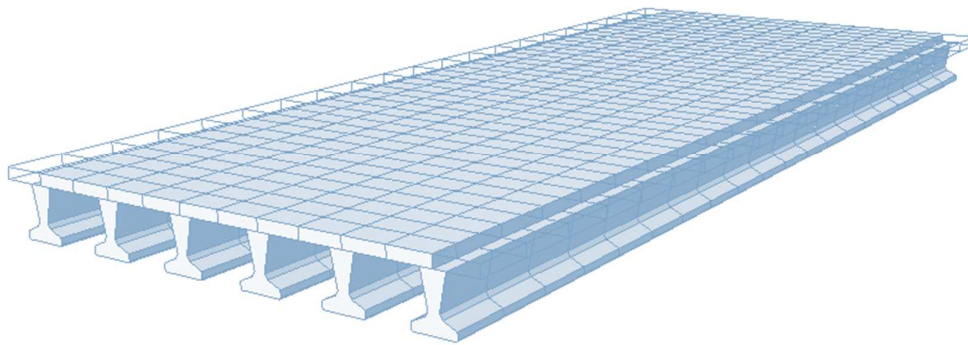


midas Civil

Basic Training Session

Training Session 2

Useful Tips for modeling of Input data

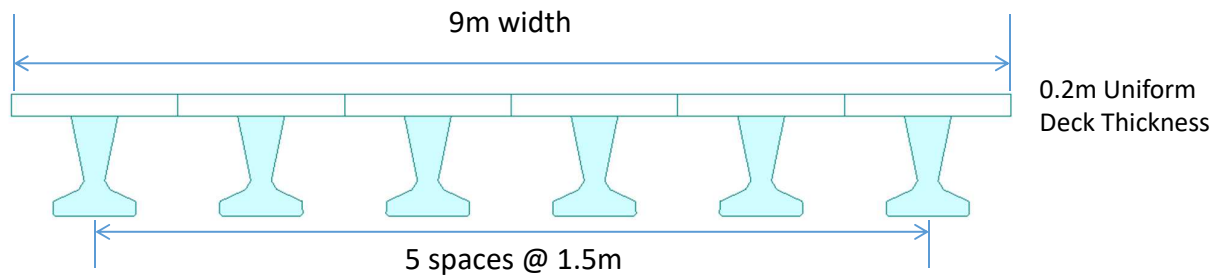


midas **Civil**

Contents

1. Span Information
2. Modeling with importing CAD
 - a. *Defining material & section properties with MCT command*
 - b. *Assigning material & section properties with detailed feature*
3. Section creation with SPC
 - a. *Precast girder*
 - b. *Composite precast girder*
4. Importing load cases with MCT command

Span Information



Bridge Specifications

Span: 20m
Width: 9m
Girders: 6TY11 precast girders

Loads

Self-weight of structural elements
Prestressing of tendons
Moving load: Dual carriageway with
HA & HB loading as per
(BD37/01 Standard load)

2. Useful Tips for Modeling – CAD Importing

1. New Project...

2. Import

3. AutoCAD DXF File...

4. CENTER...

5. OK

Import DXF File

DXF File Name : zWGrillaged Center Line.dxf

All Layers : 0

Selected Layers : CENTER...

Import : ☐ Node ☒ Node & Element

Numbering

Start Node Number : 1

Start Element Number : 1

Properties

Matl. : 1

Sect. : 1

THK. : 1

Scale and Origin

Scale Factor : 1

Origin Point : 0, 0, 0

Rotation Angle

Rx : 0

Ry : 0

Rz : 0

Tolerance

☒ Merge Duplicate Nodes

☒ Intersect Frame Elements

1. File – New Project

2. Select **Import**

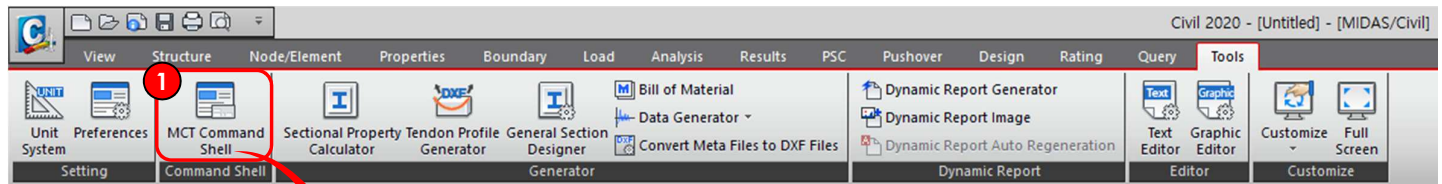
3. Select **AutoCAD DXF File...**

Grillaged Center Line.dxf

4. Move **CENTER** Layer to right side

5. Click **OK**

2. Useful Tips for Modeling – MCT: Create Materials



1. Tools – MCT Command Shell
2. Open **MCT Command Sample.xlsx**
3. Select **A-Column** and **Copy**

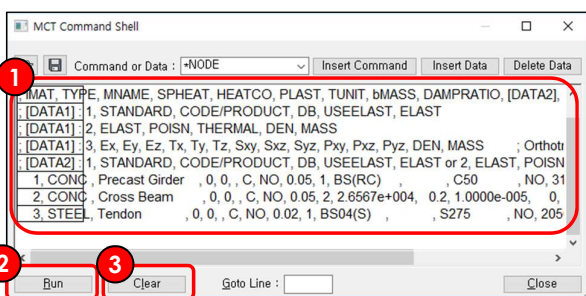
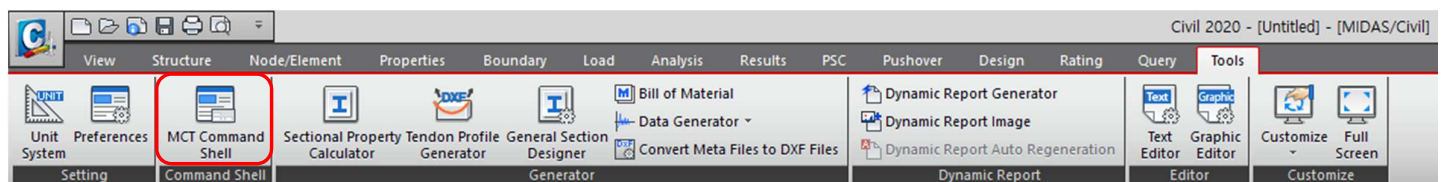
2. MCT Command Sample.xlsx

A1	B	C	D	E	F	G	H	I	J	K
MATERIAL	Material									
1	MAT, TYPE	MNAME	SPHEAT	HEATCO	PLAST	TUNIT	bMASS	DAMP	RATIO	[DATA1] ; STEEL, CONC, USER
2	MAT, TYPE	MNAME	SPHEAT	HEATCO	PLAST	TUNIT	bMASS	DAMP	RATIO	[DATA2] ; SRC
3	[DATA1]	STANDARD	CODE/PRODUCT	DB	USEELAST	ELAST				
4	[DATA1]	ELAST	POISN	THERMAL	DEN	MASS				
5	[DATA1]	Ex	Ey	Ez	Tx	Ty	Tz	Sxy	Sxz	Syz
6	[DATA1]	Ex	Ey	Ez	Tx	Ty	Tz	Sxy	Sxz	Syz
7	[DATA2]	STANDARD	CODE/PRODUCT	DB	USEELAST	ELAST or 2	ELAST	POISN	THERMAL	DEN, MASS
8	1, CONC	Precast Girder	, 0, 0, C	NO	0.05, 1	BS(RC)		C50		NO, 31754
9	2, CONC	Cross Beam	, 0, 0, C	NO	0.05, 2	2.6567e+004	0.2	1.0000e-005	0	0
10	3, STEEL	Tendon	, 0, 0, C	NO	0.02, 1	BS04(S)		S275		NO, 205000

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2. Useful Tips for Modeling – MCT: Create Materials



1. Paste **Command** from excel
2. Click **Run**

Check Work Tree menu. There will be information of Materials generated by MCT Command Shell.

Those data can be extracted from midas Civil file. (xxx.mcb)

All model information can be saved as MCT format command and re-used in midas Civil

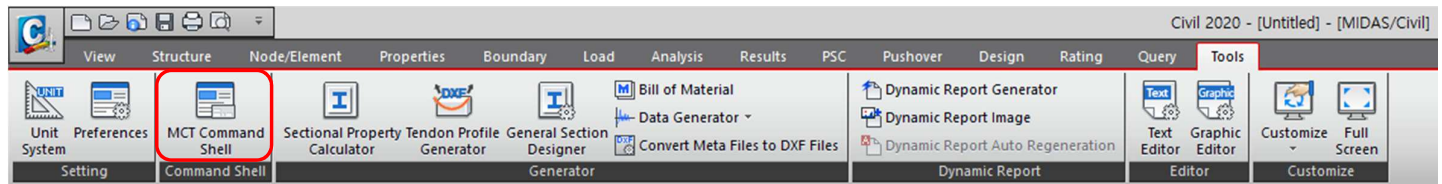
3. Click **Clear**



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2. Useful Tips for Modeling – MCT: Create Sections

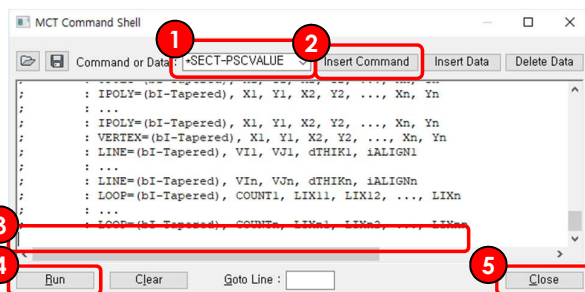
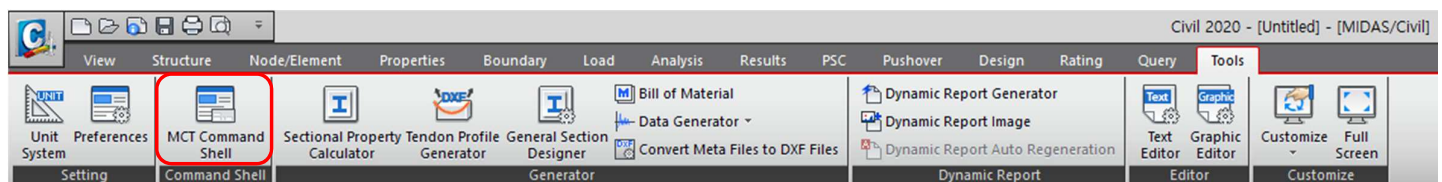


2	A	B	C	D	E	F	G	H
1	SECT=	PSC	TY11	CC, 0, 0, 0, 0, 0, YES, NO, VALU, NO, NO,				
2	34822	218344	195459	7.143e+009	2.95388e+010	7.62798e+009		
3	375, 375	511.372	388.628	215708	22760.2	3284.64	0, 375, 388.628	
4	-210, 141	210.142	350	-350	511.372	511.372	-388.628, -388.628	
5	1000,	1000,	1000,	1000				
6	YES, 0,	YES,	YES,	YES,	0	YES,	YES,	YES,
7	OPOL=	-375,	-363.628,	-350,	-388.628,	350,	-388.628,	375,
8	148.5,	-148.628,	92.5,	-68.628,	210.142,	511.372		
9	-210,	141,	511.372,	-92.5,	-68.628,	-142.5,	-148.628	
10	-370,	-253.628						
11	SECT=	COMPOSITE	Precast Girder	CT, 0, 0, 0, 0, 0, YES, NO, PC				
12	34822	485460	320561	7.33533e+009	2.95388e+010	7.62798e+009		
13	375, 375	511.372	388.628	0, 0	3284.64	0	750, 388.628	
14	-210, 141	210.142	350	-350	511.372	511.372	-388.628, -388.628	
15	1000,	1000,	1000,	1000				
16	NO, 0,	YES,	YES,	YES,	0	YES,	YES,	YES,
17	1500,	0,	1500,	200	0	1.19524	1	0.2, 0.2, 1, NO,
18	OPOL=	-375,	-363.628,	-350,	-388.628,	350,	-388.628,	375,
19	148.5,	-148.628,	92.5,	-68.628,	210.142,	511.372		
20	-210,	141,	511.372,	-92.5,	-68.628,	-142.5,	-148.628	
21	-370,	-253.628						
22								

1	Material	Sections PSC	Sections	Load Cases	+
---	----------	--------------	----------	------------	---

1. Move to **Sections PSC** Tab
2. Select **A-Column** and **Copy** for Sections

2. Useful Tips for Modeling – MCT: Create Sections



1. Go to ***Sect-PSCVALUE**
2. Click **Insert Command**
3. Go to **Bottom Line**
4. Click **Run**

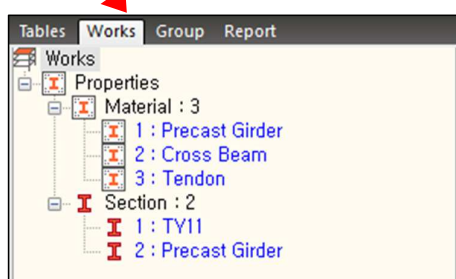
And paste **Command** from excel

Check Work Tree menu. There will be information of Materials generated by MCT Command Shell.

