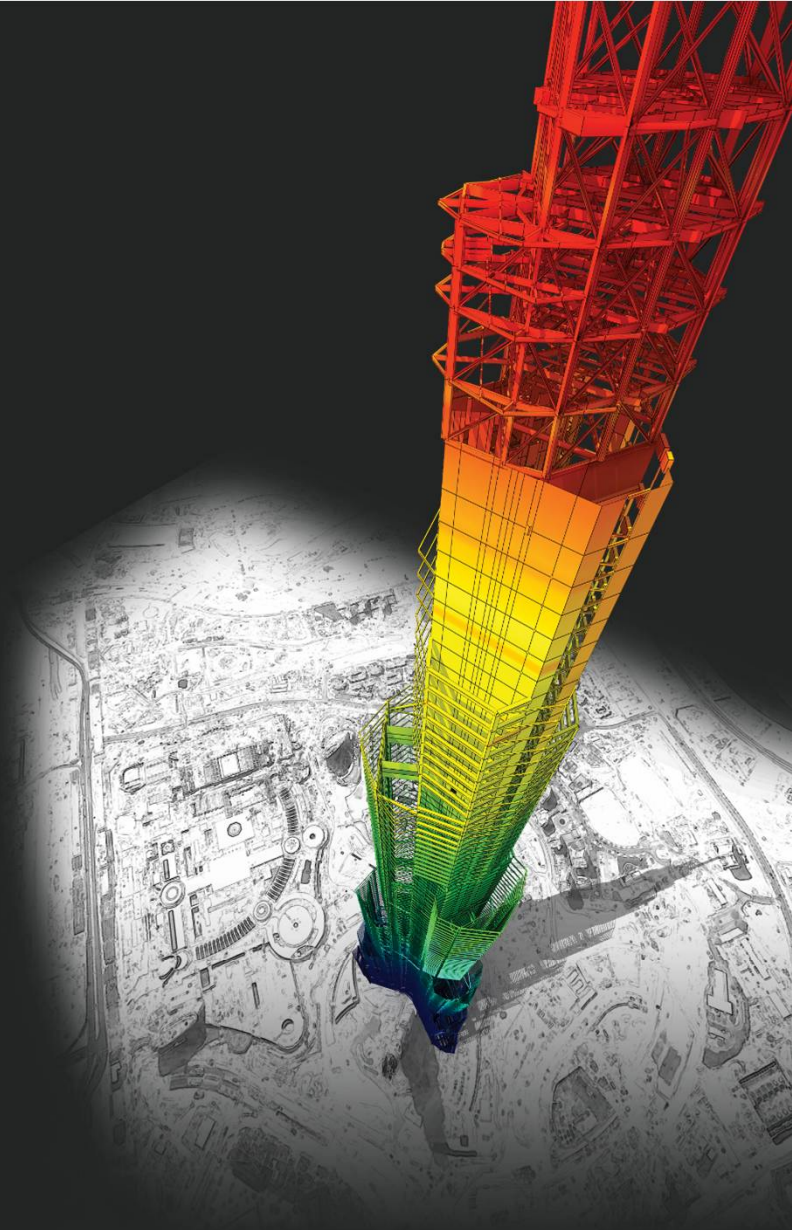


Release Note

Release Date : October. 2022

Product Ver. : midas Gen 2023 (v1.1) and Design+2023(v1.1)



DESIGN OF General Structures

Integrated Design System for Building and General Structures

Enhancements

- **midas Gen**

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↓ **INSTALLER** DOWNLOAD

midas **Gen**

1. New Seismic Code for Taiwan : Static & Response Spectrum

Added Seismic Load for Taiwan Engineers

- **Static Seismic Load (Taiwan 2022) : Generate Seismic Zone data considering Near fault seismic effect**
- **Support for Miscellaneous Structure type**

Static Seismic Load

Add/Modify Seismic Load Specification

Load Case Name : Ex

Seismic Load Code : Taiwan(2022)

