

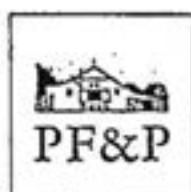
ELEVATION

RECONSTRUCTION
CHANGI CHAPEL

NATIONAL
POW MEMORIAL
RMC DUNTROON

CANBERRA
1989

FOR
ACS ACT OFFICE



Reconstruction of Changi Chapel
As A National POW Memorial
RMC Duntroon, Canberra

Report March 1990

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I BACKGROUND

The 8th Division AIF was formed after the fall of France in 1940 and after training the first units set sail for Singapore and Malaya in February 1941.

Japanese forces landed at Kota Bharu in Malaya's northeast on December 8, 1941 and proceeded rapidly down the peninsula towards Singapore, the defending British Commonwealth forces including the 8th Division retreating desperately before them.

The Japanese landed on Singapore's north coast on the night of February 8, 1942 and gradually forced the Allied troops back into an ever tightening defense perimeter.

After the surrender of British Forces on Singapore on February 15, 1942, the captured Australians were housed in the Selarang Barracks area, one of the separately wired off camps which made up the whole Changi prison compound. (Figure 1)

In the period from May 1942 to August 1943, large groups of prisoners left Changi on forced labour for the Japanese to work on the Burma-Thailand railway, on construction projects in Borneo and Formosa and elsewhere in South East Asia and in mines, factories and dock yards in Japan.

With the completion of the Burma-Thailand railway towards the end of 1943, the fittest survivors were assembled in Thailand and Indo-China for shipment to Japan.

Others remained in Burma and Thailand working on maintaining the railway while the remaining prisoners, many reduced to skin and bone were sent back to Changi.

The return to Changi is best summed up by one of the survivors of the 'death railway' as told in 'POW: Australians under Nippon' a book by Hank Nelson based on Tim Bowden's ABC Radio series of the same name.

CHANGI PENINSULA, SINGAPORE, 1942-1945.

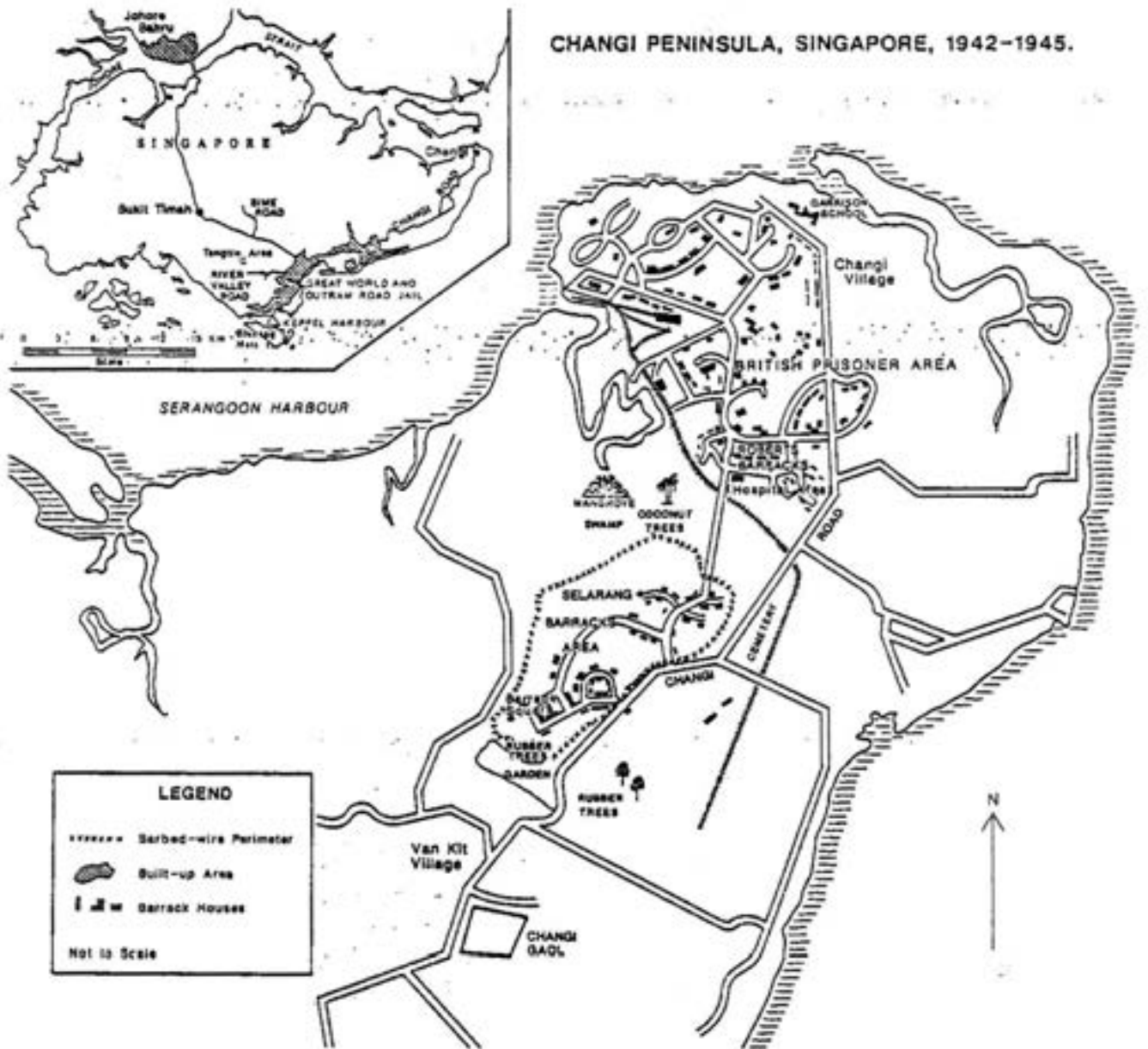


FIGURE 1

Stan Arneil arrived at Changi on December 21, 1943. He has no memory of getting from the train in Singapore station to Changi, but he has vivid recollection of his reception in Changi:

It was a moonlight night and Changi with the tropical waters round the island was so beautiful. I can still hear the squeal of the brakes as the trucks lined up. The people from Changi knew we were coming, and they came over to see us, to look for old friends, and see how we were. We got out of the trucks, a couple were dead and we laid them on the ground, and we lined up on the road. We were not ashamed because we were soldiers, and we wanted to look like soldiers. The people from Changi stood back and uttered not a word. It was really quite strange. We lined up on the road as best we could and stood up as straight as we could. Those who could not stand up straight were on sticks. And those who couldn't stop shaking with malaria were held by their friends. We thought this was what we should do as soldiers to say that we were not beaten. The sergeant major dressed us off and we stood in a straight line as he went over and reported to Colonel Johnston. Johnston went over to Black Jack Galleghan and he said, 'Your 2/30th all present and correct sir.' And Galleghan said, 'Where are the rest?' The major, he was a major then, said, 'They're all here, sir.' And we were. Black Jack Galleghan, the iron man, broke down and cried. It was an incredible scene. We wanted to show them we were soldiers.

By May 1944 after the arrival of Japanese airforce units at the Changi airfield, all prisoners were moved from the Selarang area to the Changi gaol.

The new Changi gaol camp (Figure 2) was laid out into four accommodation areas:

- gaol building
- hospital
- officer's area
- other ranks area

The hospital was located outside the gaol walls and in an open area near the barbed wire perimeter and between the hospital huts and the Japanese guards houses in Half Moon Street (known as 'Half Wit Street') a Roman Catholic and Church of England Chapel were built by the prisoners.

A chapel for other protestant denominations was also built in an outside area near the other ranks huts behind the gaol.

CHANGI ROAD AND P.O.W. CAMP
SINGAPORE ISLAND
AREA OCCUPIED BY ALLIED TROOPS UN-AM
KEY TO INSTALLATIONS AND SERVICES

- | | |
|----------------------------------|---------------------------------------|
| 1. CHANGI ROAD | 31. SURGICAL WARD (ATTAP) |
| 2. HALF MOON STREET | 32. A.L.P. |
| 3. HOSPITAL OFFICERS QUARTERS | 33. STORES |
| 4. ROMAN CATHOLIC CHAPEL | 34. OFFICERS QUARTERS |
| 5. CHURCH OF ENGLAND CHAPEL | 35. WORKSHOPS |
| 6. OFFICERS BARRACKS | 36. SECTIONS IN BLACK ON PLAN |
| 7. SERGEANTS HUTS | 37. ARE MAIN GARD (CONCRETE) BLOCK |
| 8. HOSPITAL STAFF HUTS | 38. (GARD ENTRANCE - CLOCK TOWER) |
| 9. MAIN WALLS | 39. ENGINEERS STORE |
| 10. CONVALESCENT WARD | 40. ROAD BETWEEN GARD & HOSPITAL |
| 11. OVERSEAS WARD | 41. GARD THEATRE |
| 12. T.A. WARD | 42. GARD KITCHEN |
| 13. MORTUARY | 43. (PASSAGEWAY UNDER TOWER) |
| 14. HOSPITAL KITCHEN | 44. THROUGH ADMIN. BLOCK |
| 15. HOSPITAL WARD | 45. COOKHOUSE (ATTAP) |
| 16. ATTAP HUTS (N.S. MEDICAL ST) | 46. ONE METRE ATTAP HUTS |
| 17. ATTAP HUT (N.S. MEDICAL ST) | 47. OCCUPIED BY VARIOUS ALLIED P.O.W. |
| 18. L.A. GUARD HOUSE | 48. (VEGETABLE GARDEN AND |
| 19. "P" RAY CENTRE | 49. FENCED AREA) |
| 20. SURGICAL WARD | 50. L.A. GUARD HOUSE |
| | 51. OTHER PROTESTANT DEN. CHAPEL |

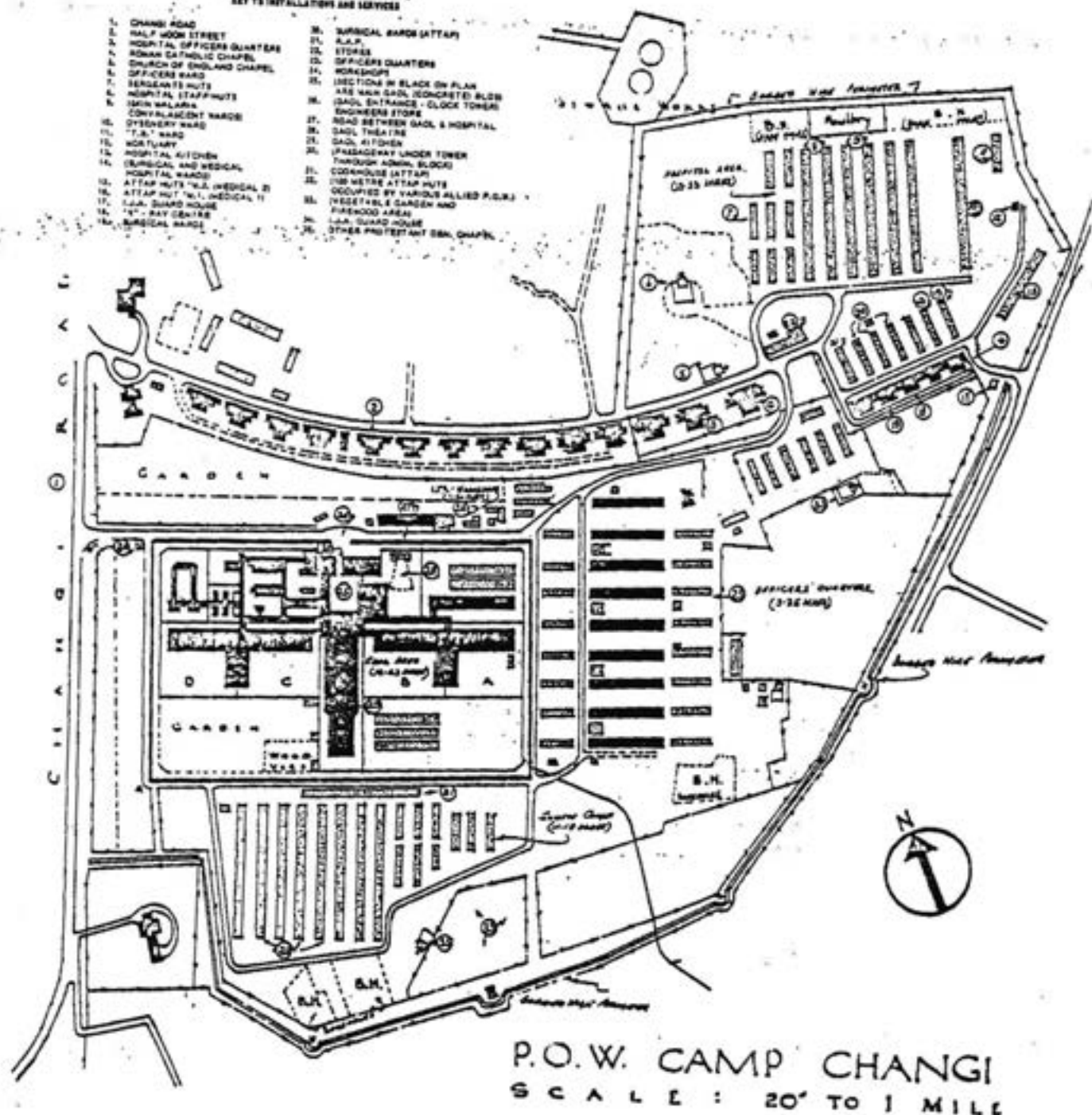


FIGURE 2

An account of the construction of the Roman Catholic chapel is taken from the writings of Father Lionel Marsden, SM, Chaplain to the Eight Division, AIF.

On our return to Singapore we were established in a new camp known as Sima Road. In this camp we had a considerate Japanese commander - as Japanese commanders go. We had not been in the camp for a week when the Catholic soldiers were clamouring for a chapel where the Blessed Sacrament could be reserved. The man who came to our assistance was Lieutenant Hemish Cameron-Smith, a Scottish Catholic, and an architect in civilian life. He drew the plans for our little chapel, rounded up a band of voluntary labourers and, with the help of his fine persuasive, Highland personality, we managed to secure all the material we needed. He then built the chapel from the first nail to the last stroke of the paint brush. His assistant and general factotum was Lieutenant Hugh Simon-Thwaites. A beautiful garden was laid around the chapel. In front of the chapel a memorial plaque was erected and on it was inscribed these words: This chapel is dedicated to Our Lady Help of Christians and in memory of our deceased comrades in Malaya, the Netherland East Indies, Thailand and Burma, over whose remains there was no Christian symbol.

In October 1945, an Australian War Graves Unit was based at Changi gaol and a request from them to save the Roman Catholic chapel from destruction was granted.

The chapel was photographed, a partially dimensioned drawing made and then using Japanese POW's as labour, disassembled, crated and shipped back to Australia in 1947.

On arrival in Australia, the crates were sent to the Australian War Memorial in Canberra and placed in storage at the Royal Military College at Duntroon, where they remained undisturbed for nearly 40 years before being 'found' during the re-organization of the store.

When the Principal Roman Catholic Chaplain for the Army became aware of the existence of the Chapel, he considered it would make a fitting memorial to Prisoners of War who he believed had been given very little recognition for the extreme adversity under which many had lived and died

The size of the chapel precluded its display in the Australian War Memorial and it was offered to the Army in 1985 for display at the Australian Defence Force Academy.

Following negotiations in April 1986 the offer was accepted and agreement reached for the Army to reconstruct and restore the Chapel as a national memorial to Prisoners of War.

A committee was formed in January 1987 to oversee the work and to raise the necessary funds.

Preliminary investigatory work had already been carried out early in 1986 on behalf of the Principal Chaplain by the Chief Engineer ACT and the planning process for re-erection commenced later that year with the preparation of the initial conceptional drawings and cost estimates by the Australian Construction Service (then known as the Department of Housing and Construction).

The first reconstruction concept prepared by Australian Construction Services in August 1986 was to reassemble the Chapel and to protect it with an 'A' frame structure covered with translucent roof sheeting. The sides were to be left open.

As the proposed site for the chapel was within the Duntroon Conservation Area (listed on the Register of the National Estate) and its reconstruction was considered to have heritage significance, the Australian Heritage Commission became involved in the project and made comments and suggestions regarding the proposed protective structure.

Australian Construction Services then prepared an alternative proposal in July 1987 recommending the chapel's reconstruction in a stand alone situation (no protective structure). Refer Annexure 'B'.

Testing of the original roof tiles was carried out to determine their water absorption characteristics and resistance to freeze/thaw cycling. Refer Annexure 'D'.

Approval was given by the Australian War Memorial to establish a work area within their storage building at Duntroon and work commenced on unpacking the crates.

The components were laid out for identification and an effort made to determine what was missing and how they all went together.

Agreement was reached that enough of the original chapel had survived to make its reconstruction viable in terms of authenticity and heritage value.

Following presentation of the results of the testing of the roof tiles and inspections of the chapel remains and three potential sites in the parkland adjacent to the ANZAC Memorial Chapel at RMC Duntroon, the project committee gave final approval in September 1987 for the reconstruction of the chapel in a stand alone form in an area to the east of the centre of the parkland on an axis centred on existing gum trees.

Australian Construction Services were then formally requested to develop the design and prepare drawings for the earthworks, footings, services and landscaping of the stand alone proposal. Refer Annexure 'C'.

Work on re-erection on site commenced in April 1988 and was carried out by army tradesmen and apprentices under the control of the Chief Engineer ACT.

The chapel was officially opened and dedicated on August 15, 1988, and the first mass celebrated on March 17, 1989. Refer Annexure 'G'.

II. RECONSTRUCTION

In July 1987, the crates containing the surviving parts of the chapel were unpacked and laid out on the floor of the work area.

The main items found were:-

- the cross off the roof;
- most of the roof tiles
- the panel from above the altar
- the altar
- most of the floor tiles
- the timber framing from the side walls
- the two roof beams and some struts
- a few pieces of the timber trims
- the CGI skirting
- electrical switchboard
- electrical light fitting

Some items were found to be marked with an alphabetic and numerical code. Main members from each elevation or a main item were allocated a letter from the alphabet as follows:

- Code 'A' - Right hand wall frame including the roof beam and struts on the centre line of that beam (struts to rafters not included), rear post but not front post;
- Code 'B' - Left hand wall frame same as above;
- Code 'C' - Rear wall frame (all but a few pieces missing), panel over altar and rear collar ties;
- Code 'D' - Altar (minor damage);
- Code 'E' - probably the front posts, rails and gate (these items were not found);

- Code 'F' - probably the roof frame and struts from posts to rafters (these items were not found).

Each piece also had a number next to the letter which would indicate its position in the sequence of the frame structure and the code was repeated at those points where members joined.

Items or members not coded included roof tiles, floor tiles, CGI skirting panels and the few pieces of the trim from the planter boxes and walls.

Documentary evidence available to aid reconstruction was as follows:

- photographs taken in 1946 by Cpl Max Lee, 40 Australian War Graves Unit prior to demolition of the chapel at Changi;
- dimensioned drawing prepared by Cpl Lee at the same time;
- 1987 drawing by an architect friend of Max Lee based on his drawing and photographs;
- typed account of Cpl Lee's involvement with the chapel;
- additional photographs, movie footage and maps held by the Australian War Memorial;
- pencil and watcolour sketch of the chapel prepared in 1945 by Richard Cochran while a prisoner of war at Changi.

Refer Annexure 'A'.

The first stage of the reconstruction process was to lay out the main frame members in their correct positions.

Missing pieces were identified to enable suitable replacements to be made prior to reconstruction.

The coding assisted in identifying the positions of larger members.

However, the location of the remaining pieces was determined by using shadow lines, lining up nail holes and bleaching or staining due to weather and comparison with the photographs and available drawings.

Horizontal dimensions were determined or confirmed by counting floor tiles and vertical dimensions by reference to the side rail height and shadow lines of the small white painted battens on the external sides of the corrugated iron skirting.

The two front posts were missing and were replaced with seasoned (old) hardwood of a similar cross section size to the original rear posts.

The roof frame was completely missing.

It was assumed a standard roof pitch had been used and this together with the known distance between posts from Cpl Lee's drawing and the number of roof tiles between the ridge and the roof beams and between the ridge and the finished line of the roof taken from the photographs helped establish the true form and dimensions of the roof frame.

This was confirmed by a partial reconstruction of the chapel in the work area using the original rear posts and collar ^{ties} and new rafters.

A number of the original roof tiles were broken and a search was started for suitable replacements.

Consideration was also given to either repairing the damaged tiles or having copies made.

The roof tiles were a Crown Brand originally manufactured by the Malabar Tile Works at Feroke on the west coast of India and it was known they had been used in Australia.

Roof tile companies in Australia were contacted and eventually Alan Breen of Monier Tiles located identical roof tiles from a house in St Mary's, Sydney which was being reroofed.

1300 roof and 60 ridge tiles were collected from the house in February 1989.

Tiles not used in the reconstruction are currently stored in the Chief Engineers compound at Duntroon.

The chapel as built at Chengi utilized a post and beam structure with vertical members buried in the ground.

This detail at ground level was not repeated in the reconstruction.

Instead the four main posts were bolted to galvanised steel post shoes cast into pockets in the ground slab which drain into the stormwater system.

The rear and side walls were rebuilt as stud frames bolted to a concrete upstand in the ground slab and original timbers were used where possible but not in their original position.

It is not known if these walls as built at Changi were sheathed both sides but it was decided to completely enclose the stud framing with fibre cement sheeting fixed rough side out to duplicate the texture of the original finish.

A glass panel was inserted in the rear wall to allow light through a cutout in the timbers behind the altar as it was believed the cutout was originally positioned to allow sunlight to fall on the altar.

The other departure from as built at Changi was the laying of the floor tiles and crazy paving which originally were bedded on a clay base.

In the reconstruction they were laid on a mortar bed on a concrete slab.

No attempt was made to find suitable replacements for missing or cracked floor tiles.

Tiles cracked but still forming a whole were relaid as they were while missing areas of tiles were infilled with mortar stained with a concrete colouring agent of a similar colour to the original tiles.

A piece of timber with electrical wiring and a lamp holder attached was part of the contents of the crates sent back from Changi.

It is not known if power was run to the chapel but a study of the site plan, the 1945 sketch and the 1946 photographs would indicate this was not the case.

However, it was decided to install the lamp holder as an overhead light directed at the altar complete with its mirrored reflector reconstructed by a former prisoner of war.

Paint samples from various parts of the chapel were removed and analysed by the Cultural Heritage Science Division within the School of Applied Science at the Canberra College of Advanced Education. Refer Annexure 'E'.

The report found "it is very unlikely that these analyses will enable you to match the paint systems used ... colour matching ... is the best way of solving this problem".

Colour matching was carried out and the paint systems used were as follows:

Post, roof beams and struts, handrails, gates, timber trim and edging	Pascal Heritage Hi gloss 'Norfolk Green'
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Roof framing, cross	4:1 mix Cabots AC51 'Sagebrush Grey' Cabots AC37 'Cardovian Brown'
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Wall sheeting	Pascal Timber Like 'White'
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Corrugated iron skirting	Cabots AC51 'Sagebrush Grey'
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Altar, altar panel	Estopol matt clear
--------------------	--------------------

Mortar infill to floor tiles	Aqua stain 'bark'
------------------------------	-------------------

Concrete service pits	Aqua stain 'otway'
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Reconstruction work on site start in April 1988 and a chronological list of construction activities was as follows:

20 April 1988	Site pegged
26 April 1988	Earthworks commenced
27 April 1988	Earthworks completed
28 April 1988	Footings excavated and formwork placed for inner slab

4 May	1988	First concrete poured
11 May	1988	Formwork for outer slab placed
13 May	1988	Outer slab poured
17 May	1988	Formwork removed
20 May	1988	Drains excavated
25 May	1988	Steel edging and frames for gravel beds fabricated
3 June	1988	Four posts erected
9 June	1988	Rafters fitted
14 June	1988	Battens fitted
20 June	1988	Steel edging placed Electrical commenced Drainage completed
11 July	1988	Painting of roof frame commenced
12 July	1988	Roof tiles laid and tied down
14 July	1988	Roof complete
20 July	1988	Altar in place Painting continuing
21 July	1988	Wall framing complete and fixing of wall sheeting commences
22 July	1988	Turf laid
25 July	1988	Painting of wall sheeting commences Cross fixed to ridge
26 July	1988	All structural work is completed

27 July 1988	Front rail fitted
28 July 1988	Commenced laying floor tiles
2 August 1988	Floor complete
3 August 1988	Wall sheeting complete Commenced crazy paving
10 August 1988	Lights installed Plants to planter box
11 August 1988	Gravel placed Lights focused
12 August 1988	Site clean up

Refer Annexure ' F ' for photographs taken during reconstruction.

Additional sets of photographs are held in the files of the Australian Construction Services and the Chief Engineer ACT (R 985-1-18/1-3).

Discussions with former POW's and the reconstruction works confirmed the assumption that the chapel had evolved over an extended period starting as a simple post and beam structure with a palm frond roof and with the floor on one level.

The panel behind the altar was self supporting and did not rely on the wall frame for support.

An area of the floor around the altar was raised and covered the lower part of the altar.

Additional struts were added to the framing to brace it and to support the additional weight when the roof was tiled.

After completion of the reconstruction works an outwards deflection was observed in the two front posts.

A structural Engineer's inspection and report in December 1988 recommended the two front posts be replaced, the two rear posts be securely fixed to the stud walls and these walls be adequately braced. Refer Annexure 'H'.

This work was carried out early in 1989 and completed prior to a visit to the Chapel in March by Hamish Cameron-Smith, Father Hugh Simon-Thwaites and Max Lee.

III CONSERVATION

Wherever possible the reconstruction utilized original members and construction methods and details. Refer Annexure 'I'.

Given ^{the}as found nature of the material used in particular the unknown species and stress grade of the timber and the construction details, the structure and fabric of the chapel should be observed closely on a regular basis to detect deterioration or failure sooner than would normally be expected.

It is recommended these inspections occur every 3 months with detailed inspections carried out in January/February and July/August each year.

Particular attention should be paid to:

- decay in timber members especially rafter ends, bottom of posts and connection of roof beams/struts to posts;
- freeze/thaw cycle damage to roof tiles, floor tiles and crazy paving ;
- deflection/failure in timber framing members;
- cracking in the structure or fabric due to movement or settlement;
- excessive timber shrinkage;
- paint failure;
- rusting of bolts or other fixings;
- blockage of drains under front post shoe brackets.

The upkeep of the surrounding grassed and gravelled areas and the external lighting should be incorporated into the RMC Duntroon external works maintenance programmes.

The drains under the front post shoe brackets should be checked immediately as it appears one may be blocked.

These drains are important as they minimize decay/deterioration in the bottom of the posts.

The front edge of the two side walls is unrestrained at the top and currently has an outwards lean.

This is of no consequence at the moment but if the lean becomes excessive then consideration should be given to incorporating a concealed steel angle (or other appropriate section) bolted to the slab and designed to act as a cantilever and hold the front of the wall vertical.

The Australian War Memorial film collection includes footage of the chapel at Changi.

A tracking shot up to the cross indicates a laying pattern for the roof tiles different to that adopted for the reconstruction.

If at some time the roof tiles are removed for maintenance purposes it is recommended the film footage is studied and consideration given to relaying the tiles to match.

It is recognized that most if not all of the original materials used in the reconstruction may eventually have to be replaced.

However given the circumstances of the building of the chapel at Changi a degree of 'roughness' of finish in the reconstruction is acceptable and this should be kept in mind when making replacement/upgrading decisions.

Any replacement should be with materials equal to the original.

If necessary application of sympathetic protective coatings or repairs should be considered if suitable replacements are not available.

This applies in particular to the roof and floor tiles where acceptable replacements would not be readily available.

Replacement of major framing members should be based on engineering advice as adherence to member cross section size may involve the use of a timber stress grade higher than normally expected.

Copies of drawings used in the reconstruction are held on the files of the Chief Engineer ACT with the originals held by Australian Construction Services.

While the main significance of the chapel reconstruction derives from its dedication as a national memorial to prisoners of war, the attention to detail and the Art Deco styling achieved in the building of the chapel at Changi is exceptional and these qualities should be respected in any work carried out on the chapel in the future.

IV ANNEXURES

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Annexure G	Dedication and First Mass
Annexure H	Rectification Work
Annexure I	Peter Freeman & Partners Drawings

Annexure A

Documentary Evidence

A1	Max Lee's Notes
A2	1946 Dimensioned Drawing
A3	1946 Photographs
A4	1945 Sketch
A5	Crate Inventory
A6	1987 Drawing

CHANGI CHAPEL

With an Australian Army War Graves Unit we arrived in Singapore in October 1945 destined for Sumatra. Due to the Indonesian uprising our departure was delayed for personal safety reasons and we were held in Singapore based at the infamous Changi Prison. We were living in what was originally the Civilian Gaol Staff Quarters in a street known as Half Moon Street and situated immediately in front of the main clock tower entrance to the Gaol. This street of houses was occupied by the Japanese Gaol staff during the occupation and in fact these buildings remain unaltered today.

Our delay at Changi gave us the opportunity to re-equip our nine man unit and we were engaged in clerical and field work with War Graves and War Crimes both on Singapore and Malaya. Additional work was necessary in and around the area of Changi Prison compound occupied by P.O.W.s'. We also established the War Memorial Cemetery at KRANJI on the northern part of Singapore Island overlooking the Straits of Johore.

Huts occupied by the P.O.W.s' within the compound and immediately in front of Half Moon Street were fired as a means of disposing of them and situated amongst this array of huts, which could have related many a story of anxiety and sadness was a Roman Catholic Chapel built by the Prisoners. As has been proved on many occasions in extreme circumstances, people from all walks of life will call upon a Faith to see them through. An Anglican Chapel also built by P.O.W.s' was situated inside the Gaol. A photograph of which I have.

It was fortunate the Roman Catholic Chapel was not fired along with the huts because of its close locality but we were able to hold the Chapel. An approach was then made to the British Military Administration requesting if we could demolish the Chapel and have it shipped to Australia to be rebuilt in Canberra War Museum. Our request was granted.

Photographs of the Chapel were taken within and without as it originally stood. I have copies of all photographs. I accurately measured the Chapel and drew a plan to scale which includes :

Front Elevation

Side Elevation

Alter Plan

Floor Plan

This plan is also in my possession. We then acquired a working party of Japanese Surrendered Personnel and the Chapel was sectionised, demolished, crated and ready for shipment to Australia.

We then received our orders to go to Sumatra. We left suddenly and I had no knowledge of what happened to the Chapel after our departure.

