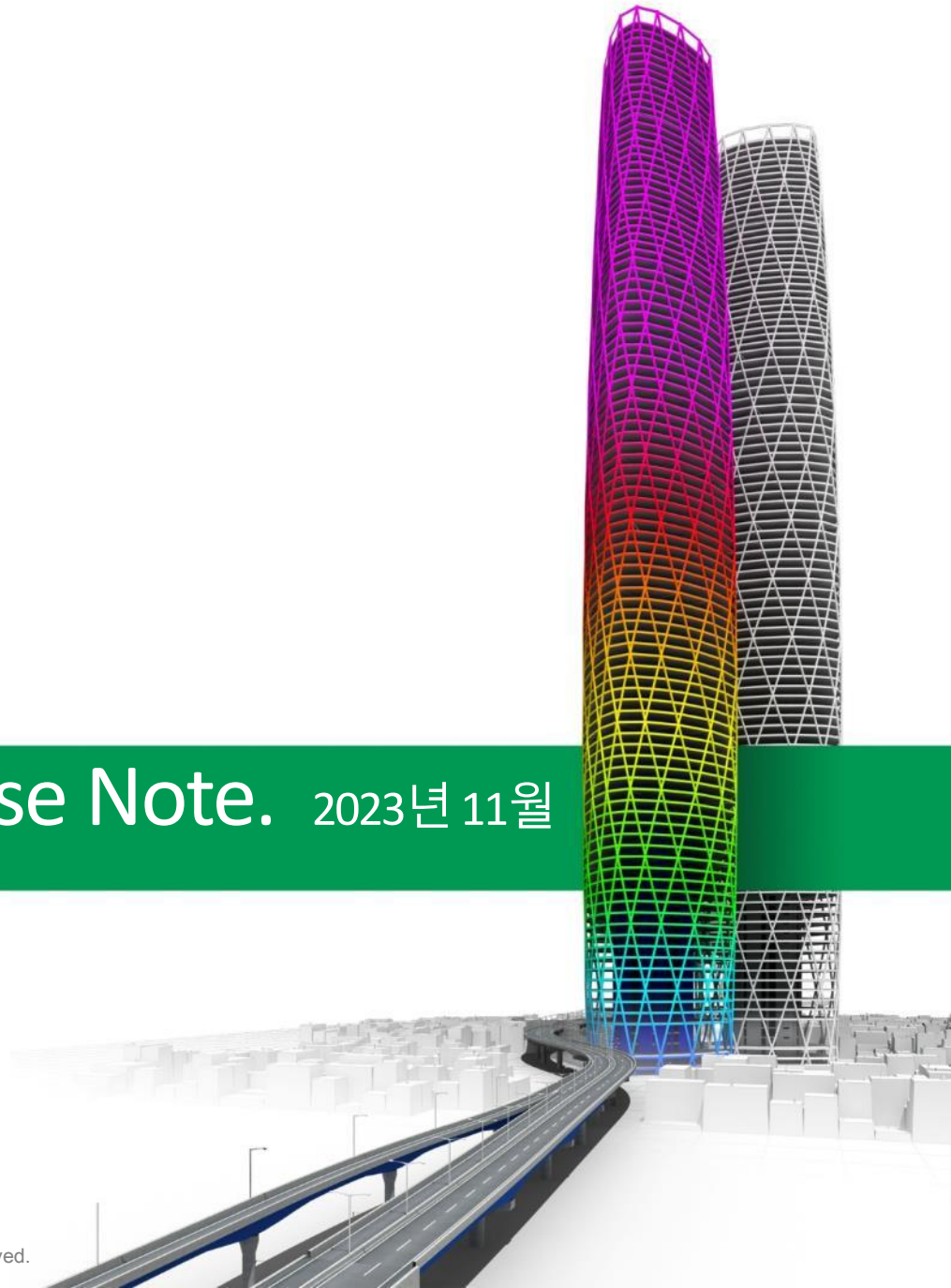
MODS 2024(Gen V945) Release Note. 2023년 11월

Integrated Design System for Building and General Structures



Product Version

MODS 2024 2023. 11. 13

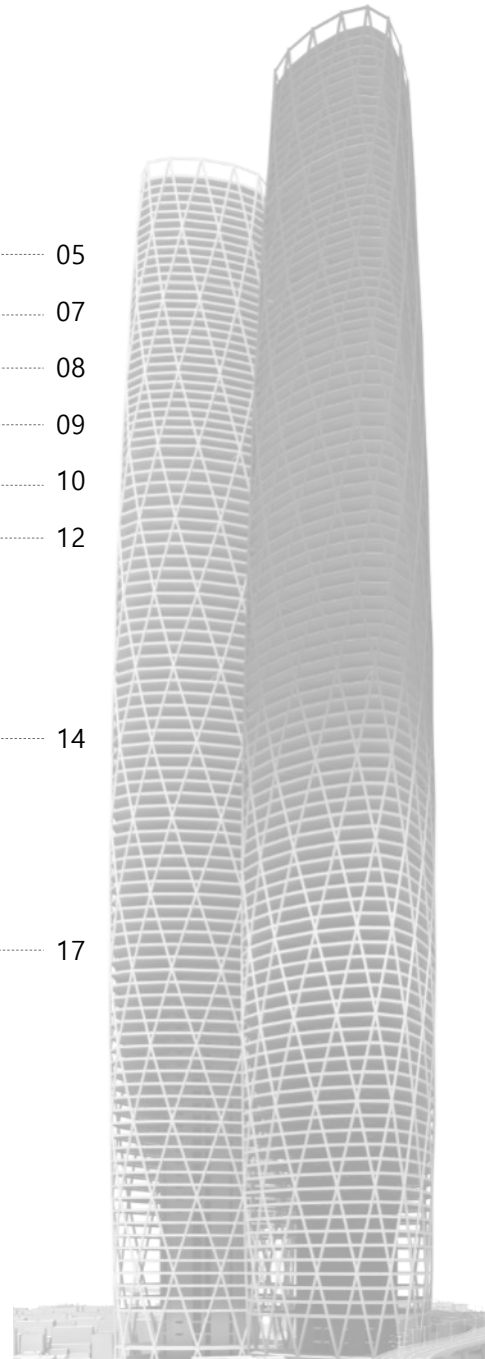
기본/서비스 모듈

- midas Gen 2024 (V945 R1) Version Up
- midas Design+ (V495 R1) Version Up
- midas SDS (V410 R1) Version Up
- midas GSD (V325 R1) Version Up
- midas Set (V334 R1)

부가모듈

- midas ADS (V285 R1) Version Up
- midas Modeler V200 R8
- midas Drawing V300 R7

Release Note



Part Ⅰ. midas Gen 2024 (V.945 R1) 주요 개정내용

Part Ⅱ. midas Design+ (V.495 R1) 주요 개정내용

Part Ⅲ. midas SDS (V.410 R1) 주요 개정내용

Part Ⅳ. 기타 개선 및 버그 수정

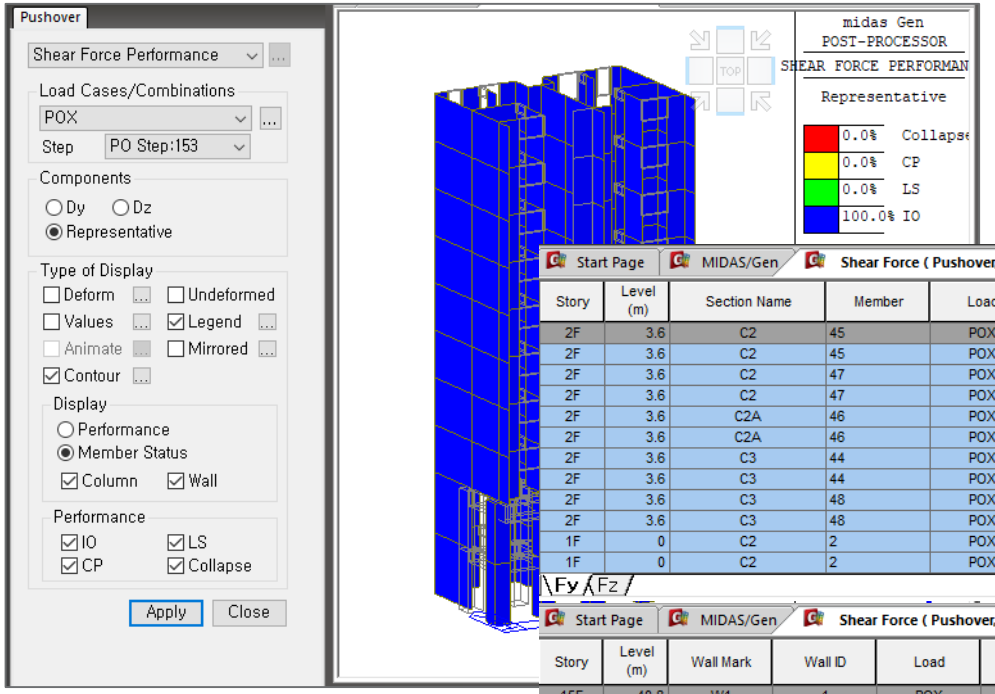
MIDAS

Gen V.945

[midas Gen V945 R1] [Seismic Performance] Fiber Hinge 가 할당된 부재의 전단 결과 출력 - Pushover 해석

