

22<sup>nd</sup> November 2021



Parks Victoria  
Level 10, 535 Bourke Street  
Melbourne VIC 3000

## STRUCTURAL DESIGN CERTIFICATE

**Project Description: Certification of Walkway Mesh Balustrade**

**Site Address: Portarlington Pier**

We, Partridge Structural Pty Limited, being professional Structural Engineers within the meaning of the National Construction Code, hereby certify that the structural design of the building work shown on the Certified Structural Drawings was carried out under the supervision of a structural engineer certified under NER, and that this work was designed in accordance with accepted engineering practice and principles and with the following:

- (a) National Construction Code 2016, Volume One
- (b) The relevant Australian Standards listed in the NCC as follows:

AS/NZS 1170.0 – 2002	Structural design actions Part 0: General principles
AS/NZS 1170.1 – 2002	Structural design actions Part 1: Permanent, imposed and other actions
AS/NZS 1170.2 – 2011	Structural design actions Part 2: Wind actions
AS4100 – 2020	Steel Structures
AS/NZS 4673 - 2001	Cold formed stainless-steel structures
- (c) **Loading:**

Loading is taken from AS 1170.2-2011, Section 3.6 Barriers, Table 3.3 category C3 – areas without obstacles for people moving and not susceptible to overcrowding, including:

  - 1 kPa infill distributed load applied over an area up to 1.1m above finished floor level of the balustrade.
  - 0.5 kN horizontal infill point load applied at any point within the mesh (to satisfy the infill point load, and also to consider the potential for point loads being applied to the mesh above handrail height).
- (d) **Attached documentation:**

Hand Sketches:

  - 2021S0818 – SK01 and SK02 Portarlington Pier, prepared by Partridge Structural, dated 27<sup>th</sup> October 2021

(e) **Referenced drawings:**

- Drgs PP-CPFX-A1-00, Concept Flexi-mesh, prepared by Matsee, dated 22<sup>nd</sup> June 2021.
- Drgs 3478-P3-S026 Rev 2, Post – Typical Details dated 30<sup>th</sup> January 2021.

(f) **Certifications:**

- Fleximesh product datasheet, attached,
- Stainless steel wire rope product datasheet, attached

(f) **Certification Exclusions:**

- Concrete slab
- 300PFC steel beam

This certificate shall not be construed as relieving any other party of their responsibilities, liabilities or contractual obligations.

Prepared by,

Reviewed by,



**Sonia Cunningham**

BE (Hons.1) BDesArch MIEAust CPEng  
NER (Structural)  
Senior Engineer



**Eamonn Madden**

BE MSc(Struct) MIEAust CPEng NER(Structural)  
Director

For and on Behalf of:

