

User Guide

This guide provides the specifier and contractor guidance in determining the appropriate material to be used for providing fire protection to structural steel members. The following considerations that must be taken into account when the user has to decide between a board, cementitious spray or reactive coating (intumescent paint). This guide also highlights properties critical to the materials performance, including environmental use, method of installation, appropriate certification standards etc.

The second stage of this guide provides the user information on the calculation of the section factor (AV or Hp/A) which is used to determine the thickness of the protective material. Examples for both boxed and profile calculations are provided.

The third section details the flow of the application methods. Details on surface preparation, appropriate anti corrosion primers, key coats, protective weather proof coatings etc are all detailed in Stage Three.

Because this guide is by no means exhaustive in its content, the end user should satisfy themselves that the environmental end use conditions are suitable for the product and the relevant approvals and certifications are available. If in doubt, please contact the nearest Promat office for advice.

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Promat fire protection products are manufactured under a quality management system certified in accordance with ISO 9001: 2008 Certification. The production units have passed the site audits of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001 and OHSAS 18000 for occupational health and safety.

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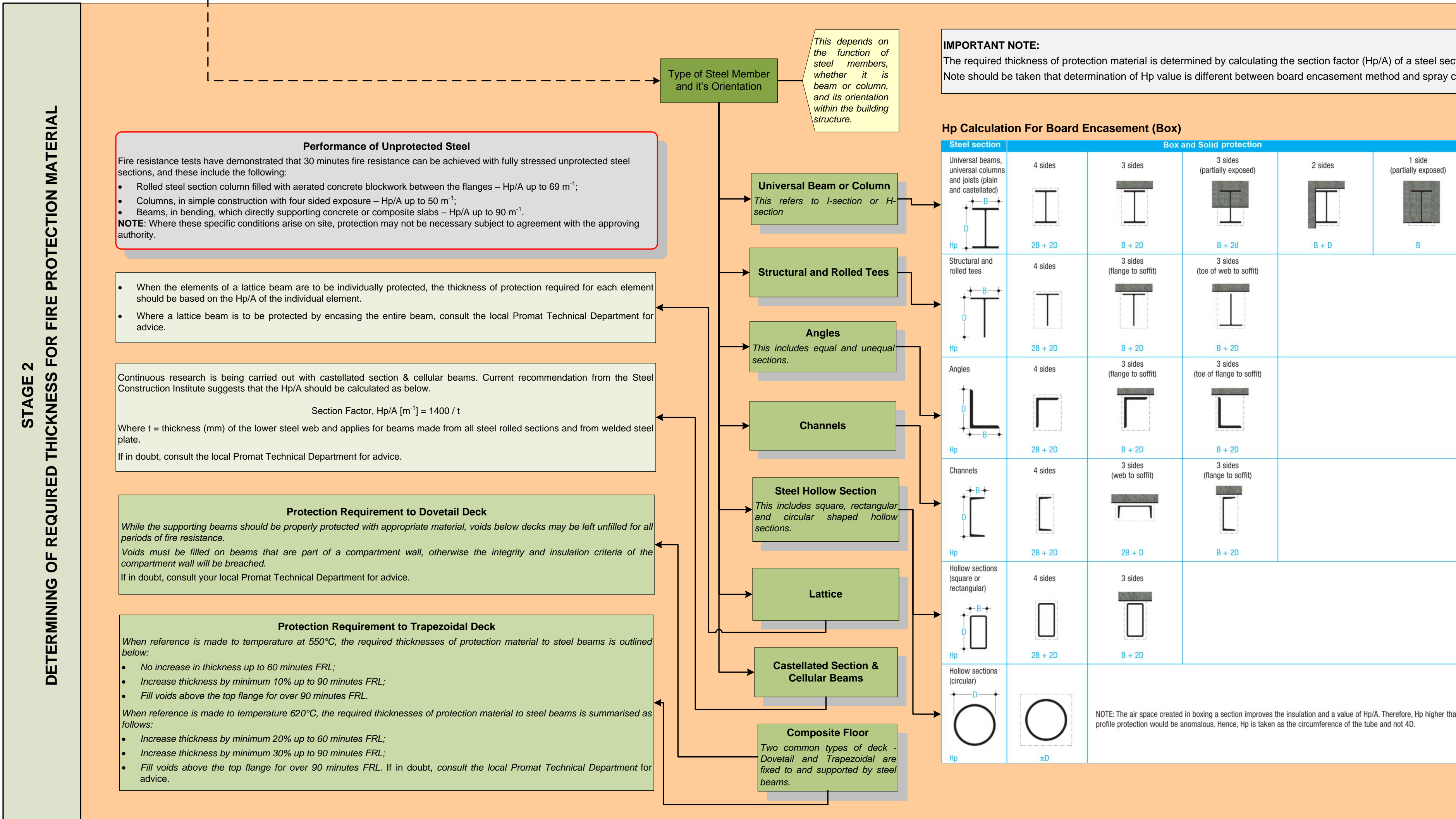
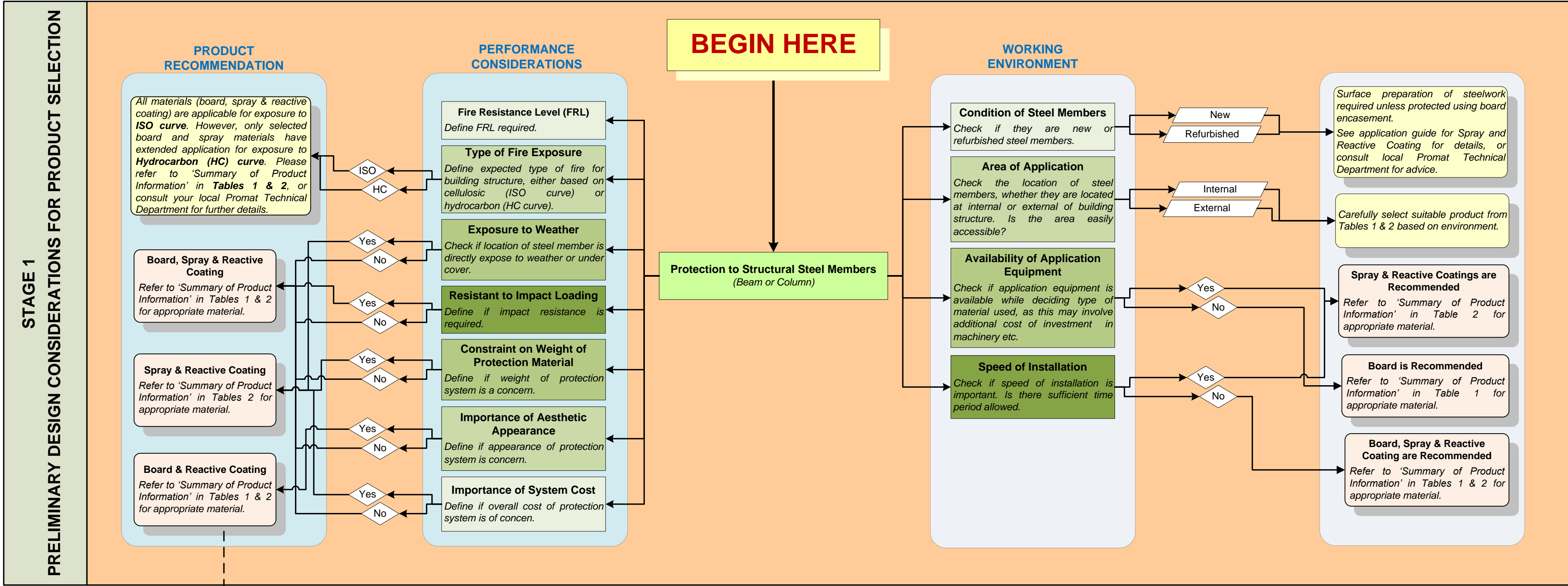
TABLE 1: Summary of Promat Board Products (complies with BS 476: Part 21: 1987, AS 1530: Part 4: 2005 and ASTM E119)

