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**Structural Design Summary****Power Hall – Package 4 Works****Science & Industry Museum, Manchester**

Ref: 180426/S Wilkinson

16 June 2023

Status: For Information

Version 1.2

**Plant Room Extension Works**

Works are proposed to extend the new main plant room at the eastern end of the building. These comprise construction of new reinforced concrete slab, retaining wall and raised steel decking structures to replace existing brickwork and concrete structures installed in the 1980s. No historic structure is proposed to be altered or removed.

These new structural elements will be independent from the external walls and foundations and no fixings to the historic fabric are proposed.

**South Plant Room Works**

A new reinforced concrete slab is proposed to support the external walls of the plant room and plant and equipment within. This slab will replace an existing concrete slab of 1980s origin and will not affect the historic fabric.

The blockwork walls enclosing the plant room will be connected to the existing brickwork of the south elevation using wall ties inserted into mortar joints to minimise impact. Similar screw fixings into mortar joints will be used to secure a timber wall plate supporting rafters over the enclosure.

**East Platform Works**

The new east platform structure replaces a similar structure dating wholly from 1980s. No removal of historic fabric is proposed. The new raised deck structure primarily comprises timber joists bearing onto blockwork sleeper walls with isolated steel beams used where longer spans are required over pipework or plant and machinery. The existing reinforced concrete slab floor from the 1980s will be retained.

There is no anticipated impact on the historic fabric other than use of supplementary mechanical fixings for the timber deck into the north elevation brickwork if and where required. These will be placed into the mortar joints to minimise impact on the brickwork.

### **West Platform Works**

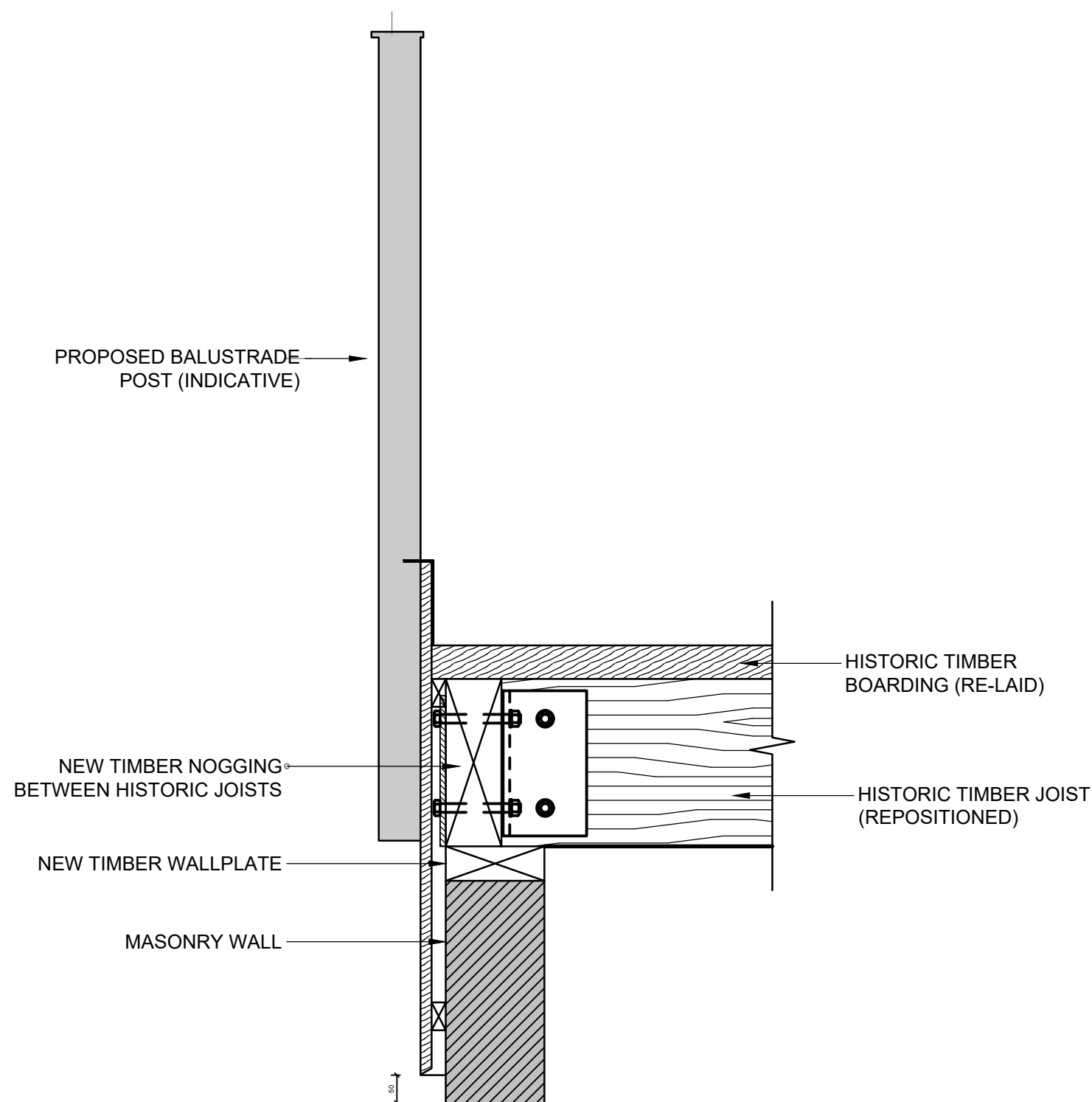
Modifications are proposed to the existing West Platform structure (see architectural drawings - PHL-CGA-00-00-DR-A-4\_06110\_Proposed Ground Floor Plan, PHL-CGA-00-00-DR-A-4\_20510\_West Platform Sections 01-03 & PHL-CGA-00-00-DR-A-4\_20511\_West Platform Sections 04-05).

