MasterPort

1. Sway Stability $\alpha_{Crit} - \alpha_{Crit,sm}$ (sway mode) is now assessed on HNL (Horizontal Notional Loads)-only cases in accordance with P399 7.5, using $\alpha_{Crit,sm} = (1/200) \times (h/\delta)$. This approach avoids the natural eaves sway of a portal frame under gravity loading incorrectly affecting the default Eurocode 3 empirical $\alpha_{Crit,sm} = (H\_ed / V\_ed) \times (h/\delta)$.

2. Where axial force in the rafter is significant ($N\_ed > 0.09 N\_cr$), the elastic critical load factor $\alpha_{Crit,s,est}$ is modified in accordance with P399 7.6.1.

MasterFrame

3. Sway Stability $\alpha_{Crit,sm}$ – Option to generate sway stability cases using HNL-only forces instead of the standard EC ultimate cases + HNL (BS always uses HNL-only).

4. New control over selection of the load case for $\alpha_{Crit,sm}$ assessment:
   - *Automatic* follows current MasterFrame rules – EuroCode uses any case with Ultimate Loads + HNL, British Standard uses HNL-only
   - *Manual* allows explicit user selection

MasterFrame + MasterKey Steel Design – Local Bow Imperfection

5. Local Bow Geometric Imperfection – EC local bow imperfection can now be applied in accordance with EN 1993-1-1:2003, 5.3.2 (6) & (7), introducing member-level small P–δ geometric imperfection checks.

6. Applicable for compression members with at least one end moment restrained and $N\_ed > 0.25 N\_cr$.

7. When enabled via the *Local Bow* member attribute in MasterFrame:
   - Generates the local bow imperfection load at analysis time per Figure 5.4, but only if $N\_ed > 0.25 N\_cr$. A P-Delta analysis must be enabled.
   - With *Auto Connect* on, automatically subdivides the member to capture small P–Δ effects.

8. At design time, if conditions are met, combined axial and bending checks are modified — EN 1993-1-1:2005 Eq. 6.61 is omitted, per the more explicit guidance in EN 1993-1-1:2022 Eq. 8.88 (Method M4).
   This feature is typically only required where design results indicate $N\_ed > 0.25 N\_cr$.

MasterKey Steel Design

9. For asymmetrical I-sections, lateral–torsional buckling (LTB) of top and bottom flanges in compression is considered separately (double curvature bending), with the worst case selected. This replaces the previous manual *Top Flange in Tension/Compression* input.
10. Output now explicitly states:
    - The Z_j value used and flange compression convention for LTB.
    - Whether Table B.1 or B.2 is applied for k_{zy} buckling modification, and the condition for the decision.
11. Section classification is now based on forces in the specific portion being designed, rather than on the overall member.

MasterFrame FE

12. Export and import FE surface loads from file. A sample file is provided at:
    C:\ProgramData\MasterSeries\Samples\FE Load Import Sample File.fel

MasterKey Masonry

13. Support for new gable wall shapes: apex, hipped, and asymmetrical.
14. Point loads can now be applied at any vertical position in the wall.
15. New internal lateral support lines, particularly useful for multi-storey gable end walls.
16. Where internal lateral support is provided, lateral load take-down, axial load, and buckling checks are performed between each intermediate level.
17. Load take down diagram shown between multi-level internal lateral supports.
18. In General Settings, control which critical load case (compression, buckling, tension) is shown in load take-down diagrams.
19. BS EN 1996-1-1:2022 + UK NA implemented.

MasterKey Concrete Slab & Wall Design

20. Recommendations of IStructE Design of Transfer slab guidance implemented. [Further details](#).
21. Slab Shear Capacity Contours
22. Slab Shear Unity Ratio Contours – useful for identifying areas outside punching shear zones where additional linear shear reinforcement may be required.
23. Optional Linear shear checks now integrated with Strip reinforcement zone, with control over check distance from start or end of strip zone.
24. Required shear additional linear shear reinforcement design in Strip zone.
25. Punching shear perimeter can be adjusted from the standard 2d to a smaller factor as per IStructE Design of Transfer slab guidance, with appropriate changes made to design equations.

2nd Generation Eurocode Implementation Status - August 2025

Code Part	Review	Code Implemented	UK/IRL NA Implemented	Released in MasterSeries 2025
BS EN 1992-1-1: Concrete – General	✔	Planned 25/26	Not published	✘
BS EN 1993-1-1: Steel – General	✔	✔	Not published	✘
BS EN 1993-1-5: Plated Structures	✔	✔	Not published	✘
BS EN 1993-1-13: Large Web Openings – New	✔	✔	Not published	✘
BS EN 1993-1-8: Steel Connections	✔	✔	Not published	✘
BS EN 1994-1-1: Composite Structures – Draft	✔	Planned 25/26	Not published	✘
BS EN 1995-1-1: Timber	✔	✔	Not published	✘
BS EN 1996-1-1: Masonry	✔	✔	✔ *	✔
BS EN 1997-1-1: Geotechnical – Pad Foundations & Retaining Walls	Planned 25/26	Planned 25/26	Not published	✘

*UK NA included in MasterSeries 2025

While much development work has gone into implementing the Gen 2 Eurocode parts, they require their accompanying National Annex for use in practice.