

DURA[®] Wall Panel WP70/20

Description

DURA[®] Wall Panel WP70/20 is a thin wall panel manufactured using ultra-high performance ductile concrete (UHPdC). Each panel has a total height of 7 m and a total width of 2 m. The wall panel has multiple purposes such as it can be used in conjunction with **Dura[®] Portal Frame System (PFS)**, serve as thin wall panel against wind/rain/sunshine/dust/spy. Besides, the wall panel can be customized to serve as acoustic panel against noise; security panel against thief; protective panel against blast and impact loading; impermeable membrane against highly corrosive compound and fire.

Features

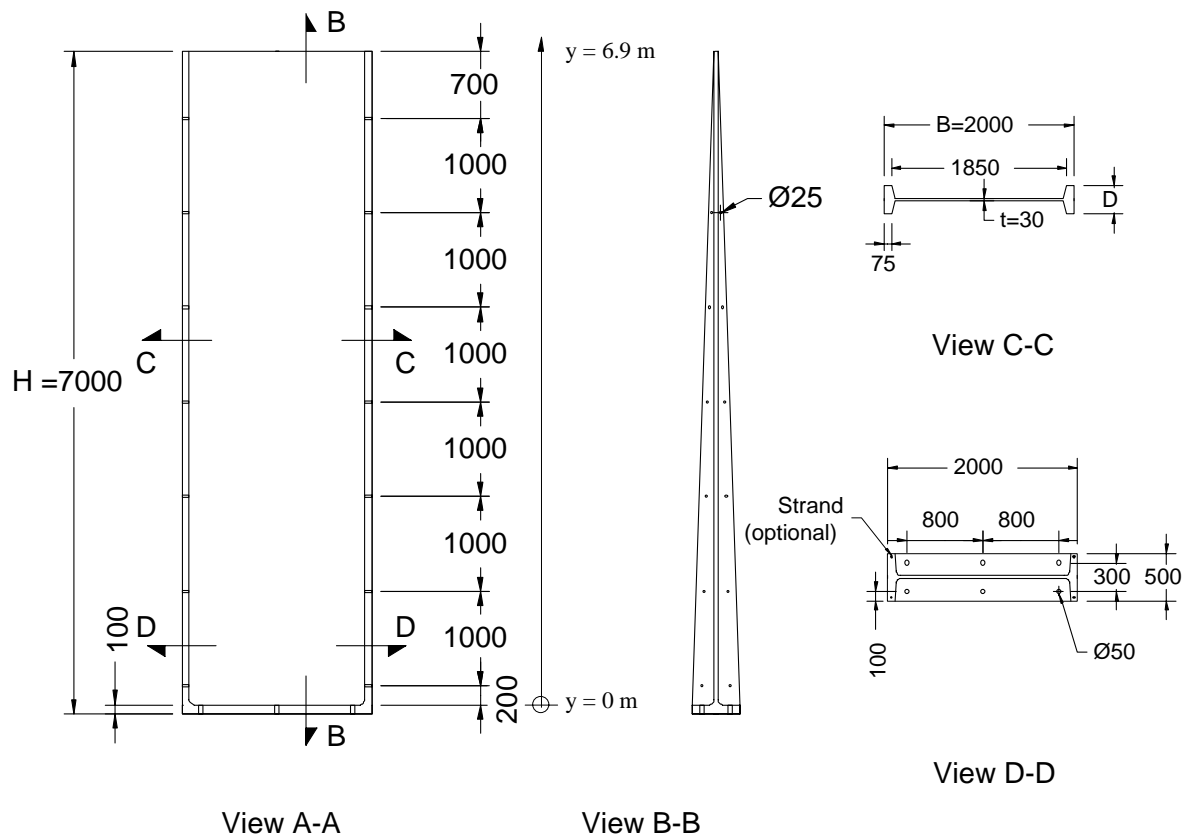
- **DURA[®] WP70/20** consists of thin wall panel of 30 mm in thickness, two ribbed beams as wide as 75 mm and a base pad of 100 mm in thickness.
- The UHPdC used for the **DURA[®] WP70/20** has characteristic compressive strength ranges between 100 to 120 MPa, and characteristic flexural strength of 15 MPa.
- **DURA[®] WP70/20** eliminates the use of conventional steel reinforcing bars and stirrups. All steel fibres used are made from high carbon steel wires with tensile strength of 2300 MPa.
- Special lifting anchors are provided to improve the safety margin during handling and installation.