- 성능설계 지침(AIK-G-001-2021) 검토 시 지원
- Fiber Hinge가 할당된 RC Column, Wall 의 그래픽, 테이블 결과

Seismic Performance (AIK-G-001-2021) > Pushover Anal. > Performance > Shear Force Performance
Seismic Performance (AIK-G-001-2021) > Pushover Anal. > Fiber Hinge Memb. > RC Column Performance (Shear Force)
Seismic Performance (AIK-G-001-2021) > Pushover Anal. > Fiber Hinge Memb. > RC Wall Performance (Shear Force)



▪ Shear Force Performance Graphic Result

▪ Shear Force Performance Table Result

Start Page | MIDAS/Gen | Shear Force (Pushover, Column)

Story	Level (m)	Section Name	Member	Load	Step	Part	Force-Controlled Action					
							Fs	Fns	Fns+1.2(Fs-Fns)	φFn	Ratio	Performance
2F	3.6	C2	45	POX	po_0139	I[133]	163.651	10.161	194.349	1911.256	0.102	IO
2F	3.6	C2	45	POX	po_0139	J[32]	163.651	10.161	194.349	1906.303	0.102	IO
2F	3.6	C2	47	POX	po_0139	I[135]	-47.267	10.137	-58.747	1787.776	0.033	IO
2F	3.6	C2	47	POX	po_0139	J[34]	-47.267	10.137	-58.747	1782.823	0.033	IO
2F	3.6	C2A	46	POX	po_0139	I[96]	-13.933	-13.837	-13.952	1230.020	0.011	IO
2F	3.6	C2A	46	POX	po_0139	J[26]	-13.933	-13.837	-13.952	1225.067	0.011	IO
2F	3.6	C3	44	POX	po_0139	I[74]	3.968	-23.624	9.486	1261.885	0.008	IO
2F	3.6	C3	44	POX	po_0139	J[2]	3.968	-23.624	9.486	1256.932	0.008	IO
2F	3.6	C3	48	POX	po_0139	I[99]	-12.683	-23.822	-10.455	1317.781	0.008	IO
2F	3.6	C3	48	POX	po_0139	J[31]	-12.683	-23.822	-10.455	1312.828	0.008	IO
1F	0	C2	2	POX	po_0139	I[134]	-0.835	1.064	-1.214	1922.422	0.001	IO
1F	0	C2	2	POX	po_0139	J[133]	-0.835	1.064	-1.214	1917.469	0.001	IO

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Start Page | MIDAS/Gen | Shear Force (Pushover, Wall)

Story	Level (m)	Wall Mark	Wall ID	Load	Step	Axial Force Ratio	Force-Controlled Action					
							Fs	Fns	Fns+1.2(Fs-Fns)	φFn	Ratio	Performance
15F	40.8	W1	1	POX	po_0139	0.00862	-31.143	-12.888	-34.794	3269.207	0.011	IO
14F	38	W1	1	POX	po_0139	0.02027	-62.028	2.875	-75.009	3365.452	0.022	IO
13F	35.2	W1	1	POX	po_0139	0.02751	-130.552	-5.961	-155.470	3425.265	0.045	IO
12F	32.4	W1	1	POX	po_0139	0.03219	-200.994	-5.345	-240.124	3463.895	0.069	IO
11F	29.6	W1	1	POX	po_0139	0.03469	-260.622	-8.699	-311.007	3484.598	0.089	IO
10F	26.8	W1	1	POX	po_0139	0.03127	-306.659	-10.451	-365.900	3603.127	0.102	IO
9F	24	W1	1	POX	po_0139	0.03004	-346.905	-13.485	-413.589	3591.784	0.115	IO
8F	21.2	W1	1	POX	po_0139	0.02736	-380.248	-16.563	-452.986	3566.852	0.127	IO
7F	18.4	W1	1	POX	po_0139	0.02325	-403.345	-20.416	-479.931	3528.684	0.136	IO
6F	15.6	W1	1	POX	po_0139	0.01754	-417.217	-25.821	-495.496	3737.414	0.133	IO
5F	12.8	W1	1	POX	po_0139	0.00945	-407.719	-29.801	-483.303	3662.308	0.132	IO
4F	10	W1	1	POX	po_0139	0.00000	-384.884	-52.076	-451.446	3232.715	0.140	IO

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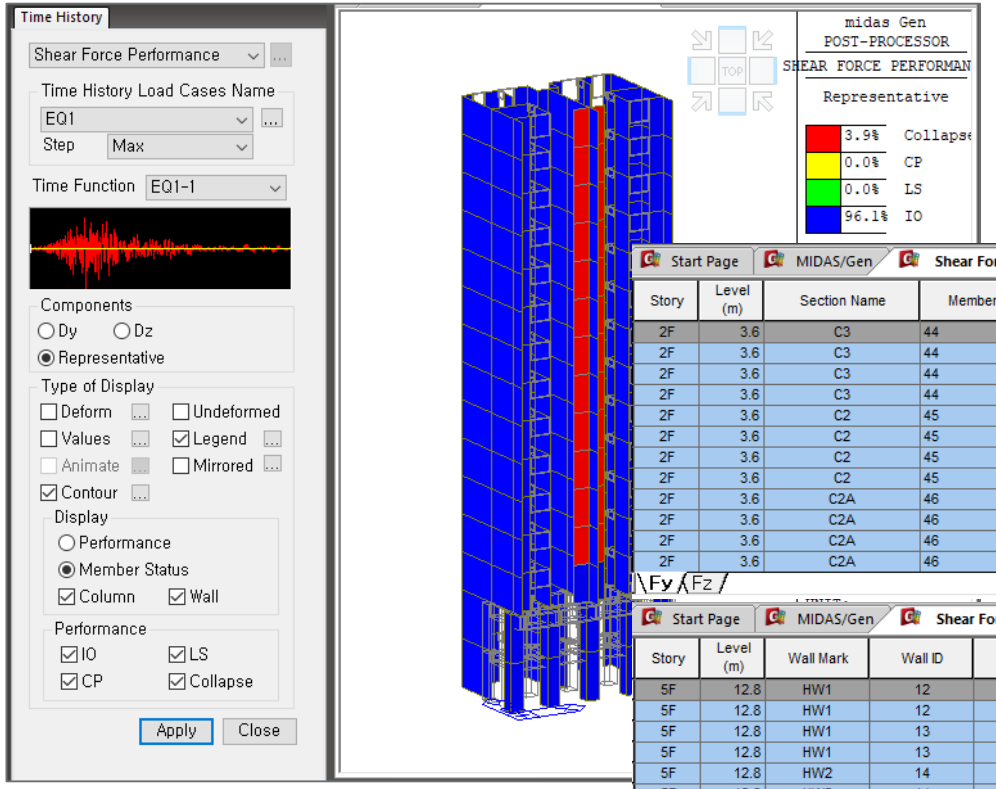
[midas Gen V945 R1] [Seismic Performance] Fiber Hinge 가 할당된 부재의 전단 결과 출력 - 시간이력 해석

- 성능설계 지침(AIK-G-001-2021) 검토 시 지원
- Fiber Hinge가 할당된 RC Column, Wall 의 그래픽, 테이블 결과

Seismic Performance (AIK-G-001-2021) > Time-history Anal. > Performance > Shear Force Performance
Seismic Performance (AIK-G-001-2021) > Time-history Anal. > Fiber Hinge Memb. > RC Column Performance (Shear Force)
Seismic Performance (AIK-G-001-2021) > Time-history Anal. > Fiber Hinge Memb. > RC Wall Performance (Shear Force)



▪ **Shear Force Performance Graphic Result**

▪ **Shear Force Performance Table Result**

Start Page | MIDAS/Gen | Shear Force (Time-History, Column)

