

Monitoring and advisory services
Facilities upkeep
Facilities development



Eastern District Cultural Square - TO Experience Sharing

FACO KO
TO(A)/AB1/13

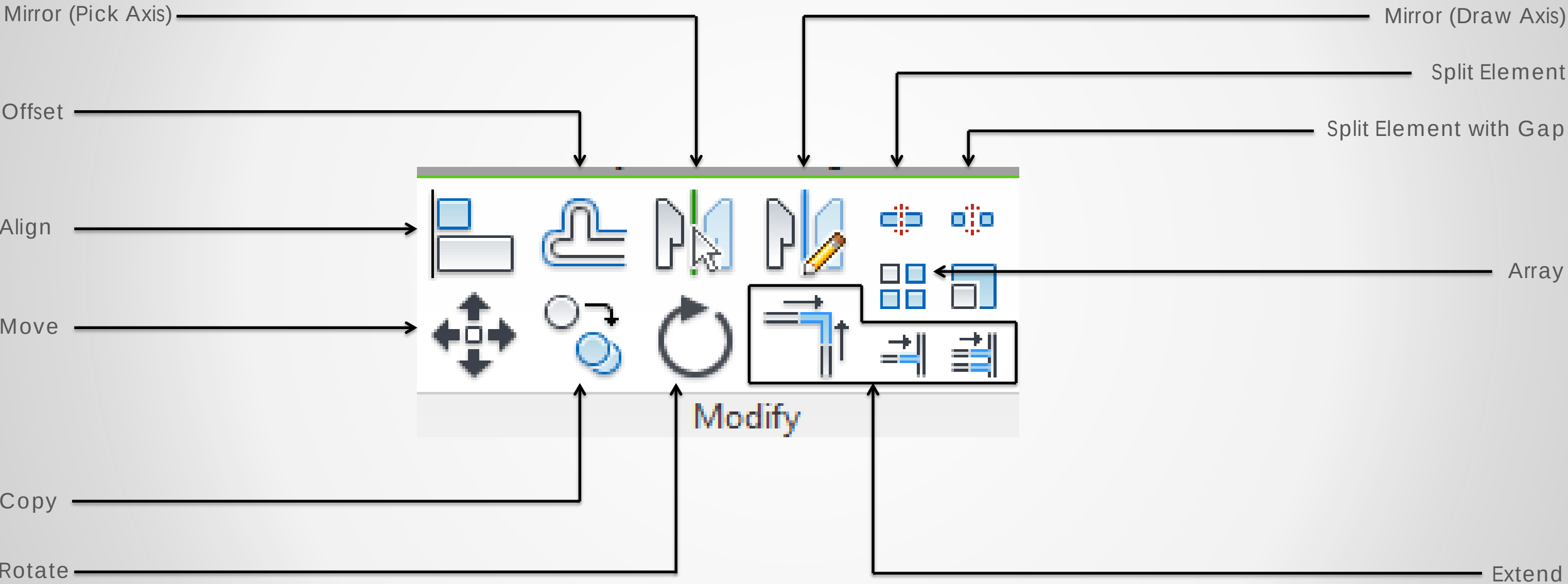
Billy TSOI
TO(A)/AB1/14

London Blackfriars station, courtesy of Network Rail and Jacobs

Topics

- 1. Sense of 3D**
- 2. Co-operation with other branch**
- 3. Aluminum Panel standardization work flow**

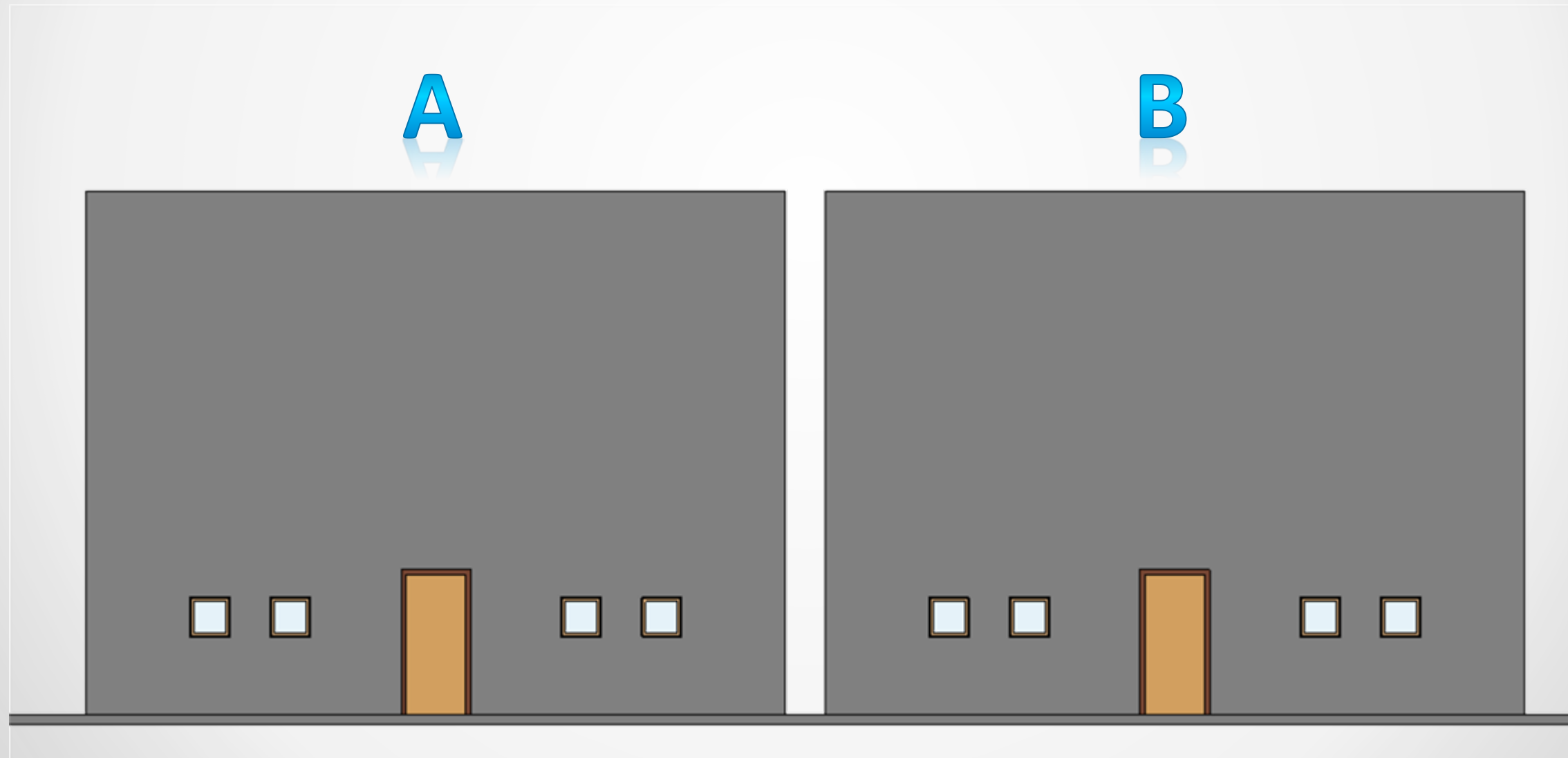
Sense of 3D



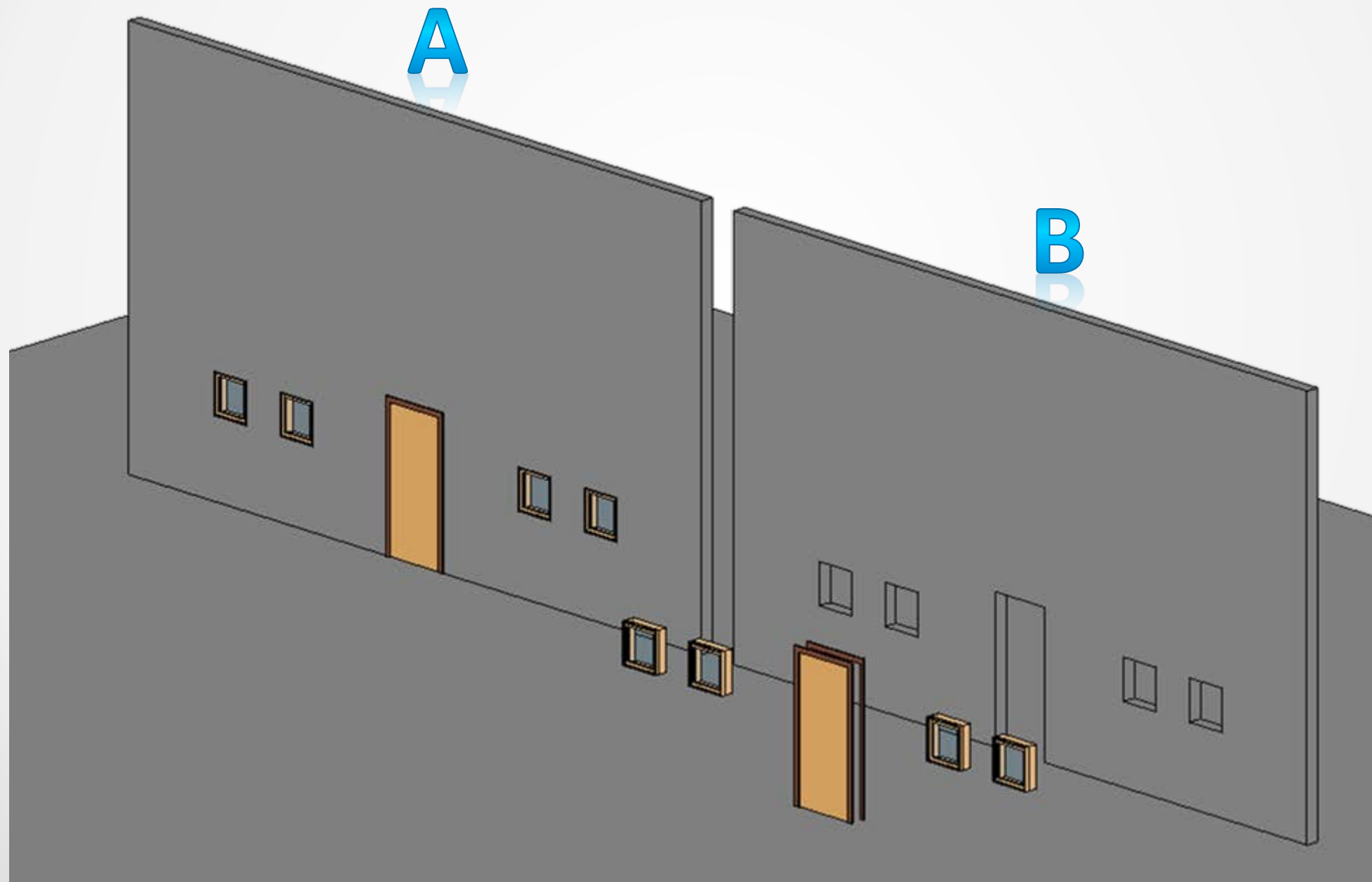
Command for Drawing lines in Revit

Using of 3D View

Can you find the differences of two view below?

