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ROCHESTER CATHEDRAL

The third phase of conservation of paintings in the crypt was started on 18th January 1988 and lasted 12 weeks. Two main areas were included in this programme of work: firstly the two bays in the north-west corner of the crypt, Nos. 40 and 33 on the ground plan, and secondly, the bay adjoining St. Ithamar's Chapel - No. 18 on the plan.

The work was carried out in conjunction with students from the Courtauld Institute of Art Wall Paintings course, in two groups of three students, each group working for a period of 6 weeks.

Bays 33 and 40

Although all the sections of these bays are clearly in desperate need of conservation, it was decided to treat the area in most danger of collapse plus two, more complete, sections that would give an impression of how the original decoration may have looked.

Condition :

It was in bay 40 that the most vulnerable areas of painting were located, with three of the four sections either partially or, as in section C, almost totally lost through detachment. The reasons for this extensive damage are many fold:

- a) Past incursions of moisture. There appear to have been several alterations to the areas above and to the west of of the northwest wall, immediately adjoining this bay. These include the blocking of windows and subsequent infilling of that area and the creation of a concrete floored yard with w.c.'s. (See detail plan2). The drains in this area are constantly blocking with pigeon refuse, and, as the walls are so high, any moisture that builds up takes a long time to disperse.

The laying of a concrete floor in the crypt itself will clearly not have aided evaporation of any moisture, and damage to the pillars, capitals and lower parts of the ribs suggests a previous rising damp problem. However, protimeter readings suggest that there is no particular damp problem at the moment.

- b) The above problems have added to a build-up of salts already present in the limemortar which comprises of local sea sand and lime. This has resulted in a breakdown of this mortar and the lime 'skim' which was a preparatory coat for painting. Tests have indicated that these salts are chlorides.
- c) Constant changes in temperature and humidity have caused movement of these salts, resulting in the breakdown of both the support and the surface, causing detachment, efflorescence and blistering. It is interesting to note that the worst areas of damage in these two bays are directly related to the position of the north door and window, which would create dramatic temperature changes. (See plan 3).
- d) In earlier times the crypt was used as a coal store for the heating system and also as an ammunition dump for the castle, both of which would have meant large amounts of sulphur in the air. This has reacted with the calcium to form a very hard calcium sulphate crust, which has trapped dirt and grime making it exceedingly hard to remove. The hard crust has also meant a great deal of surface distortion, especially when coupled with the salts accretion behind.

Treatment :

In general bay 33 was not as badly damaged as bay 40, (except in the section nearest the north window), the plaster support and masonry pattern being in fairly good condition. As a result it was decided to treat section C of bay 33 and sections A and D of bay 40.

Bay 40 - D :

This section was in a terribly precarious state, areas hanging free of their supporting plaster, blisters, etc., and was clearly in need of detachment and transfer.

- i) The surface was cleaned with soft brushes to remove dust and cobwebs, and then 3 layers each of silk crepeline and a strong tissue were stuck to the surface of the painting with a water soluble animal glue.
- ii) When dry the coating was keyed up to marks on the stone and the painting, plus facing, was cut down in sections, (see plan 4), the size and shape of each being dictated by both manageability and suitability of cut positions.
- iii) The crumbling and salts laden support plaster could now be raked out to a depth at which it was firm and fresh lime plaster was applied to bring the level up to that of the original. The mix of the new mortar was :- 2 local sharp sand : 1 lime putty : 1/6 H.T.I. (a pozzolanic agent). This plaster was applied in several coats over a 1 week period and allowed to dry for 2 weeks before re-attachment.
- iv) Meanwhile the loose remains of plaster adhering to the backs of the pieces of detached painting, were carefully removed with scalpels and small rifflers.
- v) An 'adhesive' mortar, comprising 1:1 snodland sand : lime putty, both finely sieved, was then applied in a thin coat to the backs of each section of painting. These were lined up with key marks and rolled into place, and the facing was steamed off the following day. Cleaning of the new stable surface was effected as below.

Bay 40, Section A & Bay 33, Section C :

Condition :

Although the deterioration was not as extensive as in Section D, the paint surface had begun to bubble and blister and separate from the underlying 'lime skim' as a result of salts movement. This action had already resulted in a large amount of loss to the masonry pattern and rosettes on the south side of section A where only the stain from the original pigment remains to indicate the pattern. Indeed, only a 'negative' image of many of the rosettes and stems remains throughout this area. Where the rosettes are intact the vermillion has oxidised (only partially in some cases), leaving a blackened shape. However, after cleaning this has been improved somewhat, and it is possible

to see clearly the form of the original decoration.

