

DURA[®] WP35/30 Wall Panel

Description

DURA[®] WP35/30 Wall Panel is a thin wall panel manufactured using ultra-high performance ductile concrete (UHPdC). Each panel has a total height of 3.5 m and a total width of 3 m. For interior application, **DURA[®] WP35/30** can serve as highly durable permanent partition wall. For exterior application, **DURA[®] WP35/30** has multiple functions: such as it can be used in conjunction with **Dura[®] PFS Portal Frame System**, 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

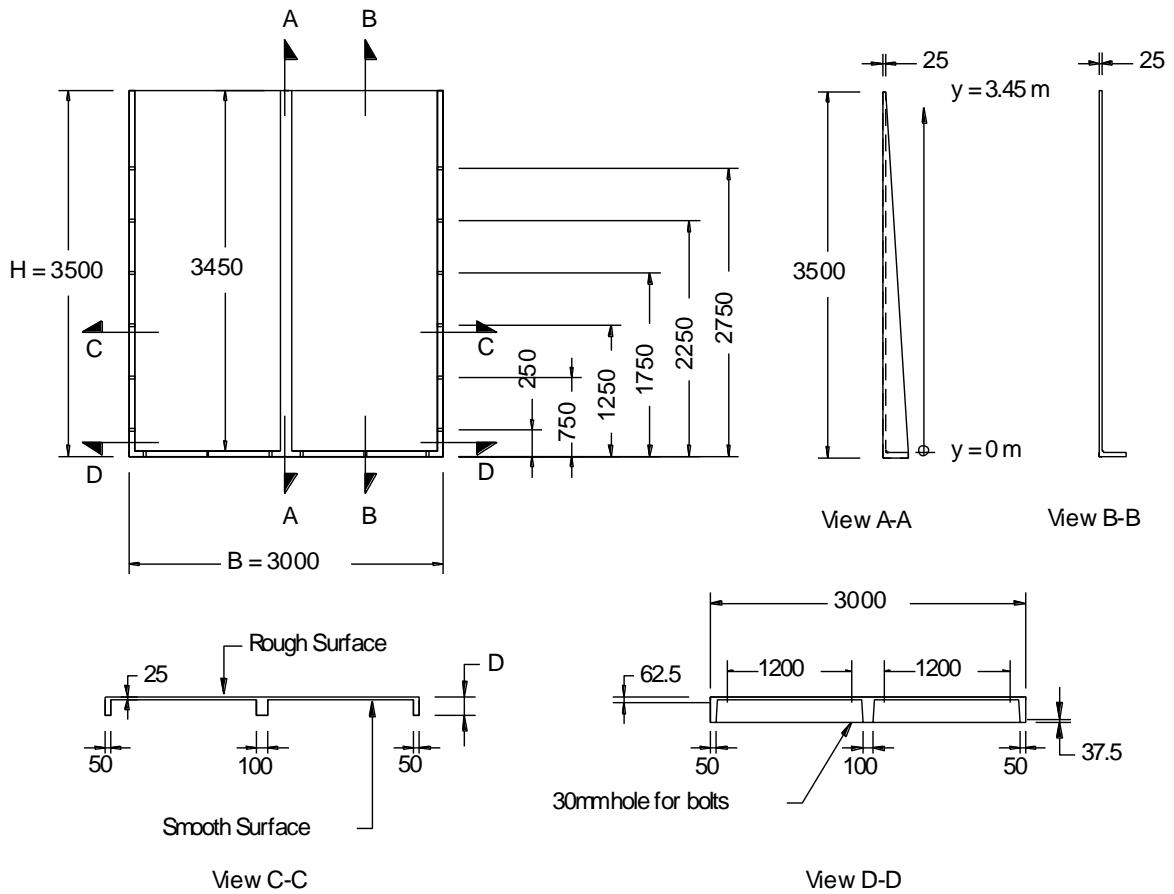
- **DURA[®] WP35/30** consists of thin wall panel of 25 mm in thickness, three ribbed beams and a base pad of 50 mm in thickness.
- The UHPdC used for the **DURA[®] WP35/30** has compressive strength ranges from 130 MPa to 150 MPa and modulus of rupture over 20 MPa.
- **DURA[®] WP35/30** eliminates the use of conventional steel reinforcing bars and stirrups. All steel fibers 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[®] WP35/30

- **DURA[®] WP35/30** is highly durable and impermeable. It is therefore suitable for use in extremely aggressive environments such as marine environments or chemically active plants.
- **DURA[®] WP35/30** 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[®] WP35/30** is many times lighter than conventional R.C. wall system.
- **DURA[®] WP35/30** is guaranteed to be geometrically stable as they are steam-cured to minimized creep and long-term shrinkage.
- **DURA[®] WP35/30** is not only weather-proof, but can be also customized to fire-proof.
- **DURA[®] WP35/30** is aesthetically pleasing as its finish surface is smooth and colors of the wall are subjected to request.
- **DURA[®] WP35/30** is a durable structure that supports the “GREEN” visionary of sustainable development.