This platform structure includes historic timber joists and floorboarding. The proposed modifications involve dismantling of the existing structure and reconstruction to improve accessibility and permit installation of pipes and ducts beneath the platform. Historic timber material is proposed to be retained and reused in the level areas of the modified platform, however some replacement with new timber is anticipated as the historic joist dimensions are too large to permit use in the proposed ramp structures – refer to architectural drawings PHL-CGA-00-XX-DR-A-4\_00100\_Existing Ground Floor Demolition Plan & PHL-CGA-00-00-DR-A-4\_06110\_Proposed Ground Floor Plan.

Installation of a new balustrade compliant with current regulations is required. To achieve the necessary loading at the posts, installation of new timber noggings and steel angles with two bolt fixings through each historic timber joist will be needed. This has been designed to keep loss of historic fabric to an absolute minimum – please refer to drawing 180426-CON-PH-ZZ-DR-S-4300.

### **Hydraulic Objects Display**

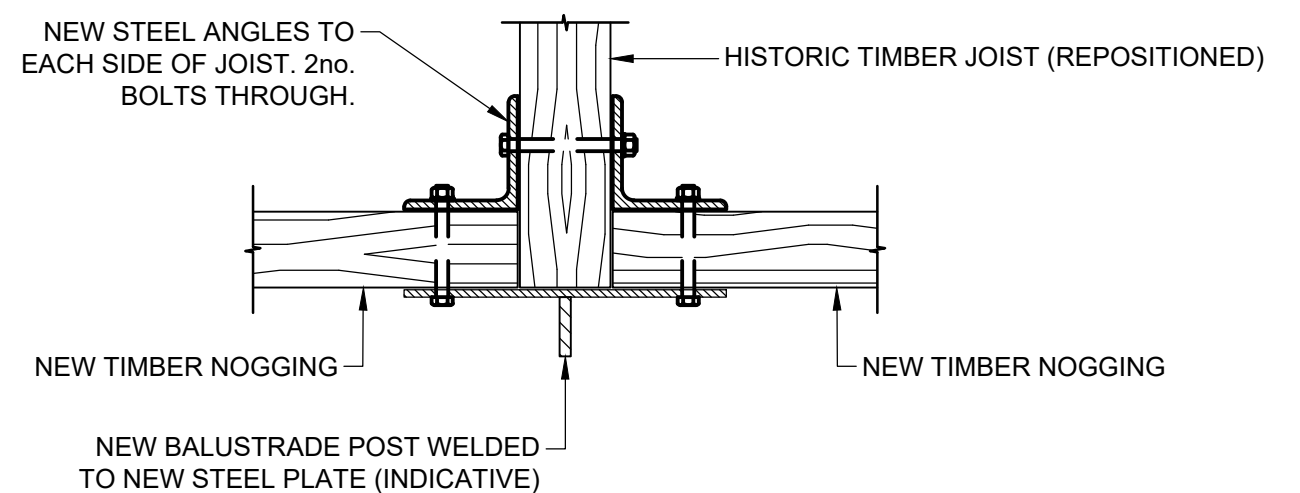
It is proposed to modify and reduce the plan area of the modern concrete plinth under hydraulic objects displayed adjacent to the south elevation wall. A modern steel frame provides support to some of the displayed objects and will need to be fixed back to the south elevation brickwork prior to the plinth reduction. These additional fixings will be unobtrusive and comprise two new steel angles bolted to the top of the modern steel frame with a total of four resin anchor bolts into the south elevation brickwork. The fixings are located between 3.0 and 4.0 metres from ground level and will not be easily visible.



PROPOSED BALUSTRADE CONNECTION TO HISTORIC TIMBER JOISTS (SECTION/ELEVATION VIEW)  
scale 1:10@A3

#### NOTES

- THIS SKETCH SHOWS PROPOSED CONNECTIONS TO RETAINED HISTORIC JOISTS ONLY. REFER TO ARCHITECTURAL DRAWINGS:  
PHL-CGA-00-00-DR-A-4\_34701\_Proposed Typical Balustrade Overview\_Type 01 &  
PHL-CGA-00-00-DR-A-4\_34110\_Proposed Balustrade Types FOR FULL DETAILS OF PROPOSED BALUSTRADES.



PROPOSED BALUSTRADE CONNECTION TO HISTORIC TIMBER JOISTS (PART PLAN)  
scale 1:10@A3

NOT FOR CONSTRUCTION

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Project  
SIM, MANCHESTER.  
POWER HALL PKG 4.

Title  
WEST PLATFORM - HISTORIC  
JOIST/BALUSTRADE CONNECTION

| Rev            | Date  | Description |          |  |
|----------------|-------|-------------|----------|--|
| Scale          | Drawn | Engineer    | Date     |  |
| 1:10           | SW    | SW          | JUN 2023 |  |
| Drawing Status |       | Project No  | Revision |  |
| PRELIMINARY    |       | 123456      | P1       |  |

Drawing No  
**180426-CON-PH-ZZ-DR-S-4300**