

Technical design note

Project name	Princess Royal Theatre		
Design note title	Structural Condition of Existing Development		
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1. Introduction

As a part of the planning application, Hydrock now Stantec have been commissioned by Morgan Sindall to produce this technical note demonstrating the structural condition of the existing building. The content of this report is based upon several site visits inspecting areas where changes to the existing structure are proposed, along with some as built AutoCAD files. A foundation and 1st floor as-built drawing has not been made available.

NOTE: Much of the structural steel frame is enclosed and not visible, as such the condition of these cannot be identified in their entirety. All assumptions made have been based on visual inspection above ceiling level and as-built drawings

2. Summary

The existing building is a steel frame construction with precast planks generally as floorplates throughout. Locally, some in-situ concrete slabs have been poured to areas where installation of planks may have been difficult. From information gathered online the building was constructed in 1987, as such it is likely that the steel grade of the existing frame is an S275 grade. Three large steel trusses span across the theatre, no as-built information was available for the trusses and an on-site survey was conducted to size these.

The roof is constructed of timber purlins, felt, batten and slate roof tiles. No foundation information is available however based upon the SI for the proposed, it is unlikely that piled foundations have been installed and the foundations of the existing building are likely to be spread pad and strip foundations.

It is unclear where the stability of the frame is achieved, plan bracing is shown on the as built plans however no vertical bracing is shown on the as built information and was not discovered in areas inspected. The proposed development/extension will have their own stability system and the existing building will not rely on the proposed for stability.

2.1 Steel Frame

Where the proposed development is set to interact with the existing frame, structural calculations have been implemented taking into account any uprise in loads to ensure the existing members have capacity. The existing frame has been sprayed in cementitious fireproofing, likely when the frame was erected, where connections into the existing frame are required, this will need to be removed in order to achieve a solid connection. From visual inspection, there was no sign of any defects to the existing steel members.

2.2 Precast concrete flooring

No visible defects were found upon inspecting the underside of the precast planks. Where potential penetrations may occur, additional steelwork will be required to ensure the integrity of the panels is not compromised.

2.3 Façade

The façade is constructed of several different build ups around the building:

- » precast panels span horizontally in between columns as an inner leaf with brickwork as an external leaf
- » in rebated areas of the building (southern foyer) and to the back of the main stage a cavity masonry construction
- » on the corners of the building, a down stand RC beam hung from the slab allows a lintel to be fixed into to support finished brickwork in between large window openings

It is unclear how the precast panels are fixed to the columns or whether they bear directly onto the foundations and are restrained by the columns. These assumptions have been based upon visual inspections above ceiling level. Until opening up works have been completed these assumptions cannot be verified.

2.4 Masonry

Where inspection have been carried out there has been no noticeable cracking in the masonry walls, no noticeable signs of walls out of line & no noticeable re-pointing required. It is unclear whether the cavity masonry walls are tied to the frame. This will again need to be verified once opening up works has commenced. Where proposed internal walls are being removed, they have been checked on plan to ensure that they do not affect the stability of the external walls.

2.5 Foundations

The as-built information of the foundations has not been made available, however the uplift in loads in the affected areas has been calculated as less than 10% and is therefore acceptable

3. Conclusion

Based on visual walkover survey, and record information, the existing building appears to be in a serviceable condition with no apparent signs of excess settlements or distress in the structural systems. There were no notable alterations to the existing structure.