

## FrameAI Seismic Calculation Note

EN 1998-1 Seismic-Designed Moment Frame

Client: Kensetsu KK, Osaka, JP

Project: 5-Storey Moment-Resisting Frame, DCM,  $q=4.0$

Date: 2026-06-13

Designer: M. Nakamura

### SEISMIC PARAMETERS

EN 1998-1 seismic zone:  $a_g=0.35g$ , soil class B,  $S=1.20$

Ductility class: DCM, behaviour factor  $q=4.0$  (MRF)

Design spectral acceleration:  $S_a=0.14g$  at  $T=1.5s$

### CAPACITY DESIGN (EN 1998-1 §5.2)

Strong-column weak-beam (SCWB):  $\frac{M_{Rc}}{M_{Rb}} = 1.47 > 1.30$  PASS

Column overstrength factor:  $\gamma = 0.75$

Panel zone shear:  $V_{j,Rd} = 540 \text{ kN} > V_{j,Ed} = 490 \text{ kN}$  PASS

### MEMBER SCHEDULE

COL-GF-01 to 02 HEA 340 L=3600mm S355 (5 storeys)

BM-L1-01 to 02 IPE 450 L=8000mm S355 (5 floors)

### EUROCODE SUMMARY

EN 1998-1 Seismic design: DCM,  $q=4.0$ ,  $a_g=0.35g$

EN 1998-1 §5.2 Capacity design: SCWB ratio  $> 1.3$  PASS

EN 1993-1-1 Column: Class 1 plastic, buckling curve a

EN 1993-1-8 Panel zone:  $V_{j,Rd} = 540 \text{ kN}$

MAX COLUMN UTILISATION: 76.1% (HEA 340, S355)

SEISMIC DRIFT SLS: H/250 PASS, ULS: H/150 PASS

EXECUTION CLASS: EXC 2 per EN 1090-2

Full calculation available in FrameAI app

<https://frameai-structural.polsia.app/examples/seismic-designed-frame>

FrameAI Structural Engineering