Description :

Seismic Load Parameters

Type of Structure

General Structure Miscellaneous Structure

Seismic Zone (Z) : Near Fault Zone

Importance Factor (I) : 1.00

Seismic Magnify Factor (ay) : 1.2

Structural Parameters

Analytical Period Approximate Period

Fundamental Period : 0.7

Response Modification Coef (R) : 1.6

Seismic Load Direction Factor (Scale Factor)

X-Direction : 1 Y-Direction : 0

Accidental Eccentricity

X-Direction (Ex) : Positive Negative None

Y-Direction (Ey) : Positive Negative None

Torsional Amplification

Accidental Eccentricity Inherent Eccentricity

Additional Seismic Loads (Unit:kN,m)

Story	Add-X	Add-Y	Add-RZ

Seismic Zone Data (Taiwan 2022)

Seismic Zone (Z) : Near Fault Zone

Horizontal Spectral Accel. (Table 2-1)

	Design	Maximum
Short Period (Ss) :	0.5	0.7
Isec Period (S1) :	0.3	0.45

Near Fault Seismic Effect (Table 2-3-1 ~ 2-3-4)

	Design	Maximum
Short Period (Ss)	0.8	1
Isec Period (S1)	0.45	0.55

Site Magnify Factor

Soil Type : Type 1

	Design	Maximum
Short Period (Fa) :	1	1
Isec Period (Fv) :	1	1

Short Period (Fa*) :
 1 |

Isec Period (Fv*) :
 1 |

Response Spectrum & Demand Spectrum (Pushover)

Add/Modify/Show Response Spectrum Functions

Function Name : Taiwan(2022)

Spectral Data Type

Normalized Accel. Acceleration

Scaling

Scale Factor Maximum Value

Scale Factor : 1

Import File Design Spectrum

	Period (sec)	Spectral Data (g)
1	0.0000	0.1020
2	0.0600	0.1786
3	0.1200	0.2551
4	0.1800	0.2551
5	0.2400	0.2551
6	0.3000	0.2551
7	0.3600	0.2551
8	0.4200	0.2551
9	0.4800	0.2551
10	0.5400	0.2551
11	0.6000	0.2551
12	0.6600	0.2319
13	0.7200	0.2126
14	0.7800	0.1962

Description TAIWAN(2022) : NearFault, Design, SoilType1, I=1.00, ay=1.00, R=1.60, Ss=0.50

Generate Design Spectrum

Design Spectrum : Taiwan(2022)

Spectrum Type : Horizontal Design Spectru

Seismic Zone : Near Fault Zone

Spectrum Used : Design Spectrum

Horizontal Spectral Accel. (Table 2-1)

	Design	Maximum
Short Period (Ss) :	0.50	0.70
Isec Period (S1) :	0.30	0.40

Near Fault Seismic Effect (Table 2-3-1 ~ 2-3-4)

	Design	Maximum
Short Period (Ss)	1.0	1.0
Isec Period (S1)	1.0	1.0

Site Magnify Factor

Soil Type : Type 1

	Design	Maximum
Short Period (Fa)	1	1.0
Isec Period (Fv)	1	1.0

Fundamental Period (T1) : 0.77354

Importance Factor (I) : 1.00

Seismic Magnify Factor (ay) : 1.0

Response Modification Coef. (R) : 1.6

Damping Ratio (%) : 5

Max. Period : 6 (Sec)

2. Response Spectrum Envelope functions for Taiwan Seismic Load

Envelopment of Response Spectrum

- To apply the largest ground acceleration among Design Spectrum, Small-Medium Spectrum, and Maximum Spectrum using envelope functions.

