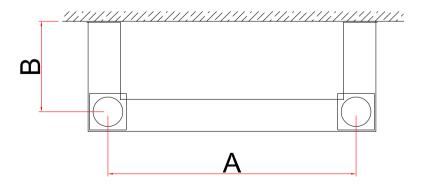
# Portico - Classic



# **Front Elevation**

Size	Style: Classic		
1	A = 2000	B = 700	H = 2400
2	A = 2500	B = 1000	H = 2400
3	A = 3000	B = 1200	H = 2400
4	C = 2000	D = 700	H = 2400
5	C = 2500	D = 1000	H = 2400
6	C = 3000	D = 1200	H = 2400
7	E = 1000		H = 2400
8	E = 1250		H = 2400
9	E = 1500		H = 2400

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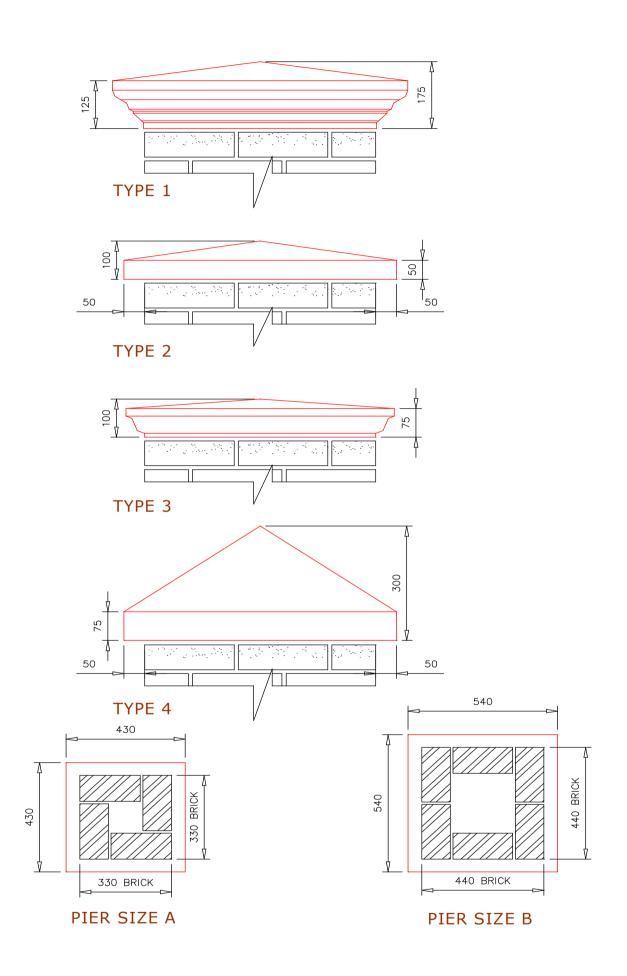