BOARD	PROMATECT™-H	PROMATECT™-L	PROMATECT™-250/100	PROMATECT™-50	VICUCLAD™
Maximum FRL & Standard	120 min (BS AS) 180 min (ASTM)	240 min (BS & AS)	150 min (BS & AS)	240 min (BS & AS)	240 min (BS & AS)
Maximum Section Factor (AV)	260 m <sup>2</sup> (BS) 300 m <sup>2</sup> (ASTM)	260 m <sup>2</sup> (BS & AS)	260 m <sup>2</sup> (BS & AS)	260 m <sup>2</sup> (BS & AS)	265 m <sup>2</sup> (BS & AS)
Area of Application	- Internal - Semi External	- Internal - Semi External	- Internal	- Internal - Semi External	- Internal
Impact Resistance	Yes	Yes	No	Yes	No
Fixing Method Used	- Screw - Staples (for thickness > 15mm)	- Screw - Staples	- Screw - Staples (for thickness > 15mm)	- Screw	- Adhesive & Nail - Screw
Construction Type	1,2,3 or 4 Sided Encasement	1,2,3 or 4 Sided Encasement	1,2,3 or 4 Sided Encasement	1,2,3 or 4 Sided Encasement	1,2,3 or 4 Sided Encasement
Type of Fire Curve	ISO / HC Curve	ISO Curve	ISO Curve	ISO Curve	ISO Curve

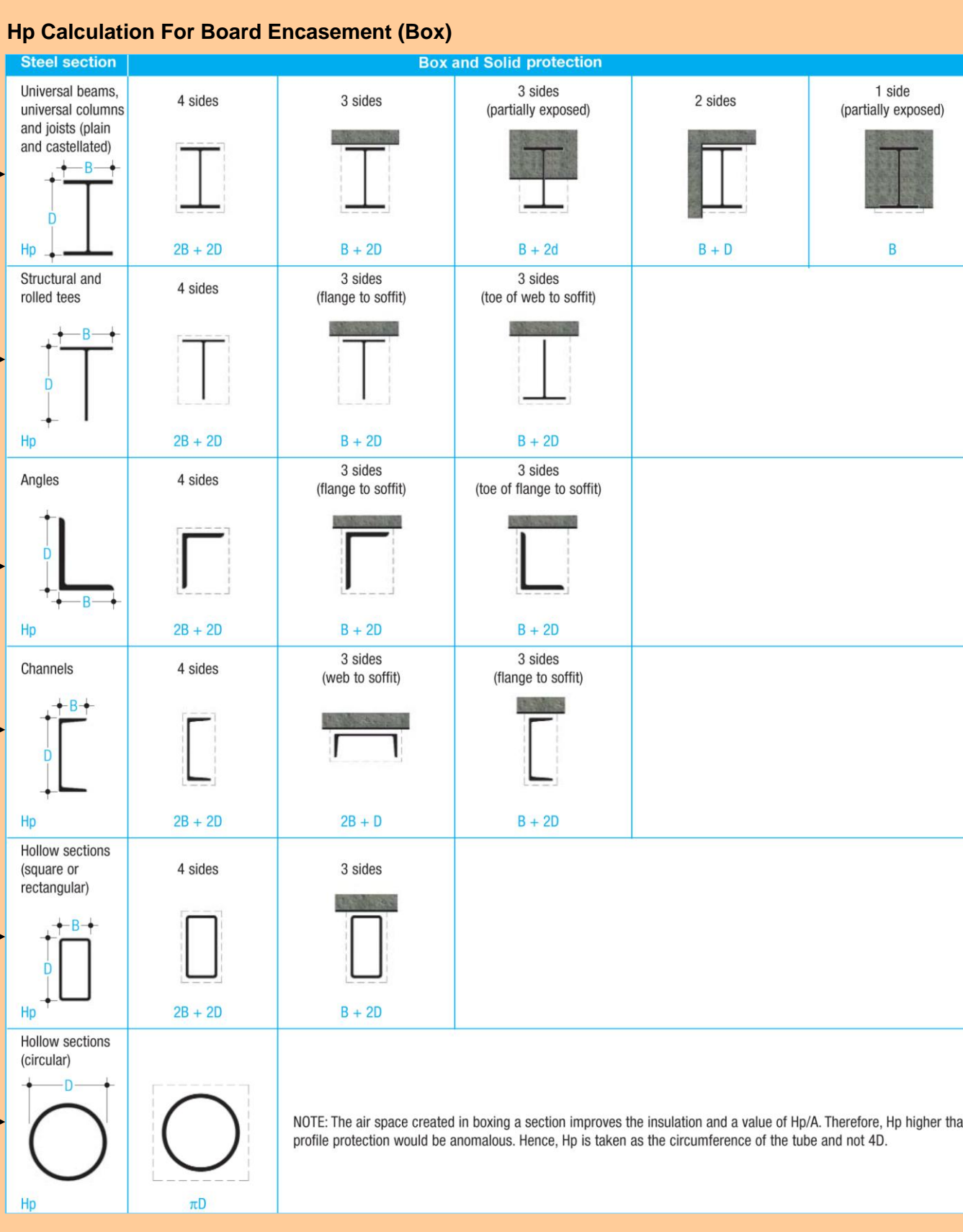
TABLE 2: Summary of Promat Spray and Paint Products (complies with BS 476: Part 21: 1987 and AS 1530: Part 4: 2005)

