Validation of the

Capacity Design of Concentric Braced Frames

Software (StructAutoma)

Hand-Calculation Validation Report | May 2026

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1. Introduction

This report presents an independent hand-calculation validation of the *Capacity Design of Concentric Braced Frames* software (StructAutoma). The software automates seismic capacity design for Ordinary Concentric Braced Frames (OCBF) and Special Concentric Braced Frames (SCBF) by interfacing with SAP2000 v23+ via its COM API.

Two representative cases are validated:

1. **Case 1 — Ordinary CBF (OCBF), 100 % Capacity + 30 % Static (both directions)** — referred to as the "100-30 ordinary" case.
2. **Case 2 — Special CBF (SCBF), 100 % Capacity + 100 % Capacity (both directions)** — referred to as the "100-100 special" case.

For each case, the figures captured before and after running the software are reproduced and captioned, followed by step-by-step hand calculations that verify the software output against AISC 341-22 (Seismic) and AISC 360-22 (Steel Construction).