

Computation of Section Properties – Exodermic Deck

VT - Richmond Truss

DESIGN PARAMETERS

MAIN BAR TYPE = WT 4 x 5

Element	Height (in.)	Width (in.)	Weight (lbs/lin.ft.)	Area (in. ²)	Spacing (in.)	Moment of Inertia	Distance to Centroid from Grid Bottom (in.)
Main Bar	3.945	0.17	5.00	1.480	12	2.15	0.953
Punchout for dist	0.75	0.17			12		1.820
Shear Hole Size	0.75	0.17	0.43	0.128	12		3.320

note: Bottom of shear holes always at bottom of concrete
 Hit of main bar embedded in concrete 1 in.

Concrete Component

Concrete thickness (in.) 4.5 after deducting 0.5 in. for future wear or milling
 Concrete type Normal weight
 Concrete weight 145
 Concrete strength (f'_c) 4000
 top rebar # 4 @ 4 in. c-c
 bottom rebar # 4 @ 6 in. c-c

Determine the Modular Ratio, $n = E_s/E_c$

CASE 1, for all calculations other than for deflection, (AASHTO 8.15.3.4)

look up n in table given in AASHTO 10.38.1.3:

for $f'_c = 4,000$ psi,
 $n = 8$

CASE 2, only for calculations of deflection (AASHTO 8.15.3.4)

$E_s = 29,000,000$ AASHTO 8.7.2

$E_c = w_c^{1.5} \cdot 33 \cdot \sqrt{f'_c}$ AASHTO 8.7.1

$E_c = 3,644,147$

$n = 8$

for these calculation, use

$n = 8$

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