

# Repair Work to Bykle Kyrkje

July 1, 2001

## ENTRANCE VESTIBULE:

The first repair was made to the bottom sill below the exterior 'weather' door of the church. It was rotten along its entire length on the underside (25-30% height, 100% width), and was very rotten directly below the exterior door (60-75% height, 100% width). The concrete steps, mortared directly to the side of the church, will have contributed to this large area of decay.

It was decided to replace the entire bottom sill. A new one was hewn from good quality pine wood (approx. 2-4 mm per annual growth ring, few knots) and hand planed to match the interior finish of the logs in the entrance vestibule.

Before the sill work was carried out, the floorboards in the entrance were pulled up and inspected. Several of them were rotten on the end abutting the exterior door, and will need replacing. We also noticed that most of all of the boards had been recycled old roofing boards, with drip grooves and 'chevron' patterns on their undersides.

The floor joists (or 'sleepers' when something is laid directly on the ground as in 'railway sleeper') were also pulled up and inspected. All three were in various states of decay, and contained large amounts of sapwood. We decided that now was the best and most cost-effective time to replace them. Three new sleepers were hewn to contain as much heartwood as possible, with only small amounts of sap on their upper sides. It would be better for these sleepers to be raised slightly off the ground onto small stone piers, so as to reduce the absorption of moisture.

## Nave Cable - End Walls: (Walls III & CCC on plan)

Wall III: Wall III had a bottom sill with approx 25-30% rot in height and 100% in width. Luckily, the rot did not go as far as the exterior and interior corners. The decayed section was removed, and a new piece spliced into position. Again, the work was hewn and heartwood used as much as possible.

Wall CCC: Wall CCC had similar decay to wall III, only the rot had spread to both the exterior and interior corners. Again, the decayed area was removed and a new piece installed to provide stable support points at both corners. On both walls III and CCC, only a hewn finish was required to match the existing exterior.

## Exterior Panels:

Overall, the exterior panels were in good condition, and most will be re-used. Some showed decay at their bottom ends, often where they came into contact with cement mortar. Others were cracked or split and came to pieces when being removed.

Some old repairs/splices in the panels should be carefully examined or repaired again, as rain may find its way through them.

Some panels were quite old, with profiles on their edges, while others were more modern, saw-cut repairs.

STONE FOUNDATION (or DWARF-WALL):

The foundation wall varies from very good to poor condition. Areas where flat, square stores have been wed seem to be holding out quite well. Other areas with round stores have suffered more from ground movement, leaving many areas of bottom sill unsupported. The stones could be pulled out easily by hand. We collected several tonnes of flat stores from the area for this repair work.

In an attempt to strengthen the stonewall in the past, much of it has been 'pointed' with cement mortar. This may have strengthened the wall, but it has possibly caused some of the problems with the bottom sill decay. Some of the cement wraps entirely around the bottom sill, preventing the free flow of air needed for wet wood to dry out again.

OTHER COMMENTS:

I couldn't help but notice a large amount of deflection/bending on the main ceiling joists in the nave of the church, in some it looks to be as much as 10 cm. This is not surprising as a beam of that size (10x15cm) is really too small to remain stiff over that span, and will sag under its own weight.

After having had a look at the bell tower, which seems in good order, it occurred that the weight of the tower may be fully resting on those ceiling joists - an alarming thought considering the mass of the tower and the size of the ceiling joists.

Having only had a quick look at the root structure, it was not possible to determine how the forces of the tower were being channelled to the ground with 100% certainty, but it did look as though they were resting on the ceiling below. It did not appear that the tower was being suspended or assisted by the principal roof rafters in any way.

I would suggest that the tower is investigated further to establish where it is getting its support from, and how the forces it produces are being channelled safely to the ground. There may not be a problem with it now, but any joist that has 10cm of bending is clearly telling you that something is wrong somewhere.

Otherwise, I have greatly enjoyed working on this beautiful little church. The quality of work from past carpenters is excellent throughout the church, and it felt good to put our work alongside theirs.

I also enjoyed discussing conservation practices and what actions should be taken - I don't remember disagreeing once, so we must see things with a similar eye.

Best of luck with the ongoing repair work to Bykle Church, and thank you for the opportunity to take part.

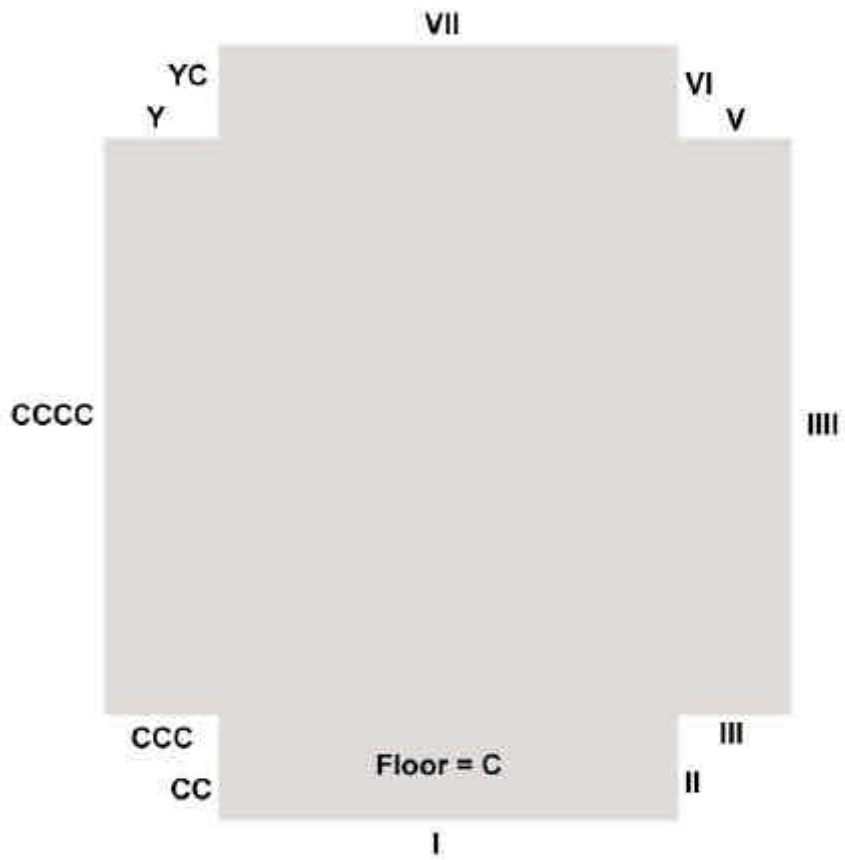
(Signed)

Daniel Addey-Jibb

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## Appendix 1 - Numbering for Panels



All panels are numbered: Left, 1, 2, 3, ... 9, 10, 11, Right