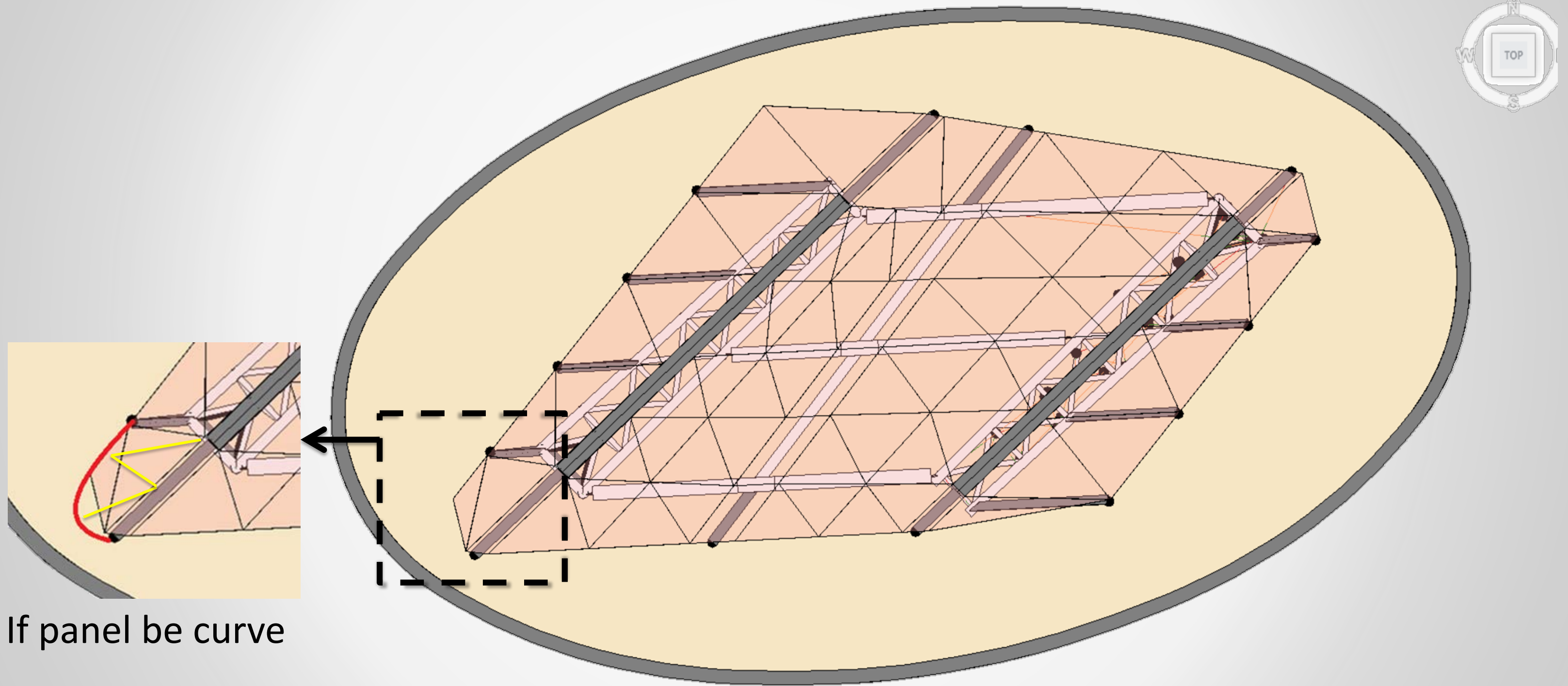


In Fact



Co-operation with other branch

Shelter 1 build up by BIM



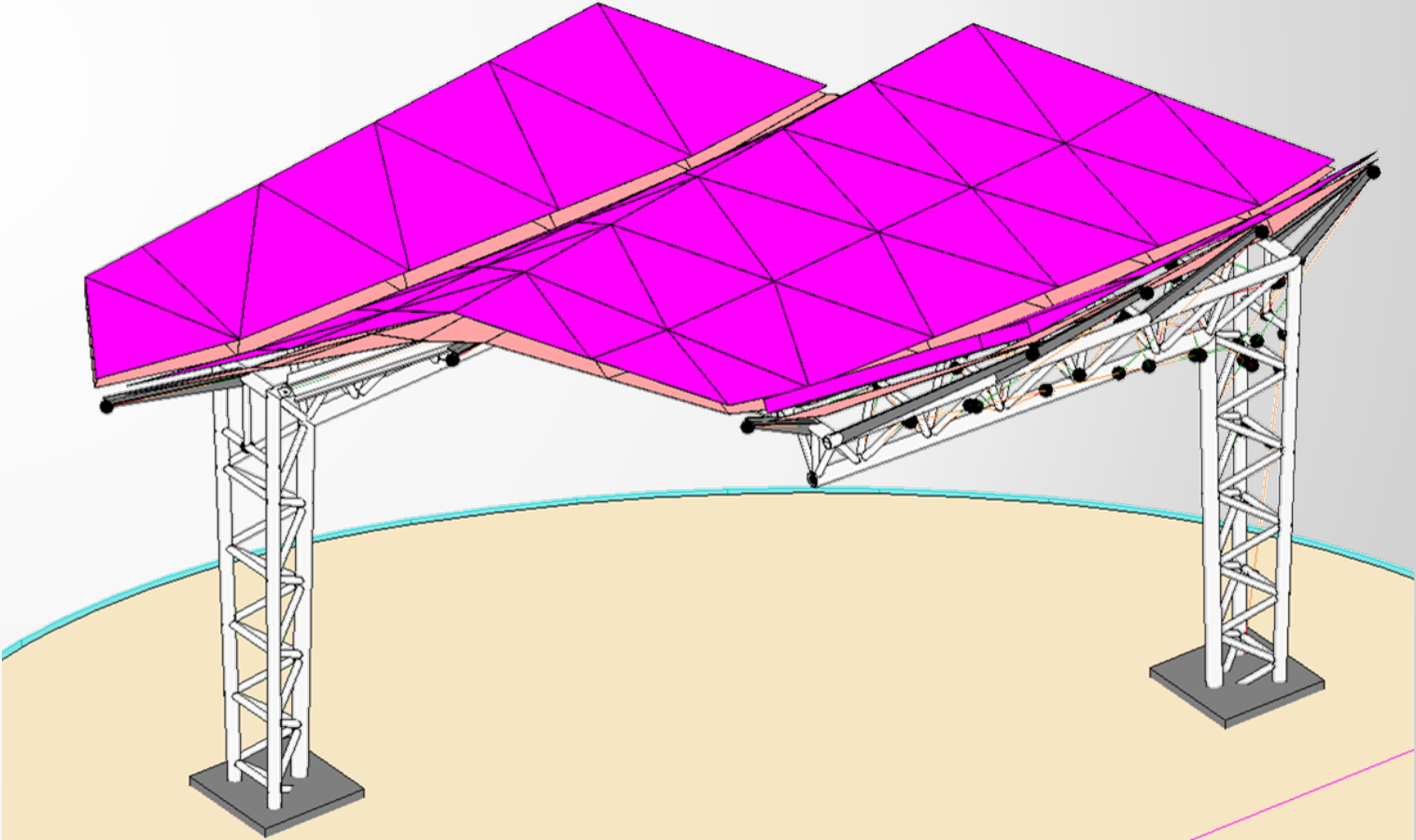
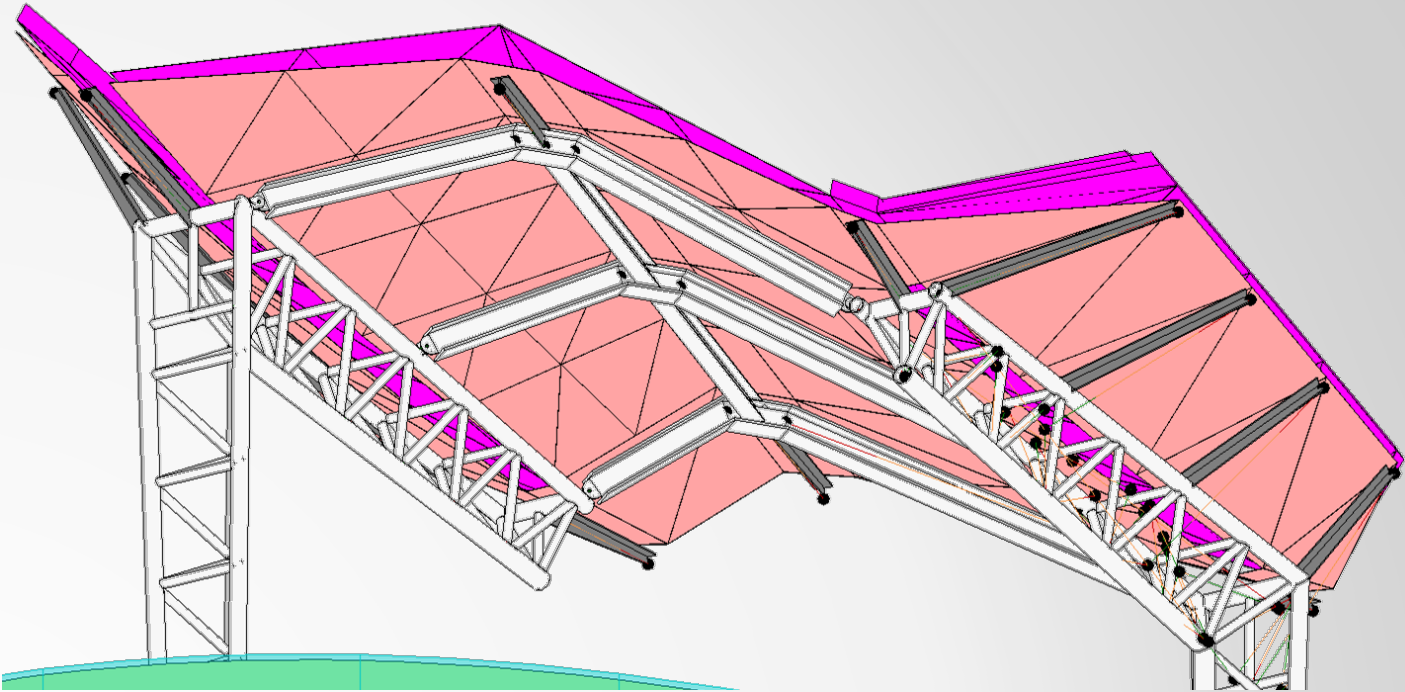
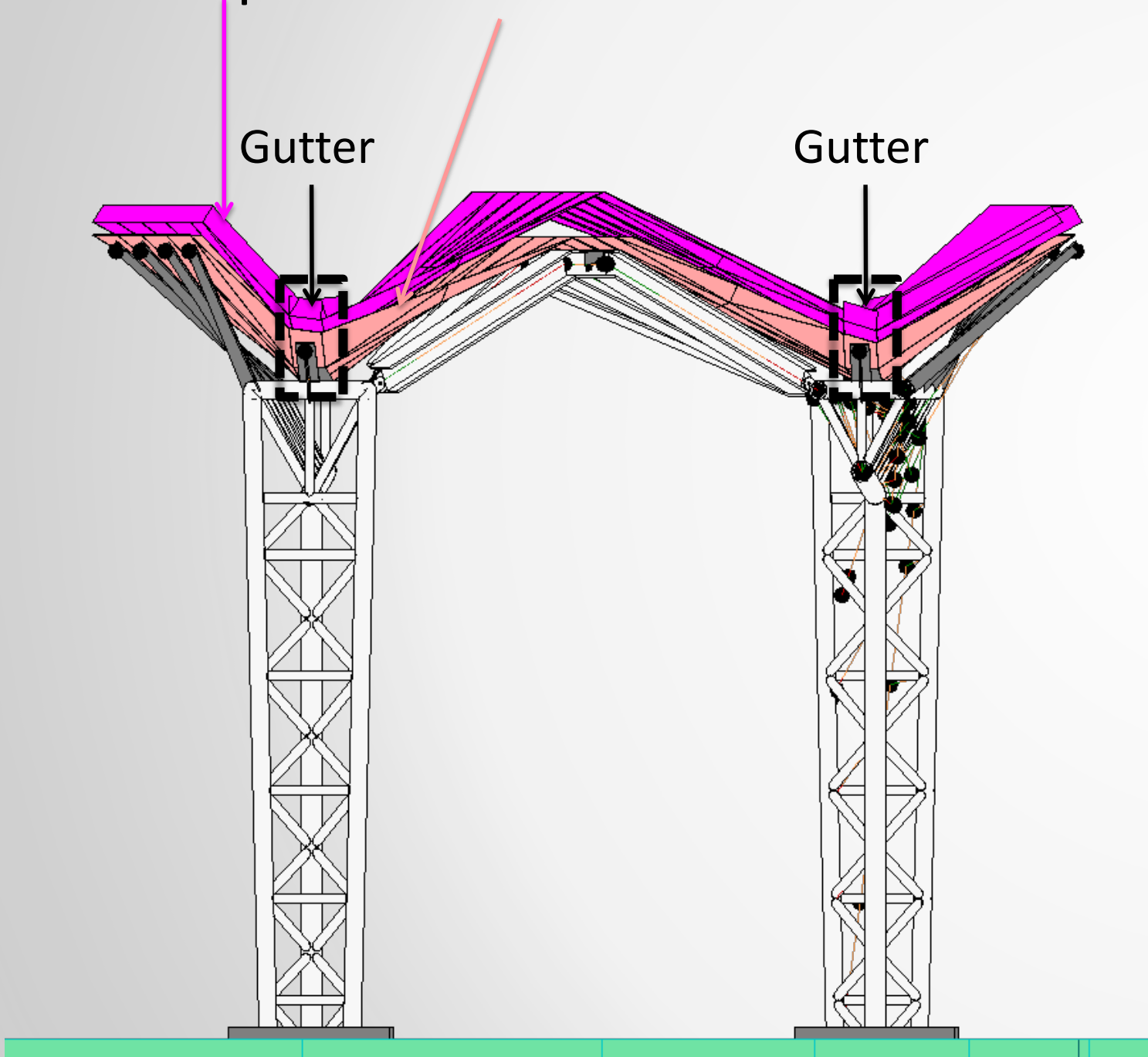
If panel be curve

