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Title Proposed design for support for delaminating canvas to Mural 11, Bridgewater Canal. Discussion draft, ver2

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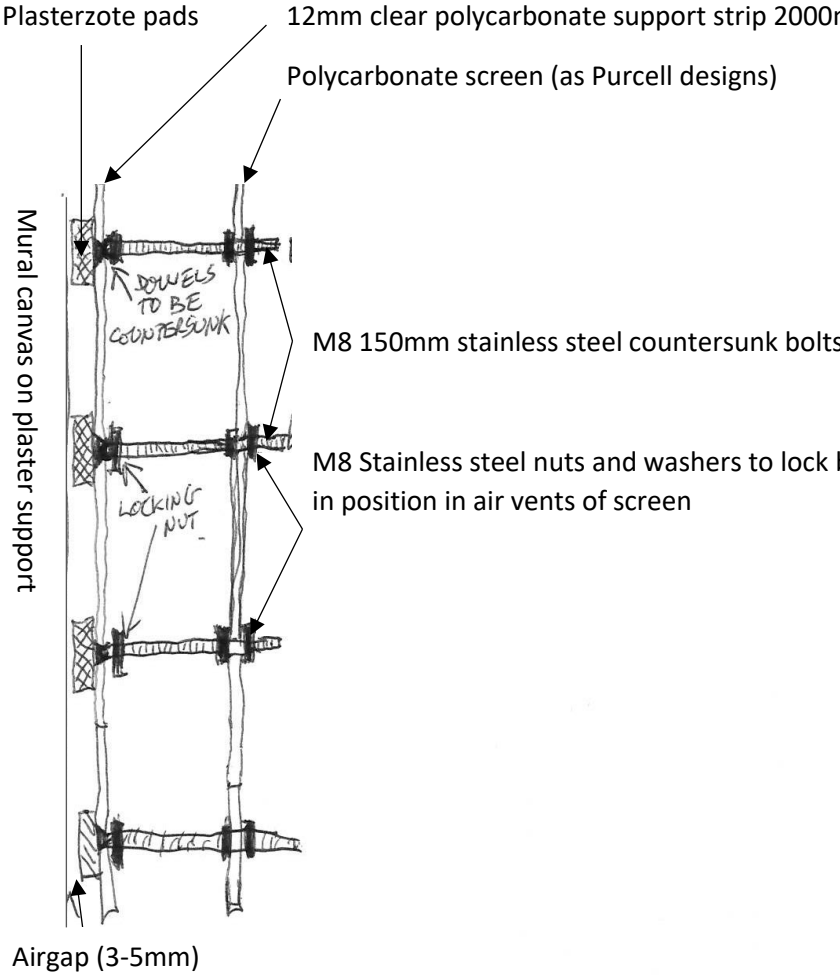
Proposed design for support for delaminating canvas to Mural 11, Bridgewater Canal. Discussion draft, ver 2

Hirst Conservation

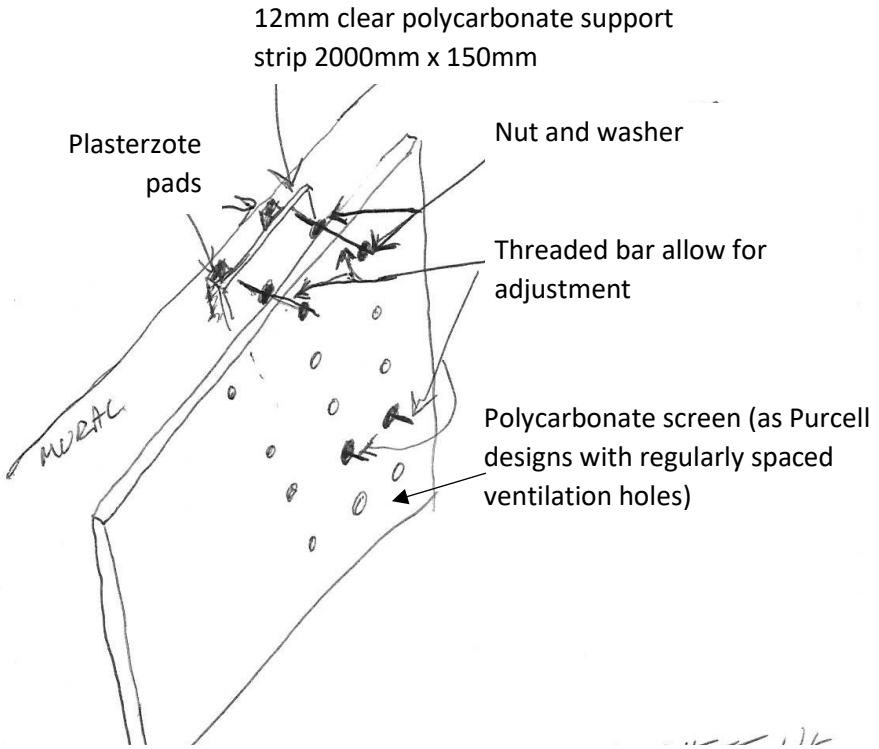
06/12/2019

Mural consolidation project, phase 1, OTH project, Manchester

Option 1: Engineered, Transparent support to allow monitoring and reduce risk of slippage

