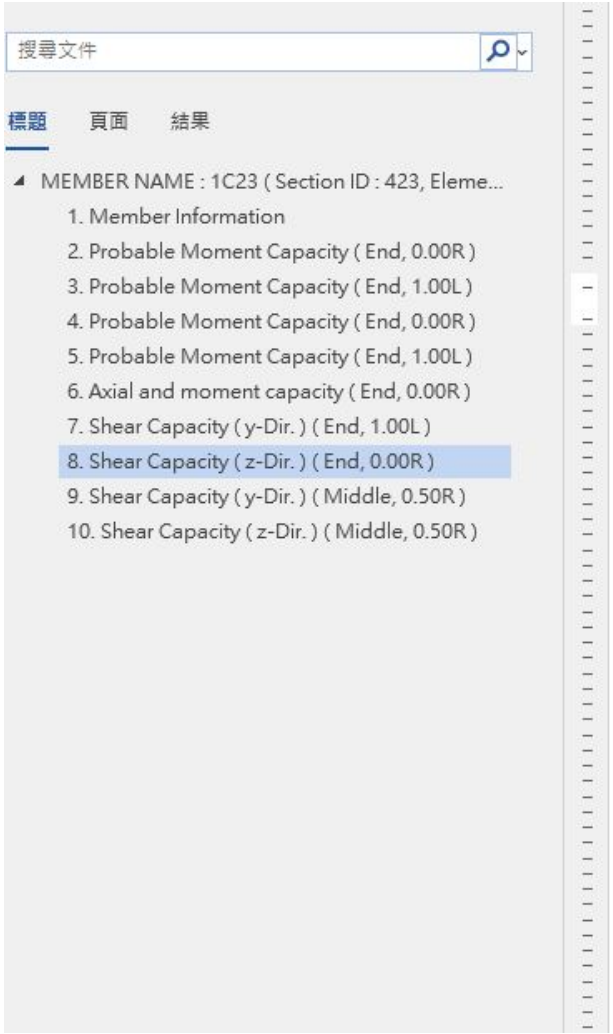
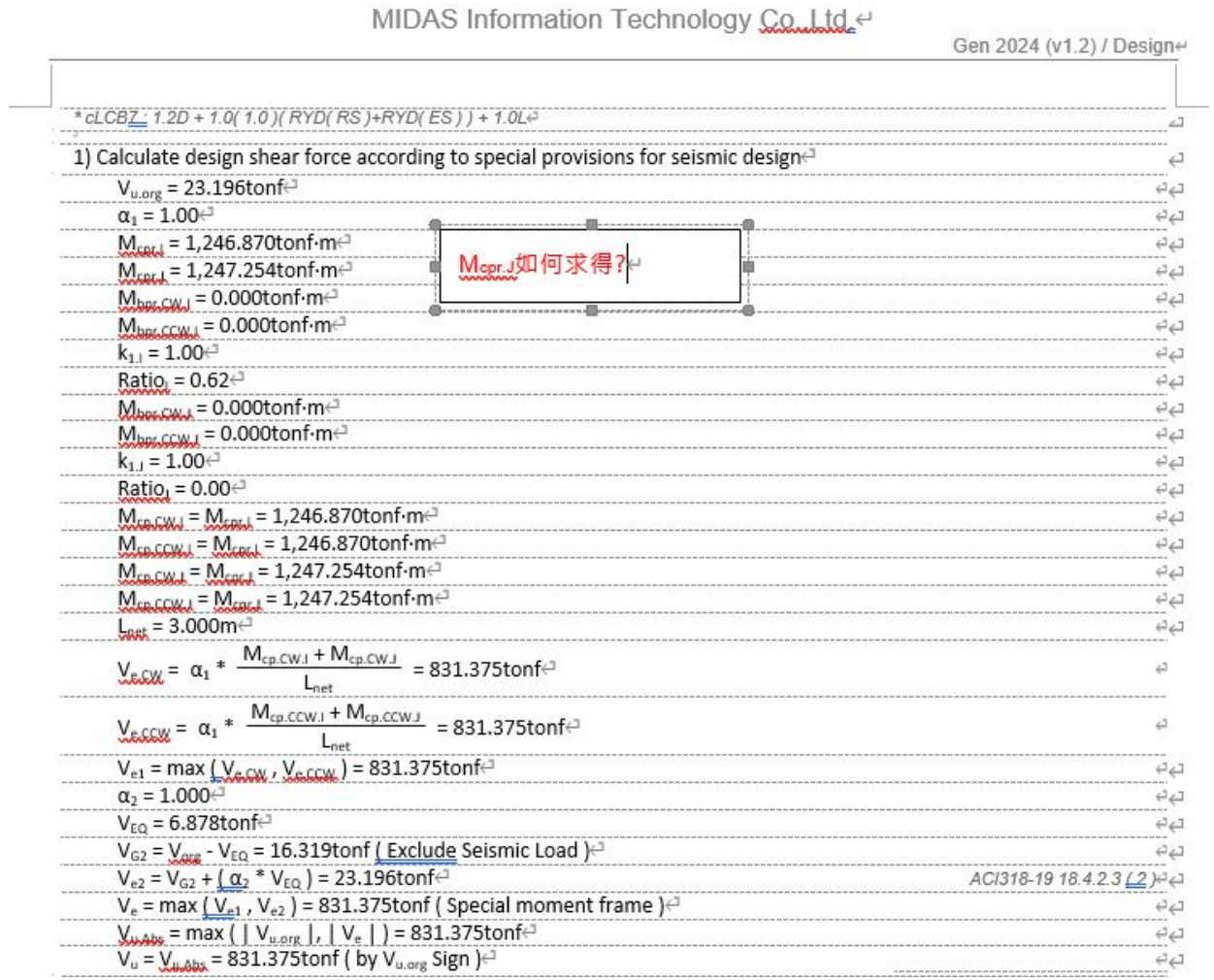
Q