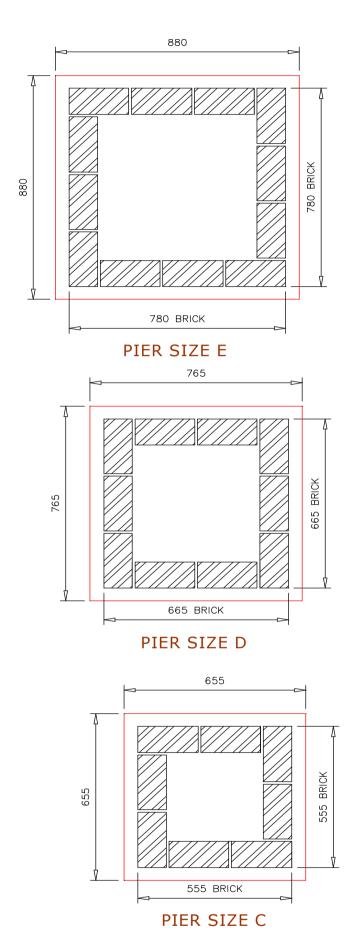












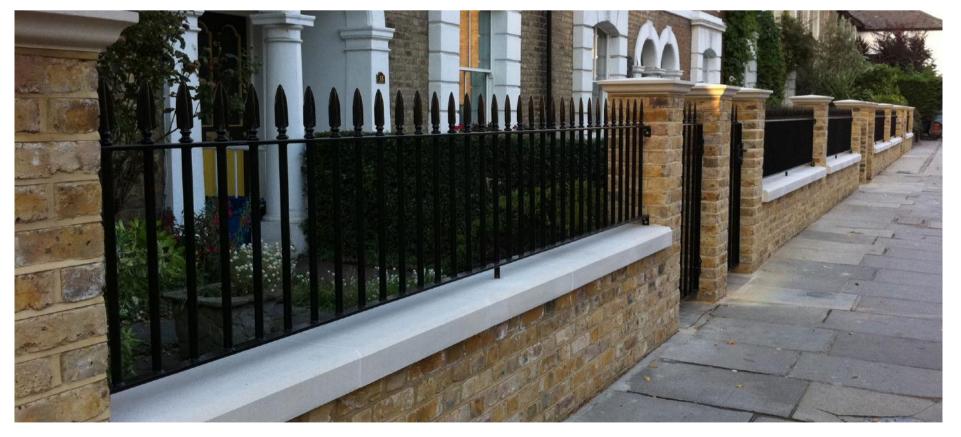
- 300Ø sphere may be applied to pier cap size C and above.
- Alternate styles and junctions manufactured to order.

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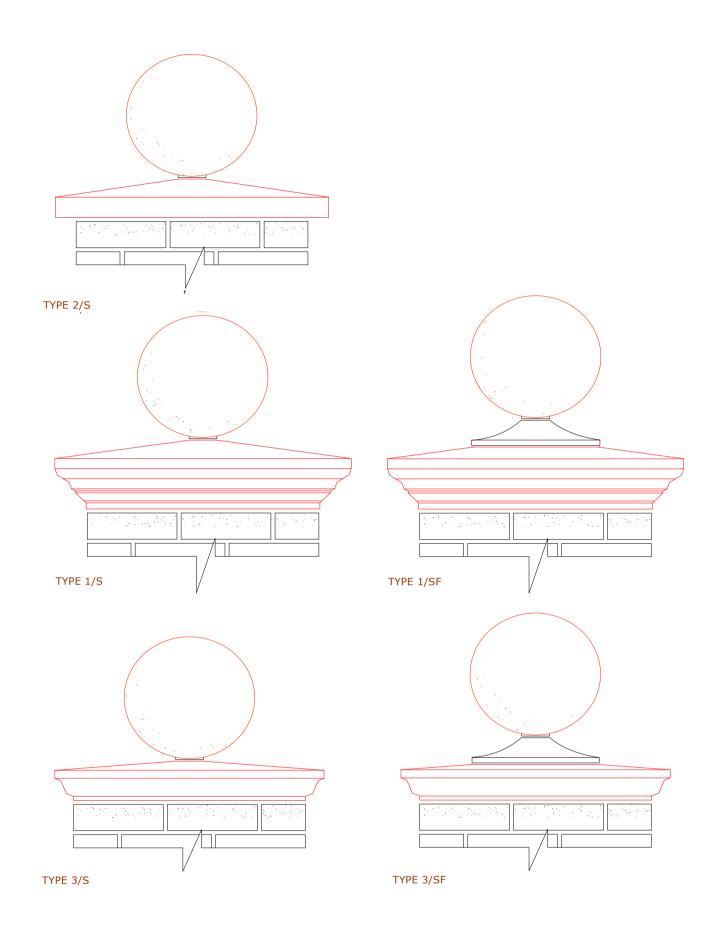












- Pier caps with spheres are generally in accordance with standard pier caps.
- Spheres supplied are 300mmØ.

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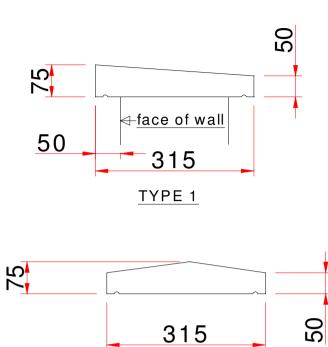
- Pier caps suffixed "S" are supplied with 100mm square flats to peak in and in 2pcs.
- Pier caps suffixed "SF" are supplied with a 300mm flat to peak in and in 3pcs c/w finial.
- All components to be located with stainless steel dowels and resin.
- Spheres only applied to pier caps size C and above.

