

midas nGen

Release Note

Release Date : Oct. 2024

Product Ver. : nGen 2025 (v1.1)

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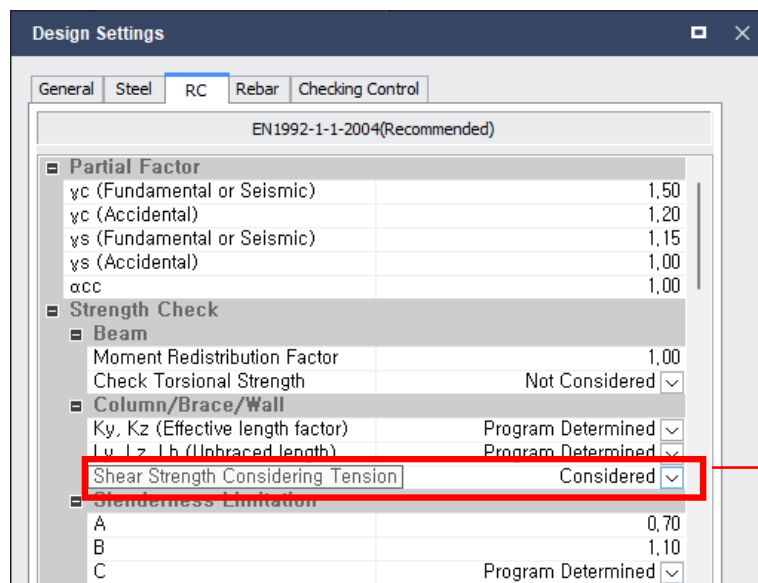
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1. Improvement of wall shear design for out-of-plane considering the a tensile force

Target Code : EN 1992-1-1 : 2004, NTC 2018(Italian Code)

- Current Version : When tension was applied to the wall element, 'Vc' was considered zero.
- nGen 2025 (New Version) : 1-Way shear method considering axial force is applied



* It will be applied when "Shear Strength Considering Tension" is set as "Considered" in the 'Design Settings' dialog box

I. Check Shear Capacity Minor Axis

Shear	Combination	LCB1 (1.40D)	
	$V_u, \phi V_{n,max}$	2.800 kN < 410.792 kN	OK
	$\phi V_c, \phi V_s$	27.158 kN + 0.000 kN = 27.158 kN	
	$V_u / \phi V_n$	2.800 kN / 27.158 kN = 0.103 < 1.000	Need Check

1) Compute shear strength of concrete.

$$V_{c1} = 0.27 \sqrt{f'_c} h_w d + P_u \frac{d}{4L_w} = 176.902 \text{ kN}$$

$$V_{c2} = (0.05 \sqrt{f'_c} + \frac{L_w (0.10 \sqrt{f'_c} + 0.2 P_u / L_w h_w)}{M_u / V_u - L_w / 2}) h_w d = 36.211 \text{ kN}$$

$$V_c = \min(V_{c1}, V_{c2}) = 36.211 \text{ kN}$$

$$\phi = 0.750$$

$$\phi V_c = 27.158 \text{ kN}$$

2) Check permissible maximum shear strength.

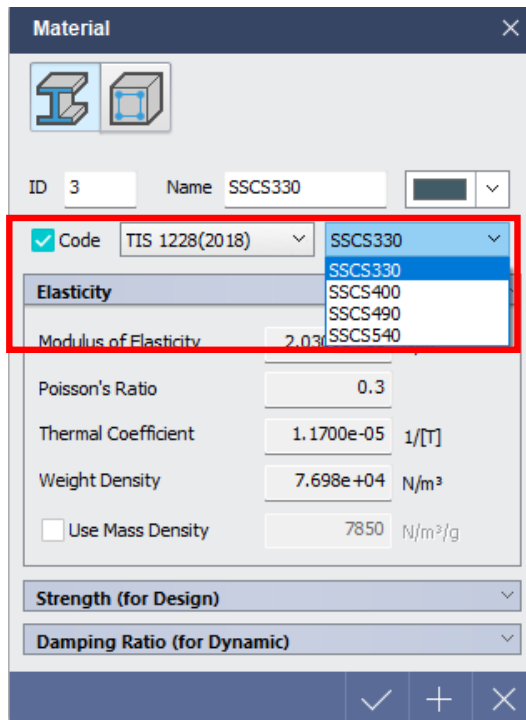
$$A_{cv} = h_w L_w = 120,000.000 \text{ mm}^2$$

