

CICA Calculation Note

Multi-crane or Multi-hoist Lifting



User Instruction

This spread sheet is a tool developed by CICA to help crane crew plan multi-crane or multi-hoist lifts.

The spread sheet has four worksheets: [Unit Converter],[Spreader Load],[LIFTING ARRANGEMENT 1], [LIFTING ARRANGEMENT 2].

The first worksheet [Unit Converter] is used for convert load (kg, t, N) and pressure units (N/m², kPa, Mpa). And ground pressure calculation.

The second worksheet [Spreader Load] is used for calculate load sharing when use spreader bar

The third worksheet [LIFTING ARRANGEMENT 1] is used for calculate load sharing between multi-cranes/hoists when lifting and rotating rectangle shape objects like precast concrete panels.

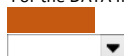
The fourth worksheet [LIFTING ARRANGEMENT 2] is used for calculate load sharing between multi-cranes when lifting and rotating long objects like steel beam or pile cage.

It is important to use accurate structure drawings of the load for the input of the worksheets, the structure drawing should include information of structurally critical dimensions, such as, position of the center of gravity (COG) of the load, and position of all the lifting points. The first and the most important step of using the worksheet is to choose a base point. If it can be identified from the structure drawing or from your experience, choose the rotating point as the base point.

The sketches and load change animations in the worksheets are based on rectangular shape loads, if your load is not rectangular shape, i.e. the sketches and load animations will not match your input, but you can still use the worksheets to calculate load sharing, as shape of the load is not important, position of the base point, COG, and lifting points are important inputs for the calculation. You will still be able to get calculation results from the worksheet.



Each worksheet has three sections, DATA INPUT, CALCULATION RESULT, LOAD SHARING GRAPH,
For the DATA INPUT section:



Input value at the orange box for load dimensions, load weight and crane configuration.

Select an option for multi-crane or multi-hoist lift from the drop down box

For the CALCULATION RESULT section:



Green boxes are calculation results, no input needed

For the LOAD SHARING GRAPH section:

This section shows the rotation movement of the load and graphs of load change during rotation.

Password for all work sheets: CICA

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