**Partridge Structural Pty Ltd**

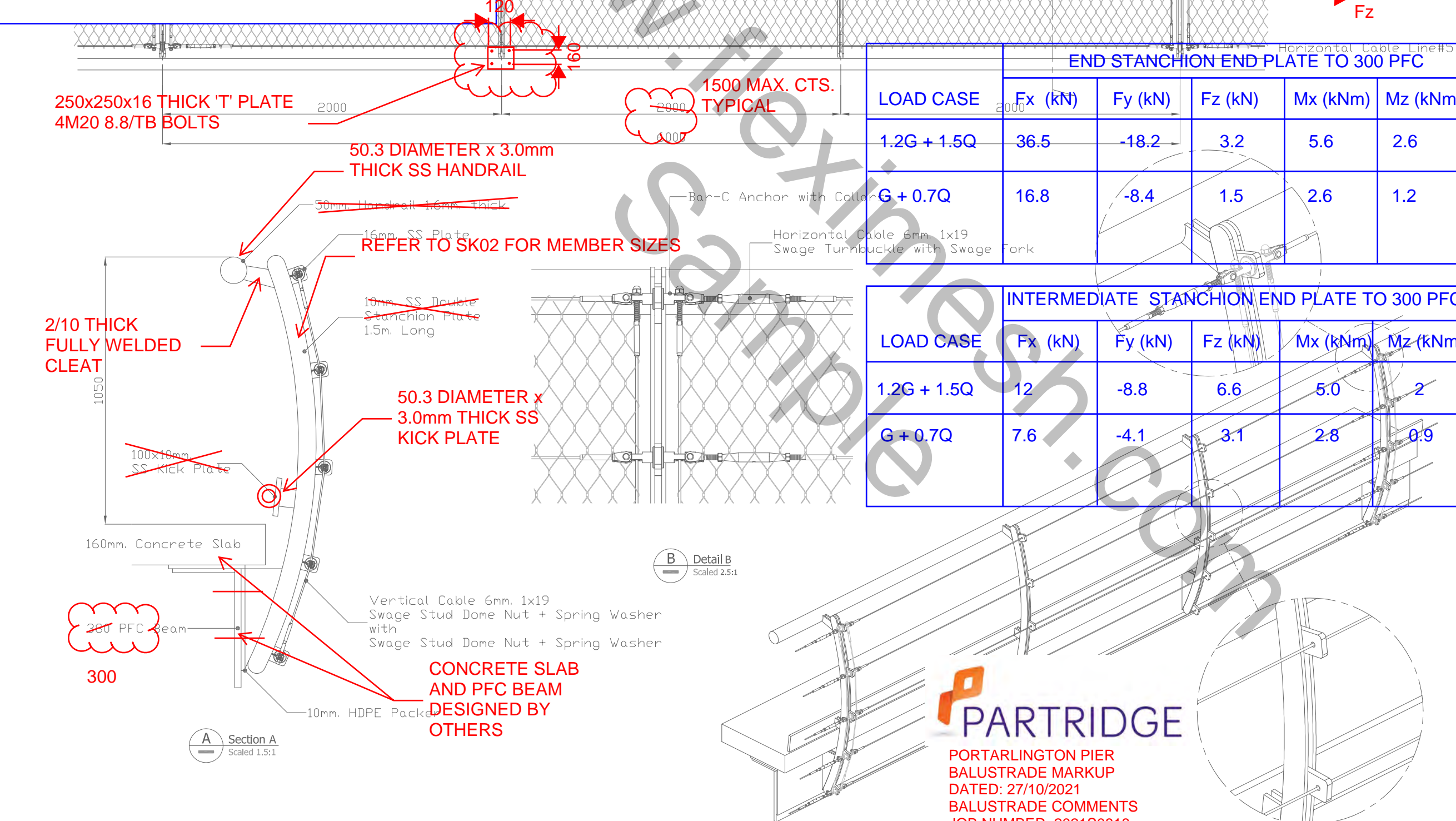
NOTE:  
THESE DESIGNS ARE BASED ON A DESIGN BRIEF OF C3 LOADING  
AS PER AS1170.1 AND WIND LOADING AS PER AS1170.2  
W = 1.12 kPa WITH POROSITY = 90%, - Wu = 0.22 kPa  
LIVE LOAD GOVERNS

EDGE AND INTERMEDIATE CABLES HAVE A 1.0 KN PRETENSION  
AND FLEXIMESH HAS A 0.25 KN PRETENSION.

ALL STAINLESS STEEL GRADE TO BE GRADE 316


G + 0.7Q MESH EXPECTED DEFLECTION = 73mm  
G + 0.7Q CABLE DEFLECTION = 38mm

NOTE: CABLE SETOUT TO CONSIDER THE DEFLECTIONS NOTED  
ABOVE FOR BCA REQUIREMENTS  
CABLE TERMINATIONS AT 6000 MAX. LENGTH.

