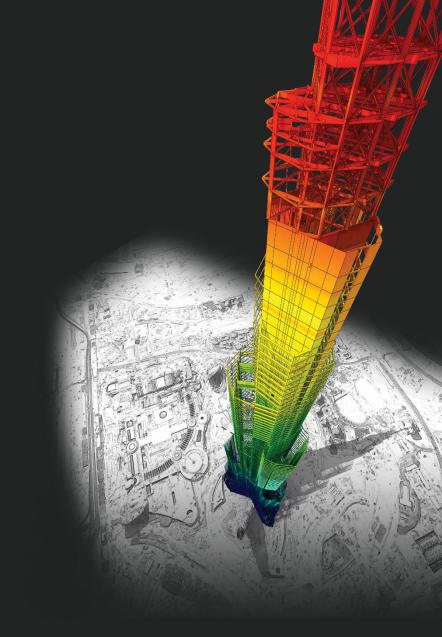
# **Release Note**

Release Date : July. 2023

Product Ver. : midas Gen 2023 (v2.1)



# **DESIGN OF General Structures**

Integrated Design System for Building and General Structures

# Enhancements

# • midas Gen

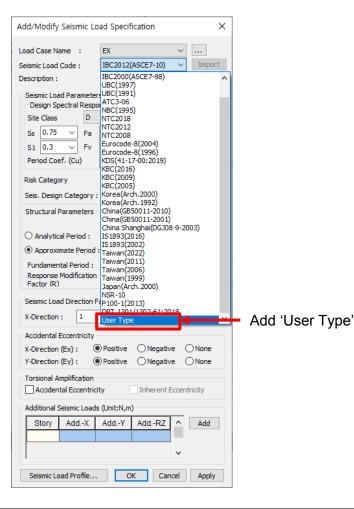
1) User Type Seismic Load	4
2) User Type Wind Load	5
3) Import Pushover Hinge Properties	6
*) Appendix Guide to Input Licer Type Seismic Load	

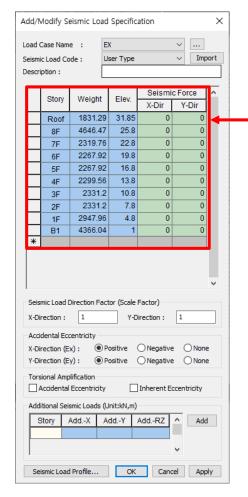
\*) Appendix Guide to Export Pushover Hinge for Inelastic Hinge Properties



# 1. User Type Seismic Load

### Added New Function Static Seismic Load: "User Type"



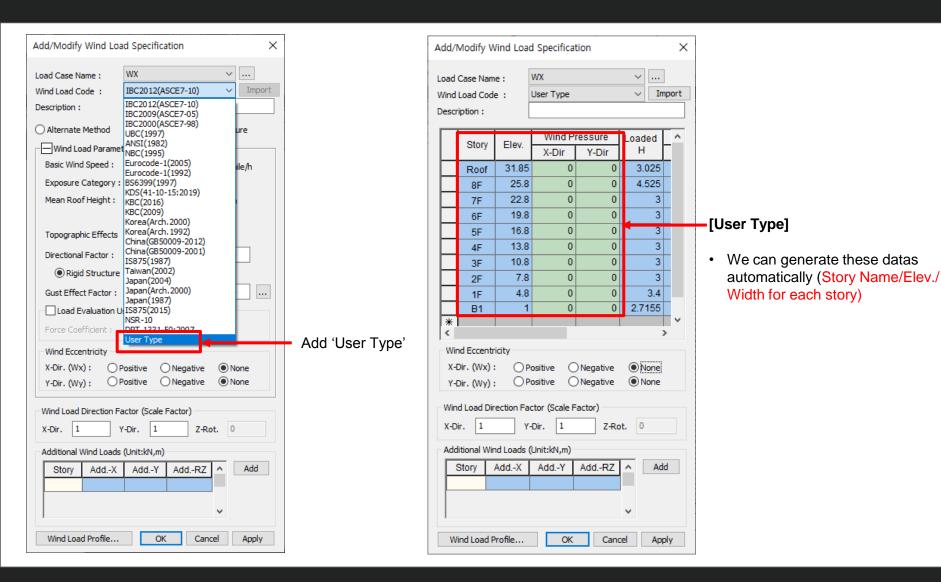


#### [User Type]

 We can generate these datas automatically (Story Name/Elev./Loaded H/ Loaded B)