Shelter 1 build up by BIM

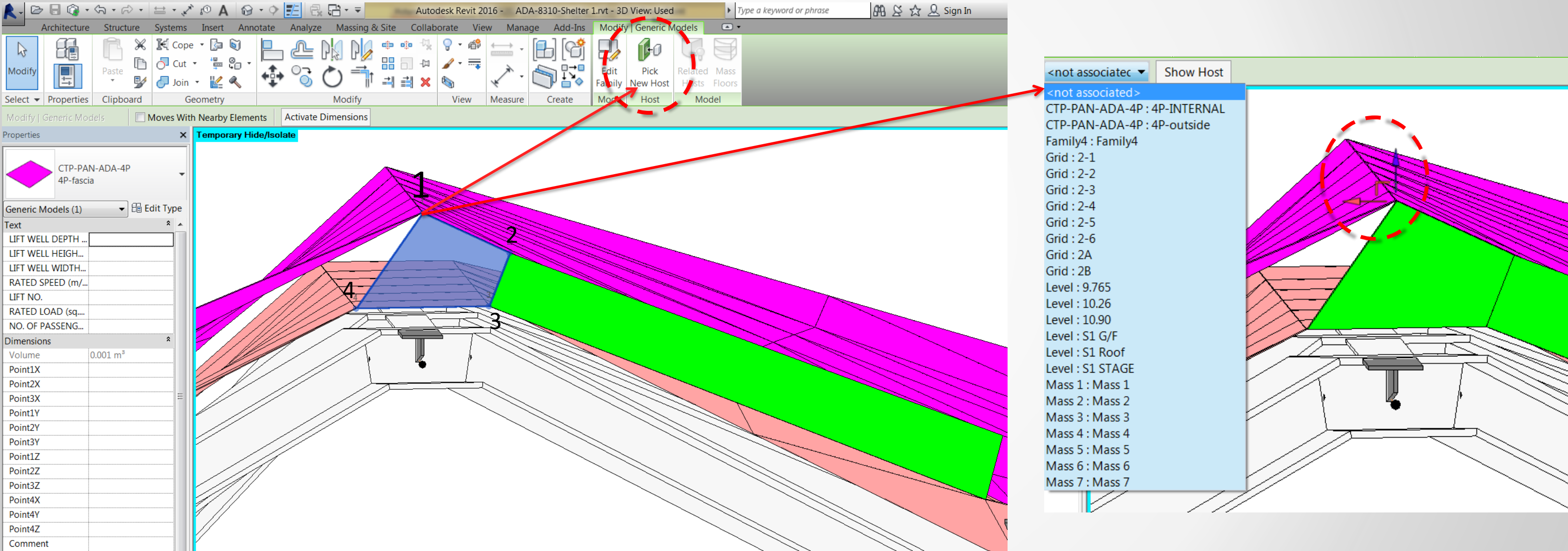
Top & Bottom Panel

Gutter

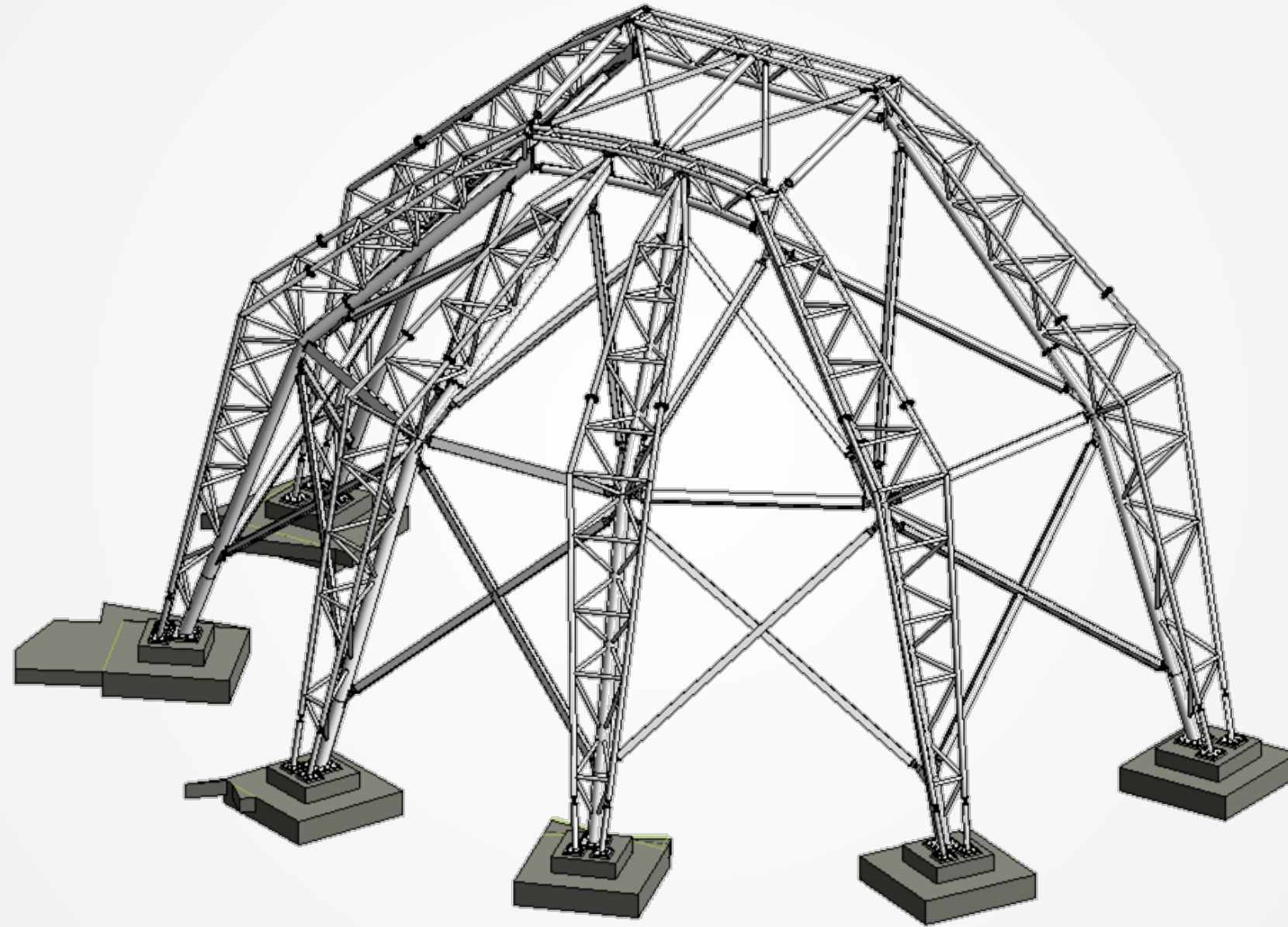
Gutter



Shelter 1 build up by BIM

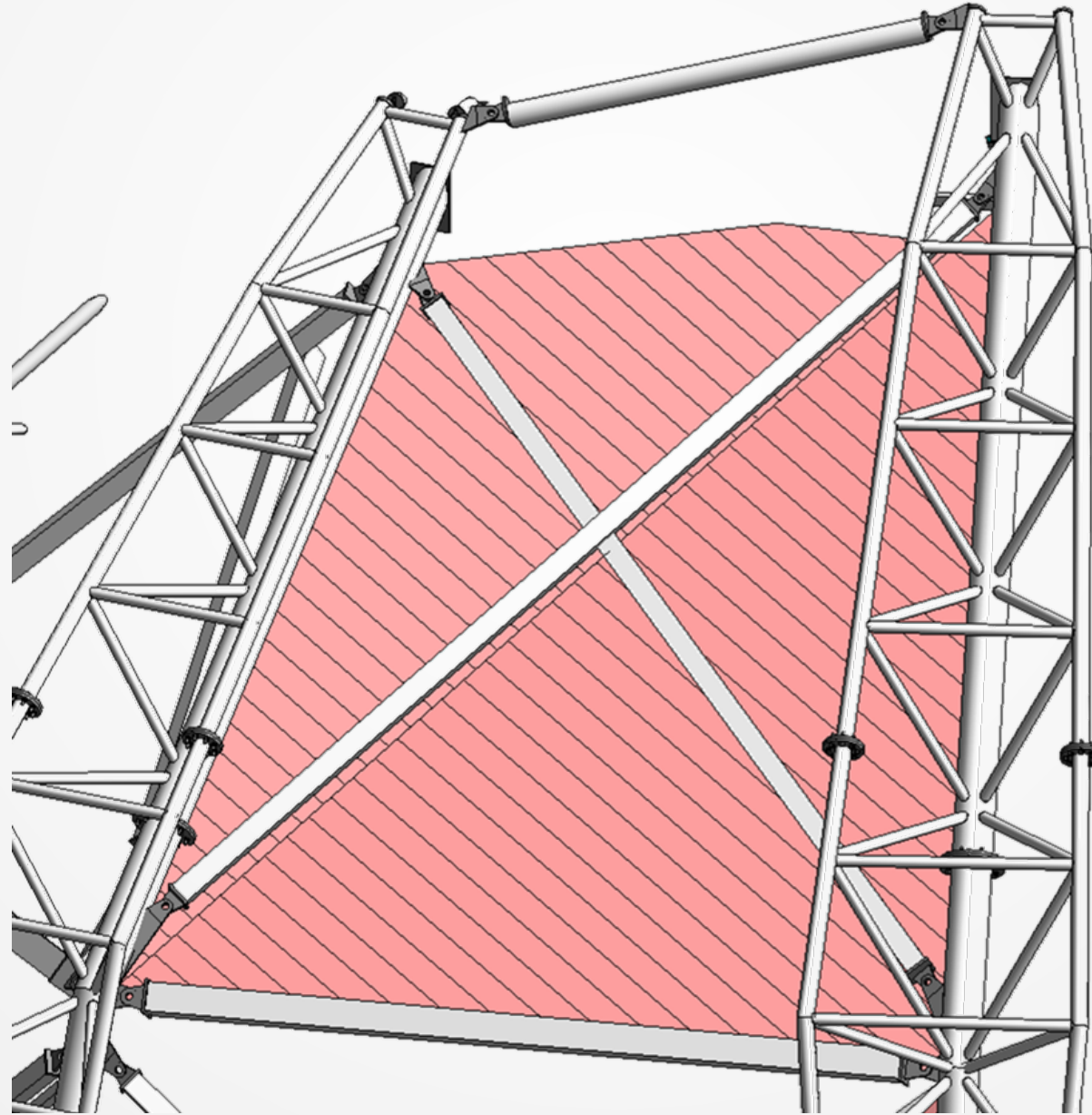


Aluminum Panel standardization work flow

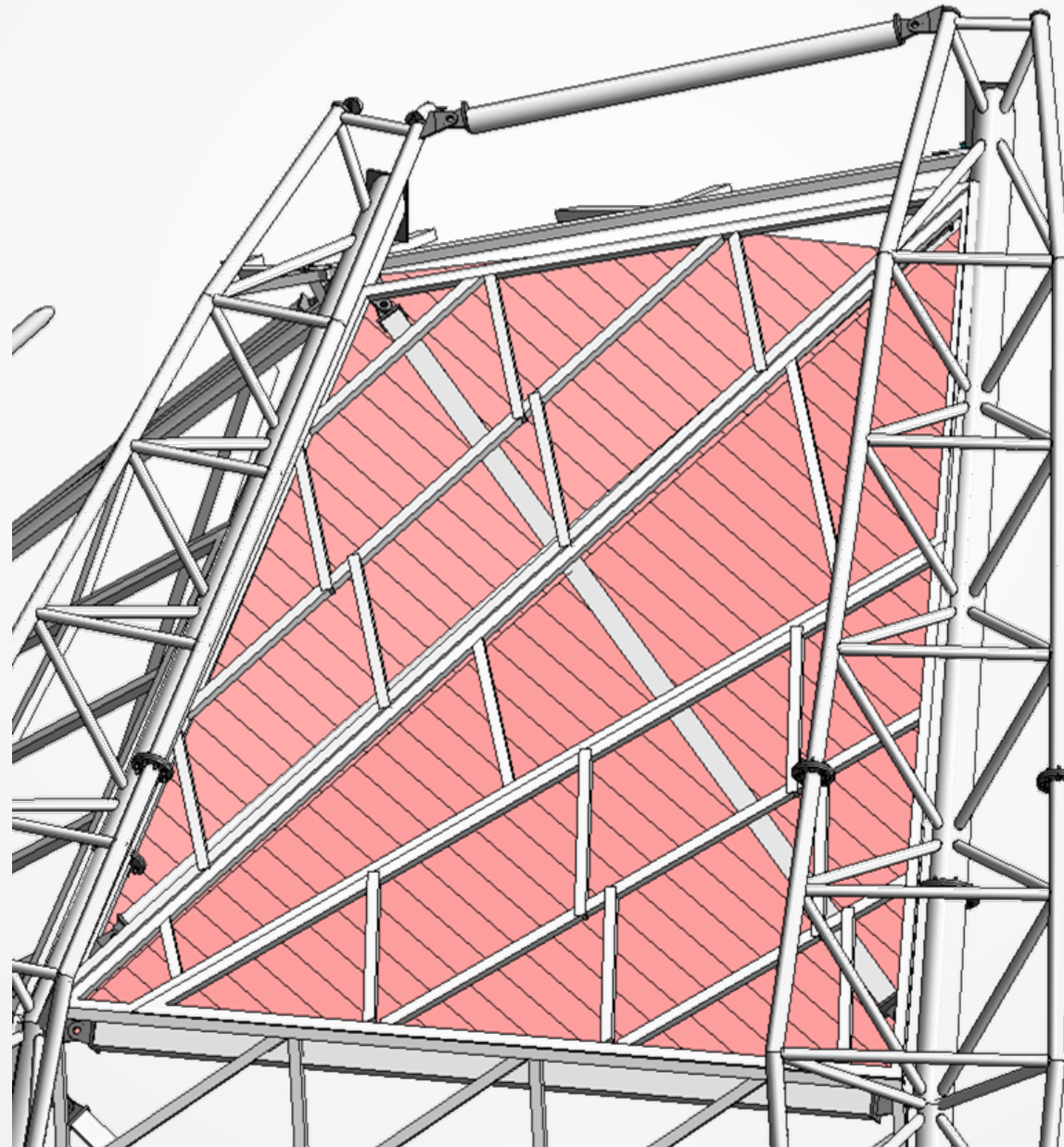


