Campbell's Stores
Bay 11 Roof
SSD7056 MOD 2
Design Response

Report prepared for Tallawoladah
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JPW
JOHNSON PILTON WALKER

Level 10, Plaza Building Australia Square
95 Pitt Street Sydney NSW 2000 Australia
T + 61 2 9259 5900
F + 61 2 9259 5999
W www.jpw.com.au

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1.0 Introduction

This summary is provided to comment on the Bay 11 roof material included as part of SSD7056 Mod 2.

The proposed Bay 11 roof modifications have been derived following a considered process involving PMNSW Heritage, the Client management team, Planner and specialist Mechanical and Heritage Architect. The roof design forms part of a broader series of approved building upgrades at Campbell's Stores, including replacing the existing slate roofs.

A range of options have been considered and tested as part of the design process for the roof material to address the project design requirements outlined below.

2.0 Design Requirements Summary

The client design brief for the Bay 11 plantroom was to pursue a gas-fired plant system, owing to limited electrical supply to the site. The Mechanical and Heritage requirements to which the roof design responds are outlined in detail in the preceeding Northrop Mechanical Engineering and GBA Heritage Architecture responses. A brief summary as follows:

Mechanical Requirements summary:
_Provide 25m2 of intake free area for equipment
_Provide 17.7m2 exhaust openings for equipment
_Provide a protective material with 70% open area to satisfy static pressure requirements of the equipment
_Minimum 3m separation required from kitchen exhaust for compliance

Heritage Requirements summary
_Retain existing roof shape/form
_Retain existing timber roof structure

Other considerations include:
_provide a protective cover against leaf litter and bird proofing
_help mitigate visual impact of the roof openings
_be suitable for a marine environment
_be able to self-span between existing purlins

3.0 Design response

The proposed modification retains the existing heritage roof form and structure consistent with the heritage requirements for the building.

Working together with PMNSW Heritage and the team, we have sought to rationalise the roof openings and moderate the visual impact with a roof mesh.

Plant equipment is contained within the existing roof form, and painted-out mid-grey to match the metal roof colour. The mechanical equipment is arranged between existing trusses (refer Fig. 3(a) right).

Detailed explanation as follows:

(a) Size and Location of Openings
The mechanical and heritage requirements are achieved as follows:
_Openings are maximised as much as possible to the non-visible southern elevation (approx. 4m2) and the (less-visible) southern roof. The openings on the southern side of the roof must be setback minimum 3m from the kitchen exhaust for compliance (refer Fig. 3(a) right).
_The openings on the northern side of the roof are rationalised into 3 openings between the existing trusses.
_The southern roof openings are aligned to these for consistency across the roof.

(b) Mesh/Louver Types
Figure 3(c) summarises the three material types available including welded mesh, expanded mesh and louvers/grills. The only viable option that satisfies the static pressure performance requirements of the Mechanical Engineer is 'TYPE A' the 'Boston 705' mesh (refer detailed photograph Fig. 3(d)).
This specific mesh has been selected over other types of mesh as it has a thick gauge wire and sectional profile that provides effective visual screening, whilst still achieving 70% free area. Other meshes with slimmer gauge wires and suitable free-area were examined and rejected, as they could not achieve effective visual screening.
The mesh is detailed so that it will sit flush to the corrugated metal roof sheet. Refer to separate proposed construction details and renderings.

(c) Finish
The finish of the material is to be powdercoated to blend with the metal roof sheet. All flashings and trims to the openings and cladding over the timber purlins will blend and match with the metal roof.