Story	Level (m)	Section Name	Member	Load	Part	Force-Controlled Action					
						Fs	Fns	Fns+1.2(Fs-Fns)	φFn	Ratio	Performance
2F	3.6	C3	44	EQ1(max)	I[74]	131.090	0.143	157.279	1163.290	0.135	IO
2F	3.6	C3	44	EQ1(max)	J[2]	131.090	0.143	157.279	1163.290	0.135	IO
2F	3.6	C3	44	EQ1(min)	I[74]	-72.454	0.143	-86.974	1567.373	0.055	IO
2F	3.6	C3	44	EQ1(min)	J[2]	-72.454	0.143	-86.974	1567.373	0.055	IO
2F	3.6	C2	45	EQ1(max)	I[133]	303.859	33.161	357.999	1751.167	0.204	IO
2F	3.6	C2	45	EQ1(max)	J[32]	303.859	33.161	357.999	1751.167	0.204	IO
2F	3.6	C2	45	EQ1(min)	I[133]	-53.027	33.161	-70.264	1941.793	0.036	IO
2F	3.6	C2	45	EQ1(min)	J[32]	-53.027	33.161	-70.264	1941.793	0.036	IO
2F	3.6	C2A	46	EQ1(max)	I[96]	160.860	2.199	192.593	1189.690	0.162	IO
2F	3.6	C2A	46	EQ1(max)	J[26]	160.860	2.199	192.593	1189.690	0.162	IO
2F	3.6	C2A	46	EQ1(min)	I[96]	-39.076	2.199	-47.330	1489.080	0.032	IO
2F	3.6	C2A	46	EQ1(min)	J[26]	-39.076	2.199	-47.330	1489.080	0.032	IO

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Start Page | MIDAS/Gen | Shear Force (Time-History, Wall)

Story	Level (m)	Wall Mark	Wall ID	Load	Axial Force Ratio	Force-Controlled Action					
						Fs	Fns	Fns+1.2(Fs-Fns)	φFn	Ratio	Performance
5F	12.8	HW1	12	EQ1(max)	0.00000	86.824	8.507	102.488	448.587	0.228	IO
5F	12.8	HW1	12	EQ1(min)	0.15209	-97.191	8.507	-118.330	557.903	0.212	IO
5F	12.8	HW1	13	EQ1(max)	0.00000	41.662	-0.861	50.166	336.429	0.149	IO
5F	12.8	HW1	13	EQ1(min)	0.23877	-40.574	-0.861	-48.516	415.741	0.117	IO
5F	12.8	HW2	14	EQ1(max)	0.00000	211.010	-6.375	254.487	361.146	0.705	IO
5F	12.8	HW2	14	EQ1(min)	0.41426	-138.803	-6.375	-165.288	829.999	0.199	IO
5F	12.8	HW2	15	EQ1(max)	0.00000	221.781	-6.197	267.377	455.579	0.587	IO
5F	12.8	HW2	15	EQ1(min)	0.34016	-212.740	-6.197	-254.049	829.999	0.306	IO
5F	12.8	HW3	16	EQ1(max)	0.00000	216.234	3.505	258.780	334.590	0.773	IO
5F	12.8	HW3	16	EQ1(min)	0.26983	-157.426	3.505	-189.612	655.647	0.289	IO
5F	12.8	HW3	17	EQ1(max)	0.00000	159.614	3.524	190.832	340.847	0.560	IO
5F	12.8	HW3	17	EQ1(min)	0.32383	-174.522	3.524	-210.132	629.436	0.334	IO

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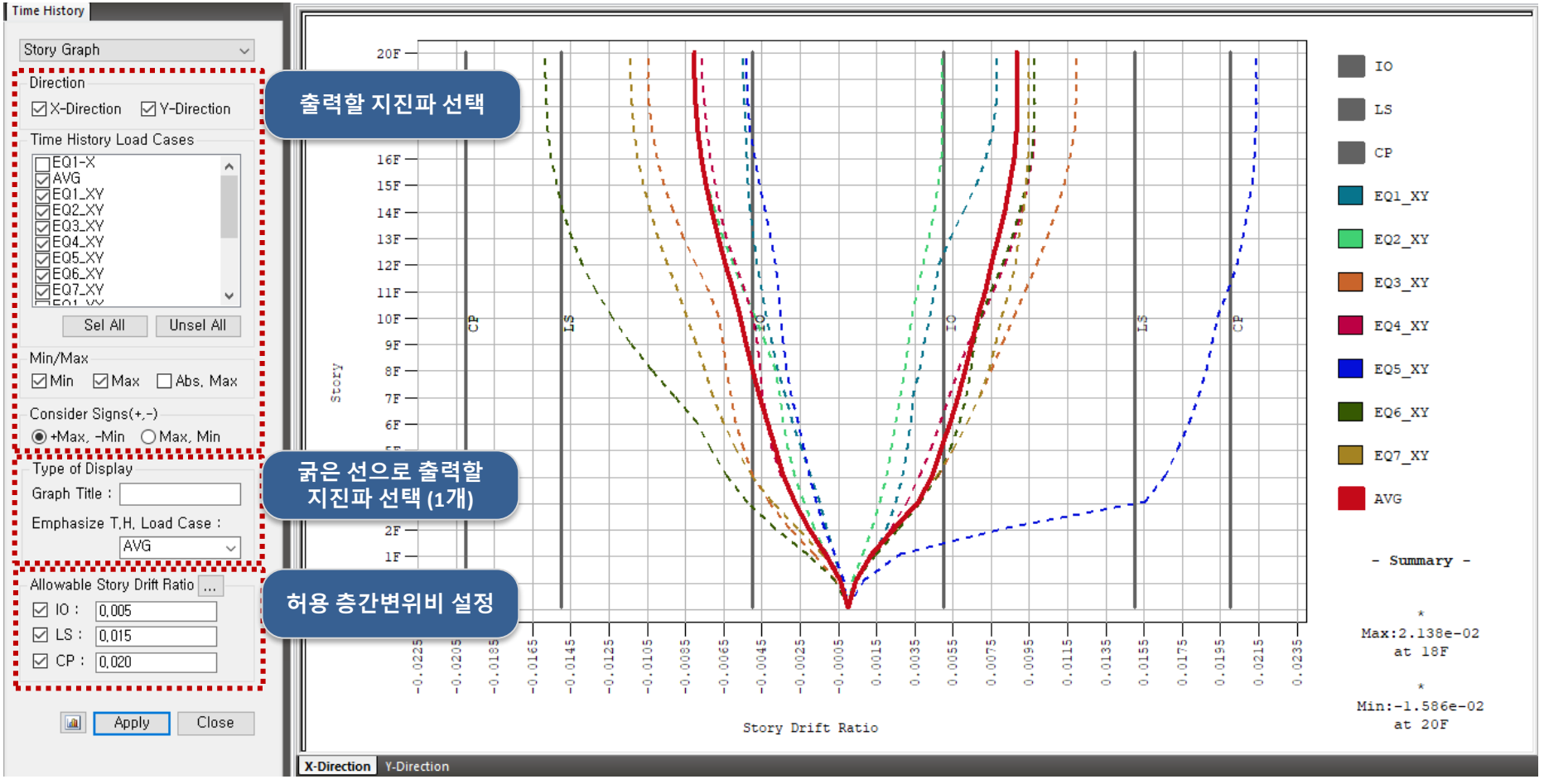
[midas Gen V945 R1] [Seismic Performance] 층간변위비 결과 그래프 출력

- 성능설계 지침(AIK-G-001-2021) 검토 시 지원
- 지진파별 층간변위비 및 허용 층간변위비 그래프 출력

Seismic Performance (AIK-G-001-2021) > Time-history Anal. > Story Graph

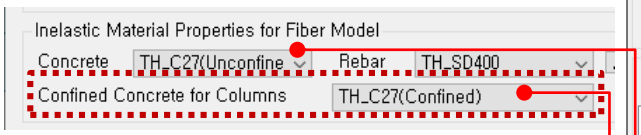


[midas Gen V945 R1] 구속/비구속 콘크리트를 구분하여 RC Column Fiber 단면 자동 생성 지원

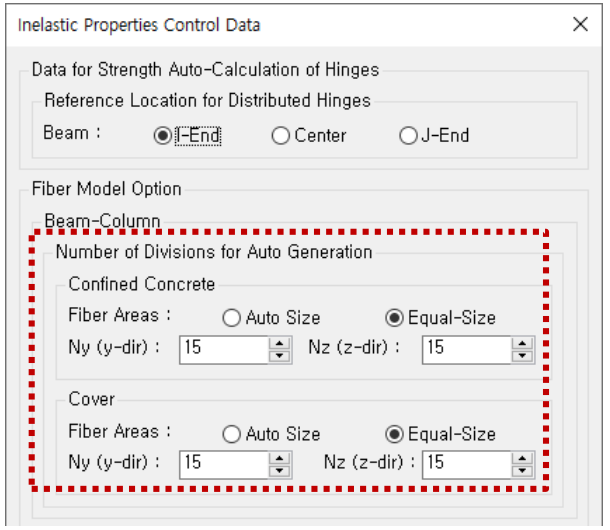
- Pushover Hinge 및 Inelastic Hinge 할당 시 자동 생성되는 Fiber Section (Column)
- Material Data에서 Confined Concrete 별도 입력하여 구분

