

midas Gen / Design+

2026 (v1.1)



Release Note (June 2025)

Pre-processing

- Added New Cross-section to Database.
 - NB/T 10115-2018 (CH) : Cold-formed section
 - I-shape DB (3 new section) as per UNI
 - T-shape DB as per UNI
 - 8 new cross-section types as per CNS-2020
- Added new material DB.
 - Aluminum DB as per EN 2023
 - Timber DB as per EN 338
- Added new rebar DB.
 - Rebar Dia. and Material as per TS (Turkish Standard)
- Improved GTS & Gen Interface .
(Handling when the slope of spring stiffness is negative.)
- Copying of Load Profile table data for wind/earthquake
- Added to Input Finishing Material Load
- Add Importing of Ground Motion Records from PEER Database

Design

- [Gen/Design+]Added Steel Design as per AISC 2022.
- Added 6 Design Codes to Shell Design
- Added RC Meshed Slab/Wall Design as per TWN-USD112.
- Added “Wall End Rebar Design Method by Member” feature in Conc. Design Parameters
- Added Load Combinations as per Thailand (2021).
- Improved Seismic Design as per EC8-3
- [Design+] Improved Gen-Design+ link.
(Automatically set to Gen's design and material code)

Add New Section and Material DB

Section Standard

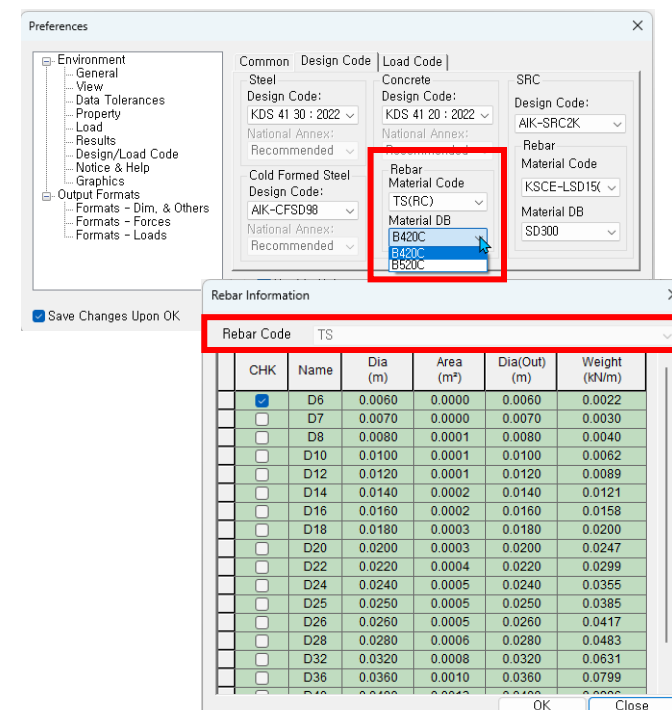
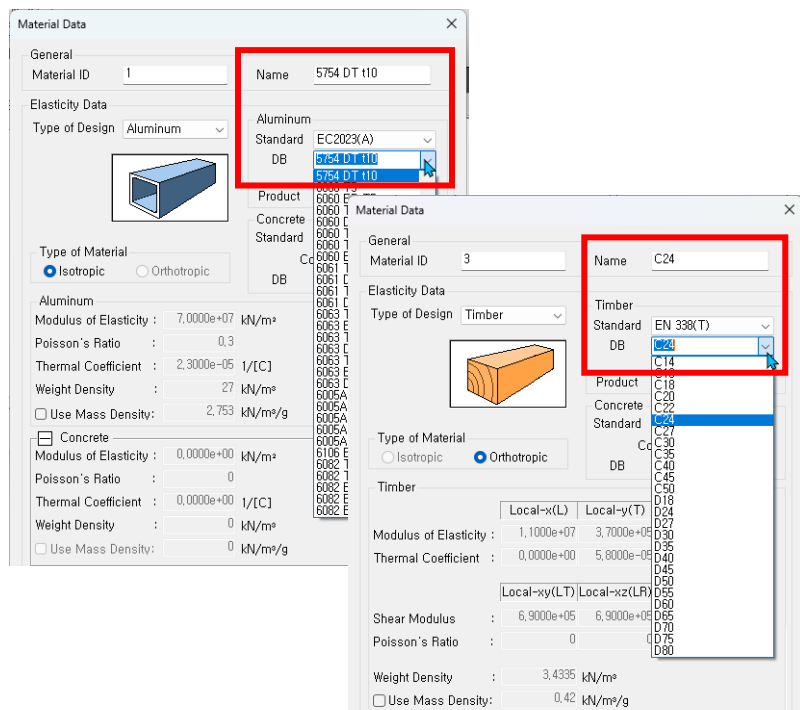
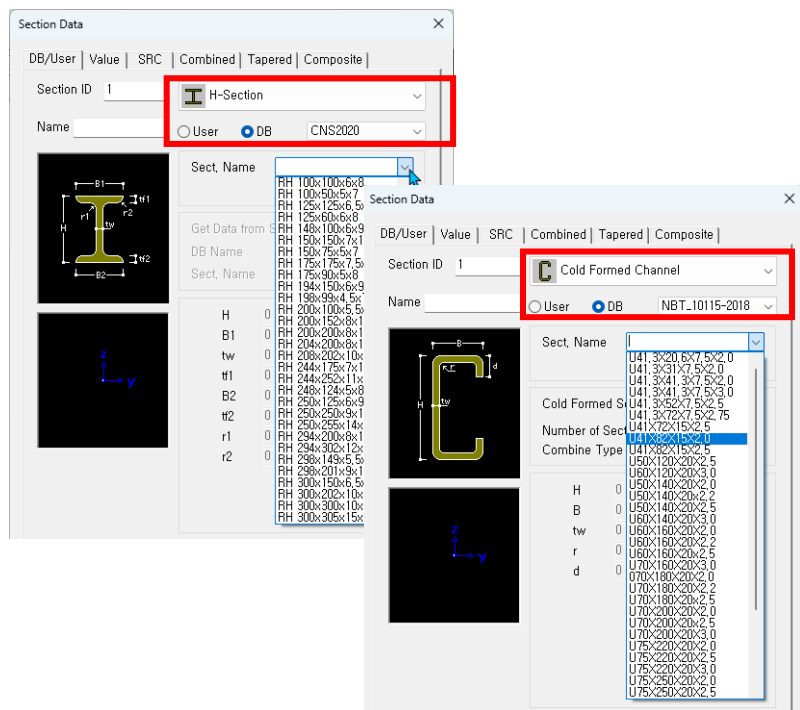
Code Name	Detail
NB/T 10115-2018 (CH)	Cold formed section
UNI (IT&Euro)	I shape (3 sections)
	T shape
CNS-2020 (TW)	I-shape, L-type, C-type, T-type, Box, Pipe, Cold formed Channel

