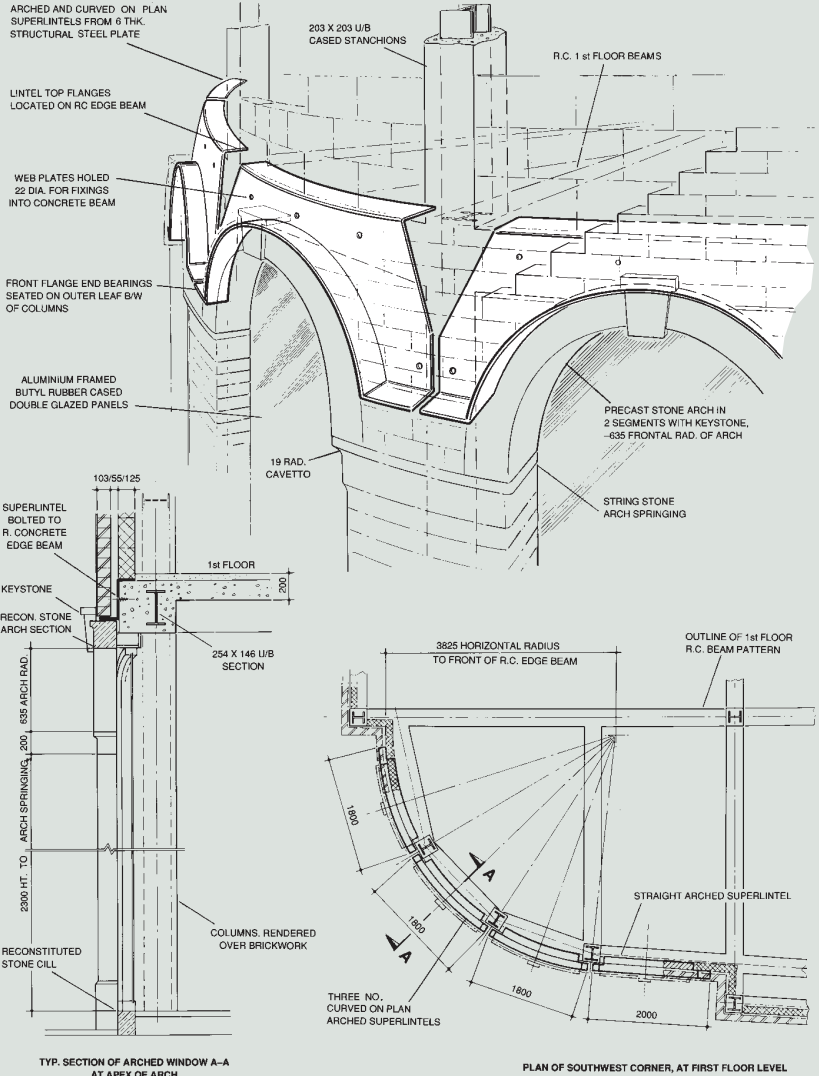


CF PROJECT DETAIL

Straight and curved-on plan arched 'Superlintels' supporting 1st and 2nd floor outer leaf brickwork over full height ground floor feature windowes.

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PRISMATIC BAYS CAPTURE LIGHT

Situated in the Smithfield area of London, 'Knights Quarter' is an outstanding speculative office development designed by IKA Project Design & Management Ltd for developers, Vestey Estates Ltd. Modern and traditional elements have been combined to produce an appealing contemporary city building which pays due respect to the areas rich historical connections with the Order of St John and the Knights Hospitaller. The design seeks to harness maximum floor space and natural light while taking full advantage of a prominent corner site. An all-round solution to these requirements is provided by a bold expanse of continuous floor to ceiling glazing, rhythmically arranged through angled cantilever bays to give an almost prismatic effect.

Bands of red facing brick and reconstituted Portland stone define the bays and model the facade, with decorative steelwork breaking up the verticality of the powder coated curtain walling. Masonry is supported on what is effectively an extensive 'Superlintel' framework, suspended from the holorib concrete floor slabs on hanging straps and connecting between the steel columns to create the building's distinctive contour. In looking for a suitable steel system to construct the window scheme, architects at IKA referred to the Review magazine for inspiration, and found a similar application in the 'Off the Drawing Board' section. This demonstrated the

use of integral straps for supporting bay window lintels off floor slabs.