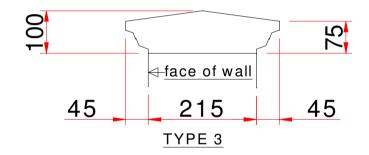




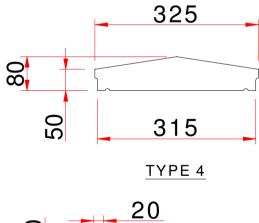


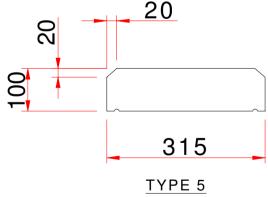




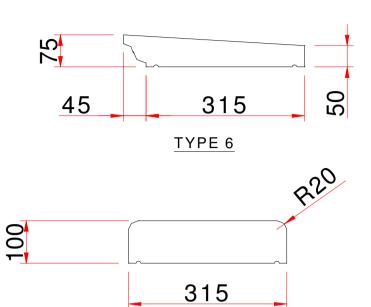


TYPE 2

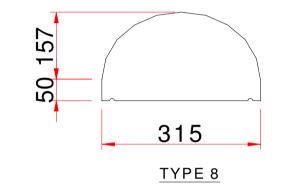


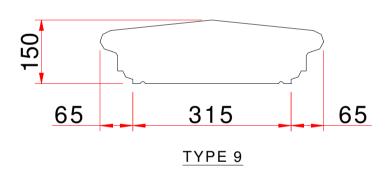


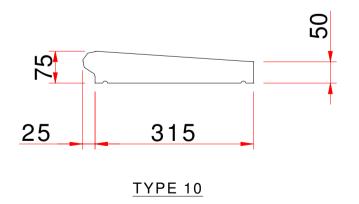
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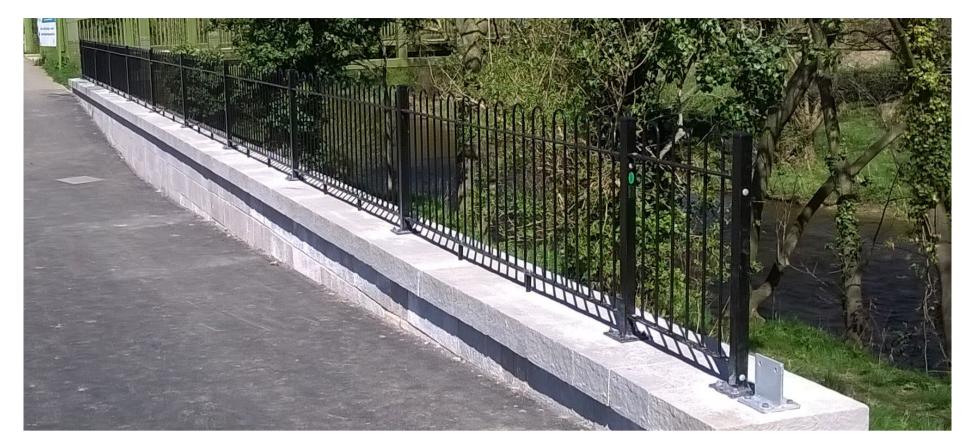
TYPE 7







- Units shown are to suit a 215mm wide wall.
- Other styles and sizes manufactured to order.

