

# Reconstruction of PRC Houses Designated In 1984 Defective Houses Act

## WATES PRC HOUSES

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PRC House Type: Wates House  
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Chartered Structural Engineer

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## **SECTION 0 INTRODUCTION**

0.1 The objective of the Repair Works is to remove and replace precast concrete elements that form the external walls of the house with modern brick and block insulated cavity walls.

This will entail careful propping and demolition of the external walls, adjusting the width of the foundations and laying bricks and blocks with insulation and inserting new insulated windows and doors where the windows and doors formerly existed.

It is considered likely that the Party wall may be able to be retained between properties and that certain precast concrete spine beams may be retained subject to informed inspection and verification.

It is intended that the external walls will be built with facing brickwork for their full height.

There is no structural objection to the walls being of alternative facing materials e.g. block and render but mortgage providers have indicated a preference for a simple brick clad elevation. It is intended that when the repair has been completed the result will be that the structure is adequate for continued use as a domestic dwelling for another 25 years, subject to continued property inspection and maintenance.

0.2 The original construction consists of foundations of in situ concrete supporting external and load-bearing internal walls and flues.

The external walls consists of precast concrete load-bearing panels of storey height and of varying standard widths that were bedded onto the foundations. Each panel is a reinforced concrete shell 30mm thick with 150mm flanges backfilled with lightweight concrete to exceed the flange depth by 22mm. The vertical flanges were grooved and formed continuous spaces at the joints which were filled with in situ fine concrete. Reinforced concrete string bonding units were provided at first floor and eaves levels with tongue and grooved joints bedded onto the panels in cement mortar. Bar reinforcement was introduced vertically and horizontally in the joints.

The Party walls are of similar design but entirely of lightweight concrete and the string bonding units were continued at first and eaves levels.

The ground floor was of solid concrete ground bearing construction.

The first floor was of timber joists and boarding with plasterboard ceiling. The joists were bedded on to a timber plate bolted to the precast concrete string course in the external and Party walls and the joists were supported internally on a spine beam of structural steelwork but sometimes of precast concrete.

Roof trusses at 1200 centres form the roof construction with timber framing giving support to tiles and battens and ceiling in the form of purlins and intermediate rafters and ceiling joists.

The external walls are typically self-finished concrete externally and either plasterboard-lined internally (nailed to the lightweight concrete panel infill) or with an internal block-work lining.

The nature of the problem identified by BRE in the late 1970's early 1980's relates to carbonation of the precast concrete and subsequent corrosion of the reinforcement steel in the external exposure conditions. Expansion of corroded steel results in spalling and break down of the concrete and loss of load bearing capability. Mild exposure in internal conditions does not pose the same risk of break down\*, but the use of Chlorides cast into concrete panels should be checked for.

\* BRO39 "The structural condition of Wates prefabricated reinforced concrete houses"

## **SECTION 1 SCOPE**

1.0 The existing condition of the Wates house will be investigated by visual inspection and assessment of obvious distortion or deterioration, rusting of reinforcement etc and recorded photographically and in writing, complete with measurements .

1.1 The system is for use on single houses or pairs of houses and single houses and multiple houses in a terrace of houses. All external PRC elements are to be removed and replaced. Some internal elements are to be replaced if found necessary on detailed inspection.

1.2 The system applies where there are internal load-bearing and non-load-bearing walls of masonry or timber construction and there are no proposals to modify these except in tying them to the new external wall construction.

1.3 The system allows occupants to remain in residence. No decanting is necessary.

1.4 Any additional works commissioned e.g. porches, extensions or the like fall outside the remit of this repair scheme.

1.5 The system does require statutory Building Regulations approval and may or may not require Planning approval depending on the local requirements related to the appearance/elevations of the building. Building Regulations standards will be applied to all replacement elements of construction.

1.6 An Appointed Contractor will be referred to as the “Repairer”. A Registered Practitioner (as defined by the PRC scheme) will be referred to as the “Designer”. Where the Designer appoints the Repairer under direct contract, the Repairer must comply with the rules of the BRE Global certification scheme for the repair of PRC homes.

1.7 Should alterations be envisaged to his standard Repair Specification the Registered Practitioner will submit a modified Repair Specification for approval by BRE Global.

1.8 It is anticipated that this repair will take approximately 7 weeks to complete, with the major structural works taking 4-5 weeks and making good internally occupying the final 2 weeks.

1.9 It should be stressed that the efficacy of this repair system and its ability to provide the intended future life for the property is predicated upon property inspection and maintenance being carried out, following completion of the repair works

1.10 If the visual inspection detailed in Section 2.0 reveals distress or decay of parts of the building not covered by the PRC repair system, then a suitably qualified person must produce a scheme of works to rectify to the problem.

1.11 Items which are not included in the repair system:-

- a) Insulation to roof spaces
- b) Kitchen fittings
- c) Bathroom fittings
- d) Central heating
- e) Re-roofing
- f) Internal decoration
- g) Internal doorsets/doors
- h) Plumbing
- i) Electrics
- j) Timber treatment
- k) Landscaping
- l) Garden walls/gates

**SECTION 2 INVESTIGATION AND TESTING**

If a Registered Practitioner requires it, investigation and testing may be carried out to verify the suitability of the repair system prior to the implementation of the repair.

2.0 A visual inspection by the Registered Practitioner is to be performed in order to establish that no variation from the standard design has been carried out that is likely to affect the proposed repair method described in this document. If the house is one of a terrace it shall be determined if the first floor Party wall coincides with one side wall of an Alleyway or if the Party Wall is located at mid-point of an Alleyway. If the Wall is at mid-point of the alleyway a new steel beam system will be installed in accordance with the details shown on drawing 9.6

2.1 An appraisal survey of the property is required for the purpose of ascertaining the general condition of the non PRC elements, internal cracking, distortion of door frames etc, deflection of floors so that these can be compared before/after the reconstruction works are completed.

2.2 An investigation to check existing foundation details is to be made. This will be done by excavating trial holes at front and rear and on the gable walls to determine foundation widths and depths. This will result in exposing the existing foundation profile, depth of existing concrete, with the object of determining if the foundation has a raft or a strip footing (which, in either case, requires the foundation to be widened using the method shown on the drawing 9.5.)

2.3 The following visual survey checklist shall be used:-

Question	Remarks
Is distress/differential settlement visible to any part of external envelope?	
Are the existing walls out of plumb and if so by how much?	
Is the external wall foundation a strip or part of a raft slab?	
Is distress/bowing/deflection visible in ground or first floors internally? Are internal door heads level? Are there any cracks across ceilings or above door heads?	
Is upper triangle of gable wall of timber frame with cladding or PRC construction?	
Is the internal first floor beam of concrete or steel and, if concrete, is it showing any sign of distress such as cracking and/or reinforcement corrosion?	
In the roof space check the details of the Party Wall (which may consist of alternative types of construction).	

