

EVANS WOLFENDEN
PARTNERSHIP

Evans Wolfenden Partnership Ltd
Consulting Structural Engineers

Llys Onnen, Ffordd Y Llyn, Parc Menai
Bangor, Gwynedd LL57 4DF

T. 01492 533721
E. info@ewpeng.co.uk

www.ewpeng.co.uk

Beaumaris Pier Handrail Refurbishment

OUTLINE METHODOLOGY

EVANS WOLFENDEN PARTNERSHIP



An Egniol Company

Company Registration No. 5438374
VAT Registration No. 800727360

CONTENTS

Introduction	Page 1
Scope of Works	Page 1
Methodology and Temporary Works	Page 2

APPENDICES

- A Drawing EWP7866s(27)D001 Plan on Pier Showing Phases

- B Drawing EWP7866s(27)D002 Typical Pier Cross Section Showing Typical Access
Concept

- C EWP Handrail Photographic Inspection Report November 2019

- D Monarflex Stripe Firesmart Scaffold Sheeting

Introduction

Beaumaris Pier is a 170m long structure located in the town of Beaumaris on the Isle of Anglesey and is situated within the Menai Strait and Conwy Bay Area of Conservation.

The structure was originally constructed in 1864 of wooden piles supporting iron girders and a wooden deck. The pier was then rebuilt in 1872 with iron screw piles, steel girders and a timber deck. Further works were carried out in 1895 to extend the deck length and a pontoon was added.

Beaumaris Pier was refurbished in the 1960s after falling into a state of disrepair and again in 2012 where the full length of the pier was refurbished and a floating pontoon landing stage was added at the seaward end of the pier. Remedial works to the paint system was carried out in 2014.

A full condition survey of the pier was carried out in August 2019 by G W Marine Systems Ltd where the structure was found to be in a fair condition overall. The report found the handrails and posts forming the parapet structure to be in fair condition with surface corrosion noted to 80% of all handrails.

At the present time the focus for repair is for the handrails.

Scope of Works

The parapet structure can be broken down into 3 elements; the posts, kickboards and the railings.

Railings – Carbon steel

Posts – Cast Iron

Kickboards – Cast Iron

An inspection of the parapet structure was carried out by EWP on 13th November 2019. The inspection revealed that the condition of the parapet structure is generally poor overall but serviceable from a structural consideration. There are many areas of localised surface corrosion where the paint system has failed and broken down. There are also multiple patches of pitting and section loss to the steel railings, which are considered to be in fair to poor condition. The kickboards and posts show signs of slight surface corrosion and staining to the paint work but are generally in fair condition. A copy of the handrail photographic inspection can be found in

Appendix C.

From the inspection, a scope of works to reinstate the corrosion protection system to the parapet structure has been established. This comprises of the following work phases:

- Erect Temporary Works to work area
- Encapsulation of work area
- Blast cleaning handrails, posts and kickboards.
- Painting parapet structure

Methodology and Temporary Works

To provide access to the outer faces of the parapet structure at the seaward end of the pier, it is proposed to provide a cantilevered cradle scaffold on rollers or similar which can be moved along the length of the pier as works progress (see **Appendix B**). Alternatively, the contractor may opt to go for scaffolding over the full length (non-moveable) but following the same structural framing beyond the high water line.

To the North West end of the pier (on the masonry cob), access is proposed to be provided via a traditional scaffolding supported off the ground.

Prior to blast cleaning, the parapet structure will need to be thoroughly washed using a high pressure jet wash to remove all chlorides and contaminants. The parapet structure will then be wiped down.

The parapet structure will be blast cleaned to preparation grade Swedish Standard Sa 2 to 2.5 so as to remove existing paint, all scaling, corrosion and foreign matter. The blast cleaning process will generate 'spent' grit along with rust and paint particles from the existing paint system. The parapet structure will need to be 'blown-down' using clean compressed air prior to applying the paint system.

