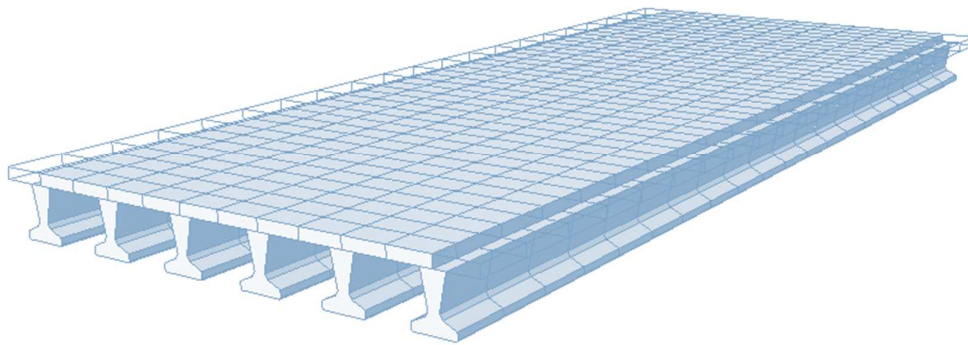


midas Civil

Basic Training Session

Training Session 3

Useful Tips for modification of input data



midas Civil

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3. Useful Tips for modification of input data

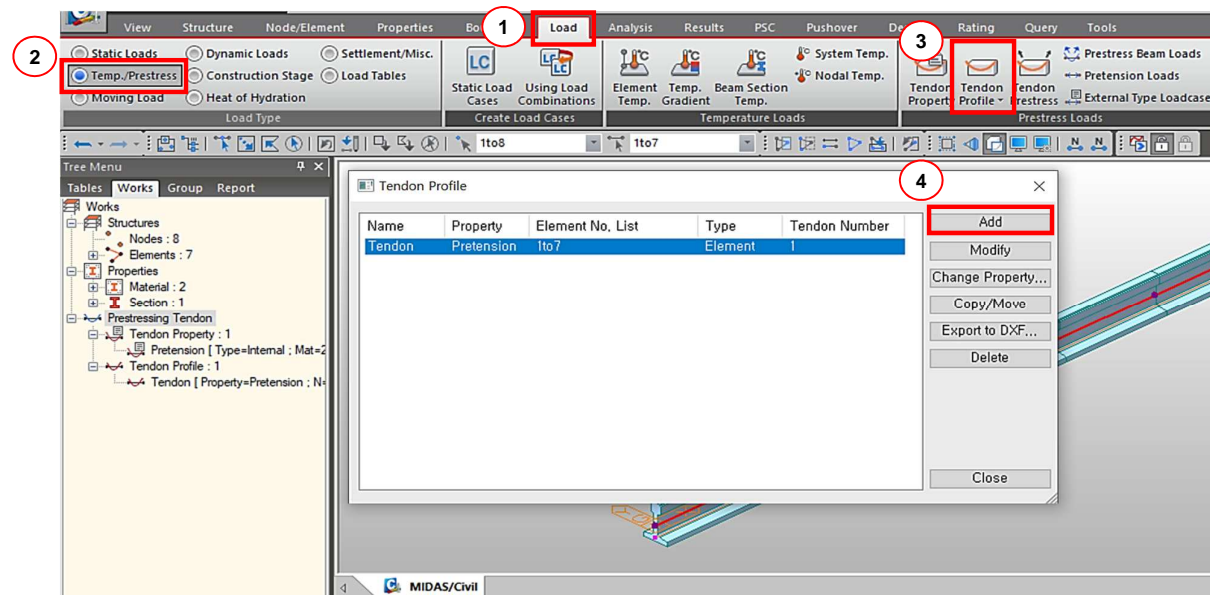
1. Objective

- Learning how to create tendon profiles with General method and using MCT command.
- Learning how to use MCT command for modifying the shape of a tendon profile.
- Learning how to input prestress loads in midasCivil.
- Learning how to manage input values by using General method and MCT command.

2. Creating a tendon profile

1) General method

- Move to "Tendon Profile" (Load > Temp./Prestress > Tendon Profile > Add)



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3. Useful Tips for modification of input data

2) Procedure of creating a tendon profile.

A-1) Make a name.

A-2) Make or select a group for the construction stage.

A-3) Select a tendon property.

A-4) Select elements where a tendon profile will be assigned.

B-1) Select the input type as 2D method or 3D method.

B-2) Select or input values for detail profile shape.

C-1) Select the reference axis among "Straight, Curve and Element".

Straight & Curve : Reference axis follows the global coordinate axis.

Element : Reference axis follows the X-axis of elements.

C-2) Input coordinates of a tendon profile.

D-1) Select the insertion point

Straight & Curve : Input a coordinate.

Element : Select an element and the start or end point of the element.

D-2) Input the rotation angle, offset length and detail options..

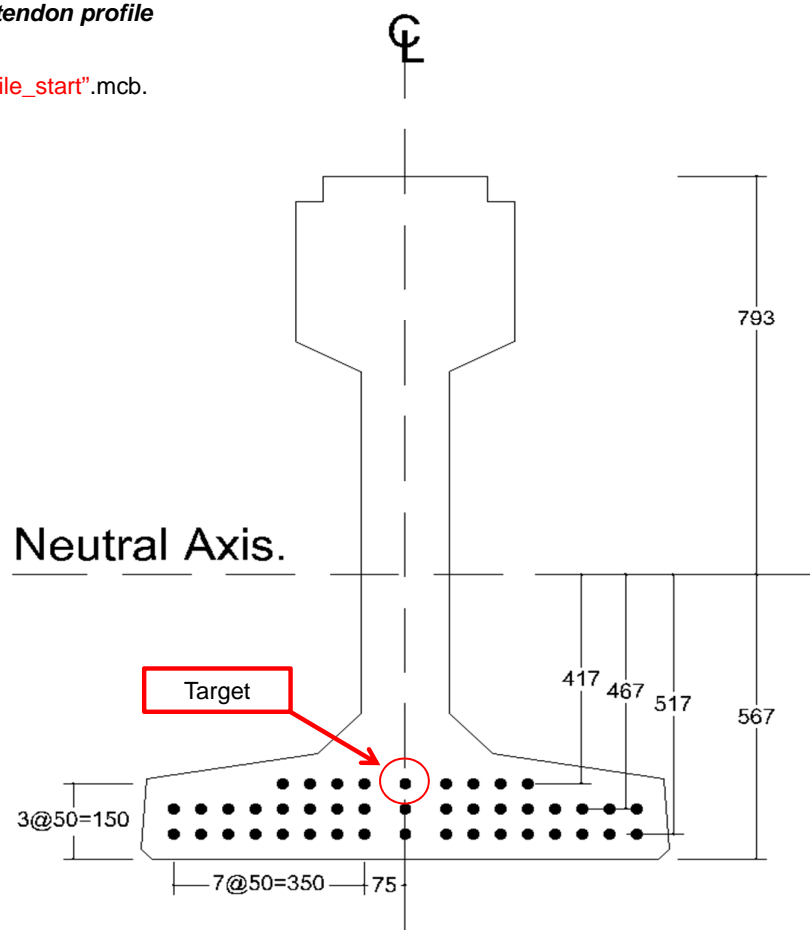
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3. Useful Tips for modification of input data