### **SECTION 3 METHOD STATEMENT**

#### 3.0 Sequence of Demolition/Construction

3.1 Full details of a Repairer's proposals for temporary support to the top floor and roof are to be submitted for approval by a Registered Practitioner prior to the use of propping on site. While a Repairer retains responsibility for the propping of the house, a Registered Practitioner will, where appropriate, inspect and advise as to the efficacy of the propping works.

3.2 As necessary a Repairer will disconnect plumbing, heating, gas and electrical services. Rising mains, meters/switch gear in the vicinity of external walls shall be protected. The existing drains are to be tested and any defective runs noted for repair by others or as an extension of the agreed works.

3.3 A Repairer will remove and store all fixtures and fittings connected to external walls including sanitary ware and kitchen fittings.

3.4 After ensuring temporary support, a Repairer will remove any lean-to structure or outbuilding with connecting roofs to external walls. These may be replaced by others or by the Repairer as an extension of the agreed works.

3.5 After widening the existing foundations as proves necessary, the external walls consisting of precast concrete storey height panels and precast concrete string course ring beams are to be carefully demolished and removed from site in an agreed sequence with the structure remaining adequately propped.

3.6 The external walls will be rebuilt, in an agreed sequence, in masonry brick and block with an insulated cavity. First floor and roof plates will be pinned up to take bearing on the new walls before proceeding to the next wall. First floor joists may be fixed to new wall plates with steel ledger angles as shown on the drawing. Windows and doors will be installed as the work progresses providing all necessary DPC's and lintels. All works are to be in accordance with the attached drawings 9.4 to 9.6.

3.7 Where new or widened foundations are used existing services and drains are to be bridged with concrete lintels and where necessary rainwater gullies and soil and vent pipe connections are to be repositioned.

3.8 If after inspection it has been decided to replace the internal wall precast concrete beams because of inadequacy due to carbonation, corrosion etc., the first floor is to be propped and the concrete beams removed and replaced with steel beams in accordance with the details shown on drawing 9.5.

3.9 A Repairer will reconnect plumbing, heating, gas and electrical services, rising mains, meters/switch gear as required.

3.10 A Repairer shall be required to maintain a photographic record of the works including as follows:-

- a) Trial Hole excavations
- b) Existing Front, Rear and Side Elevations
- c) Existing internal cracking around door heads and across ceilings
- d) Steel dowel pins to connect new foundation concrete and showing the trench widening.
- e) DPC's in walls near ground and above window and door heads
- f) Sealing around windows and doors

3.11A Repairer will leave site clean and tidy.

## **SECTION 4 SPECIFICATION FOR MATERIALS AND CLADDING**

4.0 Foundation concrete to be typically Grade 20/25 with a minimum cement content of 350 Kg/m<sup>3</sup> and a maximum aggregate size of 20mm. The foundation concrete grade may be varied by the Building Control Officer (BCO) to address aggressive ground conditions if found necessary. Details of any grade change and the decision are noted on the foundation drawing. Trial holes will be dug to ascertain the foundation profiles and any degradation of the foundation concrete after the life of the building so far, will be apparent. It would be on that basis for example that the BCO could request that sulphate resisting cement should be used or from local knowledge of the presence of claystone.

Anchor bars between new foundation and existing are to be 12mm austenitic stainless steel dowel bars with a minimum content of 3% molybdenum, 300mm long, resin cement grouted into existing foundations at 450mm centres.

### 4.1 Bricks.

In addition to the requirements of b) below, clay bricks shall comply with BS EN 771.1. Common bricks, facing bricks and engineering bricks shall, depending on their use be considered as load bearing bricks. Facing bricks shall in addition have a coloured and/or textured face as specified. When a sample of these bricks has been approved, all deliveries to the site shall be of the same appearance and quality.

b) Before orders for clay bricks are placed, the Repairer shall satisfy the Registered Practitioner either that the saturation rate of the brick, when determined according to the method set out in Special Publication No 56 by the British Ceramic Research Association does not exceed 1.5kg/m<sup>2</sup> maximum or that it is possible to adjust this, not to exceed this value by pre-wetting – see 4.10.

### 4.2 Mortar

a) Cement: to BS EN 197-1 The cement used in mortars shall be:- Portland cement or Portland blast-furnace cement or sulphate-resisting cement. Masonry cement shall not be used.

b) Lime: Lime used in mortar shall be high-calcium lime or semi-hydraulic lime to conform to the requirements of BS EN 459-1

c) Sand: Sand for mortar shall comply with the requirements of BS EN 13139. Sand which has been in contact with sea-water shall not be used.

d) Water: Water shall be clean and free from any deleterious impurity.

### 4.3 Admixtures

Calcium chloride or additives based on calcium chloride, or any other chloride shall not be used.

4.4 Pigments shall conform to the requirements of BS EN 12878 and shall be premixed with the cement or the ready-mixed lime:sand, so as not to exceed 10% by weight of the cement in the mortar, care being taken to ensure that the strength of the mortar remains adequate. Colouring agents based on carbon black shall not be used.

4.5 The use of plasticisers shall not be permitted unless approved by the Registered Practitioner.

The compressive strength of site controlled tests on mortars shall be carried out in accordance with **BS** requirements

#### 4.6 Preparation

The proportions of the constituents in all mortars for brickwork shall be those given in BS EN 1996. Mortars other than cement mortar shall be prepared either by using a lime:sand mixture (coarse sand zone 2) or by mixing cement, dry hydrated lime and sand immediately before the water is added. Where practicable the constituents shall be made up by weight, or if this is impracticable, by volume, using gauge boxes. Whichever method the Repairer chooses, it shall be used for the site control tests as specified below

When dry hydrated lime is used, whether batched by weight or volume, the content of lime may be increased if desired by up to 50%.

Lime : Sand mixture (coarse) shall be made up in the proportions given in BS EN 1996 by thoroughly mixing dry hydrated lime:sand and water and it shall be protected from drying out. Ready mixed lime:sand for mortar, delivered wet to the site and complying with BS EN 998-2, may be used in accordance with the guidance notes given in Appendix A to that standard.

Cement and Lime:Sand: Immediately before the mortar is used, cement and lime:sand mixture shall be thoroughly mixed together in the proportions given in BS EN 1996, with sufficient water to give the workability required by the bricklayer. Wet ready-mixed retarded cement:lime:sand mixtures shall not be used.

Reconstitution: Mortars shall be used before the initial set takes place. (Normally this is within 2 hours of the cement and water being added). Any mortar left after this time shall be discarded; on no account shall mortars be reconstituted.

Cleanliness: All plant and equipment used for mixing and transporting shall be kept clean. All such containers shall be thoroughly washed out whenever mixing ceases or whenever there is a change of mix.

Mixing: All mortars shall be thoroughly mixed together by mechanical means. Mortars mixed by hand shall not be used.