The diagram illustrates the process of creating a Response Spectrum Envelope function in three steps:

- “Click Envelope”**: The first screenshot shows the 'Response Spectrum Functions' dialog box. The 'Envelope' button is highlighted with a red box.
- Input Name and Select Spectrum for Envelope**: The second screenshot shows the 'Response Spectrum Envelope' dialog box. The 'Function Name' field contains 'ENV_TW2022'. The 'Response Spectrum List' contains '유저입력'. The 'Response Spectrum for Envelope' list contains 'Taiwan(2022)_Design', 'Taiwan(2022)_Small', and 'Taiwan(2022)_Maxmum'. Red boxes highlight the 'Function Name' field and the 'Response Spectrum for Envelope' list.
- Check of enveloped functions**: The third screenshot shows the 'Response Spectrum Functions' dialog box again. The 'Modify/Show' button is highlighted with a red box, and the 'ENV_TW2022' entry in the list is also highlighted with a red box.

3. Steel Design Code as per NSCP 2015 (Philippine)

Added LRFD & ASD Method for Steel Design

NSCP 2015 (LRFD)

Steel Design Code

Design Code : NSCP 2015(LRFD)

All Beams/Girders are Laterally Braced

Check Beam/Column Deflection

Apply Special Provisions for Seismic Design

Combined Ratio Method for Circular Section

SRSS(Square root of sum of square)

Linear Sum

Seismic Load Resisting System

System : Special Moment Frames

Consider strong column-weak beam on last floor

OK Close

Design Code

Automatic Generation of Load Combinations

Option

Add Replace

Code Selection

Steel Concrete SRC

Cold Formed Steel Footing

Aluminum

Design Code : NSCP 2015(LRFD)

Scale Up of Response Spectrum Load Cases

Scale Up Factor : 1

Factor	Load Case

Add Modify Delete

Manipulation of Construction Stage Load Case

ST : Static Load Case

CS : Construction Stage Load Case

ST Only CS Only ST+CS

Consider Orthogonal Effect

Set Load Cases for Orthogonal Effect...

100 : 30 Rule

SRSS(Square-Root-of-Sum-of-Squares)

Generate Additional Load Combinations

for Special Seismic Load

for Vertical Seismic Forces

Factors for Seismic Design...

Consider Redundancy Factor r:

Load Factor : 1

Consider Live Load Reduction Factor f1:

Factor for Live load Reduction...

OK Cancel

Load combination

NSCP 2015 (ASD)

Steel Design Code

Design Code : NSCP 2015(ASD)

All Beams/Girders are Laterally Braced

Check Beam/Column Deflection

Apply Special Provisions for Seismic Design

Combined Ratio Method for Circular Section

SRSS(Square root of sum of square)

Linear Sum

Seismic Load Resisting System

System : Special Moment Frames

Consider strong column-weak beam on last floor

OK Close

Design Code

Automatic Generation of Load Combinations

Option

Add Replace

Code Selection

Steel Concrete SRC

Cold Formed Steel Footing

Aluminum

Design Code : NSCP 2015(ASD)

Scale Up of Response Spectrum Load Cases

Scale Up Factor : 1

Factor	Load Case

Add Modify Delete

Manipulation of Construction Stage Load Case

ST : Static Load Case

CS : Construction Stage Load Case

ST Only CS Only ST+CS

Consider Orthogonal Effect

Set Load Cases for Orthogonal Effect...

100 : 30 Rule

SRSS(Square-Root-of-Sum-of-Squares)

Generate Additional Load Combinations

for Special Seismic Load

for Vertical Seismic Forces

Factors for Seismic Design...

OK Cancel

Load combination

4. Safety Verification & Cyclic Shear Resistance check for wall member as per EC8-3(2005), NTC 2018

- Safety Verification and Cyclic Shear Resistance tables are provided for seismic safety evaluation of wall members (Strong Axis).

