

Specifiers Resource Book

DESIGN WORKSHEET

Specifiers Resource Book - Design Worksheet

Project _____

Design _____

Location _____

Project ID _____ Date _____

Design by _____ Checked _____

Sketch

Notes

N* & V* are the **per anchor** load cases.
 Check both external and internal anchors for suitability.

Tensile design action effect	N*	<input type="text"/>	kN
Shear design action effect	V*	<input type="text"/>	kN
Fixture thickness	t	<input type="text"/>	mm
Concrete compressive strength	f _c	<input type="text"/>	MPa
Anchor spacing	a	<input type="text"/>	mm
Edge distance	e	<input type="text"/>	mm
No. of anchors in row parallel to edge	n	<input type="text"/>	
Direction of shear load		<input type="text"/>	degs.

STEP 1 Select anchor to be evaluated

Table 1a Interaction Diagram

Find intersection of N* and V* values.
 Select anchor size.

Anchor Type

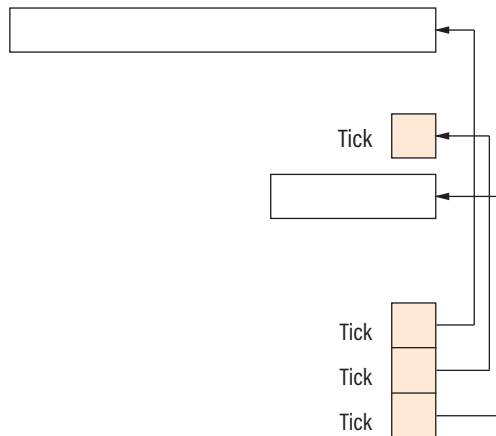
Table 1b Absolute minima, a_m & e_m

Check for compliance with absolute minima

Step 1c Calculate effective depth, h

Checkpoint 1

- Anchor size selected?
- Comply with absolute minima?
- Effective depth, h calculated?



Notes for this application

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STEP 2 Verify concrete tensile capacity - per anchor

Table 2a Concrete tensile capacity, ϕN_{uc}

Table 2a-2 Cracked Concrete effect, tension, X_{ncr}

Table 2b Concrete compressive strength effect, X_{nc}

Table 2c Edge distance effect, X_{ne}

Table 2d Anchor spacing effect, external to a row, X_{nae}

Table 2e Anchor spacing effect, internal to a row, X_{nai}

Checkpoint 2

Calculate $\phi N_{urc} = \phi N_{uc} * X_{nc} * X_{ne} * (X_{nae} \text{ or } X_{nai})$

STEP 3 Verify anchor tensile capacity - per anchor

Table 3a Calculate steel tensile capacity, ϕN_{us}

Step 3b Confirm bolt tensile capacity, ϕN_{tf}

Checkpoint 3

$\phi N_{ur} = \text{Minimum of } \phi N_{urc}, \phi N_{us}, \phi N_{tf}$

$N^* / \phi N_{ur} \leq 1.0$?

	/		=	
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If not satisfied return to step 1.

STEP 4 Verify concrete shear capacity - per anchor

Table 4a Concrete shear capacity, ϕV_{uc}

Table 4a-2 Cracked Concrete effect, shear, X_{vcr}

Table 4b Concrete compressive strength effect, X_{vc}

Table 4c Load direction effect, X_{vd}

Table 4d Anchor spacing effect, X_{va}

Table 4e Multiple anchors effect, X_{vn}

Table 4f Anchor at a corner effect, X_{vs}

Checkpoint 4

Calculate $\phi V_{urc} = \phi V_{uc} * X_{vc} * X_{vd} * X_{va} * X_{vn} * X_{vs}$

STEP 5 Verify anchor shear capacity - per anchor

Table 5a Calculate steel shear capacity, ϕV_{us}

Step 5b Confirm bolt shear capacity, ϕV_{sf}

Checkpoint 5

$\phi V_{ur} = \text{Minimum of } \phi V_{urc}, \phi V_{us}, \phi V_{sf}$

$V^* / \phi V_{ur} \leq 1.0$?

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If not satisfied return to step 1.

STEP 6 Combined loading and specification

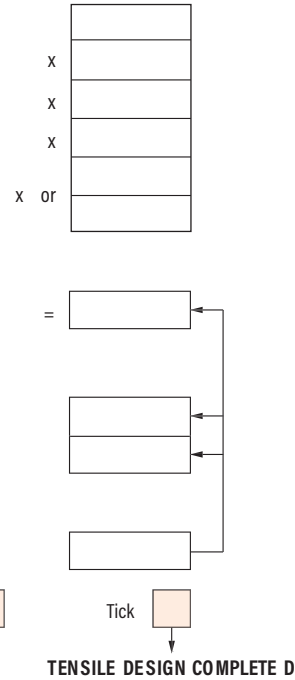
Checkpoint 6

$N^* / \phi N_{ur} + V^* / \phi V_{ur} \leq 1.2$?

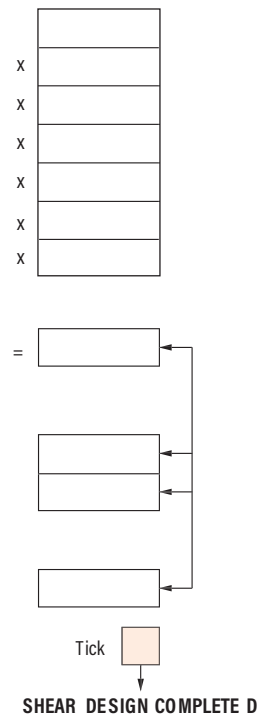
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If not satisfied return to step 1.

Specify



TENSILE DESIGN COMPLETE D



SHEAR DESIGN COMPLETE D

Tick
DESIGN CHECK COMPLETED