SPRAY	CAFCO™ 300	CAFCO MANDOLITE™ CP2	CAFCO FENDOLITE™ MI	CAFCO FENDOLITE™ TG	CAFCO MANDOLITE™ 550	CAFCO SPRAYFILM™ WB3
System Properties	Vermiculite gypsum based	Vermiculite and Portland cement based	Vermiculite and Portland cement based	Vermiculite and Portland cement based	Vermiculite and Portland cement based	Intumescent paint
Maximum FRL	240 min	240 min	240 min	240 min	240 min	120 min
Maximum Section Factor (AV)	Up to 400 m <sup>2</sup> (AS) Up to 310 m <sup>2</sup> (BS)	Up to 310 m <sup>2</sup> (BS & AS)	Please consult local Promat office			
Area of Application	Internal only	- Internal only - Semi exposed	External	External (Touch-up for CAFCO FENDOLITE™ MI)	External	- Internal only - Semi exposed (with external appropriate top coat)
Surface Preparation Required?	Yes	Yes	Yes	Yes	Yes	Yes
Keycoat (Roller, brush or conventional spray application)	CAFCO™ SBR bonding latex or CAFCO BONDSEAL™	1. CAFCO™ SBR Bonding latex if primer zinc epoxy or zinc epoxy 2. CAFCO™ PSK 101 Zinc Epoxy primer alkyl or zinc phosphate	CAFCO™ PSK 101	CAFCO™ PSK 101	CAFCO™ PSK 101 for primed steelwork	Primer required (See Table 5)
Application	Wet spray application - Machine	Wet spray application - Machine	Wet spray application - Machine	Wet hand application - Trowel by hand	Wet spray application - Machine	- Airless spray
Galvanized Mesh Required?	Depends Upon FRL and Dimension of Steel Section Please Consult Local Promat Office					
Type of Fire Curve	ISO Curve	ISO Curve	ISO Curve & HC Curve (for Oil & Gas)	ISO Curve & HC Curve (for Oil & Gas)	ISO Curve & HC Curve (for Oil & Gas)	ISO Curve

TABLES 1 AND 2: PLEASE CONSULT PROMAT FOR APPLICATIONS WHERE SECTION FACTOR EXCEEDS 260m<sup>2</sup>



**IMPORTANT NOTE:**  
The required thickness of protection material is determined by calculating the section factor (Hp/A) of a steel section, which in turn is calculated by the ratio of the heated perimeter surface (Hp) to the cross sectional area (A) of a steel section. Note should be taken that determination of Hp value is different between board encasement method and spray coating method. This is illustrated below for better understanding of the relevant steel section.