Treatment :

i) Pre-cleaning consolidation.

Because of the delicate nature of the painted surface, it was necessary to consolidate the area before cleaning could take place. However, in order that the dirt and thin calcareous crust that held it were not also fixed, it was decided to gently push back the blisters and flaking surface with warm water and small sponges. This softened the lime ground and enabled re-adherence of the flakes and also removed any surface dirt etc. Larger areas of detaching plaster were fixed by injecting a lime + H.T.I. grout behind and pushing back under pressure.

ii) Cleaning.

The major problem on all these sections, as in bay 18, was the formation of a calcite skin through salts action, which had trapped dirt, soot, etc. on the surface leaving a grey patina. A method had to be found to dissolve the crust without touching either the pigment or the lime ground on which it was painted. A form of poulticing was devised using paper pulp impregnated with EDTA, (a weak acid), Ammonium Carbonate, sodium bicarbonate and carboxy methyl cellulose to aid both consistency and adherence. The net result of the reaction is to transform the calcium sulphate of the crust into ammonium sulphate, which is soluble in water. Prolonged tests were carried out in order to determine the optimum time for the poultice to be applied and it was discovered that different areas needed different amounts of time. Once this had been worked out, all the section of vault were cleaned this way, including

iii) Consolidation :

Because the initial consolidation had been more or less temporary a method of post cleaning consolidation was necessary, and as synthetic consolidants were not considered suitable, it was decided to give repeated infusions of limewater in order to strengthen the bonding of the plaster, the lime skim and the pigment. In the apices where the surface was most badly affected by salts resulting in a certain sponginess with excessive bubbling, we added a 5% solution of skimmed milk to the limewater.

iv) Repairs :

Extensive tests were carried out to make a mortar that would blend both in tone and colour with the painting. The overall mixture that resulted was a combination of a local sharp sand, a sand from Sevenoaks and lime putty in a 1/4 : 1 3/4 : 1 ratio, although this sometimes varied depending on the colour of the immediate area to be repaired. In some cases, and particularly where only the ground layer had been lost, a tonally adjusted lime ground was applied.

Addenda :

- i) The lower part of bay 33, Section C had begun to detach to such an extent that it was deemed necessary to transfer and this was carried out in exactly the same way as that described for bay 40. (See plan 4 for diagram of detachment).
- ii) The Kentish rag stone ribs of the vault had also discoloured and these were cleaned with brushes and water, giving a far more aesthetically pleasing impression to the cleaned bays.
- iii) Serious consideration must be given to the subsequent lighting of the crypt and most especially to those areas that have been conserved. The repairs carried out to bays 40 and 33 have been done with the source of light expected to be somewhat muted and defracted, much as the original cariole light would have been. Any direct raking or bright light will not show either the cleaned painting or repairs to their best advantage.

Bay 18

The conservation carried out in 1985 on this bay involving the transfer of all the sections of the bay and two arch soffits, has consolidated these paintings to the extent that further work can now be attempted. However, after exhaustive testing in both 1985 and 1986 to find a suitable method for cleaning, including analysis done by the British Museum, it was not found to be possible to break down the extremely hard calcite crust which had formed over the surface. Limited success had been achieved with an ammonium and sodium bicarbonate poultice, but large areas remained untouched.

After nearly 3 weeks of further testing on section C, a breakthrough was made using an EDTA, ammonium carbonate and sodium bicarbonate impregnated paper pulp poultice. (The method used in this bay was later used to clean bays 40 and 33). It is a similar method to that used by the Italian conservators Paolo and ~~Lau~~^{Lu}va Mora, but with slightly different proportions of the various chemicals, and is both extremely effective and very controllable.

Section C was chosen as the first area to be cleaned in this phase as it was the most complete, with all 3 roundels virtually intact and the promise of some dramatic results. Indeed, the cleaning has removed the grey/green coating to reveal very strongly defined characters in contrast to the background, eg. the southern most roundel with the kneeling figure with Christ pointing through an open door. Cleaning has also shown that this scene is now unlikely to be The Doubting of St. Thomas, as what was previously thought to be Christ's wounds are clearly a fold in his under-garment.

Furthermore, the cleaning has revealed some exquisite drawing, especially of heads, eg. the head of Theophilus in the central roundel, where he receives his soul in the form of a bond from a statue of the ~~V~~^Virgin on an altar. The colours too have proved to be very vivid and in fairly good condition, considering the state of the vault in 1985.