There will be a need to contain the debris produced from the blast cleaning and painting process undertaken to repair the parapet structure. It is proposed to provide containment at each work area in the form of encapsulation around the temporary works access scaffold.

Encapsulation will be provided using Monarflex Stripe Firesmart Scaffold Sheeting or similar approved. The Monarflex sheeting is designed for demanding weather conditions and has a life of between 6-12 months in coastal and offshore environments. The manufacturers literature also confirms that the Monarflex Stripe Firesmart Scaffold Sheeting is suitable for use with grit blasting operations. Therefore it is well suited to the tasks required for the handrail repair works and the local environment of the pier. A copy of the product literature can be found in **Appendix D**.

The scaffolding will have a scaffold boarding deck and the Monarflex Stripe Firesmart Scaffold Sheeting will be laid over the boards. Plywood sheeting will then be laid over the Monarflex sheeting on the deck so as to provide protection to the sheeting and provide a surface for shovelling and sweeping during the clean-up and removal of debris. After the initial clear-up, the deck will be vacuum cleaned, before the plywood sheeting is removed. The Monarflex sheeting will then be swept / vacuum cleaned again (after removal of the plywood sheeting) so as to ensure that all debris are collected and removed prior to the scaffold being dismantled.

A clean-as-you-go policy will be put in place to manage and prevent extreme debris build up, and a clean-down at the end of each day is to be undertaken. This avoids congestion to the public who will still have access along the pier and boating operations will still continue.

It is envisaged that the remedial works will be carried out in phases, with the repair works undertaken in approximately 10m long sections at a time and only on one side of the pier at a time until the works are completed.

Rights of Originator

- This report is for the sole use of Isle of Anglesey County Council and/or their professional advisors. It must not be reproduced or transferred to any third party without prior written permission of the author.
- We will consider the reissue of the report in its original form to a third party within six months of the original inspection date for an administrative fee (currently 50% of the cost of the original report).
- Upon the lapse of a six-month period from the date of inspection, the report can only be reissued following a full re-inspection which will be charged at a full survey rate.
- We reserve the right to refuse copies of the report to any third party (other than those named above).
- We reserve the right to amend our opinions if additional information is made available.

For and on behalf of

Evans Wolfenden Partnership Ltd

A handwritten signature in blue ink, appearing to read 'R. Roberts', with a stylized flourish at the end.

Rhys Roberts

Meng (Hons)