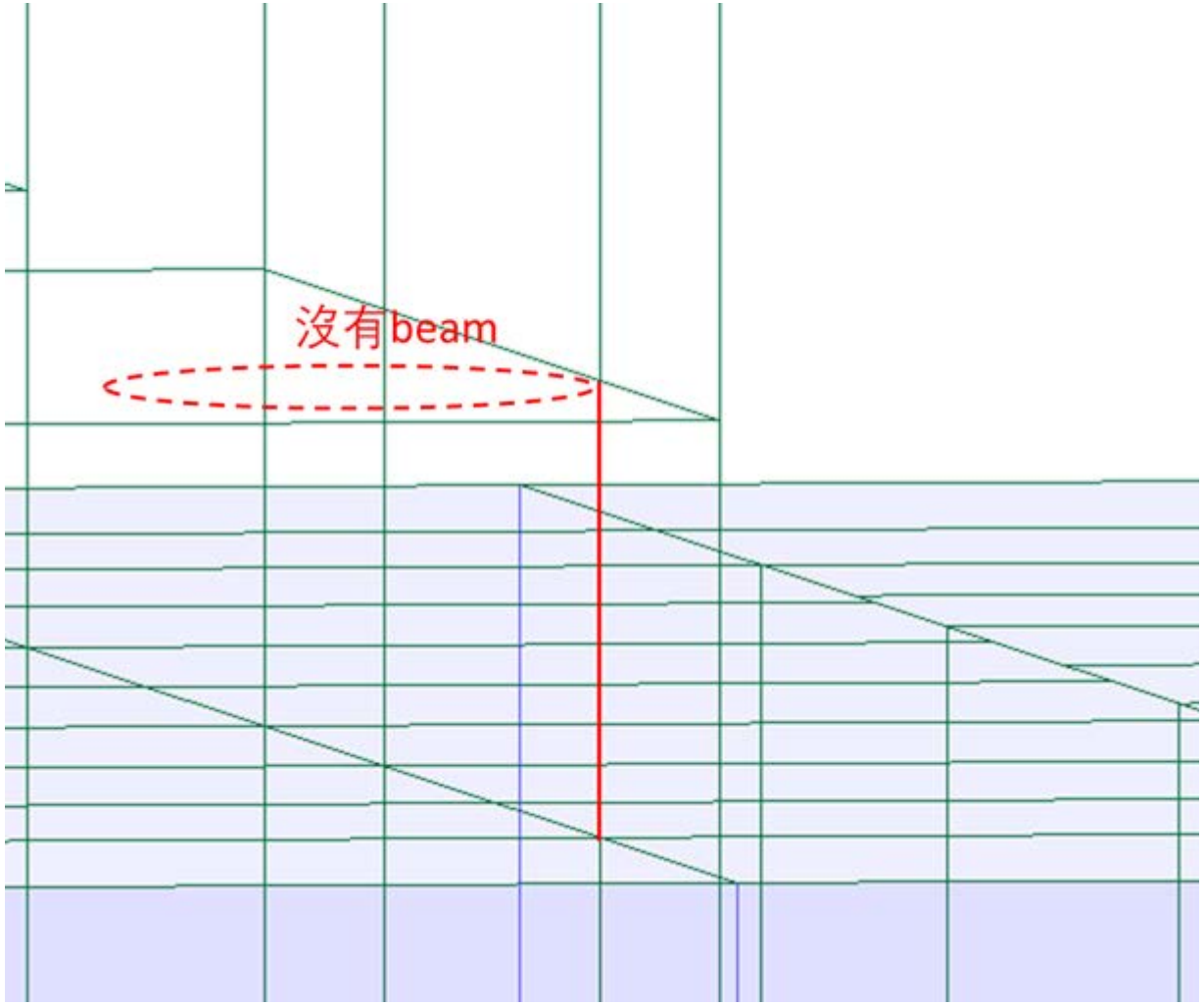
請問1F柱之剪力計算中J端彎矩(Mcpr,j)如何計算得，J端彎矩與I端近似





A

因爲LCB控制是Rx (x 方向)，您的柱子(Element 8) local axis-z沒有連接Beam，所以Mcp會使用Mcpr。



Q

再請問為何另外模型，卻又相反。
Y向有樑(Lnet=2.3m)無樑彎矩
Z向無樑(Lnet=3.0m)有樑彎矩

▪ **7. Shear Capacity (y-Dir.) (End, 0.00R)**

Shear	Memb No.	12354	
	LCB	cLCB15	
	V_u / $øV_{n.max}$	1,311.357tonf / 834.300tonf = 1.572	Failure
	V_u / $øV_n$	1,311.357tonf / 834.300tonf = 1.572	NG

** cLCB15 : 1.2D - 1.0(1.0)(RYD(RS)+RYD(ES)) + 1.0L*

1) Calculate design shear force according to special provisions for seismic design

V_{org} = 101.089tonf
$M_{prl.Colm}$ = 1,507.467tonf·m
$M_{prJ.Colm}$ = 1,508.653tonf·m
$M_{prl.Beam.CW}$ = 0.000tonf·m
$M_{prJ.Beam.CW}$ = 0.000tonf·m
$M_{prl.Beam.CCW}$ = 0.000tonf·m
$M_{prJ.Beam.CCW}$ = 0.000tonf·m
L_{net} = 2.300m
$M_{prl.Calc}$ = $M_{prl.Colm}$ = 1,507.467tonf·m