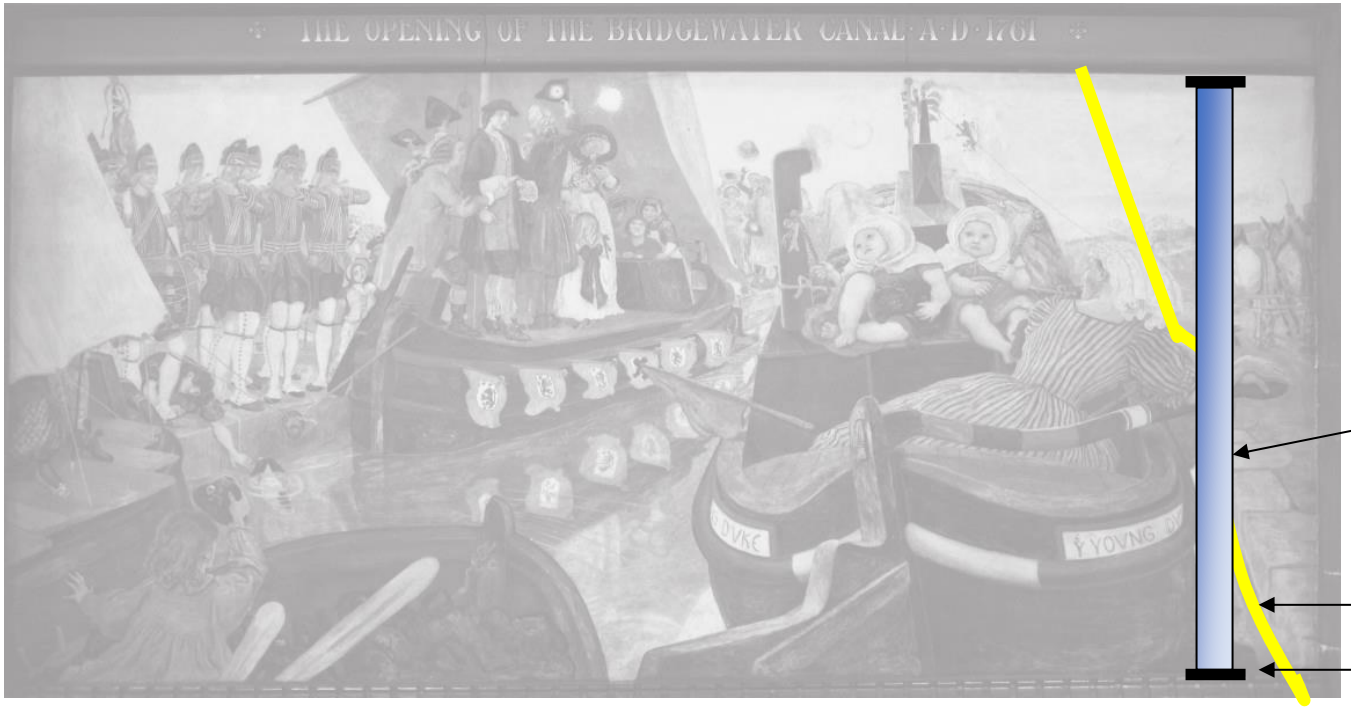


Cross section through proposed support for canvas



Top view of proposed support for canvas

Option 2: Vertical prop



Height of wall painting recess: 145cm

Hexlite 620 strip measuring 1430mmx 100mm x 13.7mm held between two pads of Plastazote®

LD45FR foam wedged against the recess surround.

Hexlite sheet strip positioned approximately 5mm away from tissue faced surface of painting.

Strip can be easily removed if necessary.