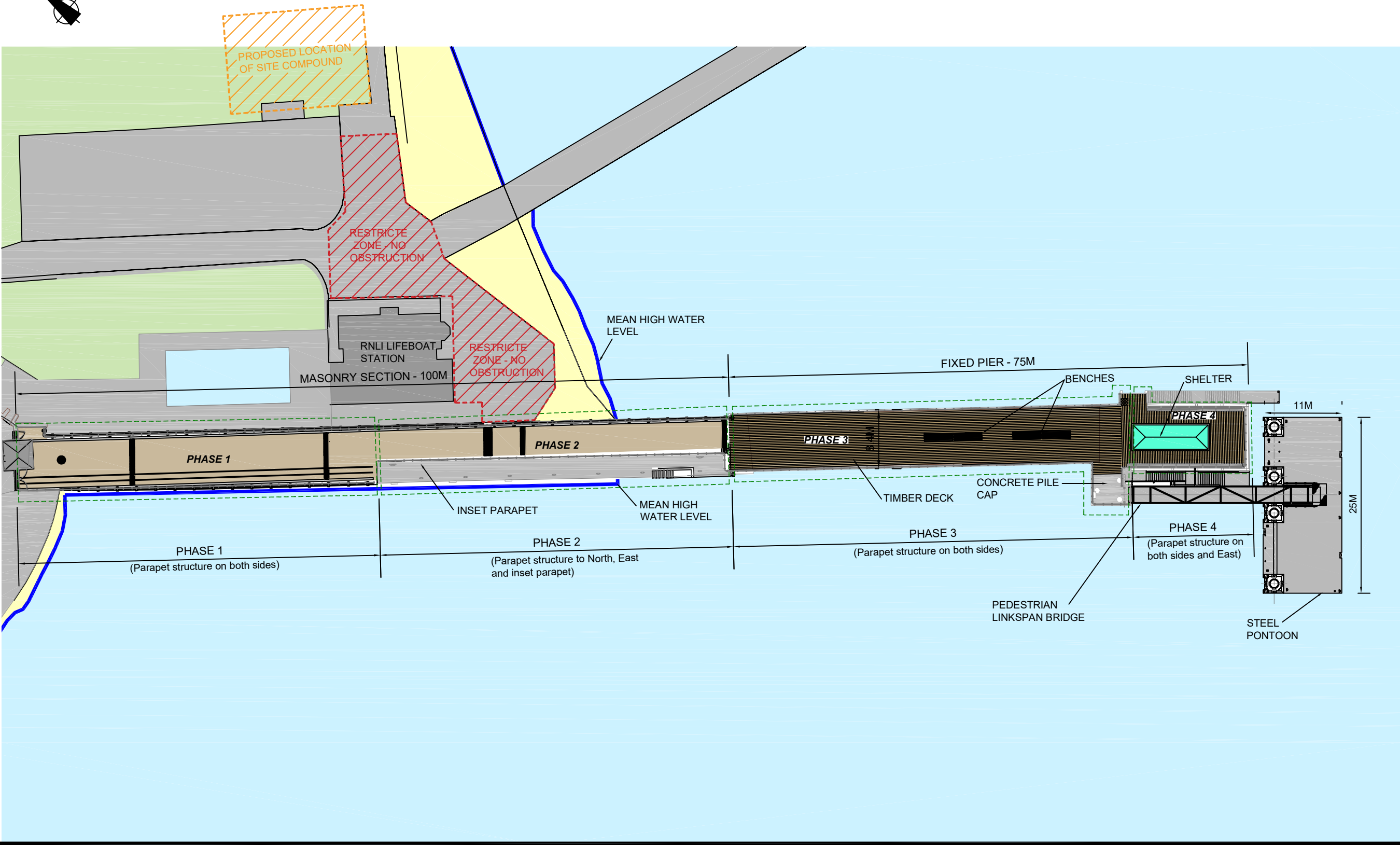
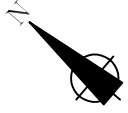
A handwritten signature in blue ink, appearing to be a stylized 'J. Evans', with a large loop at the end.

John Evans

BEng, CEng, MICE, MCIHT, MIStructE

APPENDIX A

Drawing EWP7866s(27)D001 Plan on Pier Showing Phases



Rev.	Description	Date



**EVANS WOLFENDEN
PARTNERSHIP**

Llys Onnen, Fford Y Llyn, Parc Menai, Gwynedd, LL57 4DF
Tel. +44 (0)1492 533721
www.ewpeng.co.uk