Example 1 – creating a tendon profile

1. Open "01.Tendon profile_start".mcb.

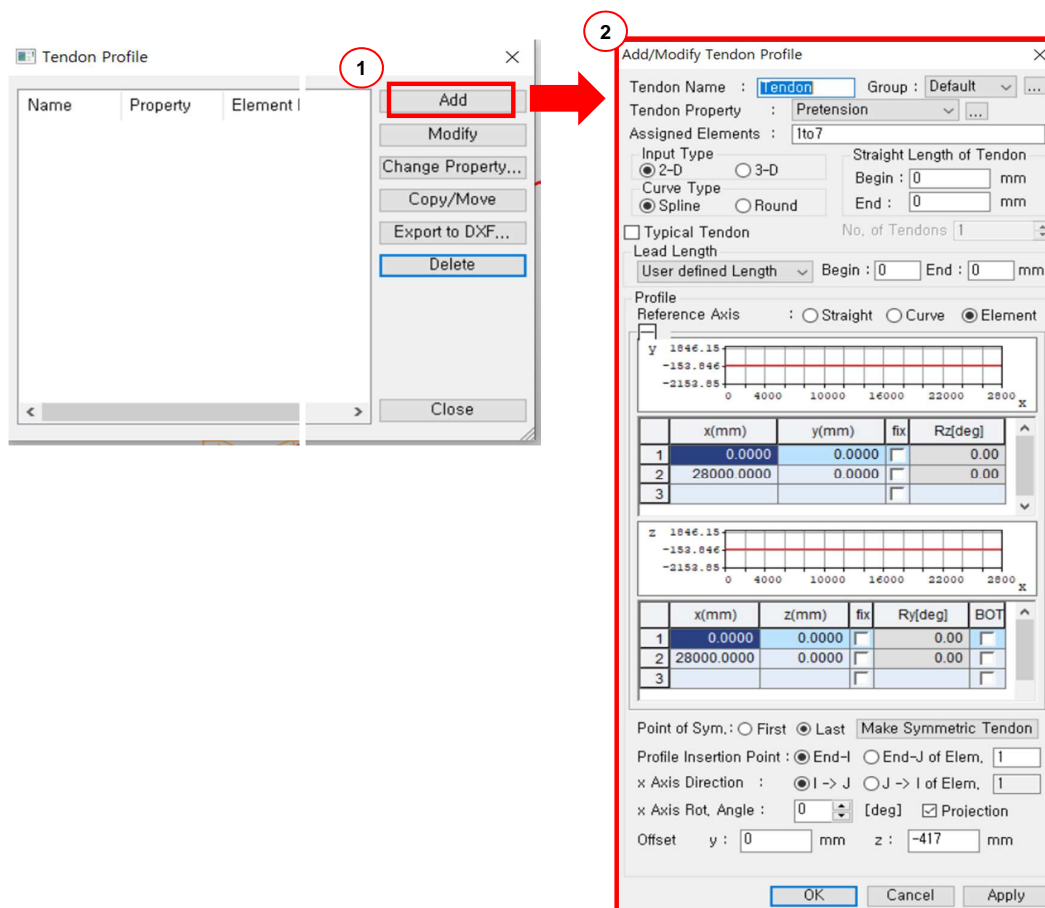


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3. Useful Tips for modification of input data

Example 1 – creating a tendon profile



- ① Tendon Name : Tendon
- ② Tendon Property : Pretension
- ③ Assigned Elements : 1to7
- ④ Input Type : 2-D
- ⑤ Curve Type : Spline
- ⑥ Reference Axis : Element
- ⑦ X-Y

	x(mm)	y(mm)	fix	Rz(deg)
1	0.0000	0.0000	<input type="checkbox"/>	0.00
2	28000.0000	0.0000	<input type="checkbox"/>	0.00
3			<input type="checkbox"/>	

- ⑧ X-Z

	x(mm)	z(mm)	fix	Ry(deg)	BOT
1	0.0000	0.0000	<input type="checkbox"/>	0.00	<input type="checkbox"/>
2	28000.0000	0.0000	<input type="checkbox"/>	0.00	<input type="checkbox"/>
3			<input type="checkbox"/>		<input type="checkbox"/>

- ⑨ Profile Insertion Point

: End-I of Elem. 1

- ⑩ Offset :

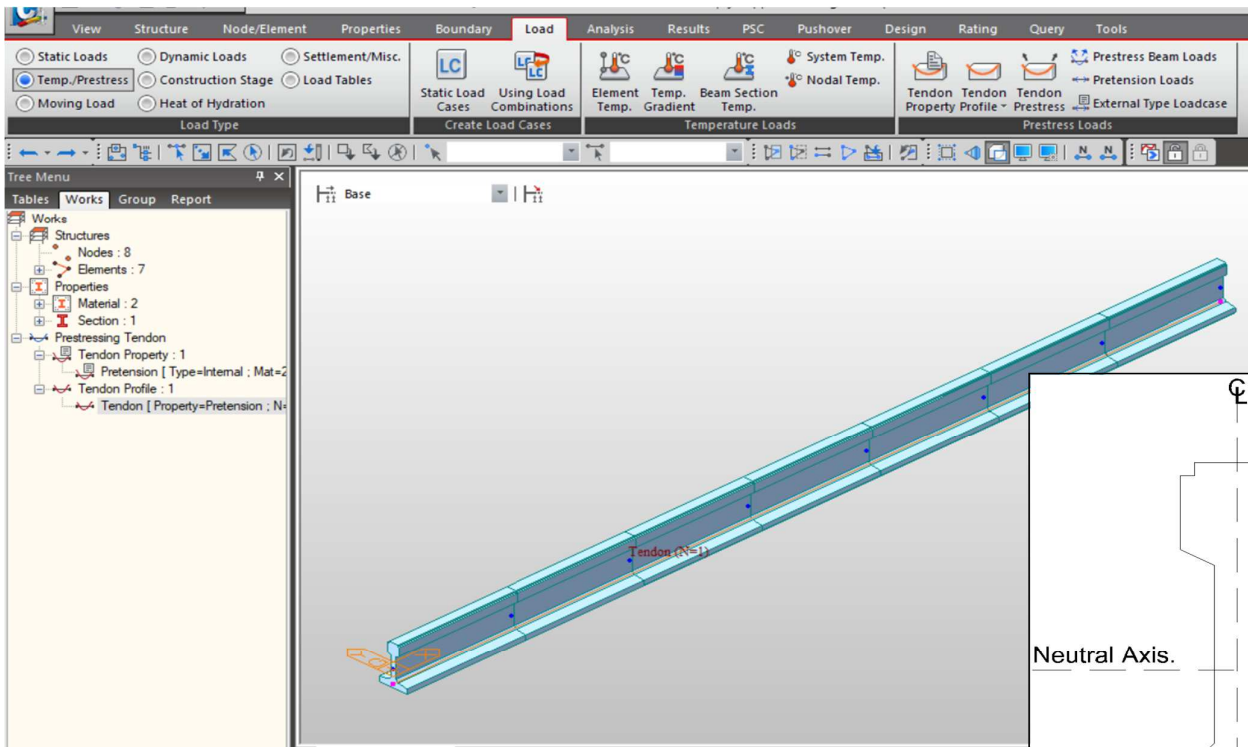
y : 0mm, z : -417 mm

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3. Useful Tips for modification of input data