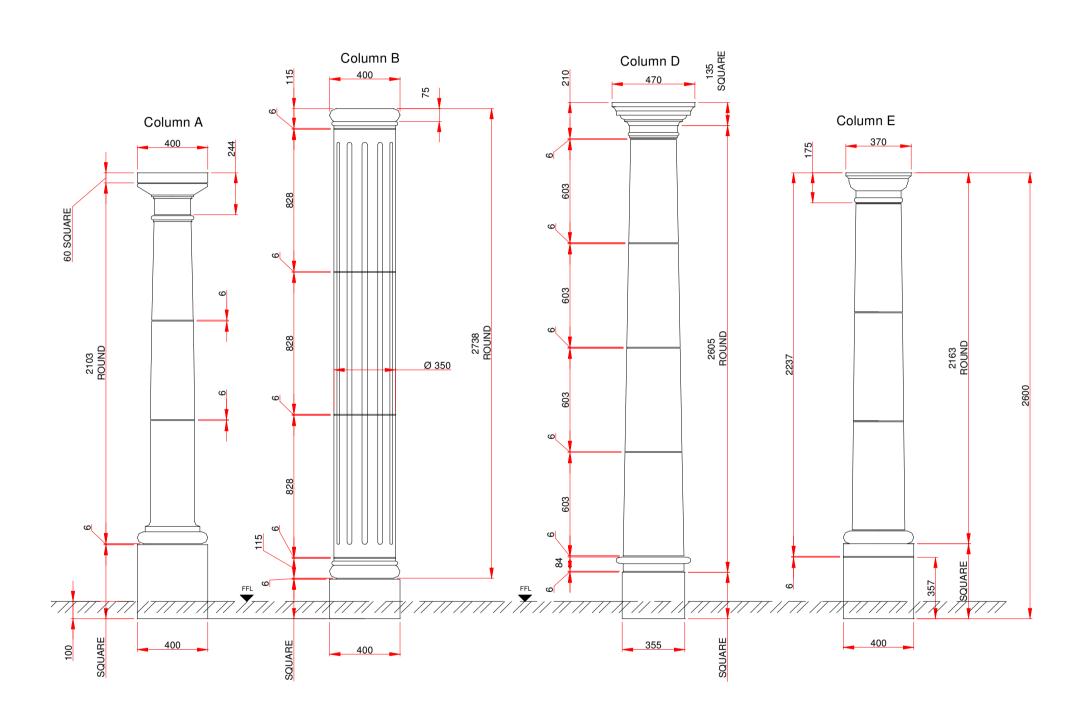






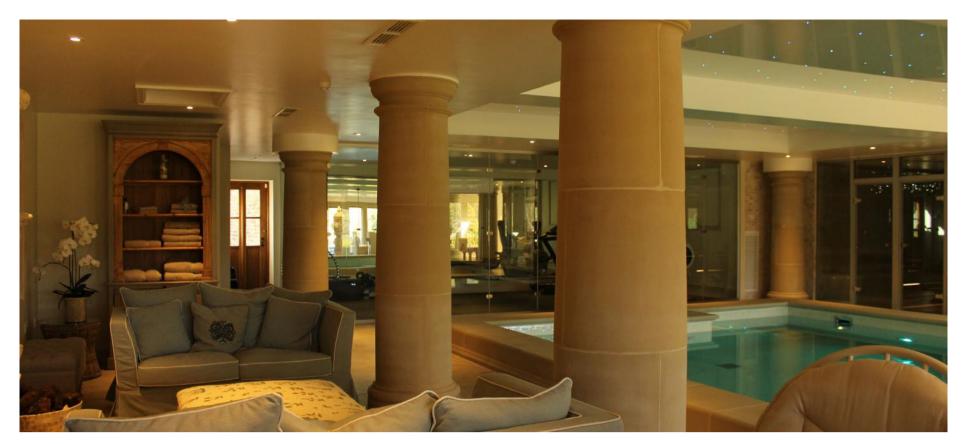






- Height variations are obtained by increasing the base block height.
- Columns supplied solid or in hollow section (some styles are not available with hollow option).
- Hollow section columns are supplied with a 100mmØ internal core and must be lined with a suitable membrane to counter defects caused by differential rates of expansion and contraction post installation.
- •A choice of columns is available on standard porticos.