The principle was applied to 'Knights Quarter' on a much larger scale, as indicated by our central perspective showing the corner bay window lintel which measures 8.9m from bearing to bearing.

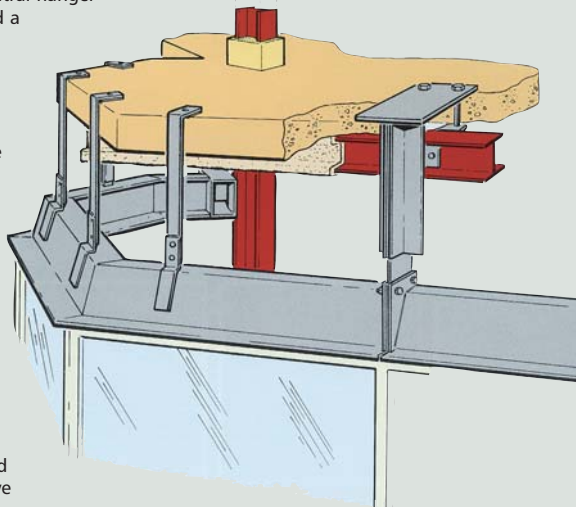
This lintel system was installed at 1st, 2nd and 3rd floor levels, suspended 725mm below the floor slab on nine hangers with a splice at the centre due to its length and extent of projection beyond the end bearings. The hanger system at the splice was substantially engineered to accommodate both vertical wall loading and lateral wind forces acting on the lintel.

The depth of the central hanger member necessitated a moment connection. This was achieved at floor level using composite action of the edge beam and floor slab. To achieve suitable stiffness, a cover plate was fitted over the top of the slab enabling bolts to be passed through the slab to join into an anchor angle attached to the rear of the edge beam. Fixity for the hanger was therefore obtained using both the concrete slab and edge beam to achieve

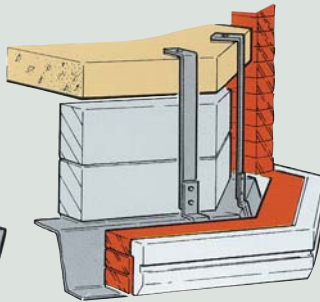
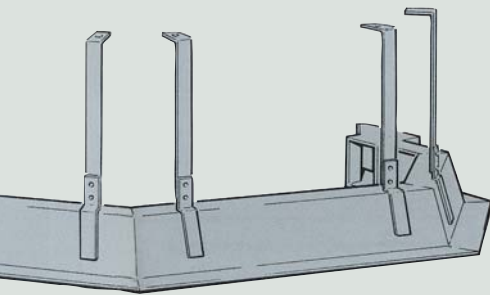
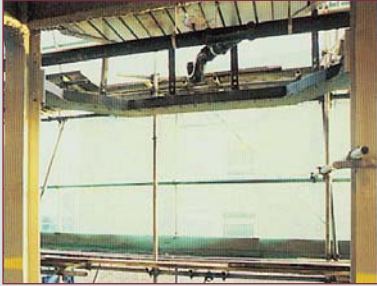
the required stability.

The function of the central hanger hinges on the symmetry of the lintel assembly, in terms of dimensions and structural composition, about the splice point. Our specialist design capability is, therefore, necessarily matched by specialist manufacturing skills. Every stage of production is closely monitored against the design specification to ensure that the finished item is within the very fine tolerances applied in our design engineering.

These rigorous standards mean that the largest and most complex fabrication can be readily installed by the contractor, avoiding remedial site work which departs from the structural scheme and disrupts the building schedule.