#### 4.7 Ancillary Components to BS EN 845-1: 2003 +A1: 2008

Wall ties shall be stainless steel double twist type, unless otherwise stated. The ties shall be of sufficient length to ensure a minimum embedment of 50mm in the outer leaf and be plugged and embedded.

Damp proof courses shall be to BS 6515 as shown on the Registered Practitioner's drawings.

#### 4.8 Storage of Materials

Bricks and blocks shall be carefully unloaded to minimise damage and placed on the site in different stacks according to strength and marked accordingly, on prepared areas free from clinker or ashes. The stacks or packs shall be protected from rain and snow.

Cement shall be stored off the ground in a dry structure so as to permit inspection and use in the order of delivery. Separate storage, clearly marked, shall be provided for different cements. Cement which has been adversely affected by dampness shall not be used. Hydrated lime shall be stored in the same way as cement. Sand shall be stored separately, according to type on hard paved areas where it will not become contaminated.(see 4.6)

Lime:Sand mixture shall be stored separately according to type, on hard paved areas where it will not become contaminated and it shall be protected from drying out.

Rolls of DPC materials shall be so stored to avoid damage and distortion.

#### 4.9 Accuracy of Construction

Horizontal dimensions shall be set out with steel tape supported throughout its length. Angles set out by measurement or by builder's square shall be checked by instrument. Where components such as windows and doors are not built in as the work proceeds, the openings to receive such components shall be accurately formed by using jigs and templates. All brickwork and blockwork shall be built to the tolerances given below. The method of controlling accuracy and setting out shall be in accordance with BS 5606.

a) Length: Up to and including 5m +or-10mm; over 5m up to and including 10m +or-15mm

b) Level of bed joint (at story height):

In any 3m length of wall +or- 10mm, In any wall +or- 20mm

Errors of level not to be cumulative over the height of a building

c) Height: Up to 6m +or- 20mm

d) Straightness: In any 5m (not cumulative) +or- 7mm

e) Verticality: In any 600mm +or - 5mm, In any 3m +or-10mm

No brickwork or block-work shall deviate more than 30mm from the vertical in its full height.

#### 4.10 Bricklaying

When the saturation rate of clay bricks exceeds  $1.5\text{kg/m}^2$ , the suction rate of such bricks shall be adjusted by light wetting so as not to exceed  $1.5\text{kg/m}^2$  maximum, care being taken to avoid damage in frosty weather.

All bricks shall be laid on a full bed of mortar. All cross joints, perpends and collar joints (those parallel to the outside face) shall be solidly filled with mortar. Single-frogged bricks shall be laid frog uppermost and double frogged bricks shall be laid with the deeper frog uppermost. All frogs shall be filled with mortar.

Brickwork built with standard 65mm bricks shall rise at the rate of four courses to 300mm. The height of brickwork built in a day shall not exceed 1.5m (twenty courses of standard bricks) without prior permission of the Registered Practitioner.

Cutting of bricks shall be kept to a minimum and special or standard - special bricks shall be used to maintain bond. When cutting of units is necessary, a bolster shall be used in preference to a trowel. No cutting of high strength perforated bricks shall be allowed except by the use of a Carborundum wheel.

Sleeves and holes through walls shall, as far as possible be provided during the building of brickwork. Chasing of completed walls or the cutting of holes through walls shall be carried out only in positions specified by the Registered Practitioner or agreed by him in writing and then only by using a tool designed to cut the bricks cleanly. No horizontal or diagonal chases shall be permitted.

Ties shall be placed as the work proceeds and set level or with a slight downward slope toward the outside leaf.

The cavity shall be kept clear of mortar or rubbish as the work proceeds by the use of battens. Mortar droppings reaching the base of the cavity shall be removed daily through temporary openings. Cavity trays shall not be damaged when cleaning mortar from temporary openings. On completion the loose bricks and blocks shall be properly bedded and jointed after finally cleaning the cavity.

Where cavity DPC's are incorporated weep holes shall be provided through the outer skin at intervals not greater than 900mm horizontally. Weep holes shall be formed by building-in proprietary plastic weep-holes in perpends.

All damp-proof courses shall be bedded.

#### 4.11 Protection Against Weather

Frost: The Repairer shall be responsible for avoiding the harmful effects of frost. The Repairer shall use air-entraining agents only when specified by the Registered Practitioner. Calcium chloride, or frost-resisting additives based on calcium chloride, shall not be used.

Rain: Brickwork shall be protected to prevent rain falling directly on its top surface or water being channelled into it until the work has its finally intended protection. It is particularly important to ensure that perforations and frogs are not allowed to fill with water. In any period of interruption through rain, and at the completion of each day's bricklaying, freshly laid brickwork and block-work shall be protected.

#### 4.11 Site Control tests

When requested, the Repairer shall prepare mortar cubes and arrange for their testing by an independent laboratory.

Four 100mm mortar cubes shall be prepared on site from mortar taken from the mixer, when requested. The Contractor shall record the date of preparation and the position in the work to which the samples relate. Specimens shall be made, stored and tested for strength in accordance with BS EN 1015, half at 7 days and half at 28 days.

Requirements to pass are based on the 28 day tests the results of which shall be deemed to pass if the average strength exceeds the site value for this stage given in BS EN 1996.

In the event of the 28 day site sample failing to meet the requirements, the Repairer, shall, if required by the Registered Practitioner, take down and rebuild any work affected.

When the average strength of the site samples tested at 7 days exceeds the appropriate 7 day strength in BS EN 1996, the work may proceed while awaiting the results on the 28 day tests.

In the event of the 7 day strengths failing to meet this requirement by a margin not greater than 10%, the Repairer may elect to continue work at his own risk. while awaiting the results of the 28 day tests, or take down the work affected.

**SECTION 5 INSPECTION SCHEDULE**

Inspection Schedule for Registered Practitioner (Inspector)

The inspection schedule is divided into three site visit sized sections and critical stages of construction.

Description	Remarks
<p><b>FIRST VISIT</b></p> <p>Where new foundations are required Is ground bearing adequate?</p> <p>Have existing/drain/services been properly bridged or repositioned.</p> <p>Have all fixtures and fittings connected to external walls been removed/made safe?</p> <p>Have adjacent lean-to structures/outbuildings been removed?</p> <p>Have 100x100 head and sole plates with Acrow props at max 950 centres been installed in accordance with Drawing 503 attached? Are the upper storey props located directly above the lower storey props? Are they positioned adjacent to the load bearing elements to be removed?</p> <p>Is propping adequate to the situation?</p>	
<p><b>SECOND VISIT</b></p> <p>Have first floor joists been securely fixed to inner skin blockwork via timber plate or steel angle?</p> <p>Have new foundations been correctly excavated and concreted to the approval of the Building Inspector and in accordance with the drawings?</p> <p>Have DPC's been properly provided?</p> <p>Is cavity insulation fixed securely to ensure residual clear cavity?</p> <p>Have roof timbers been soundly located on to new inner skin blockwork?</p> <p>Have Steel lintels been provided with cavity tray DPC's and windows surrounded with DPC's?</p>	
<p><b>THIRD VISIT</b></p> <p>Have windows and door frames been properly sealed with mastic?</p> <p>Has concrete beam been replaced with new steel beam in the same location if previously decided necessary?</p> <p>Have Acrow props been removed?</p> <p>Are there any new cracks visible internally especially around doors?</p> <p>Is site clean and tidy?</p>	

## **SECTION 6 DESIGN ASSUMPTIONS AND CALCULATIONS**

The following structural calculations have been prepared by the Registered Practitioner and are available for inspection on request:-

PRCW1, Design Assumptions; PRCW2, Design Data; PRCW 3-6, Design Calculations for Steel beams.

