

3.3 Structural Engineer's report

Price & Myers: Paul Toplis, Brent Hoffmann

19th December 2007

Ref: 16037/.2

THE SWISS CHURCH

Structural Engineer's Report – Stage D

1 The Site

The Swiss Church in central London is an existing listed building built in 1854. The façade of the building on Endell Street is constructed of stone. Internally the front of the building is divided into three levels, a basement, ground floor entrance and gallery. The remainder of the building is predominantly a ten-meter high traditional church hall.

The terraced building has brick and stone walls with timber roof trusses. The arched trusses spanning the flank walls and bear onto individual consoles. The hall has a timber floor on timber joists.

2 Ground Conditions

A geotechnical report has not been carried out. The ground is assumed to have an allowable bearing pressure of 140 kN/m².

3 Proposed Structure

It is proposed to remove the existing gallery floor and ground floor. The *basement and ground floors are to be lowered to allow for the front internal portion of the building to be divided into four floors. The new basement will increase in floor area, extending from the front façade approximately 7.5m towards the rear of the building. The new lowered ground floor will have two trenches below the finished floor level connecting the basement to the rear of the building. The first floor will have a gallery view into the central hall as well to the front of the building. This is achieved by the floor ending about a meter from the front wall creating a void between the floor and the front wall. The second and top internal level has a gallery view of the hall, with the floor extending and bearing onto the front and flank walls.*

The new floors, trenches and connecting lift shaft are to be constructed from reinforced concrete. There are three concrete columns supporting each upper level. The edge of the ground floor is supported on the existing external walls and the new vertical reinforced concrete basement wall. The reinforced concrete floor of the hall bears onto the ground. The first and second floor slab edges are similarly supported on the external walls, with the rear of the floors cantilevering past the columns.

A lift and steel staircases provide access between floors, although the existing stone basement stairs are to be re-used.

3.1 Substructure

The three columns bear onto a new concrete ground beam below the basement level. This ground beam, the lowered concrete basement floor and ground floor bear onto the ground.

3.2 Superstructure

The existing brick and stone walls will provide stability and support for the proposed works.

3.3 External Works

The lowering of the ground floor will require the entrance steps to be lowered.

4 Design Criteria

4.1 Codes and Standards

The design of the structure will be carried out in accordance with the following codes of practice:-

	British	
Loading	BS6399	Part 1 (1984) Part 2 (1997) Part 3 (1988)
Concrete	BS8110	
Foundations	BS8004	
Steelwork	BS5950	
Balustrades	BS6180	

4.2 Loadings

Design Dead Loads:

Slabs	275mm 6.6 kN/m ² 300mm 7.2 kN/m ² 150mm 3.6 kN/m ²
Finishes and Services	1.0 kN/m ²
Partition	1.0 kN/m ²
Imposed Loads	
Generally	2.5 kN/m ²
Other Loads organ	25 kN (tbc)