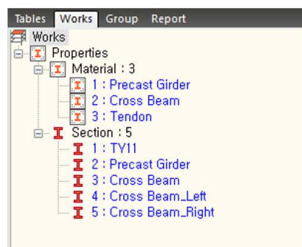
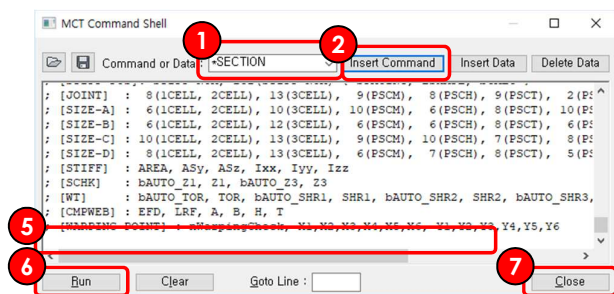
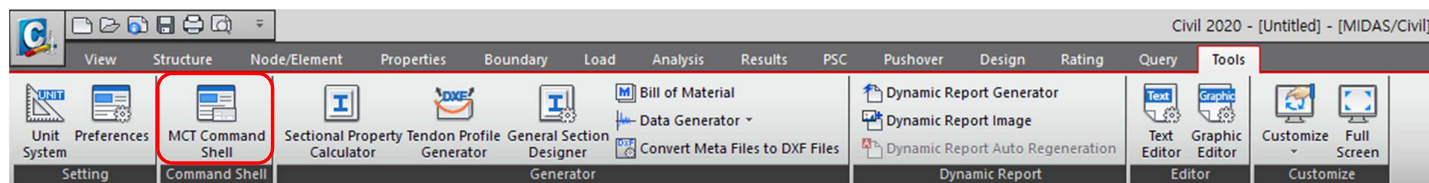
Those data can be extracted from midas Civil file. (xxx.mcb)

All model information can be saved as MCT format command and re-used in midas Civil

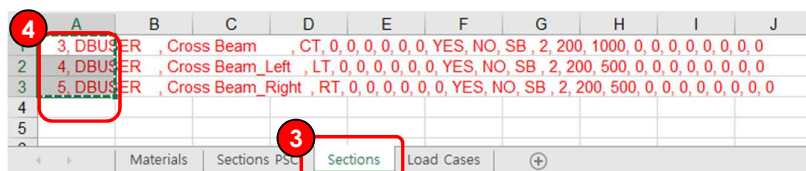
5. Click **Close**



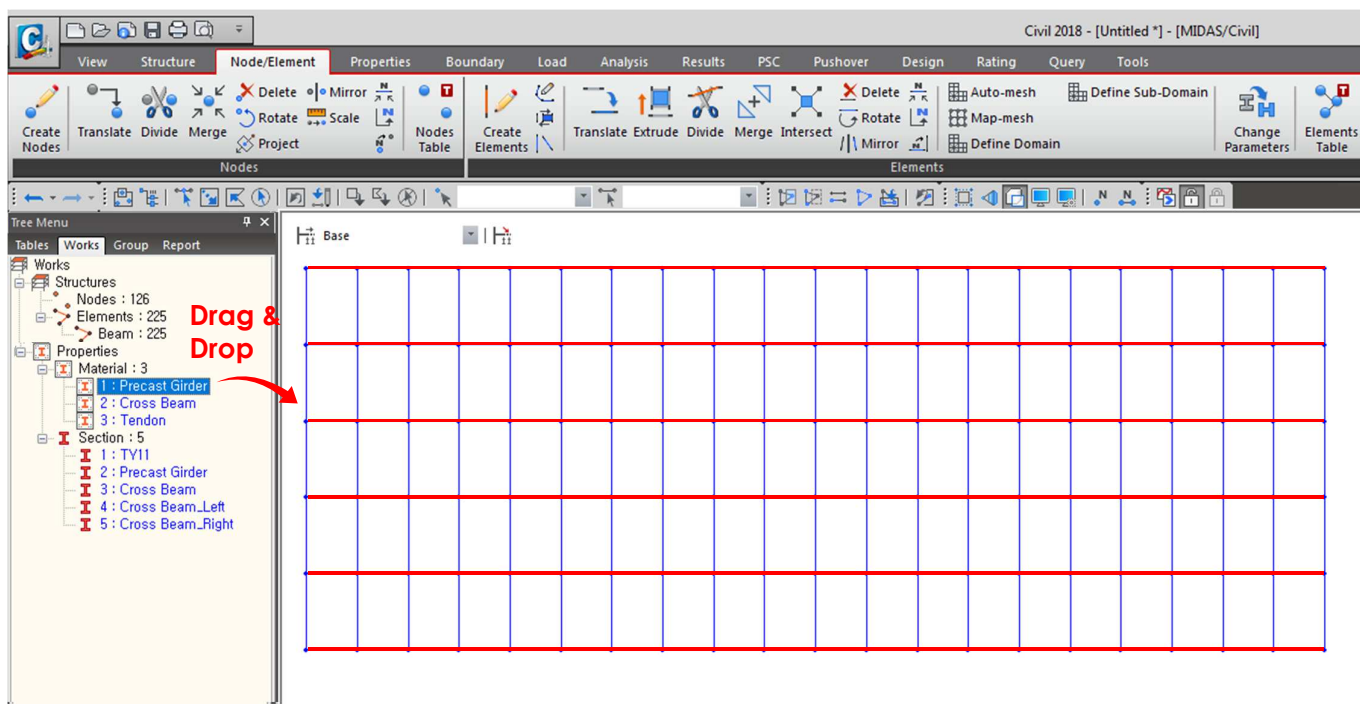
2. Useful Tips for Modeling – MCT: Create Sections



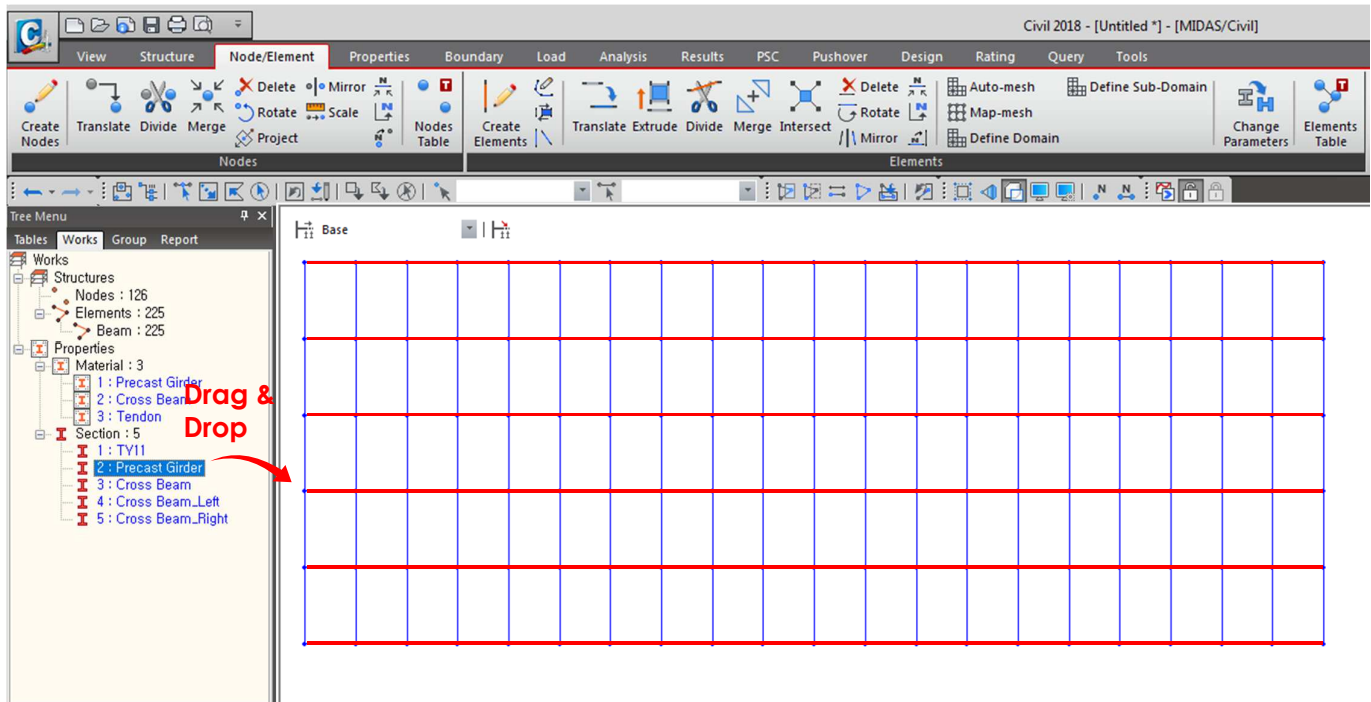
1. Go to ***SECTION**
2. Click **Insert Command**
3. Move to **Sections PSC** Tab
4. Select **A-Column** and **Copy** for Sections
5. Go to **Bottom Line**
And paste **Command** from excel
6. Click **Run**
7. Click **Close**



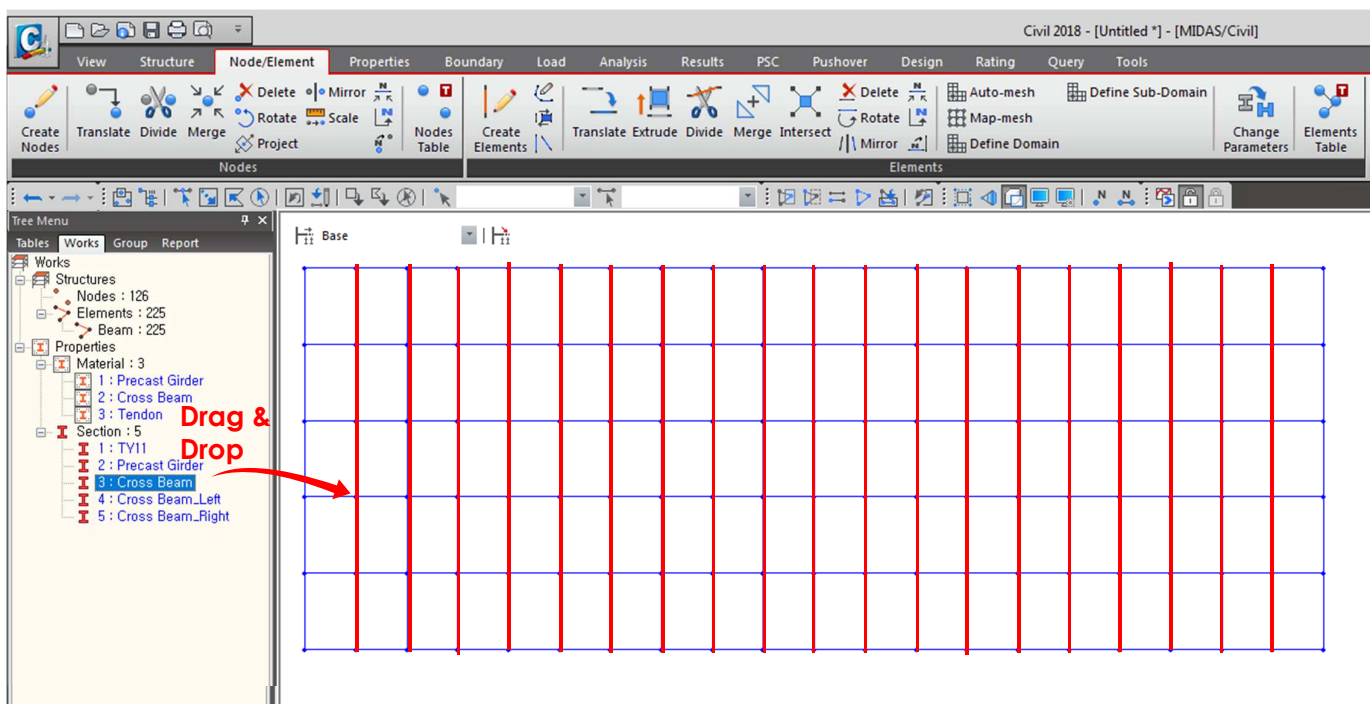
2. Useful Tips for Modeling – Change of Materials



