

# Tower Crane Operator (2024) Level 2

## ACRONYMS AND ABBREVIATIONS

TERM	MEANING
ASME	American Society of Mechanical Engineers
CSA	Canadian Standards Association
DEP	Dedicated evacuation platform
kV	Kilovolt
NDT	Nondestructive testing
OHS	Occupational Health and Safety
V	Volt
WLL	Working load limit

**NOTE** Do **not** bring this document to your exam.  
These acronyms and abbreviations will be included in the exam reference materials.

**FORMULAS**

**Note: perform all calculations to 2 decimal places**

Tension for slings of equal length	$\frac{\text{Load} \times \text{Sling Length}}{\# \text{ of Slings} \times \text{Hook to Load Height}}$
Tension for slings of unequal length	$\frac{\text{Load} \times D_2 \times L_1}{(D_1 + D_2) \times H}$ <p style="text-align: center;">OR</p> $\frac{\text{Load} \times D_1 \times L_2}{(D_1 + D_2) \times H}$ <p><i>L = Sling length</i>  <i>D = Distance from centre of gravity</i>  <i>H = Hook to load height</i></p>
Share of load on a multi-crane lift	$\text{Load on Crane 1} = \frac{B}{A + B} \times \text{Load Weight}$ $\text{Load on Crane 2} = \frac{A}{A + B} \times \text{Load Weight}$ <p><i>A = Distance to centre of gravity measuring from Crane 1</i>  <i>B = Distance to centre of gravity measuring from Crane 2</i></p>
Inverse factor	$\frac{\text{Opposite distance}}{\text{Total distance}}$
Volume of cube	$\text{Length} \times \text{Width} \times \text{Height}$
Volume of cylinder	$\frac{3.14 \times \text{Diameter} \times \text{Diameter} \times \text{Length}}{4}$ <p style="text-align: center;">OR</p> $3.14 \times \text{radius}^2 \times \text{Length}$
Pythagorean theorem	$a^2 + b^2 = c^2$

Material	Imperial unit weight	Metric unit weight
Steel	490 lb./ft <sup>3</sup>	7,850 kg/m <sup>3</sup>
Concrete	150 lb./ft <sup>3</sup>	2,403 kg/m <sup>3</sup>
Aluminum	165 lb./ft <sup>3</sup>	2,643 kg/m <sup>3</sup>

Material	Imperial unit weight
Wet fir	50 lb./ft <sup>3</sup>
Seasoned fir	34 lb./ft <sup>3</sup>
Unseasoned fir	40 lb./ft <sup>3</sup>

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