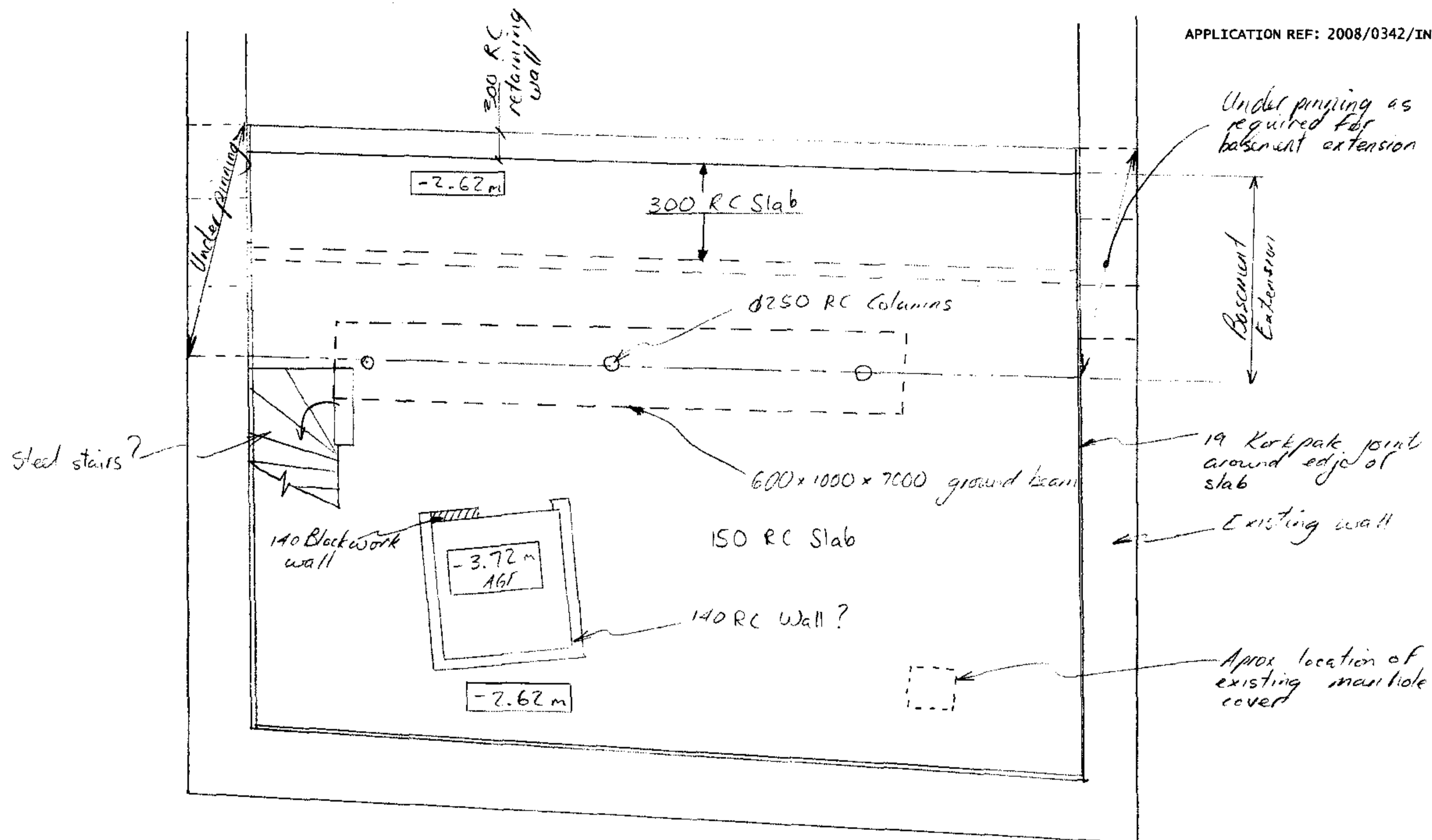
4.3 Design Fire Periods

The building will be designed for a 1-hour fire rating.

5 Design Drawings

Refer to sketches:

