ULTRAshells

(28 day concrete strength)

Section Properties

ULTRAfloor®

August 2011

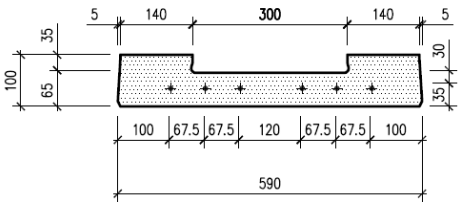
Non Composite Section Properties	Units	100 US	150 US
Mass of Section	kg/m	120	150
Gross Area	mm^2	47995	61622
EI	Nmm^2	14.773×10^{11}	45.423×10^{11}
Positive Moments			
Ultimate Moment capacity (ϕMu^{pos})	kNm	11.83	37.02
Cracking Moment (Mcr^{pos})	kNm	11.41	24.55
Reinforcement Shear component ($\phi Vuc.reo^{pos}$)	kN	22.69	32.10
Moment Shear component ($\phi Mo.max^{pos}$)	kNm	5.94	12.45
Web Shear capacity ($\phi Vuc.web^{pos}$)	kN	47.89	57.68
Negative Moments			
Ultimate Moment capacity (ϕMu^{neg})	kNm	7.23	20.64
Cracking Moment (Mcr^{neg})	kNm	4.30	10.99
Reinforcement Shear component ($\phi Vuc.reo^{neg}$)	kN	29.54	33.47
Moment Shear component ($\phi Mo.max^{neg}$)	kNm	1.13	3.78
Web Shear capacity ($\phi Vuc.web^{neg}$)	kN	47.89	57.68

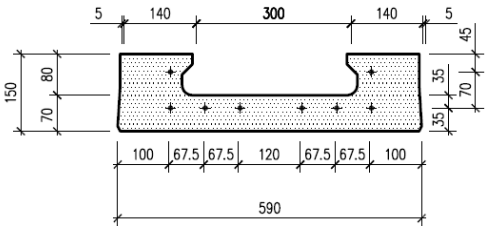
Material Details

CONCRETE: 65MPa

STEEL TENDONS:

- 7-wire ordinary strand, 9.5mm low-relaxation
- Area = $54.7mm^2$
- Min Breaking Load = 102kN
- Min Tensile Strength (fp) = 1850 Mpa
- Yield Strength = 0.85 x fp (stress relieved wire)
- Modulus of Elasticity = 195×10^3MPa





Shear Notes:

Shear capacity varies along the length of the beam, and is dependent on applied loads. ϕVuc = Lesser of ϕVuc.flexure & ϕVuc.web / ϕVuc.flexure = ϕVuc.reo + ABS [ϕMo(V*/M*)] / ϕMo Varies at the ends of the beams where the strand is developing and is a constant value ϕMo.max outside of this zone.

From 0 to 56mm from the end of the beam : ϕMo = Nil / From 56 to 558mm from the end of the beam : ϕMo = varies from Nil to ϕMo.max / Past 558mm from the end of the beam : ϕMo = ϕMo.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

ULTRAfloor®

August 2011

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

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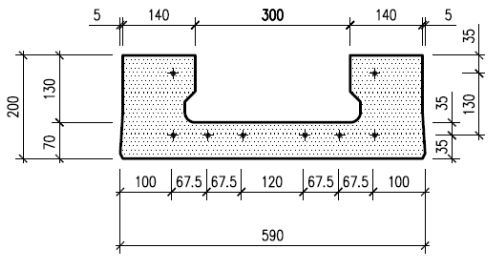

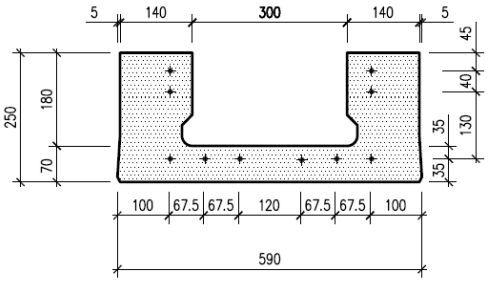

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