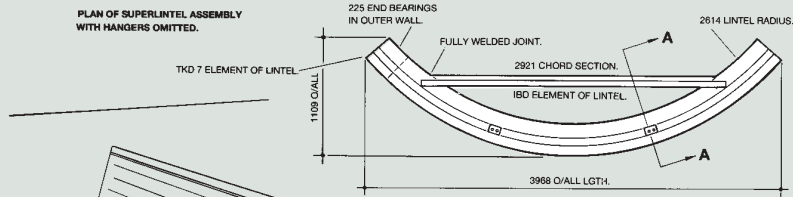
CONCRETE FRAMED / CF / PROJECT DETAIL



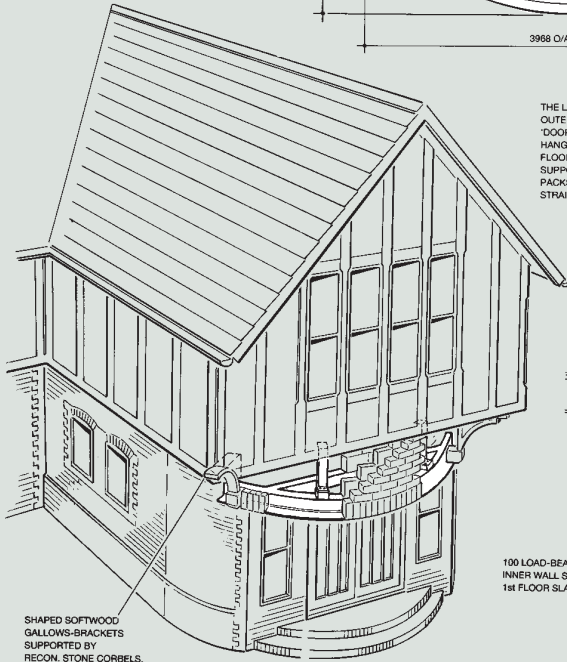
With its wealth of glazing angled prism, 'Knights Quarter' demonstrates the unique role of fulfilling the creative vision of the Architect and the exacting science of the Structural Engineer.

CONCRETE FRAMED / CF / PROJECT DETAIL

Specially designed insulated arched soffit 'Superlintels' and Two-storey bay window 'Superlintel' assemblies for individual requirements on new and refurbished buildings of major office development.



THE LINTEL ASSEMBLY WAS DESIGNED TO CARRY THE CURVED OUTER CAVITY WALL 650mm BEYOND THE SINGLE-LEAF 'DOORWAY' WALL WHICH SUPPORTS THE 1st FLOOR SLAB. HANGERS FROM THE CURVED LINTEL ARE CAST INTO THE FLOOR SLAB AND ADD THE NECESSARY BALANCE TO THE SUPPORT FROM THE CURVED END BEARINGS. 20mm SHIM PACKS SUPPLIED WITH THE LINTEL PROVIDE A STRAIGHTFORWARD MEANS OF LEVELLING ON SITE.



SHAPED SOFTWOOD GALLOWS-BRACKETS SUPPORTED BY RECON. STONE CORBELS.

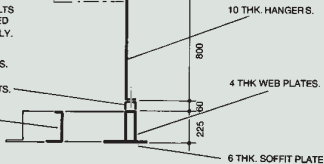
100 x 10 THK. GALVANISED & BITUMEN PAINTED HANGERS CAST INTO 1st FLOOR SLAB.

M16 CONNECTING BOLTS & SHIM PACK SUPPLIED WITH LINTEL ASSEMBLY.

BOXED HANGER BRKTS. PERMIT EASY ACCESS TO CONNECTION BOLTS.

180 CHORD SECTION

LINTEL SECTION A-A AT HANGER POSITION.



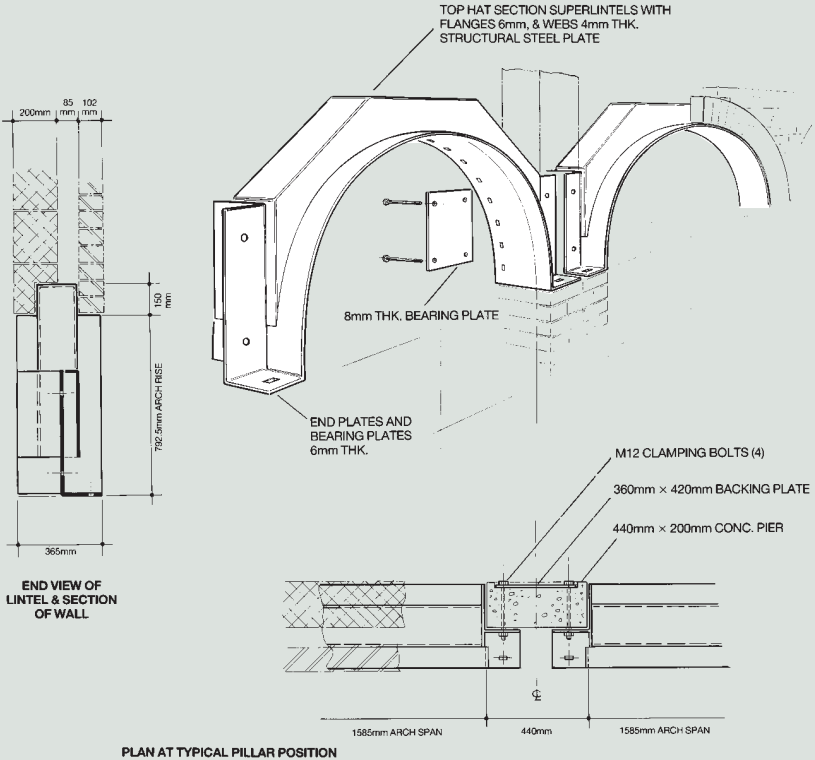
GROUND FLOOR SECTION AT DOORWAY.