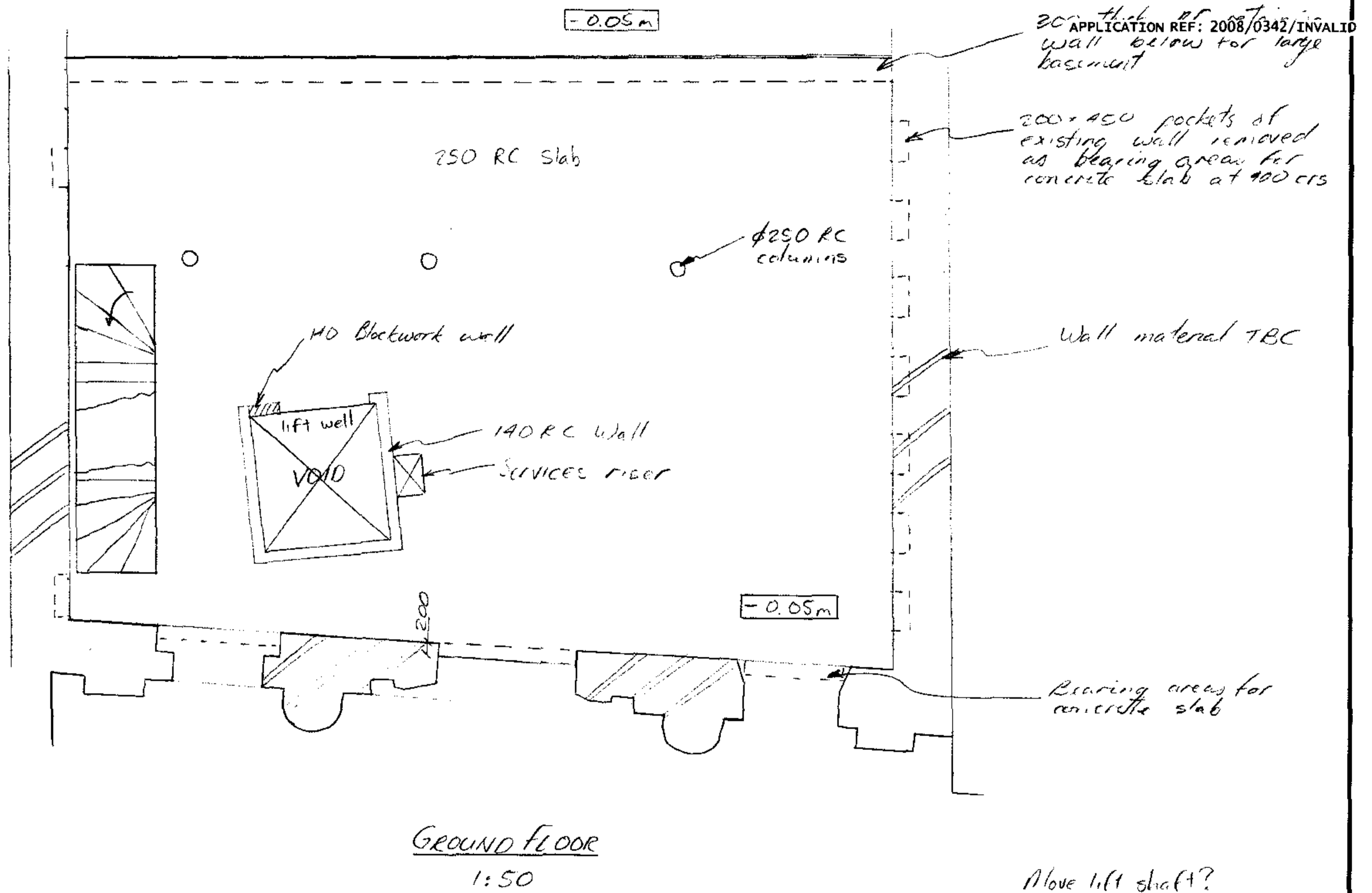
SK13
SK14
SK15
SK16
SK17
SK18



LARGE BASEMENT
1:50

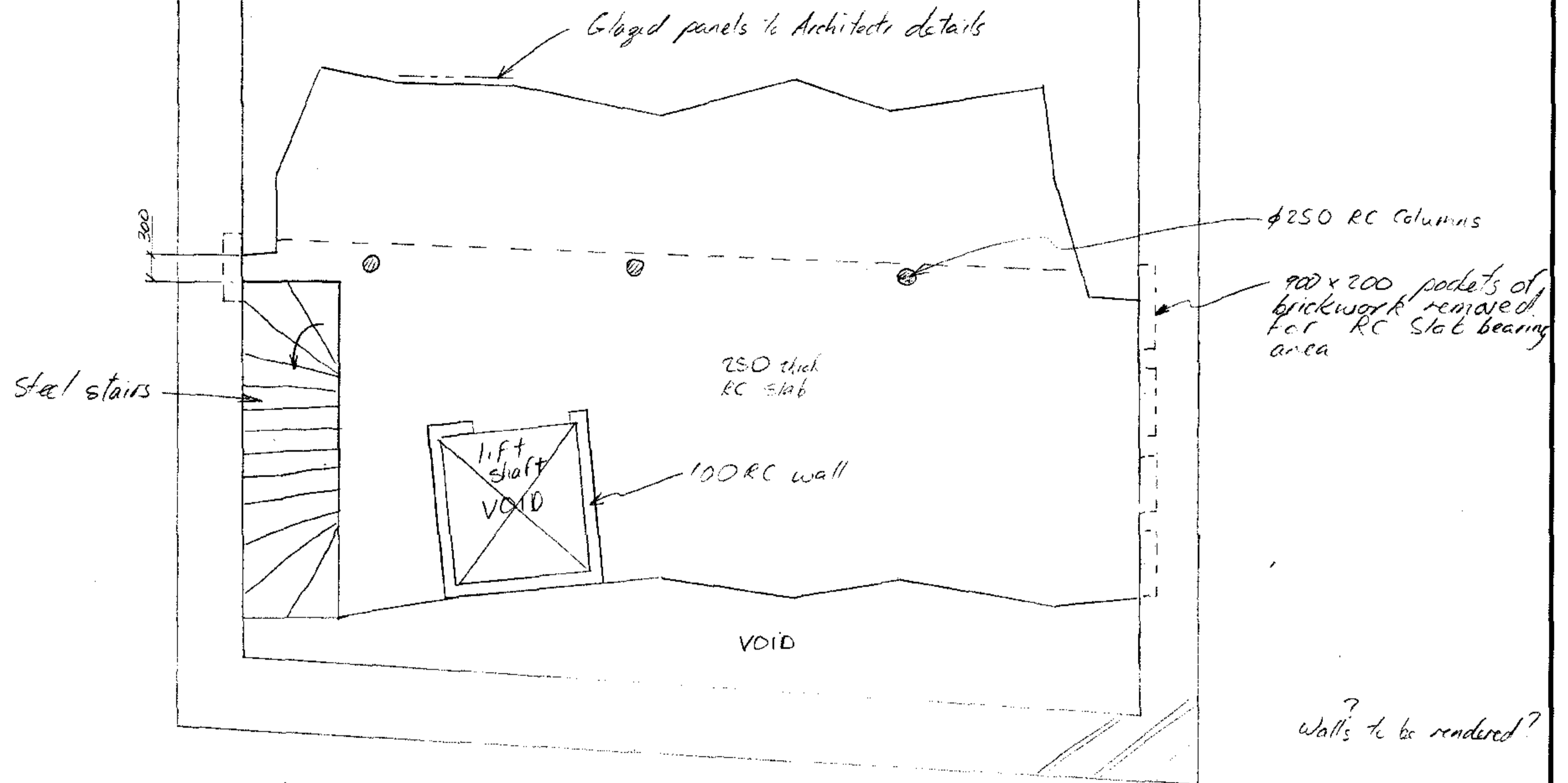
PRICE & MYERS
CONSULTING ENGINEERS

Job No. 16037	Page SK 13	Rev. A
Date 13/12/07	Eng. BH	Chd.
Job Swiss Church		



GROUND FLOOR BELOW

APPLICATION REF: 2008/0342/INVALID