**Worked example:**  
Calculate section factor of universal beam 305 mm x 305 mm x 240 kg/m. Assuming 4-sided exposure.  
Given: B = 317.8 mm D = 352.8 mm A = 356.6 cm<sup>2</sup>  
For board encasement method (board protection),  
Hp = 2B + 2D = 2(317.8) + 2(352.8) = 1341 mm  
Hence, Hp/A = 1341 / 0.03566 = 43.3 m<sup>2</sup>  
For spray or reactive coating protection (profile protection),  
Hp = 4B + 2D - 2t = 4(317.8) + 2(352.8) - 2(23) = 1930.8 mm  
Hence, Hp/A = 1931 / 0.03566 = 63.1 m<sup>2</sup>  
**Determination of Required Thickness for Protection Material**  
Once the Hp/A of a steel section is determined, refer to Promat Handbook for recommended thickness of material selected based on the required fire resistance duration.  
Contact the nearest Promat office for a copy of The Promat Technical Handbook.

Table 3: Protection with Board Encasement

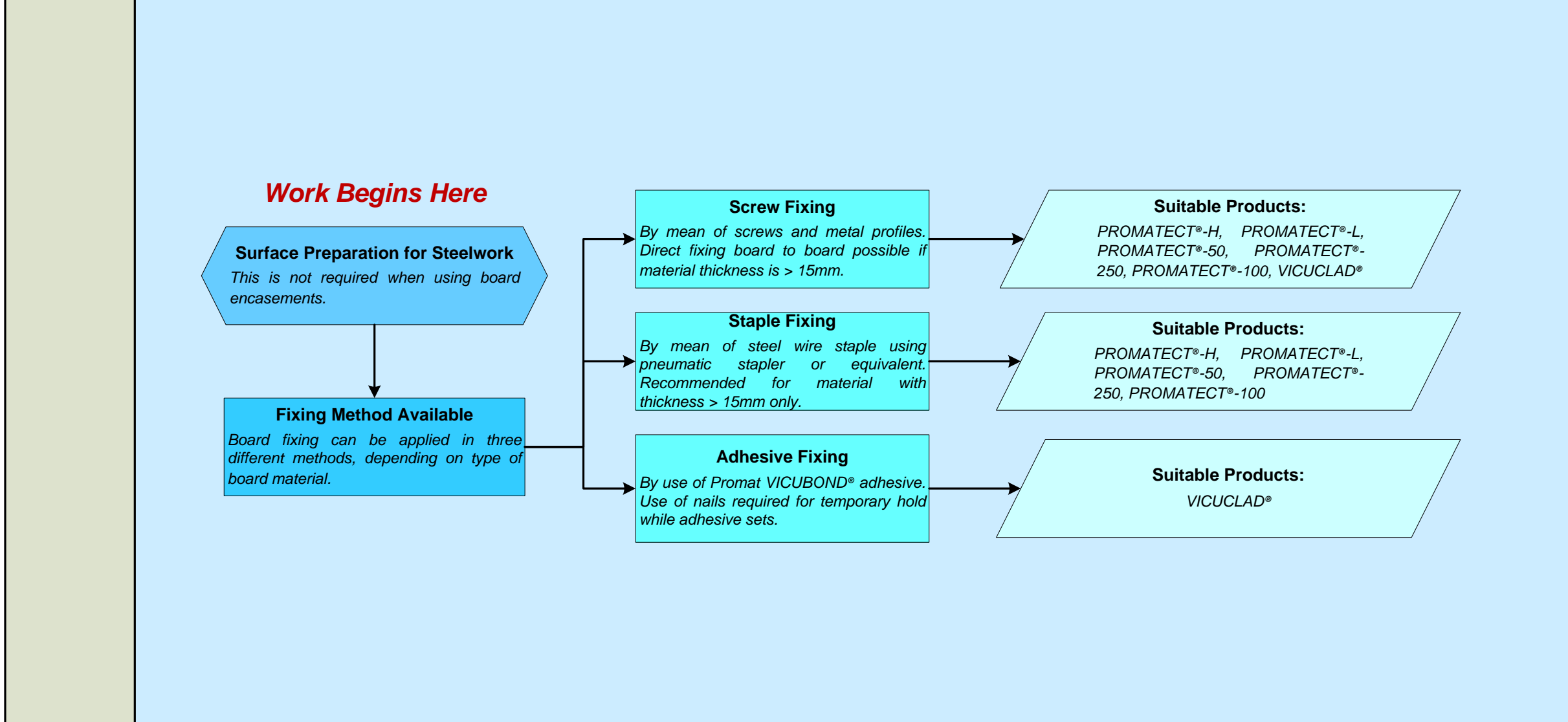


Table 4: Protection with Cementitious Wet Spray Coating (for Oil & Gas, Hydrocarbon Exposure, External Use)

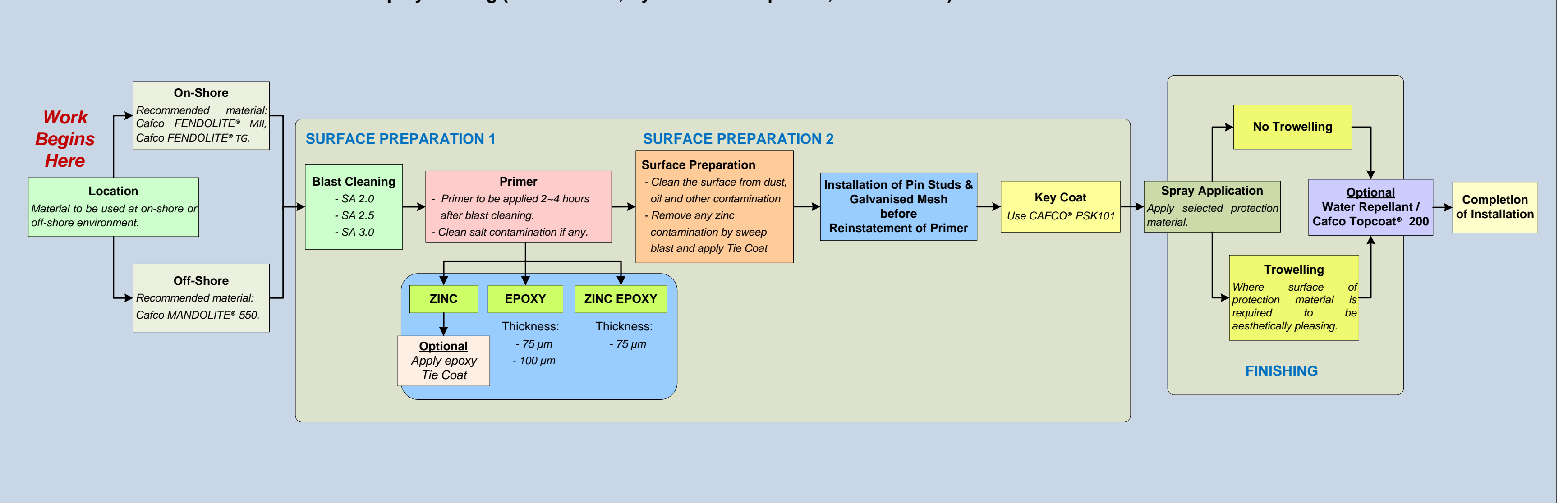


Table 5: Protection with Reactive Coating (Caico Sprayfilm WB3)