These calculations are to verify the elements used in the repair system and have been prepared in accordance with BS EN 1990; BS EN 1991 and BS EN 1993

## **SECTION 7 GENERAL ARRANGEMENT DRAWINGS**

7.1 Drawings are attached for Semi-Detached houses where there are 2 types of internal layout with first floor joists either spanning from Party wall to Gable wall with an intermediate beam and load bearing wall support or from front to rear with an intermediate beam and internal load bearing wall support.

7.2 Drawings are also attached for a terrace of houses. There are front to back alleyways provided at intervals in the terrace to give access to the rear gardens. These Alleyways form tunnels where the first floor of the houses forms a roof to the tunnel. Sometimes the Party Wall of the houses occurs at the mid point of the "roof" and sometimes the Party wall is built directly over a ground floor wall on one side of the tunnel. The repair system allows for one single adjacent house to be independently repaired.

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 Canterbury,  
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 Tel /Fax(01227) 762008

client

**Various**

job

**Wates House**

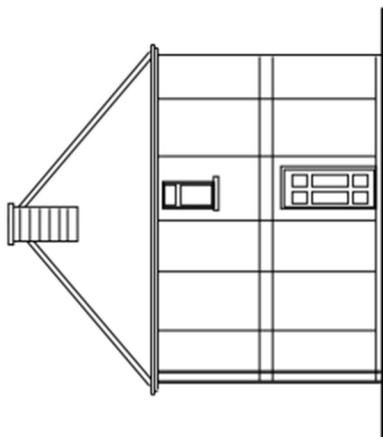
drawing title

**Existing elevations**

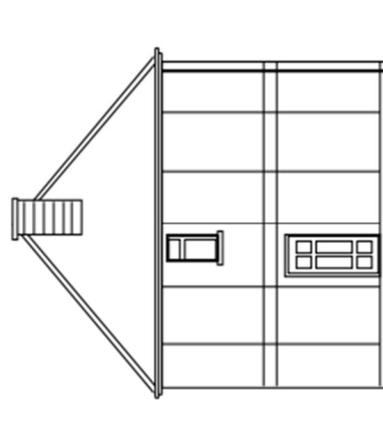
**semi detached unit**

drawing

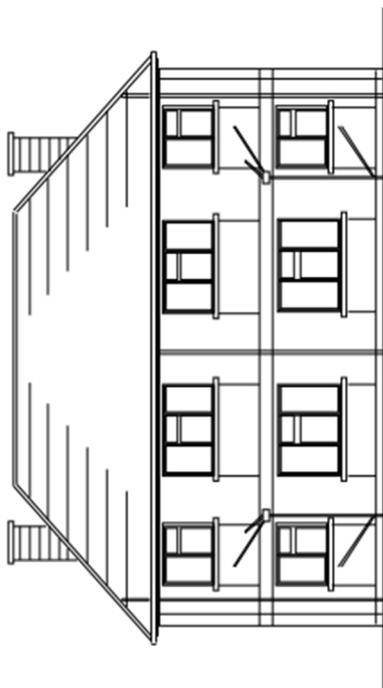
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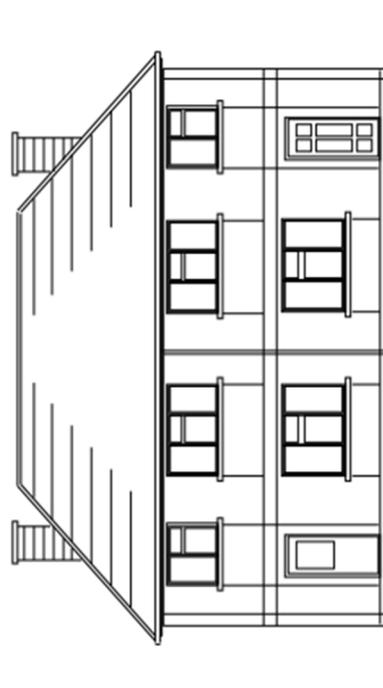
Side elevation