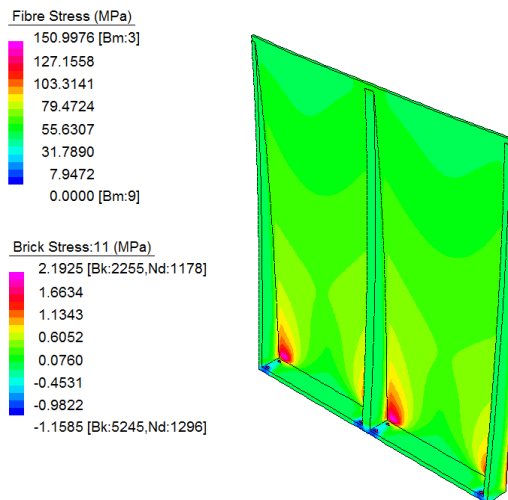


DURA[®] WP35/30



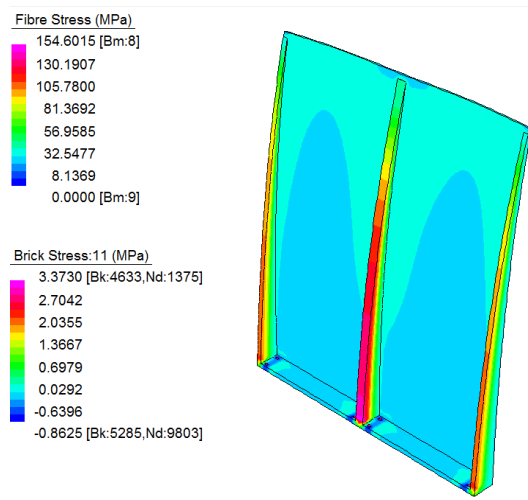
Refer to table 1 for technical data

Non-Linear Finite Element Modeling



Serviceability Limit State 1: Suction

Wind load of 0.6 kPa toward the flat surface.



Serviceability Limit State 2: Pressure

Wind load of 0.6 kPa toward the ribbed surface

Table 1: Technical Data for DURA[®] WP35/30

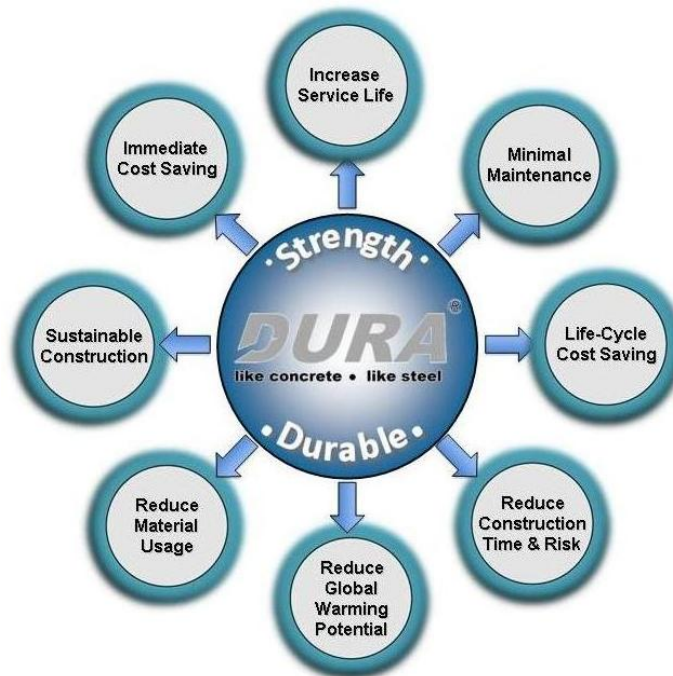
	Symbol	Unit	DURA [®] WP35/30
Total Height of Wall	H	m	3.5
Total Width of Wall	B	m	3.0
Panel Thickness	t	mm	25
Self Weight of Wall	W	kg / pc	950 ~ 1000
Ribs Depth	D	mm	25 ~ 250 [250 – 65.2174 y]
Section Area [†]	A_g	mm ²	Min. 75,000; Max. 120,000 [0.2 D + 70]
Neutral Axis [†]	y_{top}	mm	Min. 12.5; Max. 59.375 [(D ² + 8750) / (2D + 700)]
	y_{bot}	mm	Min. 12.5; Max. 190.625 [(D ² + 700 D – 8750) / (2D + 700)]
2 nd Moment of Inertia ^{††}	I_{xx}	mm ⁴	Min. 3.906e6; Max. 633.2e6 [-0.0337 D ⁴ + 51.411 D ³ – 432.55 D ² – 67128 D + 5e6]
Section Modulus ^{††}	Z_{top}	mm ³	Min. 0.313e6; Max. 10.665e6 [0.0008 D ⁴ – 0.5585 D ³ + 186.82 D ² – 13501 D + 482378]
	Z_{bot}	mm ³	Min. 0.189e6; Max. 3.322e6 [0.0021 D ⁴ – 1.7493 D ³ + 589.82 D ² – 31074 D + 779425]
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 (ULS)
Natural Frequency, 1 st	f_{o,1}	Hz	8.67
Natural Frequency, 2 nd	f_{o,2}	Hz	11.37
Natural Frequency, 3 rd	f_{o,3}	Hz	21.53

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

† Analytical expression in term of D (in mm);

†† Regression best fit with R² = 1

* AS 1170.2 (1989) – Wind loads



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