Client
Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW

Project
Beaumaris Pier Handrail Renovation Project

Title
Plan on Pier Showing Phasing

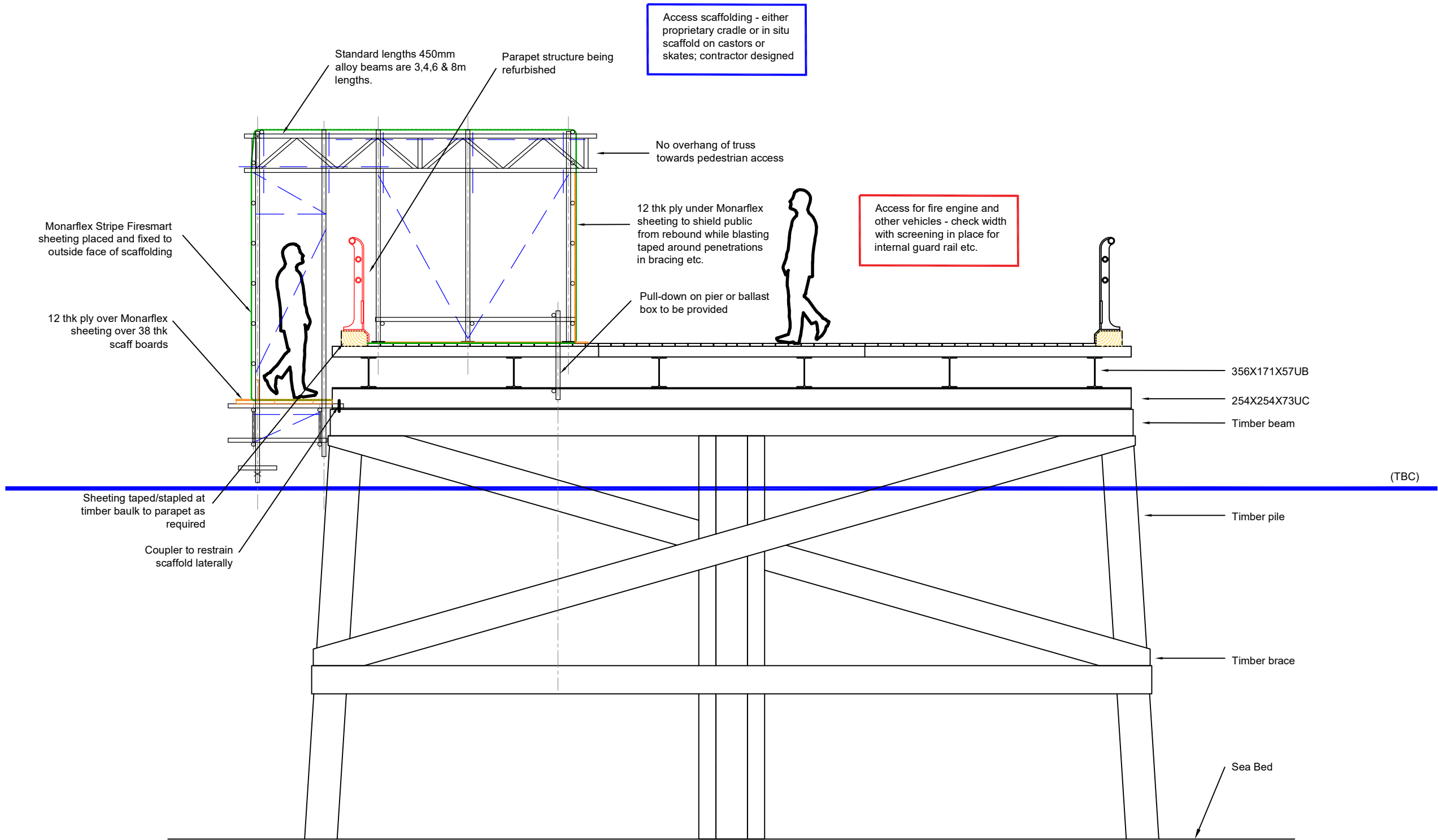
Original Scale NTS	Drawn RGLR Date 15 Nov 2019	Checked JE Date 29 Nov 2019	
Drawing Number EW7866s(27)D001			Rev A1 -

DO NOT SCALE

APPENDIX B

Drawing EWP7866s(27)D002 Typical Pier Cross Section Showing Typical Access Concept

- Notes**
1. This drawing shows the principals of the Temporary works for the purpose of the marine licence.
 2. Final design of Temporary Works to be undertaken by the contractor to BS5975:2019
 3. Works to be scheduled so as to avoid spring tides.