# 2. User Type Wind Load





MIDAS

# **3. Import Pushover Hinge Properties**

### *Properties > Inelastic Properties > Inelastic Hinge > Import Pushover Hinge Properties*

vsis Control Data igenvalue Analysis [ Type=Eigenvectors-Subspac tures tories : 6 odes : 130 lements : 265 vrites laterial : 2 ection : 5 stic Properties elastic Properties Control Data elastic Hinge Properties : 1	Auto-Calculation     User Input     Unloading Stiffness Type     Select Hyst. Model     Energy Dissipation Fact      Properties     Type	General Type     Perfect Plastic Type     Origin-Oriented tors & Unloading Stiffness Factor	Yes     No     Figure     Total Strength Loss     Figure	• Symmetric Asymmetric at Point E, -E	No V
tures tories : 6 odes : 130 lements : 265 ortifes laterial : 2 ection : 5 stic Properties elastic Properties control Data elastic Hinge Properties : 1	Unloading Stiffness Type Select Hyst. Model Energy Dissipation Fact Properties	Origin-Oriented	Total Strength Loss		No V
tories : 6 odes : 130 lements : 265 raterial : 2 ection : 5 stic Properties elastic Properties Control Data elastic Properties Control Data elastic Hinge Properties : 1	Select Hyst. Model     Energy Dissipation Fact  Properties			at Point E, -E	No 🗸
lements : 265 erties laterial : 2 ection : 5 stic Properties elastic Properties Control Data elastic Properties Control Data elastic Hinge Properties : 1	Energy Dissipation Fact Properties			at Point E, -E	No 🗸
erties laterial : 2 ection : 5 stic Properties elastic Properties Control Data elastic Properties Control Data elastic Hinge Properties : 1	Properties	tors & Unloading Stiffness Factor	Figure		
ection : 5 stic Properties elastic Properties Control Data <del>dect inclusite Hinge Result Output(Element) : 8</del> elastic Hinge Properties : 1					
stic Properties elastic Properties Control Data <del>elect Inclustic Hinge Result Output(Element) + 8</del> elastic Hinge Properties + 1					
elect Inclusite Hinge Result Output(Element) + 8 elastic Hinge Properties : 1	Туре				
elastic Hinge Properties : 1			Primary Curve		
	Symmetric As	ymmetric	1.10		
dsf_A19 [ Type=Lumped ; Interaction=None ; Dir			0.83		
ssign Inelastic Hinge Properties : 1 / B19_dsf_A19	User Defined		0.55		
daries	M/MY	D/DY	0.29		
upports : 20 ses	-E -0.2	-E -25,756062200085	0.00		>
pads to Masses : 1	-E -0.2 -D -0.2	-D -15.146321257194	- 0.55		
: Loads	-C -C -0.2	-C -15.146321257194	- 0.83		
tatic Load Case 1 [DL ; ] tatic Load Case 2 [LL ; ]	-C -1.1 -B -1	-B -1	- 1.10		
History Analysis	A 0	A 0	-25.76 -19.32 -12.88 - 6.44	0.00 8.44 12.99	19.32 25.76
ime History Global Control	► B 1	B 1	Acceptance Criteria		
ime Forcing Functions : 1	C 1.1	C 15.146321257194	(Current Deform./Yield Deform	ı.)	
round Acceleration : 1	D 0.2	D 15.146321257194			
ime History Besult Function : 2	E 0.2	E 25.756062200089		(+)	(-)
efine Pushover Hinge Properties : 1			Immediate Occupancy (IO)	4.5365803142985	4.5365803142985
st [ Beam/Column ; RC ; None ; Dir=0000A0 ]	Yield Strength (MY)		Life Safety (LS)	8.0731606285970	8.0731606285970
ssign Pushover Hinge Properties 1		(-)	Collapse Prevention (CP)	15.146321257194	15.146321257194
r Data	334.24831191: 334.24	4831191( KN·m			
	Yield Rotation (DY)		Initial Stiffness		
	User Defined		O 6EI/L ○ 3EI/L	◯ 2EI/L	
	(+)	(-)	O User 0	kN:m	

Hinge properties set in Pushover analysis can be imported to Inelastic Hinge Properties for the time history analysis.

Since Inelastic hinge properties are set before analysis, auto-calculation is not supported.

If the inelastic hinge properties are the same as the pushover's hinge properties, time history analysis can be performed quickly by bringing the automatically generated hinge properties.