GALVANISED STEEL-FRAMED DOORMAT WELL.

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Row of ten semicircular arched 'Superlintels' with integral end plates for bolting through concrete columns.



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ELEVATION OF GROUND FLOOR LEISURE/RECREATION CENTRE OF HOTEL

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NAT WEST REFURBISHMENT ON ORIGINAL CONCRETE FRAME



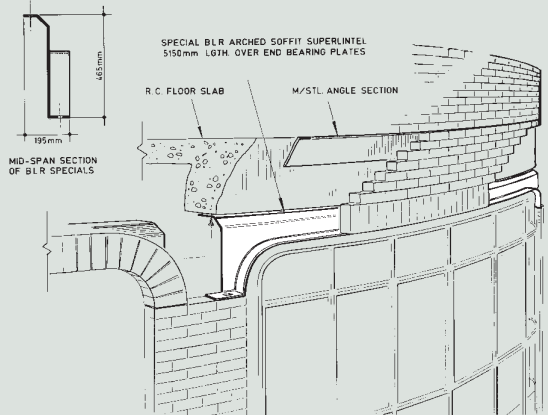
Unusual curved and arched lintels for a North Wales bank extension called for our expertise in specialist manufacture of arched lintels.

Two of these special lintels required extensive expertise in the engineering to allow the lintels to be not only arched but also curved on plan.

When the National Westminster Bank decided to expand their Wrexham, branch, the plans involved complete refurbishment of the adjoining vacant building on a distinctive corner site.

The individual design allowed each lintel to be bolted to the underside of the concrete roof slabs of the existing frame of the building. In all, twenty seven straight 'Superintel' and thirty two arched 'Superintel' were supplied to complete the project.

Three large 'Superintel' lintels, over five metres long, were specified, designed and manufactured in the quadrant flat design to accommodate a single row of soldier bricks.