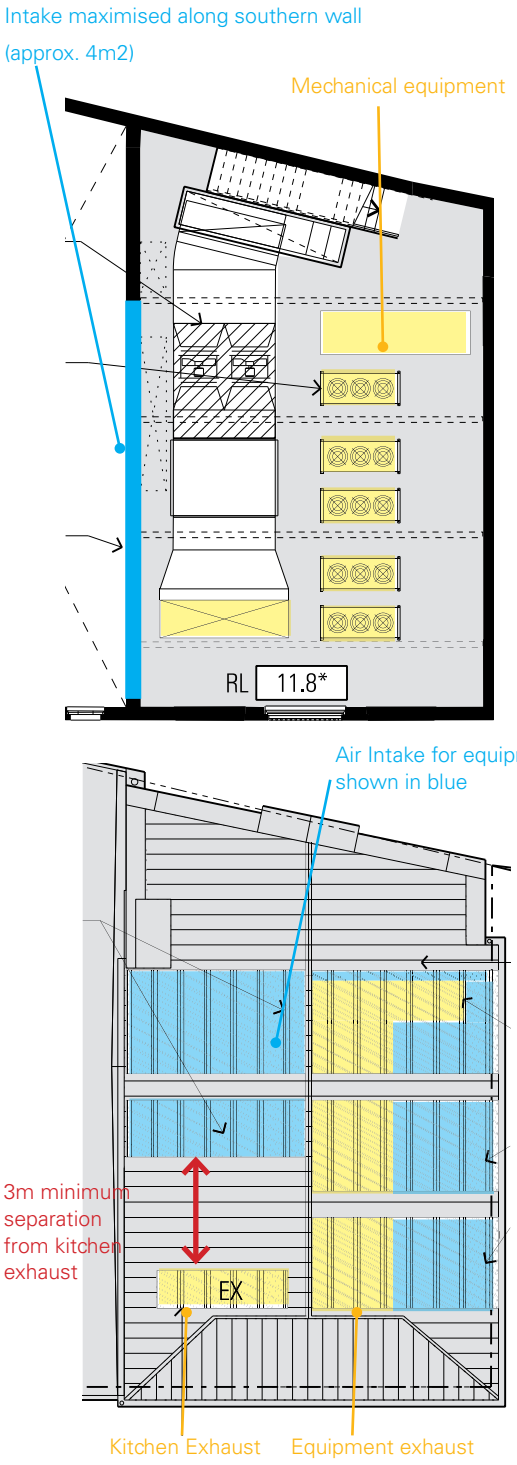
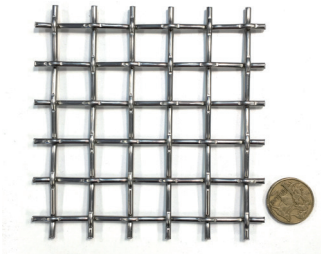
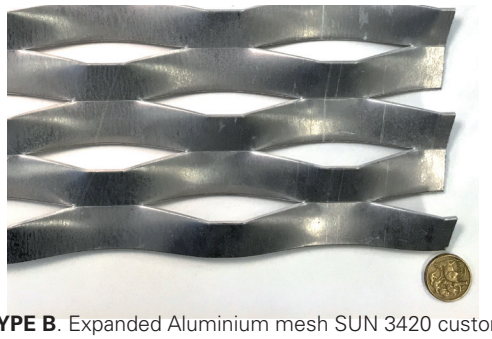


Fig. 3(a) Plans describing Size and location of openings

Fig. 3(b) The new roof and roof materials will blend and match with the colour of the metal roof sheet



TYPE A. Welded mesh (stainless steel) with 72% free area opening Boston 705. 17.3 x 17.3mm aperture (opening dimension) with 3.15mm thick wire.



TYPE B. Expanded Aluminium mesh SUN 3420 custom profile with 34-71% free area depending on angle of incidence of air.

TYPE C. Steel or aluminium louver grill with unspecified free-area.

Fig. 3(c) Relative size comparison of protective cover types available

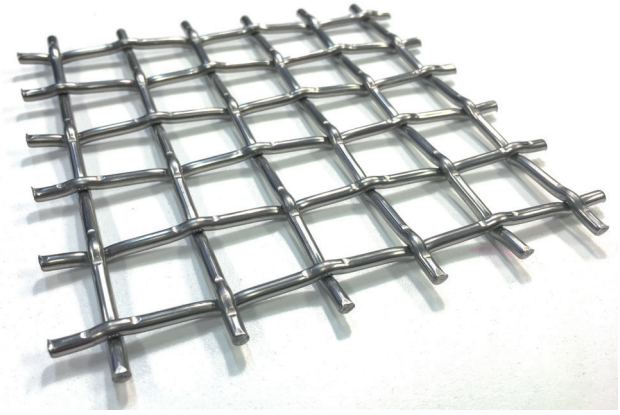


Fig. 3(d) Selected mesh type that met all mechanical performance criteria, Boston 705 welded mesh.