Structural Branch built the metal frame

Drawing a 3 point panel above the structure

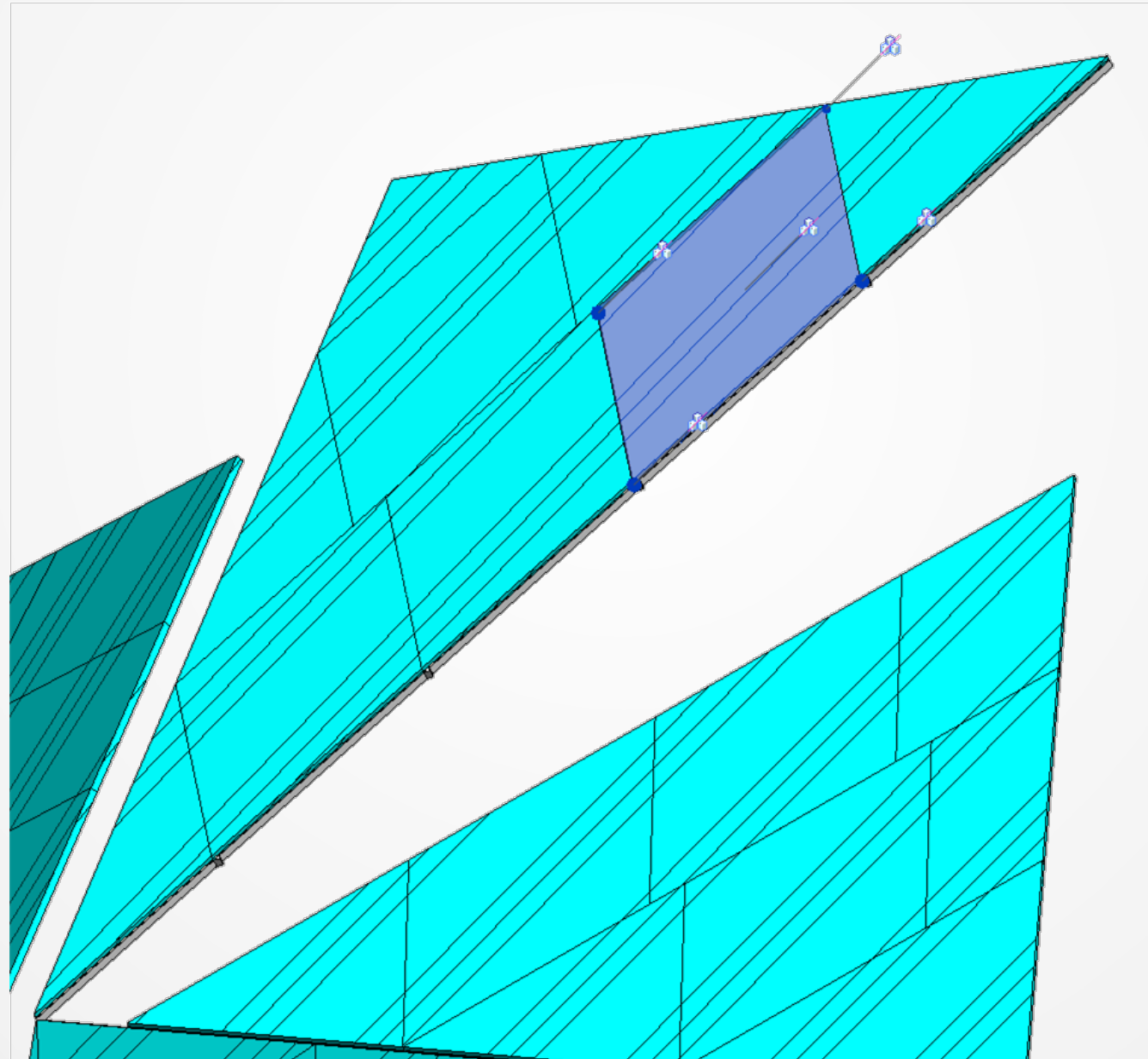


Use the curtain system to cut the panel



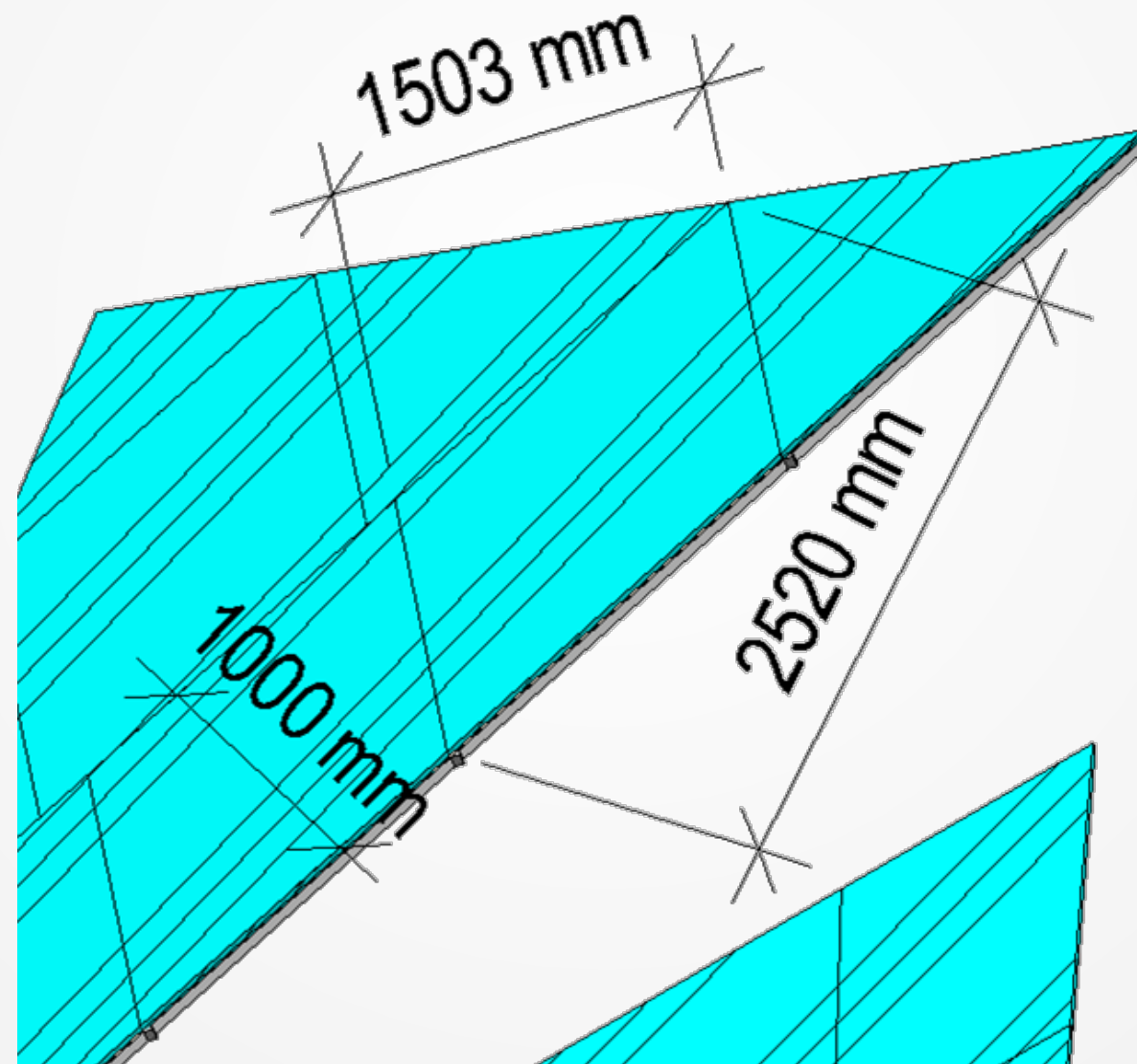
Mullions are
created in the
same time

Use the curtain system to cut the panel



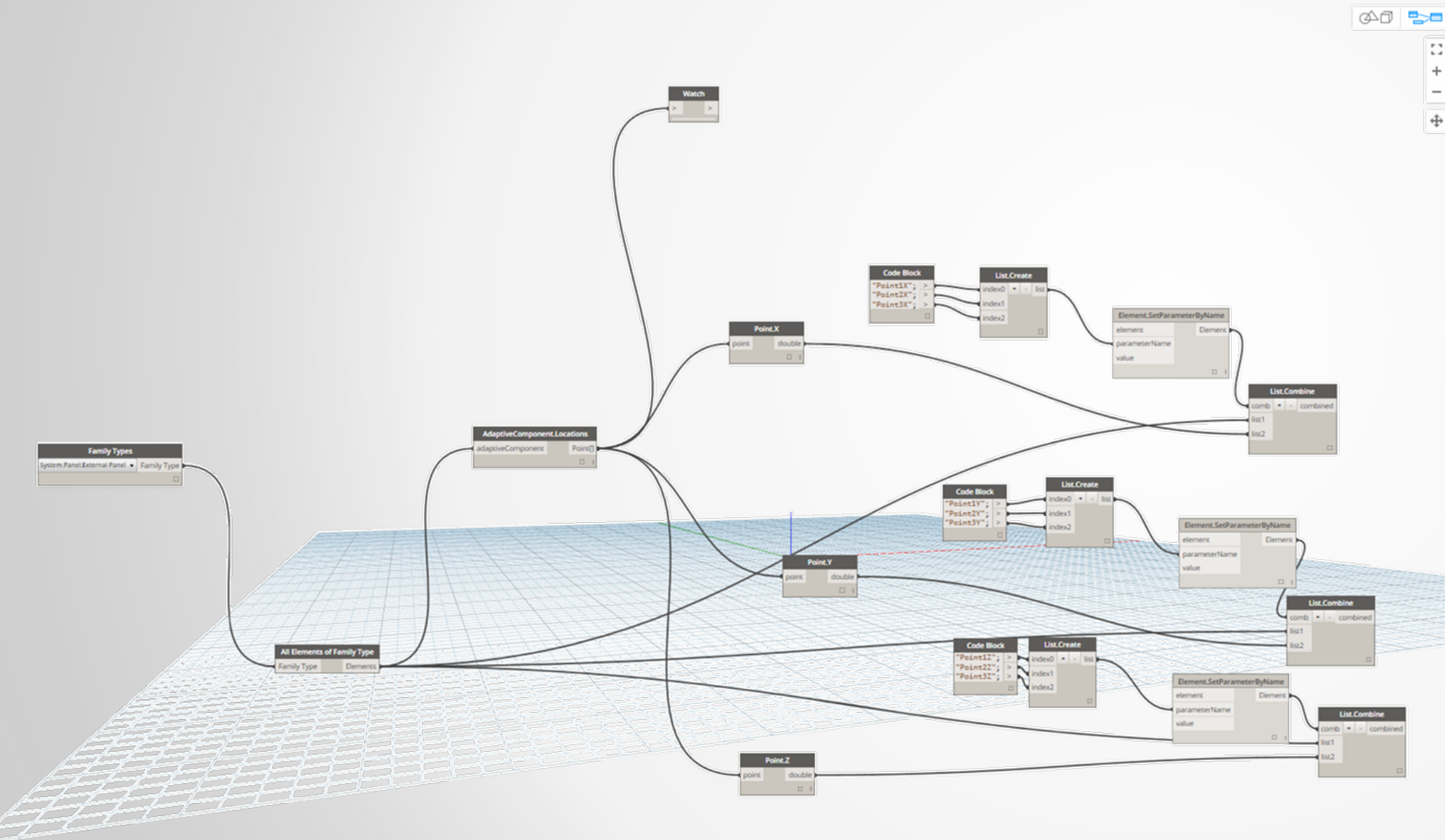
Drawing 3P & 4P
panel on the top
of the curtain wall
system

How to determine the size of the panel?



It is impossible to measure the panel length one by one

Dynamo is a solution



Dynamo extends building information modeling with the data and logic environment of a graphical algorithm editor.