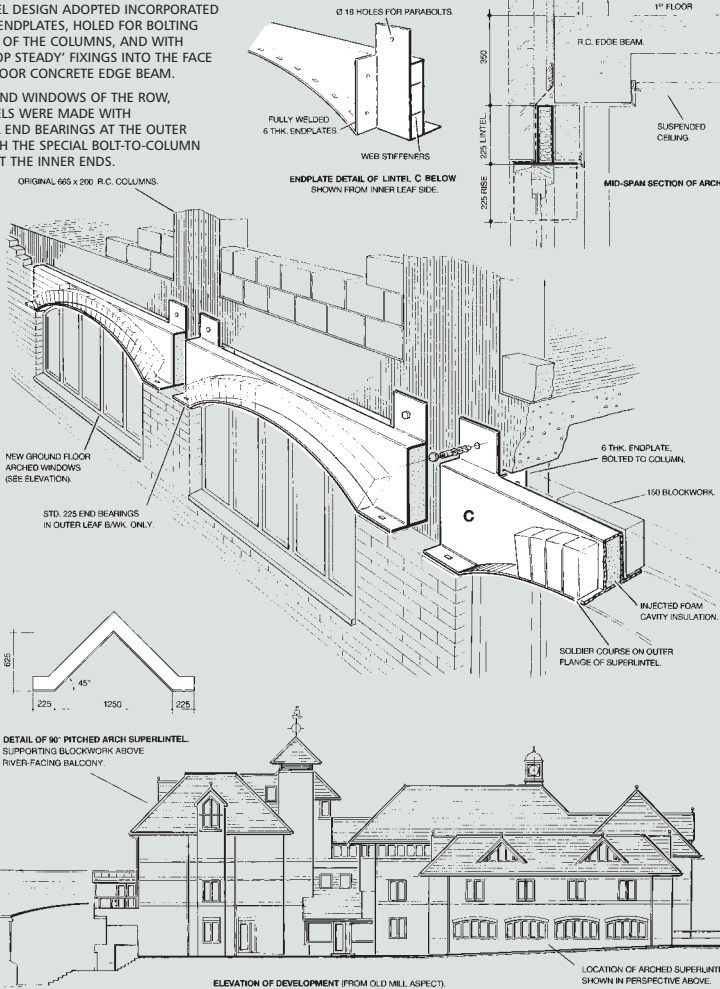
CONCRETE FRAMED / CF / PROJECT DETAIL

3050mm span segmental arched soffit 'Superlintels' with endplates for attachment to structural concrete columns. Both double-ended and 'handed' versions were used for the west-facing arched windows.

WIDE CONCRETE COLUMNS PRECLUDED A NORMAL INNER LEAF END BEARING FOR THE LINTELS OVER THIS ROW OF ARCHED WINDOWS.

THE SUPERLINTEL DESIGN ADOPTED INCORPORATED HEAVY GAUGE ENDPLATES, HOLED FOR BOLTING INTO THE SIDES OF THE COLUMNS, AND WITH ADDITIONAL 'TOP STEADY' FIXINGS INTO THE FACE OF THE FIRST-FLOOR CONCRETE EDGE BEAM.

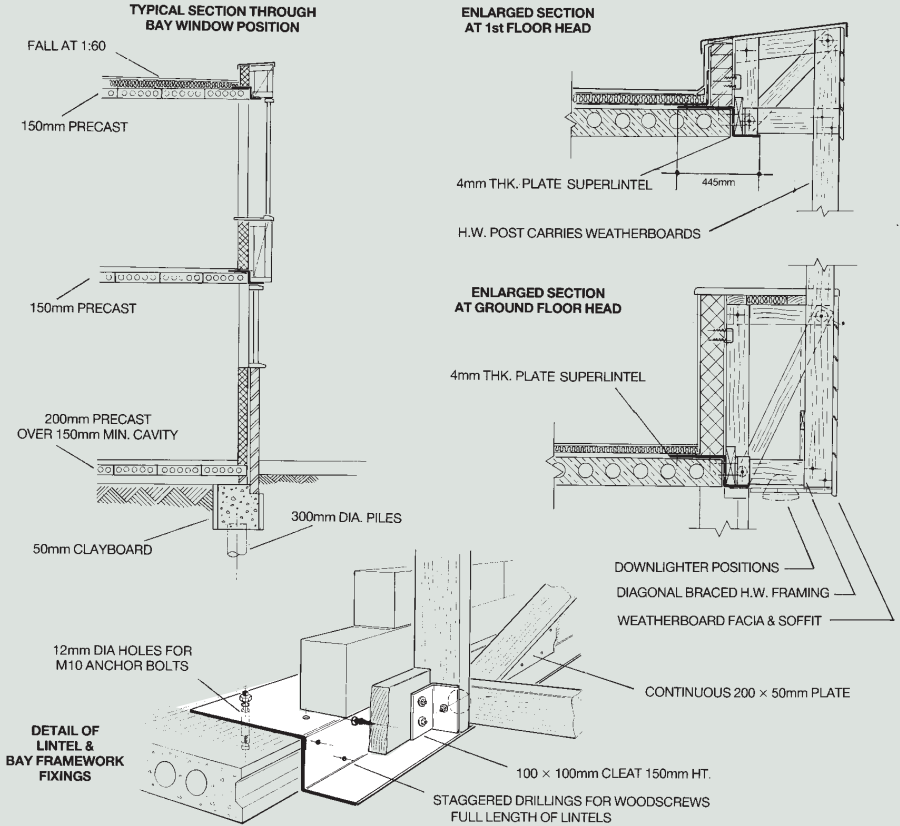
FOR THE TWO END WINDOWS OF THE ROW, 'HANDED' LINTELS WERE MADE WITH CONVENTIONAL END BEARINGS AT THE OUTER ENDS, AND WITH THE SPECIAL BOLT-TO-COLUMN ATTACHMENT AT THE INNER ENDS.