Pushover – Safety Verification Table

Wall ID	Story	Location	Seismic Element	Load	Verify Ductile Mechanism						Verify Brittle Mechanism						
					My			Mz			Fy			Fz			
					Demand	Capacity	Remark	Demand	Capacity	Remark	Demand (N)	Capacity (N)	Remark	Demand (N)	Capacity (N)	Remark	
Step for Demand = USER (Step 30), Confidence factor = 1.00																	
Press right mouse button and click 'Set Safety Parameters' menu to change step or loadcase																	
1	1F	Bottom	Primary	1	0.0000	0.0070	OK	-	-	-	-	-	-	-	716136.00	1216830.0	OK
1	1F	Top	Primary	1	0.0042	0.0070	OK	-	-	-	-	-	-	-	716136.00	1216830.0	OK
1	2F	Bottom	Primary	1	0.0000	0.0071	OK	-	-	-	-	-	-	-	467874.00	1216830.0	OK
1	2F	Top	Primary	1	0.0000	0.0071	OK	-	-	-	-	-	-	-	467874.00	1216830.0	OK

Concrete Design – Safety Verification Table

Wall ID	Story	Location	Seismic Element	Load	Cyclic Shear Resistance					
					VRy			VRz		
					Demand	Capacity	Remark	Demand	Capacity	Remark
Confidence Factor = 1.00, qd = 3.00, le = 1.00										
Press right mouse button and click 'Set Cyclic Shear Resistance Parameters' menu to change Load Case/Combination/Confidence Factor/Displacement Behavior Factor/Importance Factor										
1	1F	Bottom	Primary	-	-	-	-	56049.000	1827030.0	OK
1	1F	Top	Primary	-	-	-	-	56049.000	1616140.0	OK
1	2F	Bottom	Primary	-	-	-	-	34486.000	11956200.0	OK
1	2F	Top	Primary	-	-	-	-	34486.000	1610890.0	OK

Pushover – Safety Verification Table

Wall ID	Story	Location	Seismic Element	Load	Cyclic Shear Resistance						
					VRy			VRz			
					Demand	Capacity	Remark	Demand	Capacity	Remark	
Confidence Factor = 1.00, qd = 1.00, le = 1.00											
Press right mouse button and click 'Set Cyclic Shear Resistance Parameters' menu to change Load Case/Combination/Confidence Factor/Displacement Behavior Factor/Importance Factor											
1	1F	Bottom	Primary	1	-	-	-	-	716136.00	1491770.0	OK
1	1F	Top	Primary	1	-	-	-	-	716136.00	1329410.0	OK
1	2F	Bottom	Primary	1	-	-	-	-	467874.00	1511530.0	OK
1	2F	Top	Primary	1	-	-	-	-	467874.00	1478240.0	OK

5. Improvement for Long-term Deflection of Slabs Considering Creep Coefficient (EC2, 2004)

- User can input the creep coefficient in the dialog box for slab design serviceability check.

The screenshot displays the MIDAS/Gen software interface for slab design serviceability checking. The 'Cracked Section Analysis Control' dialog box is open, showing the 'Consider creep coefficient for crept deflection' section with a checked checkbox and a value of 2.44. The 'Slab Serviceability Checking' settings panel also shows the 'Creep (Phi: 2.44)' option checked. The main window shows a 3D model of a slab with a color-coded deflection distribution.

Cracked Section Analysis Control Dialog Box:

- Cracked Section Analysis Option
- Number of Iterations/Load Case: 19
- Convergence Tolerance: 0.001
- Consider creep coefficient for crept deflection:
 - Creep (Phi: 2.44)
- Buttons: OK, Cancel

Slab Serviceability Checking Settings:

- Slab Serviceability Checking: [Dropdown]
- Load Combinations: ALL COMBINATION
- Element: [Radio] Element, [Radio] Avg. Nodal
- Element: [Radio] Element, [Radio] Width 1000 mm
- Top: [Radio] Top, [Radio] Bottom, [Radio] Both
- Dir. 1: [Radio] Dir. 1, [Radio] Dir. 2
- Type of Display:
 - Contour, Legend
 - Values, Crack Point
- Stress Checking: [Radio] Stress Checking, [Radio] Crack cc, Deflection
- Uncracked: [Radio] Uncracked, Cracked
 - Creep (Phi: 2.44)
- Value: [Radio] Value, [Radio] Ratio
- Design Result