Example 1 – creating a tendon profile

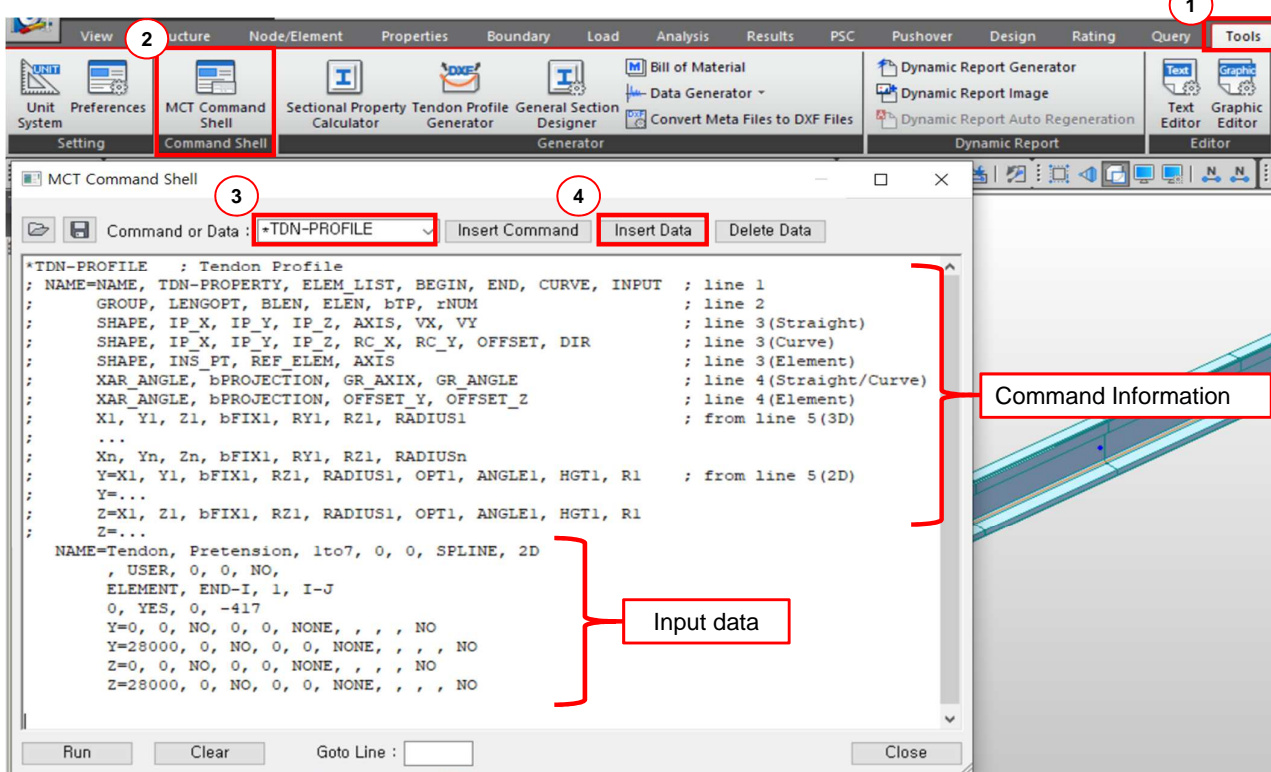


In order to create other tendon profiles, we should do the same work for several times. Or use the copy function.

3. Useful Tips for modification of input data

Example 2 – creating a tendon profile with MCT Command

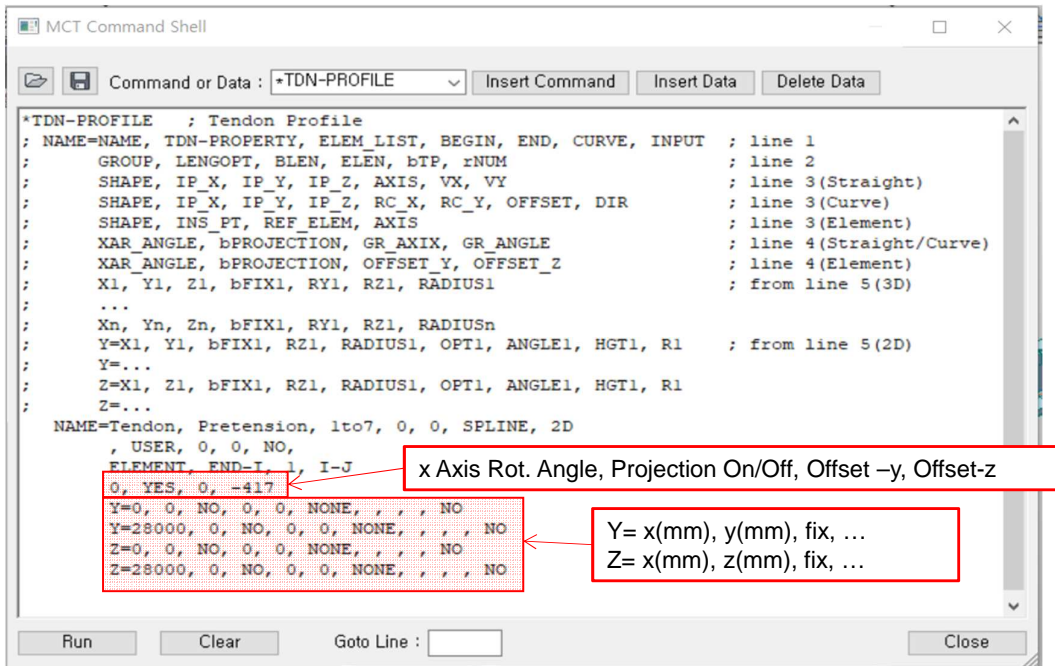
1. Move to "Tools > MCT Command Shell"