Guide to input User Type Seismic Load

# **Seismic Static Load** Added 'User Type' in the Seismic Load code.

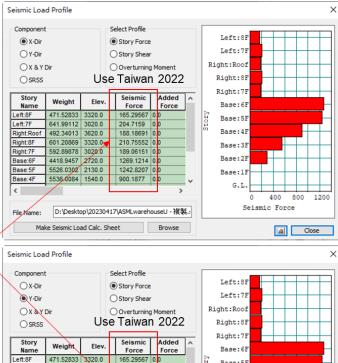
Add/Modify Seismic Lo	ad Specification X		Add	l/Modify Se	eismic Loa	d Specifica	ation	×	]	
Load Case Name : Seismic Load Code:	EX  V IIBC2012(ASCE7-10) Import			d Case Nam		EX User Type		<ul> <li>✓ …</li> <li>✓ Import</li> </ul>		
Description :	IBC2000(ASCE7-98) AUBC(1997)			scription :	ue:	user rype		Import		
Design Spectral Respo	100(1555)		F	Story	Weight	Elev.	Seismi X-Dir	Y-Dir	<b>—</b> 1.	"Story
Site Class D Ss 0.75 V Fa	NTC2018 NTC2012 NTC2008			Roof 8F	1831.2		0	0		Name/Weight/Elev."
S1 0.3 V Fv Period Coef. (Cu)	Eurocode-8(2004) Eurocode-8(1996) KDS(41-17-00:2019)			7F 6F	2319.7	6 22.8	0	0		information is automatically filled
Risk Category	KBC(2016) KBC(2009) KBC(2005)			5F 4F	2267.9	2 16.8	0	0		(Read Only)
Seis. Design Category : Structural Parameters	Korea(Arch. 2000) Korea(Arch. 1992) China(GB50011-2010)			3F	2331.	2 10.8	0	0	2.	Seismic Force (x,y
O Analytical Period :	China (GB50011-2001) China Shanghai (DGJ08-9-2003) IS 1893 (2016)			2F 1F B1	2947.9 4366.04	6 4.8	0	0		direction) is initial state (filled with 0.0).
Approximate Period :	IS1893(2002) Taiwan(2022) Taiwan(2011)		×		4300.0		Ŭ			Real numbers can be
Fundamental Period : Response Modification Factor (R)	Taiwan(2006) Taiwan(1999) Japan(Arch.2000)									entered (not read only)
Seismic Load Direction F	DPT.1301/1302-61:2018		Se	eismic Load [	)irection Fa	ctor (Scale F	actor)	~		
X-Direction : 1	User Type	Add 'User Type'	X-	-Direction :	1	Y-Di	rection :	1		
X-Direction (Ex) :	Positive ONegative ONone			ccidental Eco -Direction (E:		Positive (	Negative	None		
Y-Direction (Ey) :	) Positive 🔿 Negative 🔿 None			-Direction (E		Positive (		-		
Accidental Eccentricit	ty Inherent Eccentricity			orsional Amp Accidental		/	Inherent Ed	centricity		
Additional Seismic Loads	(Unit:N,m)		A	dditional Seis				_		
				Story /	AddX	AddY A	AddRZ	Add		
1	×							~		
Seismic Load Profile	OK Cancel Apply			Seismic Load	Profile	OK	Cano	el Apply		

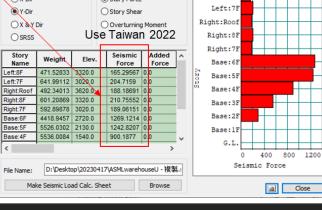


## **Seismic Static Load** Added 'User Type' in the Seismic Load code.

This additional function can be use to input the seismic load for multi – module story building, such as multi – tower building. Because when using the Taiwan seismic code, can't accurately calculate the story force for that kind of building.

Module	Story Name	Weight	Elev.	Seismi	c Force				
Module	Story Name	weight	ciev.	X-Direction	Y-Direction				
Left	8F	471.528	3320	208.472	208.472				
Left	7F	641.991	3020	141.919	141.919				
Right	Roof	492.34	3620	239.528	239.528				
Right	8F	601.209	3320	194.996	194.996				
Right	7F	592.899	3020	96.150	96.150				
Base	6F	4418.95	2720	1390.540	1390.540				
Base	5F	5526.03	2130	1361.692	1361.692				
Base	4F	5536.01	1540	986.288	986.288				
Base	3F	5507.61	950	605.303	605.303				
Base	2F	4645.75	600	322.473	322.473				
Base	1F	308.384	10	0.000	0.000				





#### Hand Calculation



×

~ ...

Y-Dir

Seismic Force

X-Dir

3320 208.472 208.472

3020 141.918 141.918

3620 239.527 239.527 3320 194.995 194.995

3020 96.1502 96.1502

2720 1390.54 1390.54

2130 1361.69 1361.69 1540 986.287 986.287

950 605.302 605.302 600 322.472 322.472

Y-Direction: 0

Positive 
 Negative 
 None

OPositive ONegative ONone

Add.-Y Add.-RZ ^

OK

Inherent Eccentricity

~

Cancel

Add

Apply

~ Import

## **Seismic Static Load** Added 'User Type' in the Seismic Load code.

After you calculate all seismic force at X-Direction and Y-Direction, at midas Gen you can immediately copy and paste the seismic force at X-Direction and Y-Direction.

Seismic Load Profile ...