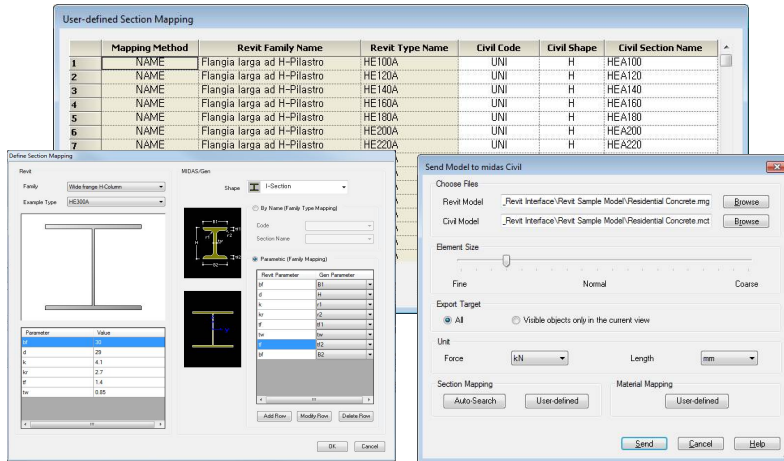
3D Model and Results:

- 3D model of a slab showing deflection distribution.
- Color scale legend for deflection (mm):
 - 0.00000e+00
 - 5.78849e+00
 - 1.15770e+01
 - 1.73655e+01
 - 2.31540e+01
 - 2.89424e+01
 - 3.47309e+01
 - 4.05194e+01
 - 4.63079e+01
 - 5.20964e+01
 - 5.78849e+01
 - 6.36734e+01
- Position: Top & Bot
- Smoothing: Element (Element)
- Component: Direction 1
- Deflection: Creep
- ALL COMBINATION
- MAX : 2
- MIN : 33
- FILE: TEST_DEF-
- UNIT: mm
- DATE: 09/27/2022

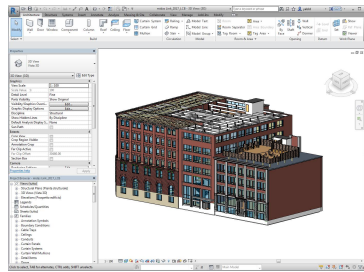
6. Revit 2023 Interface

Gen-Revit Link

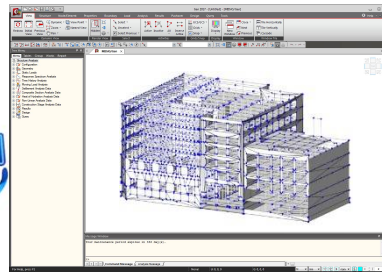
- **File > Import > midas Gen MGT File**
- **File > Export > midas Gen MGT File**



