

Structural Appraisal

of

Gazebo at Bank Hall Sawley

for

Martin and Claire Molyneux

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Gazebo at Bank Hall, Sawley

1. Introduction

The Gazebo at Bank Hall sits 50m South East of Bank Hall. The River Ribble flows along the East elevation of the Gazebo. During the floods in December 2015, the water level of the River Ribble raised to 1.2m above the top of the river retaining wall. This caused significant structural movement to the Gazebo.

This report summarises the structural condition of the Gazebo and recommends any repairs.

2. Inspection

An inspection of the structure was carried out on the 31st of March. It was a clear dry day.

Access to the East elevation was limited as this elevation forms part of the river retaining wall for the River Ribble.

3. General Description

Bank Hall is a Grade II listed property in Sawley, Clitheroe. The Gazebo is an early 19th Century structure, which also has Grade II listed status.

The Gazebo is a single storey structure approximately 4 metres wide by 4.5 metres long. The structure varies in height, with the East elevation forming part of the river retaining wall, 2.5m below ground level. The walls are solid stone masonry with lime mortar. The walls have a thick pebble-dashed cement render finish externally and are plastered internally. The masonry walls have a parapet around all four sides, with a battlement detail.

The West Elevation has a door opening and all elevations have window openings, each with sandstone sills and jambs. The ground floor is a concrete slab. There is no roof on the structure.

The Gazebo has been temporarily propped, using scaffold poles and scaffold boards to brace each elevation.

4. Structural Description

4.1 Foundations

The foundations have not been exposed or investigated but there are signs of significant settlement below the foundations. This was caused, or at least made worse, by the recent floods.

Gazebo at Bank Hall, Sawley

4.2 Walls

On all four elevations the cement render and stone wall have significant cracks, largely by the window and door openings. Each wall has also undergone significant movement, which is partly historic and increased in magnitude after the flooding in December 2015.

Drawings 100 / 101 show the extent of cracking and movement of each elevation.

North Elevation

On the North elevation a significant crack, of 70mm wide, has formed next to the right window jamb, which extends around the window opening and follows up the wall to the base of the battlements.

This crack has caused the window stonework to drop out of plumb and the wall panel has moved laterally to the West, by 320mm.

East Elevation

On the East Elevation a large crack has formed diagonally from North to South, running from the top of the battlements to the bottom of the river retaining wall.

This crack has caused the window stonework to drop out of plumb and the wall panel has skewed to the South by 320mm and to the West by 300mm.

South Elevation

On the South Elevation cracking has appeared in the wall above the apex of the window and below the window sill.

The cracks have caused the wall to displace and offset the window stonework towards the West elevation.

The wall is unstable along this elevation; the wall is out of plumb outwards by 300mm and laterally by 300mm.

West Elevation

On the West Elevation there is a wide crack above the door opening, which follows up the wall to the base of the battlements.

The 2 windows and door frame are all out of plumb and have dropped towards the South West corner of the structure.

The wall is unstable along this elevation; the wall is out of plumb, outwards by 290mm and laterally by 320mm.

Due to the scale of cracking and the displacement within the walls it is clear that there is a settlement issue with the foundations, particular in the South West corner.

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5. Recommendations

Drawing 102 highlights the proposed repair details for the Gazebo.

It is not possible to connect the settlement and lean on the walls. The best that can be done is to stabilise the building in its present condition.

All vegetation should be removed from the masonry walls.

We would recommend that the masonry walls be tied together using cintec anchors. This would reduce any further wall displacement and stabilise the structure.

On the West Elevation, 2No. cintec anchors are to be installed at high level above the door opening in a staggered alignment.

On the remaining elevations 2 pairs of 2No. cintec anchors are to be installed at high and low level, above and below the window openings in a staggered alignment.

Due to the settlement issues, the Gazebo needs to be underpinned. We would recommend a mini-piling solution based on the site constraints; proximity to the river and the confined site. Pairs of steel cased driven piles, with a concrete fill can be installed on either side of the existing walls. The top of the piles are tied together with a reinforced concrete needle beam, which supports the wall above.