			Julution				
Module	Story Name	Weight	Elev.	Seismic Force			
would	story Name	weight	ciev.	X-Direction	Y-Direction		
Left	8F	471.528	3320	208.472	208.472		
Left	7F	641.991	3020	141.919	141.919		
Right	Roof	492.34	3620	239.528	239.528		
Right	8F	601.209	3320	194.996	194.996		
Right	7F	592.899	3020	96.150	96.150		
Base	6F	4418.95	2720	1390.540	1390.540		
Base	5F	5526.03	2130	1361.692	1361.692		
Base	4F	5536.01	1540	986.288	986.288		
Base	3F	5507.61	950	605.303	605.303		
Base	2F	4645.75	600	322.473	322.473		
Base	1F	308.384	10	0.000	0.000		

#### Hand Calculation

oad	Case Nam	e :	EX		×		Load	Case Nam	e :	EX	
eismic Load Code : User Type 🗸 Import				Seisn	nic Load Co	de :	User Type				
escri	iption :						Desc	ription :			
				Seismi	Seismic Force						Se
	Story	Weight	Elev.	X-Dir	Y-Dir			Story	Weight	Elev.	X-D
	8F	471.52	8 3320	0		0		8F	471.52	8 3320	208.
	7F	641.99	1 3020	0		0		7F	641.99	1 3020	141.
	Roof	492.3	4 3620	0		0		Roof	492.3	4 3620	239.
	8F	601.20	9 3320	0		0		8F	601.20	9 3320	194.
	7F	592.89	9 3020	0		0		7F	592.89	9 3020	96.1
	6F	4418.9	5 2720	0		0		6F	4418.9	5 2720	1390
	5F	5526.0	3 2130	0		0		5F	5526.0	3 2130	1361
	4F	5536.0	1 1540	0		0		4F	5536.0	1 1540	986.
	3F	5507.6	1 950	0		0		3F	5507.6	1 950	605.
	2F	4645.7	al (22.23)	0		0		2F	4645.7	5 600	322.
*	1F	308.38	4 10	0		0	*	1F	308.38	4 10	
	mic Load [ rection :	Direction Fa	actor (Scale	Factor) Direction :	1	-		smic Load ( virection :	Direction Fa	actor (Scale	Factor
X-Di	dental Eco rection (E rection (E	x): 🔘		Negative Negative	-	1.	X-C	idental Eco irection (E irection (E	x): •	Positive	○ Ne ○ Ne
Tors	sional Amp		y 🗆	]Inherent E			Tor	sional Amp		v 🗆	]Inher
							Ad	ditional Coi	smic Loads	A Inititionf	-
Add	itional Seis	smic Loads	(Unit:tonf,	cm)				JIUUIIAI SEI	SITIC LUGUS	(onication),	um)

OK

Cancel

Apply

#### User Type Seismic Load

Seismic Load Profile ...





Guide to Export Pushover Hinge for Inelastic Hinge Properties

This additional function help the user to immediately use the pushover hinge in the inelastic hinge property.

<u>Properties > Inelastic Hinge > Import Pushover Hinge Properties</u>

		Gen 2023 - [D:\Desktop\2022v1.1\HingeProp - 複製] - [MIDAS/Gen]
View Structure Node/Element Properties	Boundary Load Analysis Results Pushover D	esign Seismic Performance Query Tools
Image: Second system       Image: Second system <td< th=""><th>Image: Section Scale Tapered Thickness       Heinel Control Data *         Properties Factor* Group       Hinelastic Hinge *         Section       Heinel Scale Tapered Thickness         Section       Hinelastic Hinge *         Heinel Control Data *       Hinelastic Hinge *         Section       Hinelastic Hinge *         Heinel Control Data *       Hinelastic Hinge *         Hinelastic Hinge *       Hinelastic Hinge *         Hinge *       Hinge *         Hinge *       Hinge *         Hinge *       Hinge *         Hinge *       Hinge *</th><th>e Properties bles</th></td<>	Image: Section Scale Tapered Thickness       Heinel Control Data *         Properties Factor* Group       Hinelastic Hinge *         Section       Heinel Scale Tapered Thickness         Section       Hinelastic Hinge *         Heinel Control Data *       Hinelastic Hinge *         Section       Hinelastic Hinge *         Heinel Control Data *       Hinelastic Hinge *         Hinelastic Hinge *       Hinelastic Hinge *         Hinge *       Hinge *         Hinge *       Hinge *         Hinge *       Hinge *         Hinge *       Hinge *	e Properties bles
	Export to Inelastic Hinge Properties	×
		elect the pushover hinge that you want to export.
	Element Type Beam/Column Wall Truss General Link	Material RC / SRC(encased) Steel / SRC(filled)
	Definition Moment - Rotation(M-0) Moment - Curvature(M-Ф Distributed)	Hinge Type ☑ Skeleton Curve ☑ Filber Model
	P-M Interaction ✓ None ✓ P-M ✓ P-M-M Approximation of Yield Surface Shape ✓ Auto Beta: 1.65 (1.0~2.0)	Skeleton Curve
		Export Cancel