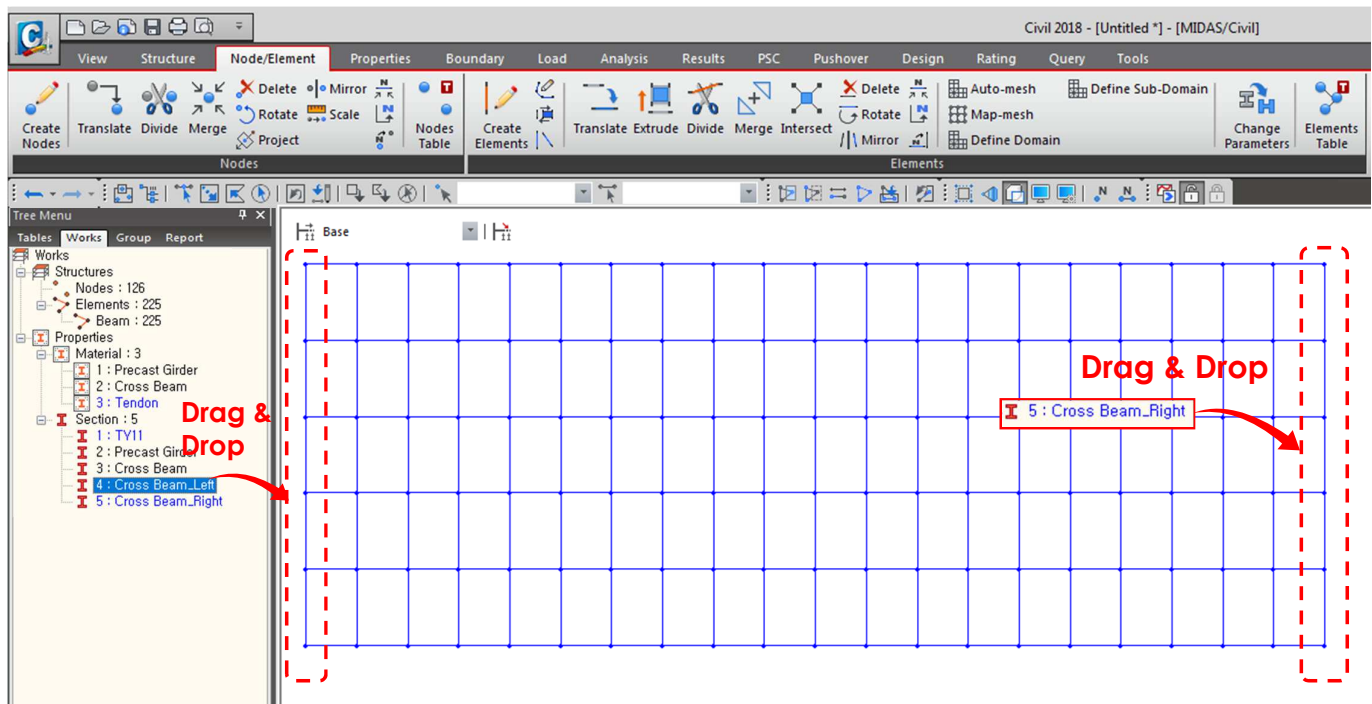
2. Useful Tips for Modeling – Change of Sections



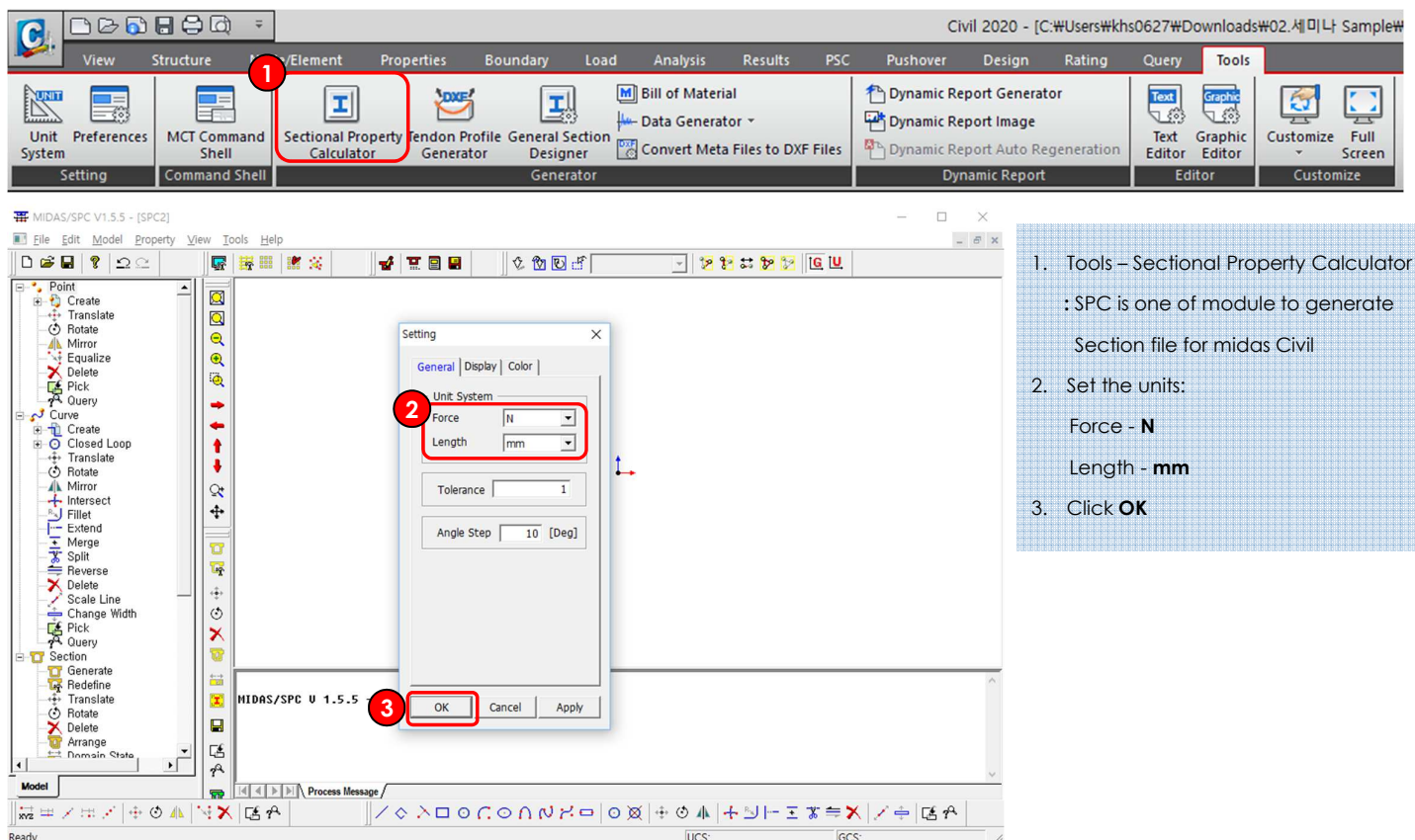
2. Useful Tips for Modeling – Change of Sections



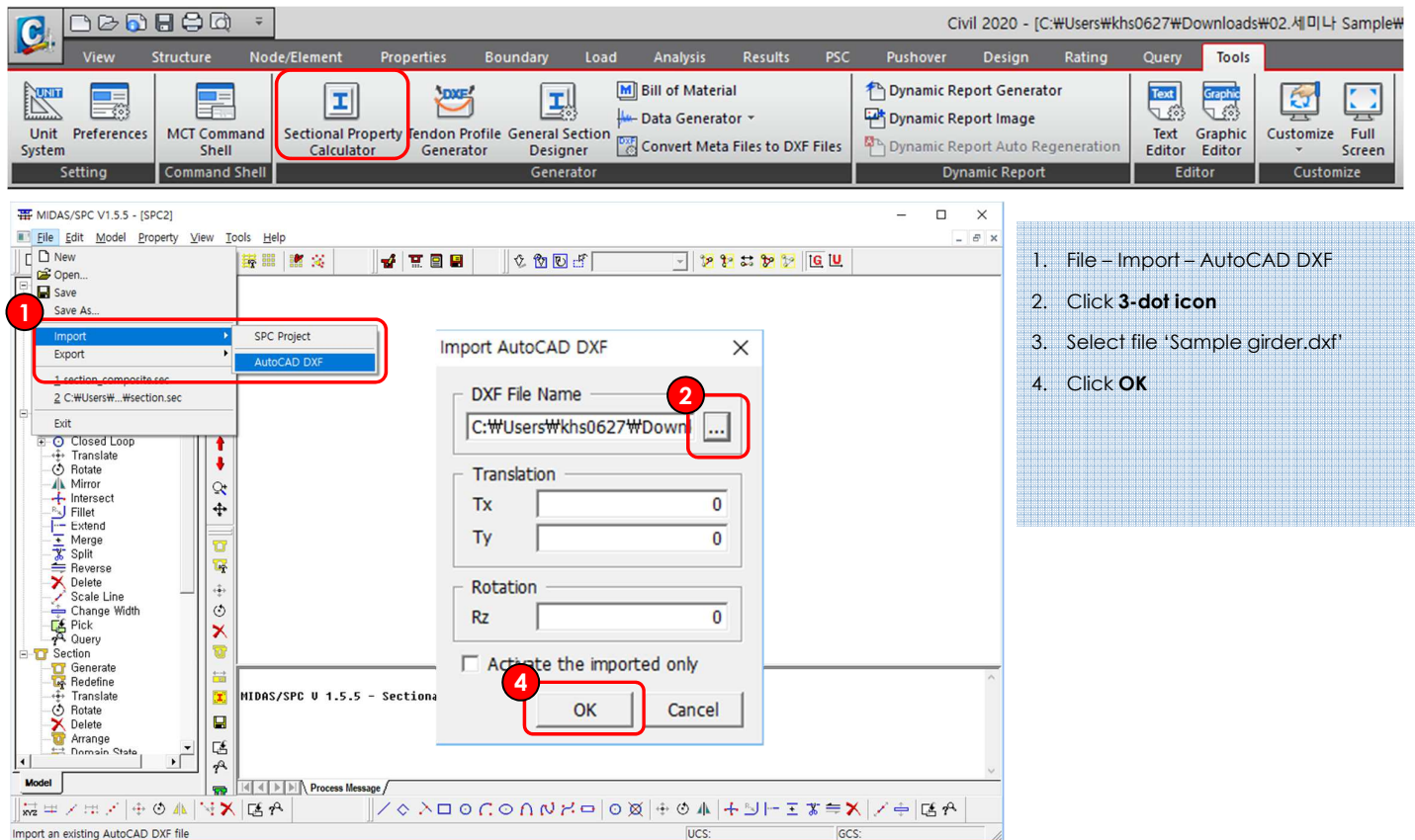
2. Useful Tips for Modeling – Change of Sections