Side elevation



Rear elevation

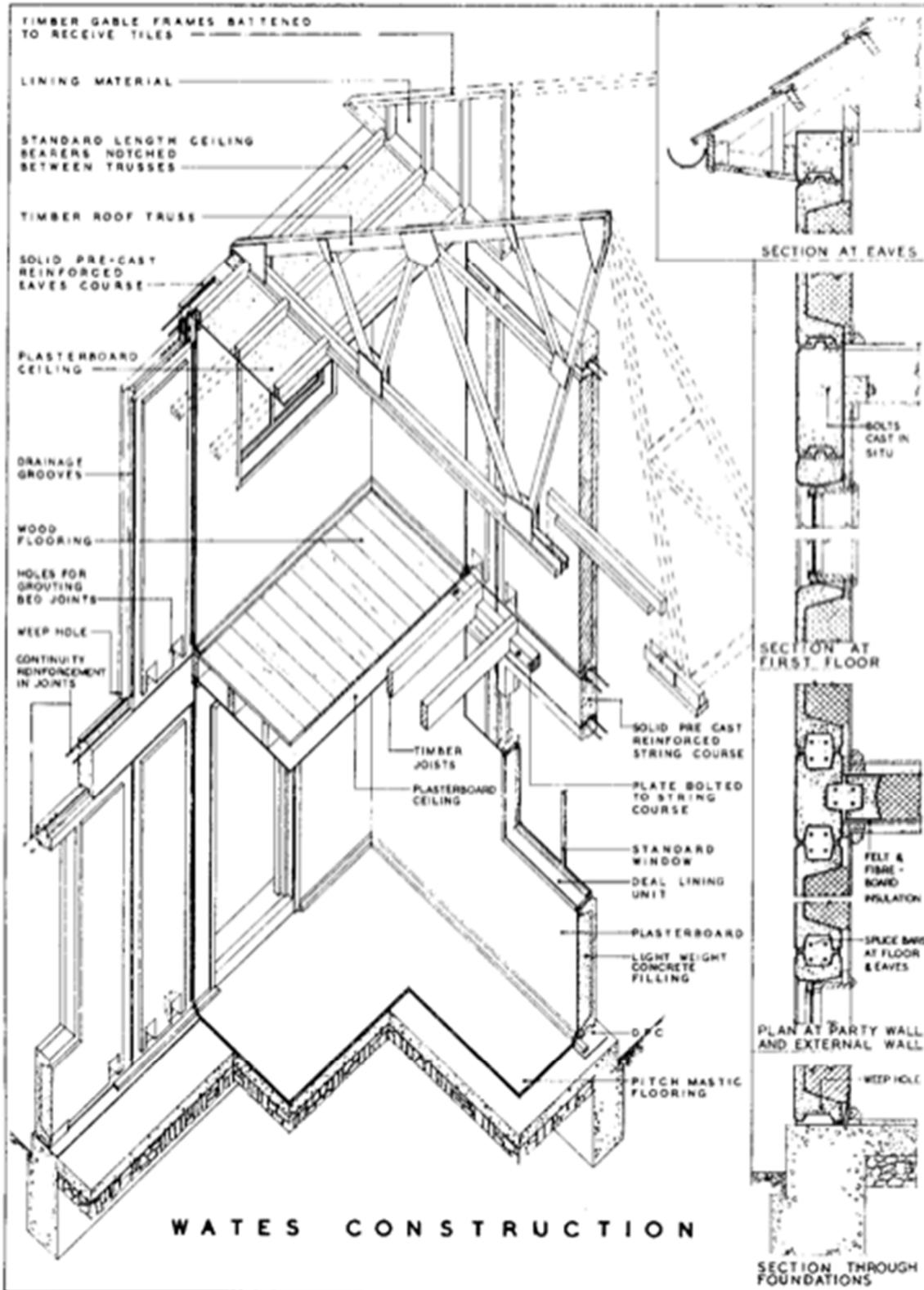


Front elevation

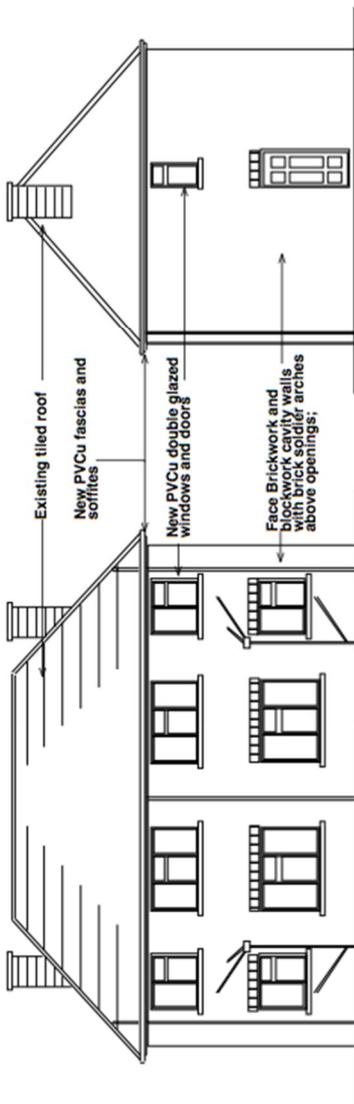


ELEVATIONS OF TERRACED HOUSES

**SECTION 8 EXISTING STRUCTURE**

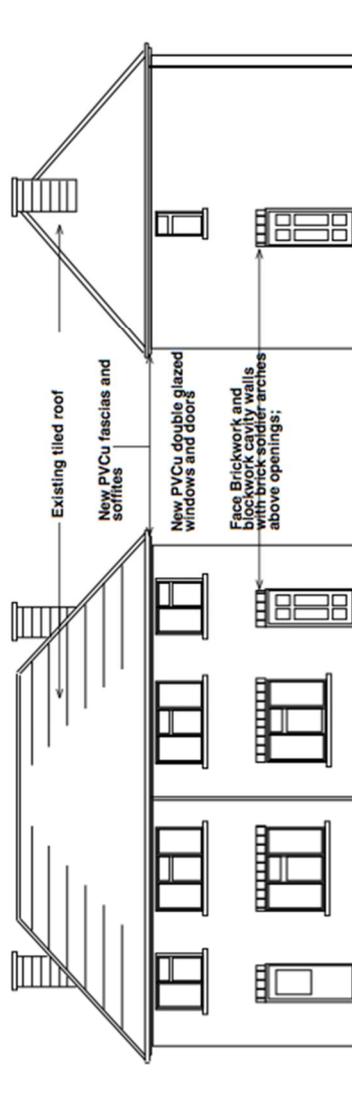


**SECTION 9 PROPOSED STRUCTURE**  
**DRAWING 9.1 Proposed Elevations Semi Detached House**



Side elevation

Rear elevation



Side elevation

Front elevation

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client  
**Various**

job

**Wates House**

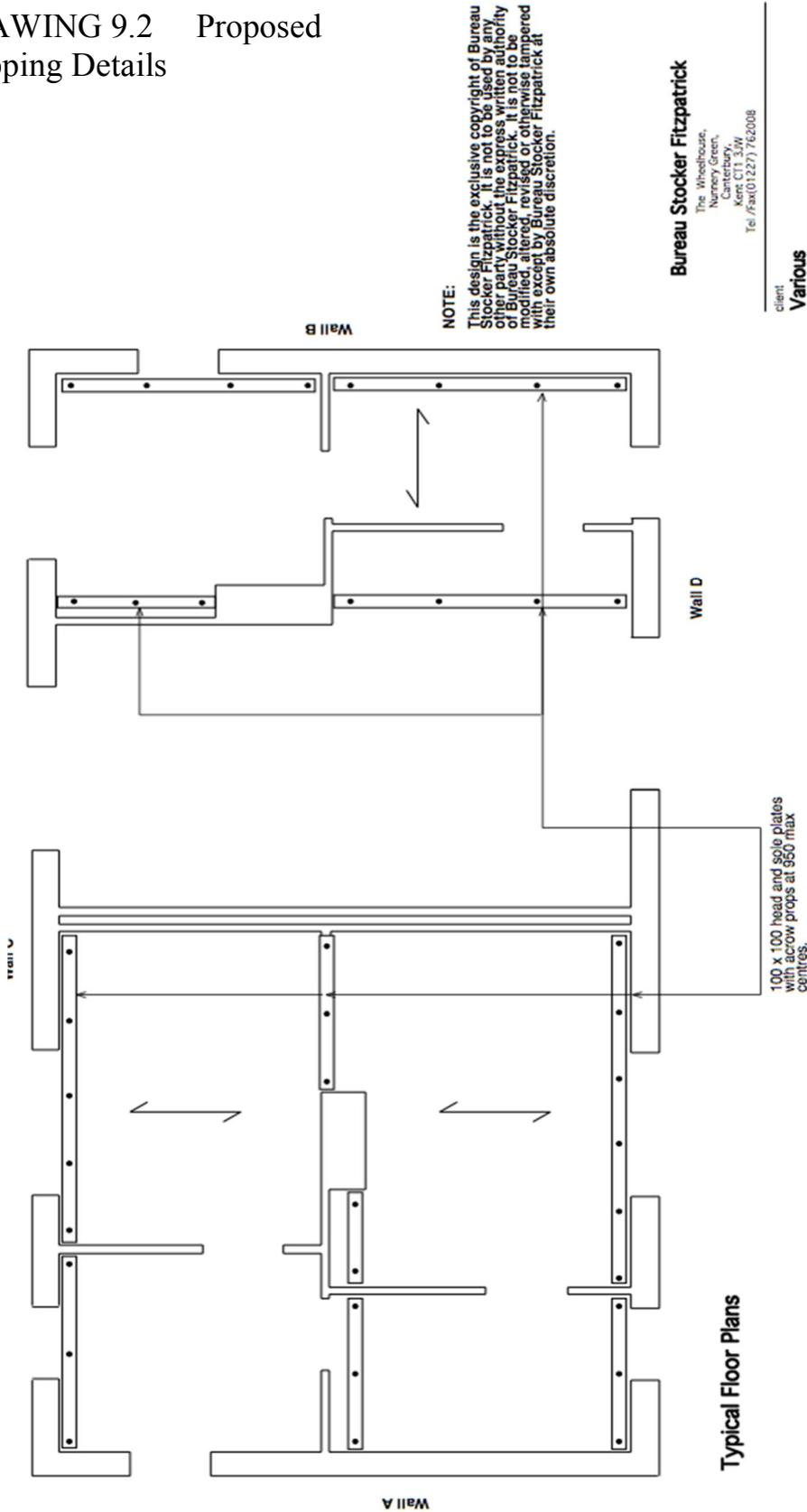
drawing title

**Proposed elevations  
 semi detached unit**

drawing

**o500/A3.4/502**

DRAWING 9.2 Proposed  
 Propping Details



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client: **Various**  