The masonry requires local repairs to all elevations:

- Voids and cracks should be infilled with stone and re-routed, both externally and internally, including around the dressed stone door and windows openings.
- Battlements to the East and South elevation to be re-built because they have been badly damaged by vegetation.
- Render to be repaired in lime where required, and the whole building could then be limewashed to cover up the repairs.

Gazebo at Bank Hall, Sawley

Drawing List

Drawing No.	Title
S07 / 100	Gazebo - Plan & Section
S07 / 101	Gazebo - Elevations
S07 / 102	Gazebo - Repair Details

Gazebo at Bank Hall, Sawley



Gazebo from across the river



North Elevation

Gazebo at Bank Hall, Sawley



East Elevation on River Side



South Elevation

Gazebo at Bank Hall, Sawley



West Elevation

Gazebo at Bank Hall, Sawley



Battlements along East Elevation



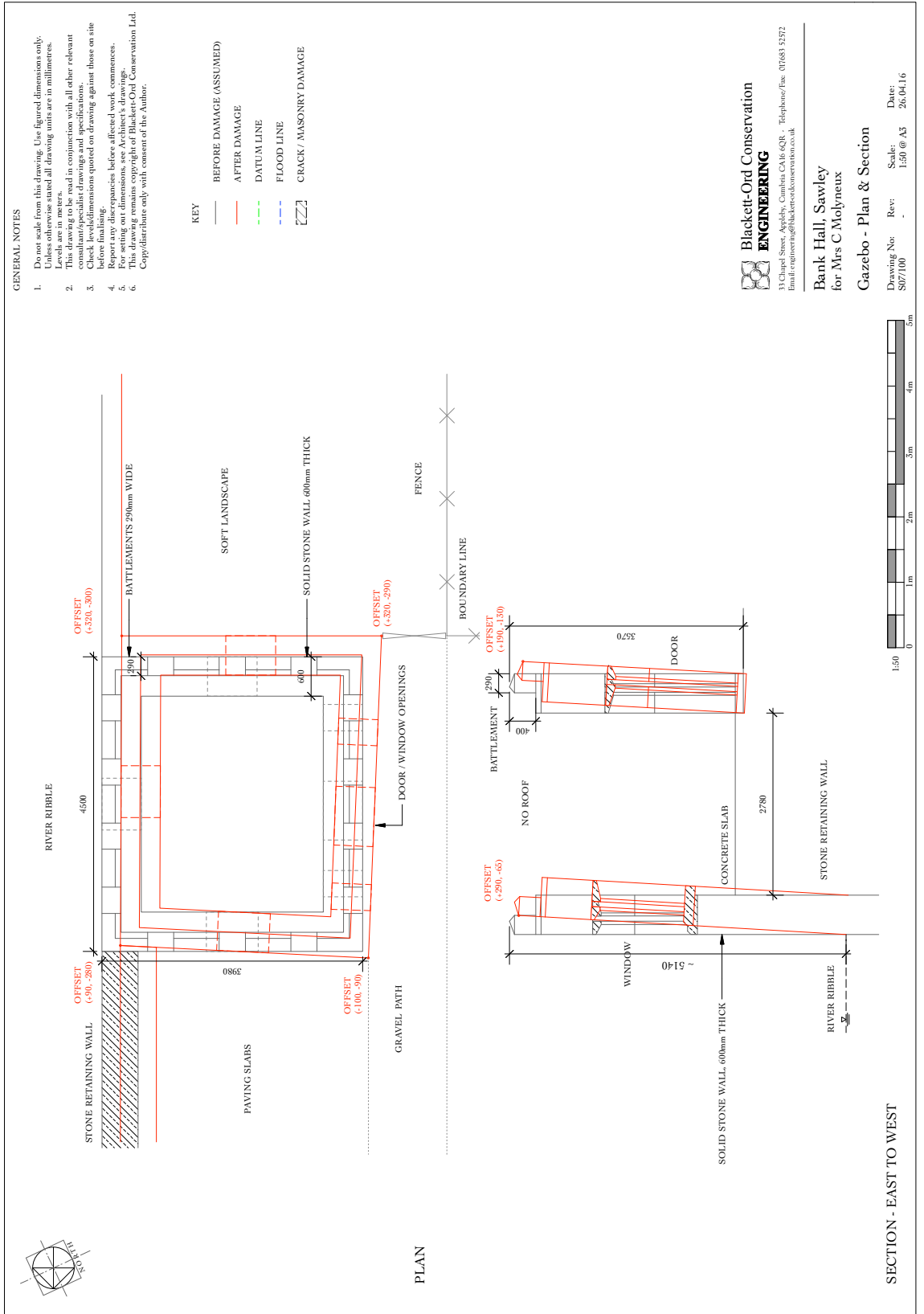
Vegetation on Battlements along South Elevation