Hexlite 620 strip

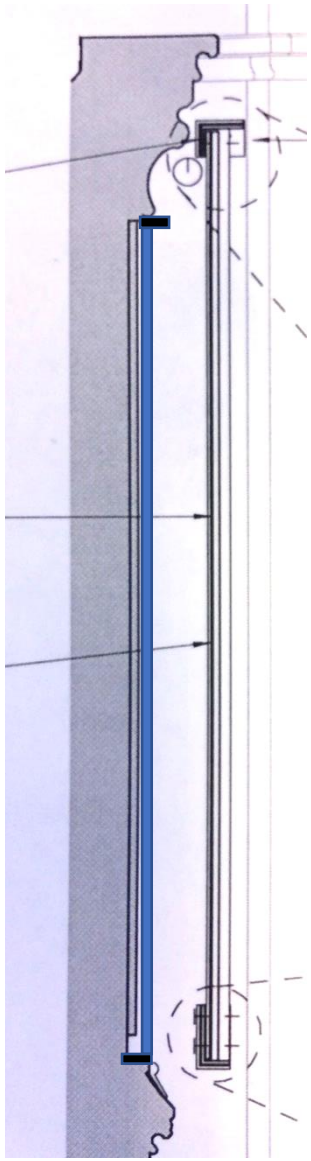
(Denotes edge of delaminated canvas area)

Plastazote® LD45FR foam (top and bottom of strip against stone and wood surround).

MATERIALS USED:

Plastazote® LD45 FR: A flame-retarded low density polyethylene foam. See Technical data Sheet attached for product information.

Hexlite 620: glass fibre reinforced honeycomb sandwich panels Technical data sheet attached



Description

Installation of an independent, vertical prop is the simplest form of prop. A vertical prop of polycarbonate was initially considered, with foam pads top and bottom to act as a support. Meetings between our conservation team concluded that the polycarbonate, whilst transparent to allow monitoring of the mural, is not rigid enough and likely to move.

One option is to use 13.7mm Hexlite 620 glass fibre reinforced honeycomb sandwich panels. This will provide a rigid support, but will not allow monitoring of the area because it is opaque.

The lip at the top of the mural (the lowest moulding on the string course) is only 35mm, which dictates the use of a fairly thin sheet material and limites the success of wedging a support in place.

Our initial design intention is to use plasterzote foam wedges to wedge a strip of Hexlite 620 between the dado rail and string coarse. Plasterzote packers or Japanese tissue wads will be used to gently support the painting. Testing will be required to ensure that this will be a sufficiently robust approach. It is understood that the panelling below the dado is to be removed and it is possible that this work will dislodge the support. As the support is release from the dado rail, the tension may be lost on the support.

Hexlite® 620, 630, 640

Honeycomb sandwich panel

Product Data

Description

Hexlite 620, 630 and 640 are all glass fibre reinforced honeycomb sandwich panels. Hexlite 620 was previously known as Aerolam F-board, Hexlite 630 was previously known as Aerolam F-board NPR and Hexlite 640 was previously known as Aerolam F-board (1 ply). The panels all offer good weight savings over conventional materials and are easy to finish and fabricate into components.

Hexlite 620 has skins of woven glass fibre impregnated with epoxy resin and a lightweight Aluminium honeycomb core. The surface is ready to be painted or have decorative finishes bonded to it.

The Hexlite 630 has skins of woven glass fibre impregnated with epoxy resin and a lightweight Aluminium honeycomb core. The Hexlite 630 panel has a removable peel ply on both faces, which provides an excellent surface for bonding or painting and requires no surface preparation.

Hexlite 640 has lightweight skins of woven glass fibre impregnated with epoxy resin and a lightweight Aluminium honeycomb core. The surface is ready to be painted or have decorative finishes bonded to it.

Principle Features

- Low weight
- Stiff and stable
- Easy to fabricate
- Easy to finish
- Colour: light green

Applications

- Tooling backing structures and checking fixtures
- Sanitary partitions
- Art restoration
- Natural stone panel backs.

Hexlite® 620, 630, 640

Construction

Hexlite 620

Skins Woven glass fibre, impregnated with epoxy resin for good strength and adhesion properties.
13.7mm and 26.4mm panels have skins measuring 0.5mm
52.3mm panel has skins measuring 0.75mm

Core Hexcel 3003 series Aluminium honeycomb with 6.4mm cell (83 kg/m³ nominal density)

Hexlite 630

As Hexlite 620 but with a removable nylon peel ply on both outer surfaces.

Hexlite 640

As Hexlite 620 but the skin thickness on all panel types is 0.25mm.