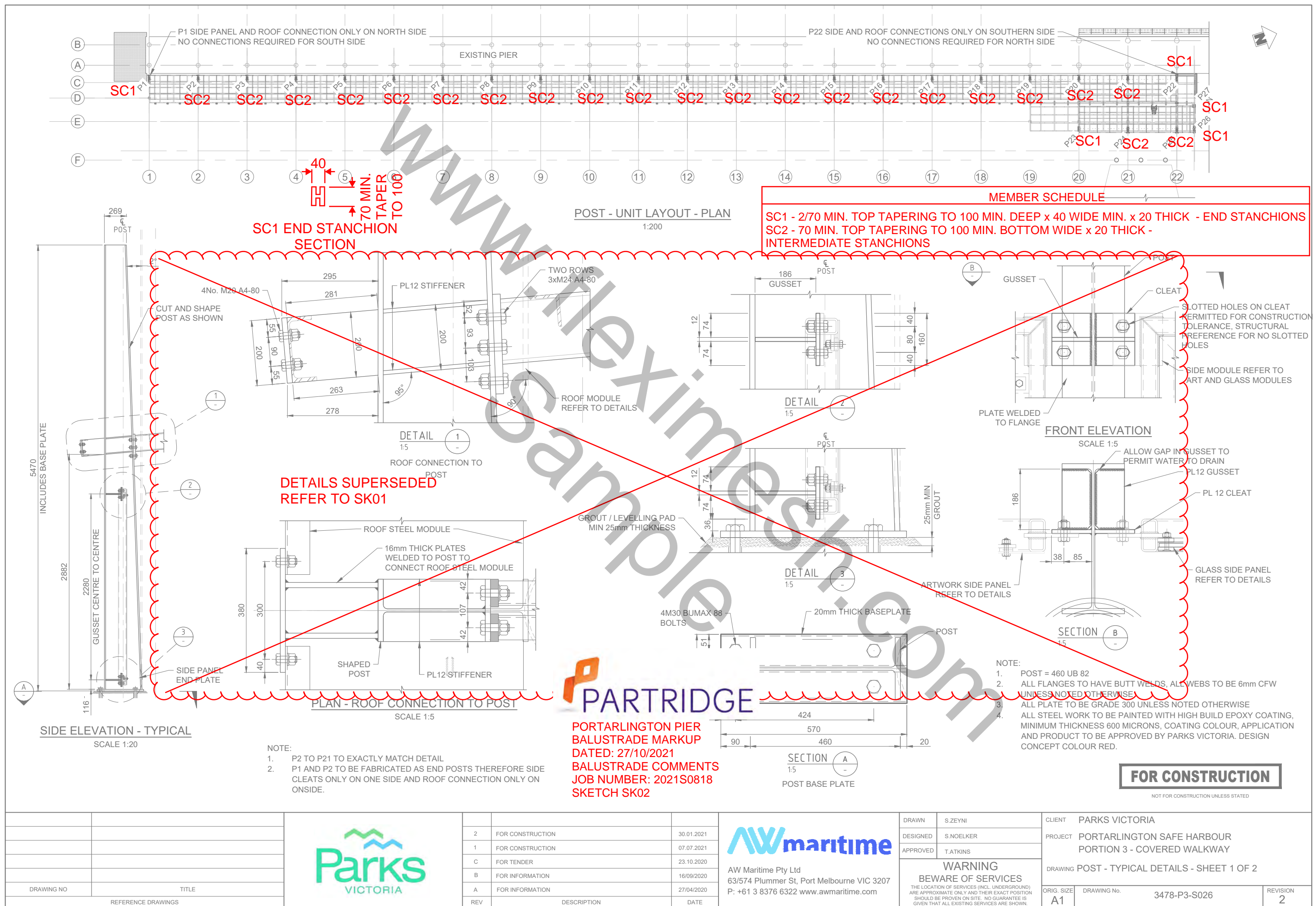


LOAD CASE	END STANCHION END PLATE TO 300 PFC				
	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kNm)	Mz (kNm)
1.2G + 1.5Q	36.5	-18.2	3.2	5.6	2.6
G + 0.7Q	16.8	-8.4	1.5	2.6	1.2

LOAD CASE	INTERMEDIATE STANCHION END PLATE TO 300 PFC				
	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kNm)	Mz (kNm)
1.2G + 1.5Q	12	-8.8	6.6	5.0	2
G + 0.7Q	7.6	-4.1	3.1	2.8	0.9