Treatment :

i) Cleaning :

Carried out with the above poultices, applied for 30-60 minutes, depending on the area, and removed with cotton wool swabs and water. Because of the very uneven surface, it was often difficult to remove the broken-down crust from the pits and troughs, but this was found to be possible to remove either with scalpels or careful re-application of tiny poultices on selected areas.

The black pigment was quite fugitive and thus the poultice sometimes more difficult to clean off thoroughly, resulting in a whitish bloom over the pigment. However, this could be removed with very gentle swabbing with the plain chemical solution followed by rinsing with de-ionised water.

ii) Fixing :

On close inspection it became apparent that occasional patches of glue from the transfer process had not been fully removed and these had contracted, lifting small flakes of paint. To fix these back it was necessary to face up the area with a square of Japanese tissue and then gently press back the flake with a sponge dipped in hot water. This both softened the paint fragment enough to flatten it down and at the same time dissolved much of the glue causing the problem. Following this a sponge or brush dipped in a weak solution of Isinglass, a very pure collagen derived from fish, was applied to push back and fix the flake.

Other areas of residual glue that had not contracted and detached, were removed either with hot sponges or a very gentle and localised steaming.

The work in section C is by no means complete, further cleaning and toning-down of repairs still remain to be done, but the results so far achieved and the tests done elsewhere in bay 18 and the arch soffits, indicate that this would be an extremely desirable prospect.

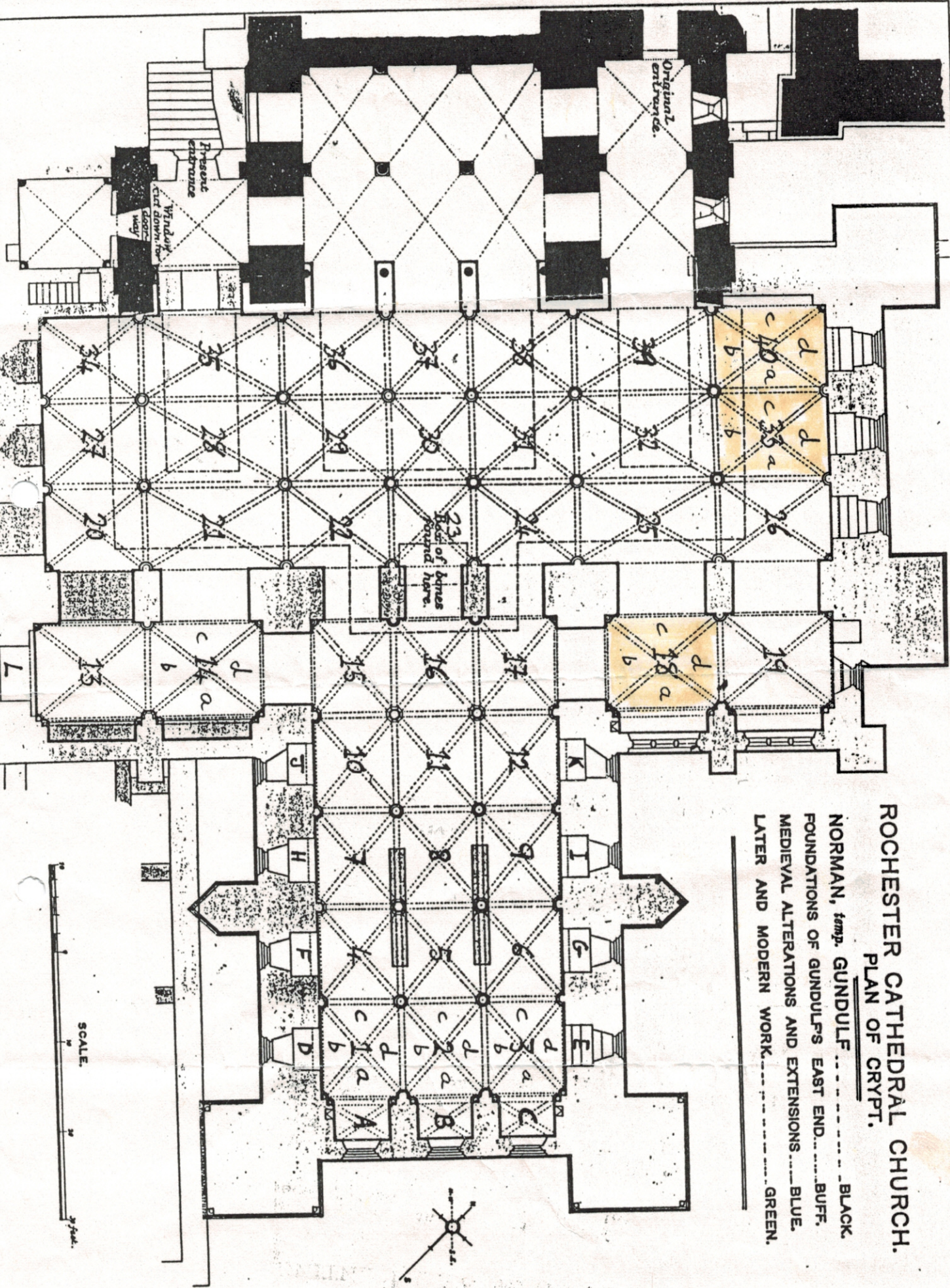
'William of Perth' Tomb - North East Transept :