Material Standard

Code Name	Detail
EN-2023 (Euro)	Aluminum materials
EN 338, EN 14080 (Euro)	Timber materials (Structural timber, glulam)

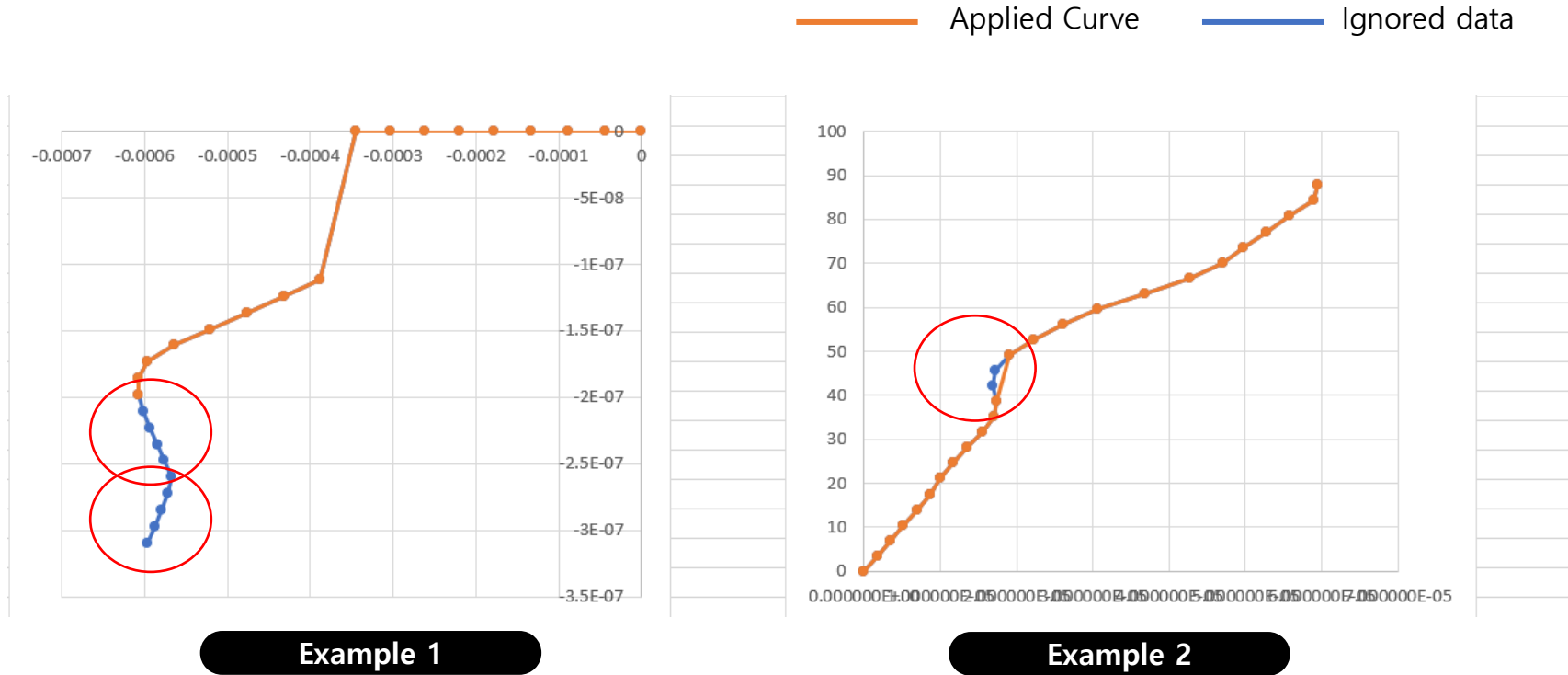
Rebar Standard

Code Name	Detail
TS (Turkish Standard)	17 Diameters



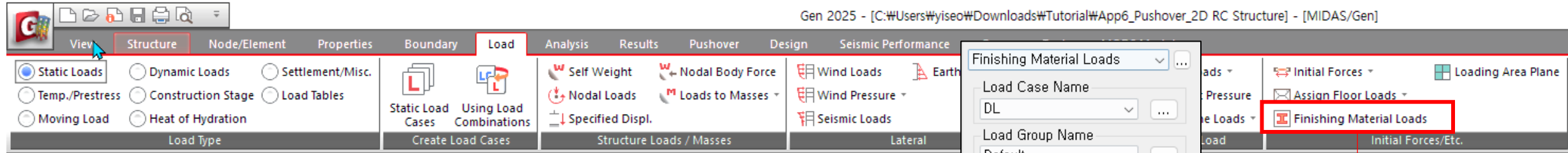
Improvement of GTS & Gen Interface

Handling when the slope of spring stiffness is negative