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CONCRETE FRAMED / CF / PROJECT DETAIL

Z-Section 'Superlintels' 5200mm length supporting timber framing for bay windows on ground and first floor level.



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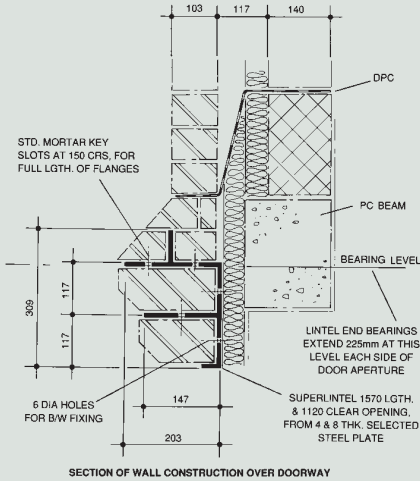
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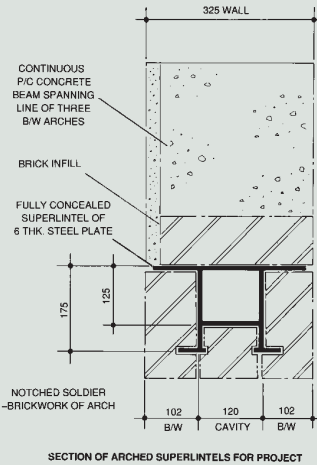
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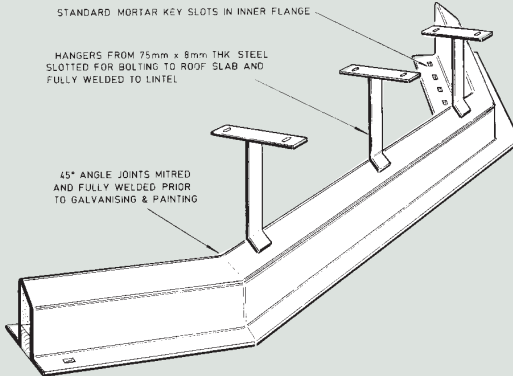
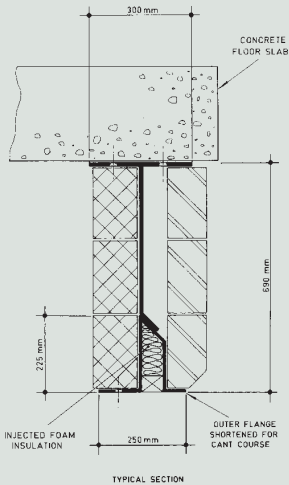
1570mm length 'Superlintel' specially designed for corbelled feature brickwork.



Arched 'Superlintels' of varying span carrying fully bricked soffit arches in 325mm walling.



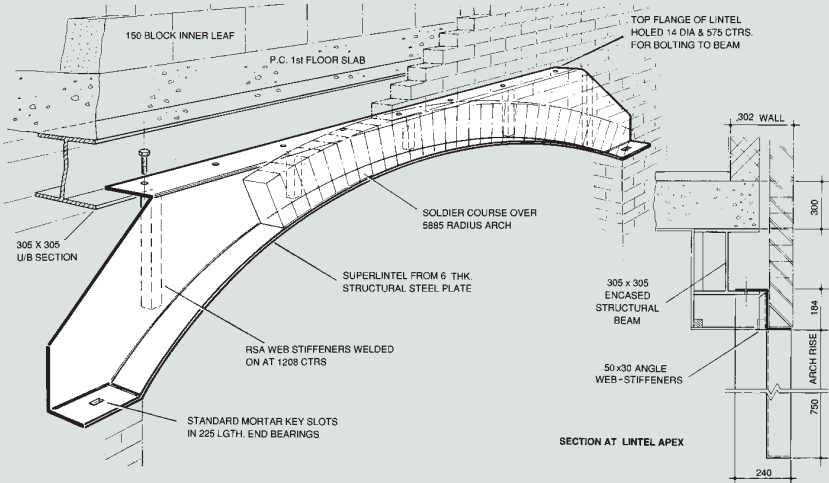
Special angled bay 'Superlintel' with support straps fitted for attachment to roof and floor slabs.



