

# ISO 4917-3:2024-02 (E)

## Design of nuclear power plants against seismic events - Part 3: Civil structures

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Seismic event .....	3
5	Structure analysis .....	3
5.1	Basic requirements .....	3
5.2	Modeling .....	3
5.2.1	General .....	3
5.2.2	Geotechnical parameters, dynamic subsoil properties .....	4
5.2.3	Material characteristics (parameters) .....	4
5.2.4	Effective stiffness .....	5
5.2.5	Contributing masses .....	5
5.2.6	Damping .....	5
5.2.7	Hydrodynamic effects .....	6
5.3	Analysis methods .....	6
5.3.1	General requirements .....	6
5.3.2	Response spectrum method .....	7
5.3.3	Time history method .....	7
5.3.4	Frequency domain method .....	9
5.3.5	Simplified methods .....	9
5.4	Soil-structure interaction .....	9
5.5	Building response spectra .....	10
5.5.1	General requirements .....	10
5.5.2	Determining building response spectra based on acceleration time histories .....	10
6	Seismic design verification concept .....	11
6.1	General requirements .....	11
6.2	Combination of actions .....	11
6.3	Combinations of loads caused by directional components of a seismic event .....	12
6.4	Ultimate limit state (ULS) .....	12
6.4.1	General requirements .....	12
6.4.2	Ductility .....	13
6.4.3	Equilibrium conditions .....	13
6.5	Serviceability limit state (SLS) .....	13
6.5.1	General requirements .....	13
6.5.2	Deformations .....	14
6.6	Beyond design considerations .....	14
6.7	Requirements on foundations .....	14
7	Structure-type dependent seismic verifications .....	14
7.1	Structural members of reinforced and pre-stressed concrete .....	14
7.1.1	General requirements .....	14
7.1.2	Strength parameters .....	14
7.1.3	Verifying the load-bearing capacity .....	15

7.2	Steel structure parts .....	15
7.3	Masonry .....	15
7.3.1	General requirements .....	15
7.3.2	Verifying the load-bearing capacity .....	15
7.3.3	Constructional design .....	15
7.4	Steel composite civil structures .....	16
7.5	Fastening constructions .....	16
7.6	Buried pipelines and ducts .....	16
7.7	Support structures .....	16
Annex A (informative) Recommendations with comments .....		17
Annex B (informative) Simplified method for approximating building response spectra .....		21
Bibliography .....		23