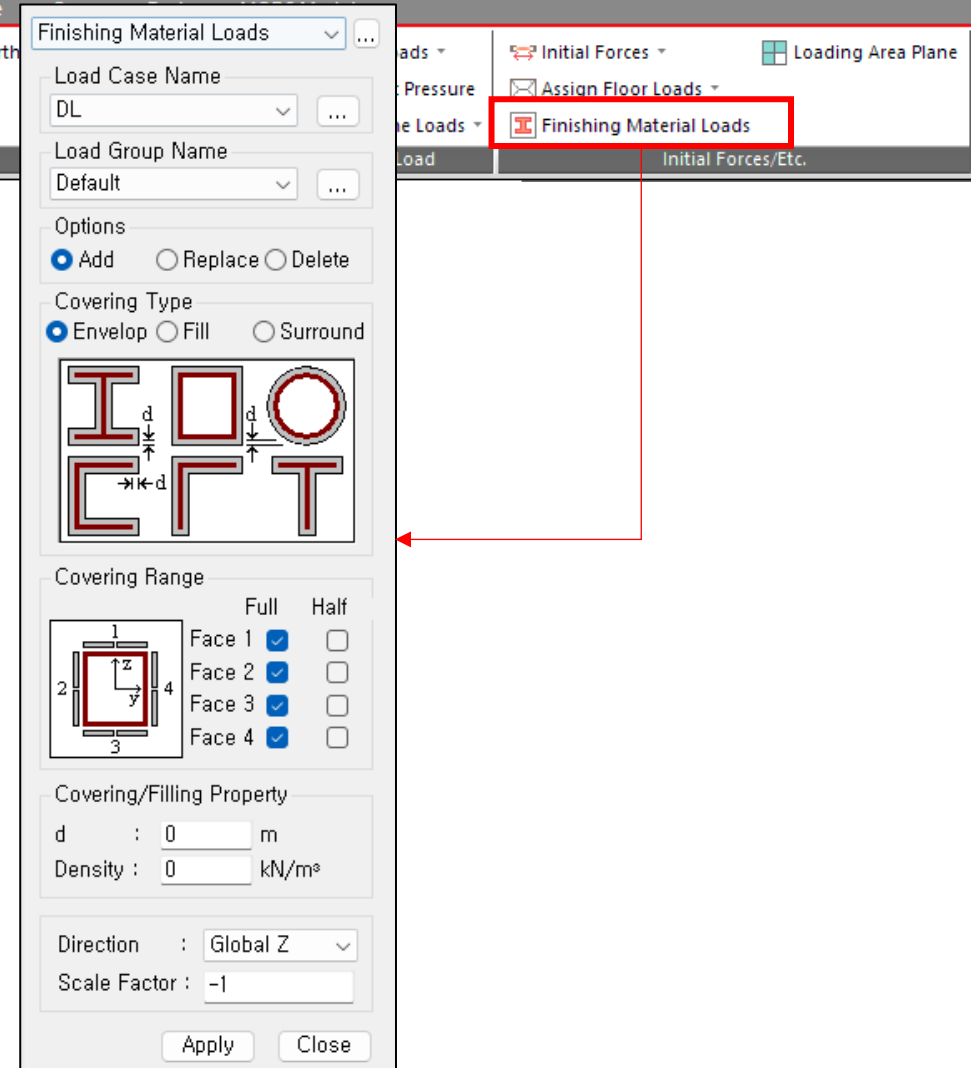
- There was a case where spring data with negative slope and deformation from GTS could not be loaded.
- Data that causes negative slope and deformation is ignored to generate a spring stiffness curve that can be imported into Gen..

Add Feature to Input Finishing Material Load



Input or modify the load due to the member's finishing, such as a fireproofing.