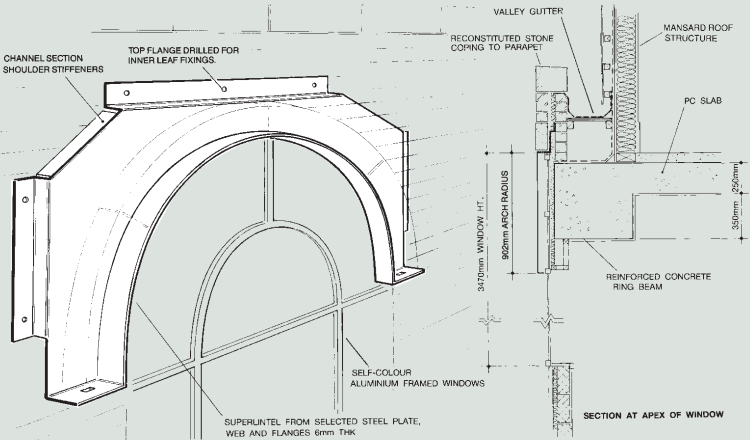
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Segmental arched 'Superintel' of 5750mm span, supported from concrete floor beam and carrying brick outer leaf of wall over 5100mm height vehicle access archway.



1803mm span Semicircular arch 'Superintel' supporting facing brickwork of frontage, with flanges on three sides for fixing to concrete ring beam and inner leaf of wall.



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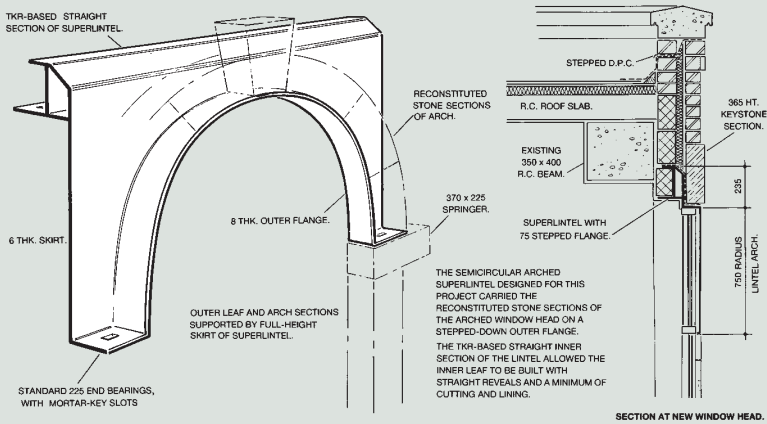
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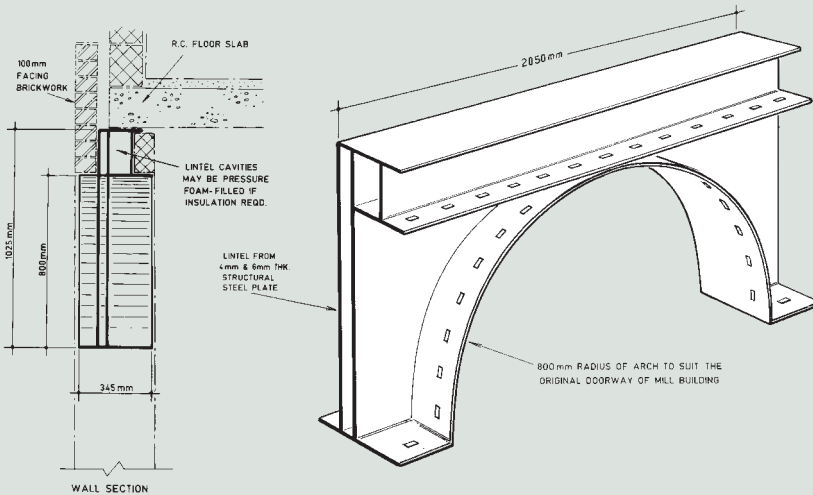
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CONCRETE FRAMED / CF / PROJECT DETAIL

The 1500mm span semicircular-arched 'Superintel' designed for this project carried the reconstituted stone sections of the arched window head on a stepped-down outer flange. The straight inner section of the lintel allowed the inner leaf to be built with straight reveals and a minimum of cutting and lining.



Semicircular arched 'Superintel' with 800mm radius of arch for doorway of mill.



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