MEZZANINE FLOOR

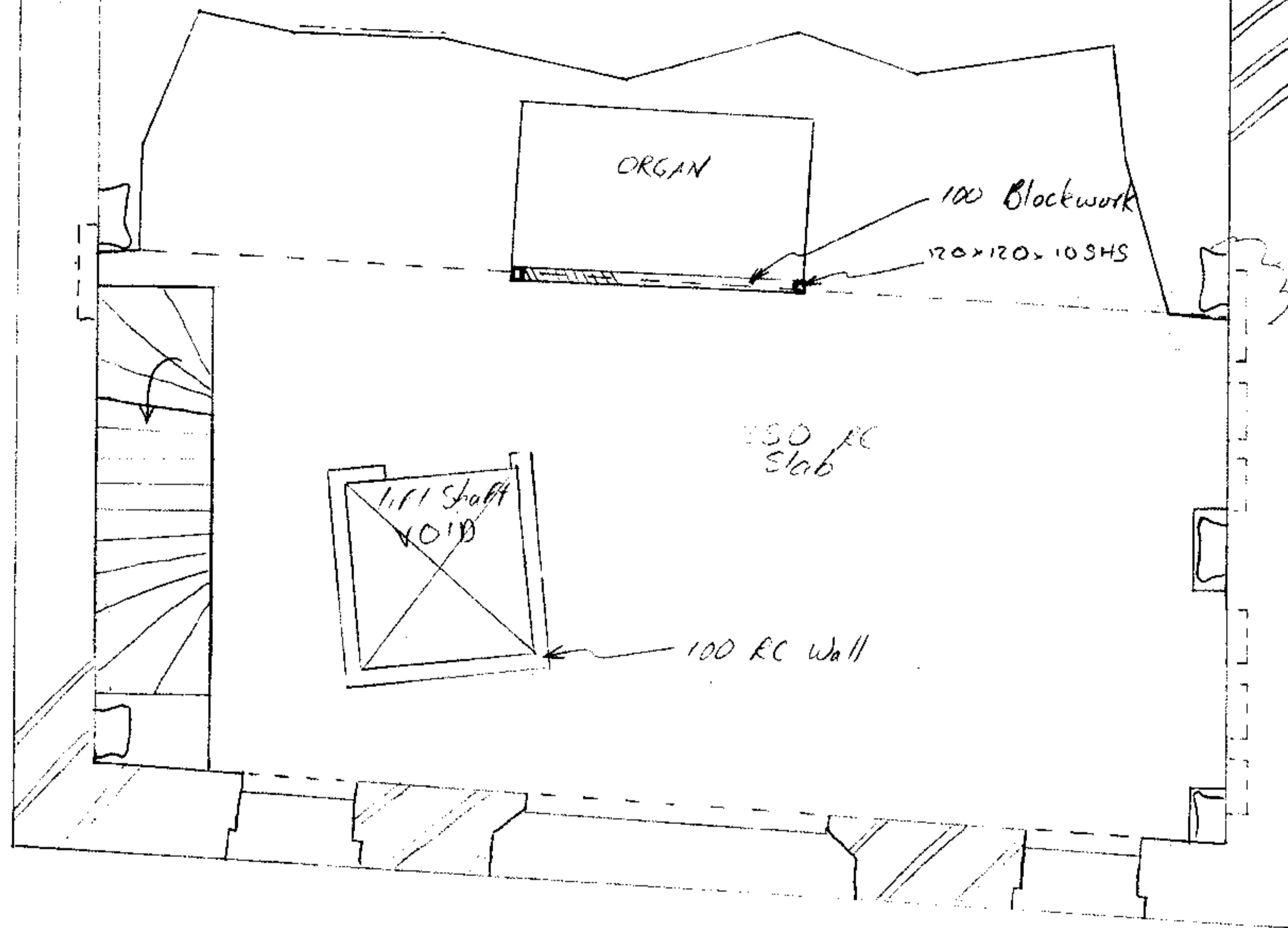
1:50

PRICE & MYERS
CONSULTING ENGINEERS

Job No. 16037	Page SK15	Rev. A
Date 6/12/07	Eng. BH	Chd.
Job Swiss Church		

GROUND FLOOR
Below

APPLICATION REF: 2008/0342/INVALID

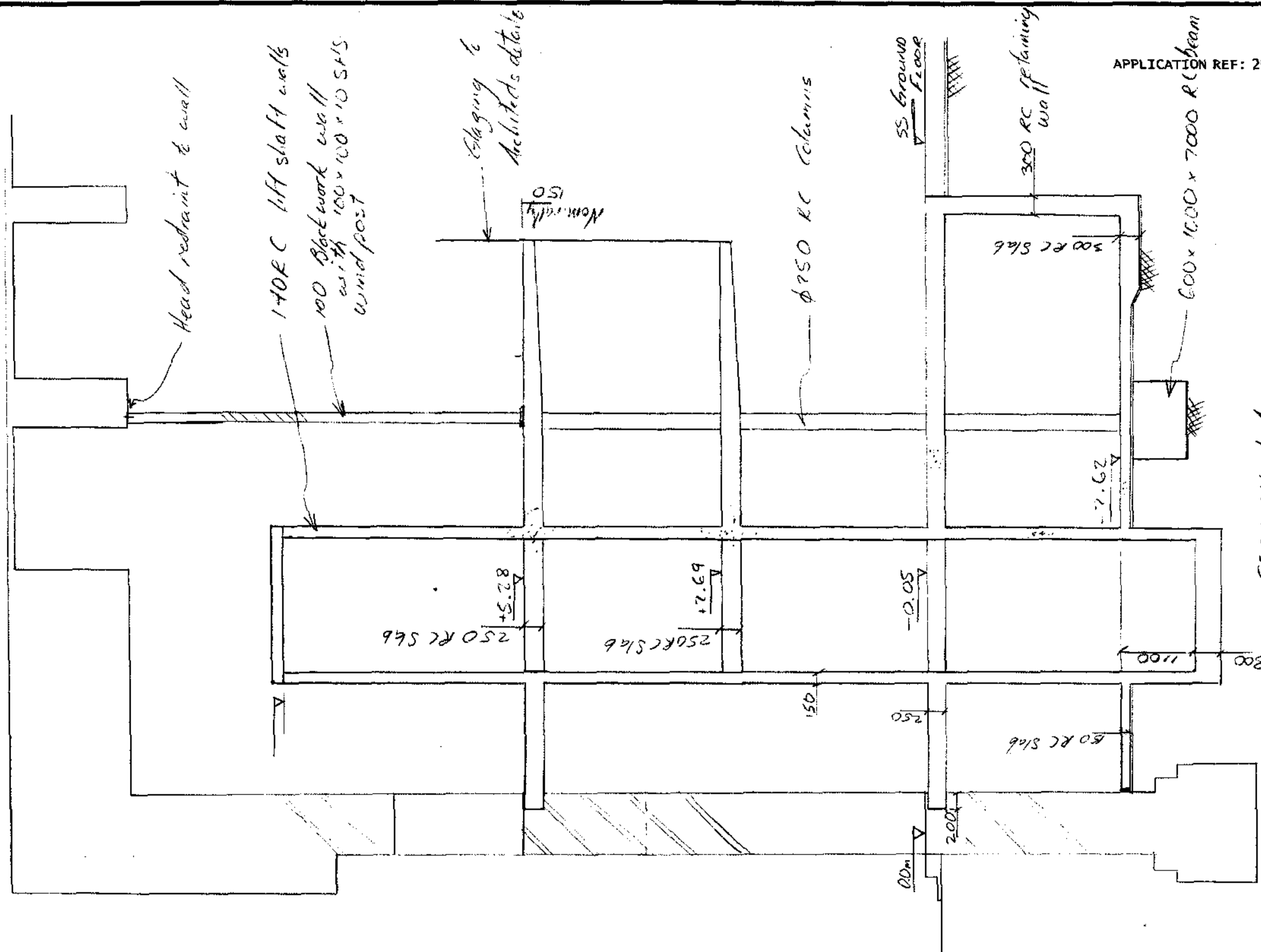


opening up
regarded

GALLERY FLOOR
1:50

PRICE & MYERS
