# Technical Note

Title: Wind Loading – Local Member Wind Diagonal Values

Date: 02/11/2020

Versions: 2018.03 +

Program: Wind Loading Analysis (in British Standard)

Description

In the British Standard on wind analysis (BS 6399 Pt2) reference is made to wind diagonals. Usually these wind diagonals are the bracing members within a frame which see a reduction in applied wind pressure as they are taking wind loading from the overall frame rather than local higher winds.

However, wind reduction factors can also be applied to local wind on selected members which take wind from a large area, for example portal rafter members where the wind area could be (say) 20m long by 7m wide giving a local 'a' diagonal value of 21.2m, rather than the default value of 5m.

This can be taken care of using the 'Applies to local wind on member only' option.
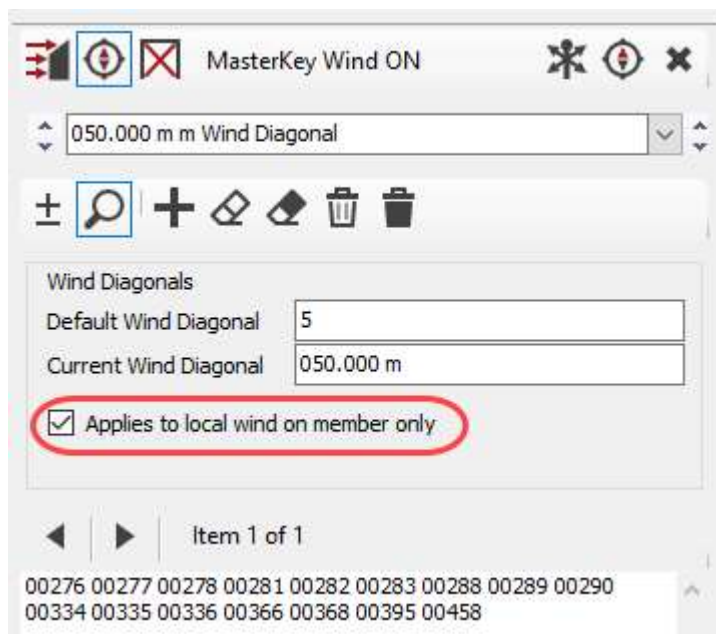
Explanation

Normally when you set up wind diagonal groups they are for bracing members in a structure and the wind load they carry is for the overall building size, hence the

diagonal value is for a whole face of a building. The 'Applies to local….' box would remain unchecked. In this approach the wind pressure is what gets reduced by the wind diagonal reduction factor, and we have multiple load cases for different wind diagonals to produce the appropriate force sets.

Now take the case of a portal frame rafter or column. The wind load on these members is applied directly to them and their diagonal value would be a more local value of the portal frame. In this case you would check this box to apply the diagonal reduction to only the members selected in that wind diagonal group. In this approach the actual wind member load is reduced by the wind diagonal reduction factor, hence the multiple diagonal load cases are not required. Hence, wind diagonal groups of this type do not participate in the generation of a separate wind load case with its own "a" value.

Off course in any frame you may have a mix of wind diagonal groups where this setting is on and off.

Regards

MasterSeries Team ☺