- Covering Type**
Specify the method of applying the covering (refer to the guide image).
- Covering Range**
Refer to the guide image to specify the range of covering material applied to each face of the element.
- Covering/Filling Property**
d: Thickness of the covering.
Density: Unit weight of the covering material.
- Direction**
Direction of the covering load application (choose from Global X, Y, or Z).
- Scale Factor**
Scale factor for increasing or decreasing the covering load.



Added Importing of Ground Motion Records from PEER Database

Midas Gen be able to read directly the ground motion database from PEER NGA.

The screenshot illustrates the workflow for importing a ground motion record into Midas Gen. The 'Add/Modify/Show Time History Functions' dialog is active, showing the 'Import' button and the 'Time Function Data Type' set to 'Normalized Accel.'. The 'File Name' field is populated with 'RSN3870_TOTTORI_HRS001EW (1) (1).at2'. The 'Scale Factor' is set to 1. A graph of the time history data is displayed, showing a peak acceleration of approximately 0.35g. The file explorer window shows the file 'RSN3870_TOTTORI_HRS001EW (1) (1).at2' selected, with the file type set to 'SGS or THD or AT2 File (*.sgs, *.thd, *.at2)'.

PEER NGA STRONG MOTION DATABASE RECORD
Cape Mendocino, 4/25/1992, Fortuna - Fortuna Blvd, 0
ACCELERATION TIME SERIES IN UNITS OF G
NPTS= 2200, DT= .0200 SEC

Time (sec)	Function (g)
1	0.0100
2	0.0200
3	0.0300
4	0.0400
5	0.0500
6	0.0600
7	0.0700
8	0.0800
9	0.0900
10	0.1000
11	0.1100
12	0.1200
13	0.1300
14	0.1400

File Name: RSN3870_TOTTORI_HRS001EW (1) (1).at2

Time Function Data Type: ☒ Normalized Accel. ☐ Acceleration

Scale Factor: ☒ Scale Factor: 1 ☐ Maximum Value: 0 g

File Name: RSN3870_TOTTORI_HRS001EW (1) (1).at2

File Type: SGS or THD or AT2 File (*.sgs, *.thd, *.at2)

[Gen/Design+] Steel design as per AISC-LRFD2022 & AISC-ASD2022

ANSI/AISC 360-22
An American National Standard

Specification for
Structural
Steel Buildings

August 1, 2022
Supersedes the
Specification for
Structural Steel Buildings,
Approved June 2, 2010

Approved by
American Institute of Steel Construction, Inc.

ANSI/AISC 360-22
An American National Standard

Seismic
Provisions for
Structural
Steel Buildings

September 26, 2022
Supersedes the Seismic Provisions for Structural Steel Buildings,
Revised July 13, 2016, and all previous versions.
Approved by the Committee on Specifications

Smarter.
Stronger.
Steel.

Gen 2025 - [C:\Users\yiseo\Downloads\App1_Steel(import)] - [MIDAS/Gen]

View Structure Node/Element Properties Boundary Load Analysis Results Pushover Design Seismic Performance Query Tools Help

General Design Parameter General Steel Design Steel Design RC Design Meshed Design

SSRC79 Eurocode3-1-3:06 SRC Design Cold-Formed Steel Design Steel/Cold Formed Steel Design Steel/Cold Formed Steel Design Concrete Design SRC Design

Perform Batch Design Batch

Forces/Properties

Start Page MIDAS/Gen

AISC(16th)-LRFD22 Code Checking Result Dialog

Code: AISC(16th)-LRFD22 Unit: kN, m Primary Sorting Option: SECT

CH	MEMB	SECT	SEL	Material	Fy	Len	Lx	Lz
OK	158	221		S01, W24x76		12.0000	12.0000	
OK	765	0.193		A36	248211	4.00000	12.0000	
OK	47	223		S03, W18x55		6.00000	6.00000	
OK	535	0.155		A36	248211	2.00000	6.00000	
OK	62	225		S05, W24x103		10.8000	10.8000	
OK	705	0.233		A36	248211	2.70000	10.8000	
OK	49	243		S03A, W24x76		6.00000	6.00000	
OK	718	0.199		A36	248211	2.00000	6.00000	
OK	94	501		C5, W14x132		6.00000	6.00000	
OK	790	0.088		A572-50	344738	6.00000	5.00000	
OK	305	502		C5, W14x99		5.00000	5.00000	
OK	988	0.171		A572-50	344738	5.00000	5.00000	
OK	95	551		C5A, W14x132		6.00000	6.00000	
OK	779	0.059		A572-50	344738	6.00000	5.00000	
OK	307	552		C5A, W12x65		5.00000	5.00000	
OK	882	0.076		A572-50	344738	6.00000	5.00000	
OK	97	601		C6, W14x176		6.00000	6.00000	
OK	547	0.079		A572-50	344738	6.00000	6.00000	
OK	309	602		C6, W14x176		5.00000	5.00000	
OK	857	0.194		A572-50	344738	5.00000	5.00000	

Connect Model View View Result Ratio... Result View Opt: All OK

Select All Unselect All Re-calculation Summary... Close

Graphic... Detail... Summary... Close

Table Result

Steel Checking Result

Company: MIDAS Author: Yong Yoon BAE Project Title: App1_Steel(import) File Name: App1_Steel(import).acs