CONSULTING ENGINEERS

Job No. 16037	Page SK 16	Rev. A
Date 6/12/07	Eng. BH	Chd.
Job Swiss Church		

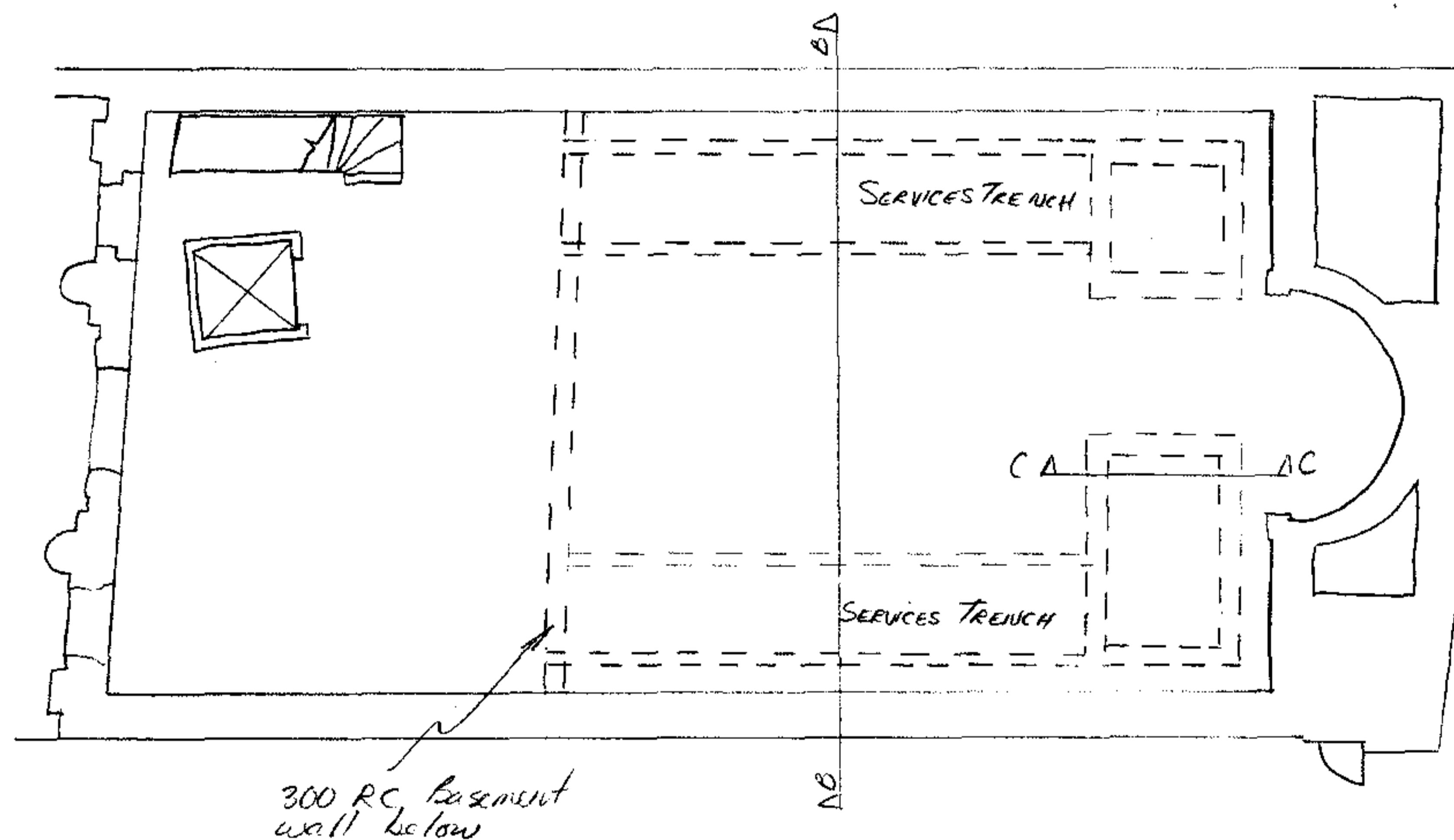


SECTION A-A

1:50

PRICE & MYERS
CONSULTING ENGINEERS

Job No. 16037	Page SK 17	Rev. A
Date 6/12/07	Eng. BH	Chd.
Job Swiss Church		



PLAN OF GROUND FLOOR

1:100