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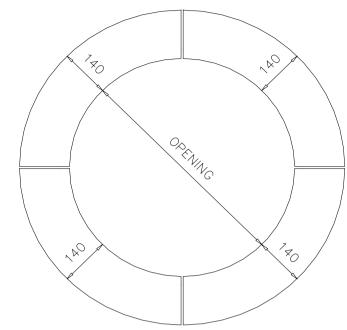






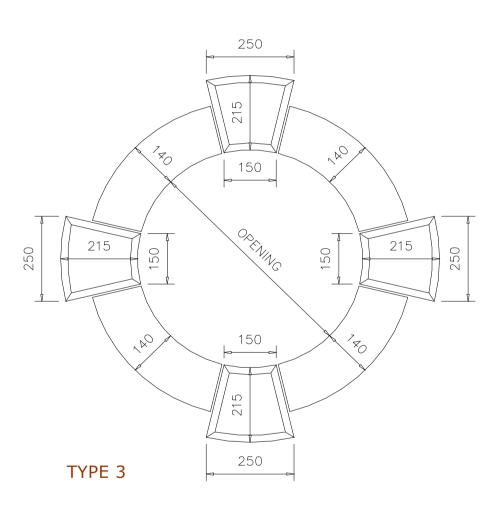


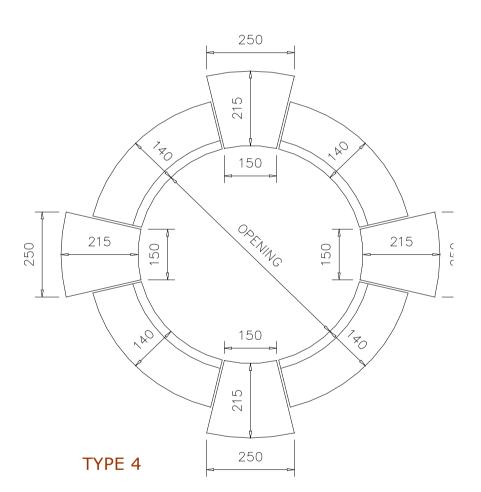




TYPE 2

TYPE 1





- Bullseyes available at 100mm, 120mm, 140mm and 150mm thick to suit various wall thicknesses.
- Bullseyes also available 215mm wide with 290mm (H) keystones.
- Keystones to type 4 available in flush finish or projecting.
- All keystone available radiused external and internal edges or flat.
- Various diameters available.

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• Specials manufactured to order.