$$V_{n,max} = V_c + 5/6 \sqrt{f'_c} A_{cv} = 547.723 \text{ kN}$$

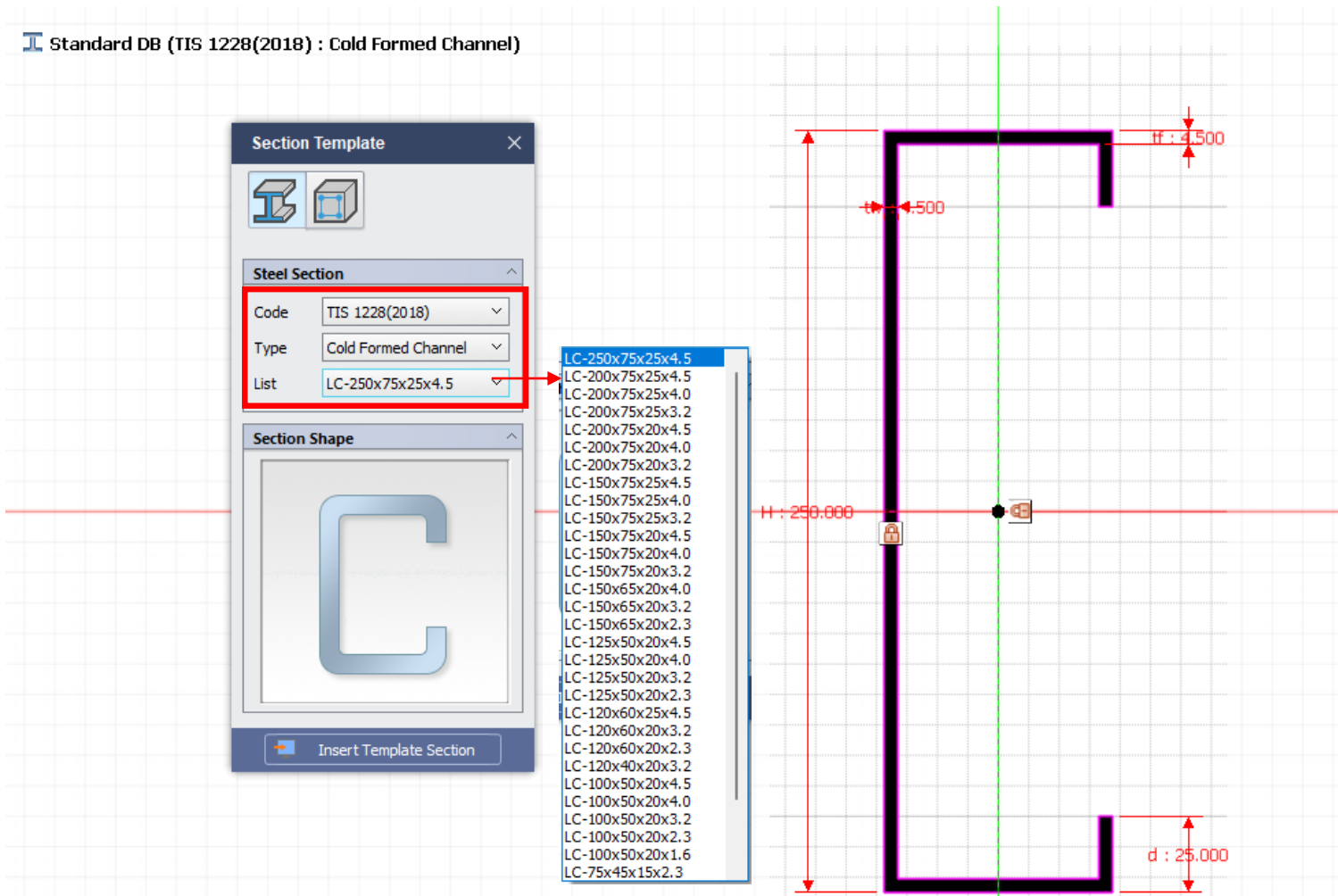
$$\phi = 0.750$$

$$\phi V_{n,max} = 410.792 \text{ kN}$$

2. Addition of Cold-formed material & Section DB according to “TIS 1228-2018”



Standard DB (TIS 1228(2018) : Cold Formed Channel)



* Note: It supports only the analysis. (Design is not supported)

3. Addition of Serviceability Check for Wind Load according DPT

Design Wind Load (Building)

Name: Detailed
Code: DPT.1311-50:2007
National Annex: None
Average Roof Height (H): 15000 mm

Application Method
Method: ☐ Simplified ☒ Detailed

Building Information
Breadth: Major 8000 mm, Ortho. 12000 mm

Common Parameters
Wind Zone: Zone 3
Basic Wind Speed: 29 m/sec
Terrain Category: B
Importance Factor: 1