$M_{prJ.Calc}$ = $M_{prJ.Colm}$ = 1,508.653tonf·m
α_v = 1.000

▪ **8. Shear Capacity (z-Dir.) (End, 1.00L)**

Shear	Memb No.	12354	
	LCB	cLCB31	
	V_u / $øV_{n.max}$	638.774tonf / 755.076tonf = 0.846	OK
	V_u / $øV_n$	638.774tonf / 755.076tonf = 0.846	OK

** cLCB31 : 0.9D - 1.0(1.0)(RXD(RS)+RXD(ES))*

1) Calculate design shear force according to special provisions for seismic design

V_{org} = -36.602tonf
$M_{prl.Colm}$ = 1,689.074tonf·m
$M_{prJ.Colm}$ = 1,685.442tonf·m
$M_{prl.Beam.CW}$ = 0.000tonf·m
$M_{prJ.Beam.CW}$ = 227.247tonf·m
$M_{prl.Beam.CCW}$ = 0.000tonf·m
$M_{prJ.Beam.CCW}$ = 178.925tonf·m
L_{net} = 3.000m
$M_{prl.Calc}$ = $M_{prl.Colm}$ = 1,689.074tonf·m

6/11

A

請看一下情況，我看您的模型Column 的i node 連接Wall Element（圖1） 所以會影響Beam 跟Column 強柱弱梁ductile design有問題。
Wall Element 是Shear Wall ，如果不是Shear Wall 所以需要改成Plate Element。