3. Useful Tips for modification of input data

Example 2 – creating a tendon profile with MCT Command

2. Users can modify or copy values in MCT Command shell. After modifying values, click Run to apply.

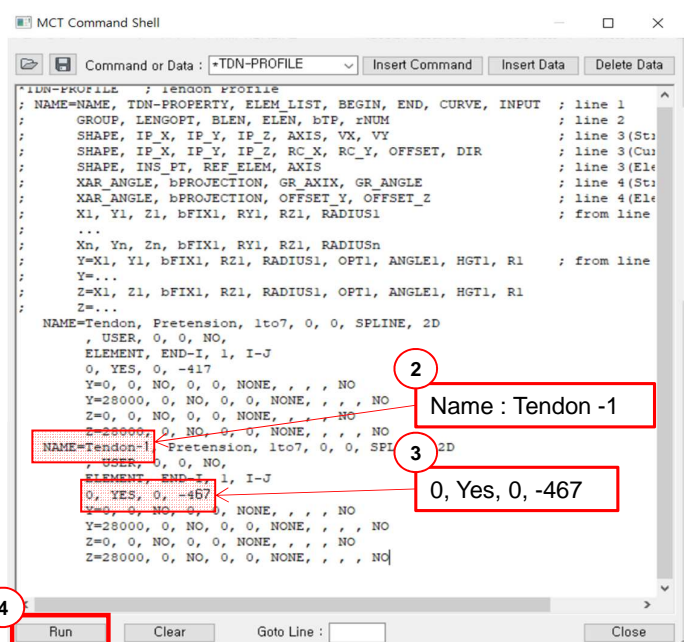
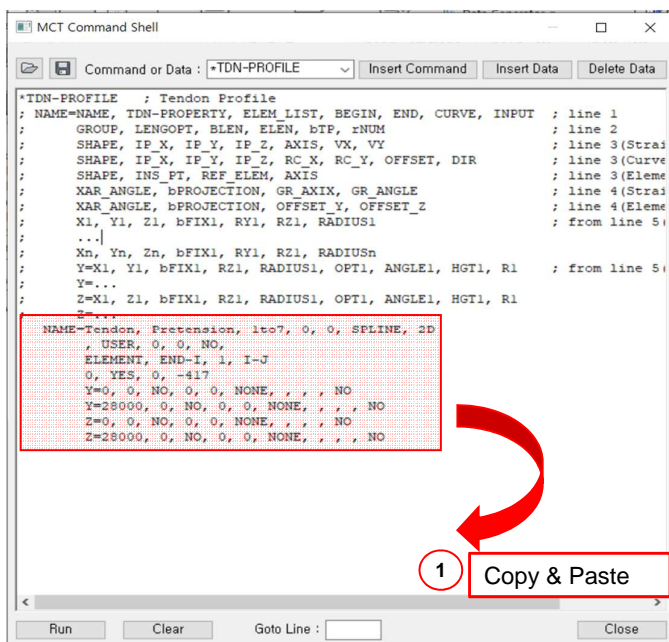


3. Useful Tips for modification of input data

Example 2 – creating a tendon profile with MCT Command

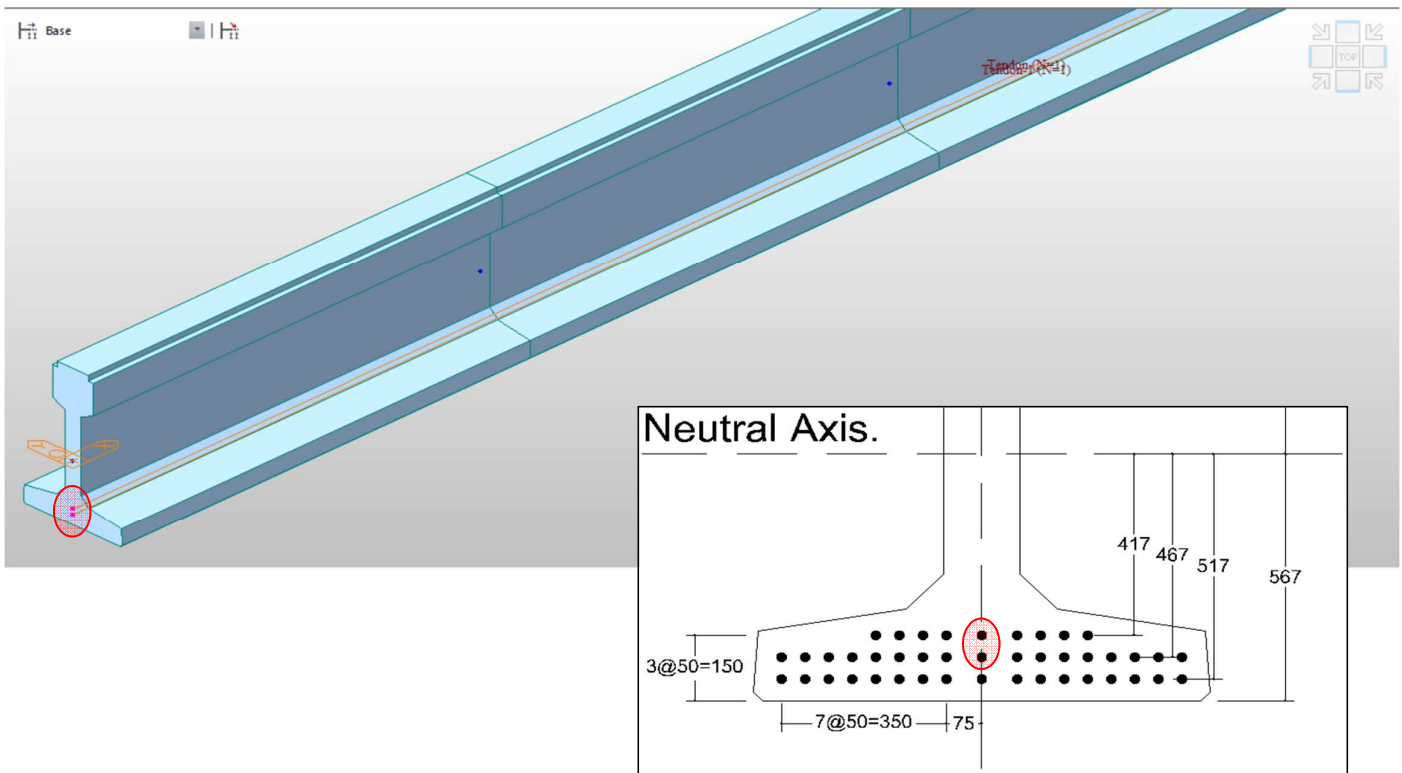
4. Create another tendon profile by using MCT command.

- 1) Copy data and paste it into other row below.
- 2) Modify the name and value in offset-z.
- 3) Click "Run" to apply data.



