Table 16 Explanation of three types of behavioral constraints corresponding to the prompt in the previous table: "**Indicator (1 or 2 or 3) for type of constraint**". In the "equivellipse" application of GENOPT only Indicators 2 and 3 are used. See Tables 31 and 32 for typical margins.

There are three types of behavioral constraint conditions in an optimization problem:

1 For a feasible design the allowable response, ALLOW must be greater than the product of the actual response, BEHAV, times its factor of safety, FSAFE.'
EXAMPLE: Allowable stress must be greater than the actual stress x the factor of safety for stress.
For example, a design margin of this type is expressed as:
1 - [BEHAVIOR)/(ALLOWABLE BEHAVIOR)] X (FACTOR OF SAFETY)

2 For a feasible design the actual response, BEHAV, must be greater than the product of the allowable response, ALLOW, times its factor of safety, FSAFE.
EXAMPLES: (a) buckling load factor must be greater than the allowable value x the factor of safety for buckling.
(b) lowest natural frequency must be greater than the allowable value x the factor of safety for natural frequency.
For example, a design margin of this type is expressed as:
[(BEHAVIOR)/(ALLOWABLE BEHAVIOR)] /(FACTOR OF SAFETY) - 1

3 For a feasible design the allowable response, ALLOW must be greater than the product of the actual response, BEHAV, times its factor of safety, FSAFE. (same as for INDX = 1). However, the margin has a different form
EXAMPLE: Allowable stress must be greater than the actual stress x the factor of safety for stress.
For example, a design margin of this type is expressed as:
[(ALLOWABLE BEHAVIOR)/(BEHAVIOR)] /(FACTOR OF SAFETY) - 1