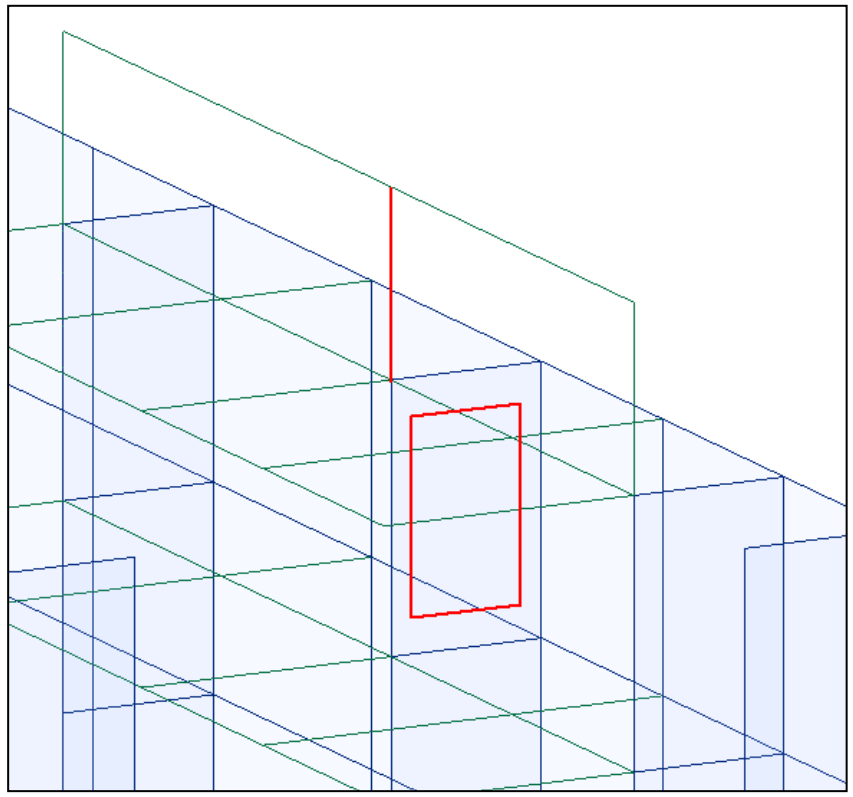


圖1

改成Plate Element就沒問題了。

7. Shear Capacity (y-Dir.) (End, 1.00L)

Shear	LCB	cLCB31
	$V_u / \phi V_{n.max}$	533.647tonf / 733.024tonf = 0.728
	$V_u / \phi V_n$	533.647tonf / 733.024tonf = 0.728

** cLCB31 : 0.9D - 1.0(1.0)(RXD(RS)+RXD(ES))*

1) Calculate design shear force according to special provisions for seismic design
- Factored shear forces caused by load case type
  - $V_{u.org}$ = 7.247tonf
  - V_{EQ} = -0.600tonf
  - $V_{G2} = V_{u.org} - V_{EQ}$ = 7.846tonf (Exclude Seismic Load)
- Design Parameter
  - α_1 = 1.000
  - α_2 = 1.000
  - L_{net} = 2.300m
- Probable Moment of column
  - $M_{cpr.I}$ = 1,114.147tonf·m
  - $M_{cpr.J}$ = 1,111.084tonf·m
- Summation of probable moments of connected girders
  - $M_{bpr.CW.I}$ = 0.000tonf·m
  - $M_{bpr.CCW.I}$ = 0.000tonf·m
  - $M_{bpr.CW.J}$ = 227.247tonf·m
  - $M_{bpr.CCW.J}$ = 178.925tonf·m

8. Shear Capacity (z-Dir.) (End, 0.00R)

Shear	LCB	cLCB15
	$V_u / \phi V_{n.max}$	1,105.858tonf / 842.381tonf = 1.313
	$V_u / \phi V_n$	1,105.858tonf / 842.381tonf = 1.313

** cLCB15 : 1.2D - 1.0(1.0)(RYD(RS)+RYD(ES)) + 1.0L*

1) Calculate design shear force according to special provisions for seismic design
- Factored shear forces caused by load case type
  - $V_{u.org}$ = 44.371tonf
  - V_{EQ} = 10.242tonf
  - $V_{G2} = V_{u.org} - V_{EQ}$ = 34.128tonf (Exclude Seismic Load)
- Design Parameter
  - α_1 = 1.000
  - α_2 = 1.000
  - L_{net} = 3.000m
- Probable Moment of column
  - $M_{cpr.I}$ = 1,658.170tonf·m
  - $M_{cpr.J}$ = 1,659.405tonf·m
- Summation of probable moments of connected girders
  - $M_{bpr.CW.I}$ = 0.000tonf·m
  - $M_{bpr.CCW.I}$ = 0.000tonf·m
  - $M_{bpr.CW.J}$ = 0.000tonf·m
  - $M_{bpr.CCW.J}$ = 0.000tonf·m