3. Useful Tips for modification of input data

Example 2 – creating a tendon profile with MCT Command



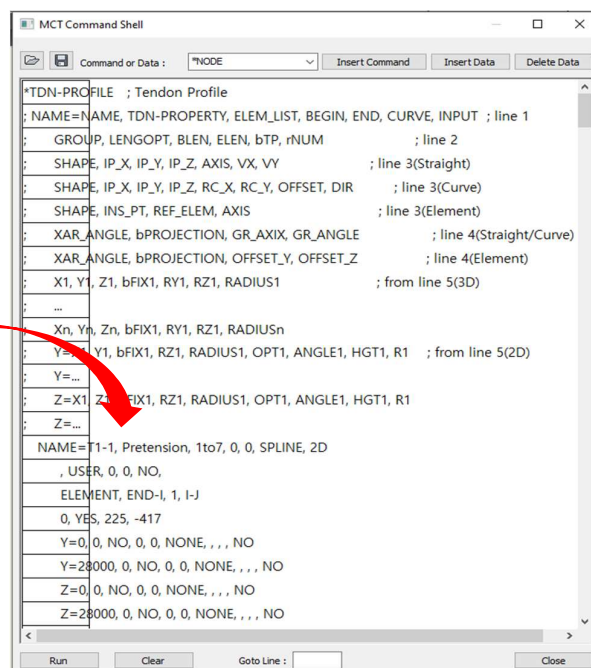
3. Useful Tips for modification of input data

Example 3 – creating a tendon profile with MCT Command and spread sheet(Excel)

1. Open "MCT Command for tendon profiles.xls" and look into EX3_simple sheet and EX3_advanced sheet.
2. Open "Tendon profile start_2.mcb" and open MCT Command Shell.
3. Copy commands in EX3_advanced sheet and paste them into MCT Command Shell.
4. Click Run

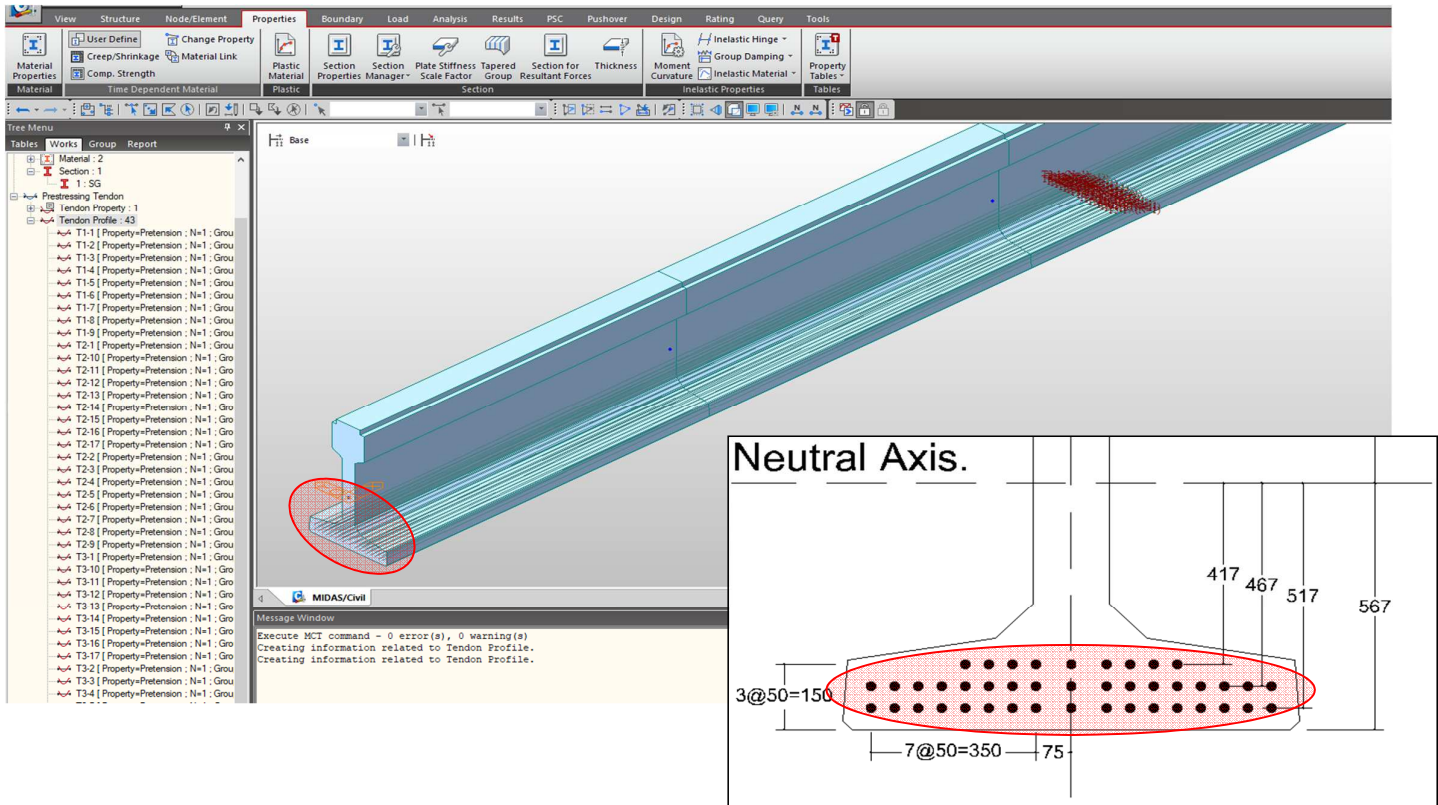
4.Copy below

```
*TDN-PROFILE ; Tendon Profile
; NAME=NAME, TDN-PROPERTY, ELEM_LIST, BEGIN, END, CURVE, INPUT ; line 1
; GROUP, LENGOPT, BLEN, ELEN, bTP, rNUM ; line 2
; SHAPE, IP_X, IP_Y, IP_Z, AXIS, VX, VY ; line 3(Straight)
; SHAPE, IP_X, IP_Y, IP_Z, RC_X, RC_Y, OFFSET, DIR ; line 3(Curve)
; SHAPE, INS_PT, REF_ELEM, AXIS ; line 3(Element)
; XAR_ANGLE, bPROJECTION, GR_AXIS, GR_ANGLE ; line 4(Straight/Curve)
; XAR_ANGLE, bPROJECTION, OFFSET_Y, OFFSET_Z ; line 4(Element)
; X1, Y1, Z1, bFIX1, RY1, RZ1, RADIUS1 ; from line 5(3D)
; ...
; Xn, Yn, Zn, bFIX1, RY1, RZ1, RADIUSn
; Y=X1, Y1, bFIX1, RZ1, RADIUS1, OPT1, ANGLE1, HGT1, R1 ; from line 5(2D)
; Y=...
; Z=X1, Z1, bFIX1, RZ1, RADIUS1, OPT1, ANGLE1, HGT1, R1
; Z=...
NAME=T1-1, Pretension, 1to7, 0, 0, SPLINE, 2D
; USER, 0, 0, NO,
ELEMENT, END-I, 1, I-J
0, YES, 225, -417
Y=0, 0, NO, 0, 0, NONE, , , NO
Y=28000, 0, NO, 0, 0, NONE, , , NO
Z=0, 0, NO, 0, 0, NONE, , , NO
Z=28000, 0, NO, 0, 0, NONE, , , NO
NAME=T1-2, Pretension, 1to7, 0, 0, SPLINE, 2D
; USER, 0, 0, NO,
ELEMENT, END-I, 1, I-J
0, YES, 175, -417
Y=0, 0, NO, 0, 0, NONE, , , NO
Y=28000, 0, NO, 0, 0, NONE, , , NO
Z=0, 0, NO, 0, 0, NONE, , , NO
Z=28000, 0, NO, 0, 0, NONE, , , NO
NAME=T1-3, Pretension, 1to7, 0, 0, SPLINE, 2D
; USER, 0, 0, NO,
ELEMENT, END-I, 1, I-J
0, YES, 125, -417
Y=0, 0, NO, 0, 0, NONE, , , NO
```