TW DESIGN STATUS

- Preliminary, not for construction
- Awaiting Client approval
- Final, issued for construction

Rev.	Description	Date

EVANS WOLFENDEN PARTNERSHIP
Llys Onnen, Fford Y Llyn, Parc Menai, Gwynedd, LL57 4DF
Tel. +44 (0)1492 533721
www.ewpeng.co.uk

Client
Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW

Project
Beaumaris Pier Handrail Renovation Project

Title
Typical Pier Cross Section Showing Typical Access Concept

Original Scale 1:25	Drawn RGLR Date 14 Nov 2019	Checked JE Date 29 Nov 2019
-------------------------------	-----------------------------------	-----------------------------------

Drawing Number EWP7866s(27)D002	Rev A1	Rev -
---	------------------	-----------------

APPENDIX C

EWP Handrail Photographic Inspection Report November 2019

APPENDIX D

Monarflex Stripe Firesmart Scaffold Sheeting

Monarflex® Stripe FireSmart®

For demanding weather conditions



- Suitable for Digiwrap and screen printing
- Flame retardant
- Certified to LPS 1207, LPS 1215
- Band reinforced with HDPE filament tapes
- Compatible with the high performance white Eurostrap fixing system which blends in with the sheet
- Lightweight for easy handling on site





Monarflex Stripe Firesmart is a mid range flame retardant high strength banded scaffold sheeting suitable for use in demanding conditions.

Features & Benefits

- Enhances the security for the workers on the scaffold.
- Serves as a climate shield to protect workers, machinery and open constructions against rain, wind, snow etc.
- Ensures a stable working climate on the scaffold so deadlines can be respected regardless of the weather.
- Protects the surroundings from any inconveniences e.g. particles or building dust from sandblasting or water jetting from facade works.

Choosing the right product

Duration of building project				
Placement of building site	<3 months	3-6 months	6-12 months	>12 months
Surrounded by high buildings		Stripe Fire-Smart	Stripe Fire-Smart	
Urban/ industrial area		Stripe Fire-Smart	Stripe Fire-Smart	
Coast/ Offshore area	Stripe Fire-Smart	Stripe Fire-Smart	Stripe Fire-Smart	
Temporary roof covering system				
Interior	Stripe Fire-Smart	Stripe Fire-Smart	Stripe Fire-Smart	

Approvals

Should fire retardant sheeting be required on site then it's important to choose the right Monarflex scaffold sheeting product. Our products are certified to LPCB standards of LPS 1215 for Super T Plus Firesmart, Stripe Firesmart, Scaffband Flamesafe and TRC Flamesafe. In addition the Super T Plus Firesmart and Stripe Firesmart also have the LPS1207 certification.

Description

The Monarflex Stripe Firesmart is made from a three-ply composition with the two outer layers being made from a special highly weather resistant LPDE with flame retardant additives that encapsulates a strong polypropylene (PP) grid which forms the weather protection. On top of the sheet there are three bands of super high strength woven and plastic coated bands in pre-set patterns and pre-made holes in the bands per 100mm making it fit virtually any type of scaffold.

Performance and Properties

Material	Co-polymer FR LDPE
Reinforcement	10 x 12mm mesh from PP
Roll Sizes	2 x 45m, 2.25 x 40m, 3 x 45m, 4 x 36m
Colour	White
Weight per m²	232g
Tensile strength	700N/50mm
Eyelet pullout	880N
Conforms to	BS7955:1999, BS8410:2007
Fire approval	LPS 1215, LPS 1207
Applications	Internal and External use

Durability

Monarflex Stripe FireSmart can be used for all types of long-term projects up to a period of maximum 12 months. The product is designed for extreme weather conditions. The combination of high quality components forms a tough and durable sheeting for very extreme working conditions i.e. sandblasting and water-jetting. By using Monarflex Stripe FireSmart, you can meet deadlines and avoid economical surprises regardless of the weather and be safe in that it fulfils all relevant British Standards like BS7955:1999 and BS 8410:2007 as well as the high demanding LPS 1207 fire standard.