Menu Tables Group Works Report Seis	Export to Inelastic Hinge Properties	×	Menu Tables Group Works Report Seis
Works  Malysis Control Data  Eigenvalue Analysis [ Type=Eigenvectors-Su  Structures  Modes : 132	Option      Add     Replace  Element Type Beam/Column     Wall     General Link	Material ☑ RC / SRC(encased) ☑ Steel / SRC(filled)	Morks Analysis Control Data Eigenvalue Analysis [ Type=Eigenvectors-Su Structures Structures : 7 Nodes : 132
<ul> <li>Elements : 266</li> <li>Properties</li> <li>Material : 27</li> <li>Section : 93</li> <li>F Thickness : 3</li> <li>Boundaries</li> <li>Supports : 12</li> <li>Panel Zone Effects [ Offset Factor=0.75 ; Out</li> <li>Masses</li> <li>C Masses</li> <li>C Masses</li> <li>C Masses</li> <li>C Masses</li> <li>Masses</li> <li>Masses<th>Definition ✓ Moment - Rotation(M-0) ✓ Moment - Curvature(M-Ф Distributed) P-M Interaction ✓ None ✓ P-M ✓ P-M ✓ P-M-M Approximation of Yield Surface Shape ✓ Auto Beta: 1.65 (1.0~2.0)</th><th>Hinge Type Skeleton Curve Fiber Model Skeleton Curve FEMA Type FEMA, Infill Strut Type</th><th><ul> <li>Elements : 266</li> <li>Properties</li> <li>Image: Section : 93</li> <li>Image: Section : 93&lt;</li></ul></th></li></ul>	Definition ✓ Moment - Rotation(M-0) ✓ Moment - Curvature(M-Ф Distributed) P-M Interaction ✓ None ✓ P-M ✓ P-M ✓ P-M-M Approximation of Yield Surface Shape ✓ Auto Beta: 1.65 (1.0~2.0)	Hinge Type Skeleton Curve Fiber Model Skeleton Curve FEMA Type FEMA, Infill Strut Type	<ul> <li>Elements : 266</li> <li>Properties</li> <li>Image: Section : 93</li> <li>Image: Section : 93&lt;</li></ul>
Static Load Case 3 [EX ;]     Static Load Case 4 [EY ;]     Static Load Case 5 [COM ;]     Pushover Analysis     Pushover Global Control [ Max. Iteration=     Pushover Load Case : 1     Pushover Load Case : 1     Pushover Load Case : 220     Assign Pushover Hinge Properties : 221     Pushover Smart Result     Rebar Data Export these pushover hin     Beam     Column		Export Cancel	Masses Masses