1. Design Information

Design Code: AISC(16th)-LRFD22

Unit System: kN, m

Member No: 97

Material: A572-50 (No.2) Fy = 344.78, Es = 199948024

Section Name: C6 (No.601) (Rolled: W14x176)

Member Length: 6.00000

2. Member Forces

Axial Force: Fxx = -2178.8 (LSD: 2, POS: 2)

Bending Moments: My = -457.07, Mz = 16.5320 (for Lb)

End Moments: My1 = 203.530, My2 = -457.07 (for Lb)

Shear Forces: Fyy = -46.779 (LSD: 6, POS: 1)

3. Design Parameters

Unbraced Lengths: Ly = 6.00000, Lz = 6.00000, Lb = 6.00000

Effective Length Factors: Ky = 1.00, Kz = 1.00

Moment Factor / Bending Coefficient: Om = 0.85, Ocz = 0.85, Ob = 1.00

4. Checking Results

Axial Strength: P / Pc = 2178.80 / 8055.35 = 0.270 < 1.000

Bending Strength: My / Mcy = 457.07 / 1568.70 = 0.291 < 1.000

Combined Strength (Compression-Bending): P / Pc + 8 / 9 * (My / Mcy + Mz / Mcz) = 0.547 < 1.000

Shear Strength: Vry / Rcy = 0.007 < 1.000

Torsion Strength: T / Tc = 0.0000 / 0.0000 = 0.000 < 1.000

Graphic Report

MIDAS/Text Editor - [App1_Steel(import).acs]

File Edit View Window Help

[[[+]]] CHECK AXIAL STRENGTH

(.) Check slenderness ratio of axial compression member

- KL/r = max(Kx Lx / ix, Ky Ly / iy) = 58.76 < 200.0 ----> 0.K *****

(.) Check width-thickness ratio of flange (BTR)

- lambdaflange = 0.56 Sqrt(Es / Fy) = 13.49

- BTR = 0.5 bf / tf = 5.973 < lambdaflange ----> Not Slender

(.) Check depth-thickness ratio of web (DTR)

- lambdaweb = 1.49 Sqrt(Es / Fy) = 35.88

- DTR = H - twf = twf2 - 2wr = 0.320m

- DTR = Dweb / tw = 15.18 < lambdaweb ----> Not Slender

(.) Calculate Flexural Buckling Stress (Fnl)

- Fe = (pi^2 Es) / (KL / r)^2 = 571.523kN/m^2

- KL/r = 58.76 < 4.71 Sqrt(Es / Fy) = 113

- Fnl = (0.658 * (Fy / Fe)) Fy = 267.821kN/m^2

(.) Calculate axial compressive strength (phiPn)

- Pn = 267.821kN/m^2

- phiPn = phi * Pn Area = 8.055kN

- Pu / phiPn = 0.270 < 1.000 ----> 0.K *****

[[[+]]] CHECK FLEXURAL STRENGTH ABOUT MAJOR AXIS (X)

(.) Elastic section modulus referred to tension and compression flanges

- Sxx = 0.0046m^3

- Sxx = 0.0046m^3

(.) Calculate limiting width-thickness ratio of flange for flexure

- lambdaflange = 0.38 Sqrt(Es / Fy) = 9.152

- lambdaflange = 1.00 Sqrt(Es / Fy) = 24.08

(.) Calculate limiting width-thickness ratio of web for flexure

- lambdaweb = 3.76 Sqrt(Es / Fy) = 90.55

- lambdaweb = 5.70 Sqrt(Es / Fy) = 137

(.) Check width-thickness ratio of flange (BTR)

- BTR = 5.973 < lambdaflange = 9.152 ----> Compact

(.) Check width-thickness ratio of web (DTR)

- DTR = 15.18 < lambdaweb = 90.55 ----> Compact

(.) Calculate nominal flexural strength for Yielding (Y)

- Mn1 = Mp = Fy Zx = 1,808kN.m

(.) Calculate limiting laterally unbraced length for the limit state of yielding (Lp)