Dynamo calculate the coordinate of the panels



CTP-CWP-ADA-Perforated
Aluminium Panel_4P
4P-sandwich

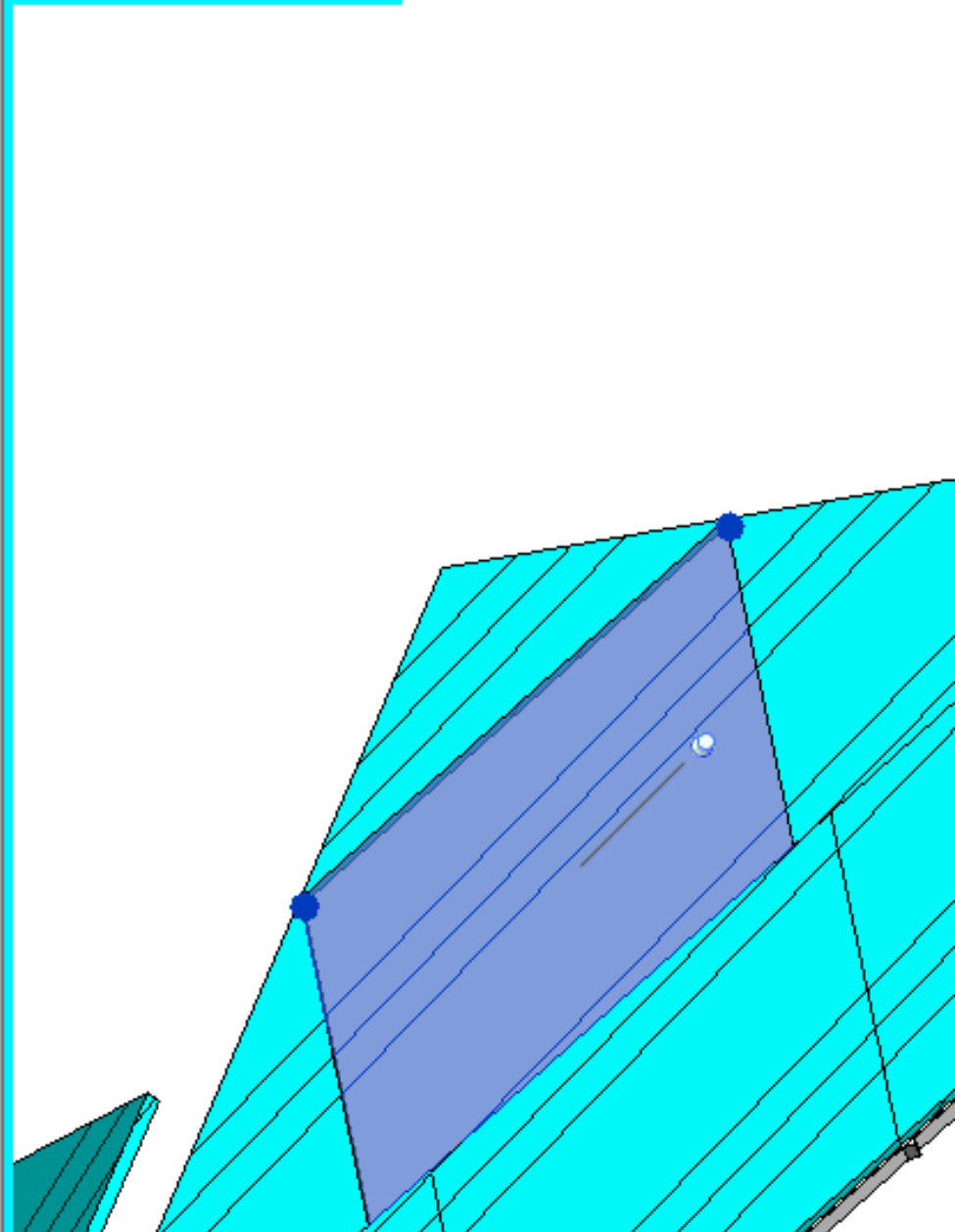
Generic Models (1)  Edit Type

Text

Panel Name	B4-F101-S03
Location	F101
LIFT WELL DEPTH (RE...	
LIFT WELL HEIGHT (RE...	
LIFT WELL WIDTH (RE...	
RATED SPEED (m/s)	
LIFT NO.	
RATED LOAD (sq.m)	
NO. OF PASSENGERS	

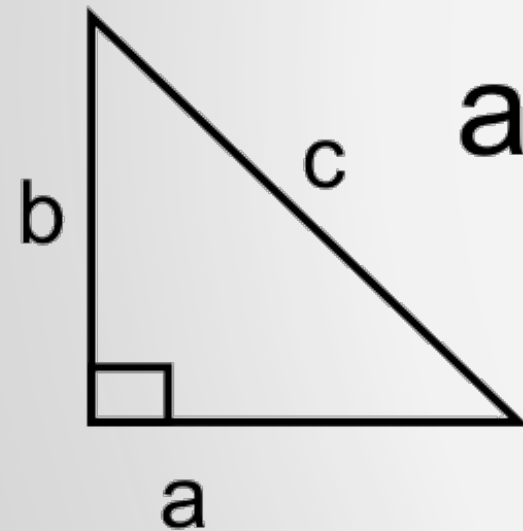
Dimensions

Volume	0.085 m ³
Point1X	147175.7 mm
Point2X	146328.3 mm
Point3X	145473.0 mm
Point1Y	84545.5 mm
Point2Y	84179.1 mm
Point3Y	85293.7 mm
Point1Z	12533.0 mm
Point2Z	13226.4 mm
Point3Z	14187.3 mm
Point4X	146320.4 mm
Point4Y	85660.1 mm
Point4Z	13493.8 mm
Point5Y	



By the Pythagorean Theorem, the lengths can be find

Pythagorean Theorem



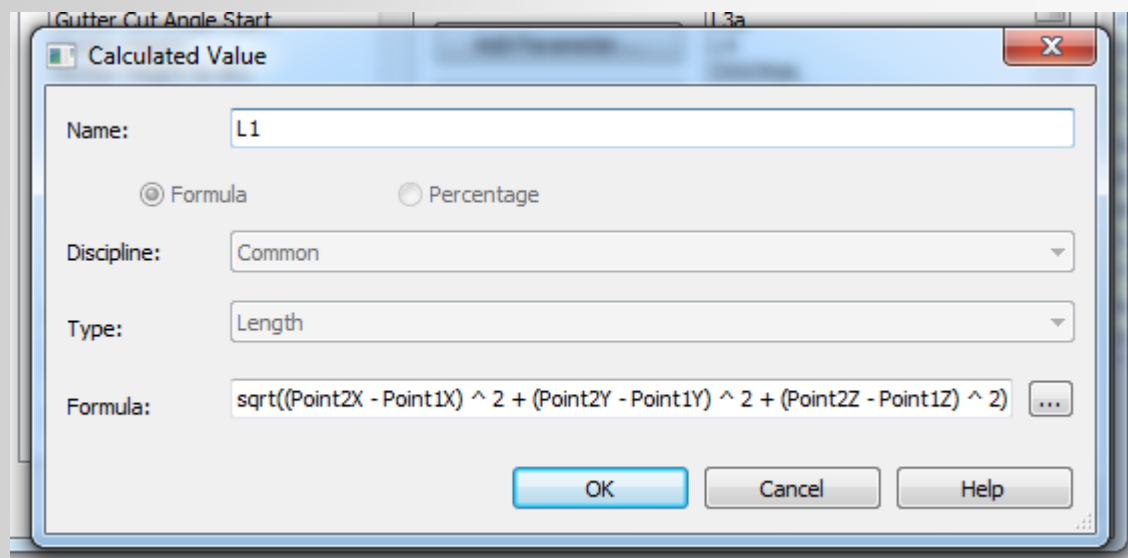
$$a^2 + b^2 = c^2$$

N	O	P
Point1X	Point1Y	Point1Z
145883 mm	78307 mm	5267 mm
137822 mm	80574 mm	10154 mm
132223 mm	87104 mm	5288 mm
141474 mm	84024 mm	14010 mm
142421 mm	82632 mm	13664 mm

Q	R	S
Point2X	Point2Y	Point2Z
145508 mm	79081 mm	7580 mm
136140 mm	81124 mm	9645 mm
133037 mm	87182 mm	7535 mm
142134 mm	85314 mm	14292 mm
142134 mm	85314 mm	14292 mm

T	U	V
Point3X	Point3Y	Point3Z
145121 mm	78474 mm	5956 mm
135713 mm	81493 mm	10121 mm
132493 mm	86667 mm	5678 mm
142421 mm	82632 mm	13664 mm
143056 mm	84172 mm	14004 mm

By the Pythagorean Theorem, the lengths can be find



E	F	G	H
L1	L2	L3a	L4
2510 mm	578 mm	2771 mm	1229 mm
2512 mm	577 mm	2774 mm	1230 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	577 mm	2771 mm	1228 mm
2510 mm	577 mm	2771 mm	1229 mm
2510 mm	1229 mm	2771 mm	1881 mm
2507 mm	1230 mm	2768 mm	1881 mm
2510 mm	1229 mm	2771 mm	1881 mm
2510 mm	1229 mm	2771 mm	1881 mm

Formula of L1=

$$\sqrt{(\text{Point2X} - \text{Point1X})^2 + (\text{Point2Y} - \text{Point1Y})^2 + (\text{Point2Z} - \text{Point1Z})^2}$$

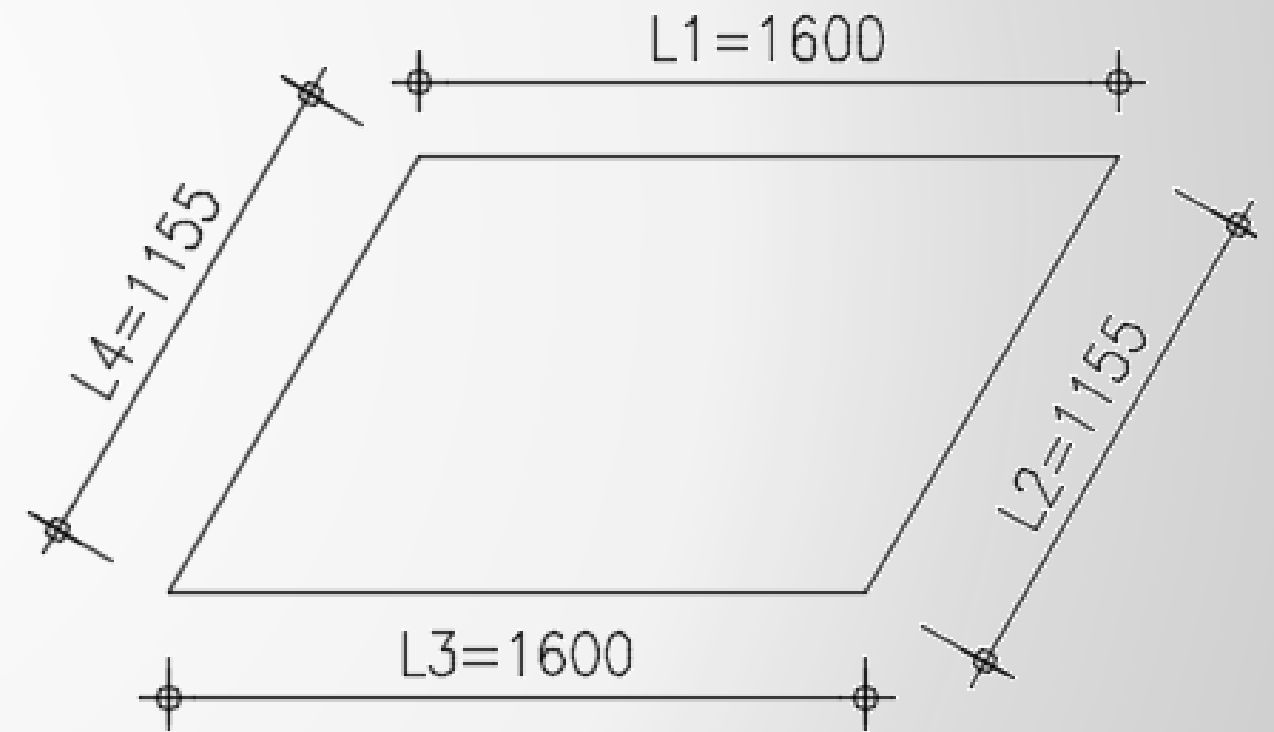
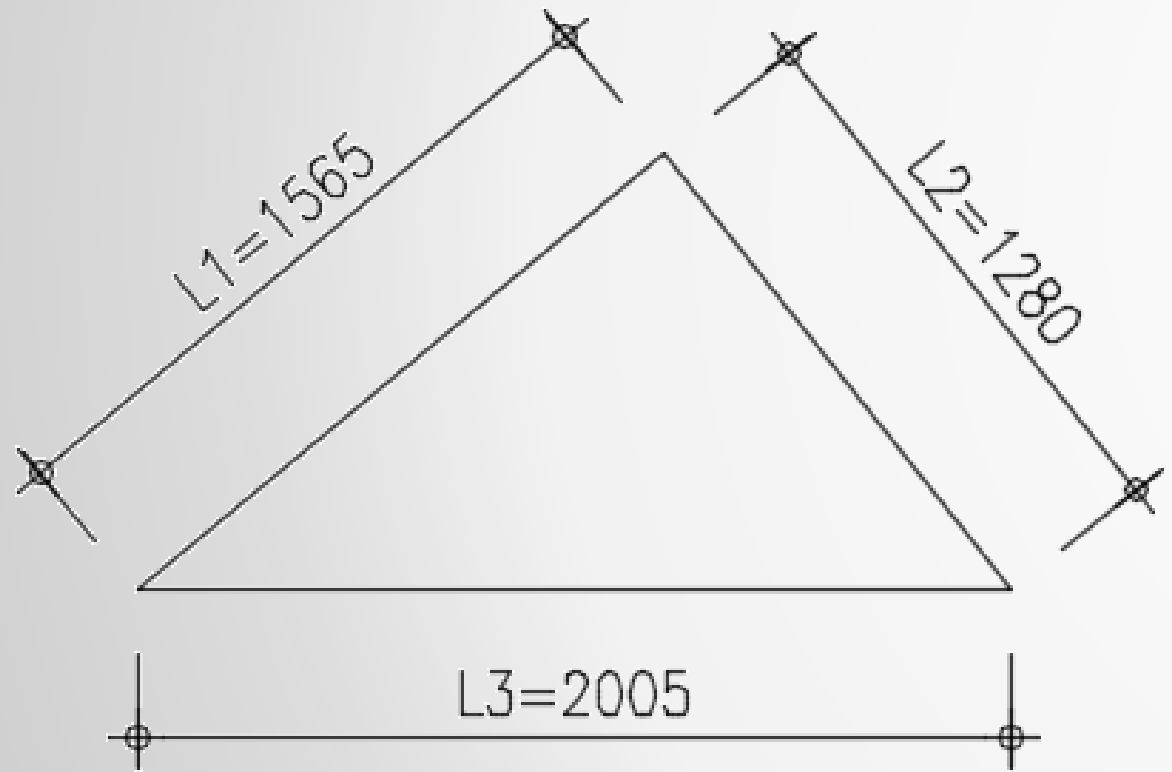
Formula of L2=

