

## ULTRASHELLS (28 day concrete strength)

## SECTION PROPERTIES

Non Composite Section Properties	Units	100 US	150 US
Mass of Section	kg/m	120	150
Gross Area	mm <sup>2</sup>	47995	61622
EI	Nmm <sup>2</sup>	14.773 X 10 <sup>11</sup>	45.423 X 10 <sup>11</sup>
<b>Positive Moments</b>			
Ultimate Moment capacity ( $\phi M_u^{POS}$ )	kNm	11.83	37.02
Cracking Moment ( $M_{cr}^{POS}$ )	kNm	11.41	24.55
Reinforcement Shear component ( $\phi V_{uc.reo}^{POS}$ )	kN	22.69	32.10
Moment Shear component ( $\phi M_o.max^{POS}$ )	kNm	5.94	12.45
Web Shear capacity ( $\phi V_{uc.web}^{POS}$ )	kN	47.89	57.68
<b>Negative Moments</b>			
Ultimate Moment capacity ( $\phi M_u^{NEG}$ )	kNm	7.23	20.64
Cracking Moment ( $M_{cr}^{NEG}$ )	kNm	4.30	10.99
Reinforcement Shear component ( $\phi V_{uc.reo}^{NEG}$ )	kN	29.54	33.47
Moment Shear component ( $\phi M_o.max^{NEG}$ )	kNm	1.13	3.78
Web Shear capacity ( $\phi V_{uc.web}^{NEG}$ )	kN	47.89	57.68
<b>Material Details</b>			
<p>CONCRETE: 65MPa</p> <p>STEEL TENDONS:</p> <ul style="list-style-type: none"> <li>• 7-wire ordinary strand, 9.5mm low-relaxation</li> <li>• Area = 54.7mm<sup>2</sup></li> <li>• Min Breaking Load = 102kN</li> <li>• Min Tensile Strength (<math>f_p</math>) = 1850 Mpa</li> <li>• Yield Strength = 0.85 x <math>f_p</math> (stress relieved wire)</li> <li>• Modulus of Elasticity = 195 x 10<sup>3</sup>MPa</li> </ul>			

### SHEAR NOTES:

Shear capacity varies along the length of the beam, and is dependent on applied loads.  $\phi V_{uc}$  = Lesser of  $\phi V_{uc.flexure}$  &  $\phi V_{uc.web}$  /  $\phi V_{uc.flexure}$  =  $\phi V_{uc.reo}$  + ABS [ $\phi M_o(V^*/M^*)$ ] /

$\phi M_o$  Varies at the ends of the beams where the strand is developing and is a constant value  $\phi M_o.max$  outside of this zone.

From 0 to 56mm from the end of the beam :  $\phi M_o$  = Nil / From 56 to 558mm from the end of the beam :  $\phi M_o$  = varies from Nil to  $\phi M_o.max$  / Past 558mm from the end of the beam :  $\phi M_o$  =  $\phi M_o.max$

### IMPORTANT NOTE:

Section properties in Western Australia may vary slightly, please contact Ultrafloor on 1800 858 723 for details.

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## SECTION PROPERTIES

Non Composite Section Properties	Units	200 US	250 US
Mass of Section	kg/m	185	220
Gross Area	mm <sup>2</sup>	75622	89622
EI	Nmm <sup>2</sup>	111.425 X 10 <sup>11</sup>	218.075 X 10 <sup>11</sup>
<b>Positive Moments</b>			
Ultimate Moment capacity ( $\phi M_u^{pos}$ )	kNm	61.44	87.13
Cracking Moment ( $M_{cr}^{pos}$ )	kNm	39.72	58.01
Reinforcement Shear component ( $\phi V_{uc.reo}^{pos}$ )	kN	39.46	50.01
Moment Shear component ( $\phi M_o.max^{pos}$ )	kNm	18.96	26.81
Web Shear capacity ( $\phi V_{uc.web}^{pos}$ )	kN	77.70	105.81
<b>Negative Moments</b>			
Ultimate Moment capacity ( $\phi M_u^{neg}$ )	kNm	29.90	55.03
Cracking Moment ( $M_{cr}^{neg}$ )	kNm	17.54	34.48
Reinforcement Shear component ( $\phi V_{uc.reo}^{neg}$ )	kN	43.44	52.56
Moment Shear component ( $\phi M_o.max^{neg}$ )	kNm	5.14	13.32
Web Shear capacity ( $\phi V_{uc.web}^{neg}$ )	kN	77.70	105.81
<b>Material Details</b>			
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