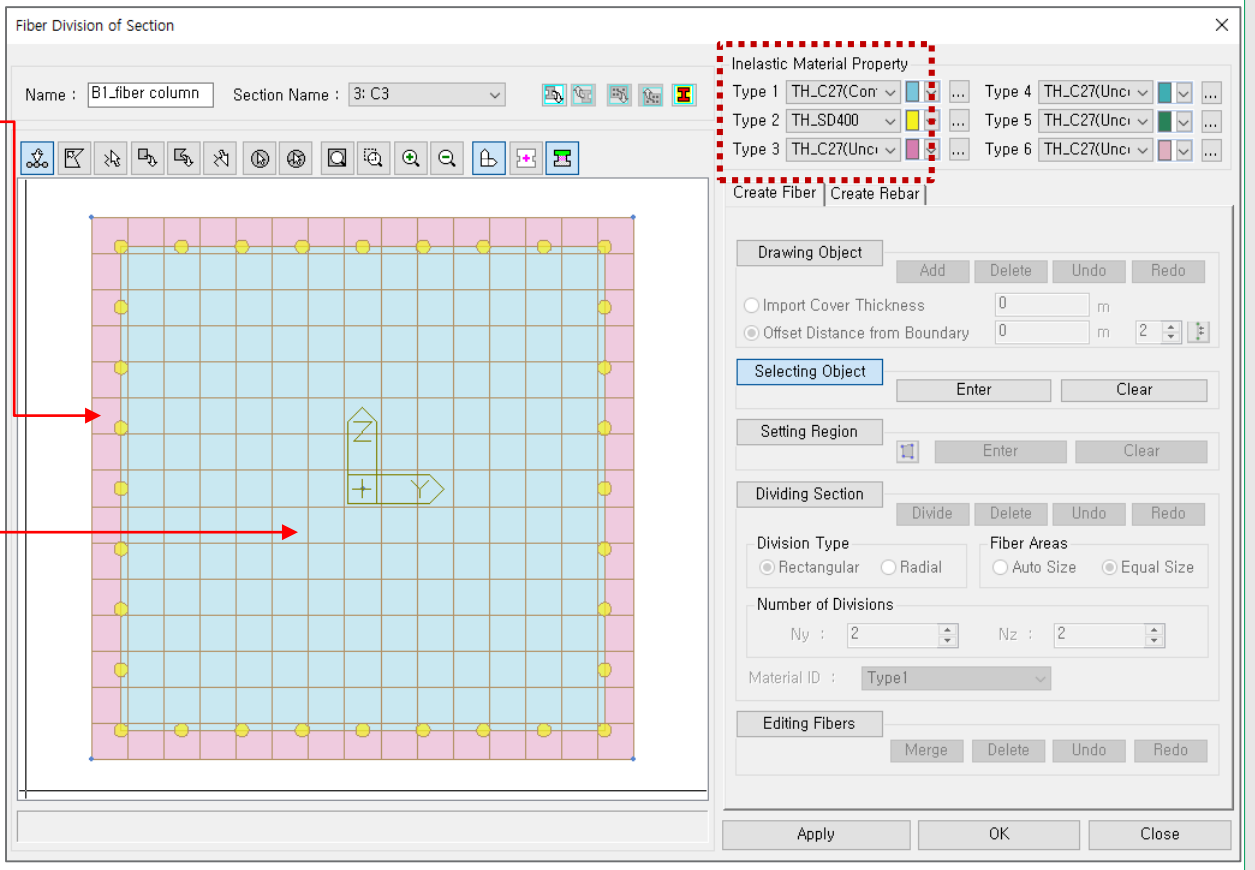
Properties > Material Properties
Properties > Inelastic Material > Fiber Division of Section (Beam-Column)
Pushover > Hinge Properties > Pushover Fiber Division of Section (Beam-Column)

▪ **Material Data 설정**



▪ **Fiber 단면 자동생성 시 분할개수 설정**





** Define Inelastic Hinge Properties, Define Pushover Hinge Properties 에서 Fiber Section을 'Auto Generation'으로 설정한 힌지를 할당하는 경우에 적용됩니다.*

[midas Gen V945 R1] 비선형 해석 시 Plate Based Type Wall 유효강성 고려

- Pushover 해석 및 Nonlinear Time History 해석 시 Plate Based Type Wall의 유효강성 고려 여부 옵션 추가
- Plate Based Type Wall에 적용된 유효강성을 CRB Type Wall의 유효강성으로 자동 변환 지원

Load > Dynamic Loads > Global Control
Pushover > Global Control

▪ **Global Control 옵션 설정**

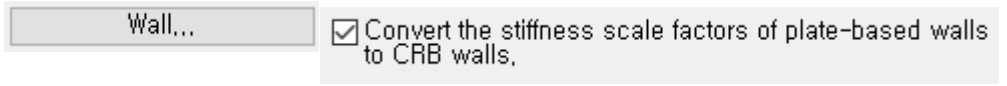
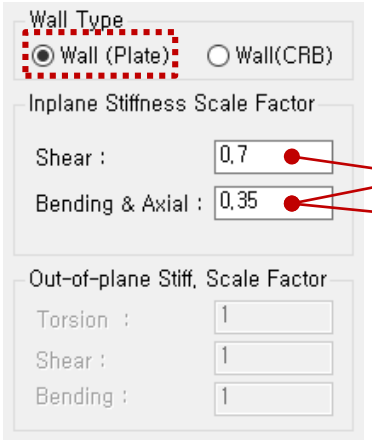
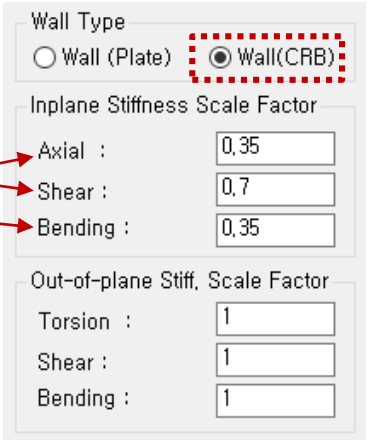


Plate Based Type Wall Stiffness Scale Factor



CRB Type Wall Stiffness Scale Factor



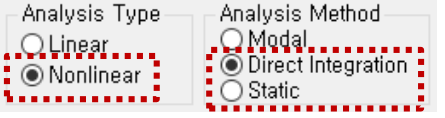
- Pushover 해석

Plate Base Type Wall로 모델링한 경우 Pushover 해석 시, Wall(Plate) Stiffness Scale Factor를 Wall(CRB) Stiffness Scale Factor로 변환하여 적용

- 시간이력해석

Plate Base Type Wall로 모델링하고 CRB Type Wall Type Hinge를 할당한 경우 비선형시간이력해석(Nonlinear Direct Integration, Nonlinear Static) 시, Wall(Plate) Stiffness Scale Factor를 Wall(CRB) Stiffness Scale Factor로 변환하여 적용

▪ **Time History Load Cases 설정 참고**



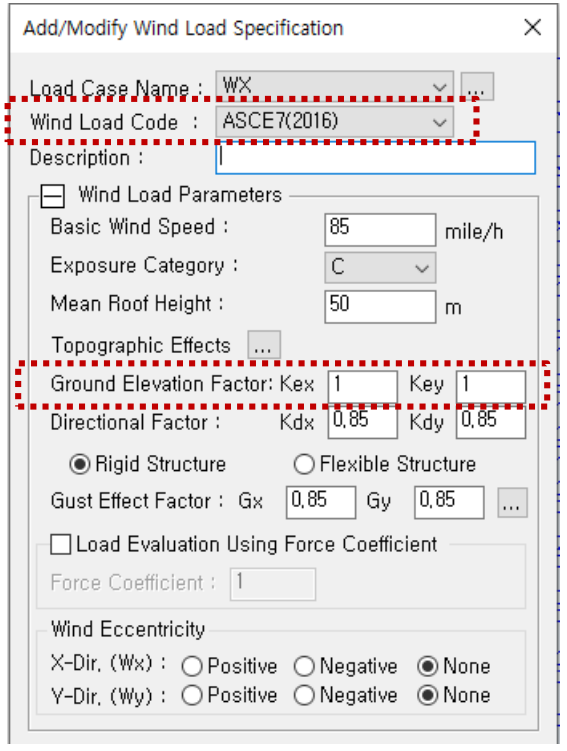
** 옵션 미체크 시 Plate Base Type Wall에 적용된 Wall Stiffness Scale Factor가 고려되지 않습니다.*