$$\sqrt{(\text{Point3X} - \text{Point2X})^2 + (\text{Point3Y} - \text{Point2Y})^2 + (\text{Point3Z} - \text{Point2Z})^2}$$

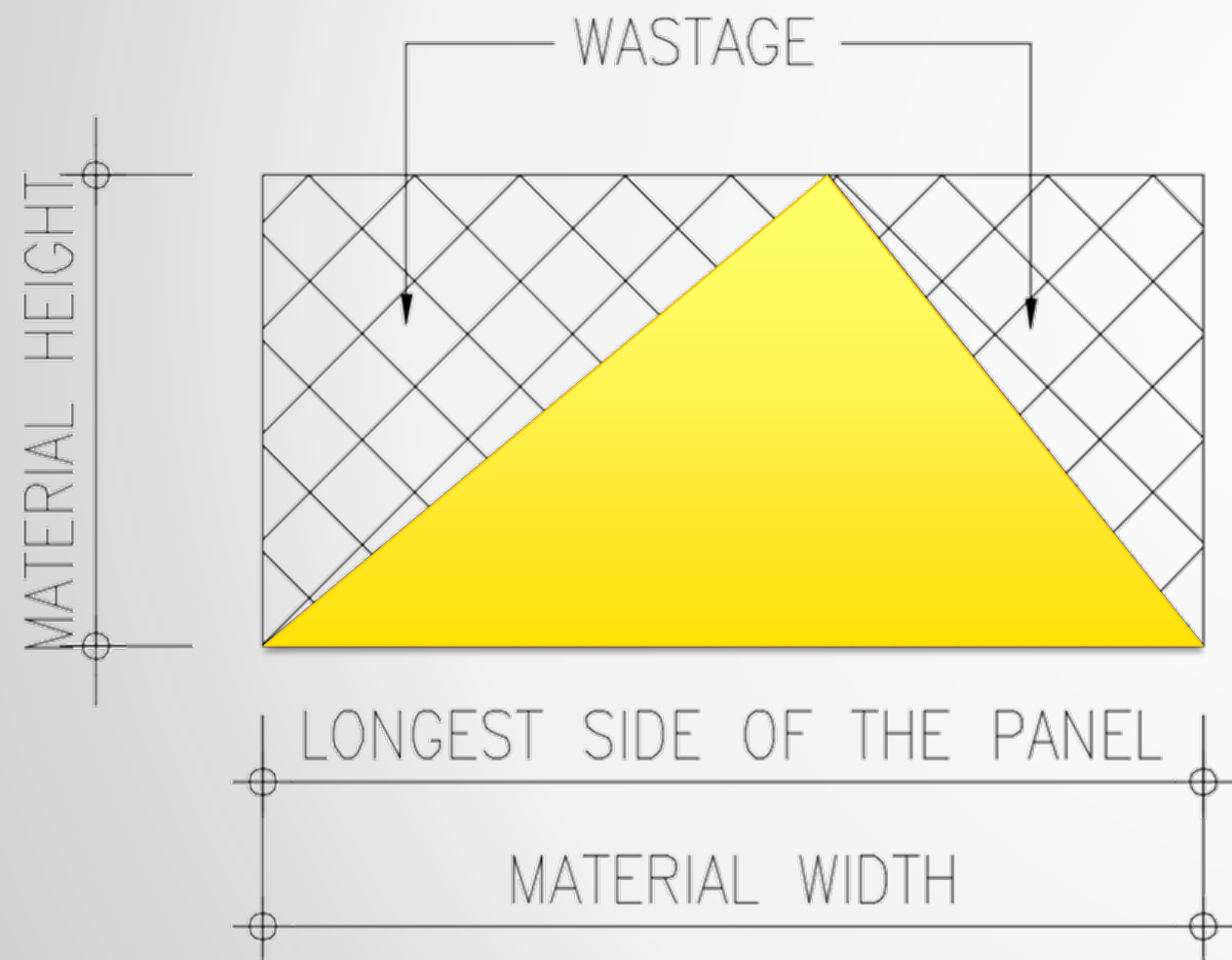
Formula of L3=

$$\sqrt{(\text{Point1X} - \text{Point3X})^2 + (\text{Point1Y} - \text{Point3Y})^2 + (\text{Point1Z} - \text{Point3Z})^2}$$

Result



Determine Material Height and Width of the Triangle Panel



$L1 = 1397\text{mm}$, $L2 = 1155\text{mm}$, $L3 = 1293\text{mm}$

Longest Length = $L1 = 1397\text{mm}$

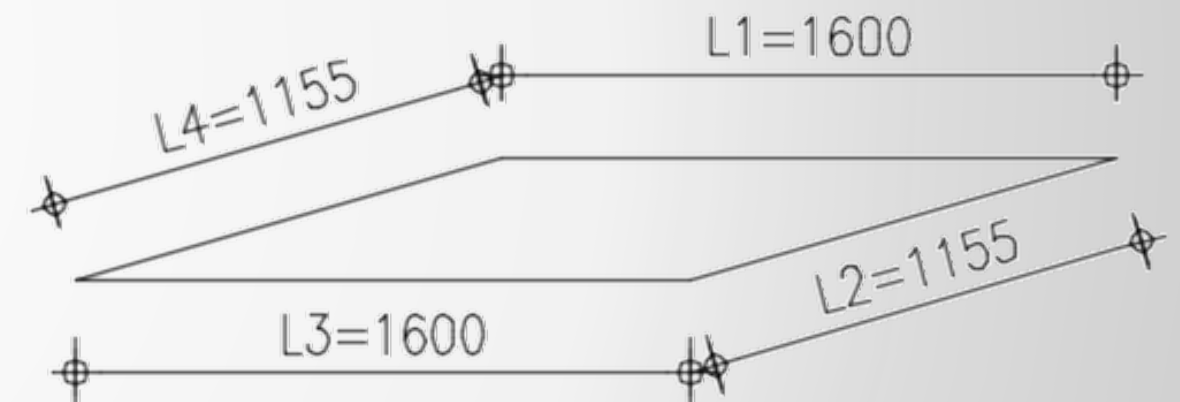
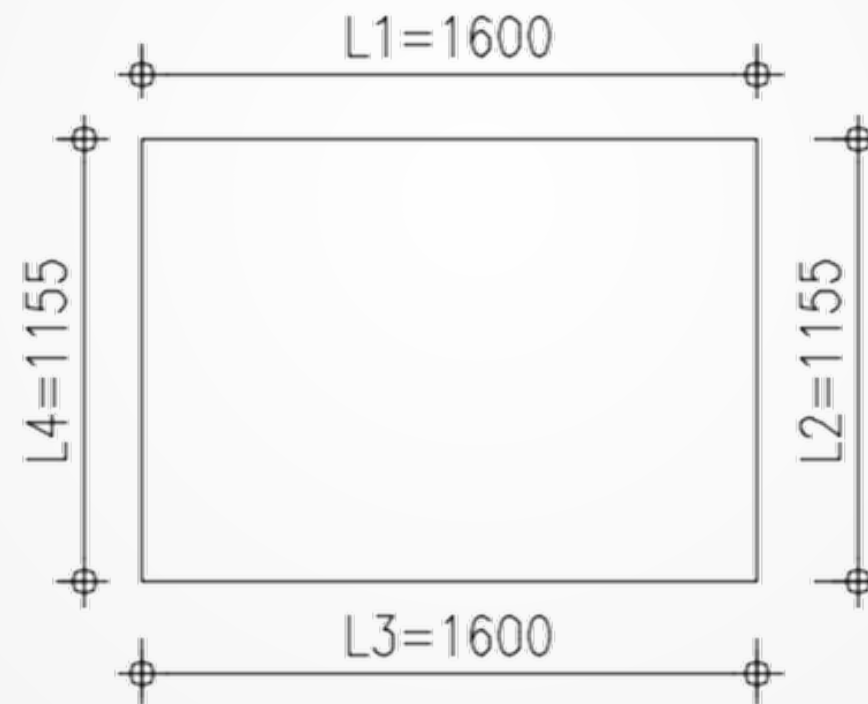
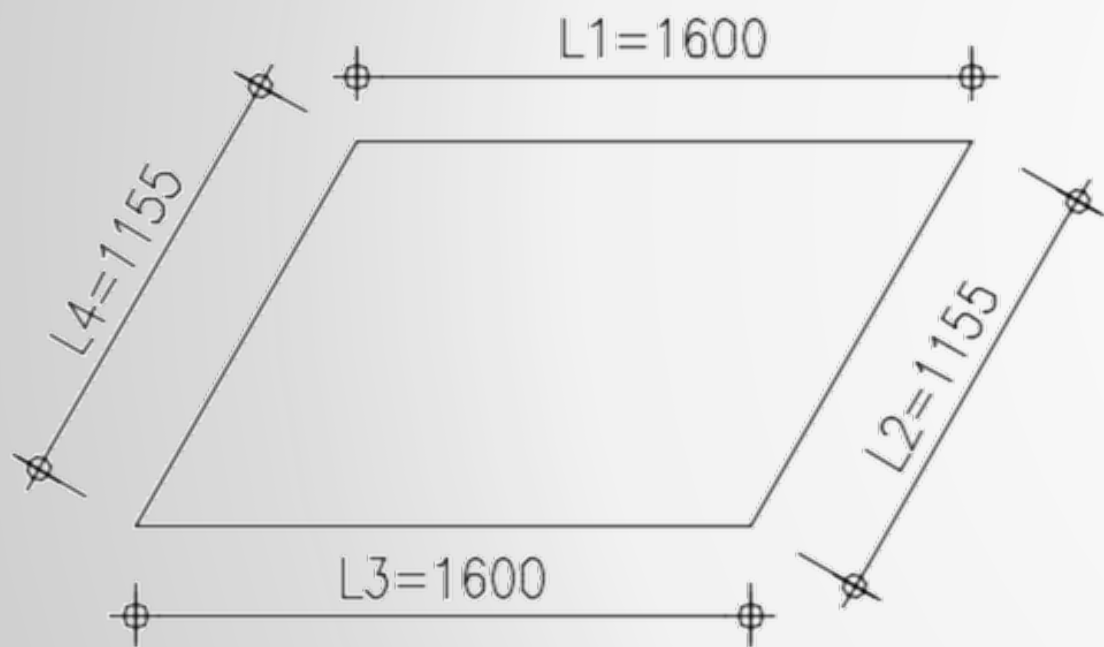
Area = 0.699m^2 (Provide by Revit)

