

MDOF

-메뉴설명(지진파 선택 화면)

입력 운동 종류(지진파, 정현파, 충격파 중 선택)

지진파 세기(Y축값)

층수
건물 무게
건물 높이
층 강성
감쇠율

층 / 무게 / 높이 / 강성 / 항복강도 / 항복후 강성비율 / 감쇠율

입력파 모양



MDOF

-메뉴설명 (정현파 시 선택 화면)

주기 시간 증분 정현파

정현파 높이

최대 변위
고유주기

시간에 따른 층별 변위 변화를
상대적인 값으로 보여줌

주기

Multiple Degrees of Freedom Application

Input Motion

Period: 0.5 sec
PGA: 1 g

Harmonic Motion

delta T: 0.02 sec
Duration: 10 sec

Output

Displaced Shape

Max Disp: 14.23 in
Fundamental Period: 2.09 sec

Building Properties

Number Floors: 5
Building Weight: 500 k
Building Height: 720 in
Story Stiffness: 31.54 k/in
Damping Ratio: 0.05 %
 Include PDelta

	Weight	Height	K	Fy	b	zeta
1	100	144	31.54	1e+100	0.01	0.05
2	100	144	31.54	1e+100	0.01	0.05
3	100	144	31.54	1e+100	0.01	0.05
4	100	144	31.54	1e+100	0.01	0.05
5	100	144	31.54	1e+100	0.01	0.05

Current Time: 0.00 sec
Current Roof Disp: -0.01 in

Play Stop Exit

SimCenter

MDOF

-메뉴설명 (정현파 시 선택 화면)

Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion

Period: 0.5 sec, delta T: 0.02 sec, PGA: 1 g, Duration: 10 sec

Output: Floor Displacement Response History

Max Disp: 14.23 in, Fundamental Period: 2.09 sec

Analysis Duration: 10 sec

Building Properties:

- Number Floors: 5
- Building Weight: 500 k
- Building Height: 720 in
- Story Stiffness: 31.54 k/in
- Damping Ratio: 0.05 %
- Include PDelta

Weight	Height	K	Fy	b	zeta
1 100	144	31.54	1e+100	0.01	0.05
2 100	144	31.54	1e+100	0.01	0.05
3 100	144	31.54	1e+100	0.01	0.05
4 100	144	31.54	1e+100	0.01	0.05
5 100	144	31.54	1e+100	0.01	0.05

Floor 5

보고자 하는 층 선택

시간에 따른 층별 변위 이력 그래프

Relative Displacement vs Time

Current Time: 0.00 sec, Current Roof Disp: -0.01 in, pga: 1g

Play Stop Exit

This work is based on material supported by the National Science Foundation under grant 161294. SimCenter Center for Computational Modeling and Simulation

MDOF

-메뉴설명 (정현파 시 선택 화면)

Multiple Degrees of Freedom Application

File Help

Input Motion Harmonic Motion Output Story Force Response History

Period: 0.5 sec delta T: 0.02 sec Max Disp: 14.23 in
 PGA: 1 g Duration: 10 sec Fundamental Period: 2.09 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 720 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %
 Include PDelta

Weight	Height	K	Fy	d	zeta
1 100	144	31.54	1e+100	0.01	0.05
2 100	144	31.54	1e+100	0.01	0.05
3 100	144	31.54	1e+100	0.01	0.05
4 100	144	31.54	1e+100	0.01	0.05
5 100	144	31.54	1e+100	0.01	0.05

Story 1

층 전단력 이력 그래프

Current Time: 0.00 sec
 Current Roof Disp: -0.01 in
 PGA: 1g

Play Stop Exit

This work is based on material supported by the National Science Foundation under grant 1512543. SimCenter
 Center for Computational Modeling and Simulation

MDOF

-메뉴설명 (정현파 시 선택 화면)

Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion

Period: 0.5 sec, delta T: 0.02 sec, Max Disp: 14.23 in
 PGA: 1 g, Duration: 10 sec, Fundamental Period: 2.09 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 720 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %
 Include PDelta

	Weight	Height	K	Fy	b	zeta
1	100	144	31.54	1e+100	0.01	0.05
2	100	144	31.54	1e+100	0.01	0.05
3	100	144	31.54	1e+100	0.01	0.05
4	100	144	31.54	1e+100	0.01	0.05
5	100	144	31.54	1e+100	0.01	0.05

Output: Story Force-Displacement

Story: 1

층별 변위-층 전단력 그래프

Current Time: 0.00 sec
 Current Roof Disp: -0.01 in
 PGA: 1g

Play Stop Exit

This work is based on material supported by the National Science Foundation under grant 161284. SimCenter
 Center for Computational Modeling and Simulation

MDOF -공진

정현파의 주기를 구조물의 주기와 일치시킴

층별 변위 이력

최대변위
403.00

구조물 주기

Multiple Degrees of Freedom Application

Input Motion | Harmonic Motion

Period: 2.09 sec | delta T: 0.02 sec
 PGA: 1 g | Duration: 10 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 720 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %
 Include PDelta

	Weight	Height	K	Fy
1	100	144	31.54	1e+100
2	100	144	31.54	1e+100
3	100	144	31.54	1e+100
4	100	144	31.54	1e+100
5	100	144	31.54	1e+100