Topographic Effects
☐ Include Topographic Effects
Hill Shape: 2-D Ridge or Va
Building Location: Downwind
Hill Height: 0 mm
Hill Length: 0 mm
Crest-Building Distance: 0 mm

Gust Factor and Pressure Coefficient
Auto Calculate by Structure Information
Gust Factor (C_g): Major 2.000, Ortho. 2.000

Additional Parameters
☒ Cross Wind
☒ Torsional Wind
☒ Response (Disp. / Accel.)
Set Wind Load Combination Factors

Set Wind Load Combination Factors

1st Natural Frequency
Along Wind: 0.749 Hz
Cross Wind: 0.657 Hz
Torsional Wind: 0.688 Hz

1st Generalized Mass
Along Wind: 190764 kN/g
Cross Wind: 239892 kN/g
Torsional Wind: 11510770 kN·mm²/g

Damping Ratio
Along Wind: 0.015
Cross Wind: 0.015
Torsional Wind: 0.015

Serviceability Items for Wind Load

- Deformation (Δ) for Wind along direction
- Acceleration (a_w) for Wind along direction
- Acceleration (a_w) for Wind orthogonal direction

11. Lateral Acceleration (Major, a)

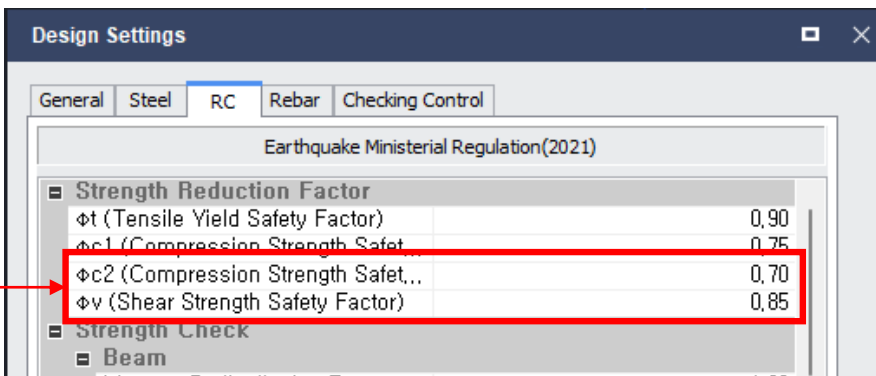
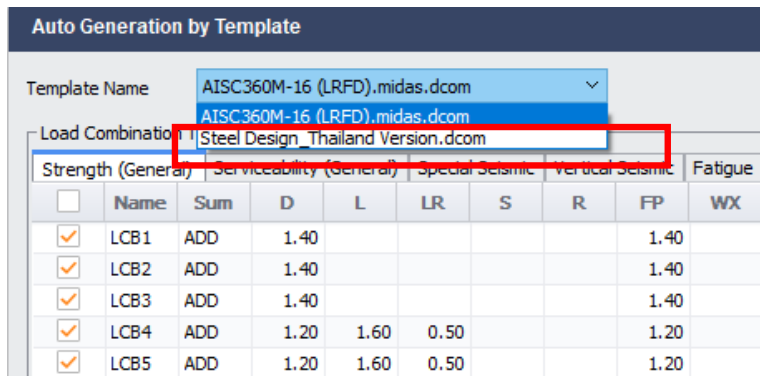
11.1. Windward

Natural Frequency Along Wind Direction (n_D)	: 1.000 Hz
Statistical Peak Factor (g_p)	: 3.977
Coefficient Factor (K)	: 0.100
Size Reduction Factor (s)	: 0.057
Factor (F)	: 0.071
Exposure Factor at the Top of Building (C_{eH})	: 0.729
Damping Ratio Along Wind Direction (β_D)	: 0.015
Gust Factor (C_g)	: 2.820
Transverse Deformation (Δ)	: 0.00001 m
Transverse Acceleration (a_D)	: 0.00006 m/sec ²

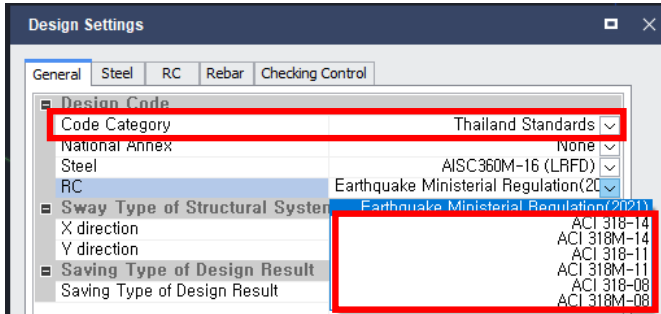
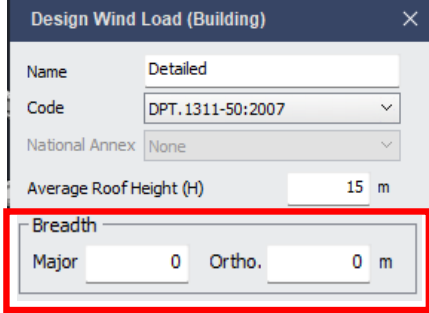
11.2. Direction Perpendicular to the Wind