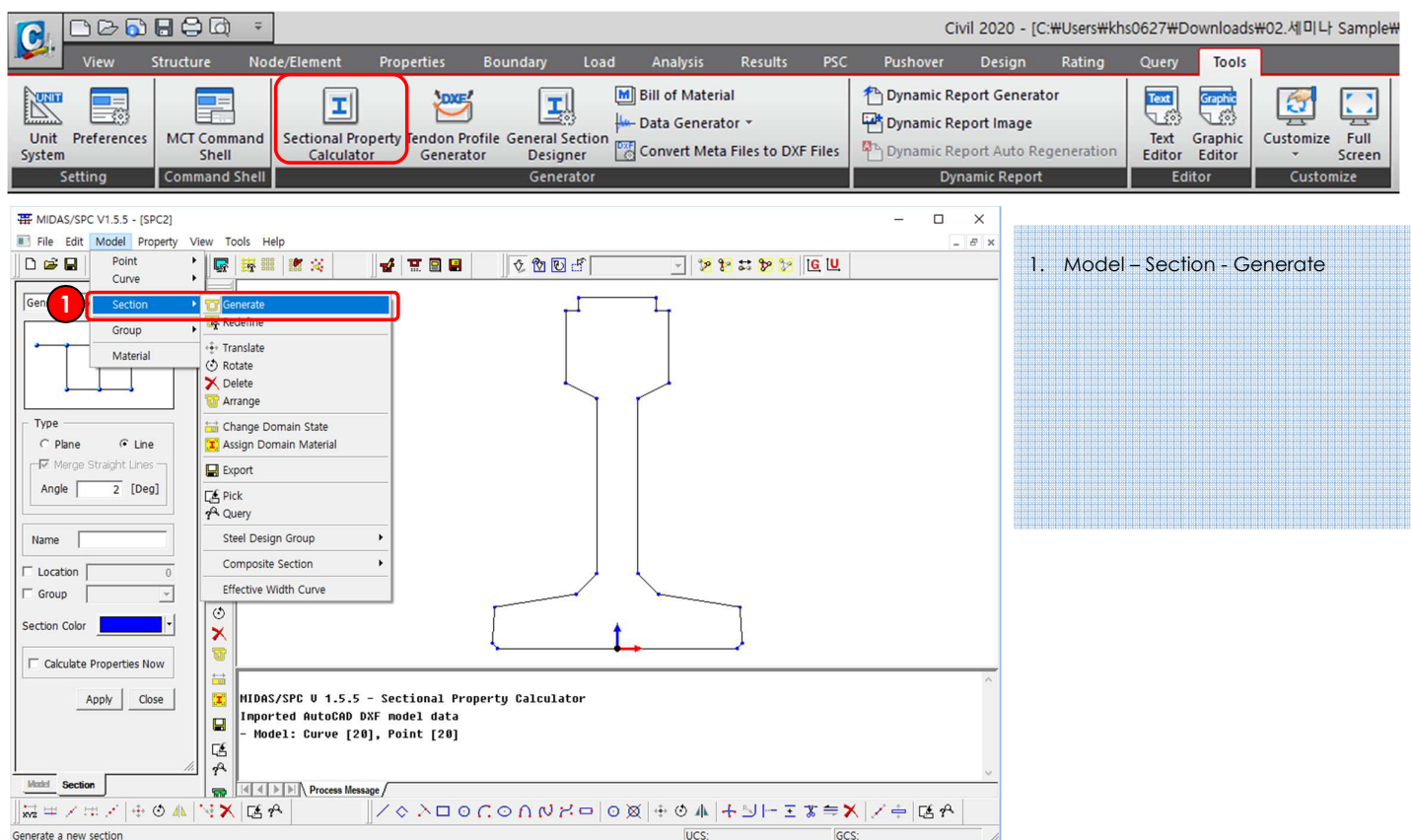
2. Useful Tips for Modeling – Girder Section Creation by SPC



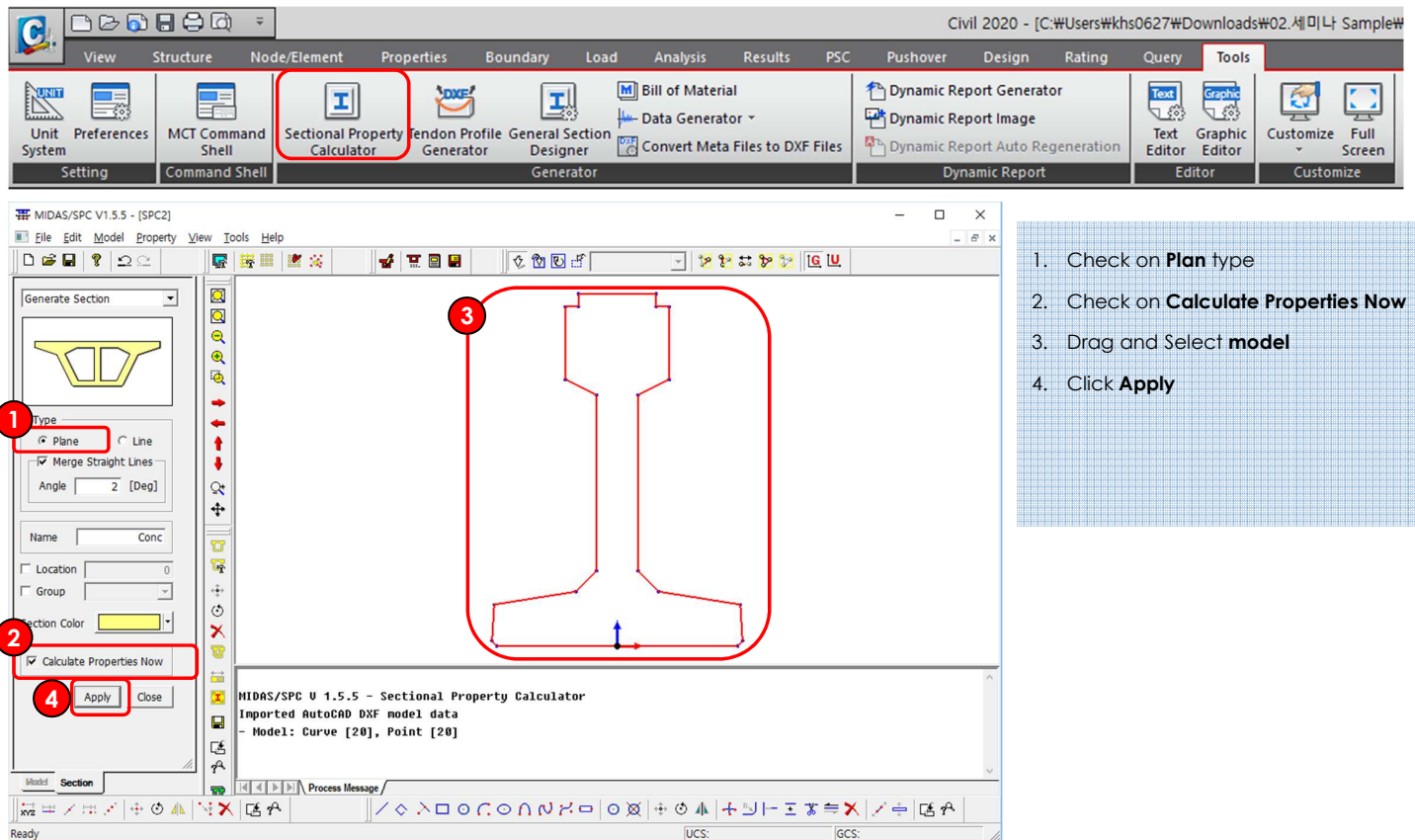
2. Useful Tips for Modeling – Girder Section Creation by SPC



2. Useful Tips for Modeling – Girder Section Creation by SPC



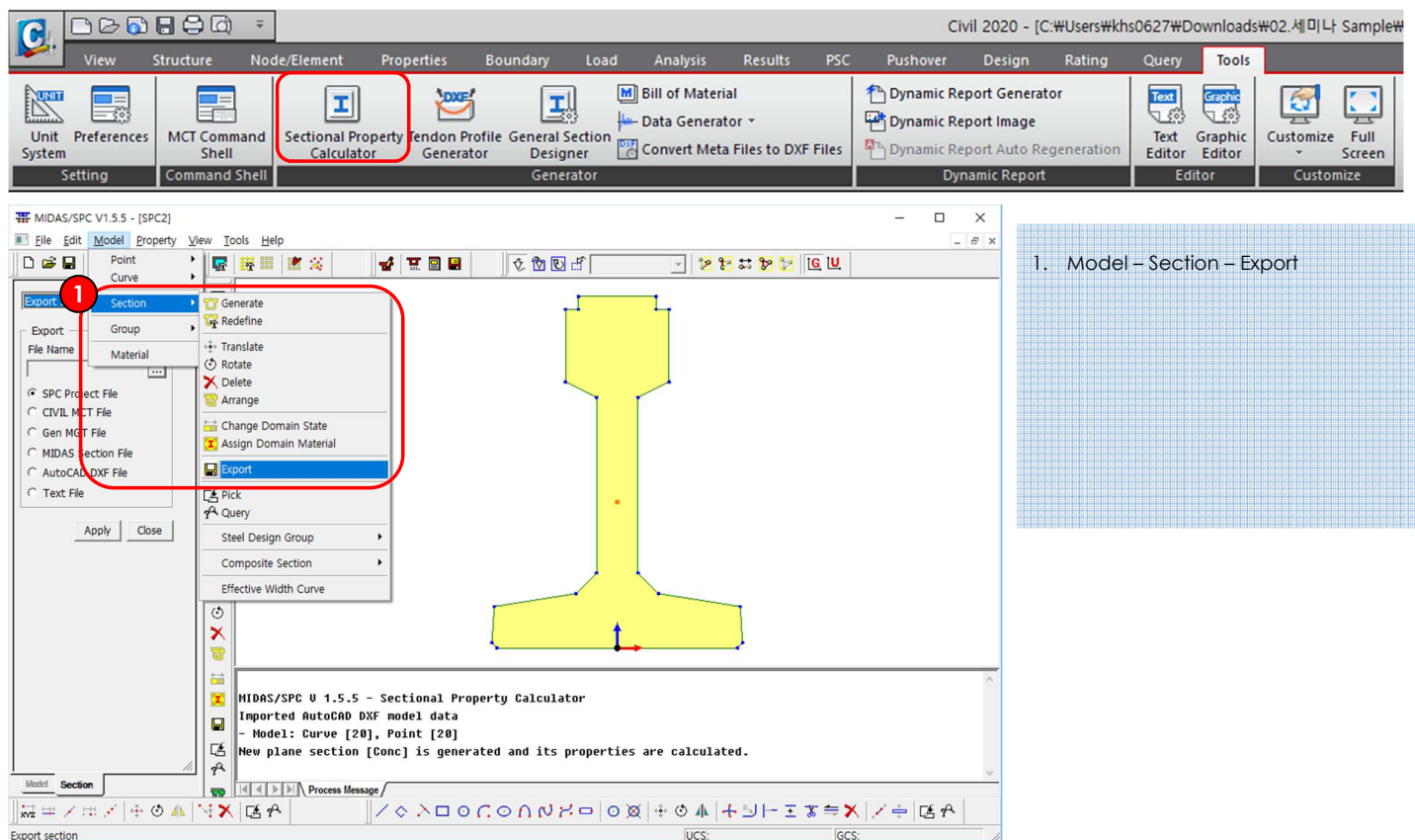
2. Useful Tips for Modeling – Girder Section Creation by SPC



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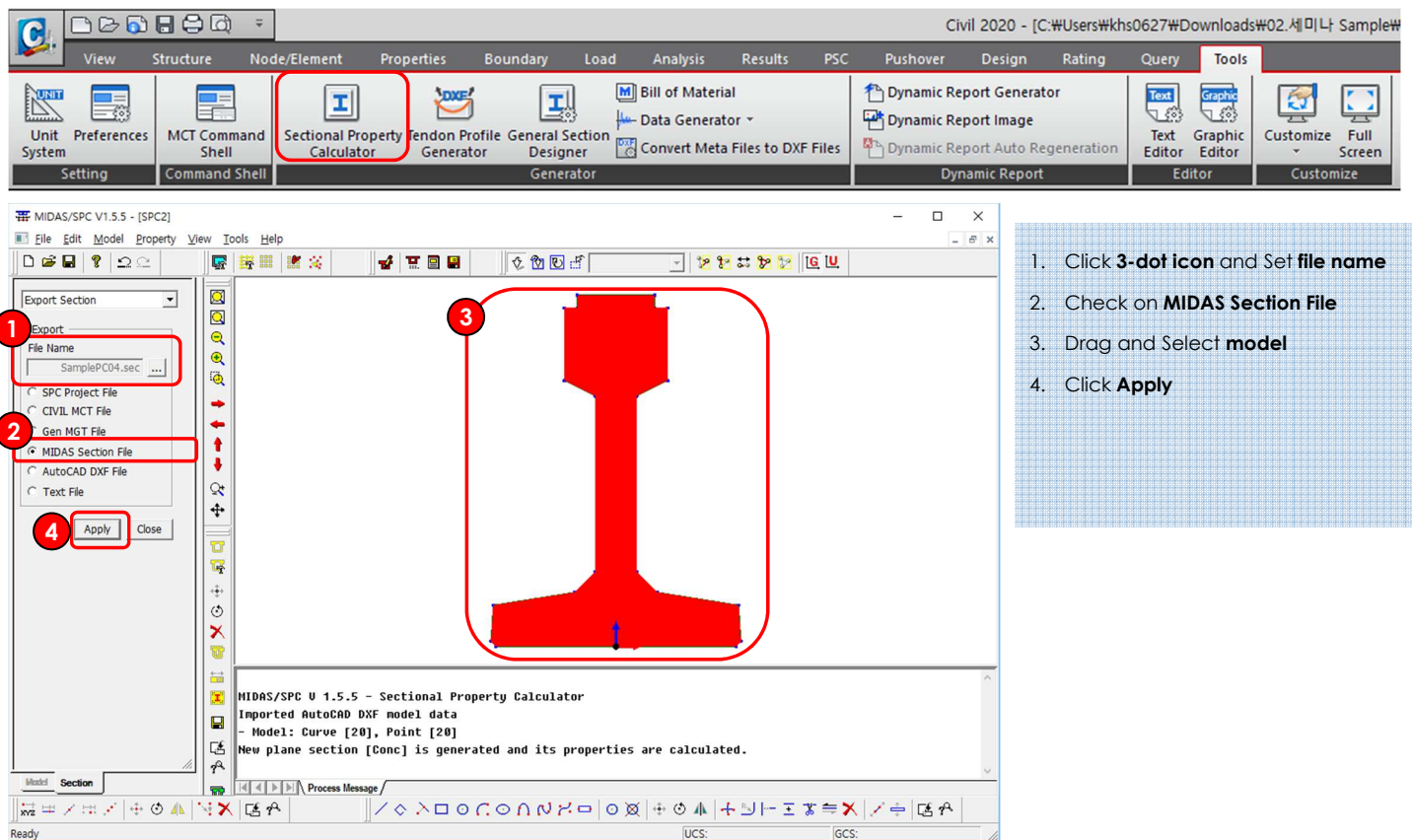
2. Useful Tips for Modeling – Girder Section Creation by SPC