Send Model to midas Gen



Revit 2023



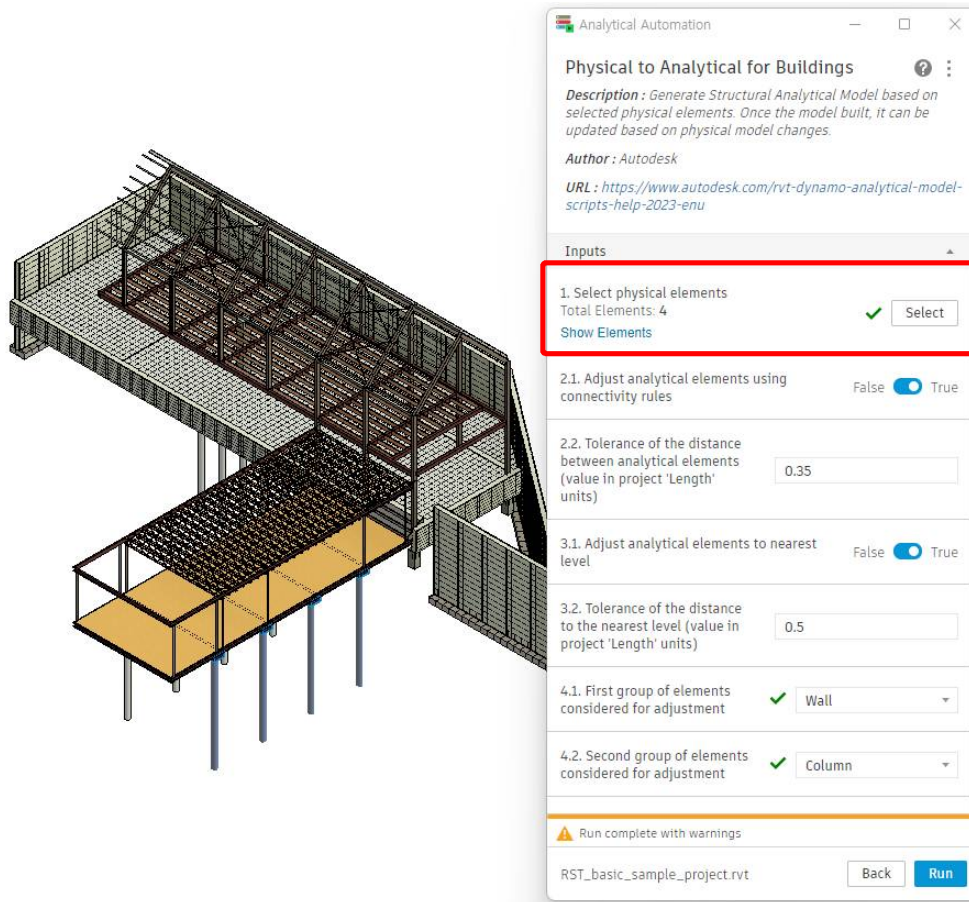
Gen2023 v1.1 (New version)

	Functions	Revit ↔ Gen	
Linear Elements	Structural Column	↔	
	Beam	↔	
	Brace	↔	
	Curved Beam	>	
	Beam System	>	
	Truss	>	
Planar Elements	Foundation Slab	↔	
	Structural Floor	↔	
	Structural Wall	↔	
	Wall Opening & Window	>	
	Door	>	
	Vertical or Shaft Opening	>	
	Offset	>	
Boundary	Rigid Link	>	
	Cross-Section Rotation	>	
	End Release	>	
	Isolated Foundation Support	>	
	Point Boundary Condition	>	
	Line Boundary Condition	>	
	Wall Foundation	>	
	Area Boundary Condition	>	
	Load	Load Nature	>
		Load Case	>
Load Combination		>	
Hosted Point Load		>	
Hosted Line Load		>	
Other Parameters	Hosted Area Load	>	
	Material	↔	
	Level	>	

6. Revit 2023 Interface

Gen-Revit Link

- User can export to Gen after setting up structural elements through the Analytical Automation function in Revit 2023.



7. Added to Rebar DB for Philippine (Design+)

- User can do reinforcement concrete member design using Philippine rebar code in the Design+ software.

Rebar Option

Rebar Code
Rebar Code PNS49

Rebar Option for Design

RC-1 | RC-2 | SRC

Slab	D10	~	D16
Beam Girder	D25	~	D28
Column	D25	~	D28
Shear Wall	D10	~	D20
Basement Wall	D12	~	D25
Buttress	D25	~	D28
Stair	D10	~	D16
Corbel Bracket	D25	~	D28
Beam Table	D25	~	D28
Slab Table	D10	~	D16

Spacing List

Moment | Shear

<input type="checkbox"/>	100.00
<input type="checkbox"/>	150.00
<input type="checkbox"/>	200.00
<input type="checkbox"/>	250.00
<input type="checkbox"/>	300.00
<input type="checkbox"/>	350.00
<input type="checkbox"/>	400.00
<input type="checkbox"/>	450.00

Add Remove

Use user-defined space.

Apply Close