Add/Modify Pushover Hinge Properties			×	Ī	Add/modify inelastic hing	ge properties		×
Name : PH-Beam001 De	scription :				Name : PH-Be	am001-1		
Element Type	Material Type	Wall Type			Description			
Beam/Column     Wall     Truss     General Link     Point Spring Support	RC / SRC (encas     Steel / SRC (file     Masonry	ed)  (i) Membrane				Wall   General Link  Material Type  Material Type		
Definition (a) Moment - Rotation (M-Theta) (b) Moment - Curvature (M-Phi Lumped)		Hinge Type			Defnition Moment - Rotation (M- Moment - Curvature ()		Hinge type Skeleton Model Fiber Model	
Consider Hinge Length Integ Moment - Curvature (M-Phi Distributed)	ration Point	Fiber Model			Interaction type	Fiber Section		
Axial-Moment Interaction Type	Fiber Section				None		ation Ouser Defined	
None     P-M Interaction     P-M-M in Status Determination	O Auto Generation	i (i) User Defined			P-M in Strength Calcul		~	
Axial-Shear Interaction Type of RC	Fiber Name :	~			0111111111111	Piper Name	· .	
None     P-Q Interaction	Out-of-plan	e Nonlinearity of Fiber Wall						
Component Properties					Component Properties			
Component Hinge Location	Skeleton Curve				Component Hinge Loc			
	sar Type	Properties			Fx Center	Kinematic Hardeni     Kinematic Hardeni		
	sar Type	Properties			Fz 18J	<ul> <li>Kinematic Hardeni</li> </ul>		
	sar Type	V Properties			Mx I&J	<ul> <li>Kinematic Hardenir</li> </ul>		
Mx I&J-end V Triin	ear Type	Properties     Properties			✓ My 18J	✓ FEMA	v Properties	
	ear Type	<ul> <li>Proper bes</li> </ul>			Mz I&J	<ul> <li>Kinematic Hardenir</li> </ul>	ng 💌 Properties	
Yield Surface Properties	Ma Directional Properties	of Pushover Hinge : FEMA	×			Directional Properties of Inela	stic Hinge : FEMA	
	Input Method O Auto-Calculation © User Input	Shape of FEMA Curve General Type Perfect Plastic Type	Strength Loss Type of LEnd & J-End © Yes O Symmetric No Figure @ Asymmetric			Input Method Auto-Calculation	Shape of FEMA Curve General Type Perfect Plastic Type	Strength Loss Type of 1 End & J End                Yres          O Symmetric           O No         Figure              Asymmetric
	Unloading Stiffness Typ	Origin-Oriented Factors & Unloading Stiffness Factor	✓ Total Strength Loss at Point E, € Yes ∨ Pigure			Unloading Stiffness Type Select Hyst. Model Energy Dissipation Factors & Properties of I-end Properties of		✓ Total Strength Loss at Point E, -€ Yes ∨     Figure
	Туре		Primary Curve			Туре		Primary Curve
	Symmetric	Asymmetric	22.31			Symmetric O Asymmetry		27.71
	User Defined		20.78 13.85			User Defined		2078  13.85  6.99
	M/MY -E -27.1507 -D -27.5924 -C -27.7053 -B -1 A 0 B 1	D/DY           €         -1157.554046           ·D         -341.938427           ·C         +83.518655           ·B         -1           A         0           B         1	00 01 02 02 02 02 02 02 02 02 02 02			-D -27.5924 -C -27.7053 -B -1 A 0	D/DY -E -1157.554046 -D -341.938427 -C -83.518655 -8 -1 -1 A 0 -8 1 	00 00 00 00 00 00 00 00 00 00 00 00 00
	C 27.7053 D 27.5924 E 27.1507 Yield Strength (MY) (+) 61576.2 61	C 83.518655 D 341.938427 E 1157.554046	(Current Deform, / Vield Deform,) (+) (+) Immediate Occupency (00) Ulfs Safety (0.5) Object Prevention (07) I157.554046 I157.554046			D 27.5924	D 341.938427 E 1157.554046	(Current Deform,/ Yield Deform.)         (4)         (5)           Immediate Occupancy (00)         83.518655         83.518655           Jufe Safety (5.5)         344.03427         344.03427           Collapse Prevention (07)         1157.554046         1157.554046
	Yield Rotation (DY) User Defined (+) 0 0	(·) [ræd]	Initial Stiffness           O 661A         (9) 361A         (2 26)A           O User         (0)         (1) 40 <sup>+2</sup> cm           O Bastic Stiffness :         (1) 40 <sup>+2</sup> cm			Yield Rotation (DY) User Defined (+) 0 0		Image         Image <th< th=""></th<>
	- Unloading Stiffness Par Exponent in Unloading Pinching-Rule Factor (	Stiffness Calculation 0.4	OK Cancel			Unloading Stiffness Parameter Exponent in Unloading Stiffness Pinching-Rule Factor (07λ?1.0)		OK Cancel