Application

Monarflex Stripe FireSmart should be applied horizontally while taking care to overlap the lower sheet externally for weather protection and overlap the lower sheet internally if used for containment. Fixing the sheeting to the scaffold must be done according to calculations taking factors like wind, building season and height of the surrounding buildings into consideration. We recommend the use of EuroStrap for Digiwrap or Flexitie fixings/m² but any fixing must be placed according to calculations for each project.

Delivery And Storage

The Monarflex Stripe FireSmart is supplied in pallets of 25 rolls for our 2m x 45m roll, with each roll individually wrapped in PE foil with label and name identification. The rolls must be stored lying on a pallet under cover and away from heat and direct sunlight.

Health And Safety

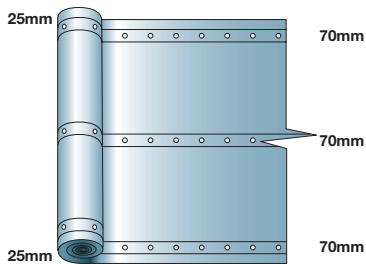
Health and safety data sheets are available for all materials. Please contact Icopal's Technical Services Department for further information.

Quality Assurance

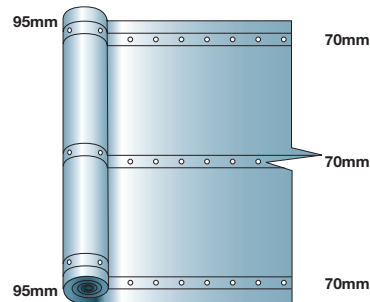
Monarflex Stripe Firesmart is manufactured under a Quality Mangement System approved to ISO 9001:2000 by BSI Quality Assurance.



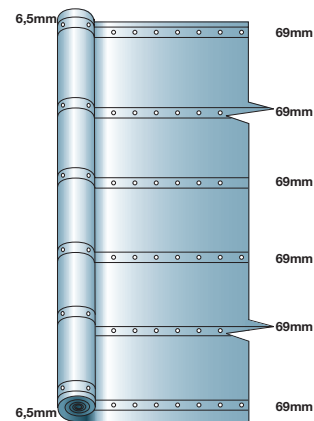
Roll Size: 2m x 45m



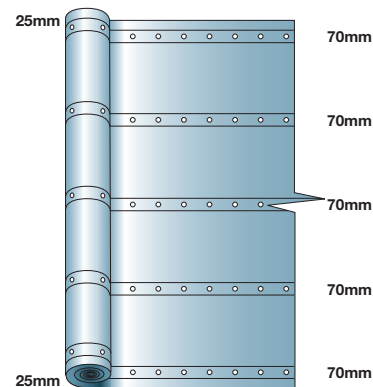
Roll Size: 2.25m x 45m



Roll Size: 3m x 45m



Roll Size: 3m x 45m



For further information call 0161 865 4444 or visit www.monarflex.co.uk

NOTE: This information is given in good faith being based on the latest knowledge available to Icopal Limited. Whilst every effort has been made to ensure that the contents of the publication are current while going to press, customers are advised that products, techniques and codes of practice are under constant review and liable to change without notice. Responsibility cannot be accepted for the application of products, and no claims can be considered, where the manufacturer's instructions have not been followed. The user should not assume, based on any information provided in this sheet, that the product is suitable for any abnormal use. All products are sold subject to our standard conditions of sale, available on request.

Icopal Limited Barton Dock Road, Stretford, Manchester M32 0YL ■ Tel +44(0)161 865 4444 ■ Fax +44(0)161 864 2616 ■ Email: info.uk@icopal.com

www.monarflex.co.uk

Monarflex® **Stripe FireSmart®**

Icopal Ltd
Barton Dock Road
Stretford
Manchester
United Kingdom
M32 0YL
Tel: +44 (0) 161 865 4444
Fax: +44 (0) 161 864 2616
info.uk@icopal.com
www.icopal.co.uk

IC03153
Dec 2015