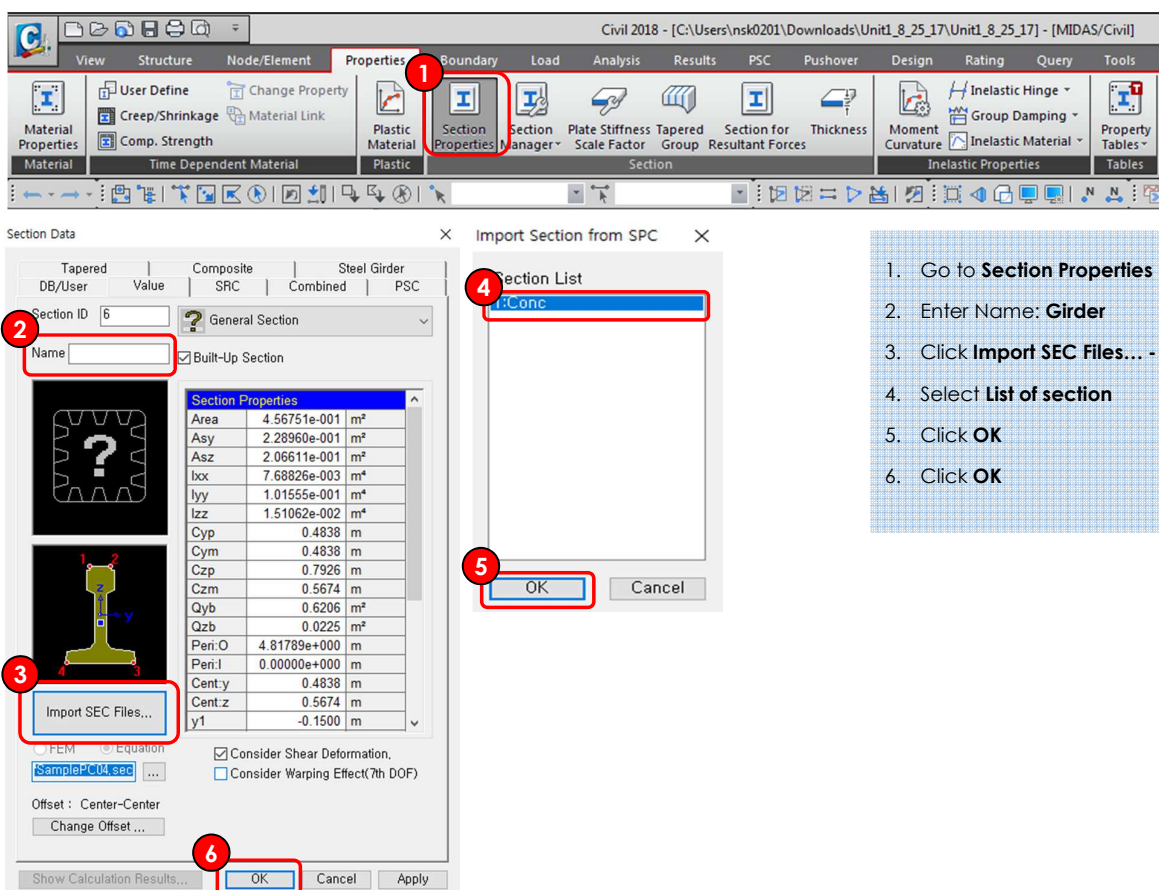
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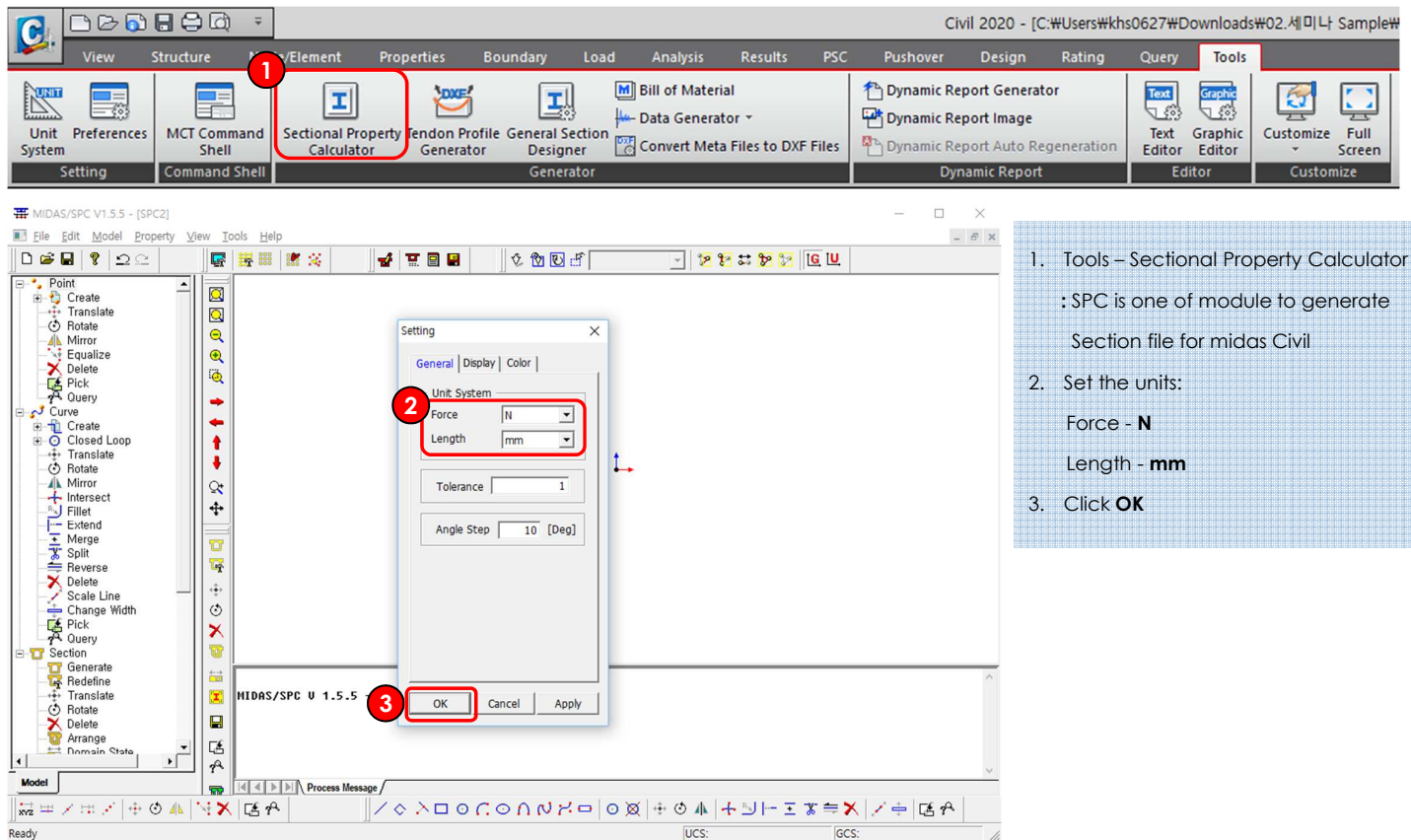
2. Useful Tips for Modeling – Girder Section Creation by SPC



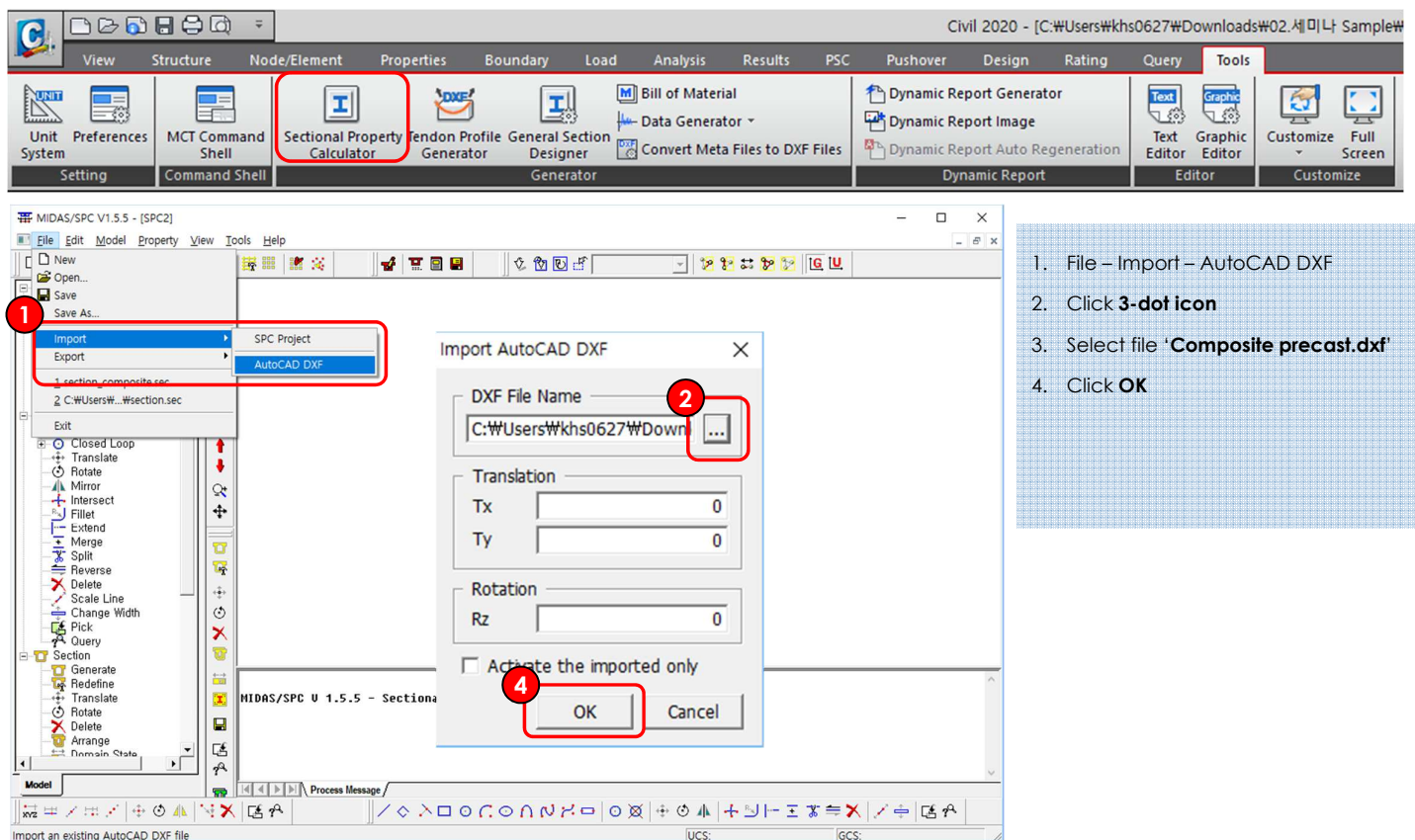
2. Useful Tips for Modeling – Girder in General Section



