

A benchmark building for designing a seismic isolated structure

A. Common Articles

A1. Building Outline

Principal use	Condominium
Total floor area	1,950m ²
Maximum eaves height	23.6m
Classification of structure	Reinforced concrete structure
Structural type	X(lateral) direction : Moment frames Y(longitudinal) direction : Moment frames with bearing walls
Foundation	Site cast concrete piles

A2. Structural Feature

1) Story mass

Story	height(mm)	Weight (kN)	Mass (ton)
7	3,000	4410	450
6	3,000	4165	425
5	3,000	4165	425
4	3,000	4165	425
3	3,000	4214	430
2	3,000	4214	430
1	3,000	4214	430
i	1,700	5292	540

2) Horizontal stiffness

Story	Horizontal stiffness (kN/mm)	
	X direction	Y direction
7	951	3,243
6	2,407	3,553
5	1,242	5,957
4	1,336	7,950
3	1,457	10,183
2	1,544	12,966
1	2,005	12,814

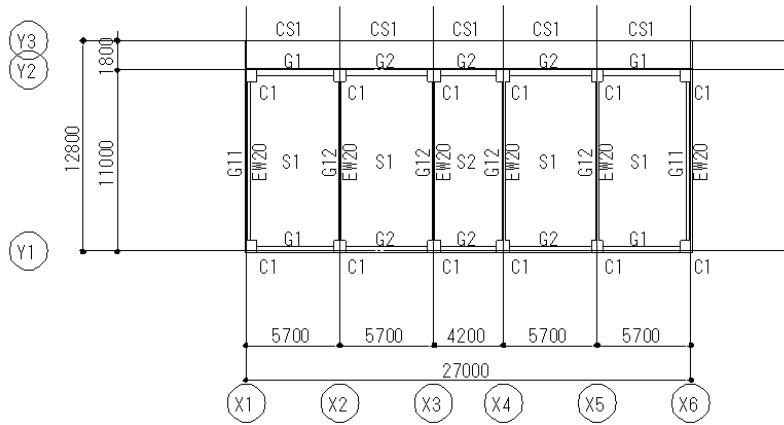
Vertical loads on isolation devices

(kN)	X1	X2	X3	X4	X5	X6
Y2	2,453	4,308	3,741	3,741	4,308	2,753
Y1	2,222	3,246	2,819	2,819	3,246	2,222

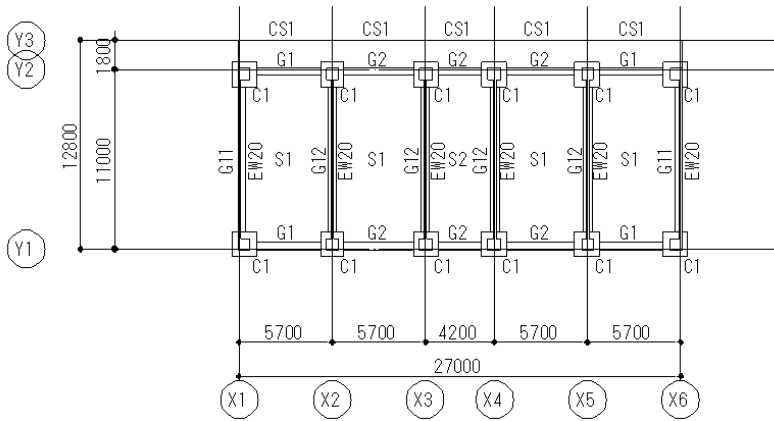
Isolation devices

Any isolation device is okay to be used.