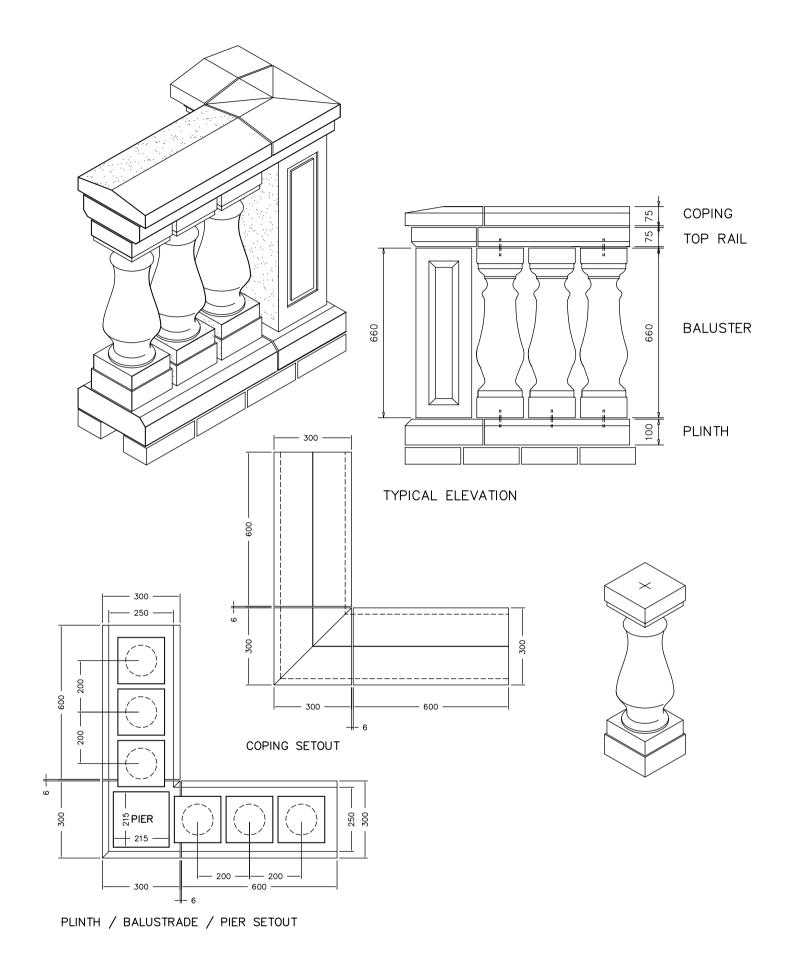












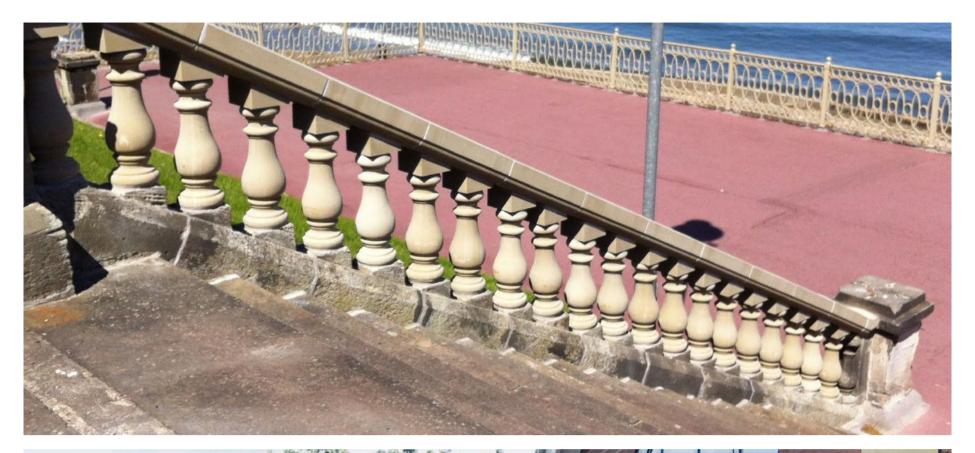
Balustrade supplied pre-drilled to accept stainless steel location dowels (supplied either as an extra or by others).

Height of plinth can be increased to suit. Specials manufactured to order include:

- Radial on plan sets
- Raked stair sets

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• 45° Internal and external sets



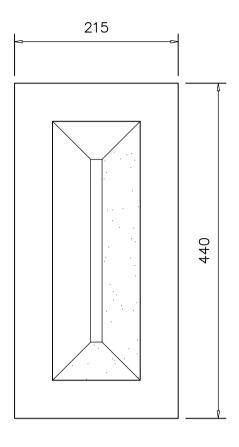




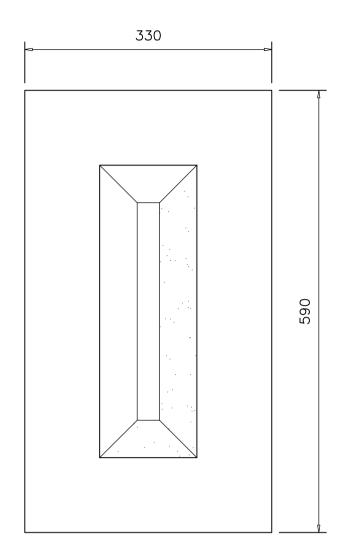




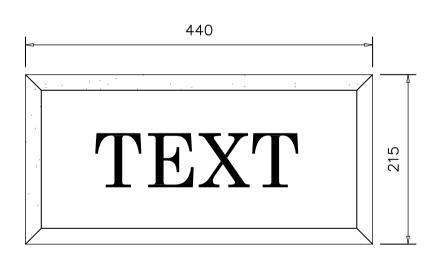
## Gable vent



ELEVATION TYPE 1



ELEVATION TYPE 2



ELEVATION-STANDARD NAME/DATE STONE

#### **NAME & DATE STONES:**

- Standard dimensions 440mm (L) x 215mm (H).
- Available with or without chamfer and with various text.
- Text/numerals in recessed century typeface.
- Non standard dimensions manufactured to order.
- Maximum depth 150mm.