PRICE & MYERS
CONSULTING ENGINEERS

Job No. 16037	Page SK 18	Rev. -
Date 14/12/07	Eng. BH	Chd.
Job Swiss Church		

3.4 Survey under the original ground floor

A small trial pit has been done to check the existing floor construction of the ground floor. The carpet was lifted just by the gallery structure and a piece of floor boarding was temporarily removed.

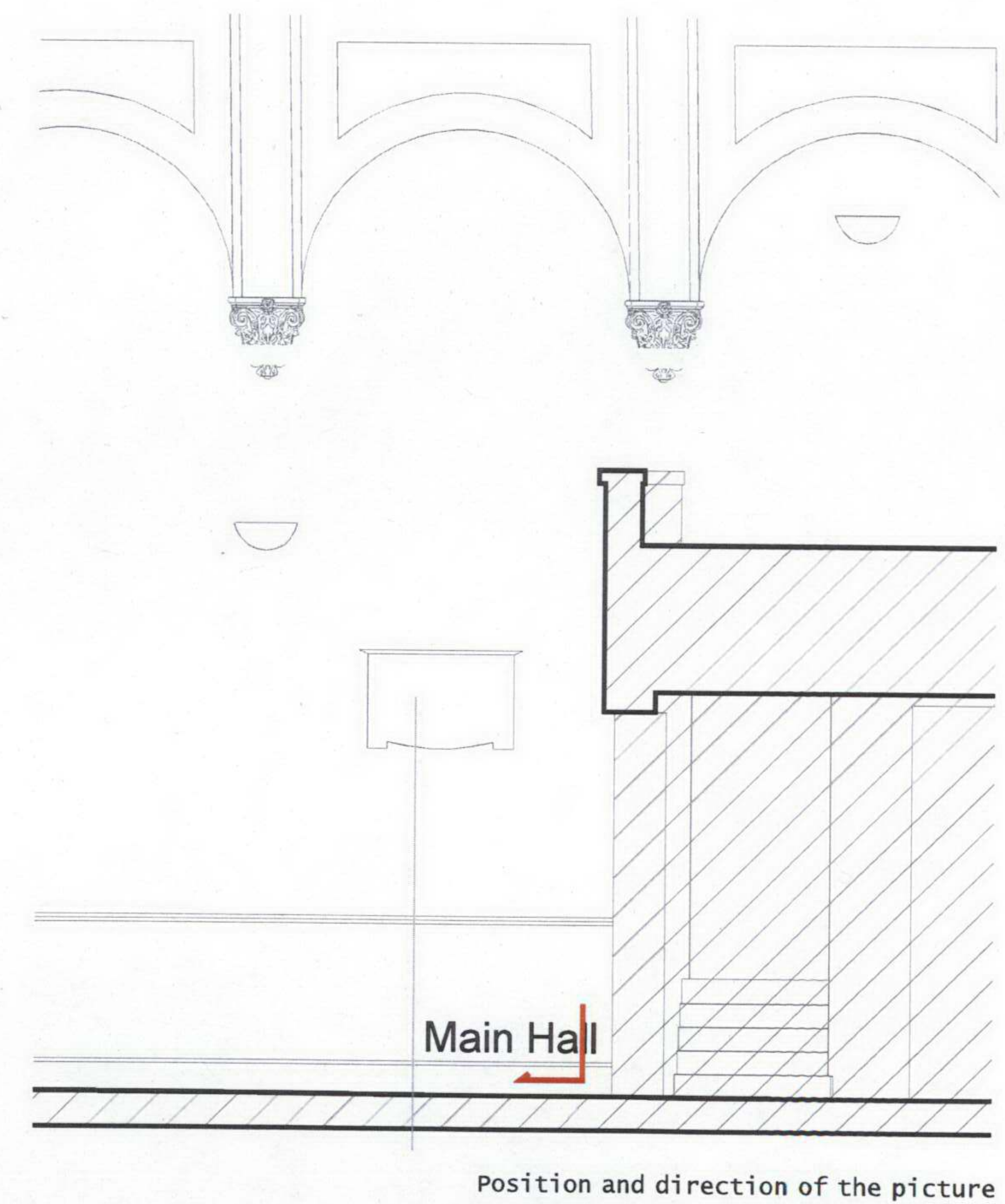
It was assessed that the floor boards on joists over a vented void are supported by brick columns. The distance between the upper side of the oak boarding and the ground is about 430mm, the void is about 300mm and the joists are 60/100mm.