[midas Gen V945 R1] ASCE7-16, ASCE7-22 기준 Wind Load, Wind Pressure 지원

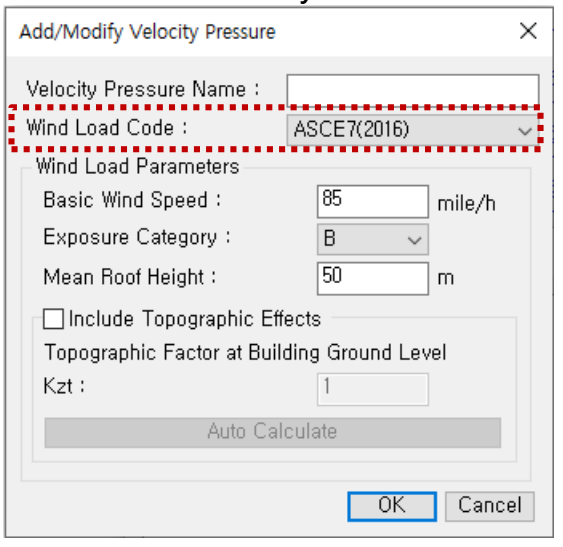
- ASCE 7-16 기준 Ground elevation factor (Ke factor) 반영

Load > Static Loads > Wind Loads, Wind Pressure

▪ **Wind Load 설정**



▪ **Wind Pressure > Velocity Pressure 설정**



- 공기 밀도를 고려한 계수(Ke factor, Ground elevation factor)를 곱하여 속도압을 산정합니다.
Ke factor는 ASCE 7-16 Table 26.9-1에 따라 결정됩니다.

[ASCE 7-16 26.10]

$$q_z = 0.00256 K_z K_{zt} K_d K_e V^2 \ (\mathrm{lb/ft^2});\ V \text{ in mi/h} \qquad (26.10\text{-}1)$$

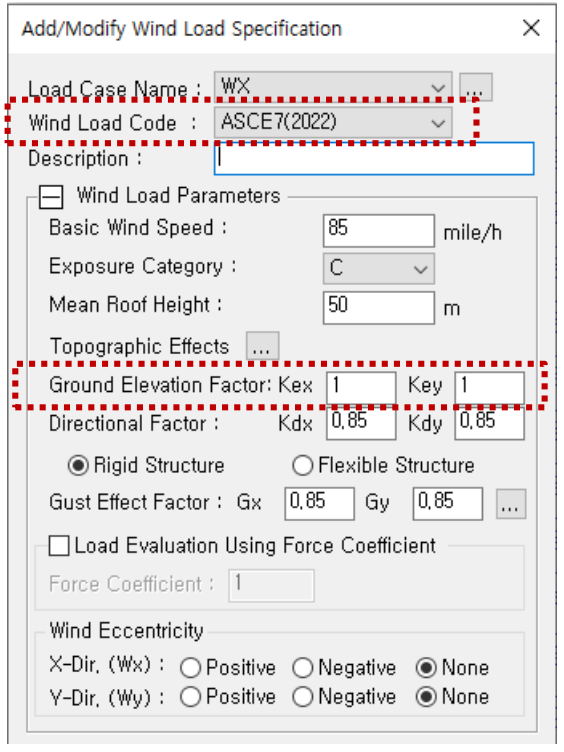
```
WIND LOADS BASED ON ASCE7-16 [UNIT: kN, m]
--------------------------------------------------------------------------------
Design Wind Loads                                  : F    = p * A
Design Wind Pressure                               : p    = qz*G*Cp1 - qh*G*Cp2
Velocity Pressure at Design Height z [psf]         : qz   = 0.00256*Kd*Kz*Kzt*Ke*V^2
Velocity Pressure at Mean Roof Height [psf]        : qh   = 0.00256*Kd*Kh*Kht*Ke*V^2
Calculated Value of qh for X-dir [psf]             : qh   = 0.65
Calculated Value of qh for Y-dir [psf]             : qh   = 0.65

Basic Wind Speed [mph]                             : V    = 85.00
Directionality Factor for X-dir Wind Loads         : Kdx  = 0.85
Directionality Factor for Y-dir Wind Loads         : Kdy  = 0.85
Ground Elevation Factor                            : Kex  = 1.00
Ground Elevation Factor                            : Key  = 1.00
Exposure Category                                  : C
Mean Roof Height                                   : H    = 50.00
Nominal height of the atmospheric boundary layer   : Zg   = 274.32
3-s gust-speed power law exponent                  : alpha= 9.50
Kz at Mean Roof Height                             : Kh   = 1.40
```


[midas Gen V945 R1] ASCE7-16, ASCE7-22 기준 Wind Load, Wind Pressure 지원 (계속)

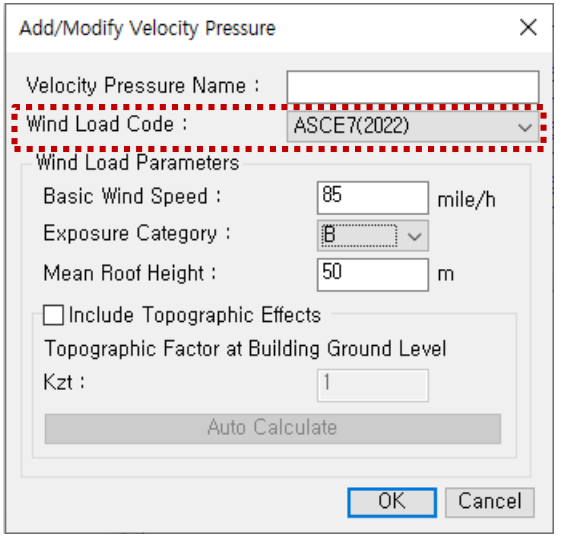
- ASCE 7-22 기준 Kh, Kz 변경 및 풍압계산 시 Kd factor 반영

Load > Static Loads > Wind Loads, Wind Pressure

▪ **Wind Load 설정**



▪ **Wind Pressure > Velocity Pressure 설정**



- 풍향의 영향을 고려한 계수(Kd factor, Wind direction factor)를 적용하여 설계 풍압을 산정합니다.
- 높이에 따라 산정되는 Kh, Kz 값에 대한 기준 내용 변경 사항을 고려하여 속도압을 산정합니다.

[ASCE 7-22 27.3]

$$p = qK_dGC_p - q_iK_d(GC_{pi}) \qquad (27.3\text{-}1)$$

[ASCE 7-22 26.10]

$$q_z = 0.00256K_zK_{zt}K_dK_eV^2\ (\mathrm{lb/ft^2});\ V \text{ in mi/h} \qquad (26.10\text{-}1)$$

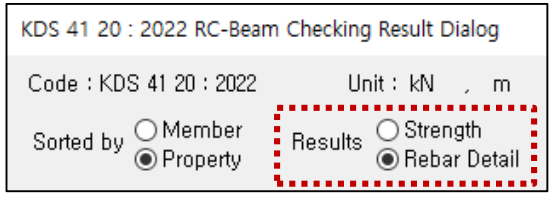
```
WIND LOADS BASED ON ASCE7-22 [UNIT: kN, m]
-------------------------------------------------------------------------------
Design Wind Loads                                  : F    = p * A
Design Wind Pressure                               : p    = qz*Kd*G*Cp1 - qh*Kd*G*Cp2
Velocity Pressure at Design Height z [psf]         : qz   = 0.00256*Kz*Kzt*Ke*V^2
Velocity Pressure at Mean Roof Height [psf]        : qh   = 0.00256*Kh*Kht*Ke*V^2
Calculated Value of qh for X-dir [psf]             : qh   = 0.77
Calculated Value of qh for Y-dir [psf]             : qh   = 0.77

Basic Wind Speed [mph]                             : V    = 85.00
Directionality Factor for X-dir Wind Loads         : Kdx  = 0.85
Directionality Factor for Y-dir Wind Loads         : Kdy  = 0.85
Ground Elevation Factor                            : Kex  = 1.00
Ground Elevation Factor                            : Key  = 1.00
Exposure Category                                  : C
Mean Roof Height                                   : H    = 50.00
Nominal height of the atmospheric boundary layer   : Zg   = 749.81
3-s gust-speed power law exponent                  : alpha= 9.80
Kz at Mean Roof Height                             : Kh   = 1.39
```