3. Useful Tips for modification of input data

Example 3 – creating a tendon profile with MCT Command and spread sheet(Excel)

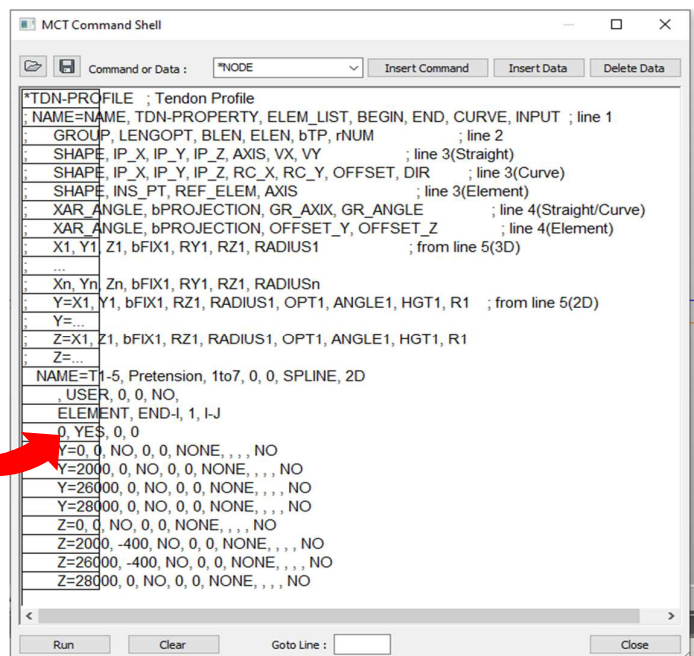


3. Useful Tips for modification of input data

Example 4 – modifying a tendon shape with MCT Command & spread sheet(Excel)

1. Open "MCT Command for tendons.xls".
2. Move to "EX4-profile shape" sheet.
3. Copy commands and paste them into MCT Command Shell.
4. Click Run.

```
*TDN-PROFILE ; Tendon Profile
NAME=NAME, TDN-PROPERTY, ELEM_LIST, BEGIN, END, CURVE, INPUT ; line 1
GROUP, LENGOPT, BLEN, ELEN, bTP, rNUM ; line 2
SHAPE, IP_X, IP_Y, IP_Z, AXIS, VX, VY ; line 3(Straight)
SHAPE, IP_X, IP_Y, IP_Z, RC_X, RC_Y, OFFSET, DIR ; line 3(Curve)
SHAPE, INS_PT, REF_ELEM, AXIS ; line 3(Element)
XAR_ANGLE, bPROJECTION, GR_AXIS, GR_ANGLE ; line 4(Straight/Curve)
XAR_ANGLE, bPROJECTION, OFFSET_Y, OFFSET_Z ; line 4(Element)
X1, Y1, Z1, bFIX1, RY1, RZ1, RADIUS1 ; from line 5(3D)
...
Xn, Yn, Zn, bFIX1, RY1, RZ1, RADIUSn
Y=X1, Y1, bFIX1, RZ1, RADIUS1, OPT1, ANGLE1, HGT1, R1 ; from line 5(2D)
Y=...
Z=X1, Z1, bFIX1, RZ1, RADIUS1, OPT1, ANGLE1, HGT1, R1
Z=...
NAME=T1-5, Pretension, 1to7, 0, 0, SPLINE, 2D
USER, 0, 0, NO,
ELEMENT, END-I, 1, I-J
0, YES, 0, 0
Y=0, 0, NO, 0, 0, NONE, , , NO
Y=2000, 0, NO, 0, 0, NONE, , , NO
Y=26000, 0, NO, 0, 0, NONE, , , NO
Y=28000, 0, NO, 0, 0, NONE, , , NO
Z=0, 0, NO, 0, 0, NONE, , , NO
Z=2000, -400, NO, 0, 0, NONE, , , NO
Z=26000, -400, NO, 0, 0, NONE, , , NO
Z=28000, 0, NO, 0, 0, NONE, , , NO
```



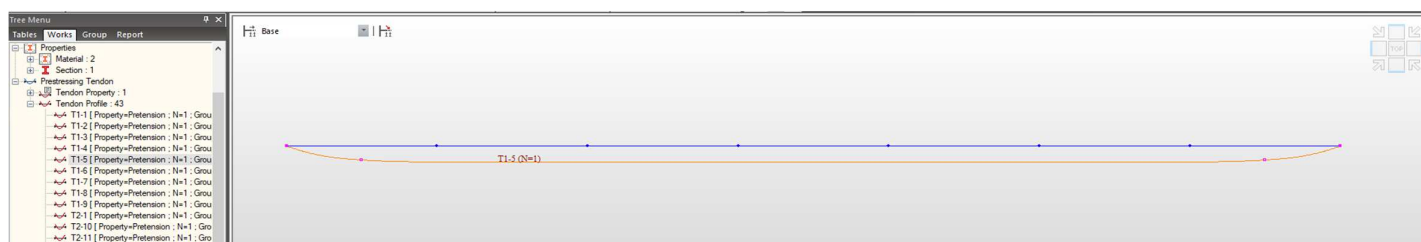
3. Useful Tips for modification of input data

Example 4 – modifying a tendon shape with MCT Command & spread sheet(Excel)

Before



After

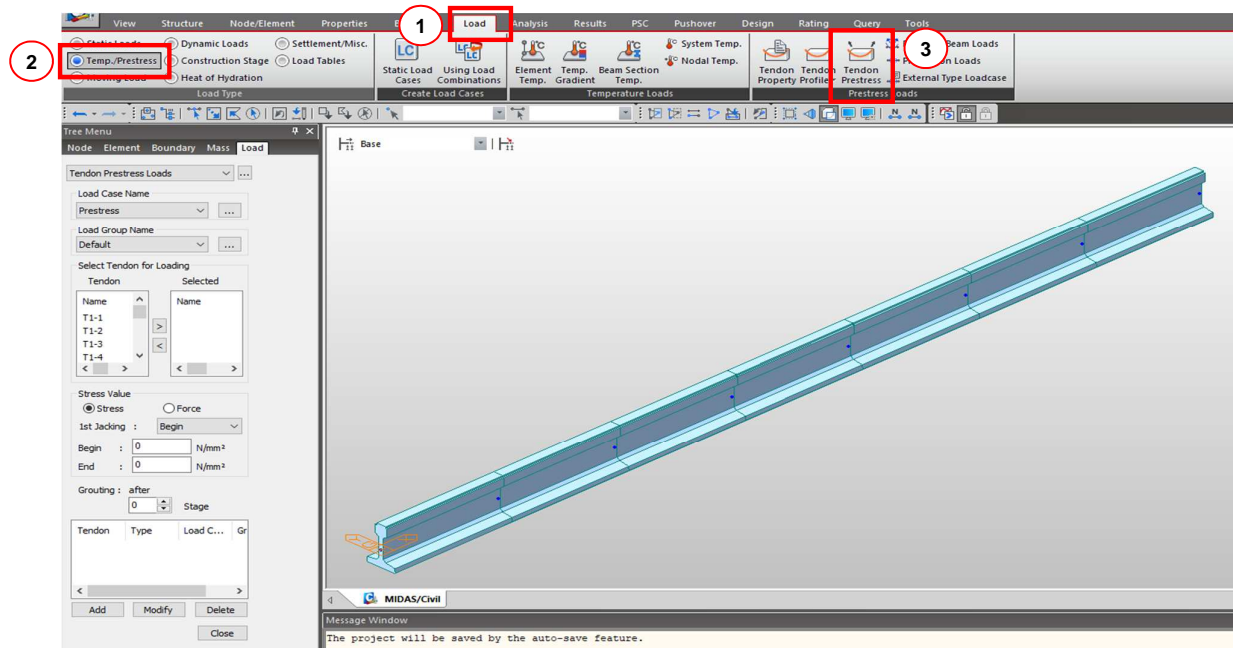


3. Useful Tips for modification of input data

3. Creating prestress loads

1) General method

- Move to “Tendon Prestress” (Load > Temp./Prestress > Tendon Prestress).