Picture of the vented void



Picture of the oak boarding



APPLICATION REF: 2008/0342/INVALID

3.5 Internal elevation

New darkening blinds in
all rooflights
with side guide
motor operation

Repoint flashings

New safety handrail

Repair and repaint
plaster ceiling to
existing pattern

New fixed glass E30

New Organ

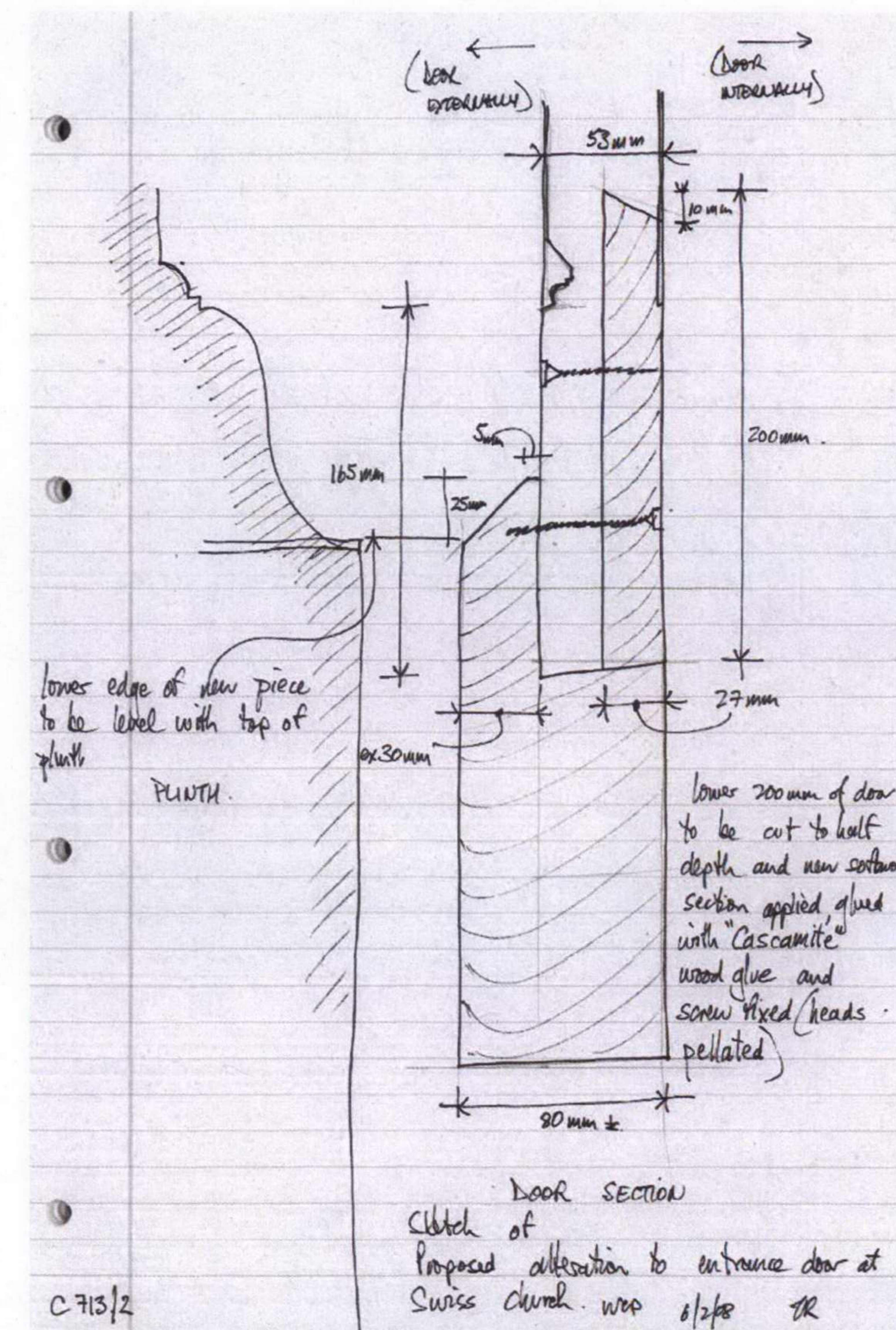
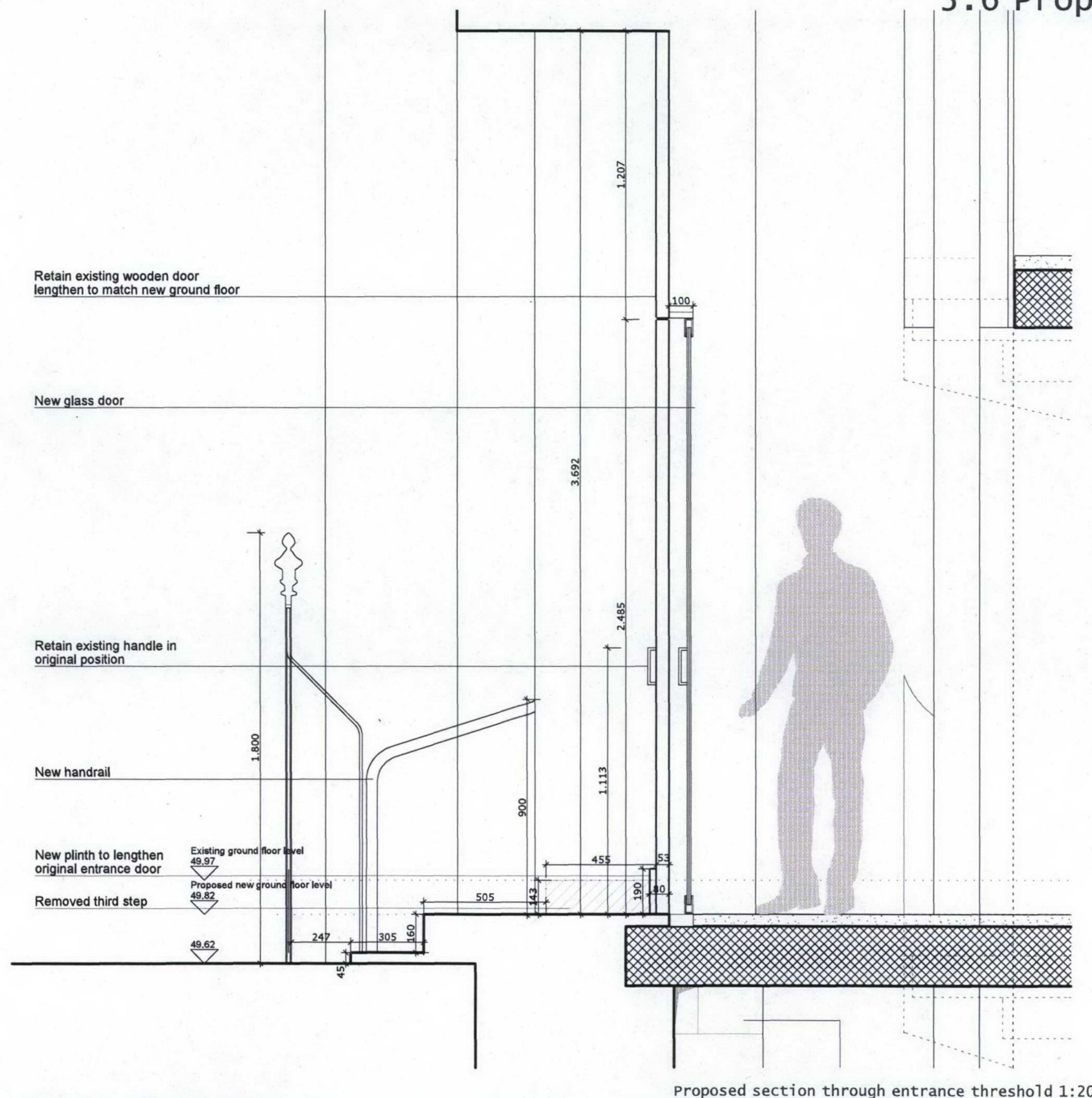
New glass balustrade

New fixed glass EI30
butt-jointed

New fixed glass EI30

Existing ground floor level
49.97
Proposed new ground floor level
49.82

3.6 Proposed section through entrance threshold



Sketch of the proposed alteration to the entrance door (by T.Redman), no scale

The screws fixings need to be at 150mm horizontal centres (i.e. three in each line, per door leaf), and countersunk and pellated to conceal the heads. The lip on the top of the new section might need to be additionally filled with decorators caulk, to prevent water getting in behind it. The addition to the door is in relationship to the stone plinth adjacent.

DO NOT SCALE OFF DRAWING
REPORT ALL DISCREPANCIES
CHECK ALL DIMENSIONS ON SITE

© Christ & Gantenbein AG
08/02/2008

PROJECT	PHASE
The Swiss Church, London	Listed Building Application
CONTENT	PLAN NO.
Proposed section entrance threshold	1064_06-001
FORMAT	DATE
42/29.7	08.02.2008
SCALE	REV.
1:20	
CHRIST & GANTENBEIN AG, ARCHITEKTEN ETH SA BSA, SPITALSTRASSE 12, 4056 BASEL, T 061 260 90 20, F 061 260 90 30, mail@christgantenbein.ch	