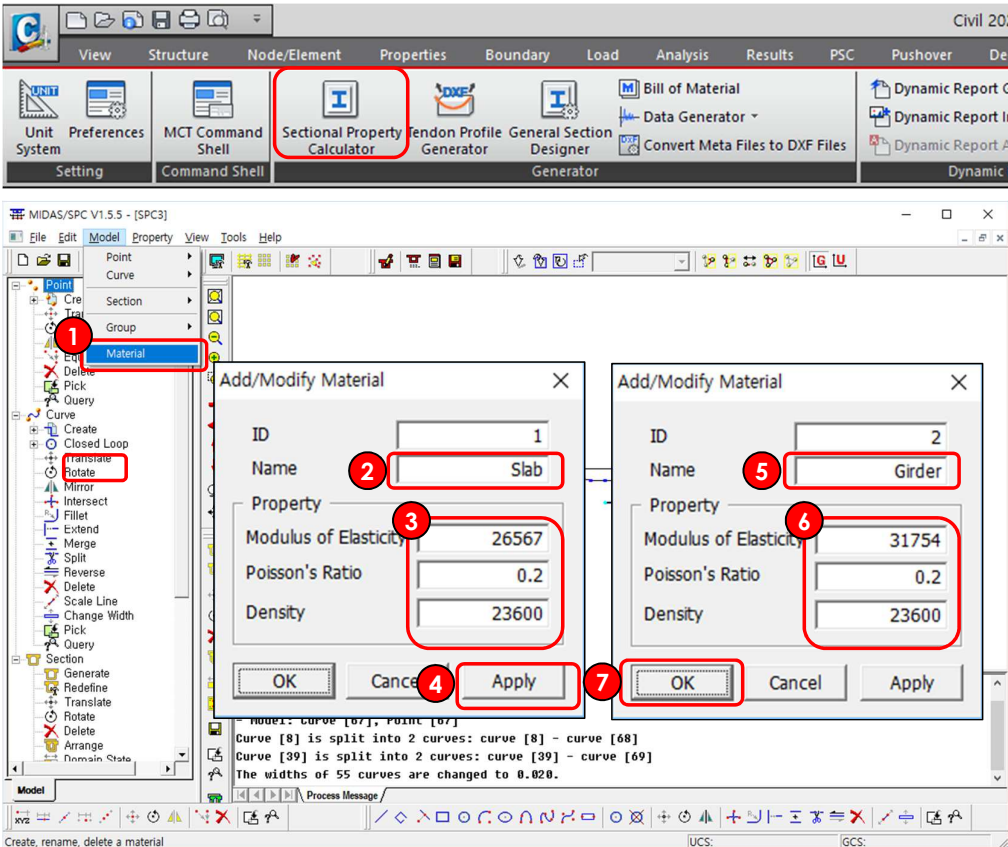
2. Useful Tips for Modeling – Girder Section Creation by SPC



2. Useful Tips for Modeling – Composite Girder Creation by SPC



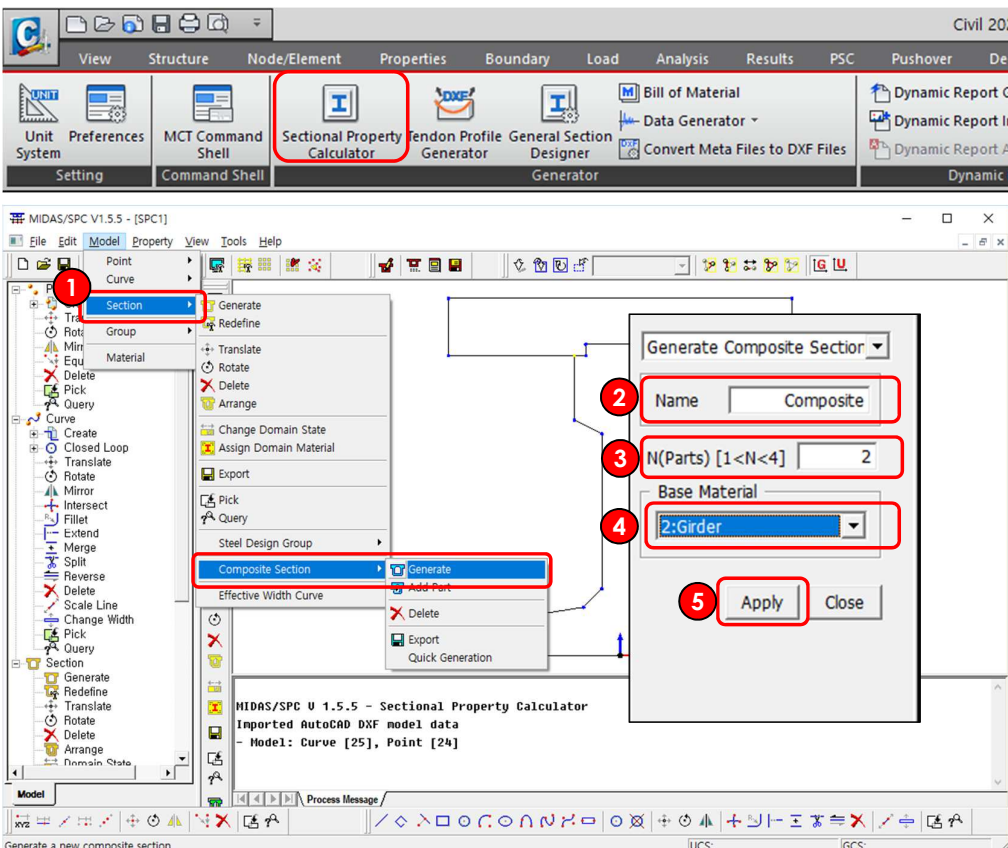
2. Useful Tips for Modeling – Composite Girder Creation by SPC



#. Assigning Material

1. Model – Material – **Add**
2. Enter name: **Slab**
3. Enter
Modulus of Elasticity: **26,567**
Poisson's Ratio: **0.2**
Density: **23,600**
4. Click **Apply**
5. Enter name: **Girder**
6. Enter
Modulus of Elasticity: **31,754**
Poisson's Ratio: **0.2**
Density: **23,600**
7. Click **OK**

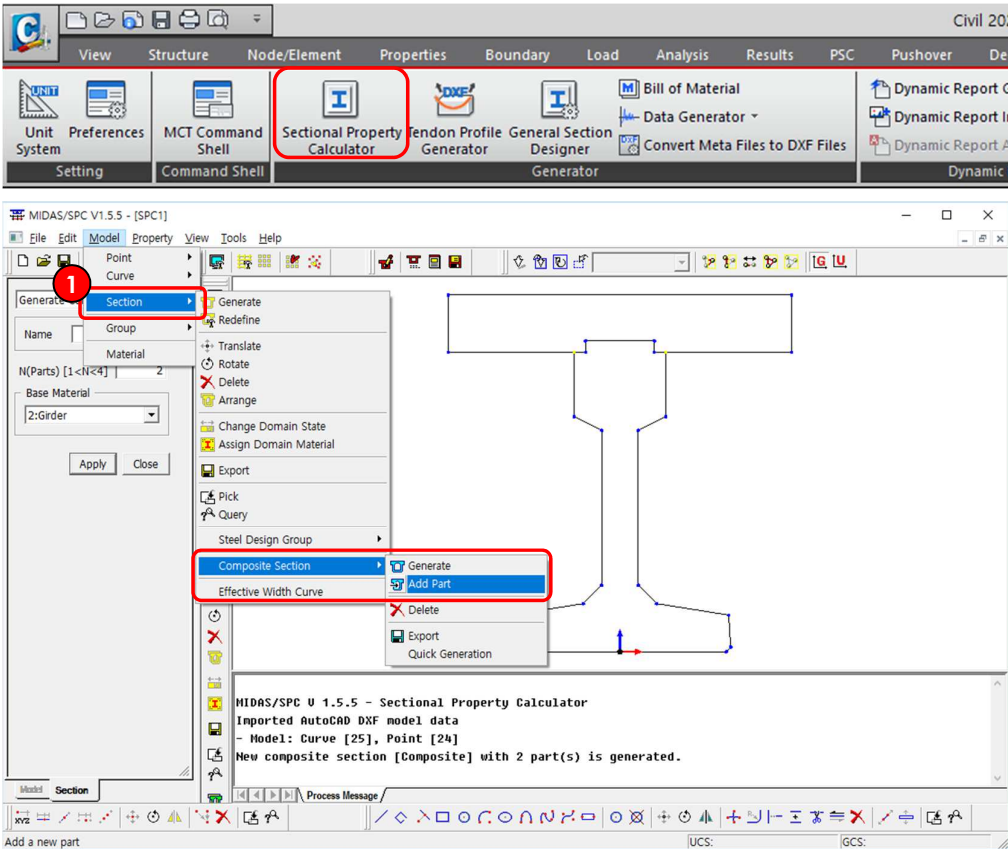
2. Useful Tips for Modeling – Composite Girder Creation by SPC



#. Composite section Generation

1. Model – Section – composite section – **Generate**
2. Enter name: **Composite**
3. Enter Part Number: **2**
4. Select material: **2:Girder**
5. Click **Apply**

2. Useful Tips for Modeling – Composite Girder Creation by SPC

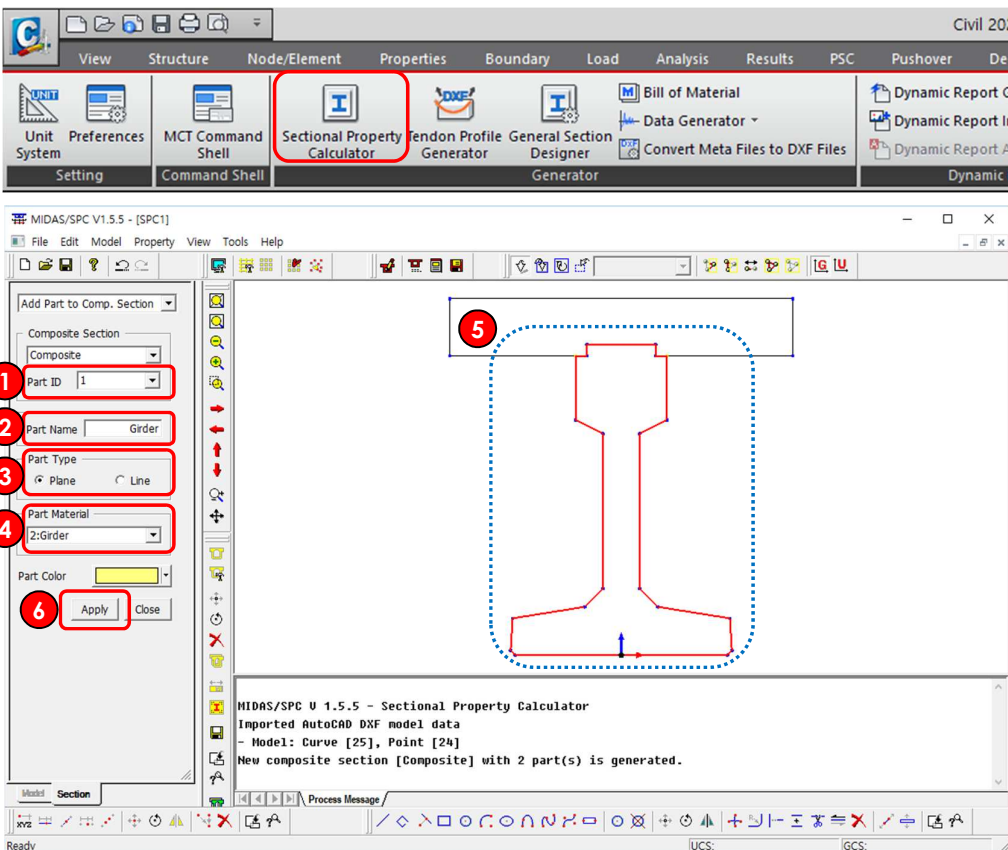


The screenshot shows the MIDAS/SPC V1.5.5 software interface. The 'Section' menu is open, and the 'Composite Section' option is highlighted. The 'Add Part' sub-option is also visible. The main window displays a cross-section of a composite girder. The status bar at the bottom indicates 'Add a new part'.