I returned to Australia in January 1947, was discharged and in 1965 with my wife and family we travelled to Sydney via Canberra. I visited the War Memorial Museum at Canberra and no one could give me any information of this Chapel which some 20 years earlier had been a part of my life.

Early in 1987 War Veterans Canberra contacted me to ask if I could assist them with any information on the Changi Chapel. Curiosity got the better of me and I asked how they were able to trace one Corporal Lee M.C.

It would appear, for reasons I will never know, I put my name on the side of a crate and it is from that War Veterans traced me through Army records.

This may prove, if you leave graffiti there long enough, 41 years in this case, it can be of use.

The Chapel is now to be erected at the Royal Duntroon Military College as a Bicentennial project and is to be dedicated on V.P. Day August, 15th 1988. This short chapter of my life lead me to re-read after many years, my diary, the content of which confirms all I have stated.

My one wish would be that of all people, of all nations and of all denominations who have Faith support this Chapel in memory of those men who during extreme adversity found Faith so they may survive.

M.C. LEE

For the purpose of rebuilding, the chapel has been sectionized into 4,

1. Frontage (as shown in front elevation of plan) roofing supports and tile battens.
2. Sides complete.
3. Rear wall with main section of altar.
4. Roof and floor tiles.

Along with the plans are a series of photographs taken of the chapel as it originally stood at Changi.

The outer terrace is constructed of cement slabs and the tiles are used for the interior of the chapel only. They are bordered with hard wood.

The chapel contained one electric light, fitted flush to the roof. The shade being fitted with mirrors directing a beam on to the white cross painted on the corrugated iron erected above the altar.

The interior panelling around the altar and half of each side wall comprises green painted corrugated iron one foot from floor level then fibro cement painted white. The rear left and right hand corners of the interior, built into the structure, contains recesses for growing shrubs.

The app. scale of the plan is due to a considerable amount of improvisation used during the actual building. More so, the hidden structure was pieced together with various types and sizes of timber because of the building material being of insufficient length.

A considerable amount of the structural pieces, mainly those on/or under ground level, have decayed and will not be included in any of the aforementioned sections.

Ch. 1. 1. 1.



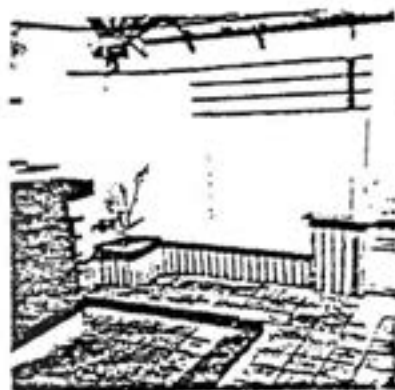
p425/05/02



p425/05/01



p425/05/03



p425/05/05



p425/05/04

PLANS OF R C CHAPEL, CHANGI

The original drawing at approximate scale 1:24 has been photocopied onto six A3 size sheets.

Sheets are numbered 1 to 6 in red, and fit together thus:

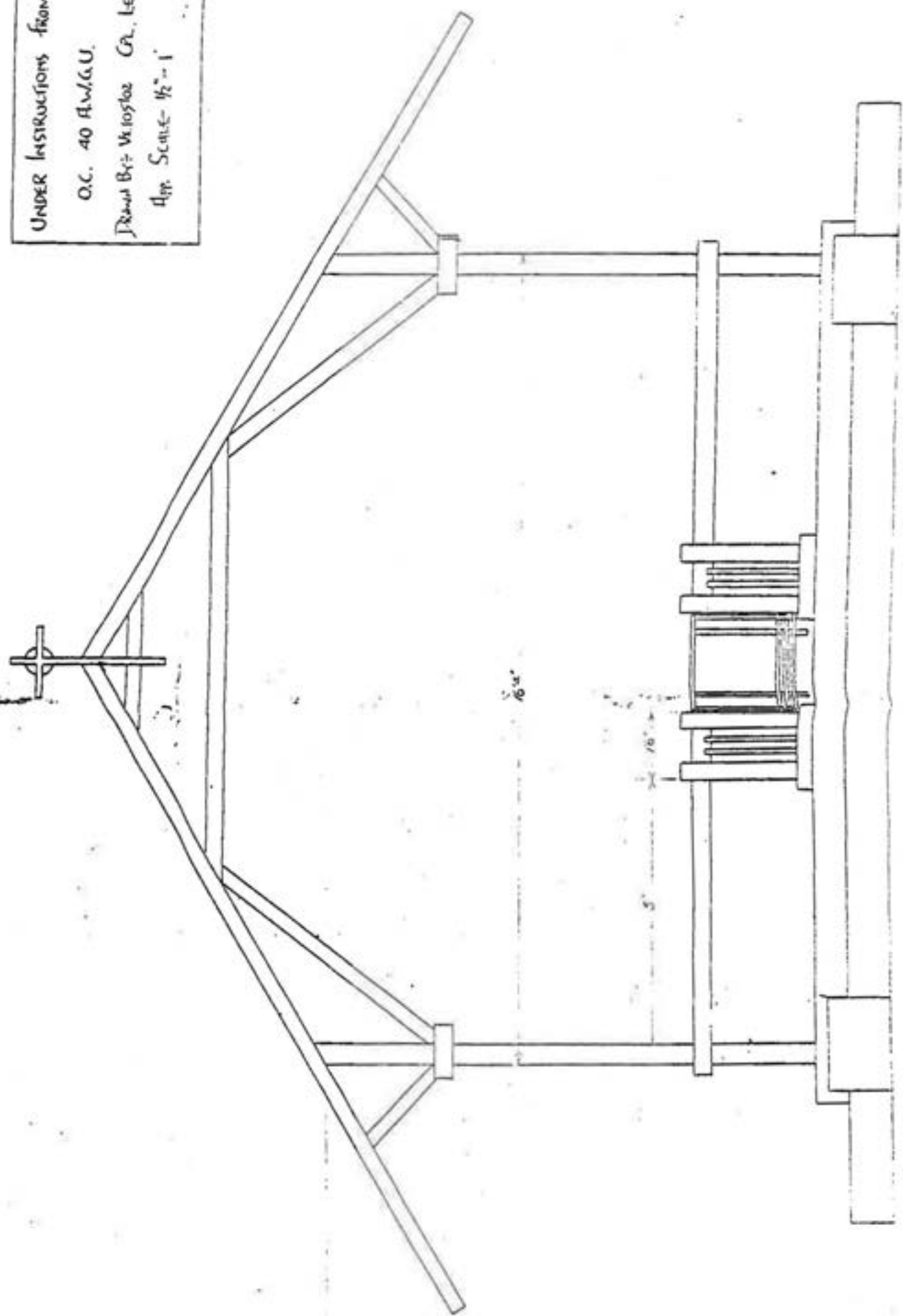
1	4
2	5
3	6

These plans are accompanied by a single sheet containing descriptive notes and five photographs.

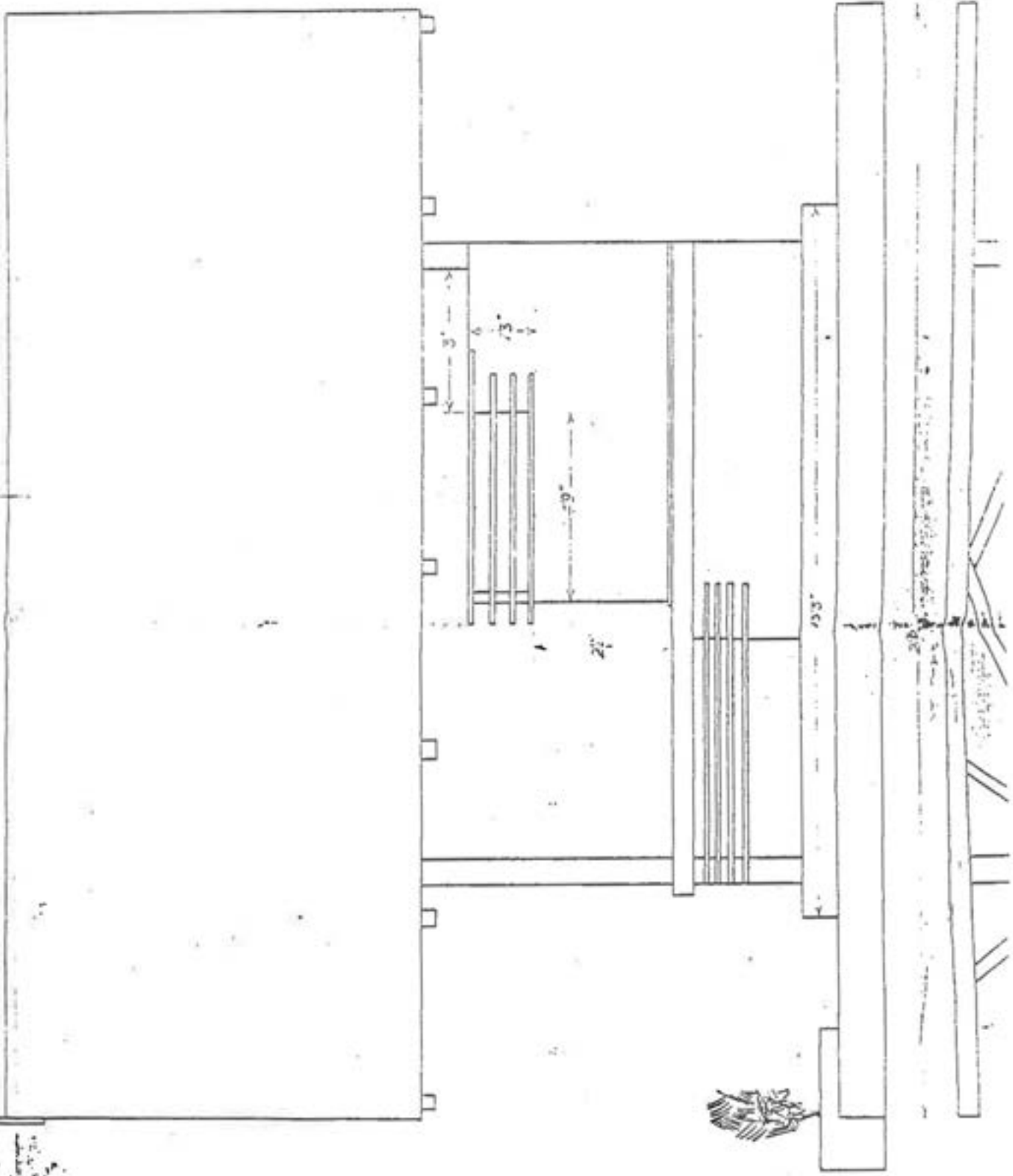
18 Apr 95

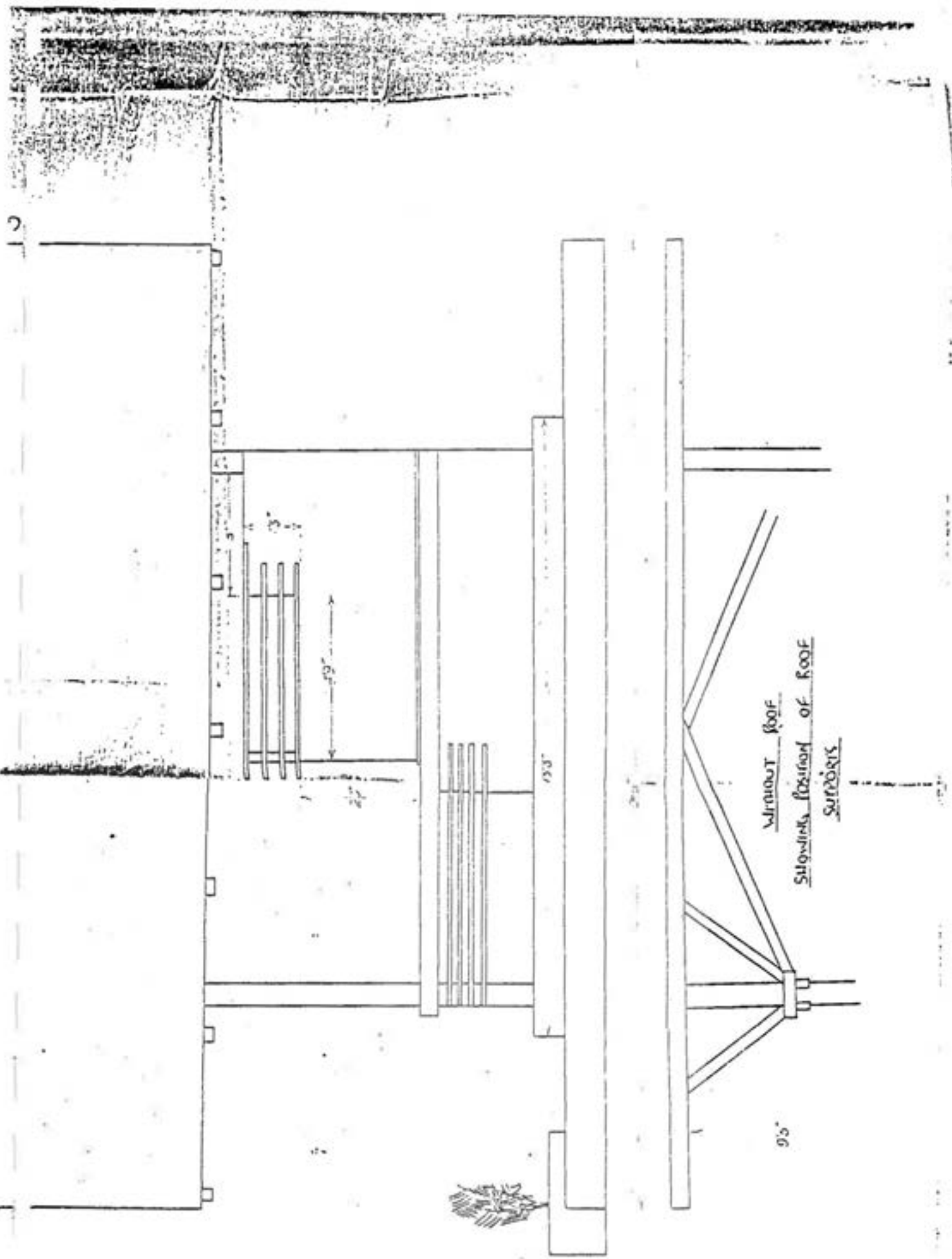
FRONT ELEVATION

UNDER INSTRUCTIONS FROM
O.C. 40 A.W.G.U.
Drawn By: V.105102 CA. LEE M.C.
App. Scale: 1/2" = 1'



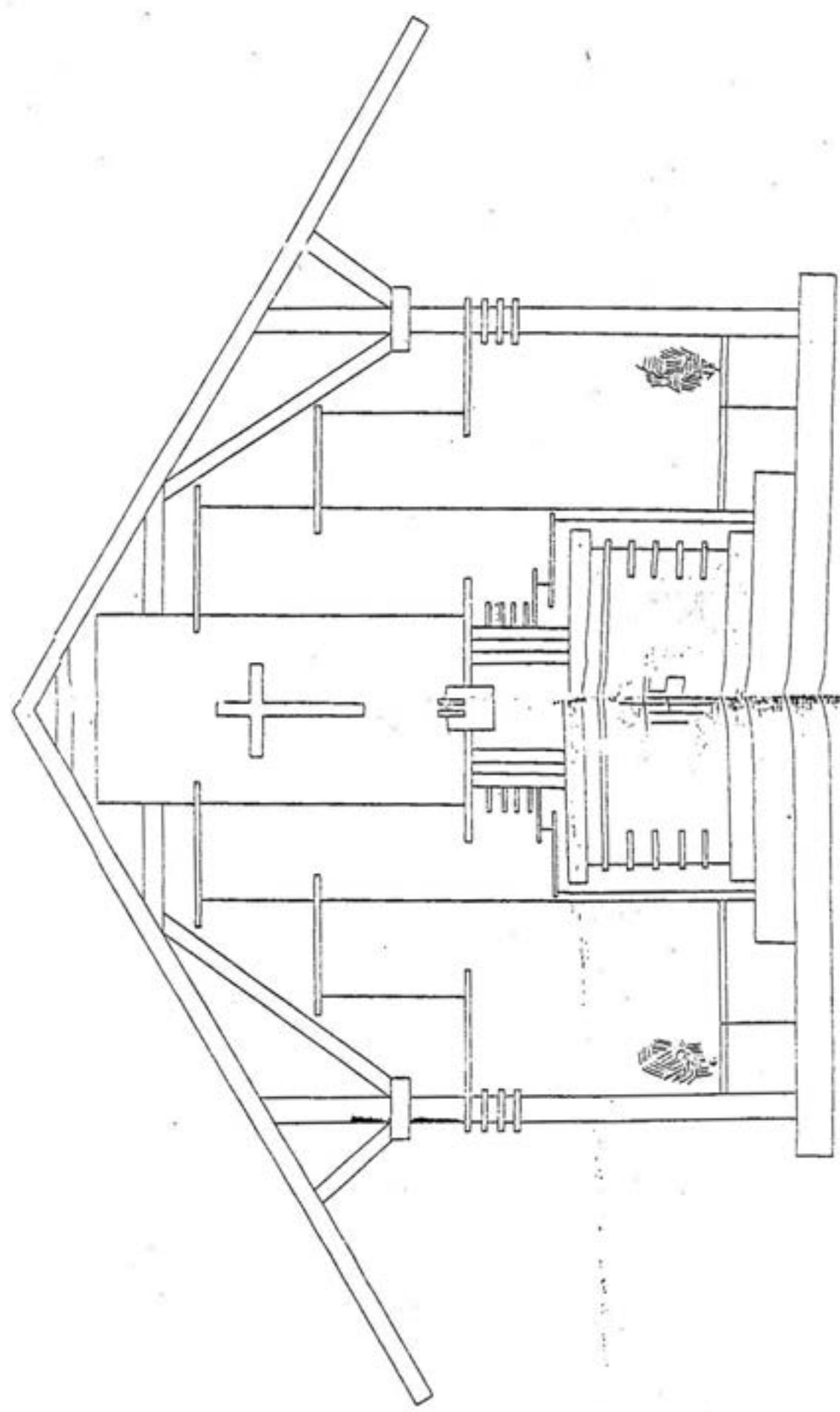
Side Elevation

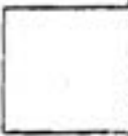
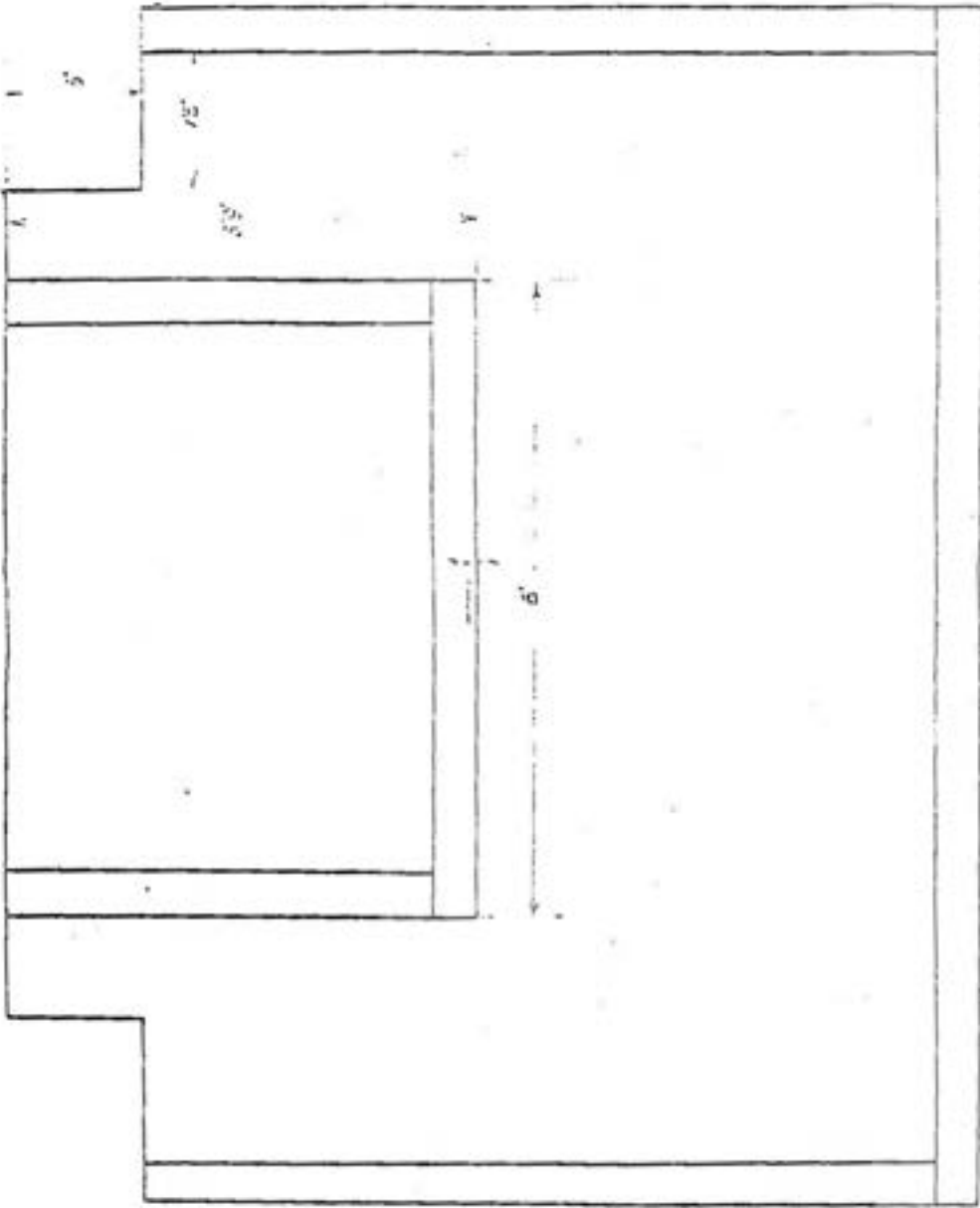




INTERIOR SHOWING FRONT ELEVATION OF ALTAR WHICH COMPRISES

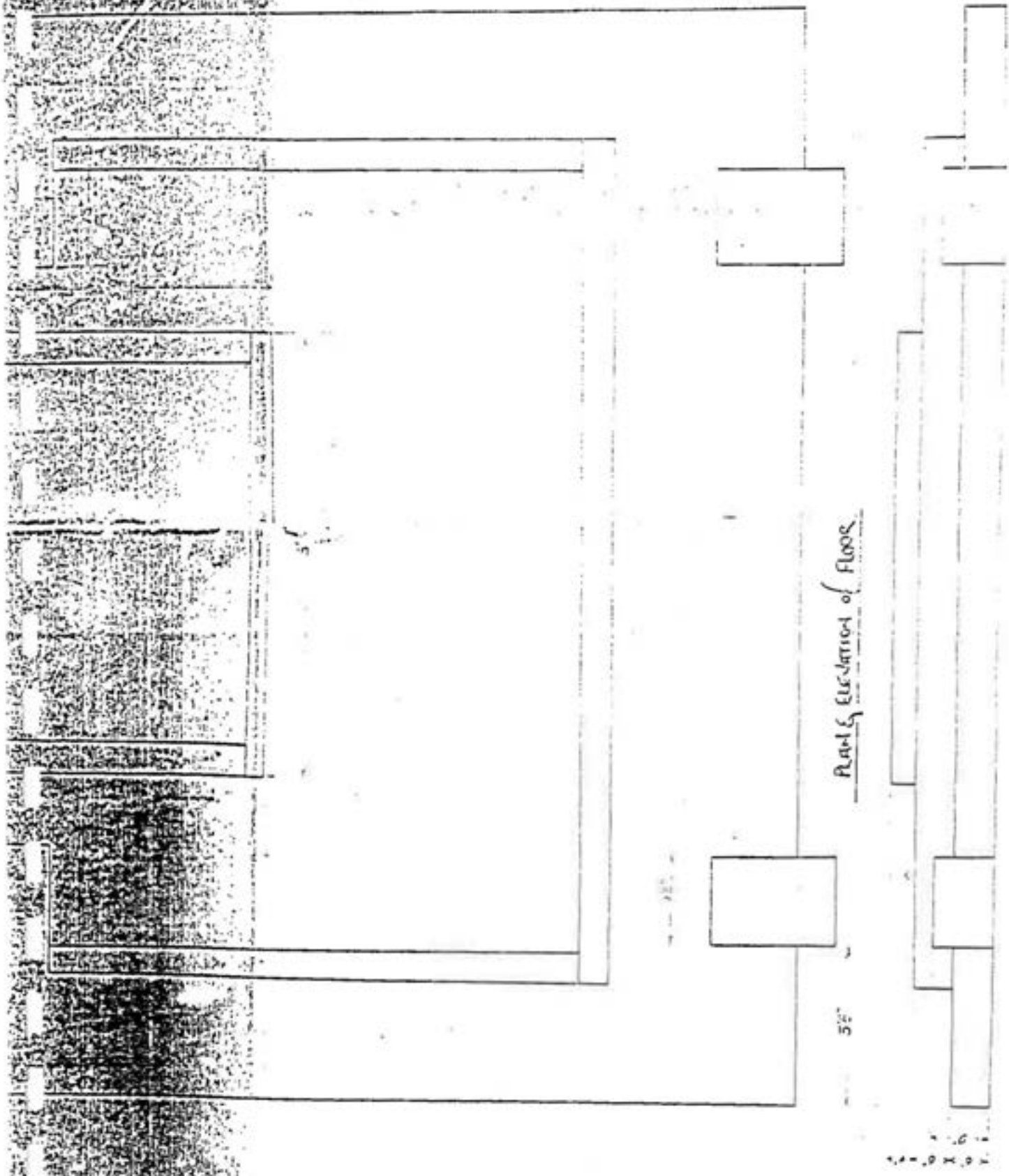
REAR WALL





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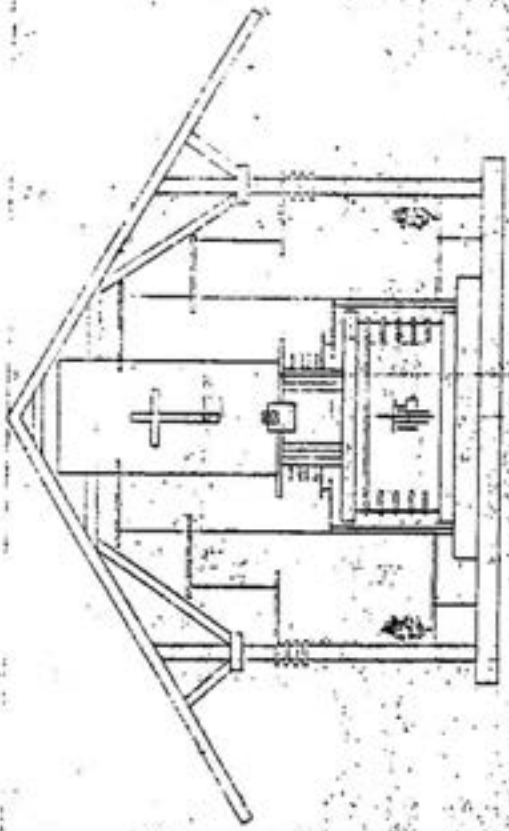
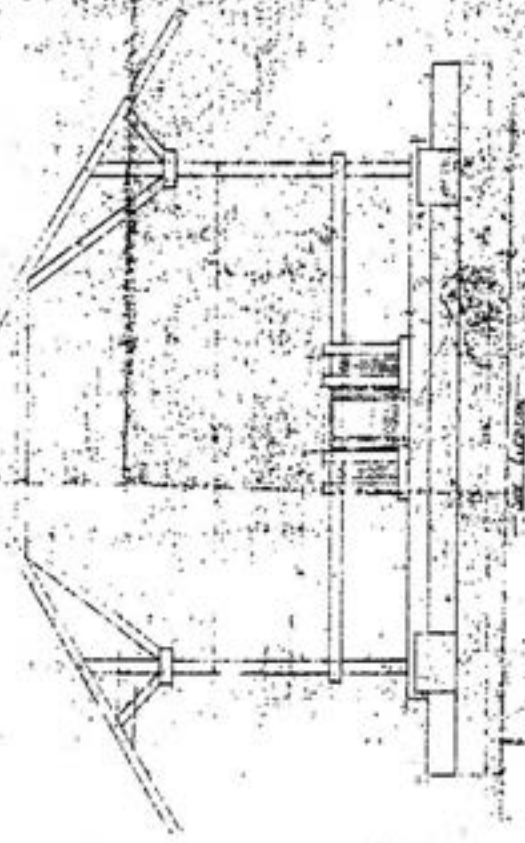
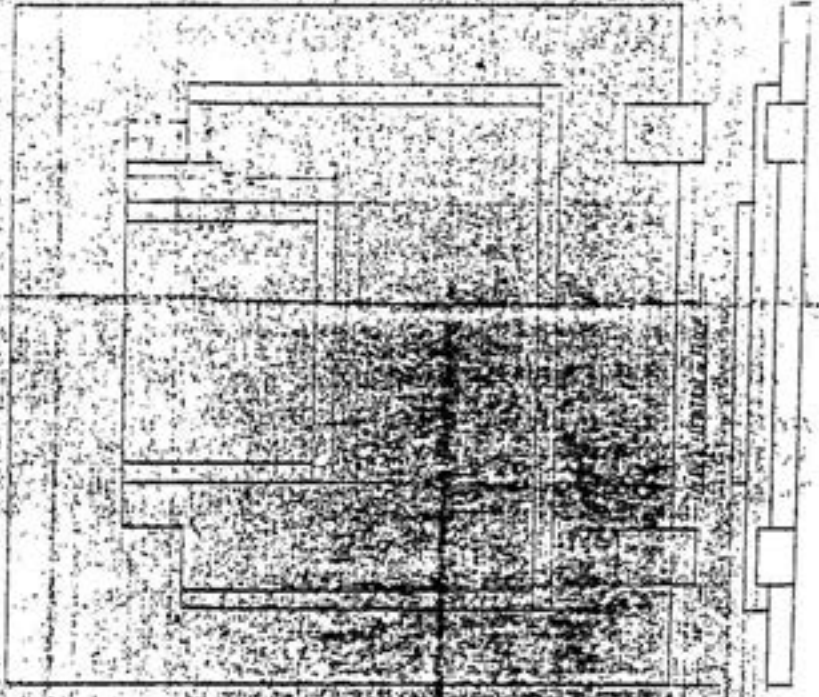