Add/Modify Pushover Hinge Properties		×	Add/modify inelas	ic hinge properties	×	-
Properties Unable to Modify	able to Modify		Name :	PH-Column013-1		
Name : B57_PH-Column013 Description	:		Description			
Element Type	Material Type Wall Type		Element Type     Seam-Column	Wall	(ased) Wall Type	
Beam/Column     Wall     Truss     General Link	RC / SRC (encased)     Membrane     Steel / SRC (filed)		O Truss	General Link Steel/SRC (f		
Point Spring Support	O Masonry O Plate		Definition		Hinge type	
Definition	Hinge Type		Moment - Rotz	tion (M-Theta)	Skeleton Model	
Moment - Rotation (M-Theta)	Skeleton Model		O Moment - Curv	ature (M-Phi Distributed)	O Fiber Model	
Moment - Curvature (M-Phi Lumped)     Consider Hinge Length     Integration Poi			Interaction type	Fiber Section		
O Moment - Curvature (M-Phi Distributed)			None		ation	
Axial-Moment Interaction Type	Fiber Section		P-M in Strengt			
None     P-M Interaction	Auto Generation     O User Defined		O P-M-M in statu			
O P-M-M in Status Determination	Section :  Fiber Name :					
Axial-Shear Interaction Type of RC    None   P-Q Interaction	Fiber Name : view view view view view view view view					
	Out of plane norm contry of their from		Component Proper	es noe Location Hysteresis Model		
Component Properties Component Hinge Location Skele	ton Curve			nter v Kinematic Hardenir	ng 🔻 Properties	
Fx I&J-end V Trilnear Type	V Properties		Fy II			
□ Fy I&J-end · Trilnear Type	<ul> <li>Properties</li> </ul>		Fz II			
Fz I&J-end ∨ Trilnear Type     Mx I&J-end ∨ Trilnear Type	Properties     Properties		Mx II			
My I&J-end V FEMA	Properties		My II Mz II		Properties  Properties	
Mz I&J-end V Trilnear Type	<ul> <li>Properties</li> </ul>		-			
Yield Surface Properties Masor	Directional Properties of Pushover Hinge : FEMA	>		Directional Properties of Inelas		×
	Input Method Shape of FEMA Curve O Auto-Calculation   General Type	Strength Loss Type of I-End & J-End  Yes Symmetric			ihape of FEMA Curve Stre	righ Loss Type of I-End & J-End Yes O Symmetric
	User Input     Ordeneral Type     Ordeneral Type     Ordeneral Type				OPerfect Plastic Type	
	Unloading Stiffness Type			Unloading Stiffness Type		
	Select Hyst. Model     Origin-Oriented	√ Total Strength Loss at Point E, -E Yes  ✓			rigin-Oriented V	Total Strength Loss at Point E, -E
	O Energy Dissipation Factors & Unloading Stiffness Fa	ctor Figure		O Energy Dissipation Factors &	Unloading Stiffness Factor	Figure
	Properties of I-end Properties of 3-end			Properties of I-end Properties of	fJ-end	
	Туре	Primary Curve		Туре	Primary	Curve
	Symmetric     Asymmetric	3.56		Symmetric O Asymmetry	ric 3.56	
	User Defined	257		User Defined	2.67	
	M/MY D/DY			M/MY	D/DY	
	-E -3.0335 -E -16.818118				-E -16.818118 -0.99	
	-D -3.4129 -D -16.208346	-13		-D -3.4129	-D -16.208346 +1.78	
	-C -3.5645 -C -8.325074 -8 -1 -8 -1	- 2.67			-C -8.325074 -2.67 -8 -1 -3.56	
		-16.82 +12.61 + 8.41 + 4.20 0.00 4.20 8.41 12.61 16.82			A 0	-12.61 +8.41 +4.20 0.00 4.20 8.41 12.61 16.82
	8 1 8 1	Acceptance Criteria			· · · · · · · · · · · · · · · · · · ·	nce Criteria
	C 3.5645 C 8.325074 D 3.4129 D 16.208346	(Current Deform./ Yield Deform.)			C 8.325074 (Curren D 16.208346	nt Deform./ Yield Deform.)
	E 3.0335 E 16.818118	(+) (-)			E 16.818118	(+) (-)
	Yield Strength (MY)	Immediate Occupancy (IO)         8.325074         8.325074           Life Safety (LS)         16.208346         16.208346		Yield Strength (MY)	Immedia Life Safe	te Occupancy (IO) 8.325074 8.325074 ety (LS) 16.208346 16.208346
	(+) (-)	Collapse Prevention (CP) 16.818118 16.818118		(+) (-)		Prevention (CP) 16.818118 16.818118
	686025.7 686025.7 kgf**cm			686025.7 686025.7	kgt*cm	
	Yield Rotation (DY)	Initial Stiffness O 6EI/L		Yield Rotation (DY)	Initial Sti O 6EI/	
	(+) (·)	Oldser 0 kgf*cm		(+) (-)	Ouse	
	0 0 [rad]	O Elastic Stiffness :		0 0	[rad] Elas	tic Stiffness :
	Unloading Stiffness Parameter			Unloading Stiffness Parameter		
		.4		Exponent in Unloading Stiffness	Calculation 0.4	
	Pinching-Rule Factor (0?\\?1.0)	0.5 OK Cancel		Pinching-Rule Factor (07\chi21.0)	0.5	OK Cancel
	L		2			