Output | Floor Displacement Response History

Max Disp: 403.00 in
 Fundamental Period: 2.09 sec

Floor: 5

시간에 따라 변위 증폭

Relative Displacement vs Time

Current Time: 0.00 sec
 Current Roof Disp: -0.01 in
 PGA: 1g

Play Stop Exit

NSF This work is based on material supported by the National Science Foundation under grant 1612843 SimCenter NHERI Center for Computational Modeling and Simulation

MDOF -공진

정현파의 세기를 5배로 증대시킴

최대 변위 213.20

MDOF
File Help

Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion

Output: Floor Displacement Response History

Period: 1 sec delta T: 0.02 sec
 PGA: 5 g Duration: 10 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 720 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %
 Include PDelta

	Weight	Height	K	Fy
1	100	144	31.54	1e+100
2	100	144	31.54	1e+100
3	100	144	31.54	1e+100
4	100	144	31.54	1e+100
5	100	144	31.54	1e+100

Floor: 5

Max Disp: 213.20 in
 Fundamental Period: 2.09 sec

Relative Displacement

Time

Current Time: 0.00 sec
 Current Roof Disp: -0.01 in
 pga: 5g

Play Stop Exit

This work is based on material supported by the National Science Foundation under grant 1612843

SimCenter NHERI
 Center for Computational Modeling and Simulation

MDOF -면진

MDOF
File Help

Multiple Degrees of Freedom Application

Input Motion

Harmonic Motion

Period: 1 sec delta T 0,02 sec

PGA: 1 g Duration 10 sec

Analysis Duration 10 sec

Building Properties

Number Floors 5

Building Weight 500 k

Building Height 586 in

Story Stiffness 31,54 k/in

Damping Ratio 0,05 %

Include PDelta

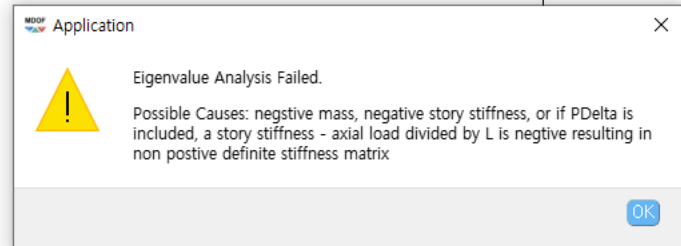
	Weight	Height	K	Fy	
1	100	10	3	1e+100	0
2	100	144	31.54	1e+100	0
3	100	144	31.54	1e+100	0
4	100	144	31.54	1e+100	0
5	100	144	31.54	1e+100	0

Output

Displaced Shape

Max Disp

Fundamental Period



Current Time

MDOF -면진

MDOF
File Help

Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion Output: Displaced Shape

Period: 1 sec delta T: 0.02 sec
 PGA: 1 g Duration: 10 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 586 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %

Include PDelta

해제시킴

	Weight	Height	K	Fy
1	100	10	3	1e+100
2	100	144	31.54	1e+100
3	100	144	31.54	1e+100
4	100	144	31.54	1e+100
5	100	144	31.54	1e+100

층 높이와 강성 작
게 수정함

상대적으로 고른
분포

면진층, 변형 집중

Max Disp: 53.05 in
 Fundamental Period: 4.36 sec

Current Time: 7.20 sec
 Current Roof Disp: 36.33 in

pga: 1g

Play Stop Exit



This work is based on material supported by the National Science Foundation under grant 1612843



Center for Computational Modeling and Simulation

MDOF -제진(TMD)

MDOF Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion Output: Displaced Shape

Period: 1 sec delta T: 0.02 sec
 PGA: 1 g Duration: 10 sec

Analysis Duration: 10 sec

Max Disp: 50.29 in
 Fundamental Period: 2.39 sec

Building Properties

Number Floors: 5
 Building Weight: 500 k
 Building Height: 586 in
 Story Stiffness: 31.54 k/in
 Damping Ratio: 0.05 %

Include PDelta

해제시킴

최상층 높이와 강성을 작게 수정

TMD 에서 변위 방향이 반대이며, 변형이 집중됨

Weight	Height	K	Fy
1 100	144	31.54	1e+100
2 100	144	31.54	1e+100
3 100	144	31.54	1e+100
4 100	144	31.54	1e+100
5 100	10	3	1e+100

Current Time: 1.04 sec
 Current Roof Disp: -24.44 in

pga: 1g

Play Stop Exit

NSF This work is based on material supported by the National Science Foundation under grant 1612843. SimCenter NHERI Center for Computational Modeling and Simulation

MDOF -제진(층별 댐퍼)

감쇠율이 증가함에 따라 최대 변위 감소

Multiple Degrees of Freedom Application

Input Motion: Harmonic Motion

Output: Displaced Shape

Period: 1 sec delta T: 0.02 sec
PGA: 1 g Duration: 10 sec

Analysis Duration: 10 sec

Building Properties

Number Floors: 5
Building Weight: 500 k
Building Height: 720 in
Story Stiffness: 31.54 k/in
Damping Ratio: 0.2 %

Include Delta:

light	K	Fy	b	zeta
1	31.54	1e+100	0.01	0.2
2	31.54	1e+100	0.01	0.2
3	31.54	1e+100	0.01	0.2
4	31.54	1e+100	0.01	0.2
5	31.54	1e+100	0.01	0.2

Max Disp: 33.36 in
Fundamental Period: 2.00 sec

감쇠율 증가

Current Time: 0.00 sec
Current Roof Disp: -0.00 in
pga: 1g

Play Stop Exit

NSF This work is based on material supported by the National Science Foundation under grant 1612643
SimCenter
Center for Computational Modeling and Simulation