#. Assigning Part Type and Name

1. Model – Section – composite section – Add Part

2. Useful Tips for Modeling – Composite Girder Creation by SPC

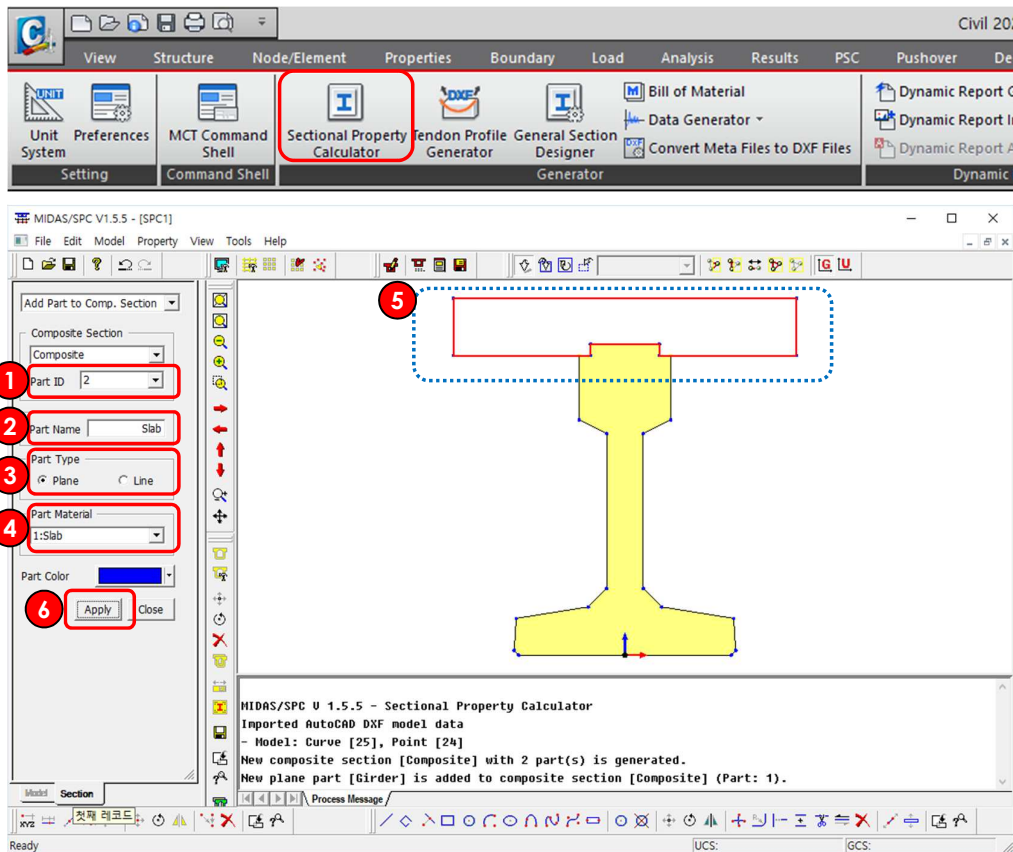


The screenshot shows the MIDAS/SPC V1.5.5 software interface. The 'Add Part to Comp. Section' dialog box is open, and the 'Composite Section' is selected. The 'Part ID' is set to 1, 'Part Name' is 'Girder', 'Part Type' is 'Plane', and 'Part Material' is '2:Girder'. The 'Apply' button is highlighted. The main window displays a cross-section of a composite girder.

#. Assigning Part Type and Name

1. Part ID: 1
2. Part Name: **Girder**
3. Part Type: **Plane**
4. Part Material: **2:Girder**
5. Select **Girder** part
6. Click **Apply**

2. Useful Tips for Modeling – Composite Girder Creation by SPC



#. Assigning Part Type and Name

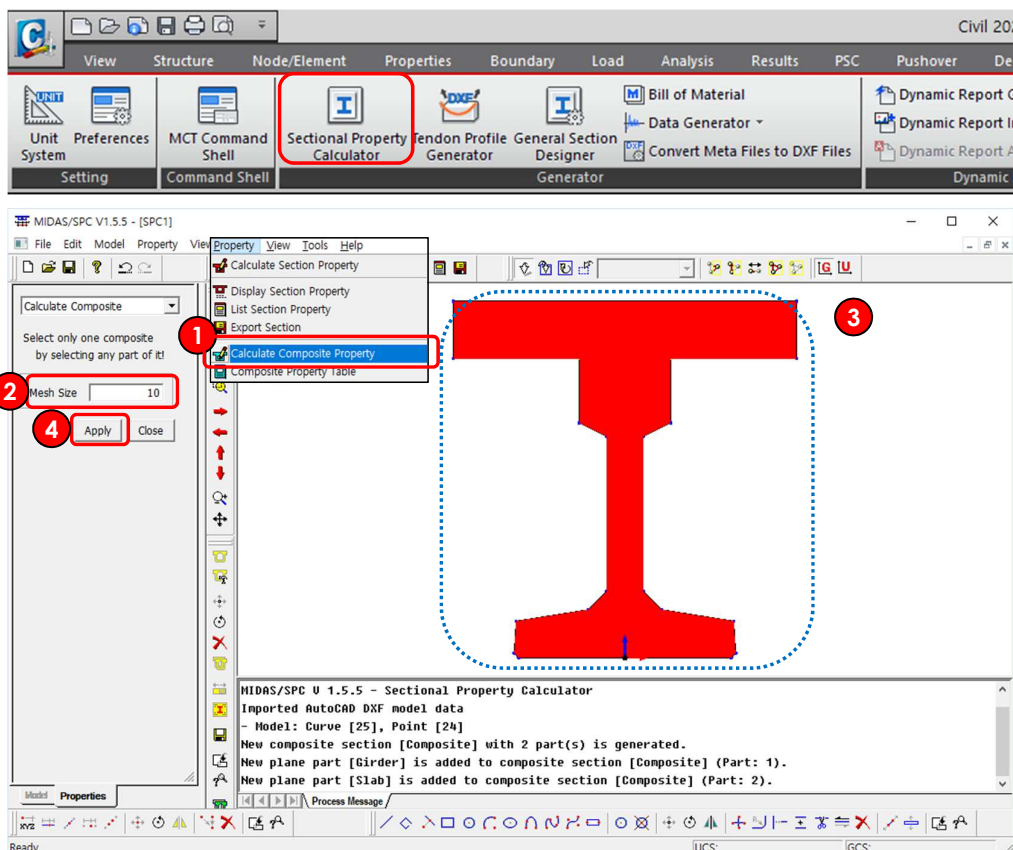
1. Part ID: **2**
2. Part Name: **Slab**
3. Part Type: **Plane**
4. Part Material: **1:Slab**
5. Select **Deck line**
6. Click **Apply**

MIDAS/SPC V1.5.5 - [SPC1]
 File Edit Model Property View Tools Help
 Add Part to Comp. Section
 Composite Section
 Composite
 Part ID: 2
 Part Name: Slab
 Part Type: Plane
 Part Material: 1:Slab
 Part Color: [Blue]
 Apply Close
 MIDAS/SPC V 1.5.5 - Sectional Property Calculator
 Imported AutoCAD DXF model data
 - Model: Curve [25], Point [24]
 New composite section [Composite] with 2 part(s) is generated.
 New plane part [Girder] is added to composite section [Composite] (Part: 1).
 Process Message
 Ready UCS: GCS:

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2. Useful Tips for Modeling – Composite Girder Creation by SPC



#. Calculation of Properties

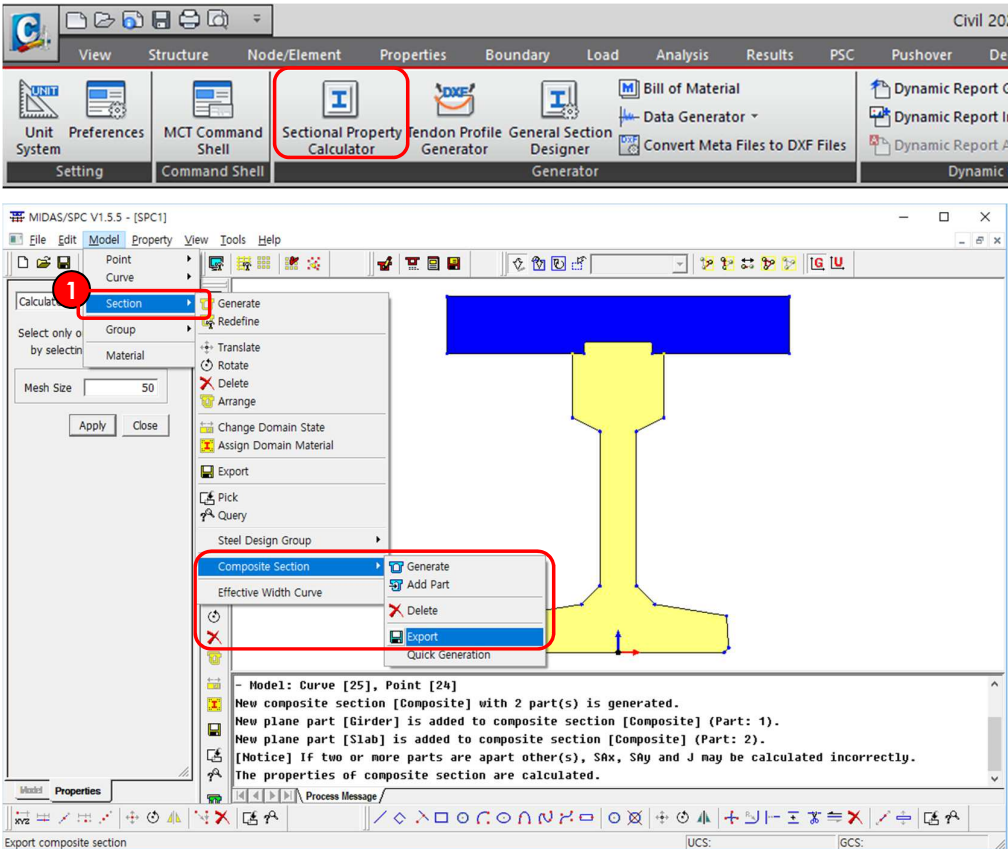
1. Property – Calculate Composite Property
2. Mesh Size: **10**
3. Select **All members**
4. Click **Apply**

MIDAS/SPC V1.5.5 - [SPC1]
 File Edit Model Property View Tools Help
 Calculate Section Property
 Calculate Composite
 Select only one composite by selecting any part of it!
 Calculate Composite Property
 Composite Property table
 Mesh Size: 10
 Apply Close
 MIDAS/SPC V 1.5.5 - Sectional Property Calculator
 Imported AutoCAD DXF model data
 - Model: Curve [25], Point [24]
 New composite section [Composite] with 2 part(s) is generated.
 New plane part [Girder] is added to composite section [Composite] (Part: 1).
 New plane part [Slab] is added to composite section [Composite] (Part: 2).
 Process Message
 Ready UCS: GCS:

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2. Useful Tips for Modeling – Composite Girder Creation by SPC



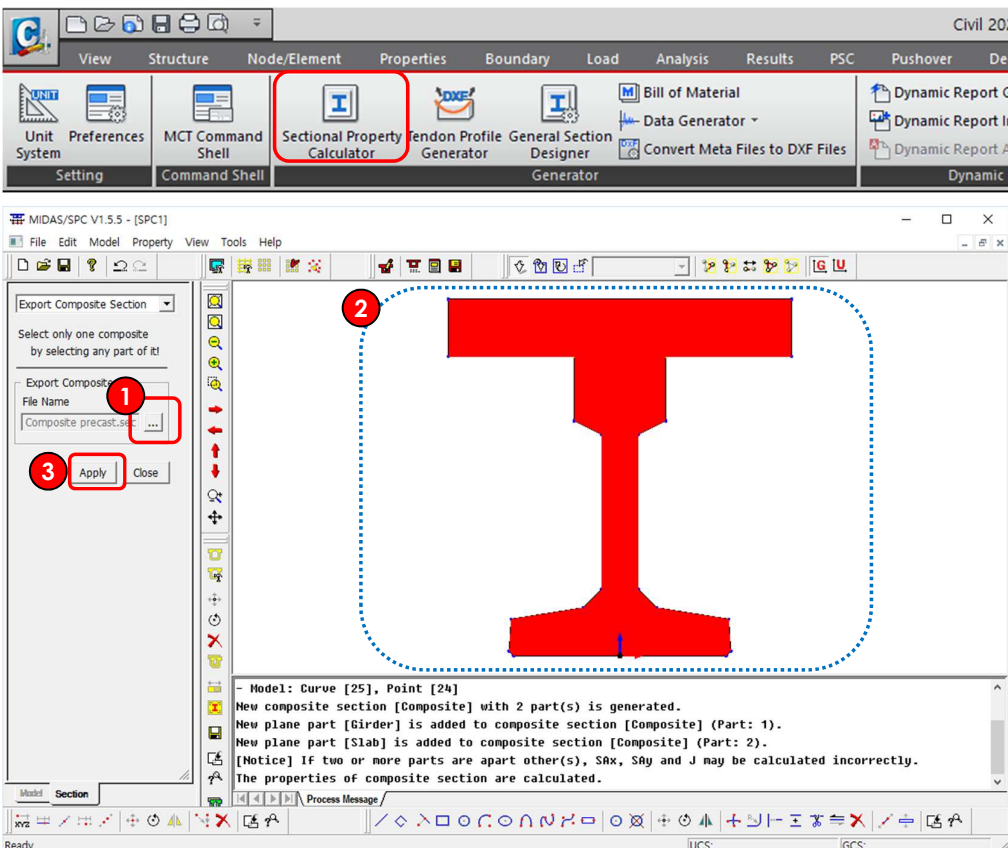
The screenshot shows the MIDAS/SPC V1.5.5 software interface. The 'Section' menu is open, and the 'Composite Section' option is highlighted. The 'Export' option is also visible. The main window displays a yellow composite girder model. The status bar at the bottom indicates 'Export composite section'.