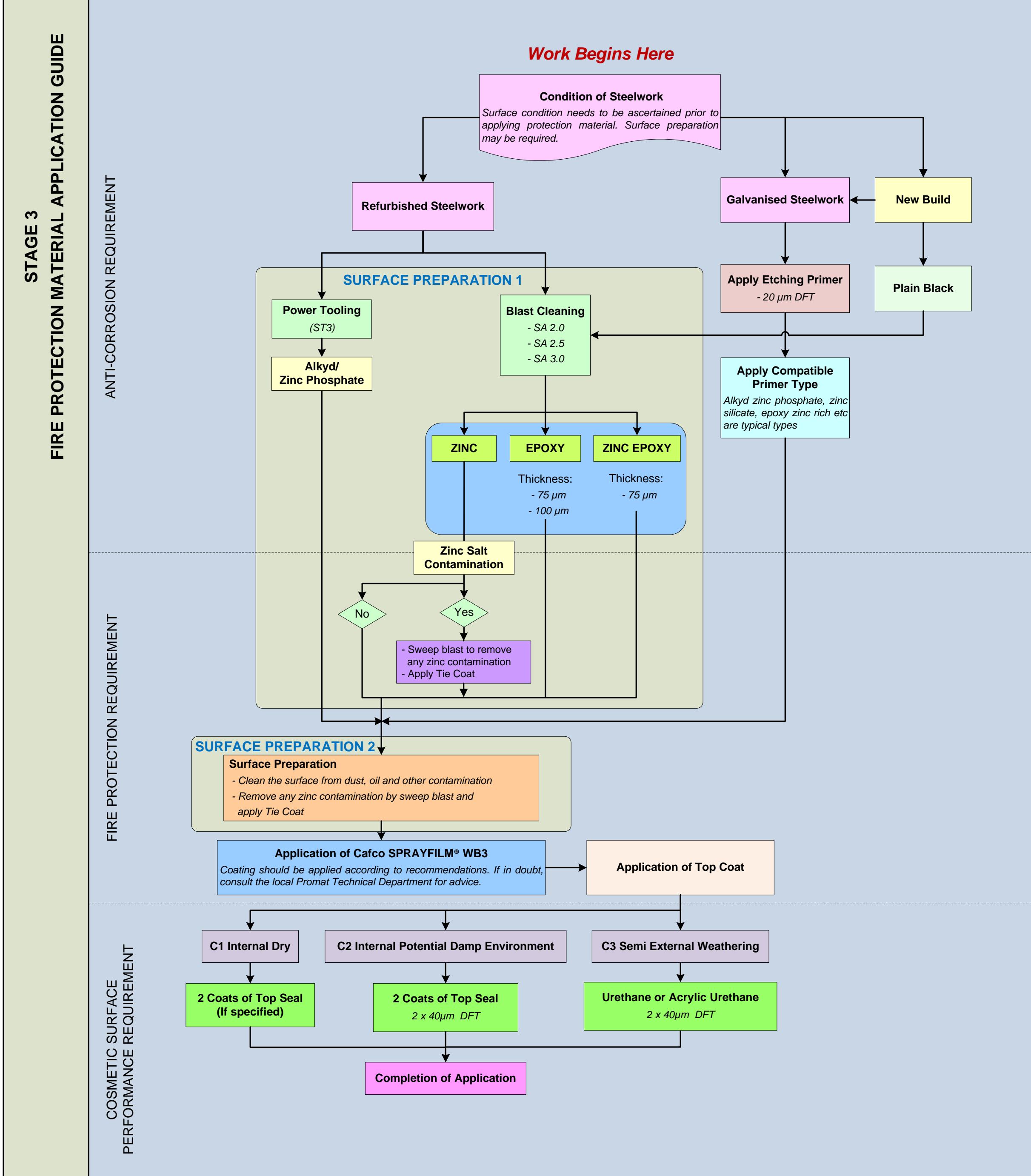


Table 6: Protection with Cementitious Wet Spray Material - General Construction