[midas Gen V945 R1] RC 부재 Checking Result Dialog Rebar Detail 출력

- RC Beam, Column, Brace, Wall Checking 시 Rebar Detail 출력
- KDS 41 20 : 2022, ACI318-19, ACI318-14, Eurocode2:04, NSR-10, NSCP 2015, NTC-DCEC(2017) 기준 검토 시 지원

Design > RC Design > Concrete Code Check > Beam Checking, Column Checking, Brace Checking, Wall Checking

▪ **Checking Result Dialog 옵션 설정**



▪ **Rebar Detail NG 시 CHK 출력**

RC Beam	Column	Wall
P : Rebar with Positive Moment **N** : Rebar with Negative Moment **V** : Stirrup **T** : Sidebar with Torsion	**M** : Main rebar ratio **V** : Hoop **J** : Hoop in Joint	**V** : Vertical rebar **H** : Horizontal rebar **B** : Hoop in Boundary area

RC Beam

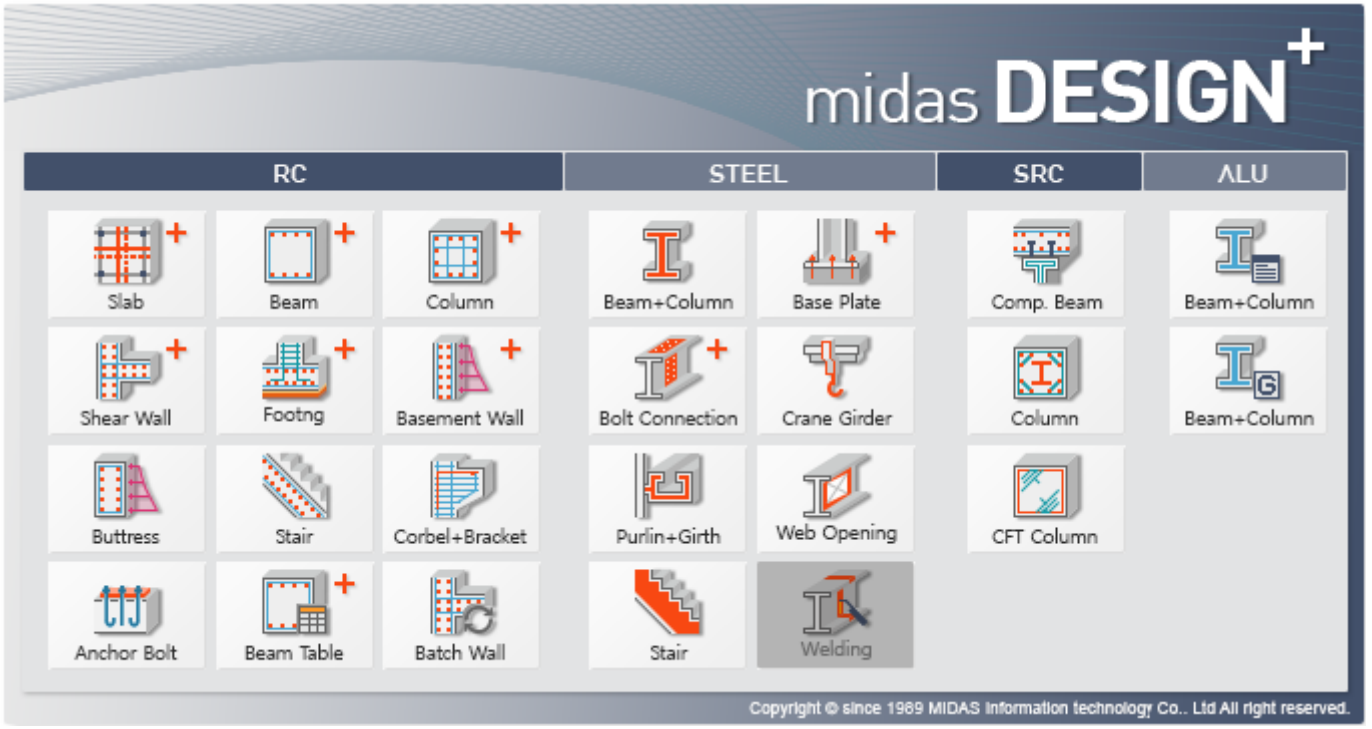
MEMB	SEL	Section		fck	POS	CHK	Main Rebar (Top)					Main Rebar (Bottom)					Stirrup			
SECT		Bc	Hc	fy			ρ.max (%)	ρ.use (%)	ρ.min (%)	s.max	s.use	ρ.max (%)	ρ.use (%)	ρ.min (%)	s.max	s.use	Av.use	Av.min	s.max	s.use
Span		bf	hf	fys																
0	☐	G1		24000.0	I	OK	2.464	1.239	0.080	0.2558	0.0867	3.051	0.603	0.276	0.2558	0.1300	0.0000	0.0000	0.3066	0.3000
211	☐	0.400	0.700	400000	M	OK	2.448	0.603	0.184	0.2558	0.1300	2.448	0.603	0.276	0.2558	0.1300	0.0000	0.0000	0.3150	0.3100
10.200		0.000	0.000	400000	J	OK	2.464	1.239	0.292	0.2558	0.0867	3.051	0.603	0.276	0.2558	0.1300	0.0000	0.0000	0.3066	0.3000

RC Column

MEMB	SEL	Section		fck	fy	CHK	Main Rebar (%)			Hoop						
SECT		Bc	Hc	Height	fys		ρ.max	ρ.use	ρ.min	POS	Avy.use	Avy.min	Avz.use	Avz.min	s.max	s.use
0	☐	C1		24000.0	400000	OK	3.000	1.089	1.000	End	0.0001	-	0.0001	0.0001	0.3552	0.2000
105		0.800	0.800	4.0000	400000					Mid	0.0001	-	0.0001	0.0001	0.3552	0.2000

RC Wall

WID	SEL	Wall Mark		fck	fy	CHK	V-Rebar					H-Rebar			
Story		Lw	HTw	hw	fys		ρ.max(%)	ρ.use(%)	ρ.min(%)	s.max	s.use	ρ.use(%)	ρ.min(%)	s.max	s.use
1	☐	W1		24000.0	400000	OK	4.000	0.352	0.120	0.4500	0.4000	0.255	0.200	0.4500	0.2800
5F		7.2000	4.0000	0.2000	400000										