The colour wash applied to the large area of loss in the 1987 conservation programme, did not dry as intended and this was removed and a more suitably toned colour wash applied.

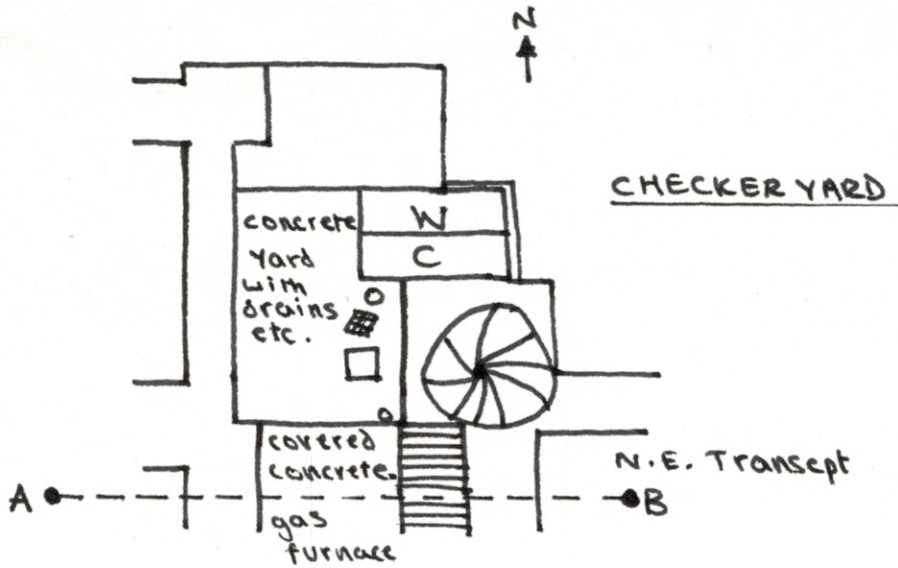
The work was concluded on 8th April 1988.

ROCHESTER CATHEDRAL CHURCH.
 PLAN OF CRYPT.

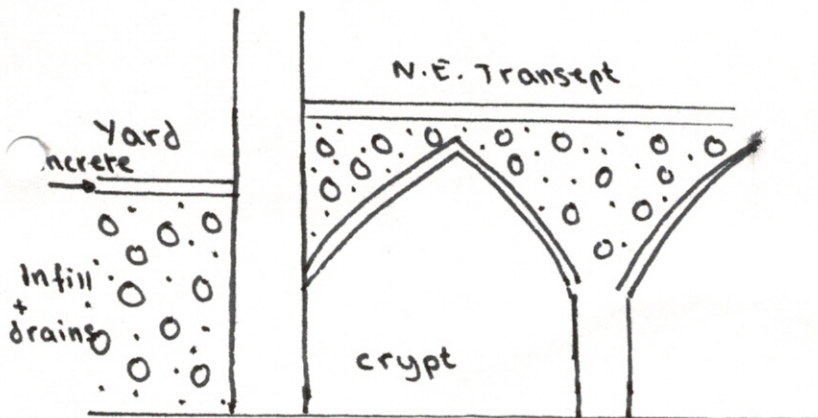
NORMAN, *temp.* GUNDULF BLACK.
 FOUNDATIONS OF GUNDULF'S EAST END BUFF.
 MEDIEVAL ALTERATIONS AND EXTENSIONS BLUE.
 LATER AND MODERN WORK GREEN.



