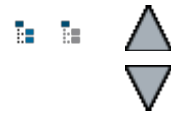


STAAD.Pro V8i (SELECTseries 3)



AD.2007-08.2 Features Affecting the Pre-Processor

AD.2007-08.2.1 Eurocode Load Combination Generator

A new macro has been included with the program to generate load combinations for the Strength limit state per *Eurocode – Basis of structural design, BS EN 1990:2002+A1:2005*.

The load combination generator is capable of creating load combinations per equations 6.10, 6.10a, or 6.10b found in Cl. 6.4.3.2.

These equations specify the following combinations of loads:

$$\sum_{j \geq 1} \gamma_{G,j} G_{k,j} + \gamma_P P + \gamma_{Q,1} Q_{k,1} + \sum_{i > 1} \gamma_{Q,i} \psi_{0,i} Q_{k,i} \quad (6.10)$$

Alternatively, for the strength limit state, the less favorable of equations 6.10a and 6.10b may be used:

$$\sum_{j \geq 1} \gamma_{G,j} G_{k,j} + \gamma_P P + \gamma_{Q,1} \psi_{0,1} Q_{k,1} + \sum_{i > 1} \gamma_{Q,i} \psi_{0,i} Q_{k,i} \quad (6.10a)$$

$$\sum_{j \geq 1} \xi_j \gamma_{G,j} G_{k,j} + \gamma_P P + \gamma_{Q,1} Q_{k,1} + \sum_{i > 1} \gamma_{Q,i} \psi_{0,i} Q_{k,i} \quad (6.10b)$$

Where:

| | |
|----------------|-------------------|
| G _k | Permanent actions |
| P | Prestress actions |
| Q _k | Variable actions |

The effects in each of the above equations are always additive. If any effect is negative (that is, would reduce the final sum), its effect is taken as zero.

Generating load combinations per Eurocode 0

1. Open a input file in STAAD.Pro.
2. Select either

Tools > User Tools > Euro Code Load Combination Generator

or

Euro Code Load Combination Generator from the **User Tools** tool drop-down menu.

The *Eurocode Combination Generator* dialog box opens.

Eurocode Combination Generator dialog box

3. Select the **Equation Number** to use for the generation of load combinations.
4. (Optional) Specify a **Start Combination Number**.
5. (Optional) Specify load Factors for use in the combination equations.

| Factor title | Equation notation |
|-------------------------------------------|-------------------|
| Permanent Actions, Gamma G | γ_G |
| Pre Stress Actions, Gamma P | γ_P |
| Variable Actions, Gamma Q | γ_Q |
| Permanent Action Reduction Factor, Xi | ξ |
| Variable Action Combination Factor, Psi 0 | ψ_0 |

The default values are taken from those provided in EC0.

6. (Optional) Click **Table A1.1** to select one of the recommended values for the Permanent Action Reduction Factor, Psi (ψ_0).
7. Click **Categories** to specify in which load action classification each STAAD.Pro load category is to be assigned.

| Action | Included Loads |
|--------|----------------|
| | |

| Action | Included Loads |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (None) | Loads of this type will <i>not</i> be included in generated load combinations. |
| Permanent | Gk (permanent) By default, Dead loads are included. You may also want to include Mass or Gravity load. |
| Variable | Q (variable) By default, Live, Roof Live, Wind, and Snow are included. You may also want to include loads such as Seismic, Temperature, etc. |
| Pre Stress | P (prestress) No loads are included by default in this category. As STAAD.Pro does not use a load category for prestressing forces, a less-common load category such as Imperfection can be used for this action. |

8. Click **Generate Combinations**.

A confirmation dialog box opens with the status of the export. Load cases are generated with the selection equation and load case number in the title.