PLAN & ELEVATION of FLOOR

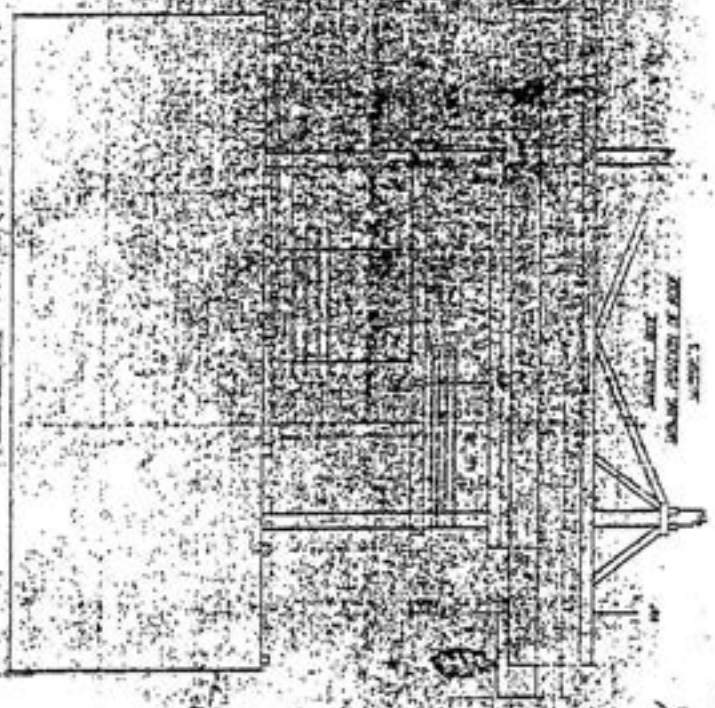
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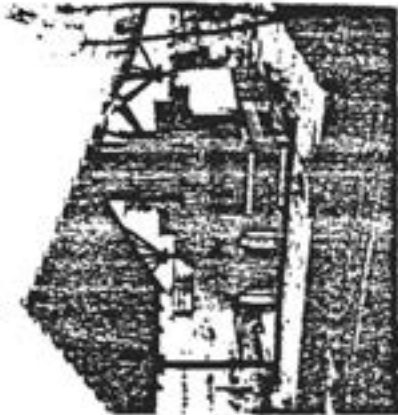
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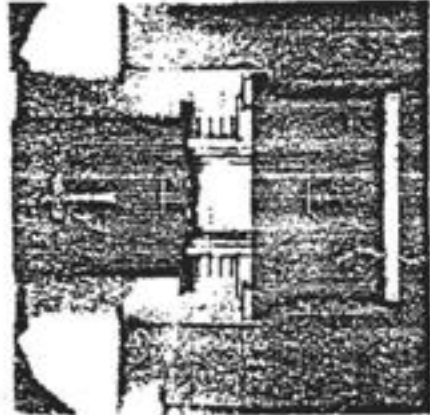
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PART A: POLYMER CHEMISTRY

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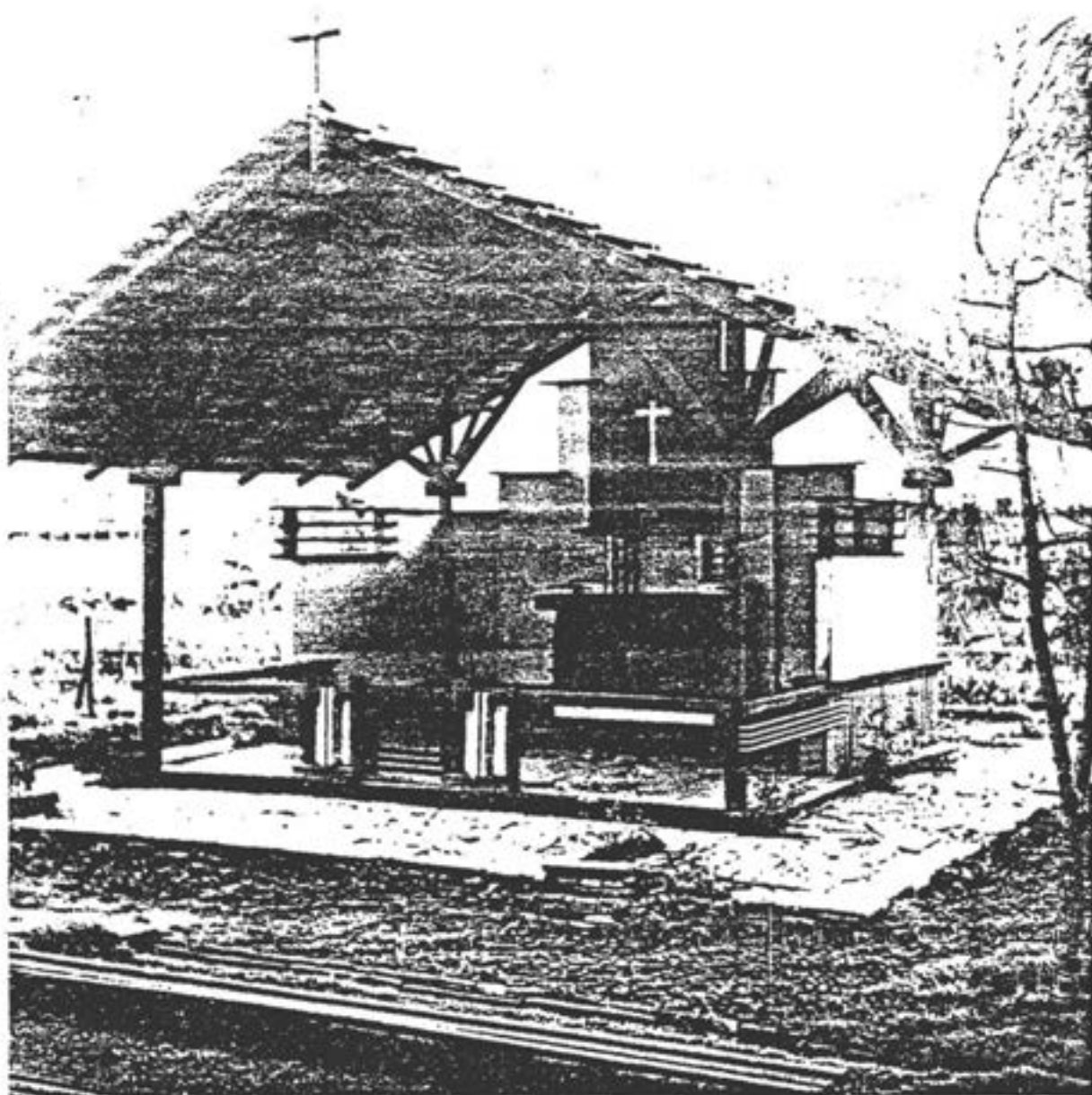


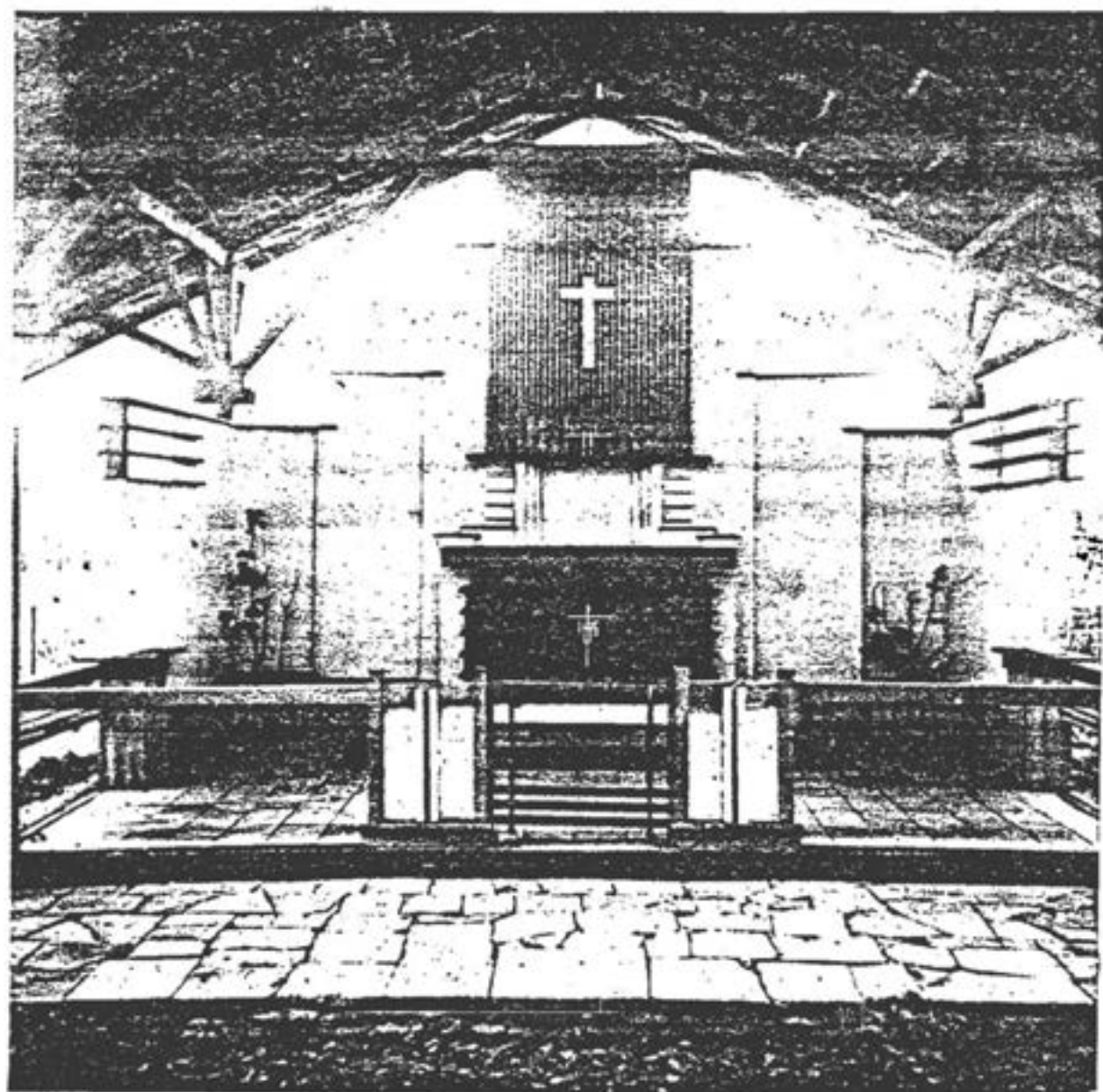
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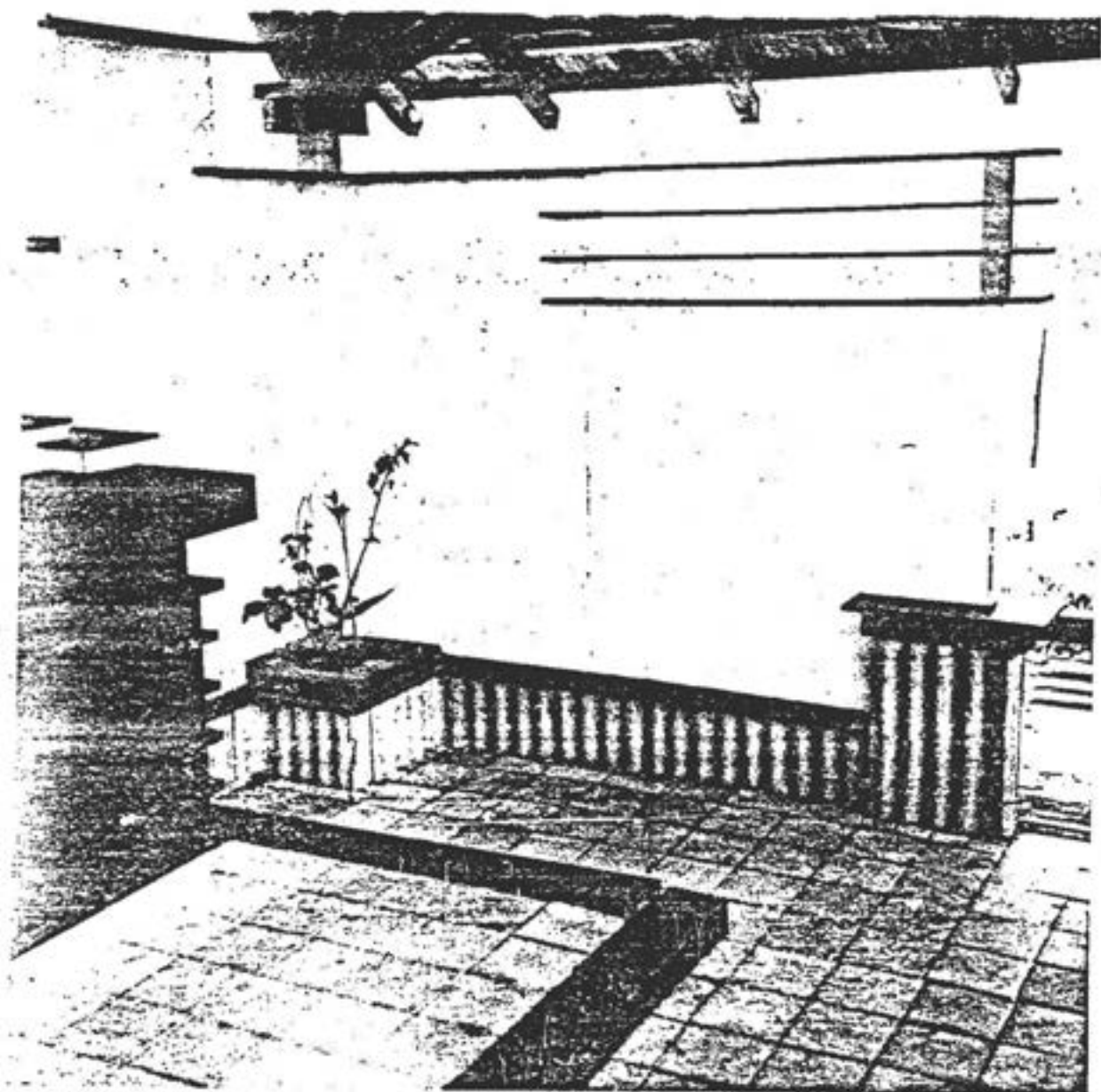


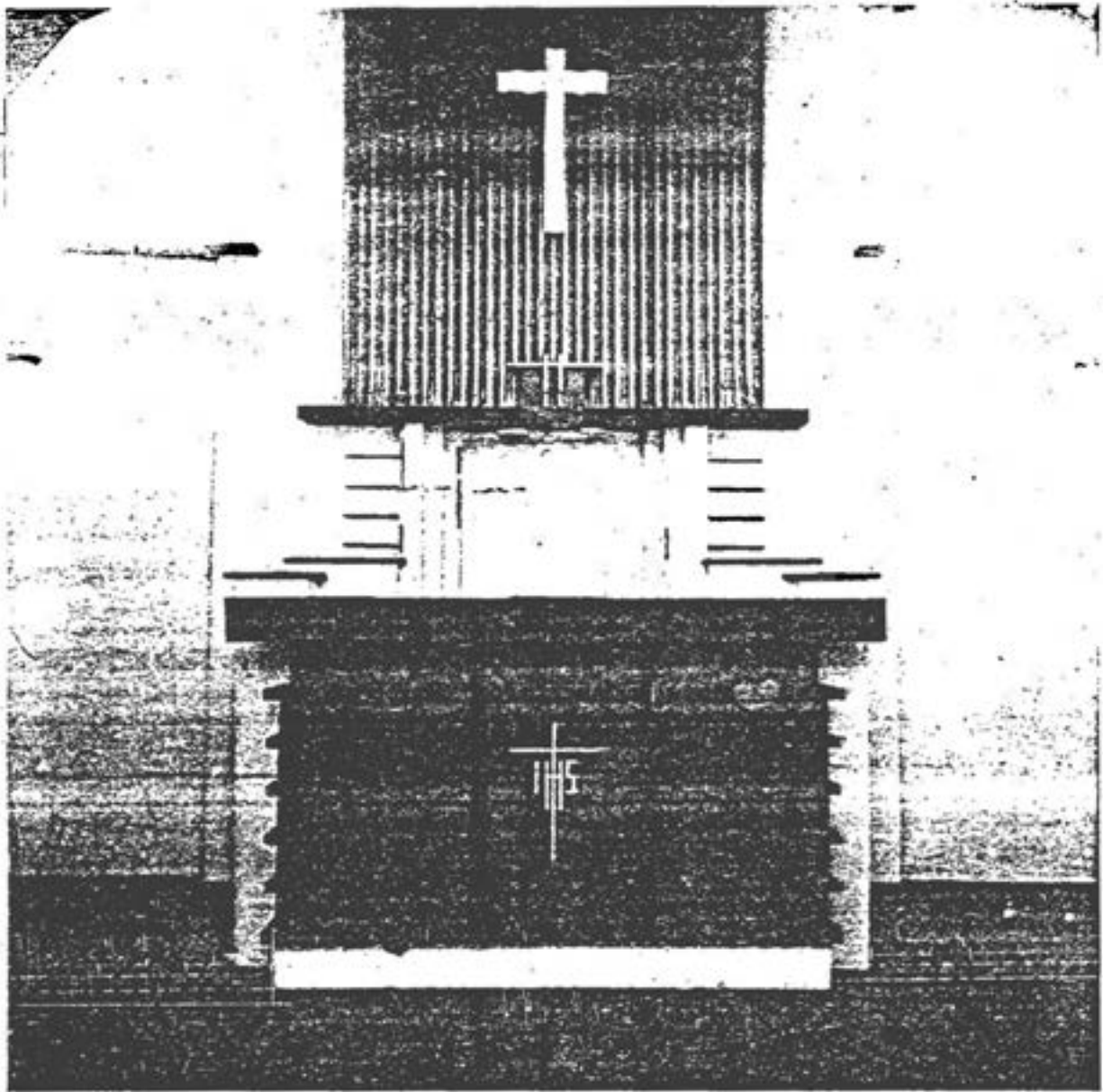
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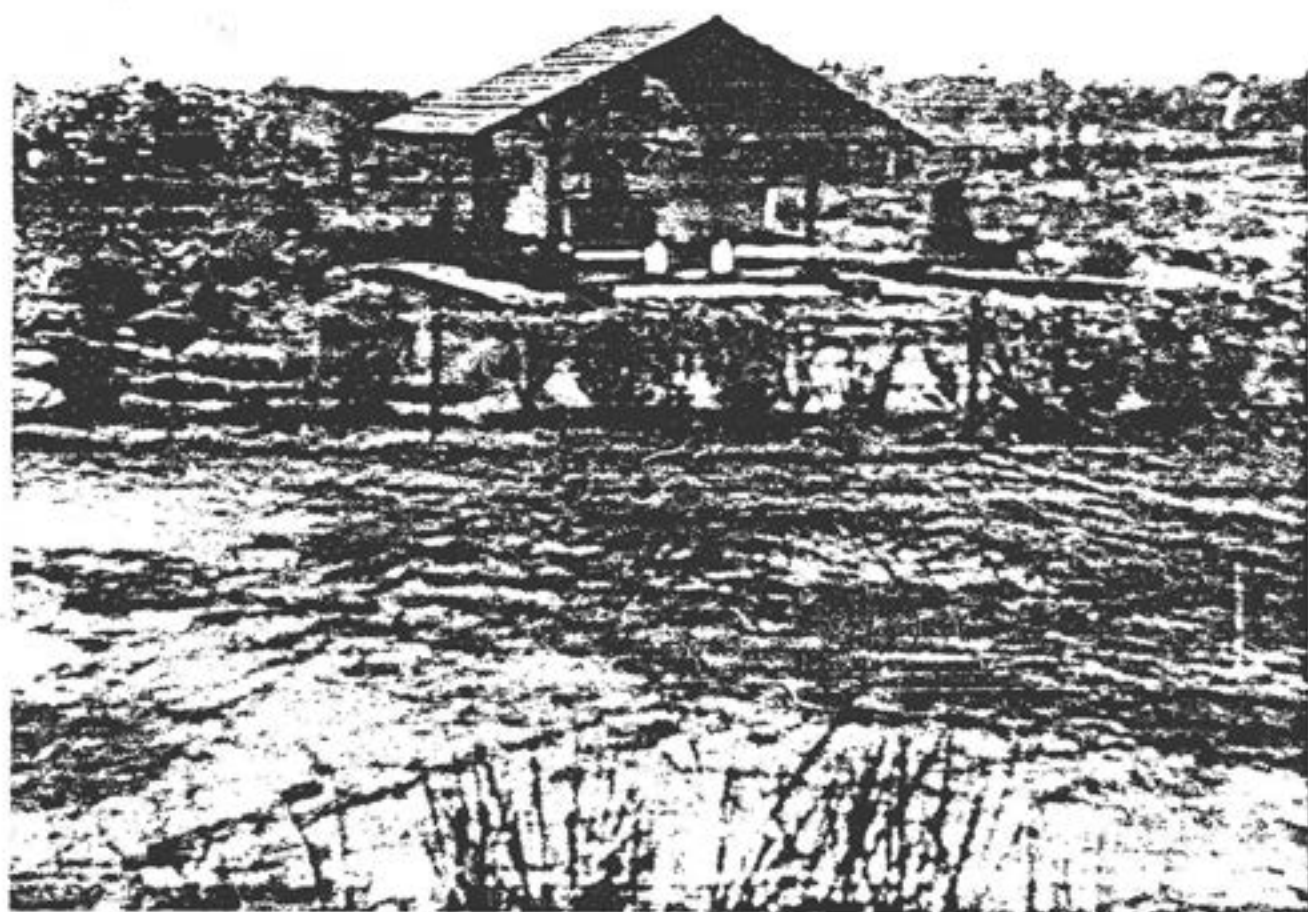


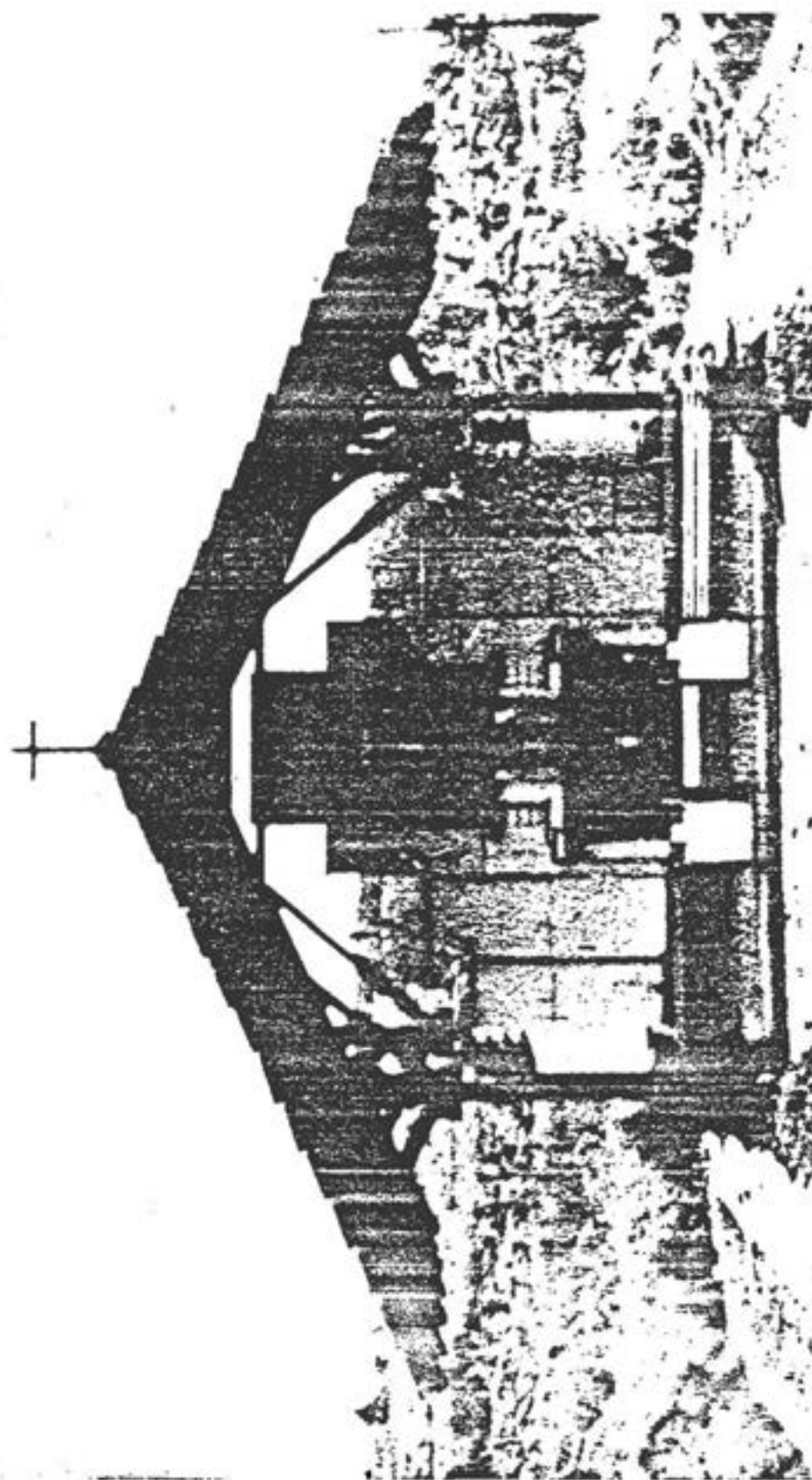


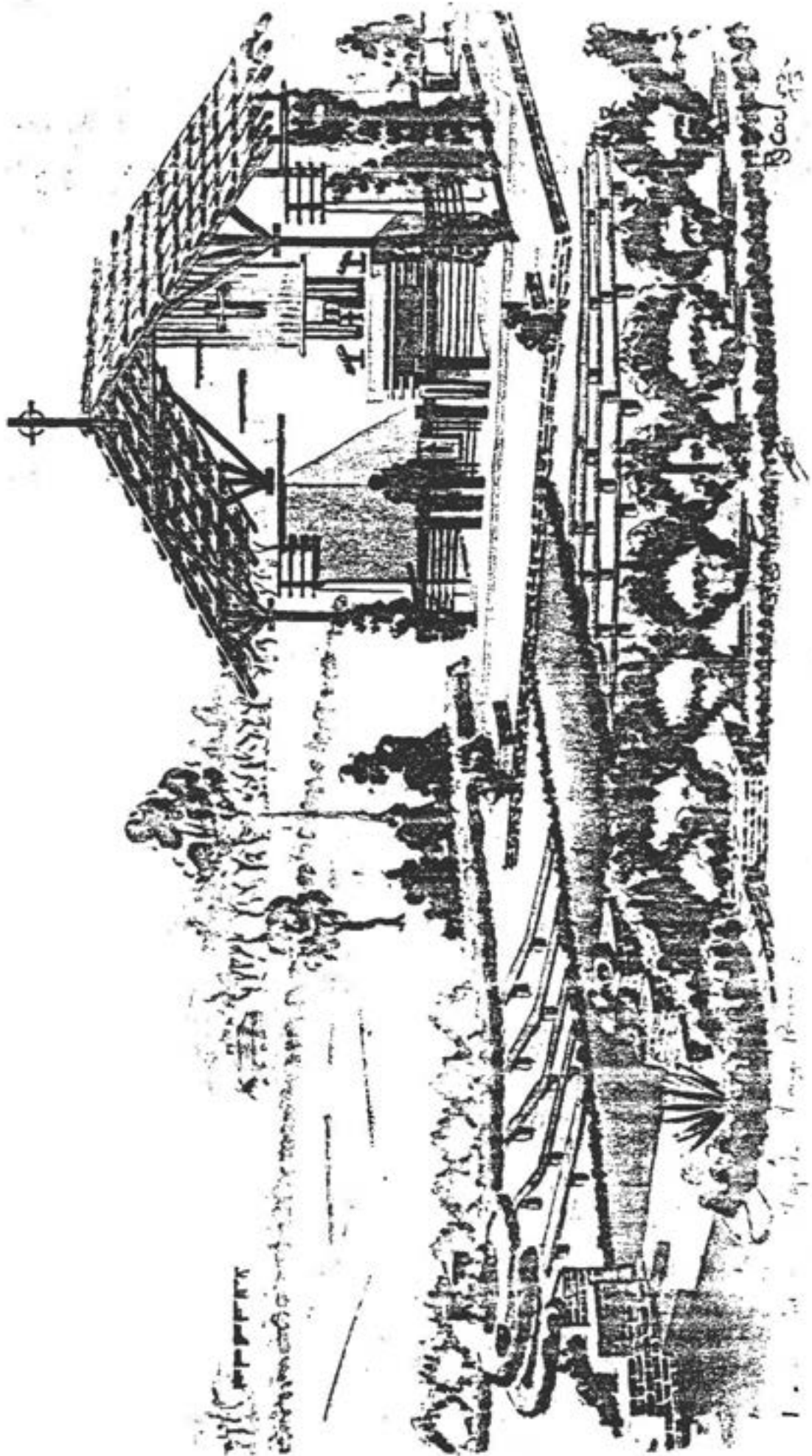












Directorate of War
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per S.S. "Mangola"
from Singapore, 17
Feb, 1947.

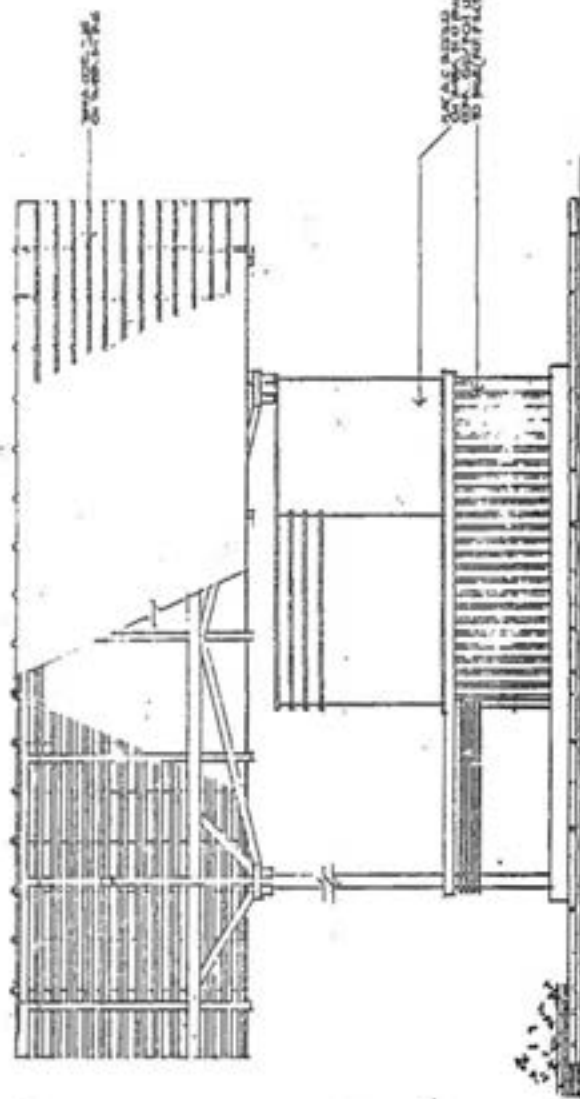
Refer Canberra
Officememo.
50/3/99 at 8th.
April, 1947.