 job:

**Wates House**

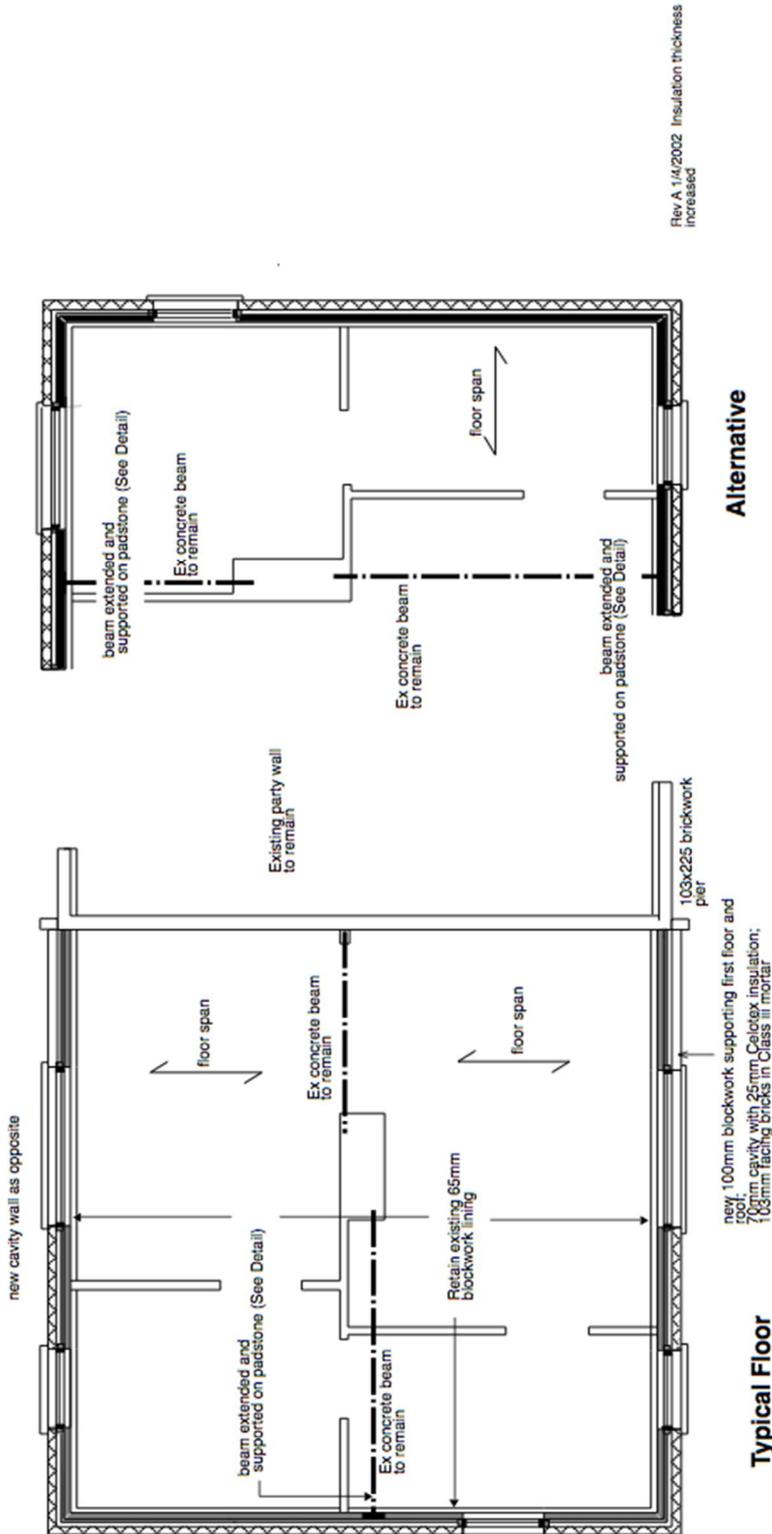
drawing title  
**Temporary support layout**  
 drawing no: 0500/A3.4/503

Scale 1:10

**Typical Floor Plans**

The 'repairer' must ensure that the upper storey propping is located directly above the lower storey propping. All props are to be positioned adjacent to the loadbearing elements to be retrofitted.

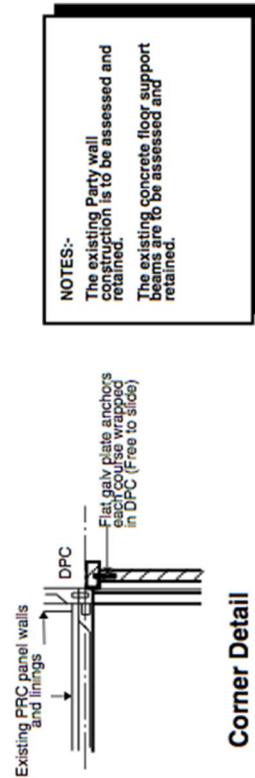
DRAWING 9.3 Proposed Plans



Rev A 1/4/2002 Insulation thickness increased

**Alternative**

**Typical Floor**



**NOTES:-**  
 The existing Party wall construction is to be assessed and retained.  
 The existing concrete floor support beams are to be assessed and retained.