- Lp = 1.76 ry Sqrt(Es / Fy) = 4.320m

Ready

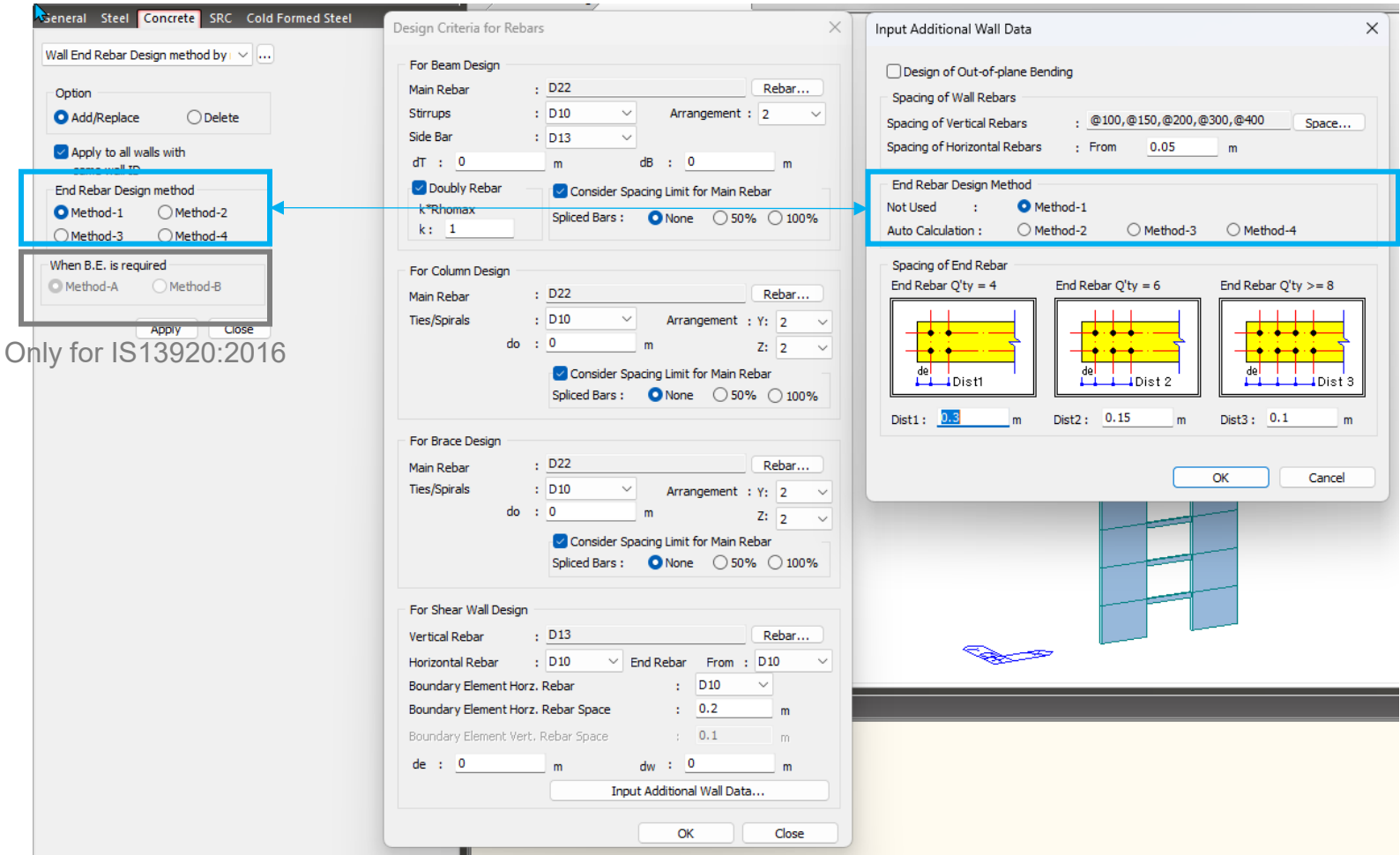
Added Design Codes to Meshed Member Design

Items	Detail		
RC Shell Design	Add a design as per ACI318-14, ACI318-19, NSR-10, TWN-USD112, NTC-DCEC(2023) and NSCP 2015 ACI318M-19 SSRC79 RC Design SRC Design Meshed Design Serviceability Load Combination Type... Slab/Wall/Shell Load Combinations... Design Criteria for Rebars... Slab/Wall/Shell Rebars for Checking... Slab Serviceability Parameters... Meshed Design Tables Slab Flexural Design... Slab Flexural Checking... Slab Shear Checking... Slab Serviceability Checking... Cracked Section Analysis Control... Perform Cracked Section Analysis Wall Design... Wall Checking... Shell Flexural Design... Shell Flexural Checking... Shell Shear Checking... midas Gen POST-PROCESSOR SHELL DESIGN F12@300, F12@100 F12@300, F10@100 F12@300, F12@150 F12@300, F12@200 F12@300, F10@150 F12@300, F10@200 F12@300, F12@300 F12@300, F12@400 F12@300, F10@300 F12@300 None <tr><td>RC Meshed Slab/Wall Design</td><td> Add a design as per TWN-USD112 NSCP 2015 SSRC79 RC Design SRC Design Meshed Design Serviceability Load Combination Type... Slab/Wall/Shell Load Combinations... Design Criteria for Rebars... Slab/Wall/Shell Rebars for Checking... Slab Serviceability Parameters... Meshed Design Tables Slab Flexural Design... Slab Flexural Checking... Slab Shear Checking... Slab Serviceability Checking... Cracked Section Analysis Control... Perform Cracked Section Analysis Wall Design... Wall Checking... Shell Flexural Design... Shell Flexural Checking... Shell Shear Checking... WALL DESIGN 1.96369e+00 1.78518e+00 1.60666e+00 1.42014e+00 1.24962e+00 1.07111e+00 8.92589e-01 POST-PROCESSOR SLAB DESIGN #5@101 #5@152 #4@101 #5@203 #5@152 #5@204 #4@203 #5@406 #4@204 #4@406 None </td></tr>	RC Meshed Slab/Wall Design	Add a design as per TWN-USD112 NSCP 2015 SSRC79 RC Design SRC Design Meshed Design Serviceability Load Combination Type... Slab/Wall/Shell Load Combinations... Design Criteria for Rebars... Slab/Wall/Shell Rebars for Checking... Slab Serviceability Parameters... Meshed Design Tables Slab Flexural Design... Slab Flexural Checking... Slab Shear Checking... Slab Serviceability Checking... Cracked Section Analysis Control... Perform Cracked Section Analysis Wall Design... Wall Checking... Shell Flexural Design... Shell Flexural Checking... Shell Shear Checking... WALL DESIGN 1.96369e+00 1.78518e+00 1.60666e+00 1.42014e+00 1.24962e+00 1.07111e+00 8.92589e-01 POST-PROCESSOR SLAB DESIGN #5@101 #5@152 #4@101 #5@203 #5@152 #5@204 #4@203 #5@406 #4@204 #4@406 None
RC Meshed Slab/Wall Design	Add a design as per TWN-USD112 NSCP 2015 SSRC79 RC Design SRC Design Meshed Design Serviceability Load Combination Type... Slab/Wall/Shell Load Combinations... Design Criteria for Rebars... Slab/Wall/Shell Rebars for Checking... Slab Serviceability Parameters... Meshed Design Tables Slab Flexural Design... Slab Flexural Checking... Slab Shear Checking... Slab Serviceability Checking... Cracked Section Analysis Control... Perform Cracked Section Analysis Wall Design... Wall Checking... Shell Flexural Design... Shell Flexural Checking... Shell Shear Checking... WALL DESIGN 1.96369e+00 1.78518e+00 1.60666e+00 1.42014e+00 1.24962e+00 1.07111e+00 8.92589e-01 POST-PROCESSOR SLAB DESIGN #5@101 #5@152 #4@101 #5@203 #5@152 #5@204 #4@203 #5@406 #4@204 #4@406 None		