3. Useful Tips for modification of input data

2) Procedure of creating prestress loads

The screenshot shows the 'Tendon Prestress Loads' dialog box with the following steps highlighted:

1. Load Case Name: Prestress
2. Load Group Name: Default
3. Select Tendon for Loading: T1-1, T1-2, T1-3, T1-4
4. Click ">" to move selected tendons to the Selected list.
5. Stress Value: Stress (selected), Force (unselected)
6. 1st Jacking: Begin
7. Begin: 0 N/mm², End: 0 N/mm²
8. Grouting: after 0 Stage
9. Add button

- ① Select a load case where prestress loads will be inputted.
- ② Select a load group for the construction analysis.
- ③ Select tendon profiles.
- ④ Click ">" or "<" to put in or out.
- ⑤ Select the prestress type as "Stress" or "Force".
- ⑥ Select 1st Jacking among "Begin", "End" and "Both" to set a order for prestressing work.
- If pre-tension type is selected in the tendon property, this option won't be applied.
- ⑦ Input values.
- ⑧ Grouting : after
- This option is for defining a stage at which tendons are grouted in the ducts(sheathes). After grouting, the duct area will be used for calculating transformed section area.
- ⑨ Click "Add" to apply prestress loads.

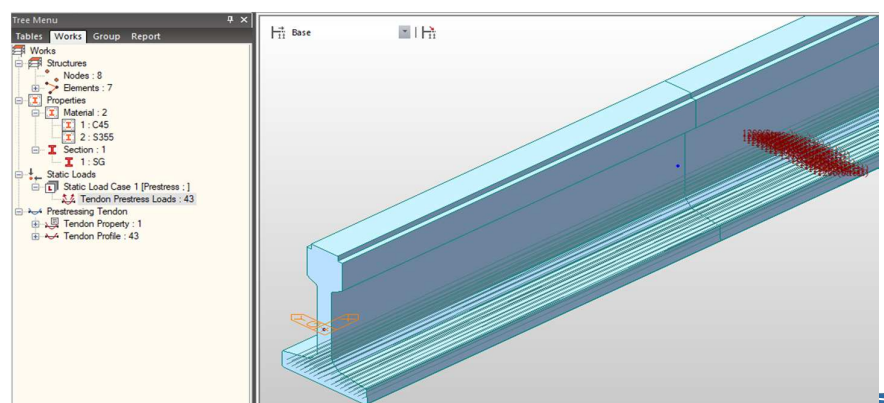
3. Useful Tips for modification of input data

Example 1 – creating prestress loads

The screenshot shows the 'Tendon Prestress Loads' dialog box with the following steps highlighted:

1. Load Case Name: Prestress
2. Load Group Name: Default
3. Select Tendon for Loading: T1-1, T1-2, T1-3, T1-4
4. Click ">" to move selected tendons to the Selected list.
5. Stress Value: Stress (selected), Force (unselected)
6. 1st Jacking: Begin
7. Begin: 1200 N/mm², End: 1200 N/mm²

- ① Open "01.Prestressing force_start".mcb.
- ② Move into "Tendon Prestress Loads".
- ③ Select "Prestress" in Load Case Name.
- ④ Select all tendon profiles and click ">".
- ⑤ Select "Stress" in Stress Value.
1st Jacking : Begin → Not apply in the pretension type.
Begin : 1200 N/mm²
End : 1200 N/mm²
- ⑥ Click "Add".