- 36857 Australian 8.1003
R.O. Chapel ex Changi.. Cross..
Made of wood. This was on the top of the
roof of the chapel. The nails which held
the cross upright have been left in, they
may add to its relic value, The cross if
exhibited separately.
- 36858 Australian 8.1004
R.O. Chapel ex Changi - Altar-..
Made of wood and shows much thought was
given to its construction with the limited
supply of material. It has a corrugated iron
base piece which will lift out separately.
Several pieces of timber are missing namely,
three pieces of wood from the table top and
the top facing boards nailed around the sides
to add to its appearance. Also a surround
piece above the letters I.H.S., and a
surround piece from around the bottom of the
Altar.
Of the entire collection received the Altar
and Cross (36857) seem the two outstanding
items from an exhibit point of view.
- 36859 Australian 8.1003
R.O. Chapel ex Changi - Back Wall piece -
Made of corrugated iron on which a large
white cross has been painted. It is fixed
to the back wall above the Altar and sits
on a shelf (36860)
- 36860 Australian 8.1003
R.O. Chapel ex Changi - Shelf -
Made of wood. This forms the base piece of
the Back Wall piece (36859) and is about
nine inches wide . There is a wooden ornament
in the centre forming a box - the top of which
was used as a shelf.

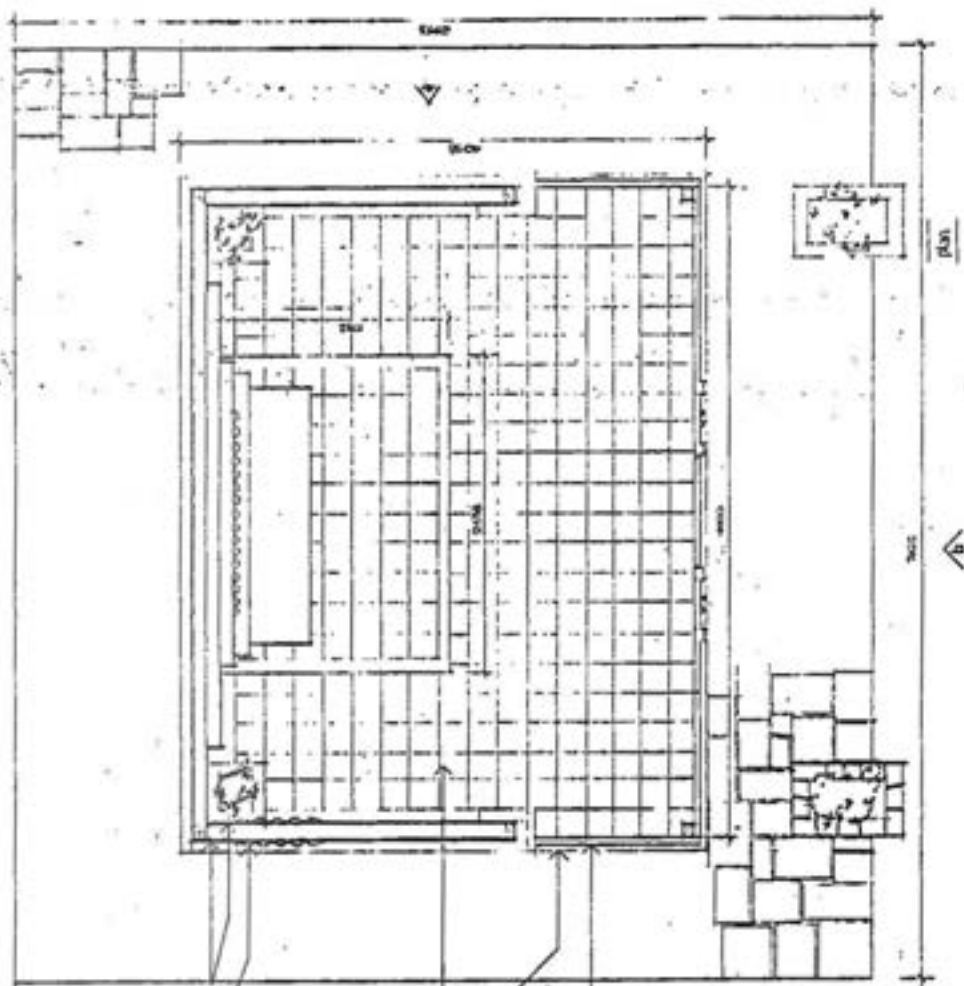
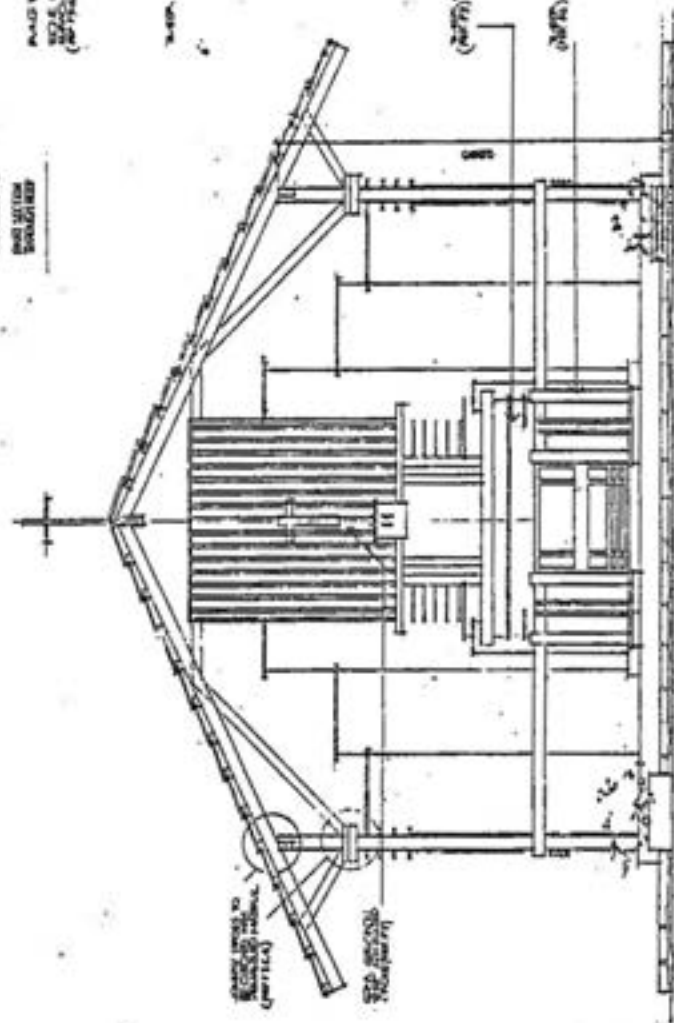
Directorate of War
reaves R.C. Chapel
at Changi, P.O.W.
amp per S.S. Mangola, April, 1947.
rom Singapore, 17
Feb. 1947.

Refer Canberra
office memo
50/3/99 at 8th.

- 36861 Australian 81003
R.C. Chapel ex Changi. Electrical Fuse Box,
also a lamp holder. All the wires had been cut
but the fittings may be of use.
- 36862 Australian 81003
R.C. Chapel ex Changi - Corrugated Iron.
These are all short lengths and were used as
a base surround of the rear walls of the
Chapel. Two bundles of short timber are
packed in the box to prevent them going astray.
- 36863 Australian 8.960 & 997
R.C. Chapel ex Changi. Ridge Capping Tiles.
These have been badly handled and all are
more or less damaged and would not make a
water proof roof. Packed in two crates.
- 36864 Australian - Part of 8.942 to 8.1027. (Less 960.997.1003.1004)
R.C. Chapel ex Changi - Construction timber -
Consists of 10 bundles, wired together and
5 crates of bits and pieces, and most of them
are numbered and lettered to mark where they
fit in the construction. All the timber used
in the building did not arrive in Sydney.
There are no rafters (or roofing supports)
and no tile battens.
- 36865 Australian - Part of 8.942 to 8.1027. (Less 960,997,1003,1004).
R.C. Chapel ex Changi - Floor tiles -
These are Terrazzo of yellow-pink, and white
marble and are 20 centimetre square (7½ inches).
There are 262 whole and about 10 broken but
complete: A number of broken pieces have been
packed and some have been cut in half: in case
they are needed for patching.
- 36866 Australian - Part of 8.942 to 8.1027 (Less 960,997,1003,1004).
R.C. Chapel ex Changi. Roofing Tiles. They are
unglazed and made by the Malabar Tile Works, Perok,
and stamped "Perfect Model, Crown Brand". They are in 55
crates and average 12 to a crate but breakage would average
one in a dozen.



elevation 'a'



Russian Catholic chapel, Chang Phuan Camp, Siam

PREPARED FROM DRAWING BY THE U.S. AIR FORCE, 1945, AND BY THE U.S. AIR FORCE, 1945



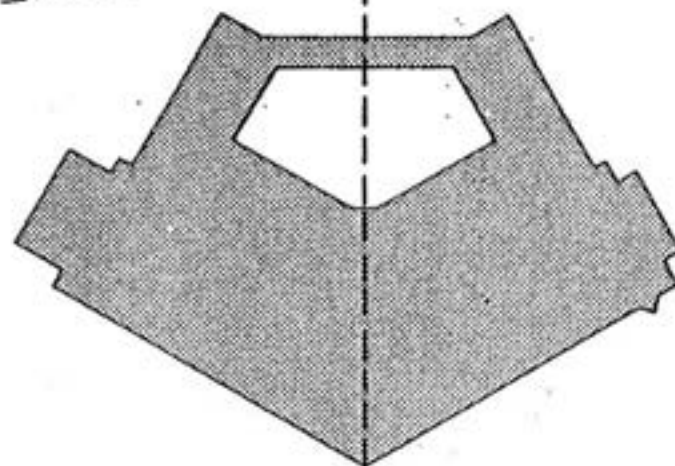
DAVID SIMPSON ARCHITECTS, INC. 1945
1/2" = 1'-0"

Annexure B

Australian Construction Services Report

July 1987

RECONSTRUCTION
OF
CHANGI CHAPEL
AT
R.M.C. DUNTROON
J U L Y 1 9 8 7

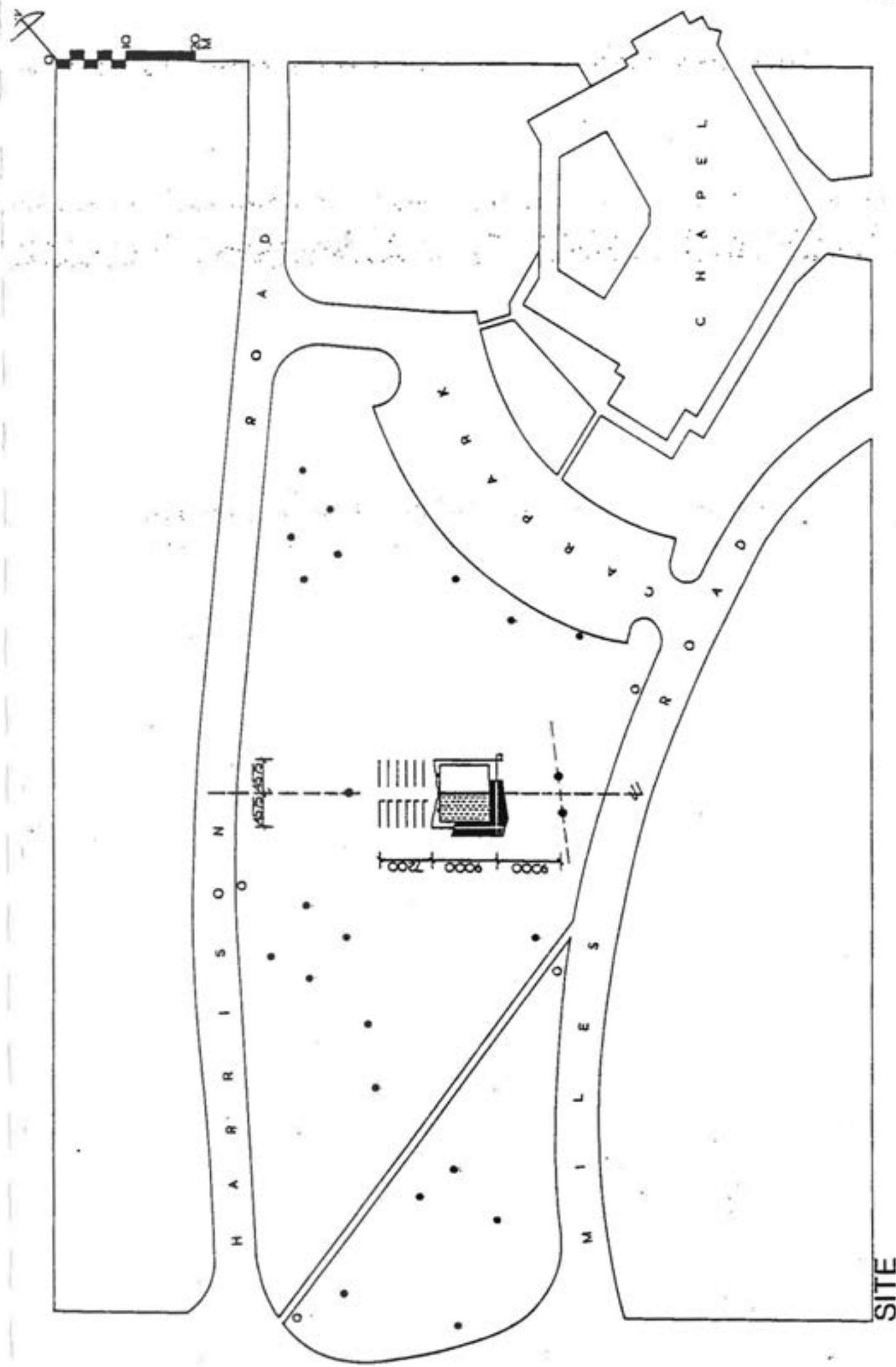


This report is prepared by D.H.C. ACT Region
on behalf of CE ACT, DUNTROON

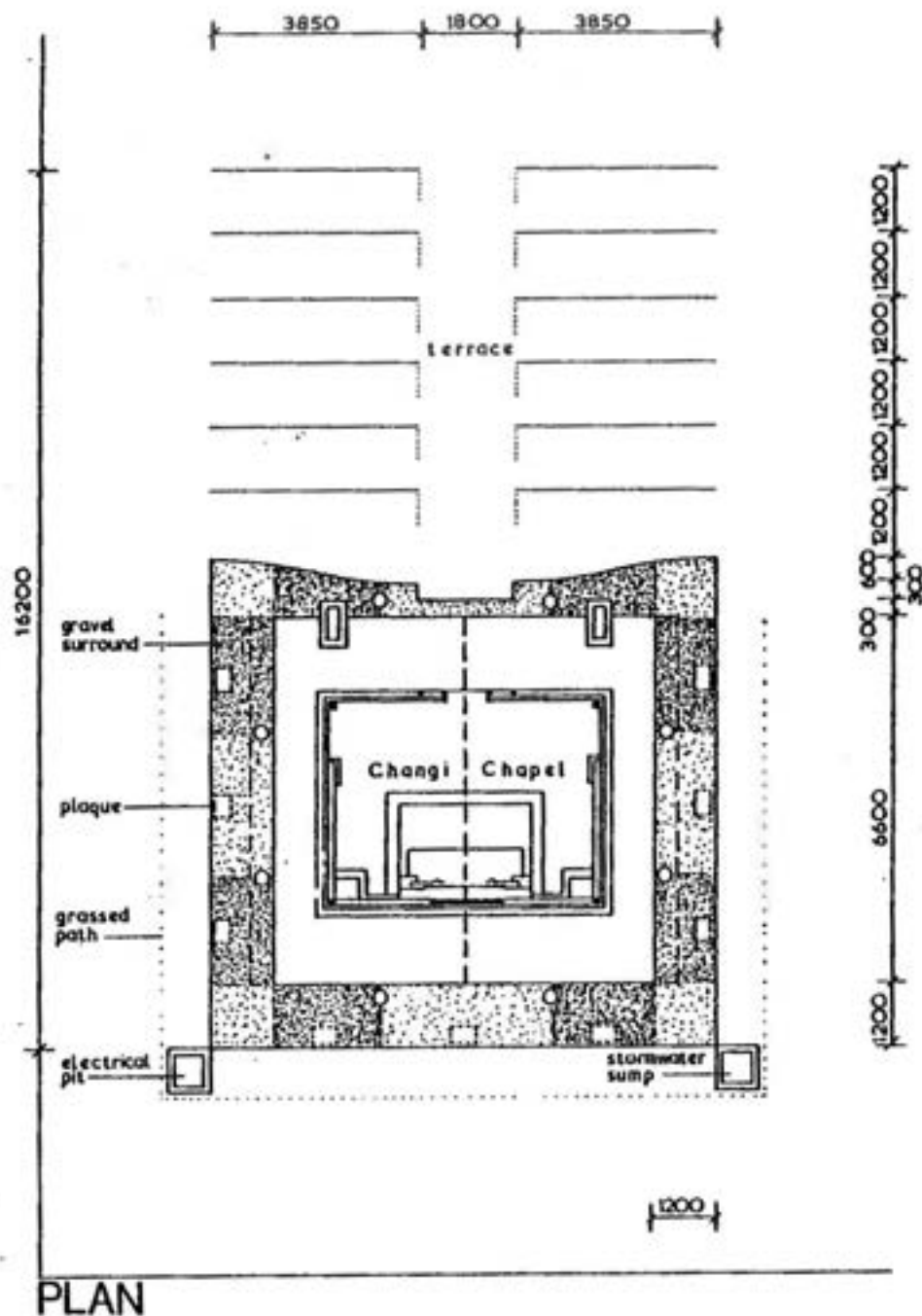
S T R A T E G Y : This report investigates the viability of an economical yet in-character reconstruction of the Changi Chapel as a national shrine. This scheme favours the reinstatement of the structure only with minimal disturbance on a Heritage listed site. It finds that any sheltering structure detracts from and conflicts with the scale of the shrine, park and Duntroon environment. Investigation of the materials will be required to address the preventative measures for waterproofing and arresting decay. Scientific tests will need to examine the roofing tiles on permeability then frost/freeze, and if necessary, investigate the most suitable means for impregnation, while information already gathered reveals that clear coating paints exist for this application.

S I T I N G : The siting is a quiet area with parking available adjacent to the Chapel. The position of the shrine is not to compete with the Chapel, but to complement and furnish the park. Existing underground services are to be avoided and the position must be clear of all trees to prevent air-borne damage. The proposal is to centre the shrine along an axis between eucalyptus trees, allowing accessibility for ceremonial purposes to all sides while reflecting the nature of the original slope at Changi.

210



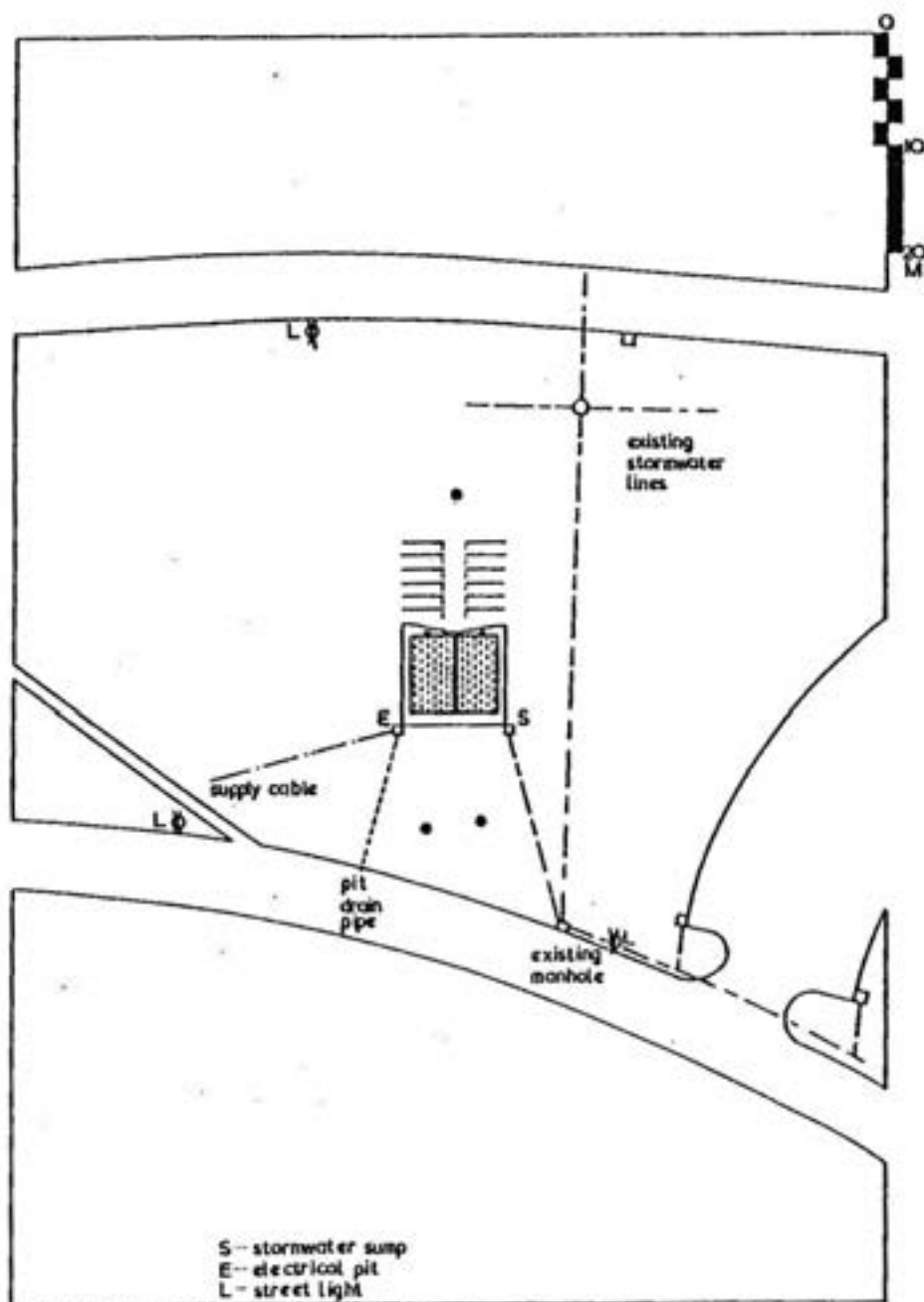
SITE



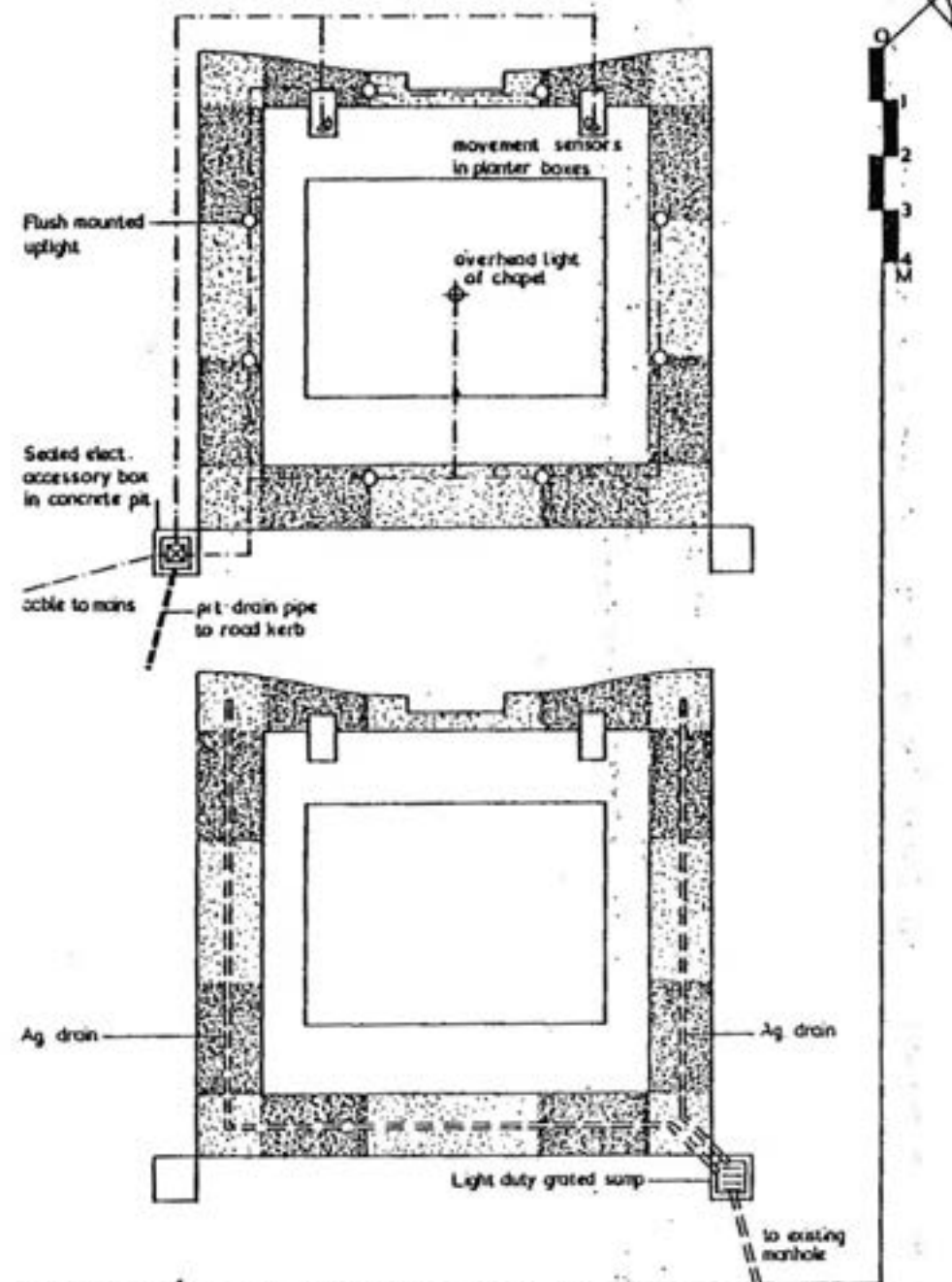
P L A N : The constructed chapel is to sit surrounded with a gravel border of 1200mm width while on the entry side it will diminish in size to allow a point of crossing. This interface with the park lawn will protect the shrine base from any mechanical damage such as grass cutting and allow for ease of maintenance. Housed in the surround will be zones of gradated and coloured gravel which will accommodate commemorative plaques. Nine plaques are shown around the three sides but it is still possible to increase this to fifteen.

S E R V I C E S : On the lower corners are the electrical pit and stormwater sump. This rationalization allows both services to be integrated and have easy access points. Night security lighting will depend upon the inconspicuous mounted movement sensors in the planter boxes and possibly elsewhere in the structure. To illuminate the building, eight lights will be mounted flush in the surround to evenly uplight the structure with the existing shrine light. The sealed electrical accessory box will be concealed in the pit and if restricted night lighting is required, a timer switch can also be incorporated. Rainwater will be collected on three sides with underground agricultural pipes terminating at the grated sump.

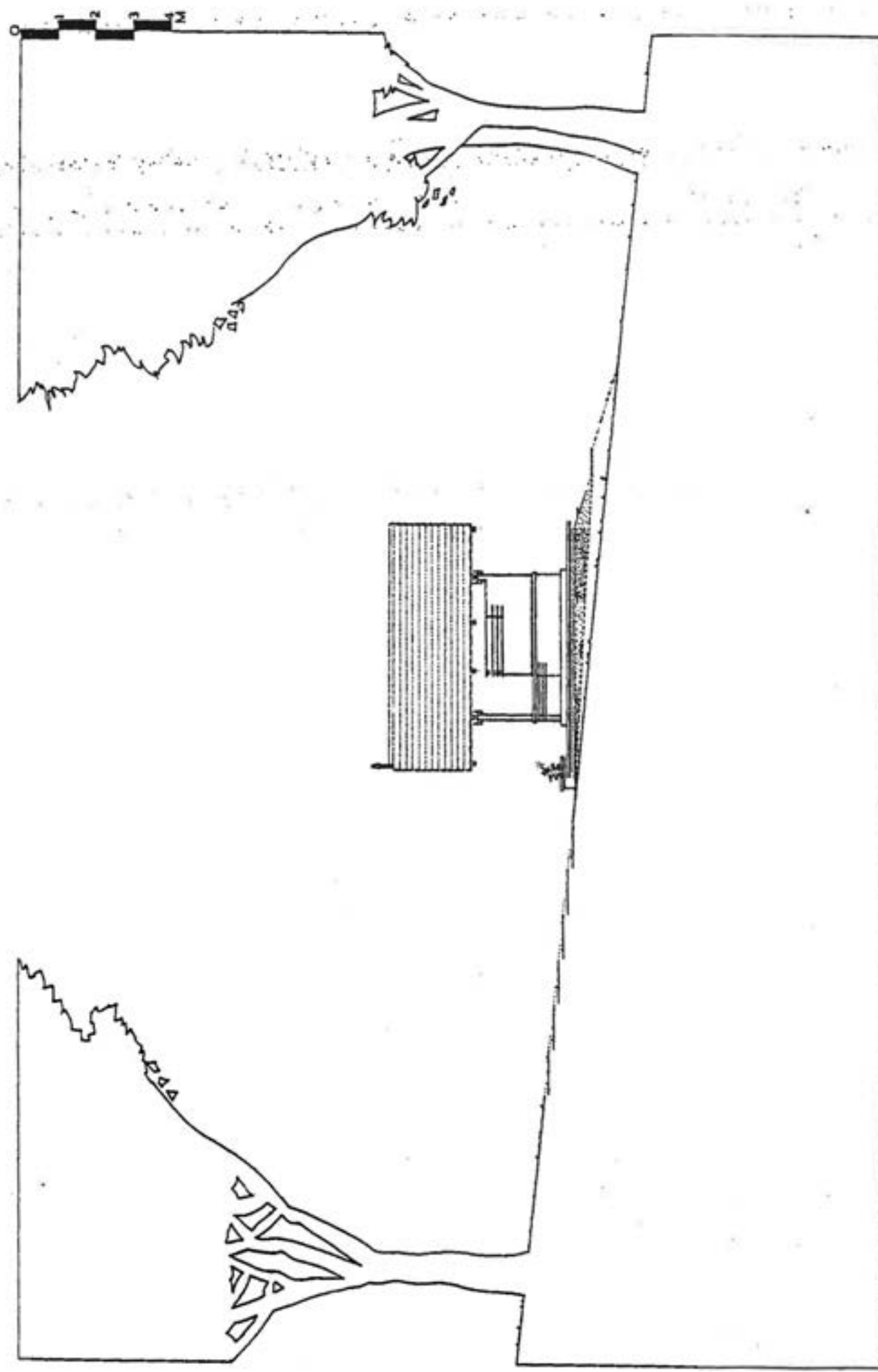
L A N D S C A P E : To signify the Changi site, six stepped levels symbolize the original seating on the upper slope. For ease of reading the plaques, a grassed flattened path will run the perimeter of the gravel surround. This forms a transitional zone in shaping the shrine into the landscape.