Add/Modify Pushover Hinge Properties		×	Add/modify inelastic hinge properties X
Properties	Enable to Modify		Name : PH-Wal001-1
Name : T1001_PH-Wall001 Description			Description
Element Type	Material Type Wall Type		Element Type Material Type Wall Type
Beam/Column O Wall	O BR 100 B Low B		Beam-Column Wall © RC/SRC (encased) Membrane
Truss     General Link	O menorare		Truss     General Link     Steel/SRC (filed)     Plate
O Point Spring Support	Masonry OPlate		Definition Hinge type
Definition	Hinge Type		Definition     Hinge type     Moment - Rotation (M-Theta)     Skeleton Model
Moment - Rotation (M-Theta)			Moment - Curvature (M-Philbitributed)
O Moment - Curvature (M-Phi Lumped)	Skeleton Model		
Consider Hinge Length Integration I	Point O Fiber Model		Interaction type Fiber Section
Moment - Curvature (M-Phi Distributed)			None     Auto Generation     User Defined
Axial-Moment Interaction Type	Fiber Section		P-M in Strength Calculation Section
None     P-M Interaction	O Auto Generation O User Defined		
O P-M-M in Status Determination	Section : V		P-M-M in status determination     Fiber Name     www
Axial-Shear Interaction Type of RC	Fiber Name : 🗸 🗸 🗸		
None     P-Q Interaction	Out-of-plane Nonlinearity of Fiber Wall		Component Properties
			Component Hysteresis Model
Component Properties			
	eleton Curve		PX FBMA w Properties
Fx FEMA	Properties		Pry Kinematic Hardening v Properties Pt Kinematic Hardening v Properties
Fy Trilnear Typ Fz Trilnear Typ			The following Compared and Comp
Mx Trilnear Typ			() () () () () () () () () () () () () (
My Trinear Typ			
Mz Trinear Typ	pe v Properties		Mz Kinematic Hardening v Properties
Yield Surface Properties	Directional Properties of Pushover Hinge : FE	K AN	Directional Properties of Inelastic Hinge : FEMA X
	Input Method Shape of FEMA C	rve Strength Loss Type of I-End & J-End	Input Method Shape of FEMA Curve Strength Loss Type of I-End & J-End
	O Auto-Calculation      General Type	Yes     Symmetric	Auto-Calculation   General Type   Yes  Symmetric
	User Input     OPerfect Plastic	Type ONo Figure O Asymmetric	User Input     O Perfect Plastic Type     No     Figure     Asymmetric
	Unloading Stiffness Type		Unloading Stiffness Type
	Select Hyst. Model     Origin-Oriented	✓ Total Strength Loss at Point E, -E Yes ✓	Select Hyst. Model Origin-Oriented      Total Strength Loss at Point E, -E Yes
	CEnergy Dissipation Factors & Unloading Stiffne		O Energy Dissipation Factors & Unloading Stiffness Factor
	O biegy bisspation ractions is driveduring service	s rocket	
	Properties of 18J-end		Properties of 183-end
	Туре	Primary Curve	Type Primary Curve
	Symmetric      Asymmetric		© Symmetric Asymmetric
		3.30	33
	User Defined	2.0	User Defined 2.3
	F/FY D/DY	1.07	F/FY D/DY
	E -4.27 E -21.4779		€ 4.27 € 21.4779
	-0 -4.27 -0 -19.4752	-23	D 4.27 D 19.4752 100
	-C -3.19 -C -7.4126	- 130	C - 3.19 C - 7.4126 - 1.30
	-8 -1 -8 -1	-4.27 -21.48 -16.11 -10.54 -5.37 0.00 5.37 10.34 16.11 21.48	-8 -1 -8 -1 -4.17 -7L48 -16.11 -10.14 -5.37 0.00 5.37 10.34 16.11 2L48
	A 0 A 0		A 0 A 0 J C C C C C C C C C C C C C C C C C C
	B 1 B 1	Acceptance Criteria	B 1 B 1 Acceptance Criteria
	C 3.19 C 7.4126	( Current Deform./ Yield Deform.)	C 3.19 C 7.4126 (Current Deform.)
	D 4.27 D 19.4752	(+) (-)	D 4.27 D 19.4752 (+) (-)
	E 4.27 E 21.4779	Immediate Occupancy (IO) 7.4126 7.4126	E 4.27 E 21.4779 Immediate Occupancy (IO) 7.4126 7.4126
	Yield Strength (FY)	Life Safety (LS) 19.4752 19.4752	Yield Strength (FY)
	(+) (-)	Collapse Prevention (CP) 21.4779 21.4779	(+) (-) (-) (-) (-) (-) (-) (-) (-) (-) (-
	7822.7122310- 7822.7122310- kgf	Compse rrevension (CP) 21.4779	7822.7122310- 7822.7122310- kgf Collapse Prevention (CP) 21-97/9
	Yield Displacement (DY)	Initial Stiffness	Yield Displacement (DY) Initial Stiffness
	User Defined	◯ 6EIA. ◯ 3EIA. ◯ 2EIA.	User Defined OEI/L OZEI/L ZEI/L
	(+) (-)	O User 0 kgf/cm	(4) (-) Oldser 0 kaff.cm
	0 0 cm	Elastic Stiffness : EA/L	0 0 cm
	Unloading Stiffness Parameter		Unloading Stiffness Parameter
	Exponent in Unloading Stiffness Calculation	0.4	Exponent in Unloading Stiffness Calculation 0.4
	Pinching-Rule Factor (07\71.0)		
	restergence ractor (crartico)	OK Cancel	Pinching-Rule Pactor (07/21.0) 0.3 OK Cancel