Advantages of DURA[®] WP70/20

- **DURA[®] WP70/20** is highly durable and impermeable. It is therefore suitable for use in extremely aggressive environments such as marine environments or chemically active plants.
- **DURA[®] WP70/20** is easy to install. Simple conventional drop-in anchors or pre-positioned bolts & nuts are used to connect the wall panel to the floors (except some grout maybe needed for uneven floor base).
- No scaffolding, props or formwork are required over the entire installation, thus reducing construction site activities, improving safety margins and eliminating in-situ casting work.
- **DURA[®] WP70/20** is many times lighter than conventional R.C. wall system.
- **DURA[®] WP70/20** is guaranteed to be geometrically stable as they are steam-cured to minimized creep and long-term shrinkage.
- **DURA[®] WP70/20** is not only weather-proof, but can be also customized to fire-proof.
- **DURA[®] WP70/20** is aesthetically pleasing as its finish surface is smooth and colors of the wall are subjected to request.
- **DURA[®] WP70/20** is a durable structure that supports the "GREEN" visionary of sustainable development.

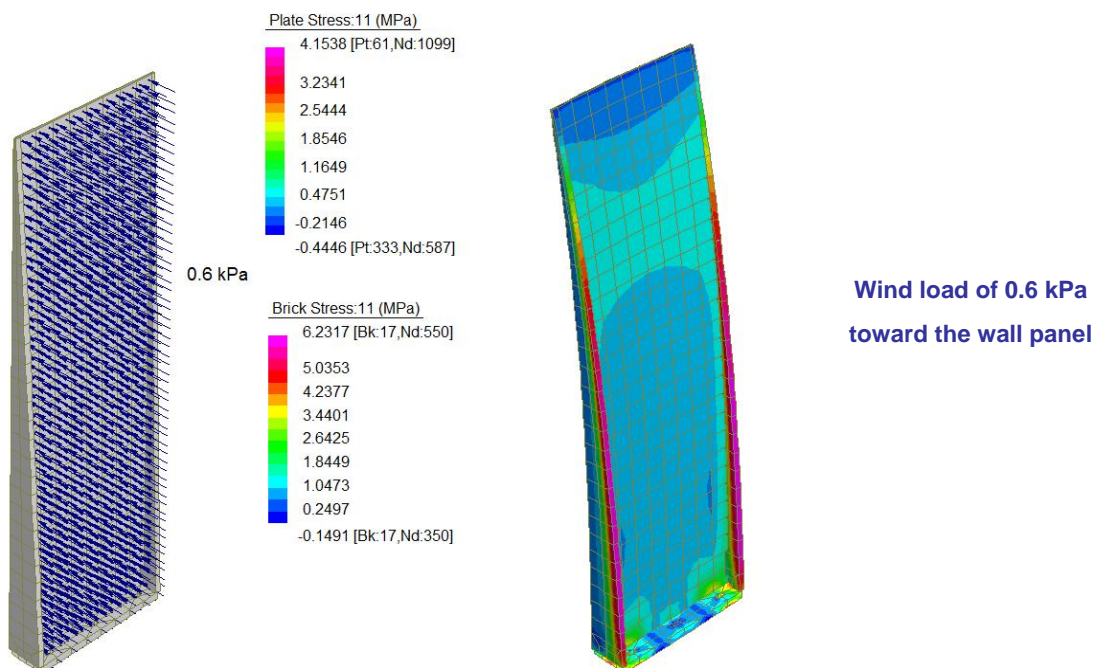


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Refer to table 1 for technical data

Non-Linear Finite Element Modeling



Construction Sequence



Step 1: Preparation of drop-in anchors on floors



Step 2: Lifting of wall WP70/20



Step 3: Over-turning of wall



(d) Lifting and mounting of wall



(e) Positioning and tightening to adjacent wall



(f) Completed wall

Table 1: Technical Data for DURA[®] WP70/20.

	Symbol	Unit	DURA [®] WP70/20
Total Height of Wall	H	m	7.0
Total Width of Wall	B	m	2.0
Panel Thickness	t	mm	30
Self Weight of Wall	W	kg / pc	2400
Ribs Depth	D	mm	135 ~ 500 [500 – 52.8986 y]
Section Area [↑]	A _g	x 10 ³ mm ²	Min. 7.75; Max. 130.5 [0.15 D + 55.5]
Neutral Axis [↑]	y _{top}	mm	Min. 67.5; Max. 250 [0.5 D]
	y _{bot}	mm	
2 nd Moment of Inertia [↑]	I _{xx}	mm ⁴	Min. 0.0349e9; Max. 1.5667e9 [4162500 + 12.5 D ³]
Section Modulus [↑]	Z _{top}	mm ³	Min. 0.7331e6; Max. 6.5275e6 [277500 + 25 D ²]
	Z _{bot}	mm ³	
Design Gust Wind Speed*	V _s	m/s (km/hr)	31 (112)
	V _u	m/s (km/hr)	40 (144)
Design Wind Pressures*	p _s	kPa	0.46 (SLS)
	p _u	kPa	0.77 (SLS)
Natural Frequency, 1 st	f _{o,1}	Hz	3.9
Natural Frequency, 2 nd	f _{o,2}	Hz	7.8
Natural Frequency, 3 rd	f _{o,3}	Hz	12.2

y is the distance along the ribbed beams (in meters)

↑ Analytical expression in term of D (in mm)

* AS 1170.2 (1989) – Wind loads

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