REV.	DESCRIPTION	DATE	APP.
A1	IFR	03/06/2021	
A2	IFR	04/06/2021	
A3	IFR	22/06/2021	
<p>NOTE :</p> <p>IFR : Issue for Review</p> <p>IFP : Issue for Pricing</p> <p>IFA : Issue for Approve</p>			
<p>CLIENT :</p> <div></div>			
<p>MAIN CONTRACTOR :</p>			
<p>FACADE CONSULTANT :</p>			
<p>PROJECT :</p> <p>PORTARLINGTON PIER</p>			
<p>KEY PLAN</p>			
<p>COORDINATOR : MATSEE</p>			
<p>DESIGNED BY : N/A</p>			
<p>DRAWN BY : KHEM</p>			
<p>CHECKED BY : TOM</p>			
<p>APPROVED BY :</p>			
<p>DATE : 22/06/2021</p>			
<p>SCALE : NONE</p>		<p>Rev. : A3</p>	
<p>DRAWING TITLE:</p> <p>CONCEPT FLEXI-MESH</p>			
<p>DRAWING NUMBER :</p> <p>PP-CPFX-A1-00</p>			

PORTARLINGTON PIER  
BALUSTRADE MARKUP  
DATED: 27/10/2021  
BALUSTRADE COMMENTS  
JOB NUMBER: 2021S0818  
SKETCH SK01





## PRODUCT DATA SHEET

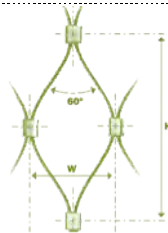
*Flexi-Mesh*  
FLEXIBLE BY DESIGN

**Code: FLEXI-7715-060**

**1.5mm 7x7 AISI316 WIRE ROPE MESH**

Product Type:	STAINLESS STEEL WIRE ROPE MESH
Flexibility:	FLEXIBLE
Wire Rope Construction:	7x7
Material:	STAINLESS STEEL
Material Type:	AISI316
Specification:	DIN 3055
Finish:	ULTRASONIC BATH
Nominal Diameter (Metric)	1.5mm
Approx. Net Weight:	0.68kg/m <sup>2</sup>
Min. Breaking Load (Wire Rope):	129kgf or 1.27kN
Light Transmission:	93%
Wire Rope Origin:	KOS (KOREA'S ORIGINAL STAINLESS) SOUTH KOREA

Mesh Aperture:



Width (H)

Height (H)

60mm

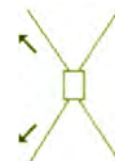
105mm

Node Strength:



Longitudinal  
Strength

0.8kN



Transversal  
Strength

2.3kN

### NOTE:

Information provided for Minimum Breaking Load (MBL) is the minimum requirement for the wire rope to meet Flexi-Mesh standards. Actual Breaking Load (ABL) will exceed this and can be found on the Mill Certificate for individual production runs. Mill Certificates can be provided with your next Purchase Order.



# ARCUS WIRE GROUP

MARINE • INDUSTRIAL • ARCHITECTURAL



## TECHNICAL DATA

Product Type:	Stainless Steel Wire Strand
Flexibility:	Non-Flexible
Strand Construction:	1x19
Material:	Stainless Steel
Material Type:	AISI316
Nominal Diameter:	6.0mm
Weight p/m:	0.180kg/m
MBS:	3,030kgf or 29.7kN
Specification:	DIN3053
Finish:	Ultrasonic Bath
Modulus of Elasticity:	125 +/- 10kN/mm <sup>2</sup>
Reel Lengths:	305m or Cut Lengths

## Other Information

Lay Length of Strand:	55.87mm
Lay Direction:	Right Lay (R.L.)

**hamma™ X-Strand**  
Manufactured Exclusively  
in South Korea by



**AWG**  
**Exclusive**

PRODUCT CODE: HMX19060

hamma™ X-Strand 6.0mm 1x19