

R beams

(28 day concrete strength)

Section Properties

ULTRAFloor

August 2011

Non Composite Section Properties	Units	130 R	150 R	200 R
Mass of Section	kg/m	34	39	54
Gross Area	mm ²	13078	15988	21943
EI	Nmm ²	8.047 X 10 ¹¹	11.558 X 10 ¹¹	28.452 X 10 ¹¹
Positive Moments				
Ultimate Moment capacity ($\phi\text{Mu}^{\text{pos}}$)	kNm	6.95	8.83	19.38
Cracking Moment (Mcr^{pos})	kNm	5.03	6.32	10.41
Reinforcement Shear component ($\phi\text{Vuc.reo}^{\text{pos}}$)	kN	8.88	9.41	11.67
Moment Shear component ($\phi\text{Mo.max}^{\text{pos}}$)	kNm	2.69	3.33	5.24
Web Shear capacity ($\phi\text{Vuc.web}^{\text{pos}}$)	kN	14.60	21.40	33.33
Negative Moments				
Ultimate Moment capacity ($\phi\text{Mu}^{\text{neg}}$)	kNm	4.18	9.27	12.73
Cracking Moment (Mcr^{neg})	kNm	2.14	4.57	6.18
Reinforcement Shear component ($\phi\text{Vuc.reo}^{\text{neg}}$)	kN	7.05	7.67	9.42
Moment Shear component ($\phi\text{Mo.max}^{\text{neg}}$)	kNm	0.70	2.22	2.33
Web Shear capacity ($\phi\text{Vuc.web}^{\text{neg}}$)	kN	14.60	21.40	33.33
Material Details				
<p>CONCRETE: 65MPa</p> <p>STEEL TENDONS:</p> <ul style="list-style-type: none"> • 7-wire ordinary strand, 9.5mm low-relaxation • Area = 54.7mm² • Min Breaking Load = 102kN • Min Tensile Strength (f_p) = 1850 Mpa • Yield Strength = 0.85 x f_p (stress relieved wire) • Modulus of Elasticity = 195 x 10³MPa 				

Shear Notes:

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

ϕMo Varies at the ends of the beams where the strand is developing and is a constant value $\phi\text{Mo.max}$ 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 $\phi\text{Mo.max}$ / Past 558mm from the end of the beam : ϕMo = $\phi\text{Mo.max}$

Important Note:

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

M beams

(28 day concrete strength)

Section Properties

ULTRAFloor®

August 2011

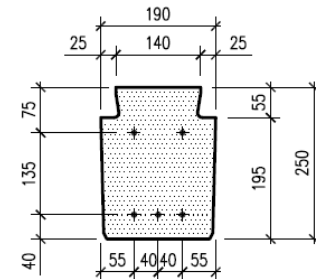
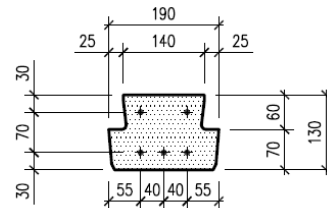
Non Composite Section Properties	Units	130 M	250 M
Mass of Section	kg/m	51	107
Gross Area	mm ²	20878	43143
EI	Nmm ²	12.465 X 10 ¹¹	91.782 X 10 ¹¹
Positive Moments			
Ultimate Moment capacity (ϕMu^{pos})	kNm	11.28	42.34
Cracking Moment (Mcr^{pos})	kNm	8.62	26.68
Reinforcement Shear component ($\phi Vuc.reo^{pos}$)	kN	14.77	22.44
Moment Shear component ($\phi Mo.max^{pos}$)	kNm	4.93	14.00
Web Shear capacity ($\phi Vuc.web^{pos}$)	kN	27.13	67.10
Negative Moments			
Ultimate Moment capacity (ϕMu^{neg})	kNm	12.59	25.04
Cracking Moment (Mcr^{neg})	kNm	6.58	12.17
Reinforcement Shear component ($\phi Vuc.reo^{neg}$)	kN	12.90	17.80
Moment Shear component ($\phi Mo.max^{neg}$)	kNm	3.54	2.98
Web Shear capacity ($\phi Vuc.web^{neg}$)	kN	27.13	67.10

Material Details

CONCRETE: 65MPa

STEEL TENDONS:

- 7-wire ordinary strand, 9.5mm low-relaxation
- Area = 54.7mm²
- Min Breaking Load = 102kN
- Min Tensile Strength (f_p) = 1850 Mpa
- Yield Strength = 0.85 x f_p (stress relieved wire)
- Modulus of Elasticity = 195 x 10³MPa



Shear Notes:

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

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

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C beams

(28 day concrete strength)

Section Properties

ULTRAFloor

August 2011

Non Composite Section Properties	Units	150 C	200 C	250 C
Mass of Section	kg/m	84	114	145
Gross Area	mm ²	33988	45943	57958
EI	Nmm ²	26.651 X 10 ¹¹	64.309 X 10 ¹¹	126.904 X 10 ¹¹
Positive Moments				
Ultimate Moment capacity (ϕMu^{pos})	kNm	22.22	39.94	68.91
Cracking Moment (M_{cr}^{pos})	kNm	14.13	22.83	43.88
Reinforcement Shear component ($\phi V_{uc.reo}^{pos}$)	kN	21.83	27.08	34.97
Moment Shear component ($\phi Mo.max^{pos}$)	kNm	7.81	12.01	24.93
Web Shear capacity ($\phi V_{uc.web}^{pos}$)	kN	50.11	70.99	91.11
Negative Moments				
Ultimate Moment capacity (ϕMu^{neg})	kNm	18.37	25.31	32.07
Cracking Moment (M_{cr}^{neg})	kNm	9.39	12.96	15.40
Reinforcement Shear component ($\phi V_{uc.reo}^{neg}$)	kN	17.79	21.86	28.45
Moment Shear component ($\phi Mo.max^{neg}$)	kNm	4.26	4.51	3.12
Web Shear capacity ($\phi V_{uc.web}^{neg}$)	kN	50.11	70.99	91.11
Material Details				
<p>CONCRETE: 65MPa</p> <p>STEEL TENDONS:</p> <ul style="list-style-type: none"> 7-wire ordinary strand, 9.5mm low-relaxation Area = 54.7mm² Min Breaking Load = 102kN Min Tensile Strength (f_p) = 1850 Mpa Yield Strength = 0.85 x f_p (stress relieved wire) Modulus of Elasticity = 195 x 10³MPa 				

Shear Notes:

Shear capacity varies along the length of the beam, and is dependent on applied loads. ϕV_{uc} = Lesser of $\phi V_{uc.flexure}$ & $\phi V_{uc.web}$ / $\phi V_{uc.flexure}$ = $\phi V_{uc.reo}$ + ABS [$\phi Mo(V^*/M^*)$] / ϕMo Varies at the ends of the beams where the strand is developing and is a constant value $\phi Mo.max$ 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 $\phi Mo.max$ / Past 558mm from the end of the beam : ϕMo = $\phi Mo.max$

Important Note:

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