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#### **GABLE VENTS:**

- Available in various depths, maximum depth 150mm.
- Available as false backed units or through units.



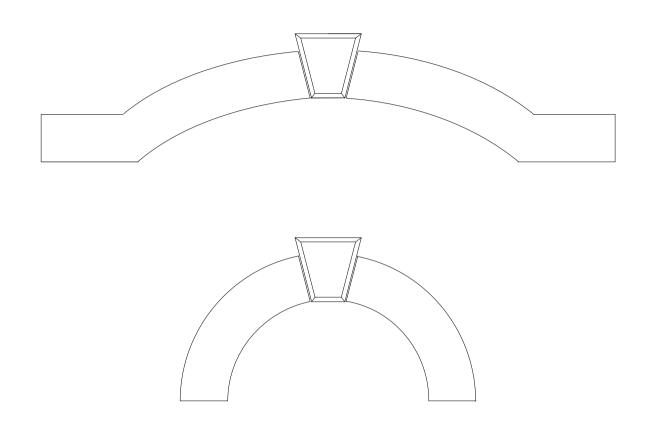


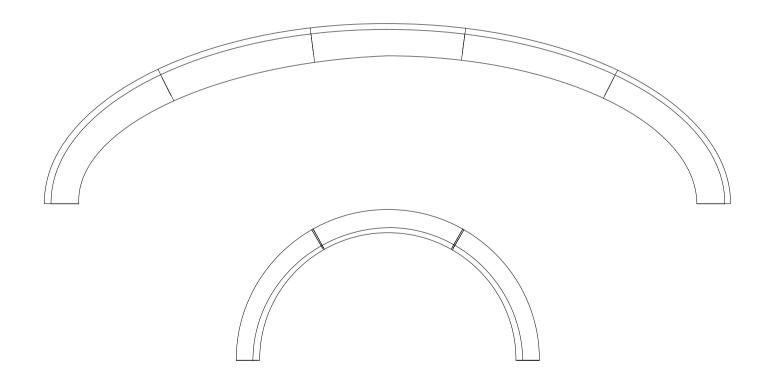












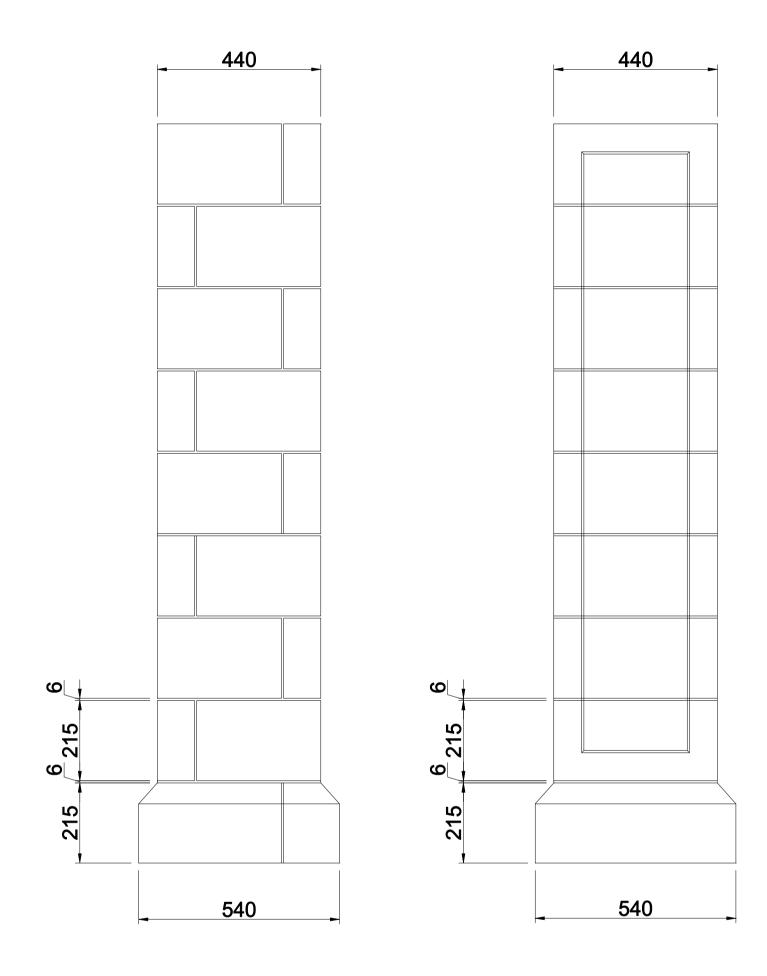