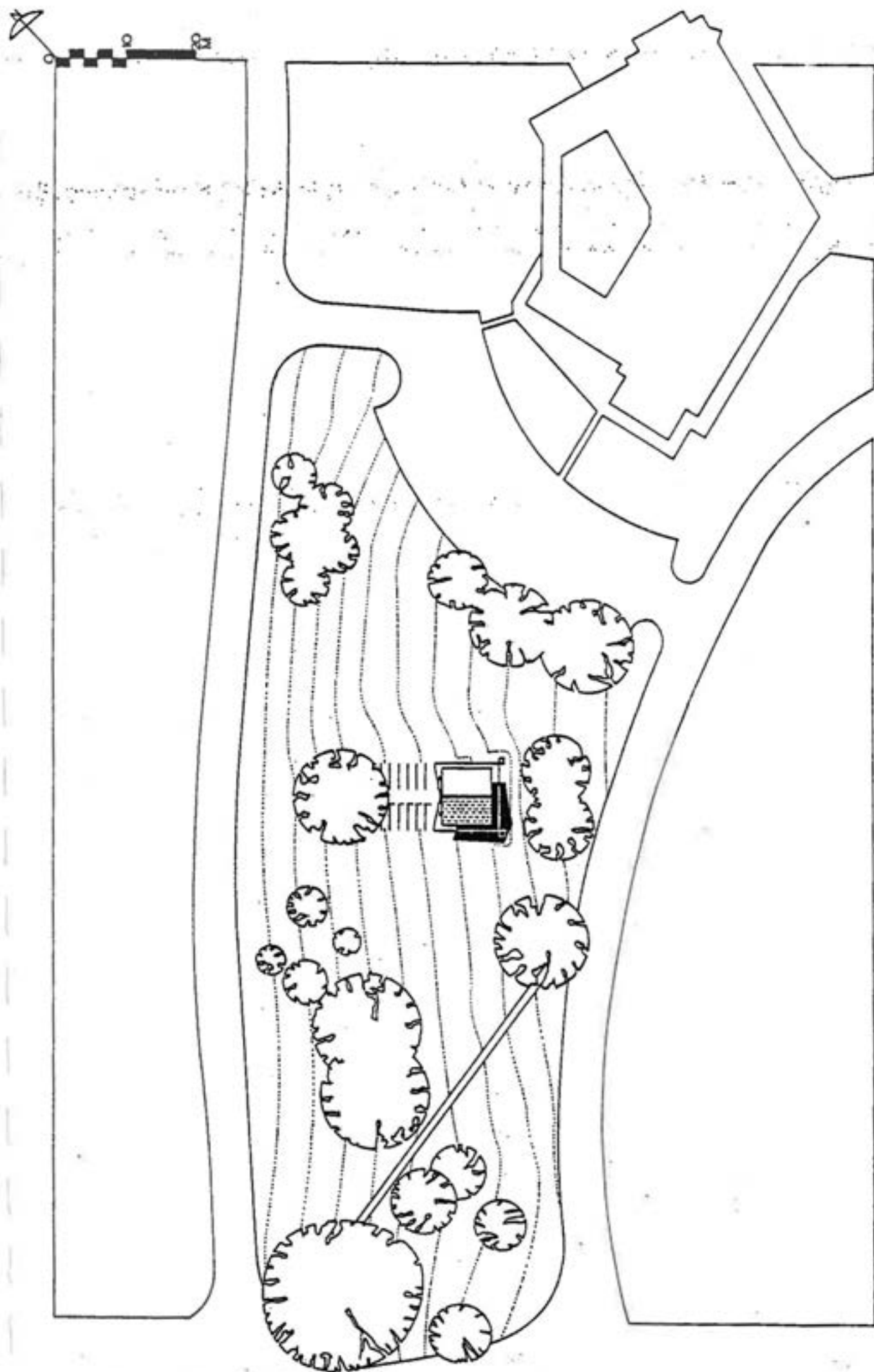
SERVICES



ELECT/STORMWATER



ELEVATION



LANDSCAPE

Annexure C

Australian Construction Services Drawings



7th year

51

Week 1

— 176 —

[illegible]

WHL DUNTING

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NUMBER OF STUDENTS : 60000-70000

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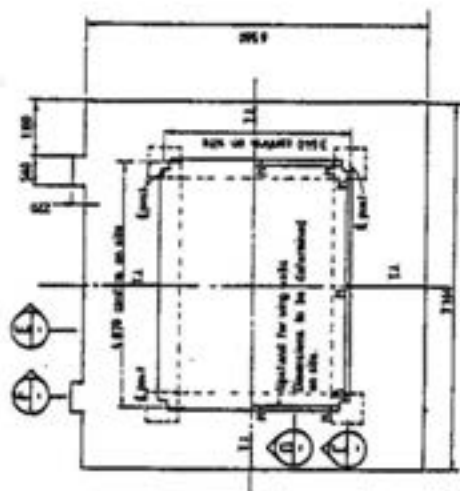
100

7

Abstract

CA 60/541

• *Journal of the American Academy of Child and Adolescent Psychiatry*, 2000, 39, 10, 1299-1306.



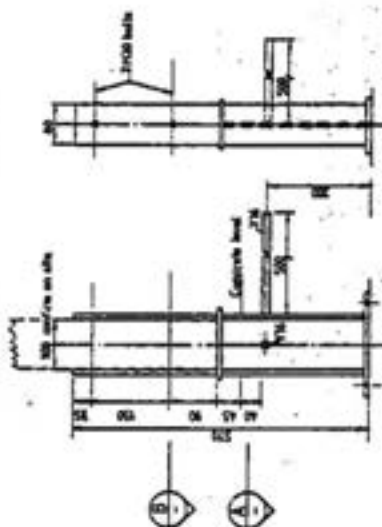
SLAB PLAN
1:5

By #12 twisted anchor
T1 twisted plate, not every second
fabric bar



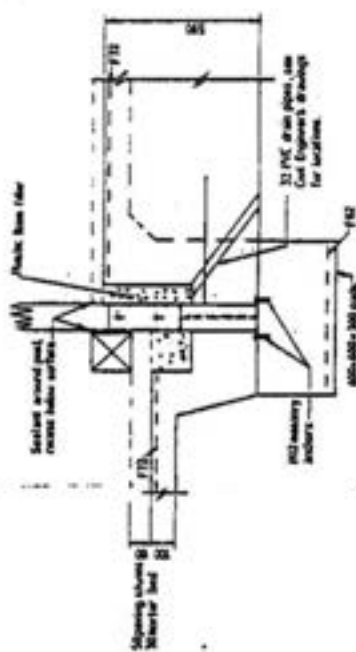
SECTION A-A
1:5

SECTION B-B
1:5

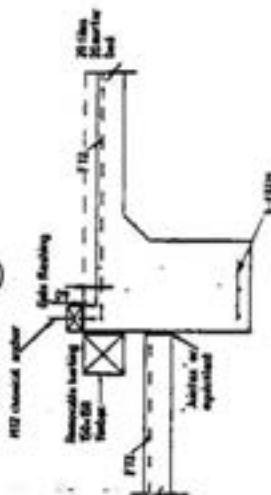


Fabricate from 8 plates
Welding with all welds to develop full
of plates and bars.

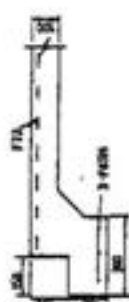
FAIRFACED SIDE AND BASEPLATE
TO TIMBER POSTS
1:5



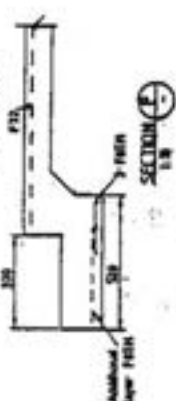
SECTION C-C
1:5



SECTION D-D
1:5



SECTION E-E
1:5



SECTION F-F
1:5

1. Before construction commences all dimensions are to be confirmed on site.
2. The drawing shall be read in conjunction with the relevant Civil Engineer's drawing.
3. Reinforcement shall be installed by -
4. -and drawn with Mark to AS 106 (100MPa)
5. -or 300mm mesh
6. Concrete shall have a characteristic strength of 20MPa, and mixed with coarse aggregate of 10mm maximum size.
7. For the purposes of this drawing, the following shall apply:
 - a. Reinforcement shall be installed by -
 - b. Reinforcement shall be installed by -
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 - z. Reinforcement shall be installed by -



ALL DIMENSIONS IN FEET
 1/4" = 1' SCALE
 1/8" = 2' SCALE
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UNCRUSHED RIVER STONE: STONES SHALL BE WASHED, ROUNDED & WORN RIVER STONES, FREE OF CLAY LUMPS, ORGANIC MATERIAL AND OTHER RELETERIOUS SUBSTANCES. STONES SHALL BE MAX. 315MM & MIN. 150MM SIZE



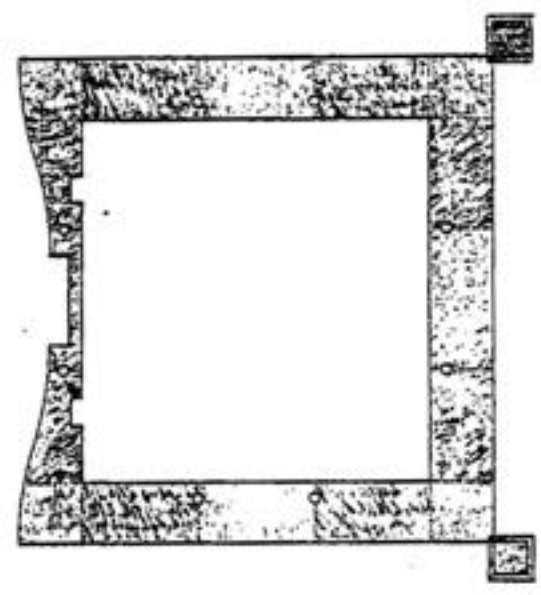
CRUSHED RIVER STONE: MATERIAL MANUFACTURED BY CRUSHING OF ROUNDED RIVER STONE SHALL HAVE A MINIMUM OF TWO FRACTURED FACES ON AT LEAST 75% OF THE PARTICLES, LARGER THAN 15MM. PARTICLE SIZES SHALL BE MAX 51.5MM AND MIN 10MM. MATERIAL SHALL BE FREE OF CLAY LUMPS, ORGANIC MATERIAL OR OTHER RELETERIOUS SUBSTANCES



RED: RED OXIDE MIXED IN WITH 7MM AGGREGATE CONCRETE TO TOP 100MM OF SUMP WALLS WHERE SHOWN & LIDS



GREEN: GREEN OXIDE MIXED IN WITH 7MM AGGREGATE CONCRETE TO TOP DOWN OF SUMP WALLS WHERE SHOWN

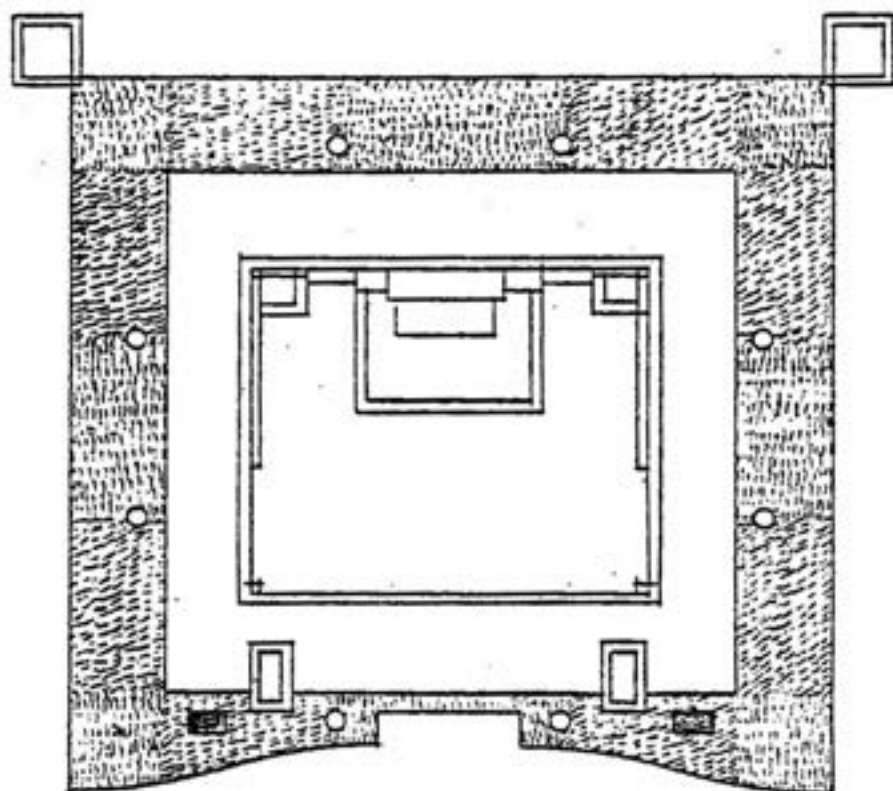


PLAN 1:1000



SECTION

NATIONAL POW MEMORIAL - CHANGI CHAPEL
FINISHES TO SURROUND & SUMPS
21/10/08 DJ



PAN.

LEGEND

- PLAQUE
- LIGHT

NATIONAL POW MEMORIAL - CHANGI CHAPEL.
LOCATION OF PLAQUES (2)

6/7/33

Annexure D

Roof Tile Testing

DEPARTMENT OF
ADMINISTRATIVE
SERVICES
CONSTRUCTION GROUP

Reference: File:5-4/Report 87/PI/55
Contact: Mr G Eccleston - (03) 647 69

SCIENTIFIC SERVICES BRANCH
177 Salmon Street
PORT MELBOURNE VIC 3207
Telephone (03) 647 6900
Fax (03) 646 5165

September 1987

Director of Construction
CANBERRA

Attention: Mr D Formiatti

TERRA COTTA ROOFING TILE FOR CHANGI CHAPEL RECONSTRUCTION

The attached report details the freeze/thaw test undertaken on the Changi tile. It concludes that whilst the tile displays roughly the equivalent freeze/thaw resistance as that of the local St Peters' tile, it would be prudent to monitor the progress of the tiles after re-erection. Should any signs of frost blast damage be evident the tiles should be treated with a silane coating.

D J Bartlett
for Director of Engineering

cc CO Library
through Director of Engineering

TERRA COTTA ROOFING TILE
FOR CHANGI CHAPEL RECONSTRUCTION

BY

D DESILVA

REPORT: 87/PI/55
FILE: 5-H
SEPTEMBER 1987

D1.3

TERRA COTTA ROOFING TILE FOR CHANGI CHAPEL RECONSTRUCTION

The SSB was requested by D Formiatti ACT Region to investigate the 'frost blast' resistance of the terra cotta roofing tiles to be used in the reconstruction of the Changi Chapel at RMC Duntroon, ACT.

The tiles in question are from the roof of the Changi Chapel Singapore, dismantled and crated in 1946.

The type of tile was standard 'Calicut' common throughout the Indian subcontinent and carried the marks 'Malabar Tile Works, Feroke, India'.

As the performance of Indian tiles in a temperate climate was not known the investigation was carried out to determine:

- 1) the water absorption
- 2) resistance to freeze/thaw cycling
- 3) methods of reducing water absorption and increasing freeze/thaw resistance

A complete tile and a piece from a corner were provided for the investigation along with another terra cotta tile having a satisfactory performance history under local conditions. The latter had the mark 'Central, St Peters'.

Technical personnel from Wunderlich Terra Cotta Roof Tiles Ltd were consulted with reference to freeze/thaw cycling tests and chemical treatment to improve frost blast resistance. It was revealed their quality control program involves 150 freeze/thaw cycles and that this is generally achieved by tiles with water absorptions less than 8 per cent. It was not practical, because of time constraints, to carry out 150 freeze/thaw cycles which requires three to four months to complete testing. Thus the decision was taken to subject the tiles to the sodium sulphate solution cycling test (AS 1226.10). The test involves the repeated crystallization of sodium sulphate in the pores of terra cotta and has been for a long time used as a substitute for freeze/thaw cycling especially in brick testing. Although no strict correlation exists between the two tests it allows results to be obtained within two weeks.

Although a higher water absorption is generally associated with a lower frost resistance, beyond a certain level frost resistance will improve. This is explained by the large pores in the more porous terra cotta allowing water to be expelled during volume expansion at freezing, rather be trapped within and exerting tensile stresses.

The salt solution cycling (two hours immersion in 14% solution then two hours drying followed by one hour of cooling) indicated spalling in the Changi tile after five cycles and the St Peters' tile after eight cycles indicating roughly equivalent freeze/thaw resistance of the two tiles. The St Peters used for comparative testing had successfully withstood Canberra winters for 30 years without freeze/thaw damage. However, the freeze/thaw resistance, as determined by the salt immersion cycling, is that of the tiles after 30 years of weathering may not necessarily reflect its initial freeze/thaw resistance.

Work currently being undertaken by the SSB has shown that silanes afford the best materials for reducing the water penetration of concrete. Similar testing in the USA has shown that silanes also reduce salt penetration and offer an effective life of at least 10 years.

Accordingly samples of both tiles were coated with Vessey Chem-Trete an alkyl alkoxy silane. Method of application was to flood all surfaces with the liquid by brush. The treatment was allowed to cure for 24 hours, oven dried for 20 hours approximately and then 72 hour water absorption redetermined. Dry weight increase after treatment was 0.35% for the Changi tile and 0.03% for the St Peters' tile. Water absorption after treatment was as follows:

72 Hour Water Absorption

| | <u>St Peters Tile</u> | <u>Changi Tile</u> |
|------------------|-----------------------|--------------------|
| Before treatment | 11.2% | 15.8% |
| After treatment | 3.3% | 7.4% |

Salt cycling after treatment had no effect on the tiles after 15 cycles. Testing is continuing and further results will be forwarded to Mr Formiatti when available. The dry weight increase due to ingress of salt was less than 1.0% for the Changi tile and 2.0% for the St Peters' tile.

CONCLUSIONS

Notwithstanding the high water absorption it would appear that the Changi tile has roughly the equivalent freeze/thaw resistance as that displayed by the local St Peters' tile and hence should resist damage from frost blast when used at RMC Duntroon. However, given that the St Peters' tile has already undergone 30 years of weathering, and that its freeze/thaw resistance may have deteriorated, it would be prudent to monitor the progress of the Changi tile when exposed at Duntroon. Should any spalling become evident it would then be advisable to completely coat the tiles, preferably by immersion, in a silane coating such as Vessey's 'Chem-Trete'. Our results indicate that such a treatment will reduce the tiles porosity and increase its resistance to frost blast. The literature indicates such a treatment would be effective for upwards of 10 years.

Annexure E

Paint Analysis



SCHOOL OF APPLIED SCIENCE

CANBERRA COLLEGE OF ADVANCED EDUCATION

P.O. BOX 1, BELCONNEN A.C.T. AUSTRALIA 2616

TELEGRAMS: COLLADVED. TELEX: 82267 CANCOL AA

BRUCE A.C.T. TELEPHONE 062 52 2111

June 22, 1988

Mr. Ian White
Peter Freeman & Partners
17 Empire Circuit
DEAKIN, ACT, 2600

Dear Ian,

I have just received the analysis of the paint samples removed from the Chapel, Changi Prison. These are as follows:

1. White paint from asbestos: Sample contains dominantly calcite (CaCO_3) with minor zincite (ZnO).
2. White paint RHS of Chapel: Sample contains dominantly calcite plus trace quantities of other components, possibly anglesite (PbSO_4) and quartz (SiO_2).
3. Paint from galvanised iron skirt: Quartz, anatase (TiO_2) and barite (BaSO_4) are the major components with minor Kaolin.
4. Paint from galvanised iron alter piece: Sample contains dominantly barite with lesser talc ($\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$).
5. Brown paint from Alter Base: Only trace of quartz was detected in this sample. The remainder does not appear to be crystalline.
6. Green paint from Long Timber RHS: This sample contains a minor amount of barite in the presence of a major unidentifiable component. The XRD pattern bears similarity with the minerals digenite, a copper sulphide, and/or arsenolite, an arsenic oxide. Despite the similarities, there were sufficient discrepancies in the XRD patterns to introduce an element of doubt in these identifications.
7. Green paint from Long Timber LHS: Similar to No.6.
8. Blue/green paint, side frame RHS: Quartz was detected with another mineral, probably eskolaite (Cr_2O_3).

It is very unlikely that these analyses will enable you to match the paint systems used on the components of the chapel, and as discussed, colour matching, followed by the use of an appropriate paint system for outdoor exposure, is the best way of solving this problem. I have

2.

asked Garry Stewart of Dulux Paints, to contact you to provide this information.

Just some comments on the above analyses.

1. The white paint used on the asbestos and on the galvanised iron shows the presence of typical fillers - calcium carbonate, and white pigments of zinc oxide, titanium dioxide, lead sulphate and barium sulphate.
2. The brown paint from the wooden alter base is organic in nature. It is likely to be a lacquer, possibly shellac. This can be analysed further if necessary.
3. The green paints from the wooden structural timbers contain possibly copper sulphide (bluish-black) and arsenic oxide (yellow), which when mixed would give the green colour. Arsenic oxide might have been added as an insecticide.
4. The blue/green paint contains chromium trioxide which is olive green in colour.

The charge for this work, including costs of analysis is \$450.

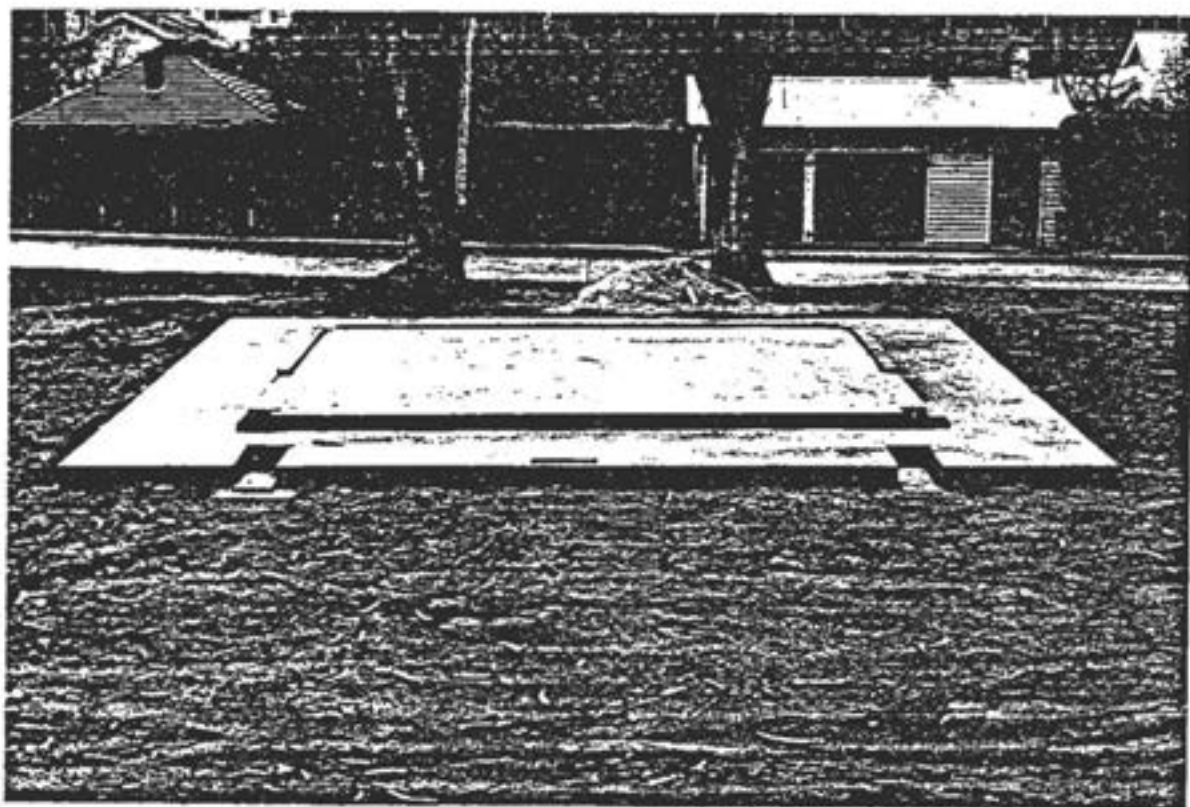
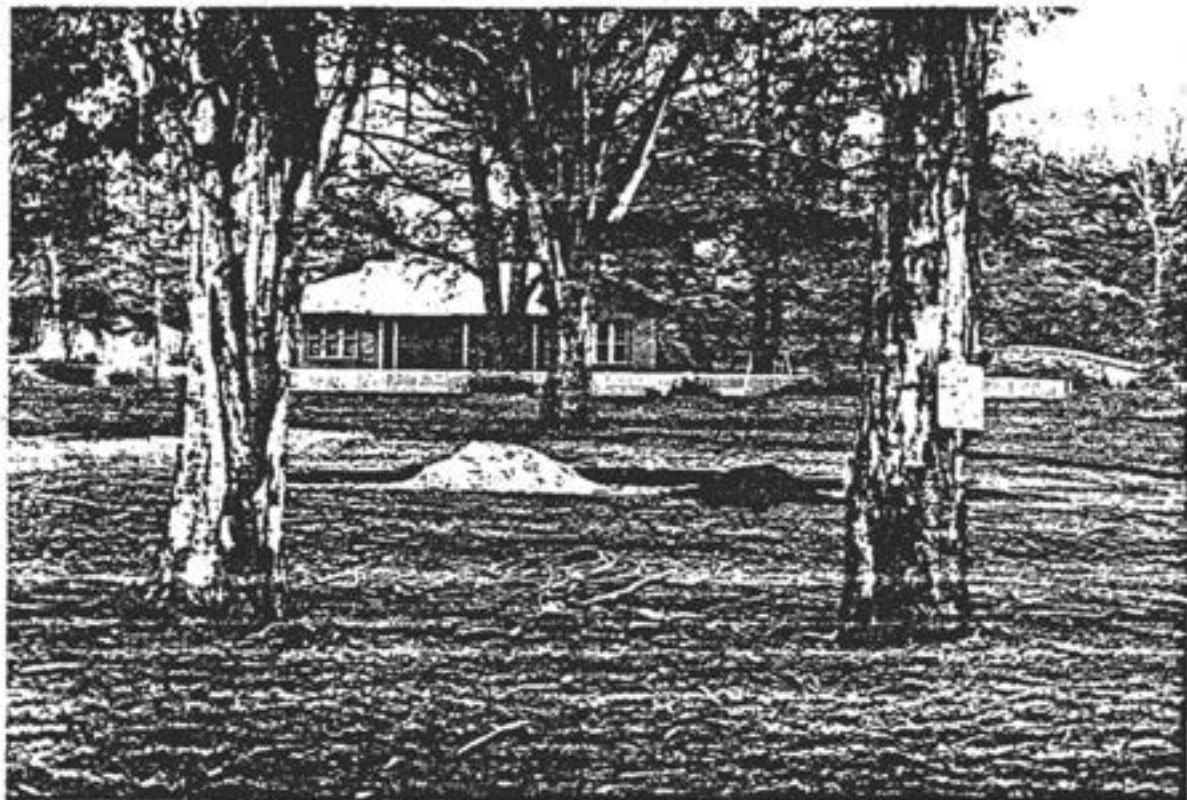
Yours sincerely,