Importance Factor (I_w)	: 0.750
Reference Unit Wind Force (q_H)	: 332.168 Pa
Coefficient of Fluctuation of the Moment (C'_L)	: 0.198
Statistical Factor (g_L)	: 4.352
Average Density of Building (ρ_B)	: 385802.469
Resonance Response Factor (R_L)	: 0.256
Transverse Acceleration (a_w)	: 0.00007 m/sec ²

4. Other Modifications for Thailand Standard

Items	Detail	Check
Modification of Strength Reduction Factors. Thailand Standards Tensile Yield Safety Factor Compress Strength Safety Factor Spiral RC Other RC Shear Strength Safety Factor Concrete Bearing Safety Factor 0.9 0.75 0.70 0.85 0.7		
Addition of Load Combination Template for Steel Design. Thailand Standards Steel Design (ASD)// RC Design (WSD) for Soil Bearing and Pile capacity Check - 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)		It should be use after pasting “Steel Design_Thailand Version.dcom” in “Midas nGen \Design\LoadCombination\Steel\Thailand” into the folder corresponding to the code selected in “Design settings” Dialog box.

4. Other Modifications for Thailand Standard

Items	Detail	Check
Thailand > RC Code	Add ACI 318(M) Series in “Thailand Standard > RC” 	
DPT Wind Load	- Cg and Cp are calculated as the breath values in the wind load dialog box.  - The default Cg value of “Simplified” is modified as “2.0” - Improvement of wind load report - T_F information output - Torsional Wind (M_T) table output	
DPT Seismic Load	- Fixed an error where acceleration was not divided by 0.85 when a damping was 0.025 - Fixed an error where some models were getting incorrect values from ‘Fa’ and ‘Fv’ Table. - Output values up to 4 decimal places in RS Table	

5. nGen – IDEA statica connection

Member forces by each load combination are updated to a design force in IDEA statica

The image illustrates the process of exporting member forces from nGen to IDEA StatiCa. It includes the nGen software interface with numbered callouts (1-6) for each step, a detailed view of the 'Export Idea Statica file' dialog, and a screenshot of the IDEA StatiCa software showing the imported model and member forces.

Step 1: Click "Steel Connection Export" in Output>Idea Static Link after performing the analysis and design.

Step 2: Select the design case to convert to IDEA statica

Step 3: Select the members and Click "V" button. (Note : Only the member connected to one point must be selected)

Step 4: Select "IDEA StatiCa.exe" (It is recommended to use the latest version of IDEA statica.)

Step 5: Select the load combinations.

Step 6: Click "Generate and Check the model and loads in IDEA statica

Export Idea Statica file Dialog:

Data Control

Note:
Select Members Those Share One Common Node
☒ Selected member only

Selected 3 Object(s)

nGen to Idea Statica Export Dialog:

Path For Idea Statica Installation: C:\Program Files\IDEA StatiCa\StatiCa 24.0\IDEA StatiCa.exe

Select Load Combination to Export

☐ Consider Max. force components from all the load Combination

Note : Special Character in the Load Combination Name will be removed while exporting

☒ 101	☒ 113	☒ 125	☒ 203	☒ 215	☒ 227
☒ 102	☒ 114	☒ 126	☒ 204	☒ 216	☒ 228
☒ 103	☒ 115	☒ 127	☒ 205	☒ 217	☒ 229
☒ 104	☒ 116	☒ 128	☒ 206	☒ 218	☒ 230
☒ 105	☒ 117	☒ 129	☒ 207	☒ 219	☒ 231
☒ 106	☒ 118	☒ 130	☒ 208	☒ 220	☒ 232
☒ 107	☒ 119	☒ 131	☒ 209	☒ 221	☒ 233
☒ 108	☒ 120	☒ 132	☒ 210	☒ 222	☒ 234
☒ 109	☒ 121	☒ 133	☒ 211	☒ 223	☒ 235
☒ 110	☒ 122	☒ 134	☒ 212	☒ 224	☒ 236
☒ 111	☒ 123	☒ 201	☒ 213	☒ 225	☒ 301
☒ 112	☒ 124	☒ 202	☒ 214	☒ 226	☒ 302

Select All Unselect All

Generate

Path For .XML File

IDEA StatiCa Software:

Production cost - 0.000

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Thank you.