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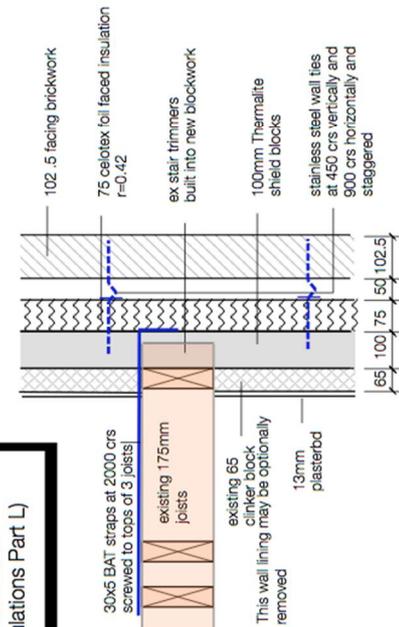
The Warehouse,  
 Nursery Green,  
 Kers C11 2JW  
 Tel / Fax (01227) 762008

client  
**Various**  
 job  
**Wates**

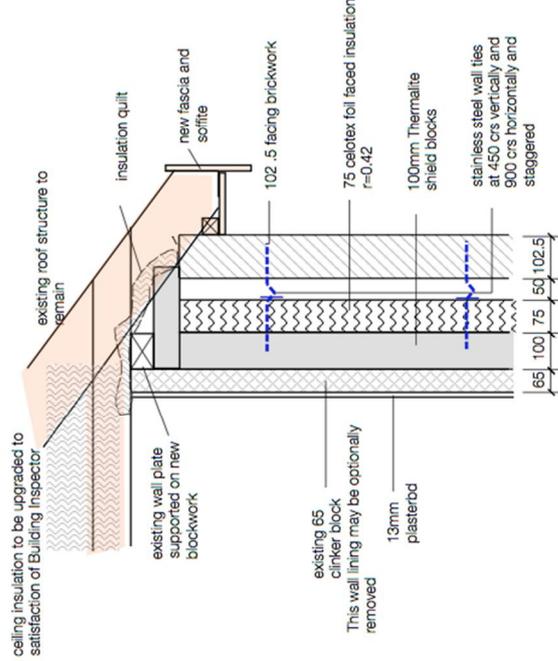
drawing  
**Ground Floor**  
 drawing  
**0500/A3.4/504A**

DRAWING 9.4 Proposed Construction Details -1

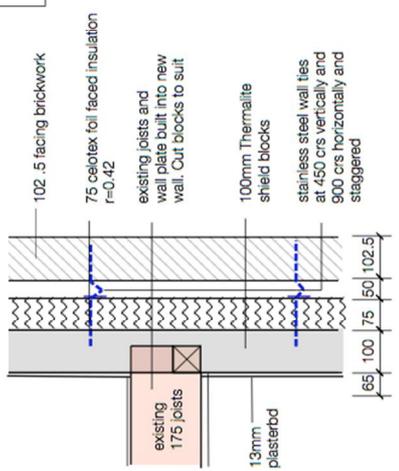
**CALCULATED U VALUE OF WALL = 0.25W/M2K**  
 (from time to time the wall construction will be varied to comply with Building Regulations Part L)



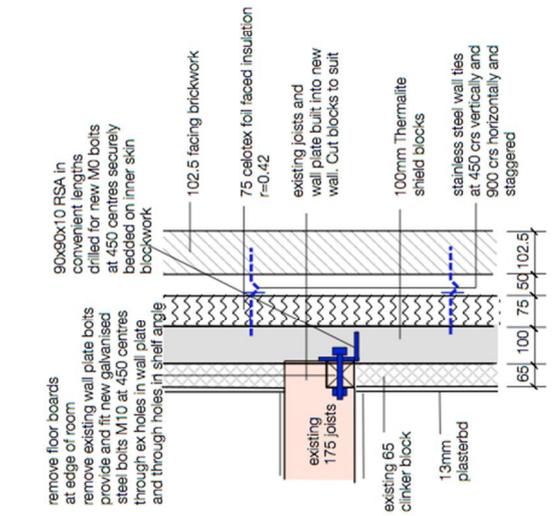
**GABLE FIRST FLOOR/WALL JUNCTION**



**EAVES JUNCTION**

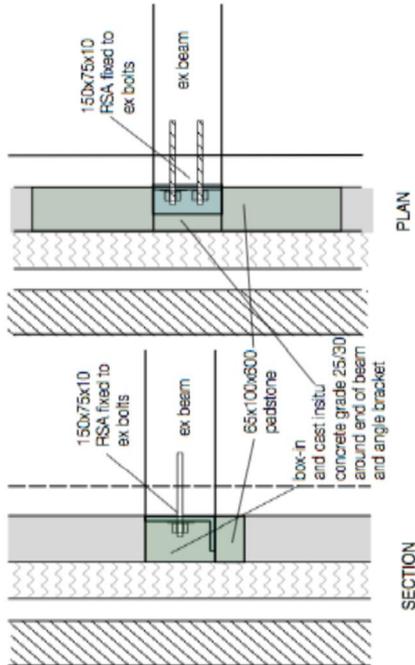


**ALTERNATIVE FIRST FLOOR/WALL JUNCTION WITH LINING REMOVED**



**ALTERNATIVE FIRST FLOOR/WALL JUNCTION WITH LINING REMAINING**

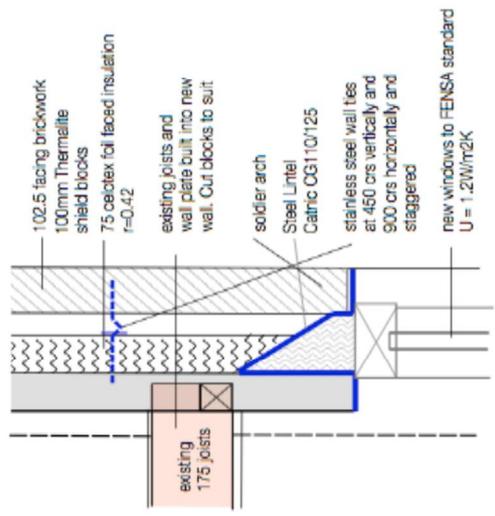
DRAWING 9.5 Proposed Construction Details -2