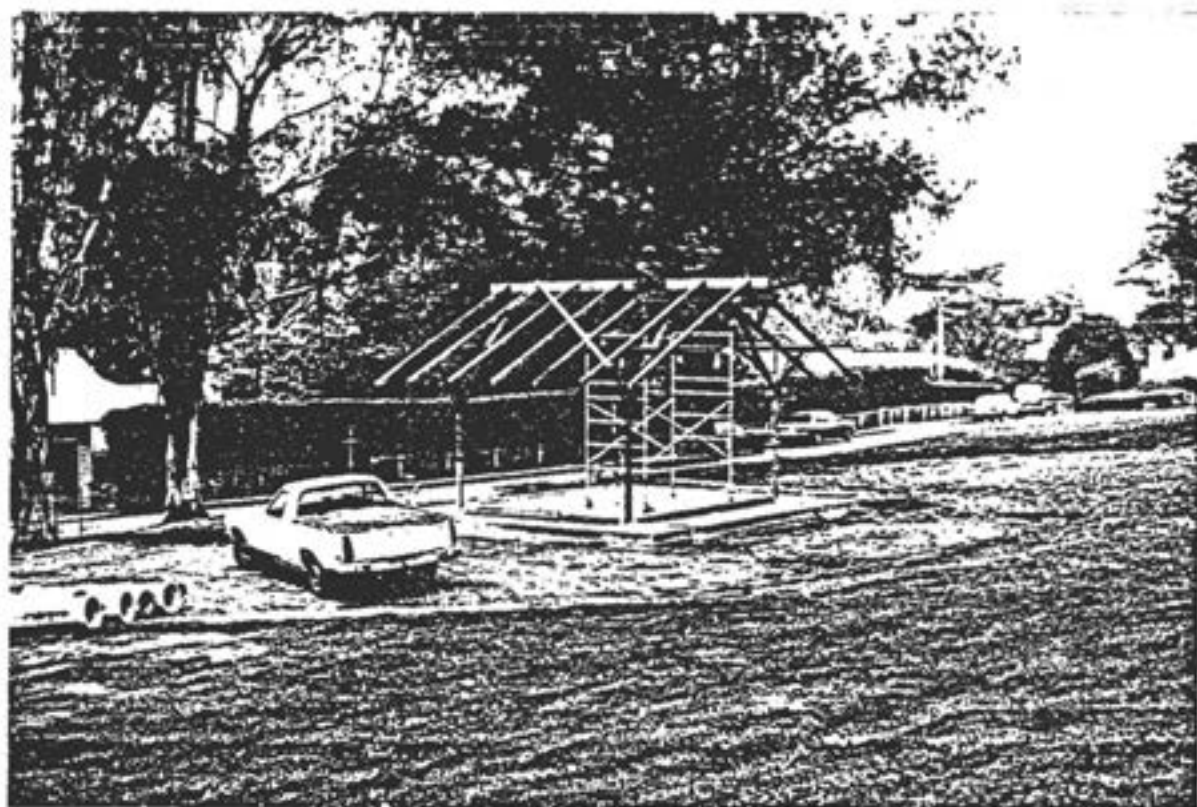
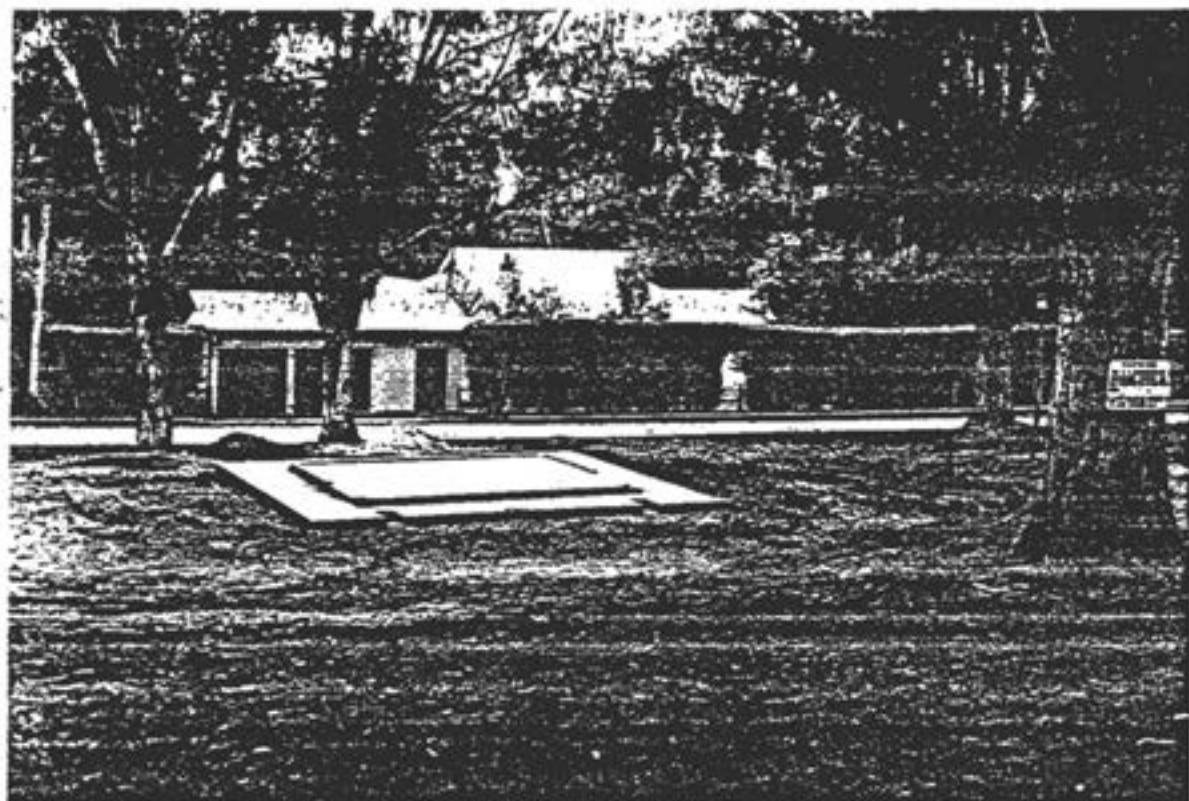


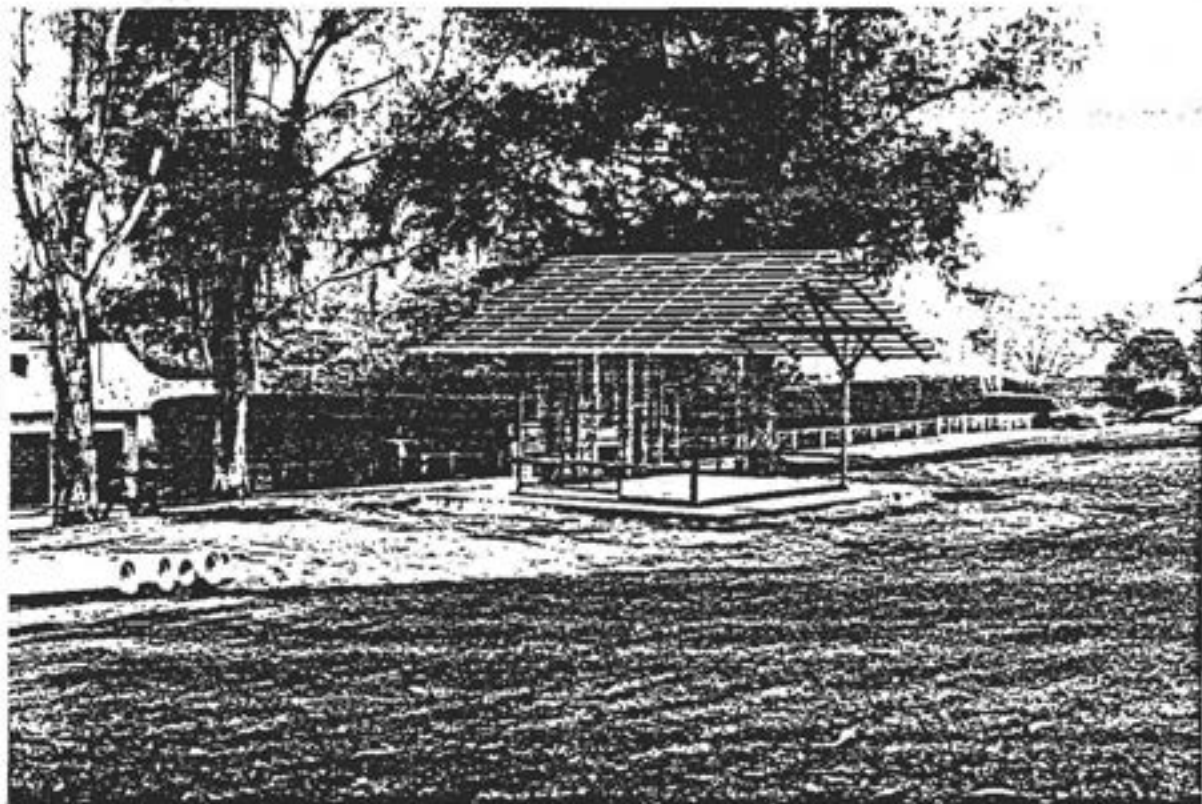
Dr. C. Pearson
Principal Lecturer
Cultural Heritage Science Division

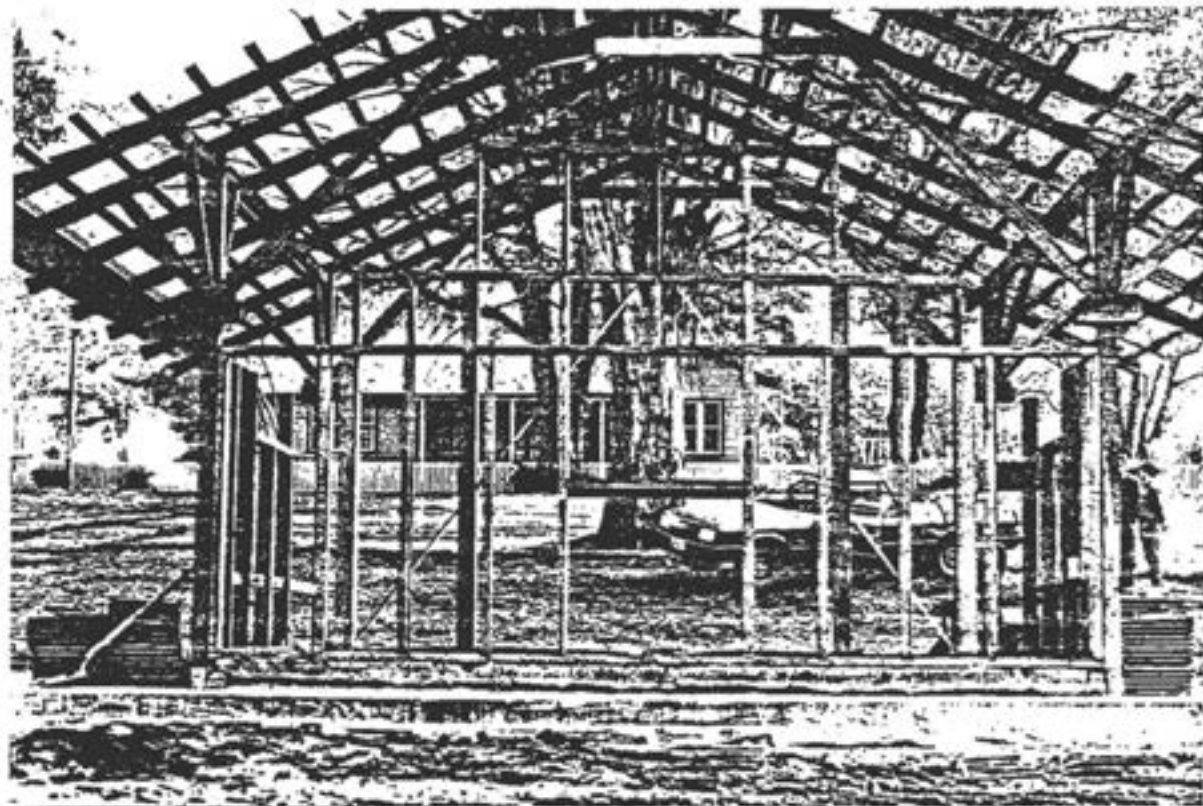
Annexure F

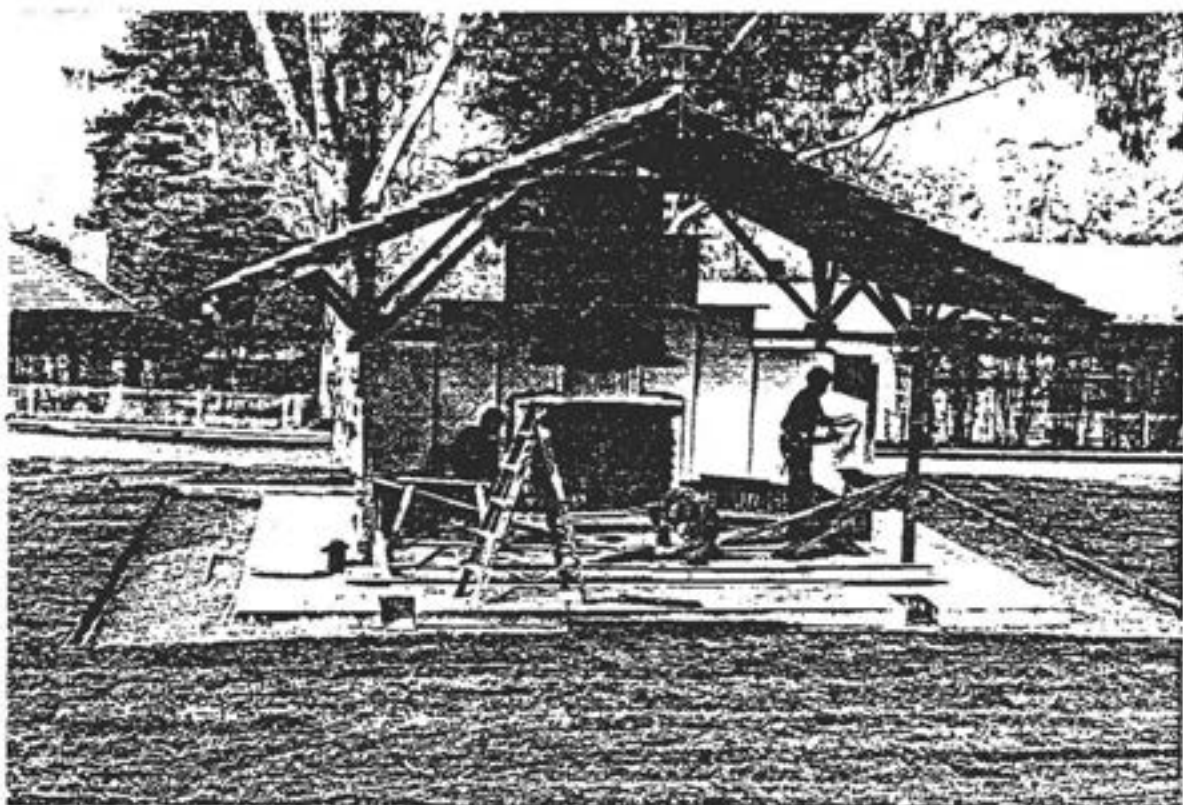
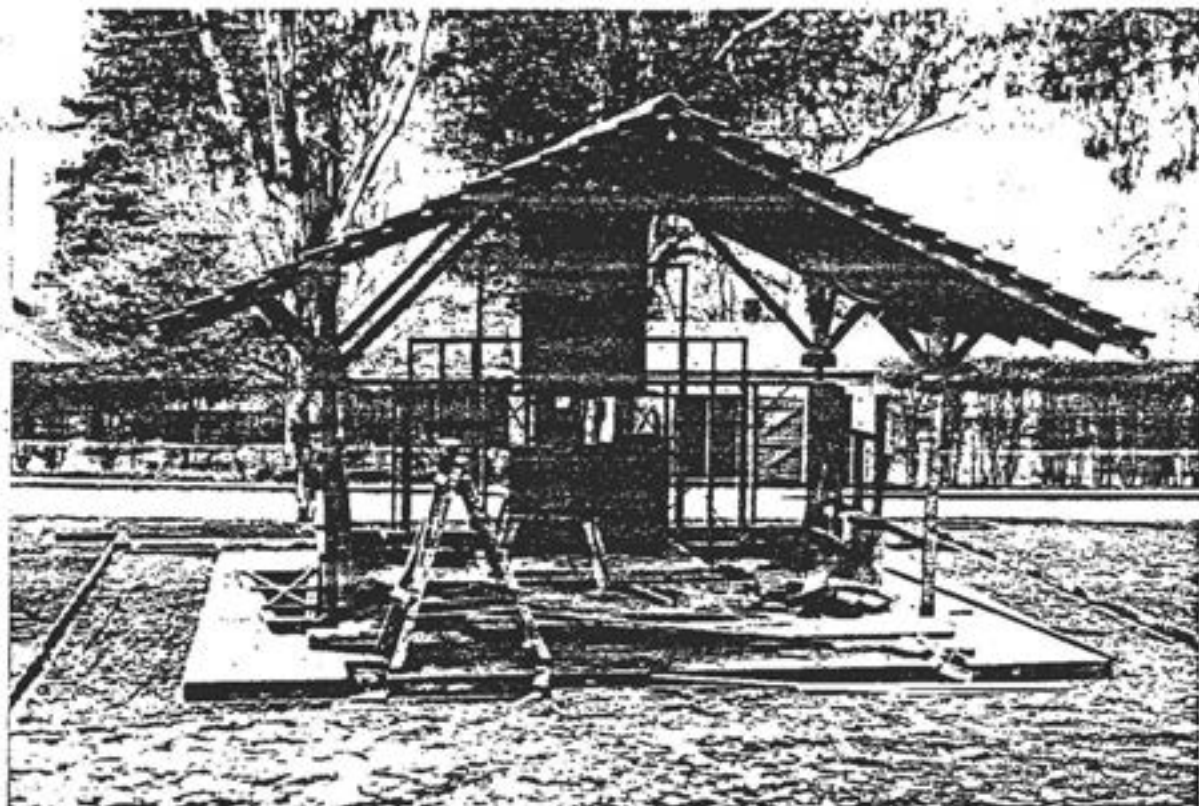
Reconstruction Photographs

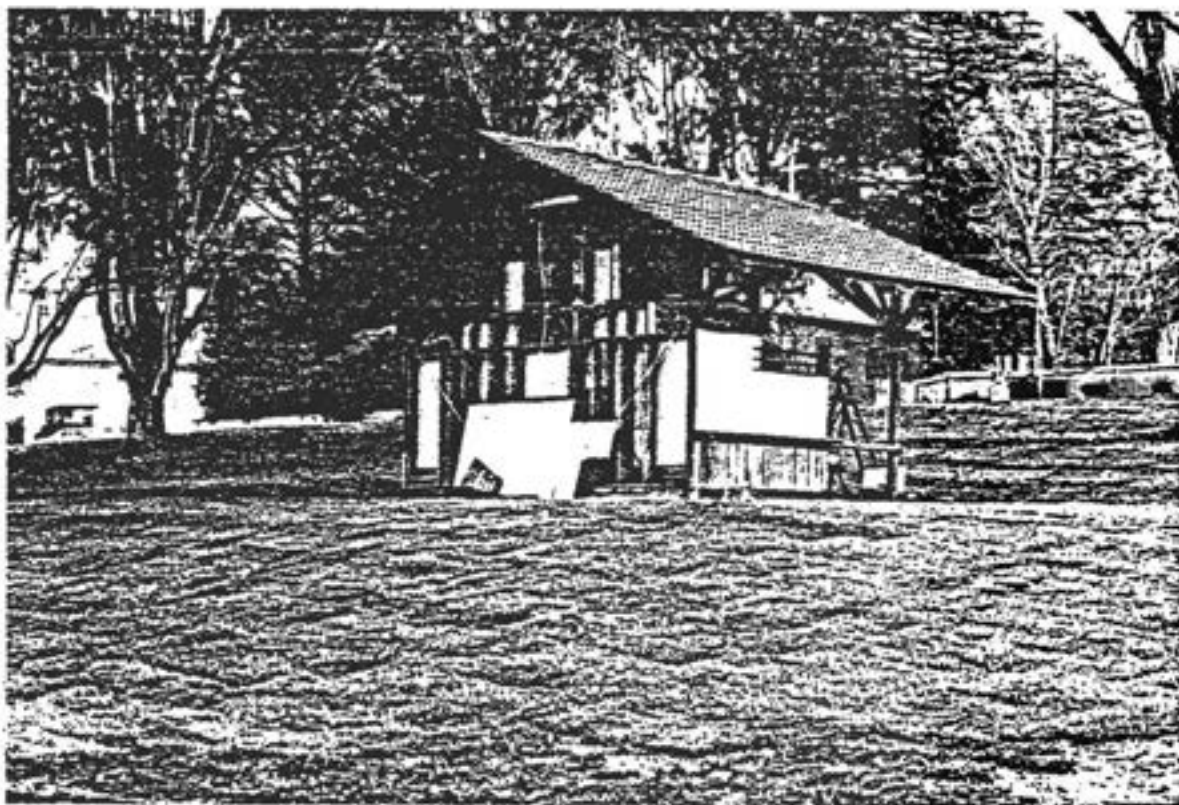








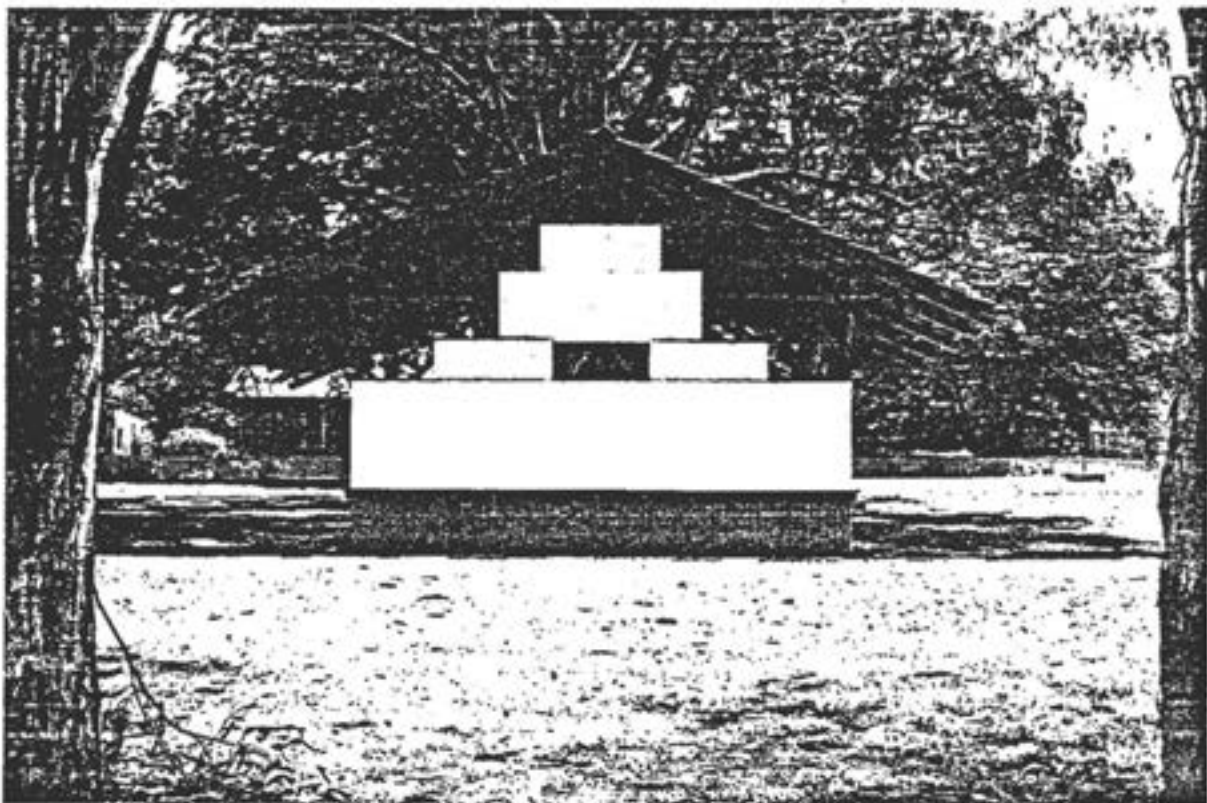
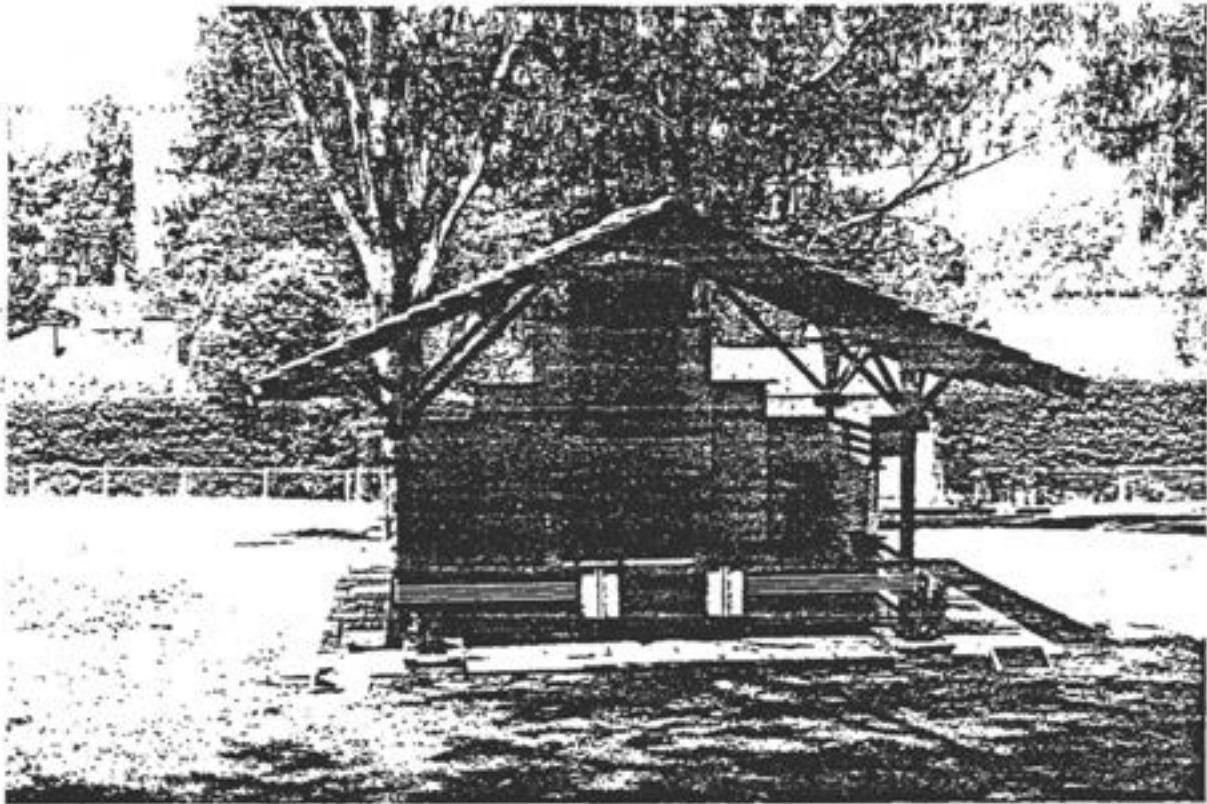


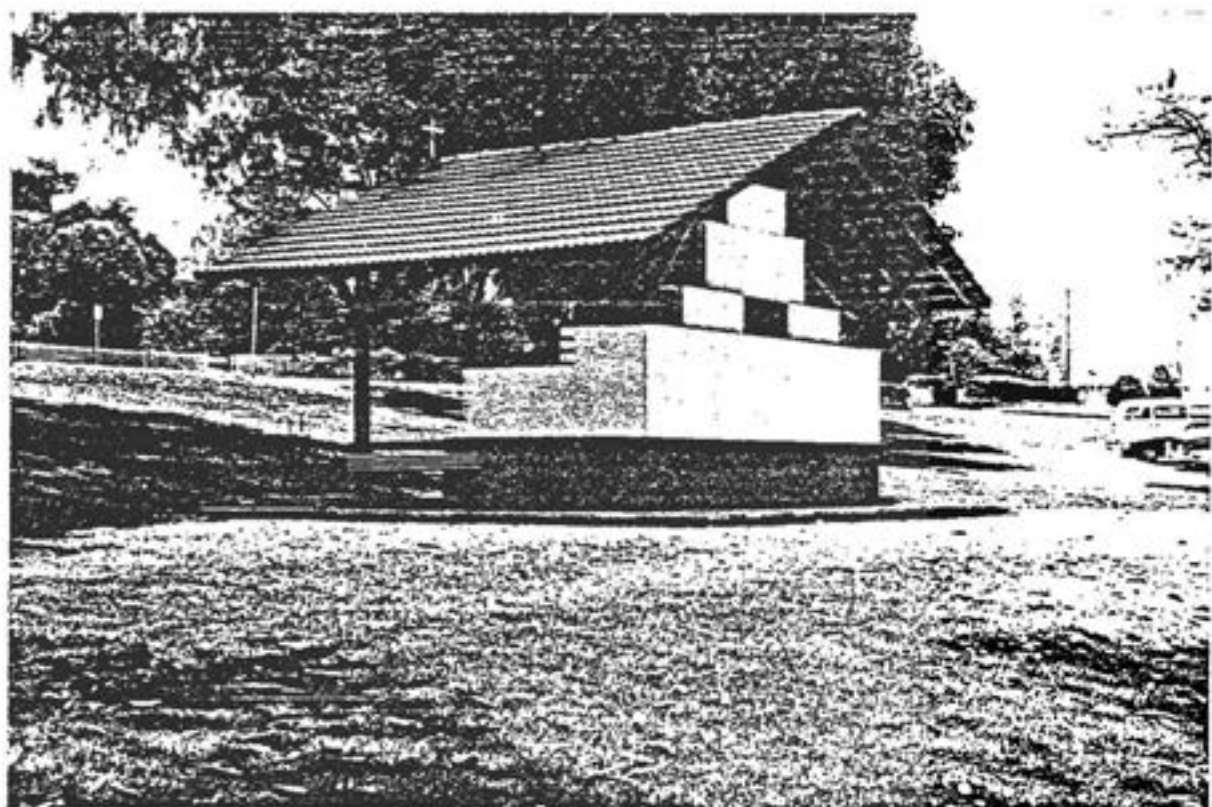
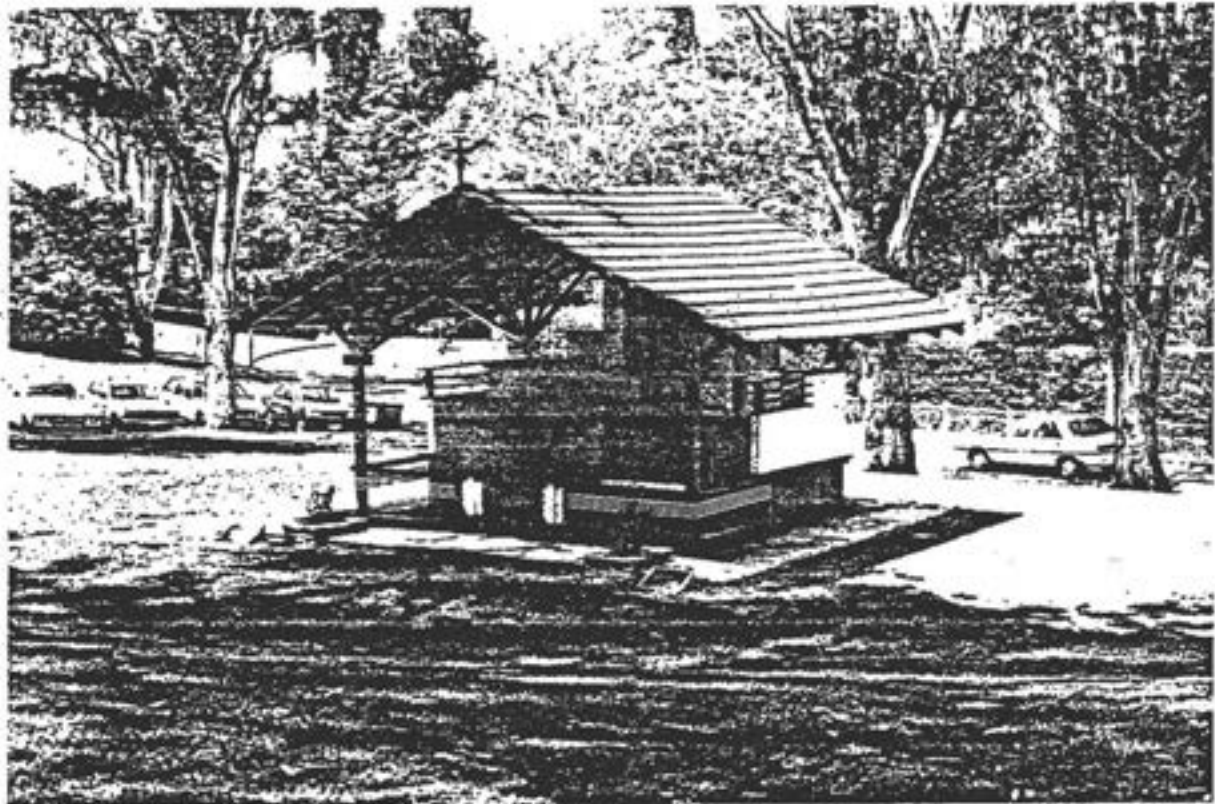