1. Section – Composite Section - Export

#. Calculation of Properties

1. Section – Composite Section - Export

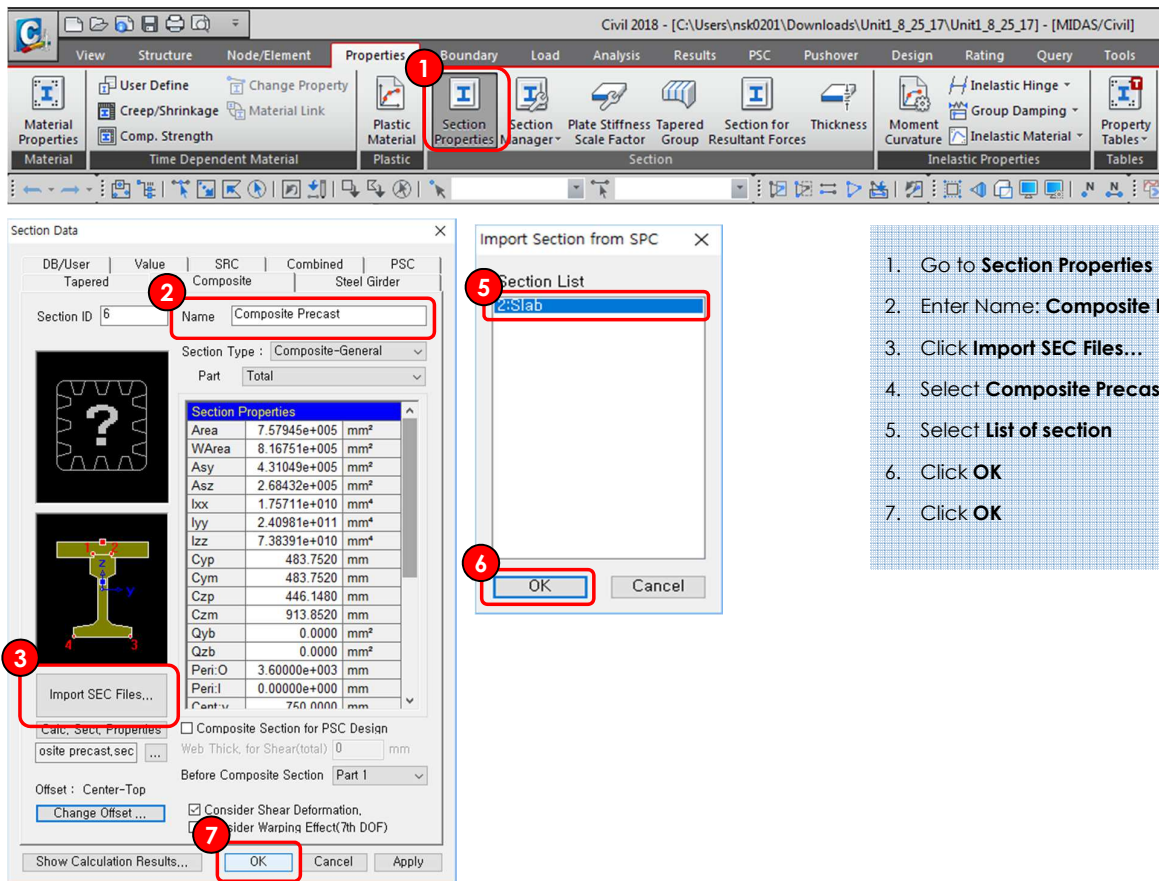
2. Useful Tips for Modeling – Composite Girder Creation by SPC



The screenshot shows the MIDAS/SPC V1.5.5 software interface. The 'Export Composite Section' dialog box is open, and the 'File Name' field is highlighted. The 'Apply' button is also highlighted. The main window displays a red composite girder model. The status bar at the bottom indicates 'Ready'.

1. Click 3-dot icon and Set file name
2. Drag and Select model
3. Click Apply

2. Useful Tips for Modeling – Composite in General Section

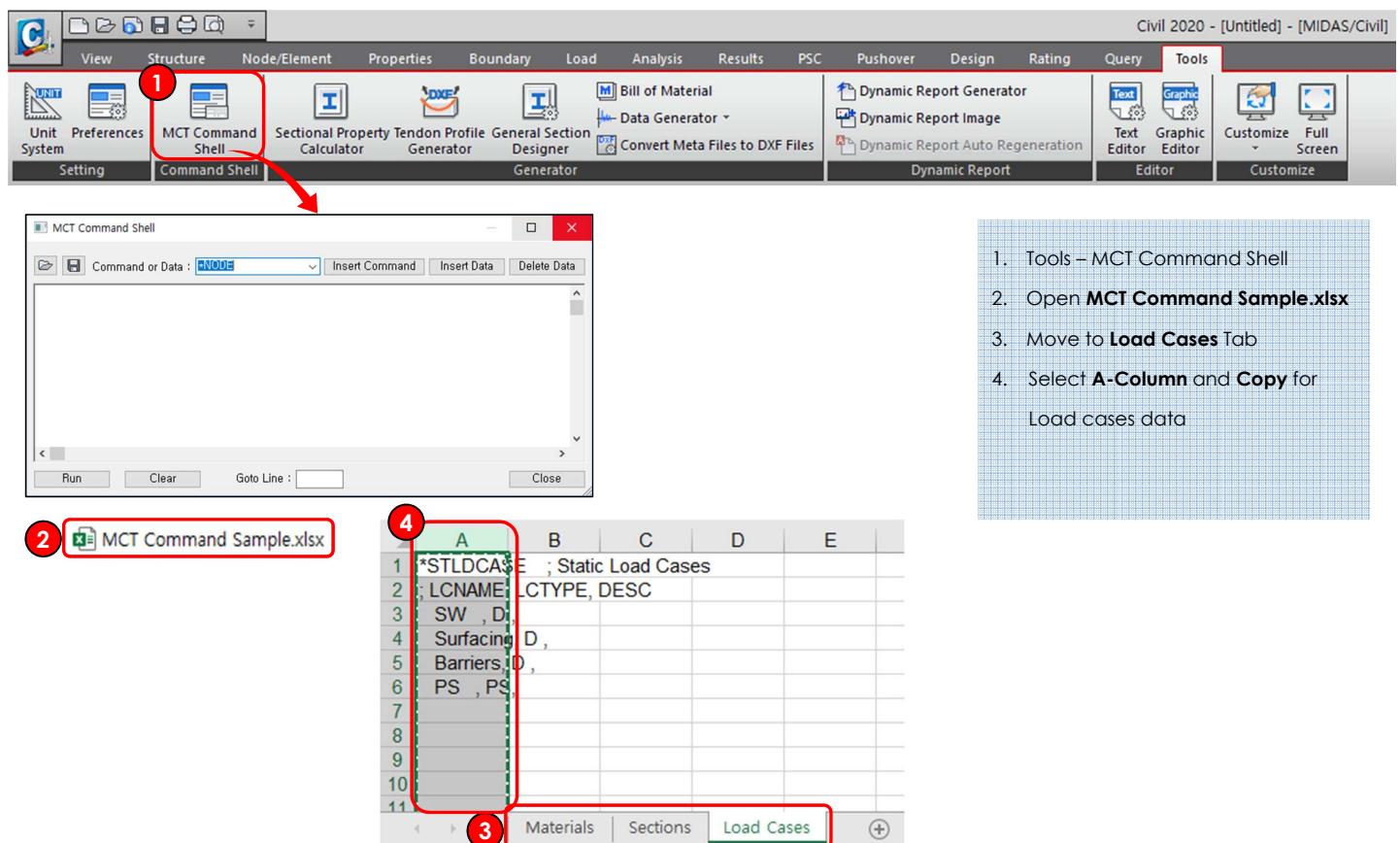


1. Go to **Section Properties - Add - Composite** tab
2. Enter Name: **Composite Precast**
3. Click **Import SEC Files...**
4. Select **Composite Precast.sec**
5. Select **List of section**
6. Click **OK**
7. Click **OK**

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2. Useful Tips for Modeling – MCT: Load Cases Creation

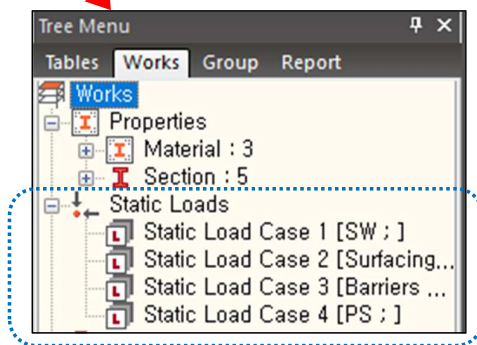
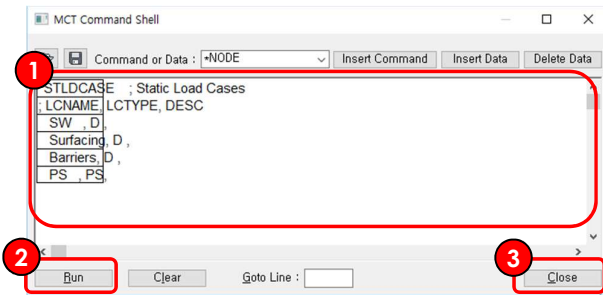
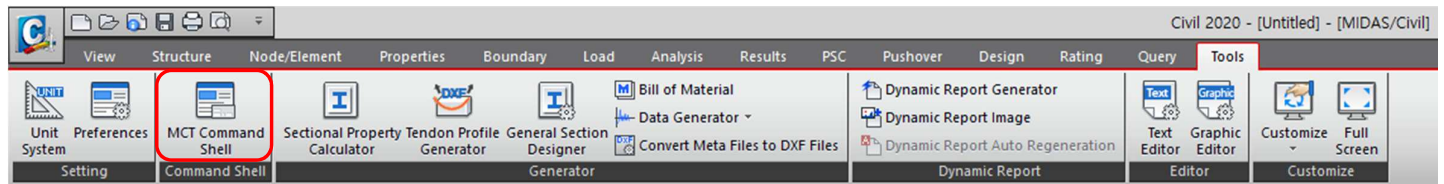


1. Tools – **MCT Command Shell**
2. Open **MCT Command Sample.xlsx**
3. Move to **Load Cases** Tab
4. Select **A-Column** and **Copy** for Load cases data

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2. Useful Tips for Modeling – MCT: Load Cases Creation



1. Paste **Command** from excel
2. Click **Run**
Check Work Tree menu. There will be information of Materials generated by MCT Command Shell.
Those data can be extracted from midas Civil file. (xxx.mcb)
All model information can be saved as MCT format command and re-used in midas Civil
3. Click **Close**