3. Useful Tips for modification of input data

Example 2 – management of prestress loads with general methods

1. In order to manage or modify Tendon Prestress Loads, we use “Properties” or “Tables”.
2. Modify values.

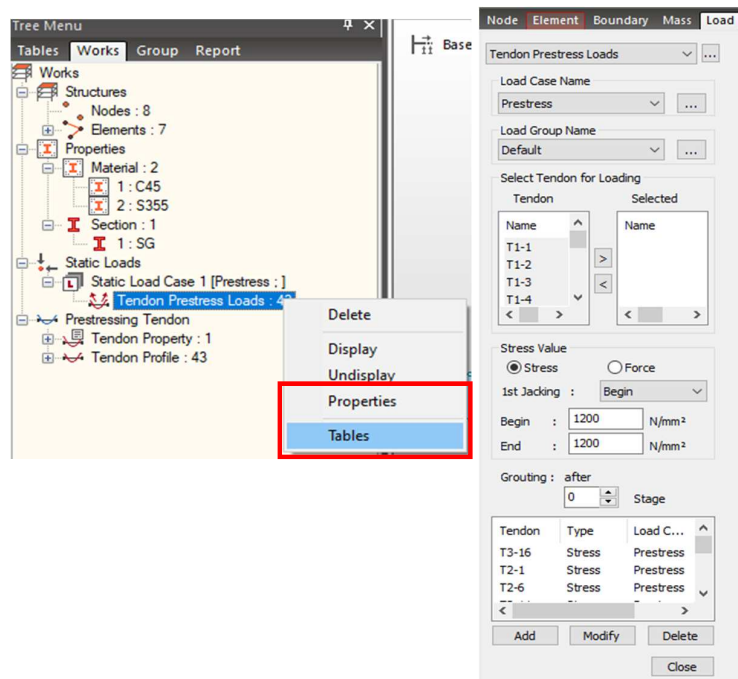


Fig a. Properties

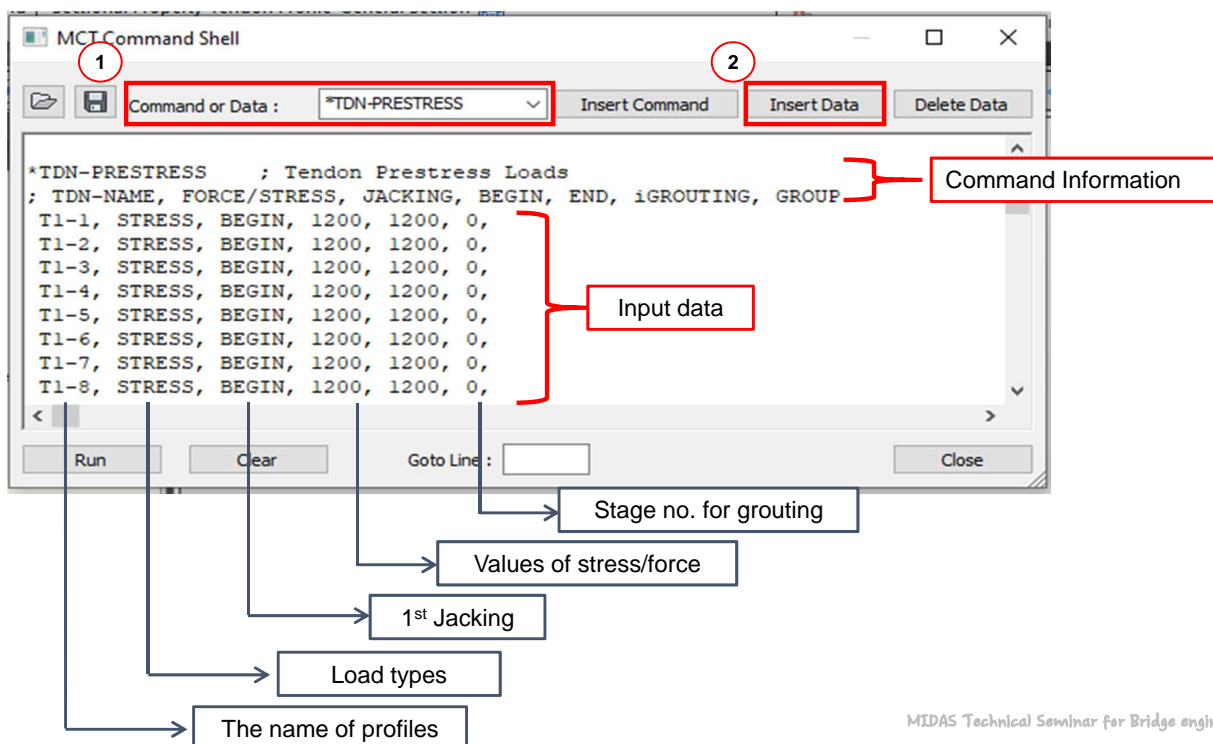
Tendon	Load Case	Type	Jacking	Stress Begin (N/mm ²)	Stress End (N/mm ²)	Force Begin (N)	Force End (N)	Grouting	Load Group
T1-1	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-2	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-3	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-4	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-5	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-6	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-7	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-8	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T1-9	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-1	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-10	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-11	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-12	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-13	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-14	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-15	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-16	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-17	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-2	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-3	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-4	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-5	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-6	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-7	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-8	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T2-9	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-1	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-10	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-11	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-12	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-13	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-14	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-15	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-16	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-17	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-2	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-3	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-4	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-5	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default
T3-6	Prestress	Stress	Begin	1200.00	1200.00	0.00	0.00	0	Default

Fig b. Tables

3. Useful Tips for modification of input data

Example 3 – management of prestress loads with MCT Command

1. Move into “MCT Command Shell” in midasCivil.
2. Find “*TDN-PRESTRESS” and click “Insert Data”.
3. Modify “STRESS” → “FORCE”, “1200, 1200” → “150000, 150000”.
4. Click “Run”.



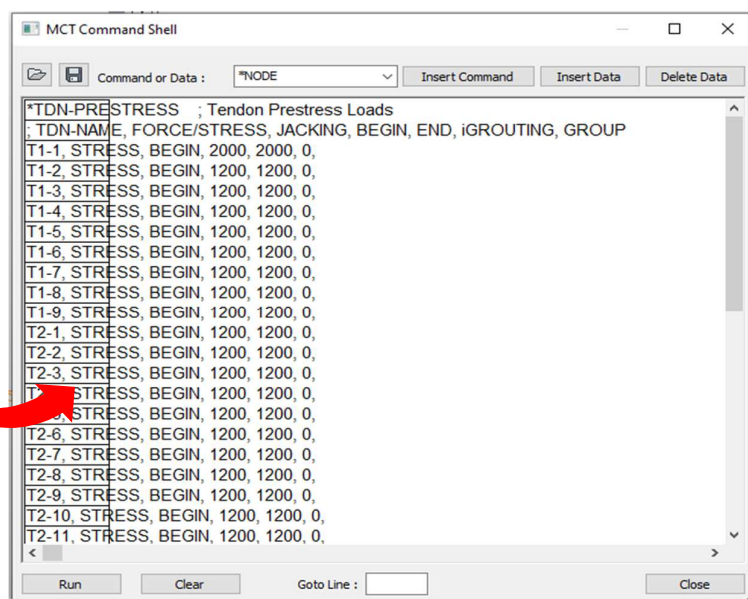
3. Useful Tips for modification of input data

Example 4 – management of prestress loads with MCT Command and spread sheet(Excel)

1. Open “MCT Command for tendon loads.xls”.
2. Move into “EX2”.
3. Copy all commands in yellow boxes.
4. Paste all into MCT Command Shell.
5. Click “Run”.

Copy

```
*TDN-PRESTRESS ; Tendon Prestress Loads
; TDN-NAME, FORCE/STRESS, JACKING, BEGIN, END, iGROUTING, GROUP
T1-1, STRESS, BEGIN, 1200, 1200, 0,
T1-2, STRESS, BEGIN, 1200, 1200, 0,
T1-3, STRESS, BEGIN, 1200, 1200, 0,
T1-4, STRESS, BEGIN, 1200, 1200, 0,
T1-5, STRESS, BEGIN, 1200, 1200, 0,
T1-6, STRESS, BEGIN, 1200, 1200, 0,
T1-7, STRESS, BEGIN, 1200, 1200, 0,
T1-8, STRESS, BEGIN, 1200, 1200, 0,
T1-9, STRESS, BEGIN, 1200, 1200, 0,
T2-1, STRESS, BEGIN, 1200, 1200, 0,
T2-2, STRESS, BEGIN, 1200, 1200, 0,
T2-3, STRESS, BEGIN, 1200, 1200, 0,
T2-4, STRESS, BEGIN, 1200, 1200, 0,
T2-5, STRESS, BEGIN, 1200, 1200, 0,
T2-6, STRESS, BEGIN, 1200, 1200, 0,
T2-7, STRESS, BEGIN, 1200, 1200, 0,
T2-8, STRESS, BEGIN, 1200, 1200, 0,
T2-9, STRESS, BEGIN, 1200, 1200, 0,
T2-10, STRESS, BEGIN, 1200, 1200, 0,
T2-11, STRESS, BEGIN, 1200, 1200, 0,
T2-12, STRESS, BEGIN, 1200, 1200, 0,
T2-13, STRESS, BEGIN, 1200, 1200, 0,
T2-14, STRESS, BEGIN, 1200, 1200, 0,
T2-15, STRESS, BEGIN, 1200, 1200, 0,
T2-16, STRESS, BEGIN, 1200, 1200, 0,
T2-17, STRESS, BEGIN, 1200, 1200, 0,
```



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End