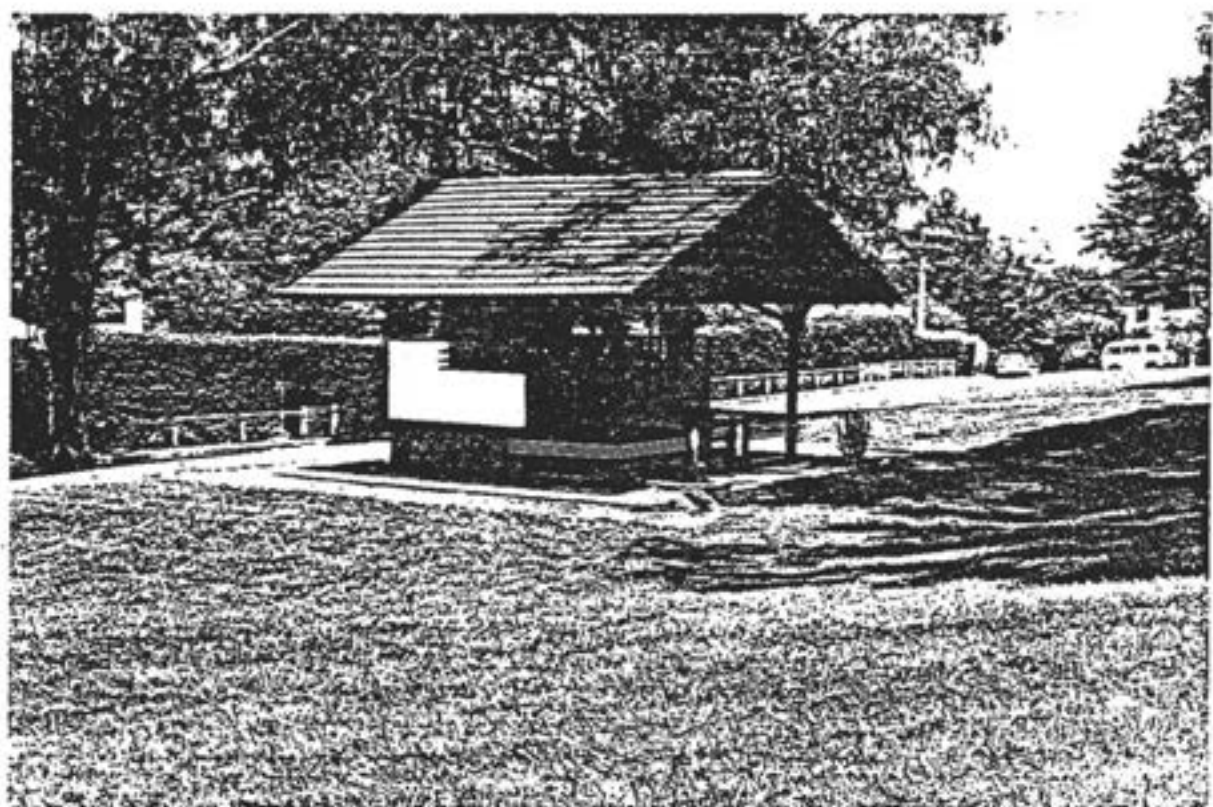
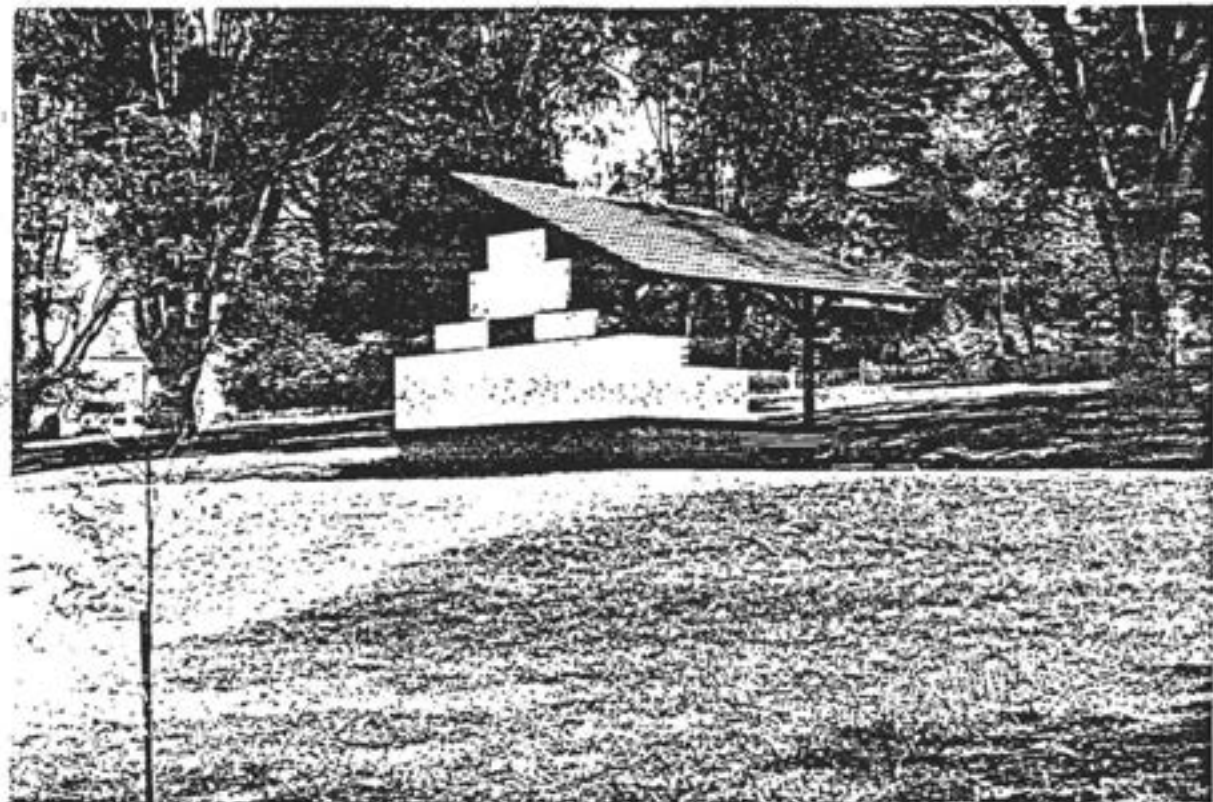


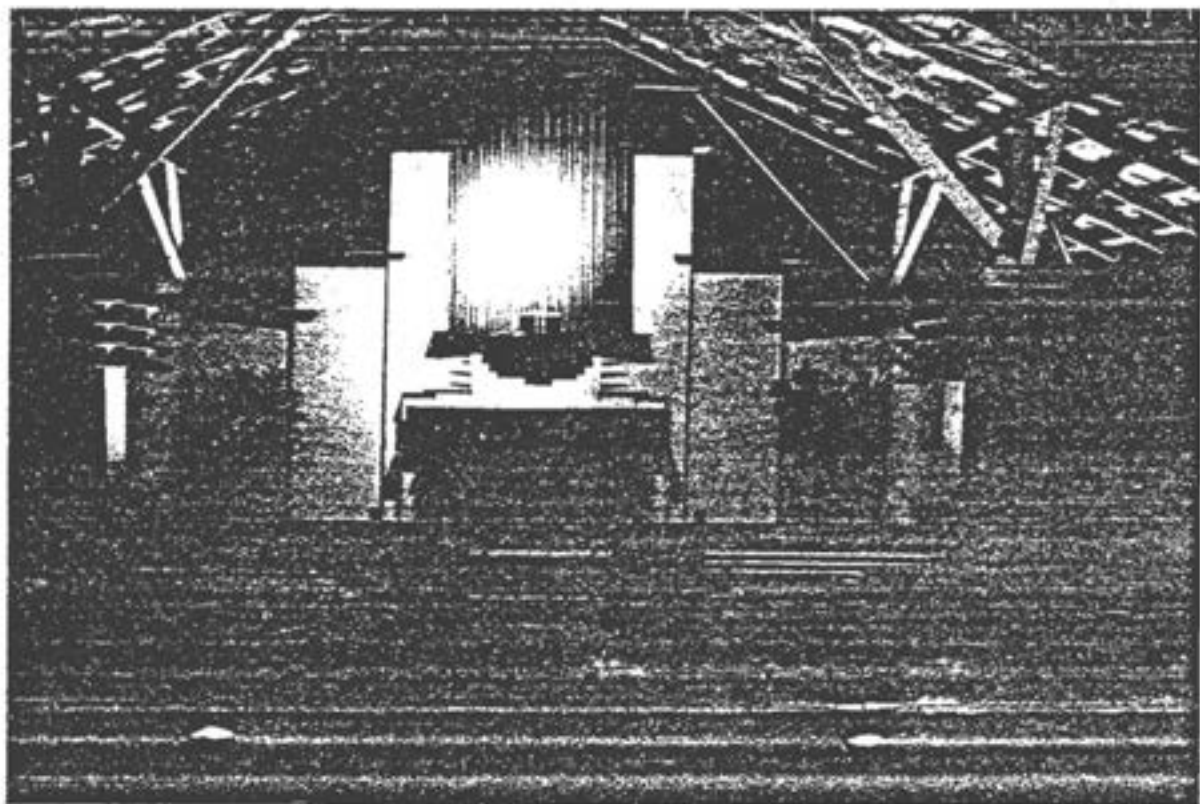
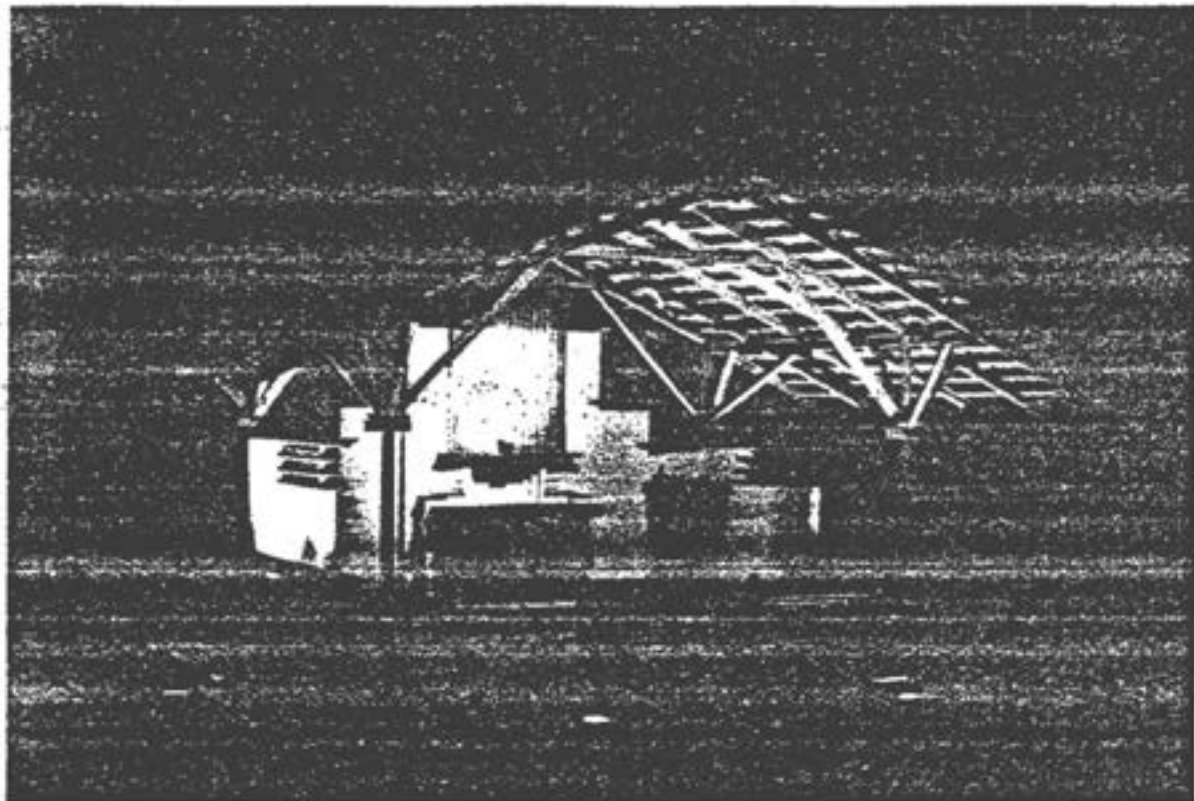
DEPT. OF DEFENCE
PUBLIC RELATIONS

Ref. No. **CANA**
88.287.10









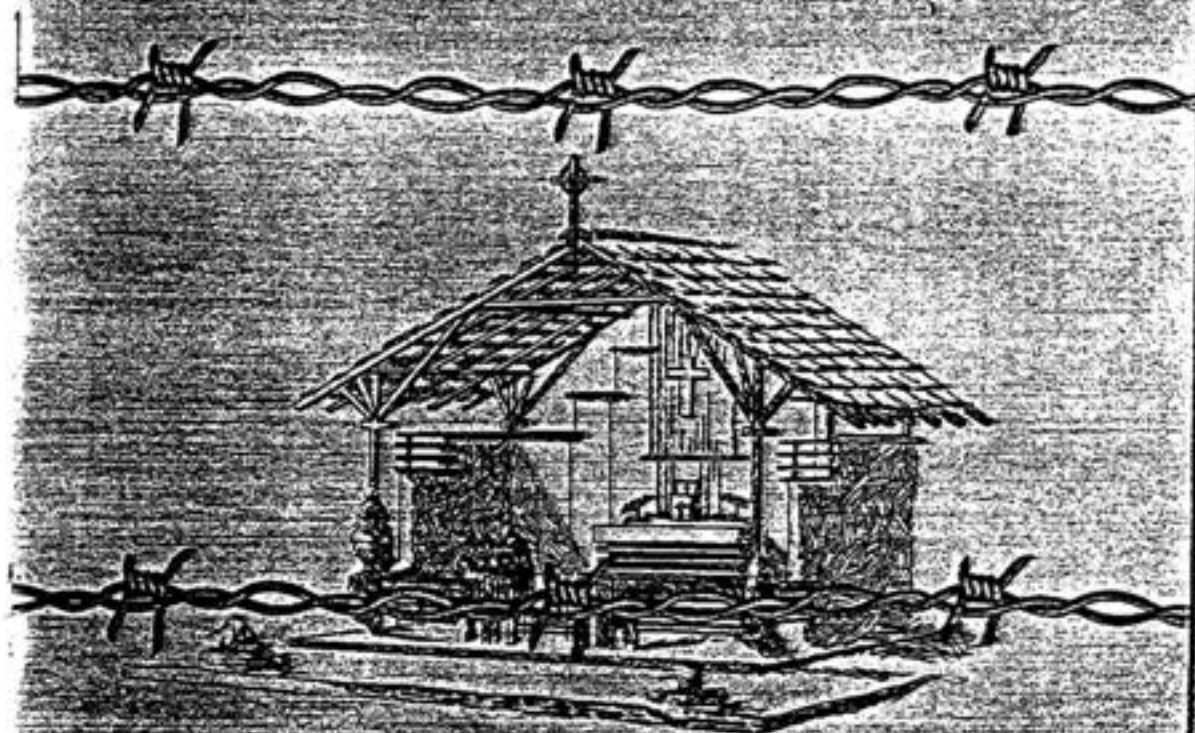
Annexure G

Dedication and First Mass

G1 Dedication August 15, 1988

G2 First Mass March 17, 1989

NATIONAL MEMORIAL TO PRISONERS OF WAR



CHANGI CHAPEL

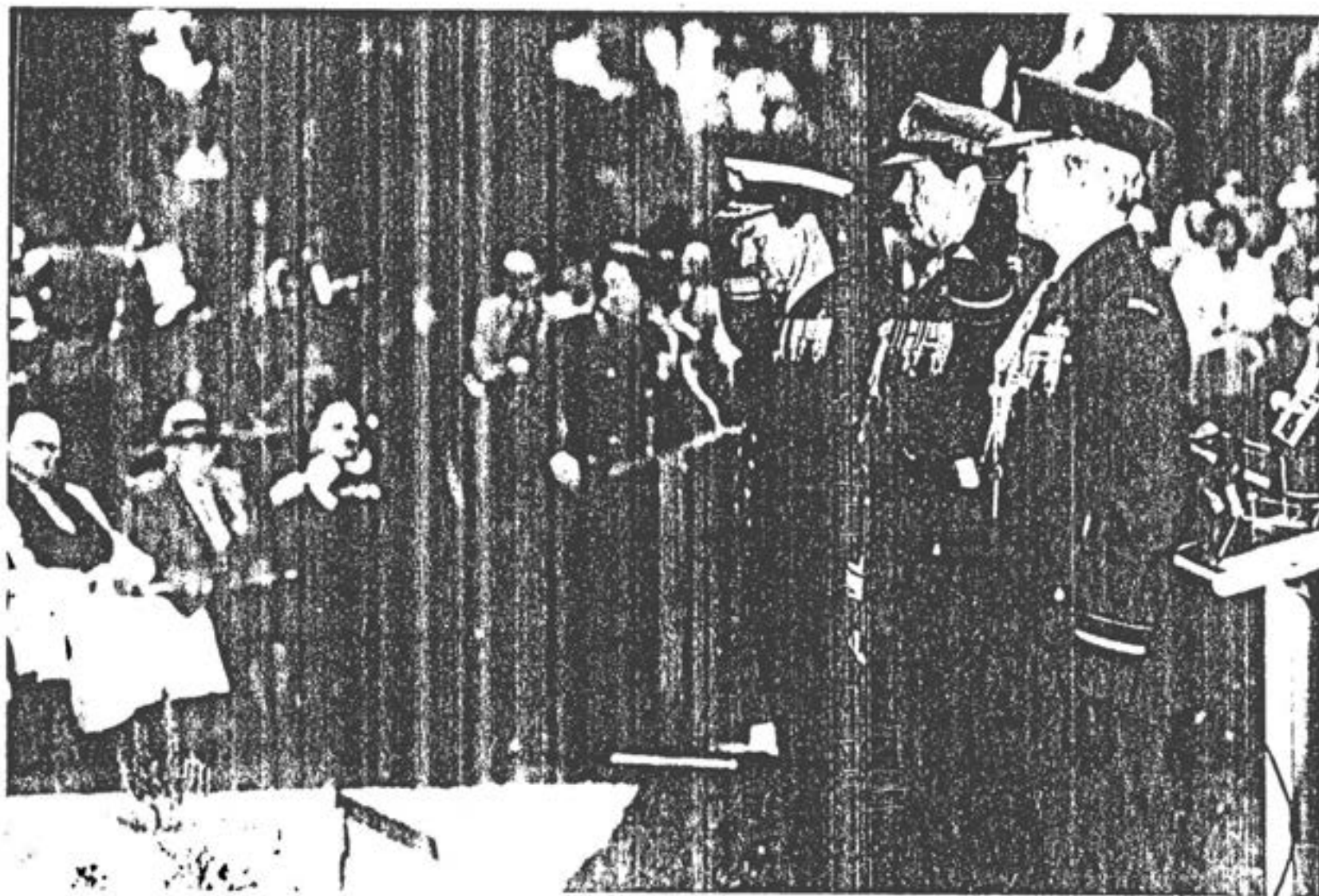
OPENING AND DEDICATION
ROYAL MILITARY COLLEGE, DUNTROON, A.C.T.
15 AUGUST 1988.



Singing the Captives Prayer during the dedication service held at Changi Chapel in the grounds of the Royal Military College, Duntroon, in Canberra, are, front row from left: The Reverend K.J. Gibson (representing Protestant denominations of the Australian Defence Force); Bishop G.F. Mayne, RC Bishop to the Australian Defence Force; Bishop K.H. Short (Anglican Bishop to the Australian Defence Force); Mrs Vivian Statham (nee Bullwinkle), a former Army matron who survived a machine-gun massacre of nurses and internment in a POW camp; and Sir Edward "Neary" Dunlop, whose skills as a surgeon in the POW camps saved countless lives. Rear row, left, is Sir William Keys, then National President of the Returned Services League (since retired). Changi Chapel was dedicated on August 15, 1988, as a National Memorial to all

DEPT. OF DEFENCE
PUBLIC RELATIONS

Ref. No. CANA
88-320.04



Changi Chapel, in the grounds of the Royal Military College, Duntroon, Canberra, was dedicated on August 15, 1988, as a National Memorial to all Australian prisoners of war who suffered or died. During the dedication ceremony Service Chiefs were invited to lay wreaths on behalf of the Servicemen and women of Australia. Pictured paying their respects to those who suffered as POWs are, from left: Rear Admiral N. Ralph, Deputy Chief of the Naval Staff; Lieutenant General L. O'Donnell, Chief of the General Staff; and Air Vice Marshal R. Bradford, Deputy Chief of the Air Staff.

DEPT. OF DEFENCE
PUBLIC RELATIONS

Ref. No. CANA

88.320.02

CHANGE CHAPEL

THIS CHAPEL WAS ORIGINALLY CONSTRUCTED BY
PRISONERS OF WAR IN CHANGE CAMP,
SINGAPORE ISLAND, IN 1944.

ITS CONSTRUCTION WAS AN ACT OF ENDURING FAITH
IN THE MIST OF EXTREME ADVERSITY.

AFTER THE WAR THE CHAPEL WAS
RETURNED TO AUSTRALIA FOR PRESERVATION.

IT WAS ERECTED ON THIS SITE AND
DEDICATED AS A NATIONAL MEMORIAL TO ALL
AUSTRALIAN PRISONERS OF WAR ON 15 AUGUST 1988.

FUNDS FOR THE ERECTION AND MAINTENANCE OF

THIS MEMORIAL WERE PROVIDED BY

THE AUSTRALIAN GOVERNMENT AND THE PEOPLE OF AUSTRALIA.

NATIONAL PRISONER OF WAR MEMORIAL

DEDICATED TO

THE 35,000 AUSTRALIAN SERVICEMEN AND WOMEN
TAKEN PRISONER OF WAR IN THE FOLLOWING WARS:

| | | |
|--------------------------------|------|------|
| WAR IN SOUTH AFRICA (BOER WAR) | 1899 | 1902 |
| WORLD WAR I | 1914 | 1918 |
| WORLD WAR II | 1939 | 1945 |
| KOREAN WAR | 1950 | 1953 |

UNVEILED BY

A FORMER PRISONER OF WAR
ON 15 AUGUST 1988

ACT reunion with a Changi chapel

CT
18/3/89

By KAREN HOBSON

Father Simon-Thwaites was received into the Catholic faith while travelling on an American ship during World War II. He said he was "somewhere between Cape Town and Bombay". Two months later he was a prisoner of war in Changi, in Singapore.

"If you are a practising Christian, you can face up to anything," he said yesterday. Father Simon-Thwaites faced up to 3½ years as a POW.

The Catholic priest was in Canberra to celebrate a Mass at the Changi Chapel, which has been reconstructed in the grounds of the Royal Military College, Duntroon. Father Simon-Thwaites, then Lieutenant Hugh Simon-Thwaites, helped Lieutenant Hamish Cameron-Smith to build the chapel in 1944.

For both men, yesterday's Mass was an emotional one. For the extremely modest Father Simon-Thwaites, it was "overwhelming". He said he would have preferred to have prayed on his own, rather than in front of a congregation. "Tomorrow we (he and Mr Cameron-Smith) will come back to say an old Mass, like the one we said in Changi," he said.

Mr Cameron-Smith said the two had visited the chapel on Thursday night "to get over the emotional side of it" before yesterday's Mass. It was the first time they had seen the chapel since Changi.

Father Simon-Thwaites now lives in Britain and Mr Cameron-Smith works as an architect in Zambia. While in Australia they are visiting and travelling with Max Lee, who saved the chapel from destruction.

Mr Cameron-Smith explained that the chapel had been built with the permission of Japanese officers. Prisoners who had worked out of the camp had "pinched" what materials they could. "Bringing them in could be very difficult," he said.

The only building plans had been a sketchy outline drawn on the ground. But yesterday Mr Cameron-Smith seemed pleased with the outcome — if not a bit surprised at some of the features. "I don't remember a gate," he said. "I don't think I had a gate."

Told it was in the photograph taken of the chapel when it was in Changi, he moved on to another part of the design, giving suggestions as to how it could be improved.

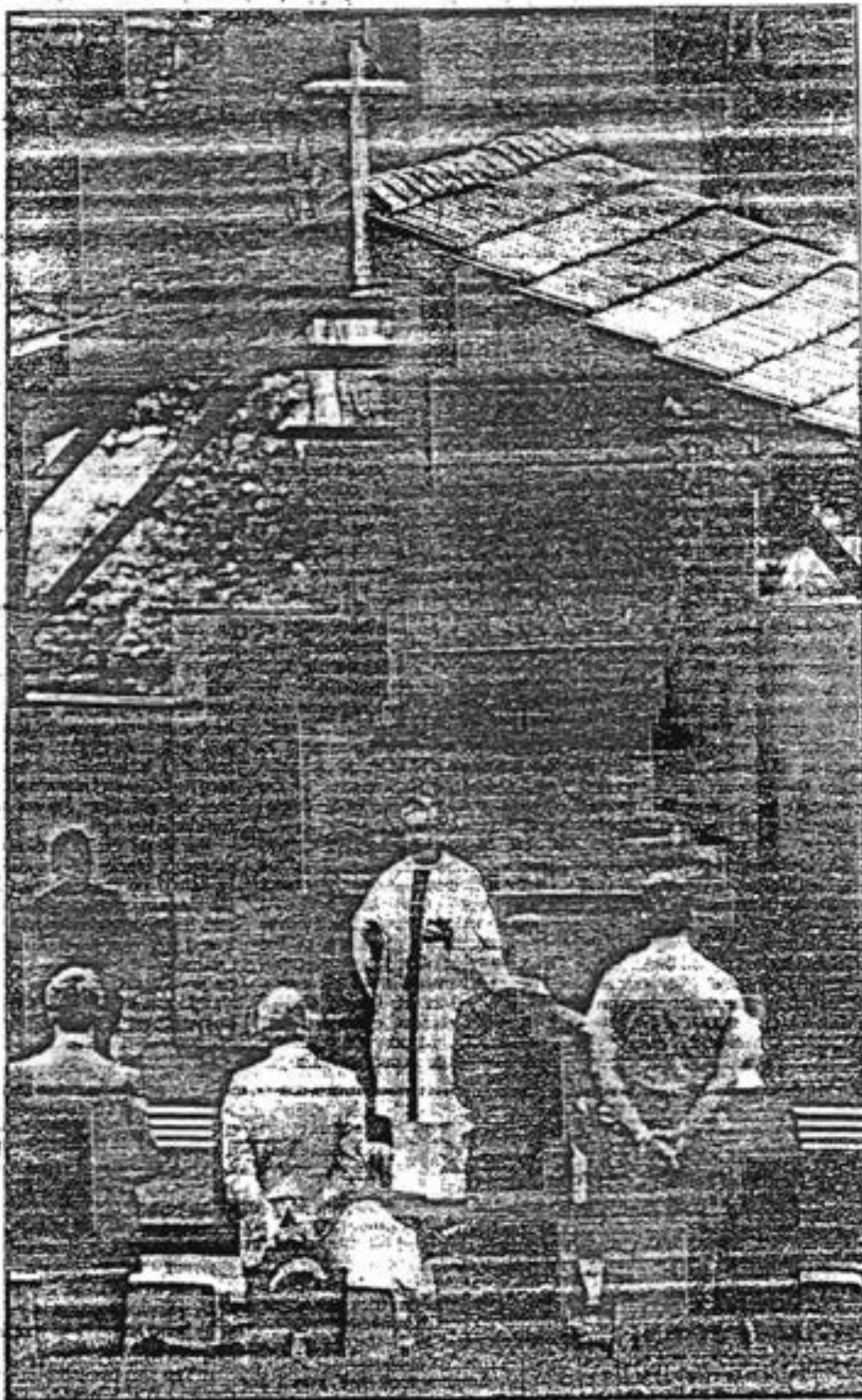
"I cannot believe it is here," he said. "I did feel for a minute some of the chapel [should have been] here," he said. "So many died. It was pathetic."

Some parts of the chapel are missing, including four name plaques Mr Cameron-Smith inscribed in memory of four friends who died in the camp, and the memorial plaque. But apart from the new columns and a couple of new rafters, he said 90 per cent was the original chapel.

The chapel is a memorial to Australia's 35,000 men and women taken prisoner in all wars.