Added “Wall End Rebar Design Method by Member” feature

Wall design (Vertical rebar arrangement) method can be set for each wall individually.

Define the design method locally



Define the design method globally

Only for IS13920:2016

Add load combinations as per Thailand (2021)

Automatic Generation of Load Combinations

Option
☒ Add ☐ Replace

Code Selection
☐ Steel ☒ Concrete ☐ SRC
☐ Cold Formed Steel ☐ Footing
☐ Aluminum
 Design Code : Thailand(2021)

☐ Scale Up of Response Spectrum Load Case
 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,...

☐ Will Execute Construction Stage Analysis
☐ Consider Losses for Prestress Load Cases
 Transfer Stage : 1
 Service Load Stage : 1

Define Factors

OK Cancel

Steel Design (LRFD)// RC Design (SDM)

- Only Structure Case
 - 1.4D
 - 1.40D+1.70L
- Wind Load Case
 - 0.75(1.40D+1.70L)+1.60W
 - 0.90D+1.60W
- Earthquake/Seismic case
 - 0.75(1.4D+1.7L)+1.00EQ
 - 0.90D+1.00EQ
- Earth Pressure/Vertical Water Pressure Load/Fluid Pressure
 - 1.40D+1.70LL+1.70EP
 - 0.9D+1.7EP
 - 1.4D+1.7LL+1.4FP
 - 0.90D+1.4FP
 - 0.75(1.40D+1.40T+1.70L)
- Thermal Force Case
 - 1.40D+1.40T

Steel Design (ASD) / RC Design (WSD)

- Only Structure Case
 - 1.00D
 - 1.00D+1.00L
- Wind Load Case
 - 1.00D+0.75L+0.75W
 - 0.60D+1.00W
- Earthquake/Seismic case
 - 1.00D+0.70EQX
 - 1.00D+0.75L+0.525EQ
 - 0.60D+0.70EQ
- Earth Pressure/Vertical Water Pressure Load/Fluid Pressure and Thermal Force Case
 - 1.00(D+L+WP+FP+T)

Improved Seismic Design as per EC8-3

Added the option to consider no confinement effect (Apply $\alpha=0$)

- Calculation of θ_{um} in Safety Verification Check
- Calculation of θ_{um} in Cyclic Shear Resistance Check
- Calculation of θ_{um} in Nonlinear Hinge Curve

A.3.2.2 Limit State of near collapse (NC)

(1) The value of the total chord rotation capacity (elastic plus inelastic part) at ultimate, θ_u , of concrete members under cyclic loading may be calculated from the following expression:

$$\theta_{um} = \frac{1}{\gamma_{cl}} 0,016 \cdot (0,3^v) \left[\frac{\max(0,01;\omega)}{\max(0,01;\omega)} f_c \right]^{0,225} \left(\min \left(9; \frac{L_v}{h} \right) \right)^{0,35} 25^{\alpha \rho_s \frac{f_{yw}}{f_c}} (1,25^{100 \rho_s}) \quad (A.1)$$

Apply $\alpha=0$

α is the confinement effectiveness factor, that may be taken equal to:

$$\alpha = \left(1 - \frac{s_h}{2b_o} \right) \left(1 - \frac{s_h}{2h_o} \right) \left(1 - \frac{\sum b_i^2}{6h_o b_o} \right) \quad (A.2)$$