- Gates and railings etc. should not be fixed to or hung from piers.
  Please contact us to discuss options and possibilities.

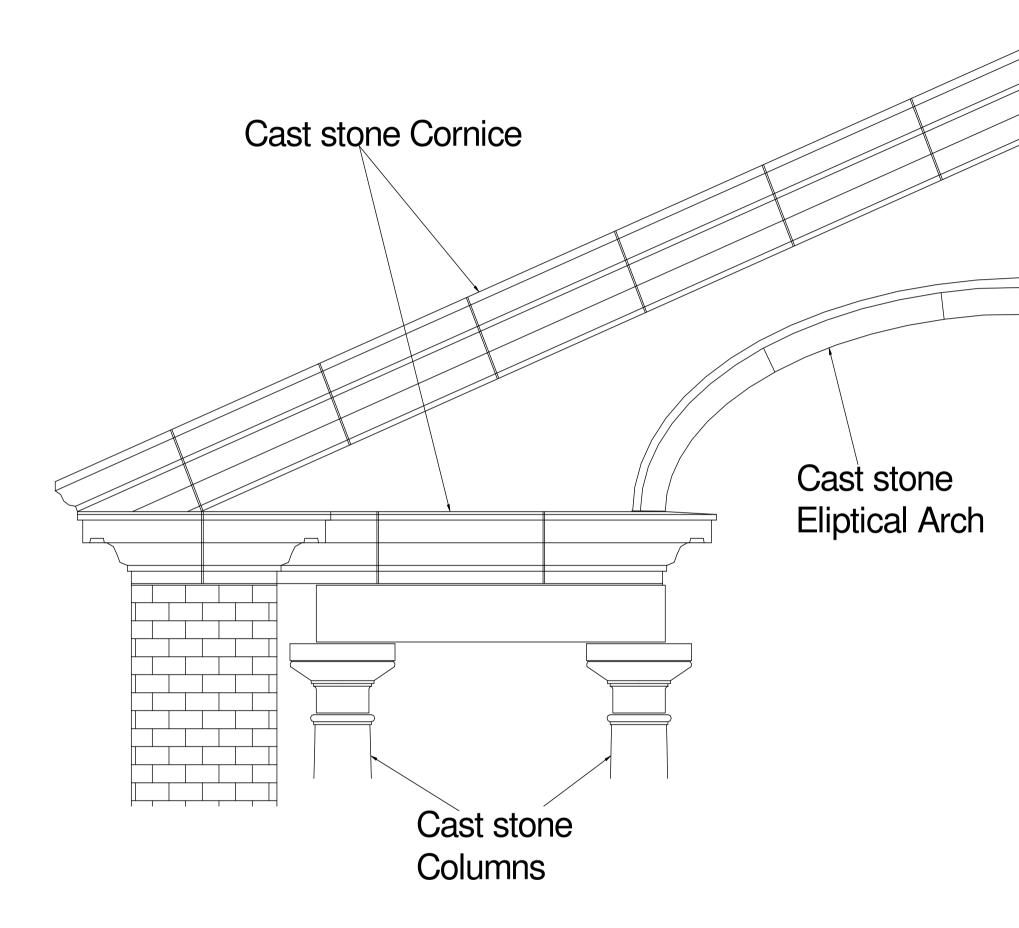
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# Cornice



Manufacture | Install | Aftercare | Trusted since 1740



### **PROCTER CAST STONE**

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