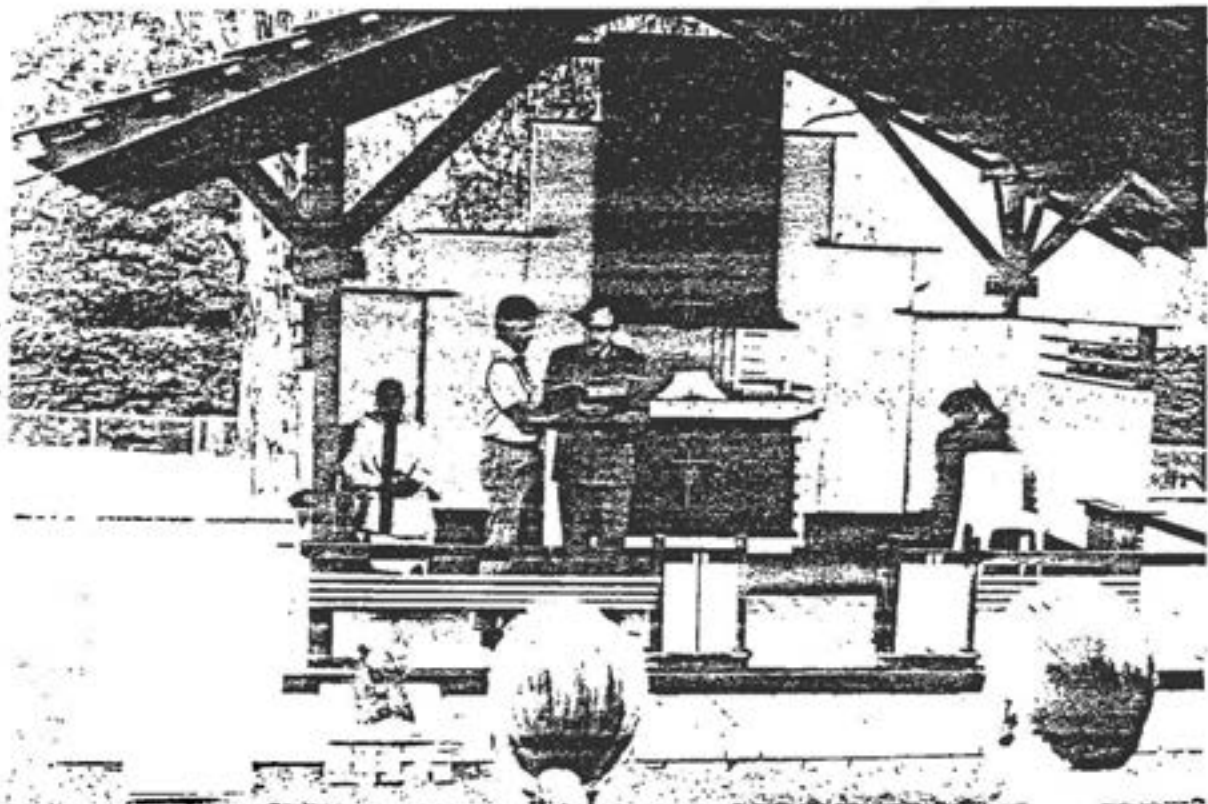
The idea to bring it to Australia was that of Mr Lee, then a corporal, who in November 1945 went to Changi with the Australian War Graves Registration Unit to help dismantle the camp. He drew plans and took measurements and for decades heard nothing more of the chapel till he was contacted in 1987 to be told that it was stored in the War Memorial's warehouse at Duntroon.

The chapel was dedicated in August last year, but a search for the architect and his assistant was successful only days before the ceremony which Mr Cameron-Smith and Father Simon-Thwaites had been unable to attend.

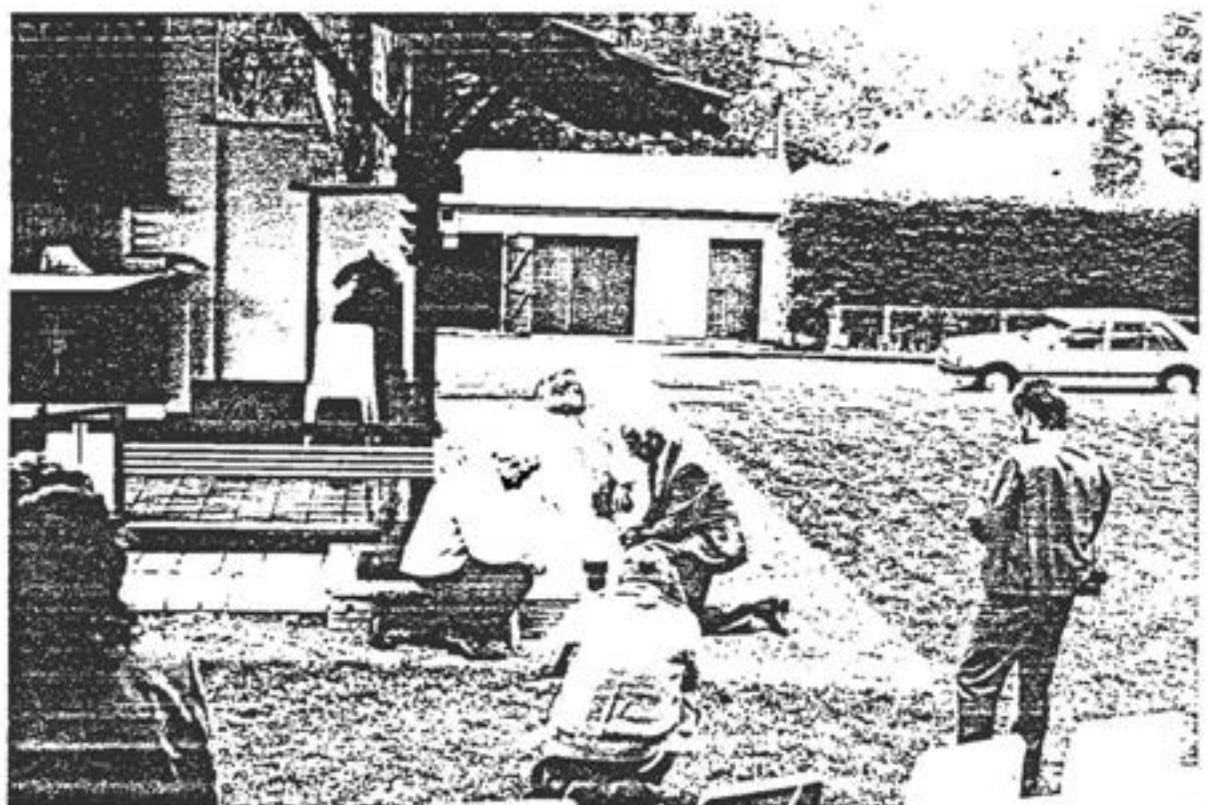


Picture: GRAHAM TROY

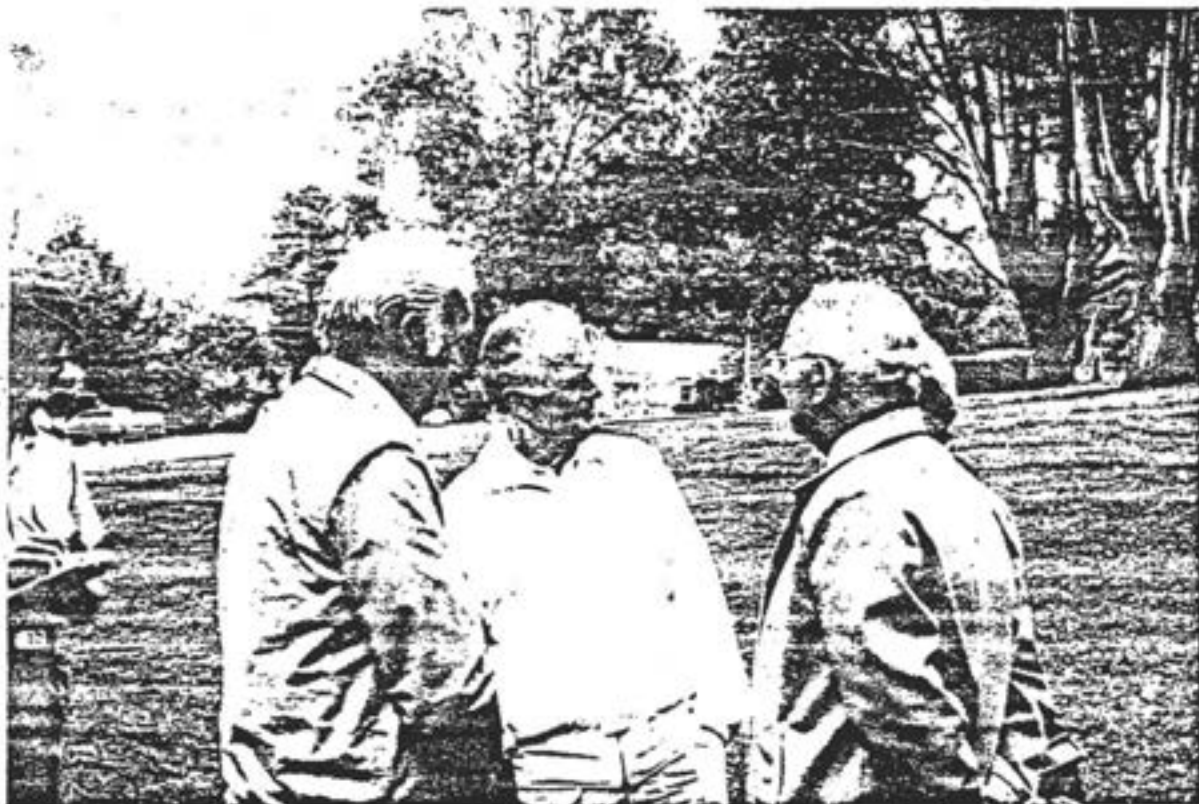
Father Simon-Thwaites celebrates Mass at the Changi Chapel which has been reconstructed at the Royal Military College, Duntroon. He was a POW in Changi.



Major John Jacques, CE ACT, reading the lesson



From left, Hugh Simon-Thwaites, Hamish Cameron Smith and Max Lee



Hamish Cameron-Smith (centre)



Father Hugh Simon-Thwaites

Annexure H

Rectification Work

H1 Letter and Details

H2 Photographs

**Murray Northrop
Consultants Pty Ltd**

Consulting Structural and
Civil Engineers

Cinema Center Building
Bunda St Canberra City
Telephone (062) 49 1800

GPO Box 429
Canberra ACT 2601
Facsimile (062) 48 0383



2689*
December 21, 1988

Peter Freeman & Partners Pty Ltd,
Architects,
17 Empire Circuit,
FORREST,
A.C.T. 2603

For the
attention of: Mr I. White

Roman Catholic Chapel
Changi Prison Camp
Currently erected at R.M.C. Duntroon

Dear Sir,

As you know on December 13, 1988 we inspected the completed structure of the Changi Chapel at Duntroon.

Considerable outwards deflection was evident in the two front posts that support the timber roof structure. This distortion has been caused by the horizontal thrust imposed on the posts by the diagonal struts intersecting the beam from two directions.

Our calculations show that the posts are most likely overstressed as a minimum of 22 grade timber is required to satisfactorily withstand the theoretically imposed stresses.

The rear two posts are receiving support from the three perimeter stud walls and have not exhibited the same degree of movement. These posts will be structurally adequate if they are securely fixed to the stud walls and the walls adequately braced.



page two

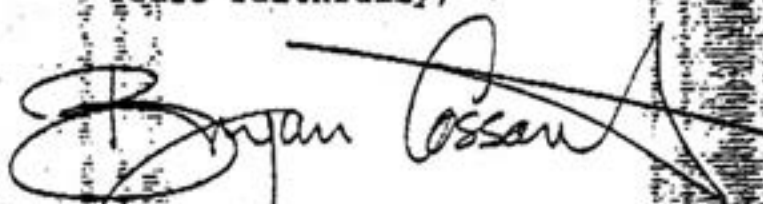
The front two posts are not structurally adequate and will need to be replaced with 120x120 F22 green hard wood. Red ironbark should be available in this stress grade. Refer SK1 for our recommendations.

Our calculations show that the structure is stable under expected wind loads provided it is adequately engaged to the three stud walls and these walls braced as shown in SK2. Additionally the roof should be braced with diagonal steel or timber bracing.

Observations on site indicate that the structure is very flexible. The reason for this could be that the existing stud wall and roof bracing is not rigid enough. Adherence to the details on SK2 will improve the rigidity of the stud walls. The roof bracing appears adequate, however we recommend that the tiles be selectively lifted to allow the installation of supplementary screw fixing of the existing timber braces to the top of all intersecting rafters.

These recommendations are designed to provide a structure that is strong enough for its purpose. We have not addressed the issue of stiffness or flexibility of the structure except for the comments above. It is our opinion that considering the nature of the structure it should remain basically as originally built.

Yours faithfully,



Bryan Cossart
Associate Director

Date 20.12.88

Project

Sheet No SK1

Murray Northrop
Consultants Pty Ltd

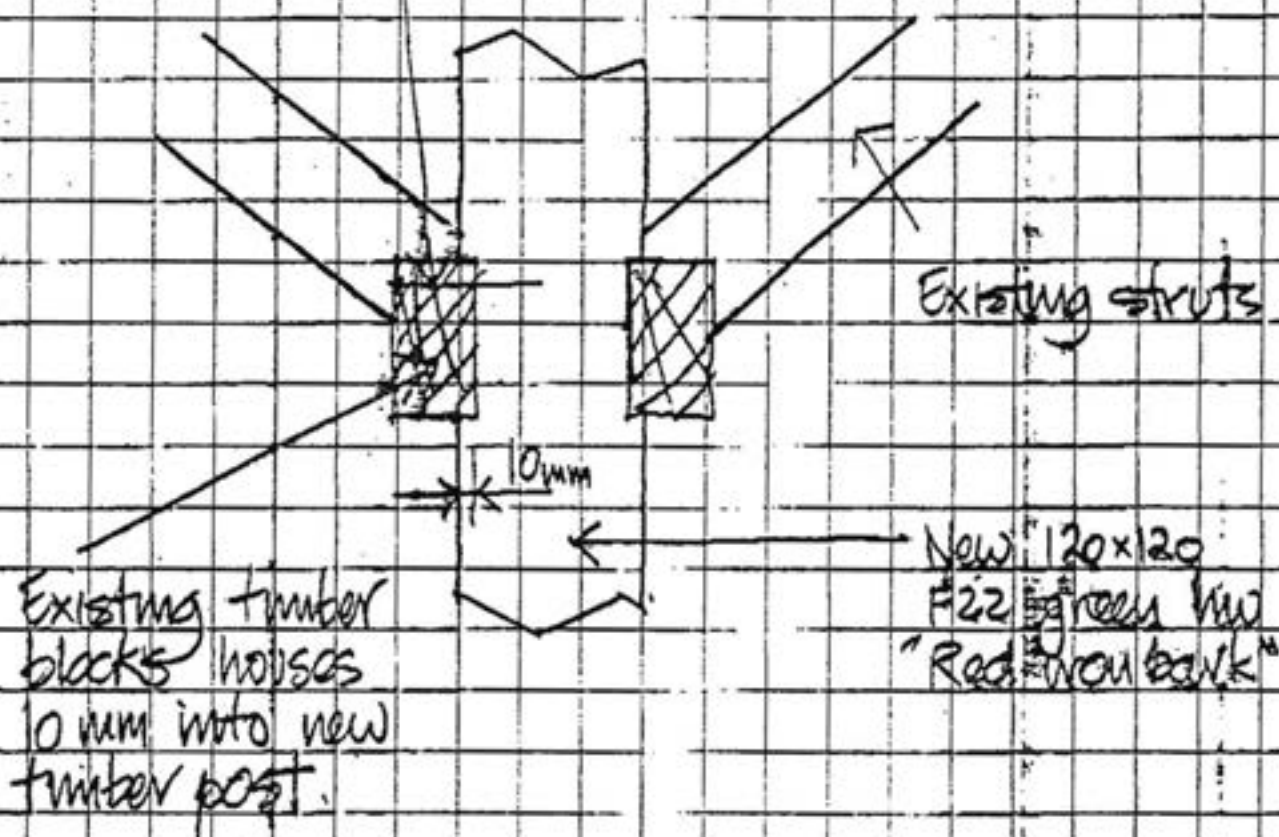
Consulting Structural and
Civil Engineers

Cinema Center Building
Bunda St Canberra City
Telephone: (062) 49 1800

GPO Box 429
Canberra ACT 2601
Facsimile (062) 48 0383



Concealed screw
fixing suggested



DETAIL FOR NEW 120x120
TIMBER POSTS

SK1

Date 20.12.88

Murray Northrop
Consultants Pty Ltd

Cinema Center Building
Bunda St Canberra City
Telephone (062) 49 1800

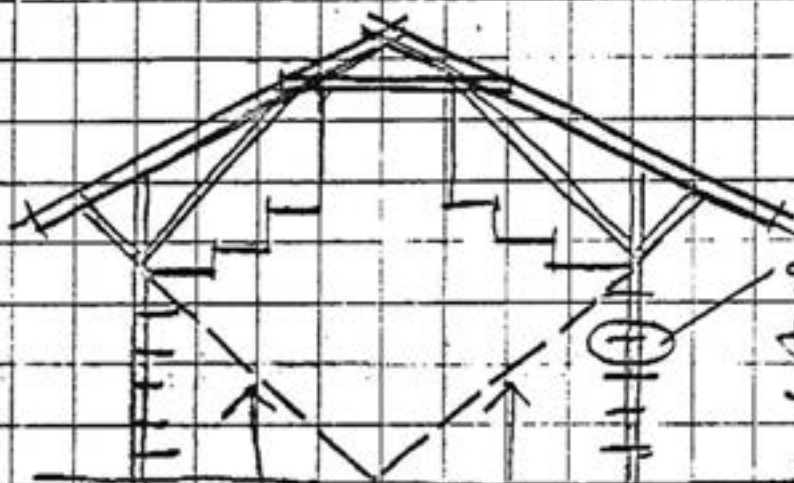
Project

Sheet No

SK 2

Consulting Structural and
Civil Engineers

GPO Box 429
Canberra ACT 2601
Facsimile (062) 49 0383



secure screw
fix lost stud
to existing
post

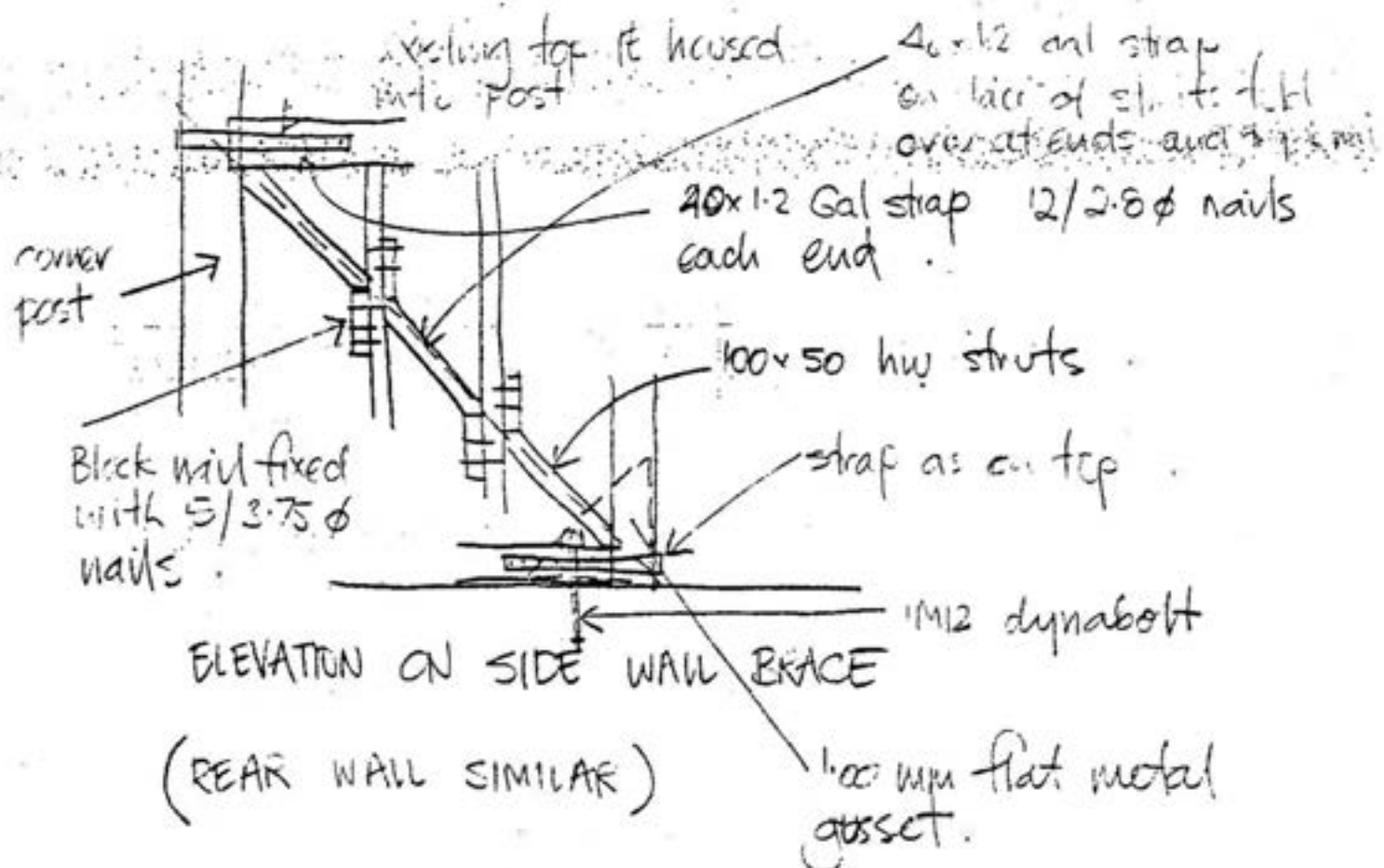
New 90x45 timber
struts fitted tightly
and blocked in
position between
existing studs

NEW BRACING DETAIL FOR REAR WALL

Similar detail to
side walls i.e. brace
with 90x45 away from
top of post at corner.

SK 2

Chamal
Chape



(IN)

To

Instruction No.

4124

Received by

Issued by

Copies to

Peter Freeman

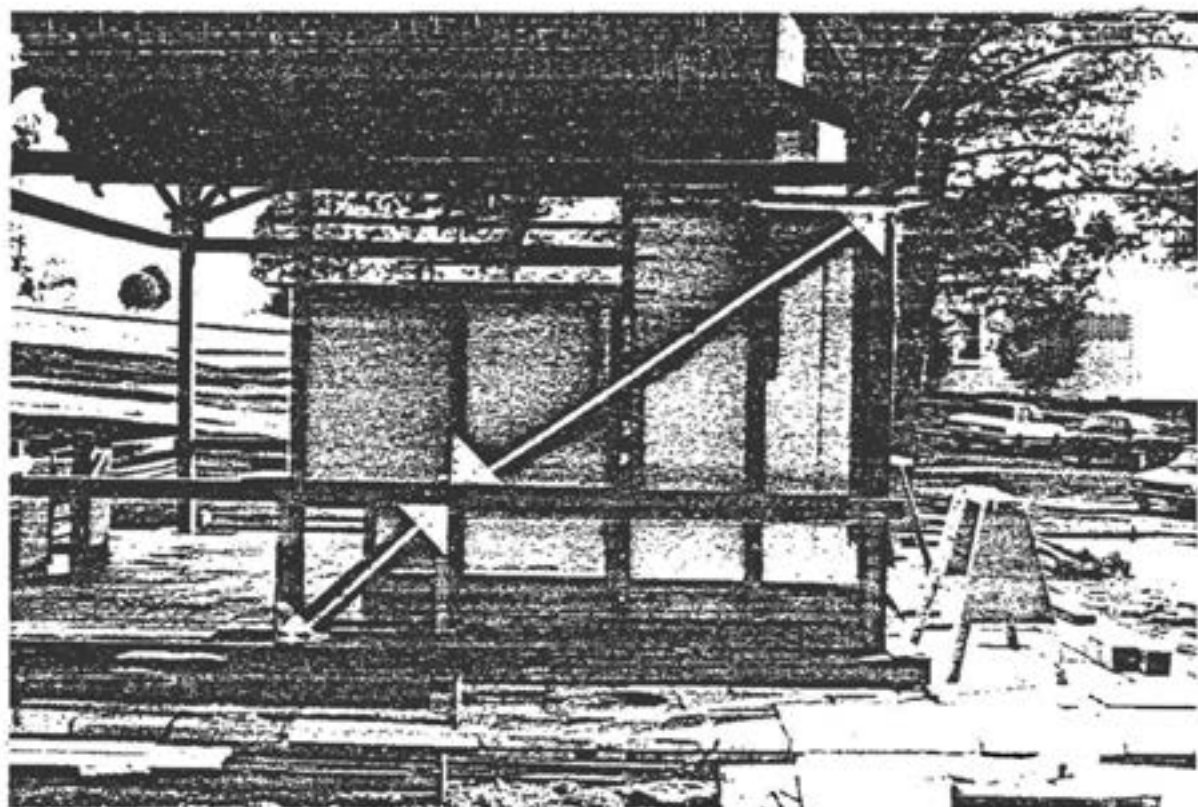
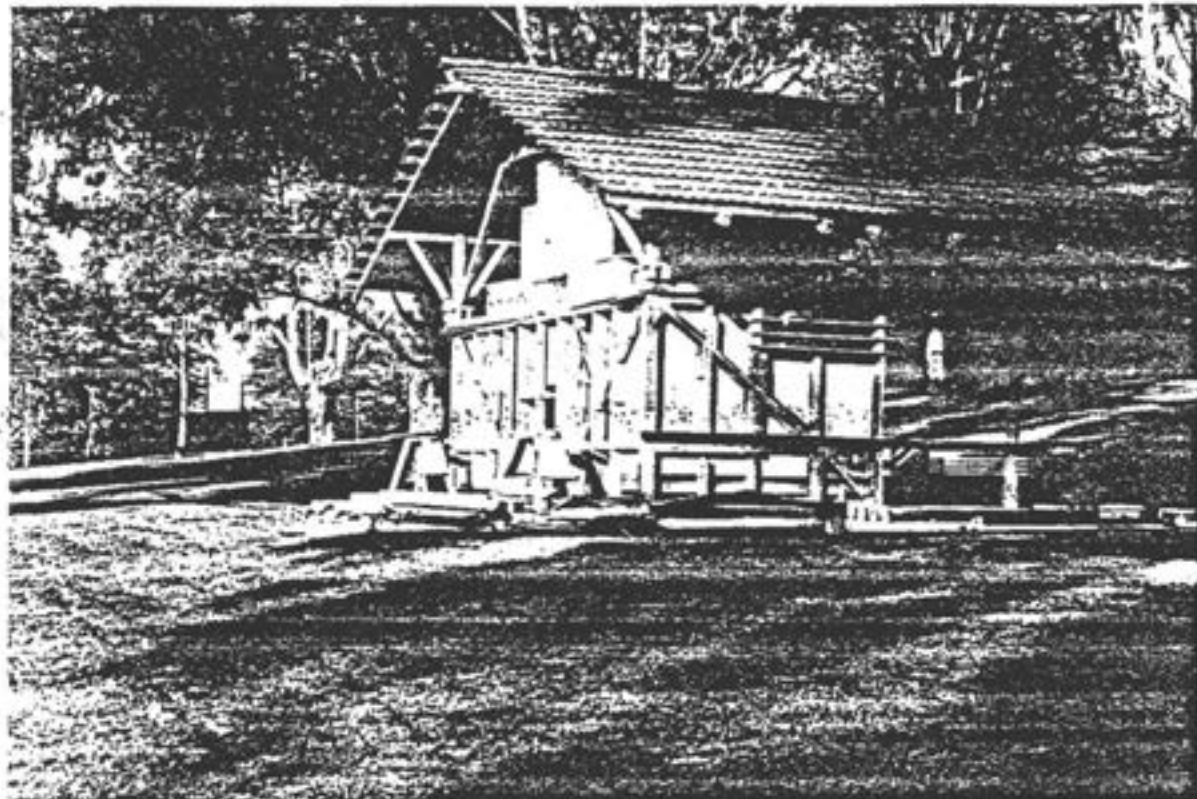
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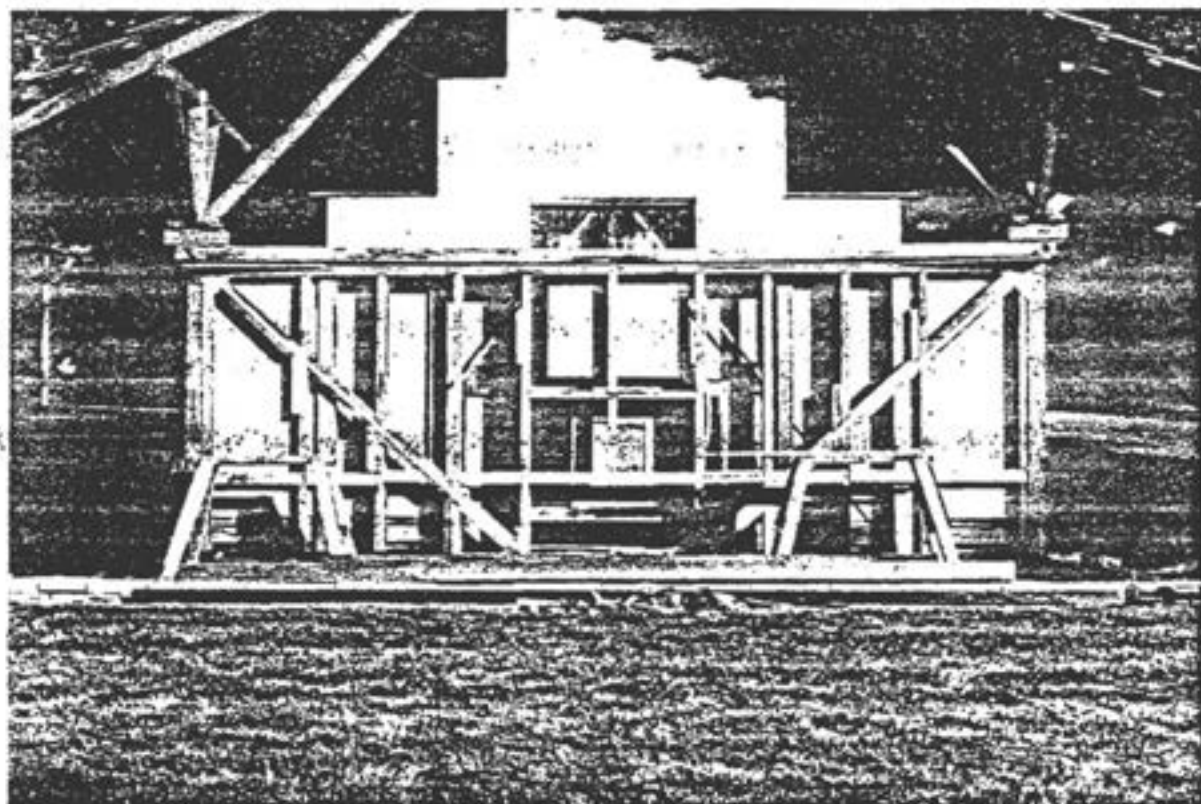
14.2.89

Any inspection carried out by Murray Northrop Consultants Pty. Ltd. does not relieve the Contractor of his responsibility to construct the structure in accordance with the drawings and specifications.

Statements set out here do not relieve the Contractor of his obligations to obtain approvals from authorities having jurisdiction over the works.

This document is not to be used for any other purpose.





Annexure I

Peter Freeman & Partners Pty Ltd Drawings

- 11 As built drawings
- 12 Drawings showing original members used in reconstruction