Gazebo at Bank Hall, Sawley

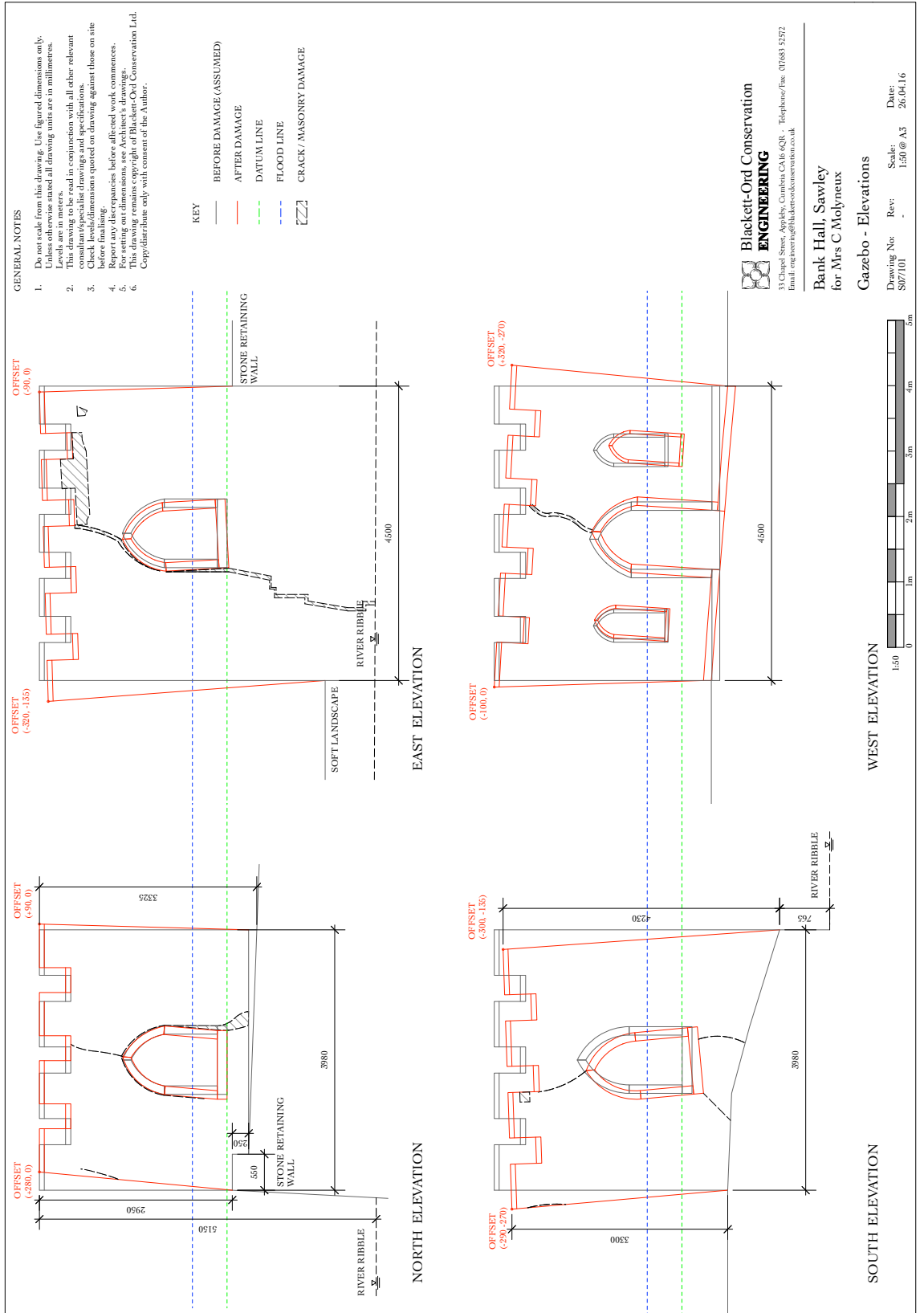


Internal Cracking on Plasterwork and Loose Stone along East Elevation