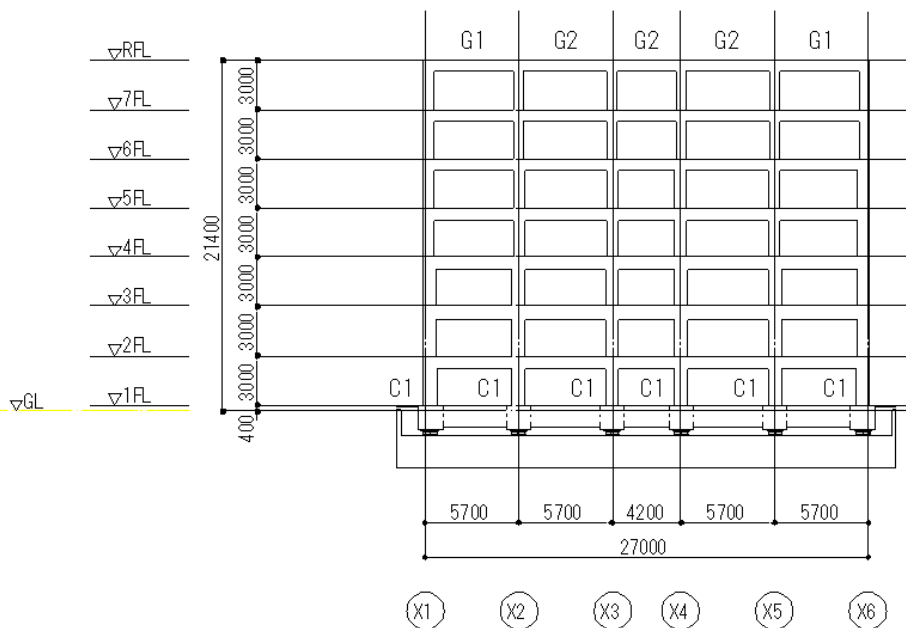
A3. Plans and Sections



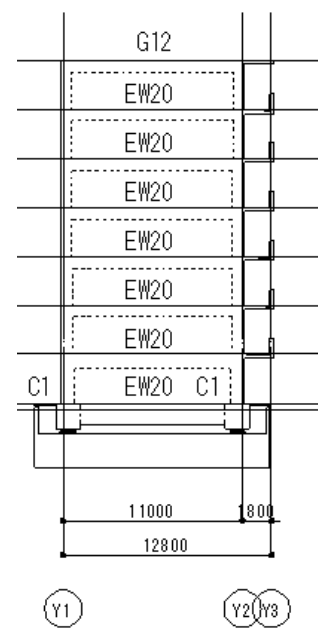
Standard floor plan



1st floor plan



Y1-section



X2-section

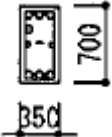
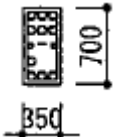
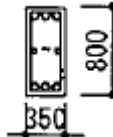

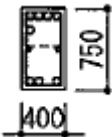
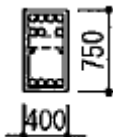
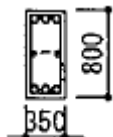


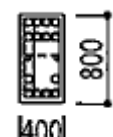
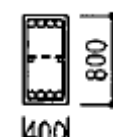

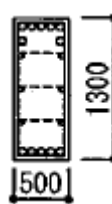
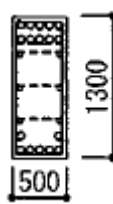
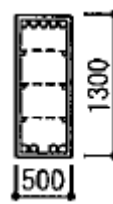
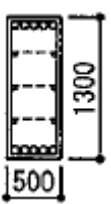
A4. Section of members

1) Material strength

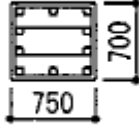
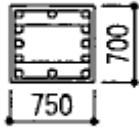
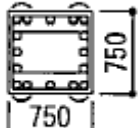
Steel: Rebar : SD345(nominal strength $\sigma_y = 345$ MPa)
 StIRRUP: SD295A (nominal strength $\sigma_y = 295$ MPa)
 Concrete: Fc24 (nominal strength $F_c = 24$ MPa)

2) Section of members

Beam list (unit: mm)

	G1	G2	G11	G12
6-R F				
Rebar (up)	4-D25	6-D25	3-D25	4-D16
Rebar (down)	3-D25	4-D25	3-D25	4-D16
StIRRUP	D13-@200	D13-@200	D13-@200	D13-@200
4,5F				
Rebar (up)	5-D25	7-D25	3-D25	4-D16
Rebar (down)	3-D25	4-D25	3-D25	4-D16
StIRRUP	D13-@200	D13-@200	D13-@200	D13-@200
2,3F				
Rebar (up)	5-D25	8-D25	4-D25	4-D16
Rebar (down)	4-D25	6-D25	4-D25	4-D16
StIRRUP	D13-@200	D13-@200	D13-@200	D13-@200
1F				
Rebar (up)	7-D25	10-D25	5-D25	5-D25
Rebar (down)	5-D25	7-D25	4-D25	5-D25
StIRRUP	D13-@200	D13-@200	D13-@200	D13-@200

Column list (unit: mm)

	C1
5,6,7F	
Rebar	10-D25
Stirrup	D13-@100
3,4F	
Rebar	12-D25
Stirrup	D13-@100
1, 2F	
Rebar	12-D25
Stirrup	D13-@100

Wall list (unit: mm)

	thickness	Vertical rebar	Horizontal rebar
EW20	200	D13-@200 double	D13-@200 double

Slab list (unit: mm)

	thickness		Transversal direction		Longitudinal direction	
			Side	Center	Side	Center
S1, S2	220	Up	D13-@100	D13-@200	D13-@200	D13-@200
		Down	D13-@200	D13-@100	D13-@200	D13-@200