**INTERNAL FIRST FLOOR BEAM BEARING ADJUSTMENT**

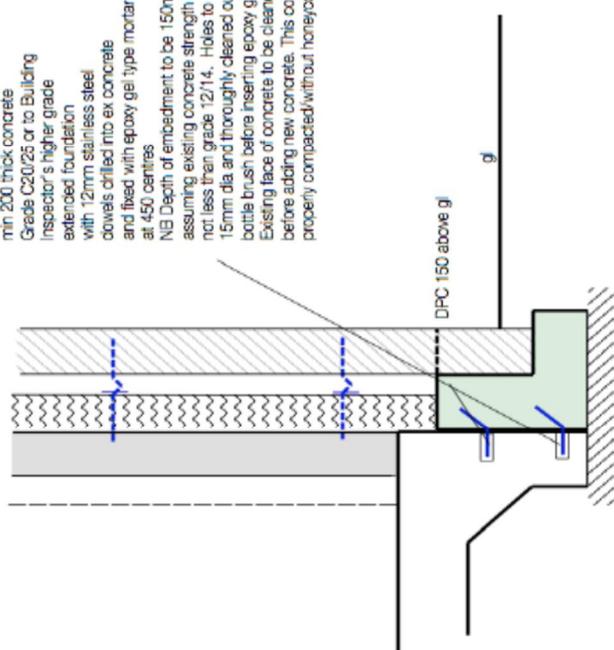
**NB** If on examination this concrete beam is found to be showing evidence of reinforcement corrosion it will be removed and replaced with a steel beam 203x133 UB25 cased in 2 layers 12.5 plasterboard and skim  
 Steel blast cleaned to SA 2 1/2 and painted 2 coats primer paint.  
 If required a top coat deemed suitable to the Registered Practitioner may be added.

If on examination the Registered Practitioner (Inspector) decides that the existing concrete foundation is of a lesser strength than grade 12/14 The Registered Practitioner may decide to underpin the existing foundations to a depth to be determined on site with regard to subsoil conditions etc.  
 It may be assumed that the existing foundations are of adequate strength and depth if there is no evidence of distortion due to subsidence or settlement given that the present age of the structure has already achieved its design life.



**TYPICAL WINDOW HEAD**

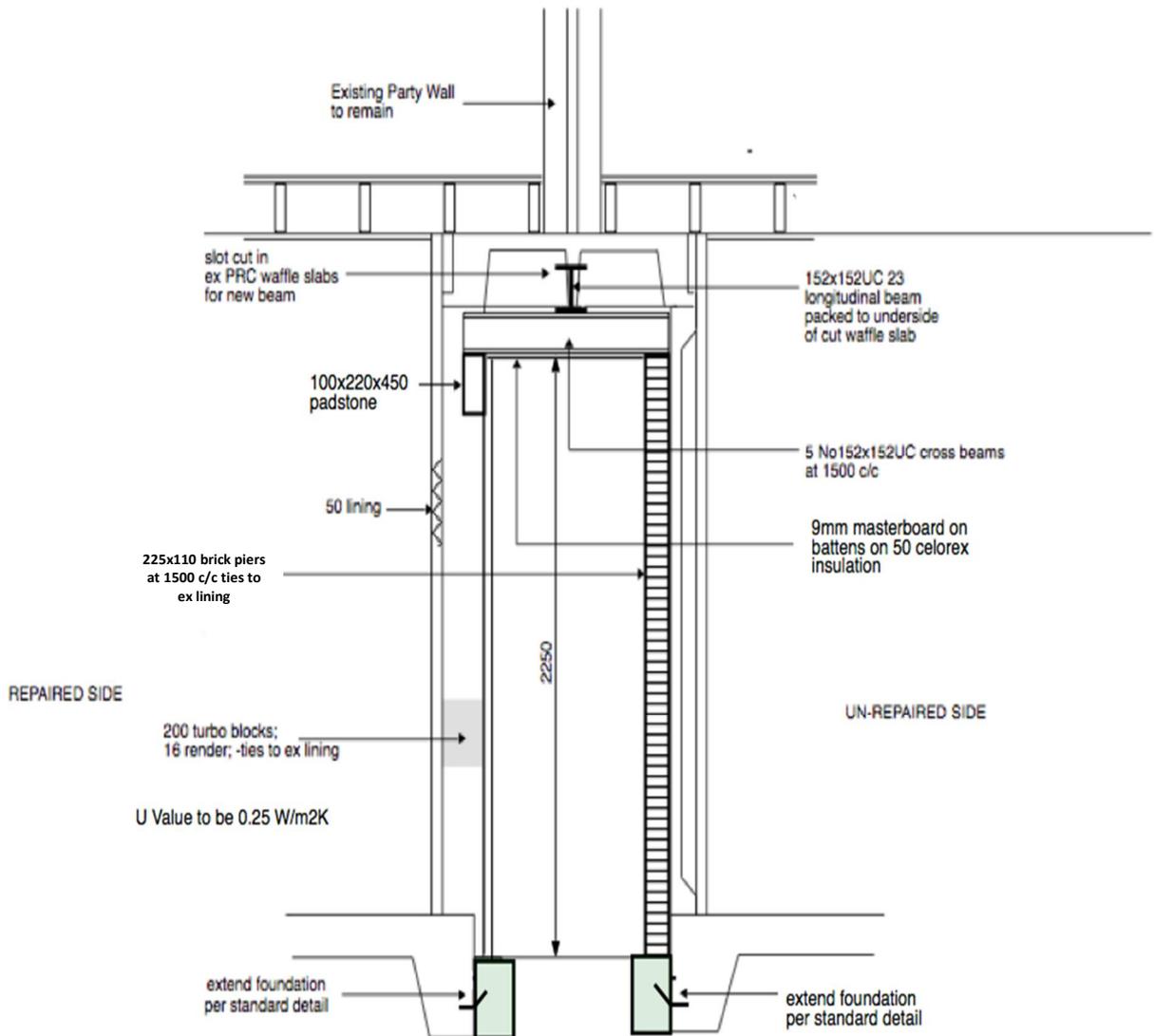
min 200 thick concrete Grade C20/25 or to Building Inspector's higher grade extended foundation with 12mm stainless steel dowels drilled into ex concrete and fixed with epoxy gel type mortar at 450 centres  
 NB Depth of embedment to be 150mm assuming existing concrete strength to be not less than grade 12/14. Holes to be 15mm dia and thoroughly cleaned out with a bottle brush before resurfing epoxy grout and dowel bars. Existing face of concrete to be cleaned and chipped before adding new concrete. This concrete to be properly compacted without honeycombing



**TYPICAL FOUNDATION**

DRAWING 9.6 Proposed Construction Details -3

The details here are for use when a house is to be repaired on one side only of the Access Alleyway in a terrace of houses. The original parts of the structure are designated "ex". The drawing shows works required on both sides of the alleyway to provide a replacement steel beam to support the party wall positioned on the line of the centre of the alleyway



**SECTION THROUGH ALLEY**

NB

If on examination the Registered Practitioner (Inspector) decides that the existing concrete foundation is of a lesser strength than grade 12/14 The Registered Practitioner may decide to underpin the existing foundations to a depth to be determined on site with regard to subsoil conditions etc.

It may be assumed that the existing foundations are of adequate strength and depth if there is no evidence of distortion due to subsidence or settlement given that the present age of the structure has already achieved its design life.