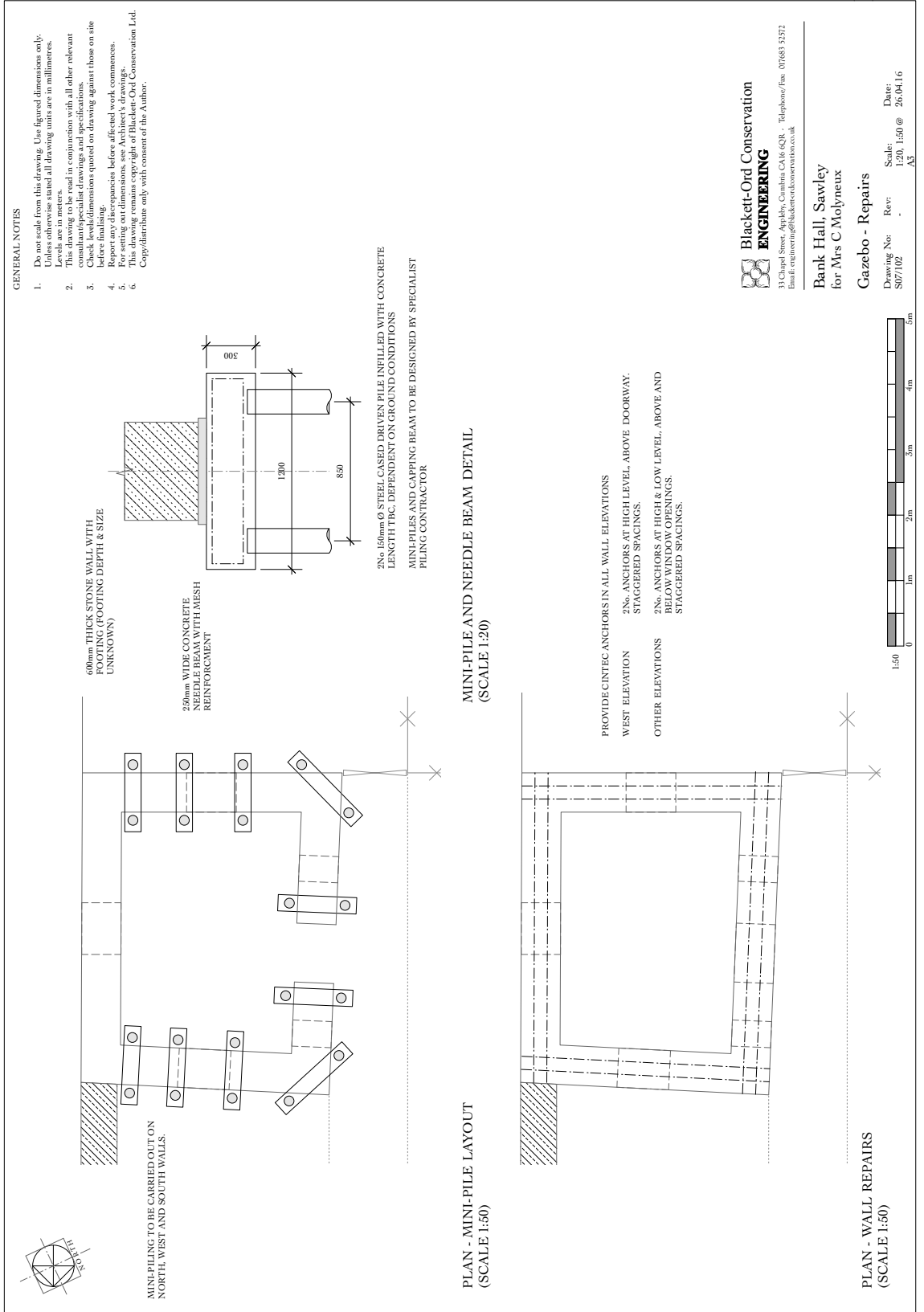
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Gazebo - Repairs