Performance Data

Hexlite 620 and 630

Test		Units	Thickness mm		
			13.7	26.40	52.30
Weight		kg/m²	3.08	4.21	7.54
Long Beam	Max. load	N	1790	3340	9460
	Deflection at 445N	mm	8.90	2.05	0.60
Climbing Drum Peel		N/76 mm	340	340	340

Hexlite 640

Test		Units	Thickness mm
			13.7
Weight		kg/m²	2.25
Long Beam	Max. load	N	890
	Deflection at 445N	mm	18.00
Climbing Drum Peel		N/76 mm	310

Maximum service temperature for all panels: 80□C.

Honeycomb sandwich panel

Availability

Standard dimensions: 2440 x 1220 mm

Standard thicknesses: 13.70, 26.40 and 52.30 mm
Other thicknesses available on request

Fabrication

Adhesives and paint can be directly applied to the skins by conventional techniques and is recommended for stabilisation against ultra violet light. Fabrication can be carried out by the methods used for other Hexlite panels. These techniques are described in the Hexcel Composites publication "Sandwich Panel Fabrication Technology".

Hexlite 620, 630 and 640 can be drilled and cut with conventional metalworking tools. Edges can be closed with extrusions or lightweight edge fillers.

Ancillary Products

Adhesives:

Araldite® 420 A/B
Araldite® 2015
Araldite® 2013

Edge Fillers:

Araldite® 252
Araldite® SV427/HV427

These products are available from:
Vantico Ltd., Duxford, Cambridge, CB2 4QA, England. Tel: +44 (0)1223 832121 Fax: +44 (0)1223 493014.

Approval/certifications

Meets the requirements of FAR 2583 a & b.

Safety

A Material Safety Data Sheet is available from Hexcel Composites Product Safety Department Tel: +44 (0)1223 838431.

AZOTE®

Plastazote® LD45 FR

Flame-Retarded Low Density Polyethylene Foam

Product Information

Typical Values

Plastazote® is a closed cell, cross-linked polyethylene block foam manufactured using Zotefoams unique production process.

The values provided in this product information represent data gathered from random samples of our production of **Plastazote® LD45 FR** foam and represent typical data. These are given to the best of our knowledge and should be considered as guidance for selecting a suitable grade for a given application.

Property	Test Standard	Units	Typical value
Apparent Density			(nominal)
Skin/Skin	BS EN ISO 7214:2012	kg/m³	45
Cell Size (Cell Diameter)	Internal	mm	0.4
Compression Stress-Strain	BS EN ISO 7214:2012	kPa	
25% compression	25 mm cell-cell		88
50% compression			162
Tensile Strength	BS EN ISO 7214:2012	kPa	449
Tensile Elongation		%	158
Flammability	CS 25.853 App. F 1a 1ii		12 second test
Aviation **	FAR 25.853 App. F 1a 1ii		Pass at 3mm & 12mm
Flammability			HF1
UL94***	UL94 Ed.6		at 3mm
Compression Set	BS EN ISO 7214:2012	% set	
25% comp., 22hr, 23°C	25 mm cell-cell		
½ hr recovery			8
24 hr recovery			3
Tear Strength	BS EN ISO 8067:2008 Method B	N/m	2404
Shore Hardness	BS EN ISO 868:2003		
OO Scale			61
Recommended maximum operating temperature*	Internal	°C	105
Water absorption	ISO 2896:2001 Ed3.	%	<1
Thermal conductivity	ISO 8301:1991	W/mK	0.038
Mean temperature 10°C			

Polycarbonate with a protective UV layer on the outer side. Provides excellent light transmission, rigidity and thermal insulation properties in a lightweight body. Wont shatter like glass and can be easily cut to shape or size with a fine-tooth jigsaw or similar.

- Impact-Resistant
- Class 1 Fire Rating
- Polycarbonate Construction
- High Light Transmission
- 5 Year Manufacturer's Guarantee (Registration Required, T&Cs Apply)
- Model No: AS6C1
- Lightweight & Insulating
- Rigid Structure
- UV Protected Side for Longevity

SPECIFICATION

Brand	Axiome
CE Standard (Tested to EN...)	BS 476 Part 7.
Colour	Clear
Construction Material (Building)	Polycarbonate
Fire Rating	Class 1 Fire Rating
Fixings Supplied	Fixings Not Supplied
Manufacturer Guarantee	5 Year Manufacturer's Guarantee (Registration Required, T&Cs Apply)
Model No	AS6C1
Pack Size	1
Parent Colour	Clear
Pieces in Pack/Case	1
Product Length	2000 mm
Product Thickness	6 mm
Product Type	Polycarbonate Sheet
Product Width	690 mm
Resistant Type	Impact-Resistant
Total Product Weight	1.79 kg
U-Value	3.5 W/m²K