midas DESIGN+
RC
STEEL
SRC
ALU
Slab
Beam
Column
Beam+Column
Base Plate
Comp. Beam
Beam+Column
Shear Wall
Footng
Basement Wall
Bolt Connection
Crane Girder
Column
Beam+Column
Buttress
Stair
Corbel+Bracket
Purlin+Girth
Web Opening
CFT Column
Anchor Bolt
Beam Table
Batch Wall
Stair
Welding
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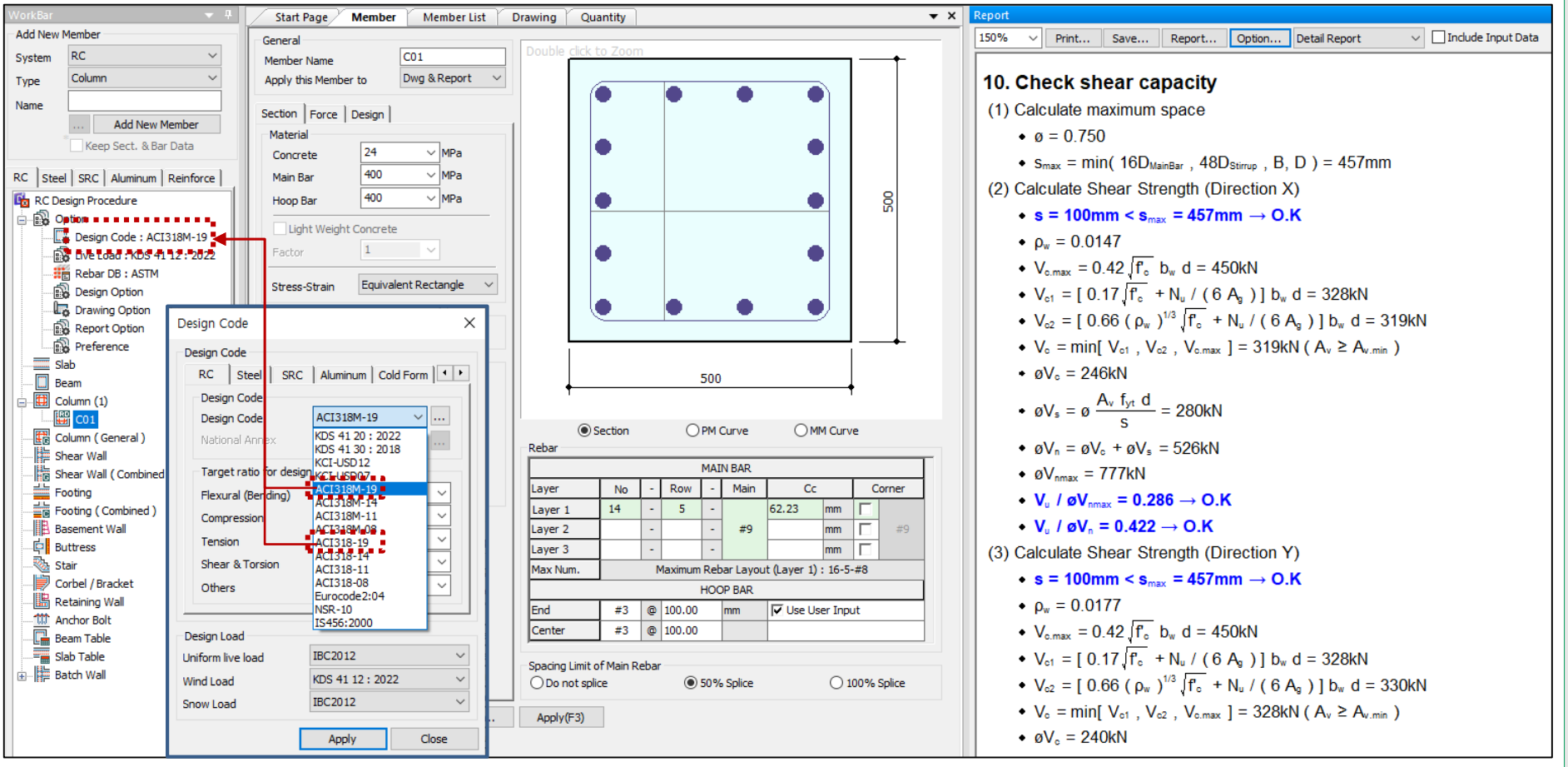
Design+ V.495

[midas Design+ V495 R1] ACI318M-19, ACI318-19 설계 지원

- ACI 기준 강도제한, 변형률, 전단강도 산정 등 개정내용 반영

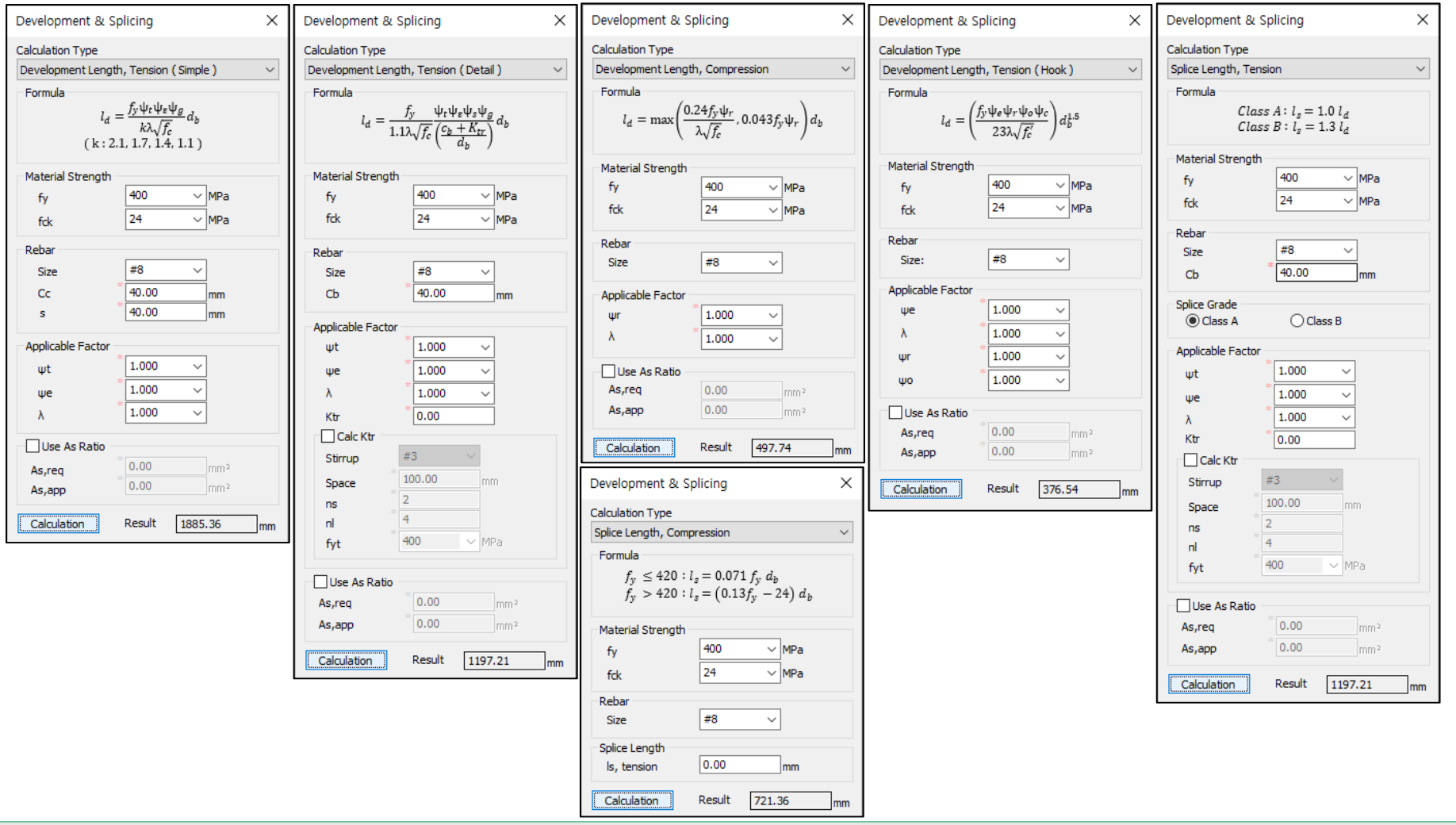
Option > Design Code > RC

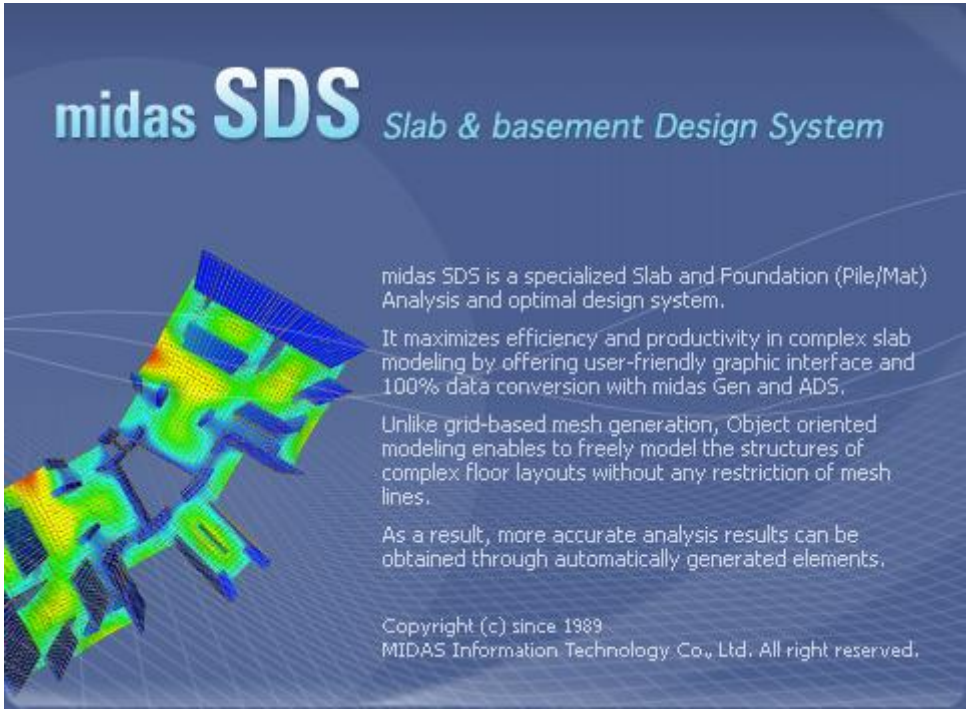


[midas Design+ V495 R1] ACI318M-19, ACI318-19 설계 지원 (계속)