Safety Verification

Set Safety Verification Parameters

Pushover Load Case: PL

Step for Demand: Significant Damage (SD)

Step for Capacity: Significant Damage (SD)

Confidence Factor: 1.0

Component: Ductile Failure (My, Mz), Brittle Failure (Fy, Fz)

Not Consider Confinement Effect

Cyclic Shear Resistance

Set Cyclic Shear Resistance Parameters

Pushover Load Case: PL

Step for Demand: Damage Limitation (DL)

Cyclic Shear Resistance Table Type: Show Selected Elements

Confidence Factor: 1.0

Not Consider Confinement Effect

Nonlinear Hinge Curve

Directional Properties of Pushover Hinge : Eurocode 8 : 2004

Input Method: Auto-Calculation

Shape of FEMA Curve: General Type

Strength Loss: Yes

Total Strength Loss at Point E, -E: No

Yield Rotation Analysis Option: Du Update

Confinement Effect: Yes

Properties: Type: Asymmetric

Class of cross section: Class1

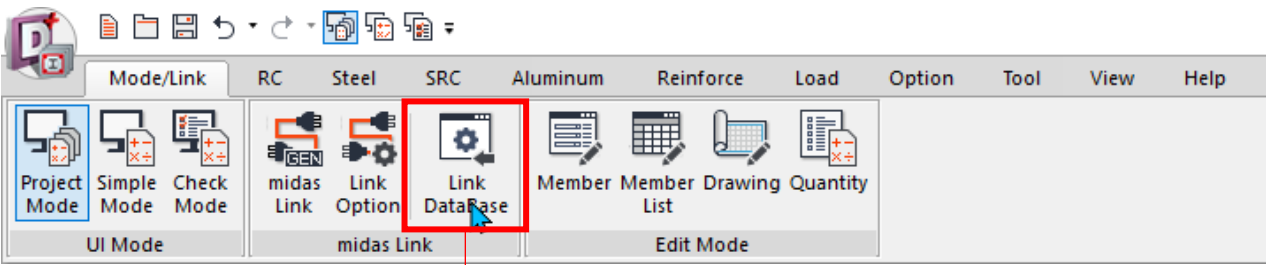
Primary Curve: Graph showing M/D vs D/Y

Compliance Criteria: Damage Limitation (DL), Significant Damage (SD), Near Collapse (NC)

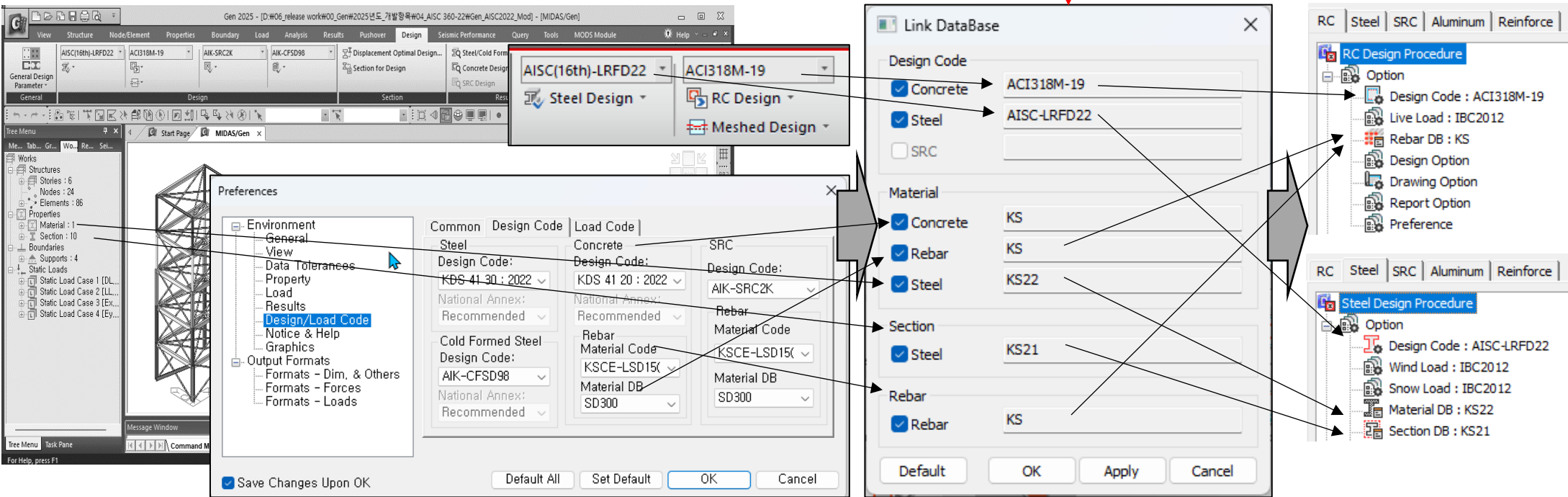
Initial Stiffness: User (+) 1, (-) 1

[Design+] Improvement of Gen-Design+ link

Automatically set the design and material code of midas Gen to Design+



The "Link Database" function loads design setting information from Gen to configure the design environment in Design+.



Thanks

