ISO 23618:2022-10 (E)

Bases for design of structures - General principles on seismically isolated structures

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1
3.1 Terms related to structure 1
3.2 Terms related to isolation system 2
3.3 Terms related to structural design 3
3.4 Terms related to maintenance and construction 3

4 Symbols and abbreviations 4

5 Basic principles of structural planning 5
5.1 General 5
5.2 Isolation interface 5
5.3 Superstructure and substructure 6
5.4 Foundation 6
5.5 Connections of isolation devices 6
5.6 Isolation gap 6
5.7 Non-structural components and equipment in isolation interface 6

6 Target performance of the seismically isolated structure 6
6.1 General 6
6.2 Superstructure 6
6.3 Substructure 7
6.4 Isolation system 7

7 Design seismic force 7
7.1 General 7
7.2 Design response spectrum 7
7.3 Design earthquake ground motion 7

8 Structural analysis 8
8.1 General 8
8.2 Modelling of isolation system 8
8.3 Modelling of superstructure and substructure 8
8.4 Response spectrum analysis method for equivalent linear system 8
8.4.1 General 8
8.4.2 Basic requirements 8
8.4.3 Effective stiffness 9
8.4.4 Effective period 9
8.4.5 Effective damping 9
8.4.6 Maximum displacement of isolation system 10
8.4.7 Seismic design forces 10
8.5 Response history analysis method 11
8.5.1 General 11
8.5.2 Basic requirements 11

8.5.3 Number of earthquake ground motions 11
8.5.4 Upper bound and lower bound of stiffness and force 12
8.5.5 Maximum displacement of isolation system 12
8.5.6 Maximum storey drift and shear force of superstructure 12

9 Constructionmanagementspecifiedindesigndocuments 12
9.1 Construction planning 12
9.2 Quality control of isolation device manufacturing 12
9.3 Temporary work planning 12
9.4 Construction procedures of isolation interface 12

10 Maintenancespecifiedindesigndocuments 13
10.1 Maintenance of seismic isolation system 13
10.2 Monitoring of system performance 13
10.3 Warning signage 13

11 Performance requirement of isolation devices 13
11.1 Performance information of isolation devices 13
11.2 Test of isolation devices 13

Annex A (informative)Classificationandperformancecharacteristicsofisolationdevices 14

Annex B (informative) Construction management of seismically isolated structures 23

Annex C (informative) Maintenance of seismically isolated structures 29

Annex D (informative) Wind-resistant design of seismically base isolated buildings 36

Annex E (informative) Mid-storey seismically isolated buildings 41

Bibliography 46