- 철근 정착, 이음길이 계산 반영

Tool > Dev. Splice Calculator

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midas SDS is a specialized Slab and Foundation (Pile/Mat) Analysis and optimal design system.
It maximizes efficiency and productivity in complex slab modeling by offering user-friendly graphic interface and 100% data conversion with midas Gen and ADS.
Unlike grid-based mesh generation, Object oriented modeling enables to freely model the structures of complex floor layouts without any restriction of mesh lines.
As a result, more accurate analysis results can be obtained through automatically generated elements.
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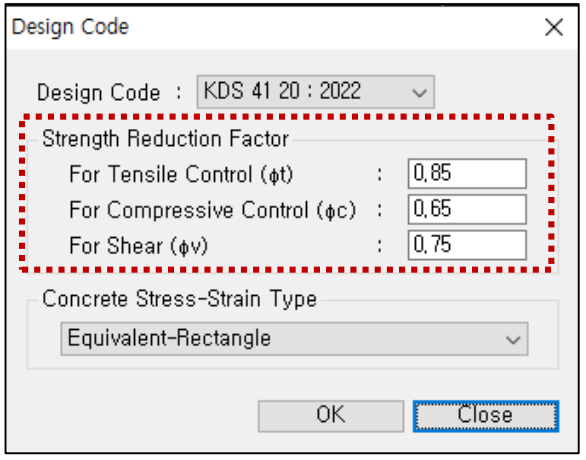
SDS V.410

[midas SDS V410 R1] 콘크리트 휨강도감소계수 계산 개선

- KCI-USD07, KCI-USD12, KDS 41 30 : 2018, KDS 41 20 : 2022 기준 검토 시 지원
- Flexural Design, Flexural Checking 시 고려

Design > Design Code
Design > Flexural Design Result, Flexural Checking Result



** 휨강도감소계수는 인장지배단면 강도감소계수와 압축지배단면 강도감소계수를 최대, 최소값으로 하여 변형률에 따라 보간하여 계산합니다.*
(KDS 14 20 10 : 2021 4.2.3 (2) 참고, Gen과 동일한 방식)

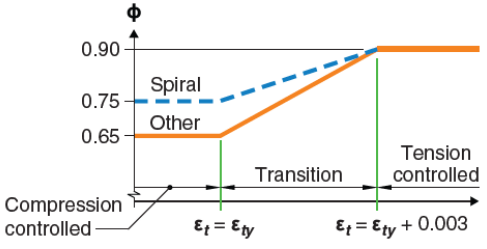


Fig. R21.2.2b—Variation of ϕ with net tensile strain in extreme tension reinforcement, ε_t.

▪ **ACI318-19 이미지 참고**

```
==========================================================================
*. midas SDS (KDS 41 20 : 2022) - Flexural Checking Maximum Result    Ver.410
==========================================================================

--------------------------------------------------------------------------
<< BOTTOM >>
--------------------------------------------------------------------------
-. Information of Parameters.
   Elem No.  : 230
   Node No.  : 39
   LCB No.   : gLCB1
   Materials :  fck =     24.0000 N/mm^2
                Fy  =    400.0000 N/mm^2
   Thickness :  500.0000 mm
   Covering  :  dB  =  30.0000 mm
                dT  =  30.0000 mm

-. Information of Design.
   b      = 1.0 mm  (by Unit Length).
   d      = 470.0000 mm

-. Information of Strength Reduction Factor.
   [ KDS 14 20 10 : 2021, 4.2.3 ]
   phic   =   0.650
   phit   =   0.850
   et     = 0.00467
   ety    = 0.00200
   etu    = 0.00500
   ety < et < etu : Transition
   phi    = phic + (phit-phic)/(etu - ety)*(et - ety) =   0.828

-. Information of Required reinforcement
   Mu_cur_max =   28797.4281 N*mm/mm (gLCB1
   Mu_opp_max =  143750.8660 N*mm/mm (gLCB1
   Fact_dist  = | Mu_cur_max / (Mu_cur_max + Mu_opp_max) | =   1.0000
   rho_min1   =   0.0020 (by temperature reinforcement)
   rho_min2   =   0.0036 (by minimum flexural reinforcement in slab)
   rho_cal    =   0.0004 (by design moment)
   rho_req    = max[ rho_min1*Fact_dist, rho_min2, rho_cal ] =    0.0021

-. Information of Moments and Result.
   Rein. Bar :  D32 @100
   As_req =       1.0000 mm^2/mm(    1000.0000 mm^2/m)
   As_use =       7.9420 mm^2/mm(    7942.0000 mm^2/m)

   Stress-strain relation : Equivalent-rectangle
   [ KDS 14 20 20 : 2021, Table 4.1-2 ]
   eta    =   1.000
                                  [          As_use*Fy      ]
   Mn     = As_use*Fy*           [ d - ------------------- ] = 1245741.6314 N*mm/mm
                                  [       2*eta*0.85*fck*b  ]

   phiMn  = phi * Mn   = 1031296.9293 N*mm/mm
   Mu                  =   28797.4281 N*mm/mm
   RatM   = Mu / phiMn =   0.028  <  1.0  --->  O.K !
```


이외 주요 개선사항 및 버그수정사항은 아래와 같습니다. 고객 여러분의 관심과 프로그램 개선 참여에 깊은 감사 드립니다.

[midas Gen 2024 V945 R1]

- [Seismic Performance] RC 보, 기둥, 벽체 강도 산정 시 Vs,max를 고려할 수 있도록 수정
- [Seismic Performance] Pushover Hinge Unloading Stiffness Type 수정
- [Seismic Performance] [MOE, KISTEC]내진성능평가 조적 스트럿 힌지 속성 자동계산 시 적용되는 기둥 전단강도 계산 수정
- [Seismic Performance] [AIK-G-001-2021] Initialize Hinge Properties 하지 않고 Elastic Analysis로 힌지속성 자동계산할 수 있도록 개선
- [Seismic Performance] [AIK-G-001-2021] Time-history +max, -min 의 Average 출력 추가
- [Seismic Performance] [AIK-G-001-2021] Time-history All 출력 삭제
- RC Beam 휨철근 최대간격 산정 시 사용하중 상태의 fs 값 적용할 수 있도록 Concrete Design Code 옵션 추가 (KDS 14 20 20 : 2022 4.2.3 (4))
- KDS 41 20 : 2022 기준 RC 부재 검토 시 메모리 성능 개선
- KDS 41 20 : 2022 기준 RC 보 Checking 시 사용자 입력 철근 강도 적용 수정
- KBC(2009)~KDS(41-12:2022) 기준 풍하중 Gust Factor 자동계산 시 Topographic Effect Height from Ground Level을 고려하지 않도록 수정
- Member Assignment, Load Cases for Wind Direction, Seismic Component Type 오류로 파일 오픈 오류가 발생하는 경우, 해당 데이터를 삭제하고 파일을 오픈할 수 있도록 개선
- Torsional Irregularity Check, Torsional Amplification Factor Result Table X, Y 방향별로 구분하여 출력하도록 개선
- [Design+ 연동] Batch Wall 특수전단벽 정보 연동 수정

[midas Design+ V495 R1]

- 대용량 파일 저장 시 진행 상황 표시할 수 있도록 개선
- Batch Wall Apply, Design, Check 단축키 적용할 수 있도록 개선
- Batch Wall 단부 보강근 편집열을 숨길 수 있도록 개선
- Combined Footing 검토 시 모멘트를 고려할 수 있도록 개선
- 지하외벽 하부층 전단력이 0으로 표기되는 경우 수정
- RC 보 장기처짐 검토 시 단면 2차모멘트 적용값 출력 수정

[midas ADS V285 R1]

- KBC(2009)~KDS(41 12 : 2022) 기준 풍하중 Gust Factor 자동계산 시 Topographic Effect Height from Ground Level을 고려하지 않도록 수정
- KDS(41 12 : 2022) 기준 풍하중 적용 시 Wind Response만 체크한 경우에도 Vibration Mode 입력할 수 있도록 수정