PLAN 2



SECTION THROUGH A - B



PLAN 3

BAY 33

BAY 40

WINDOW

DOOR

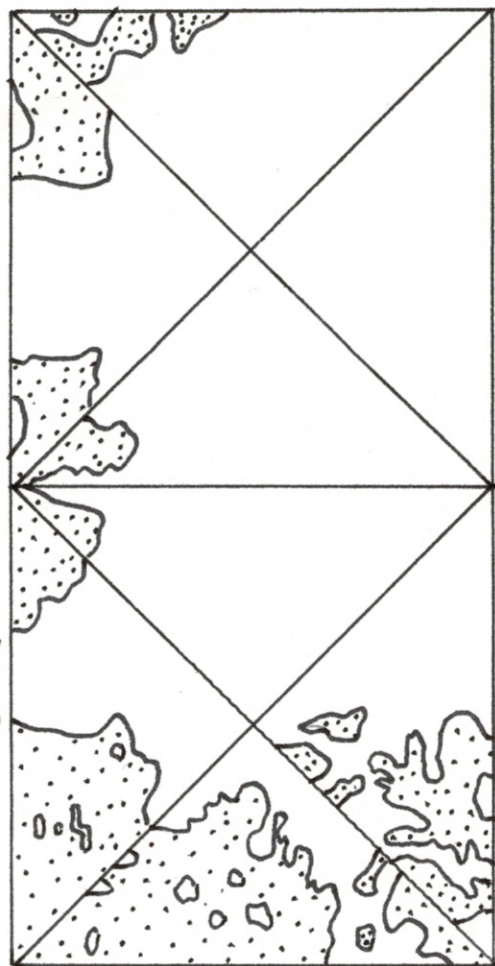
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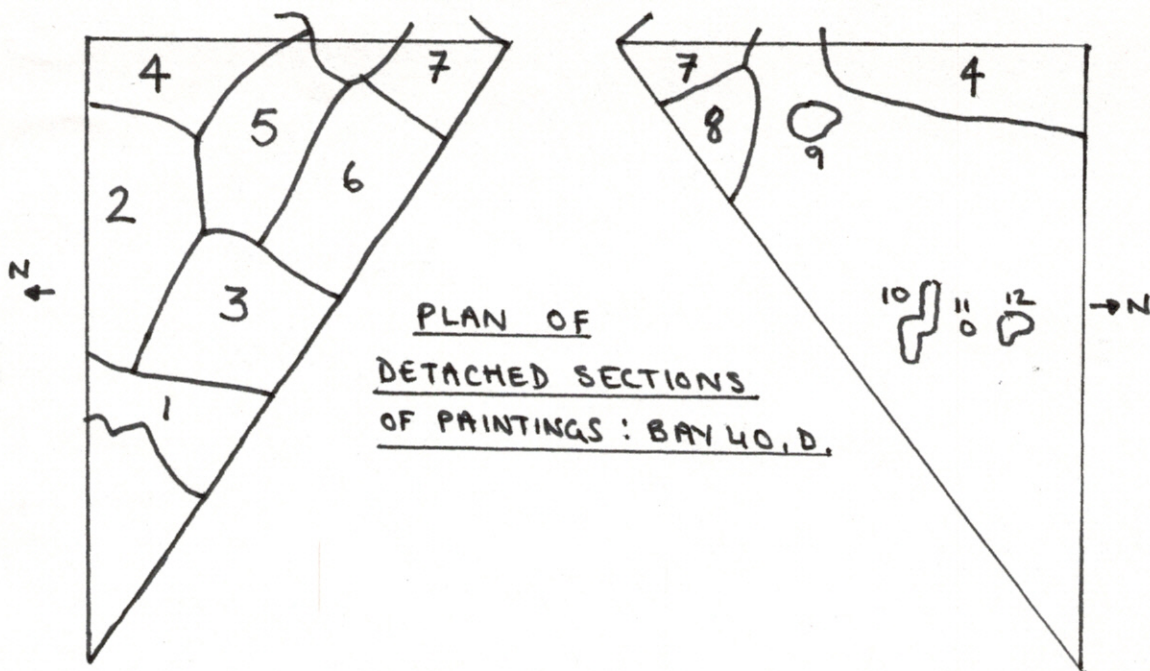


= AREAS OF LOSS



= REMAINING PAINTING

PLAN 4



DETACHED
SECTIONS: BAY 33, C