Area = Longest Length * Height / 2

Height = $0.699\text{m}^2 / 1.397\text{m}$

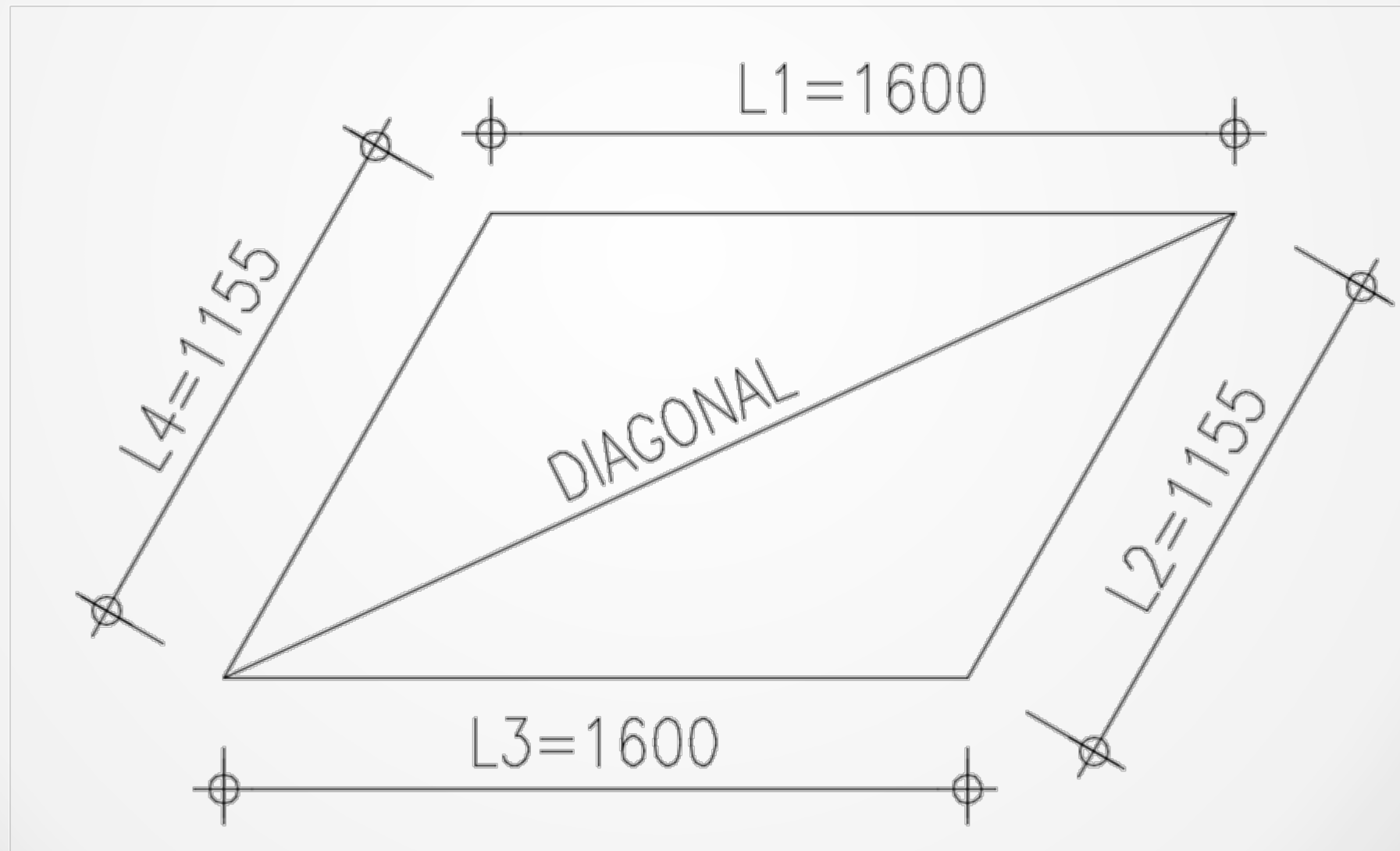
Determine Material Height and Width of the 4 sided Panel

But for the polygon is different

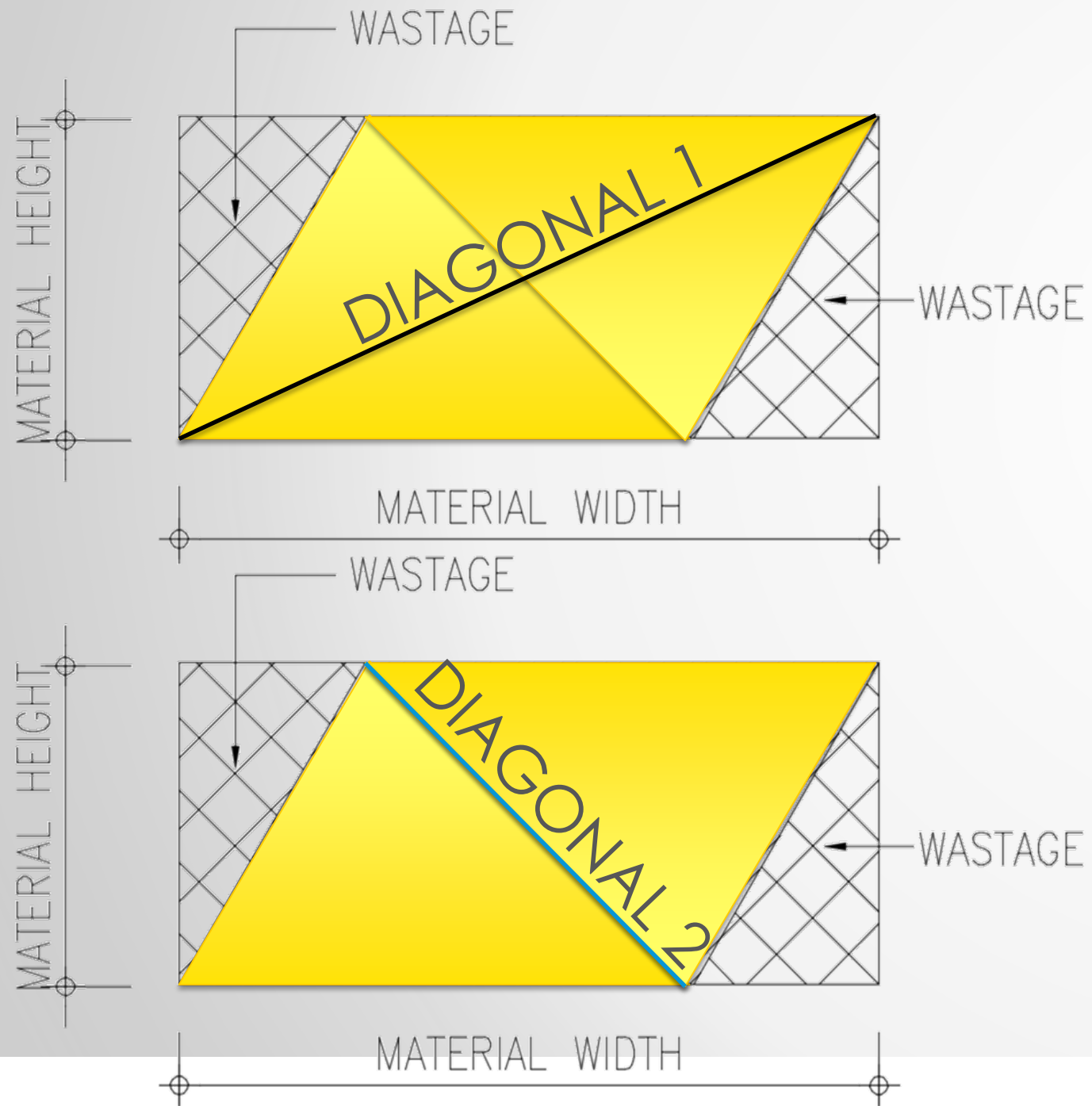


Determine Material Height and Width of the 4 sided Panel

Used the diagonal to “fix” the shaped of 4 sided Panel



Determine Material Height and Width of the 4 sided Panel



Diagonal 1=2396mm

Diagonal 2=1398mm

1 > 2

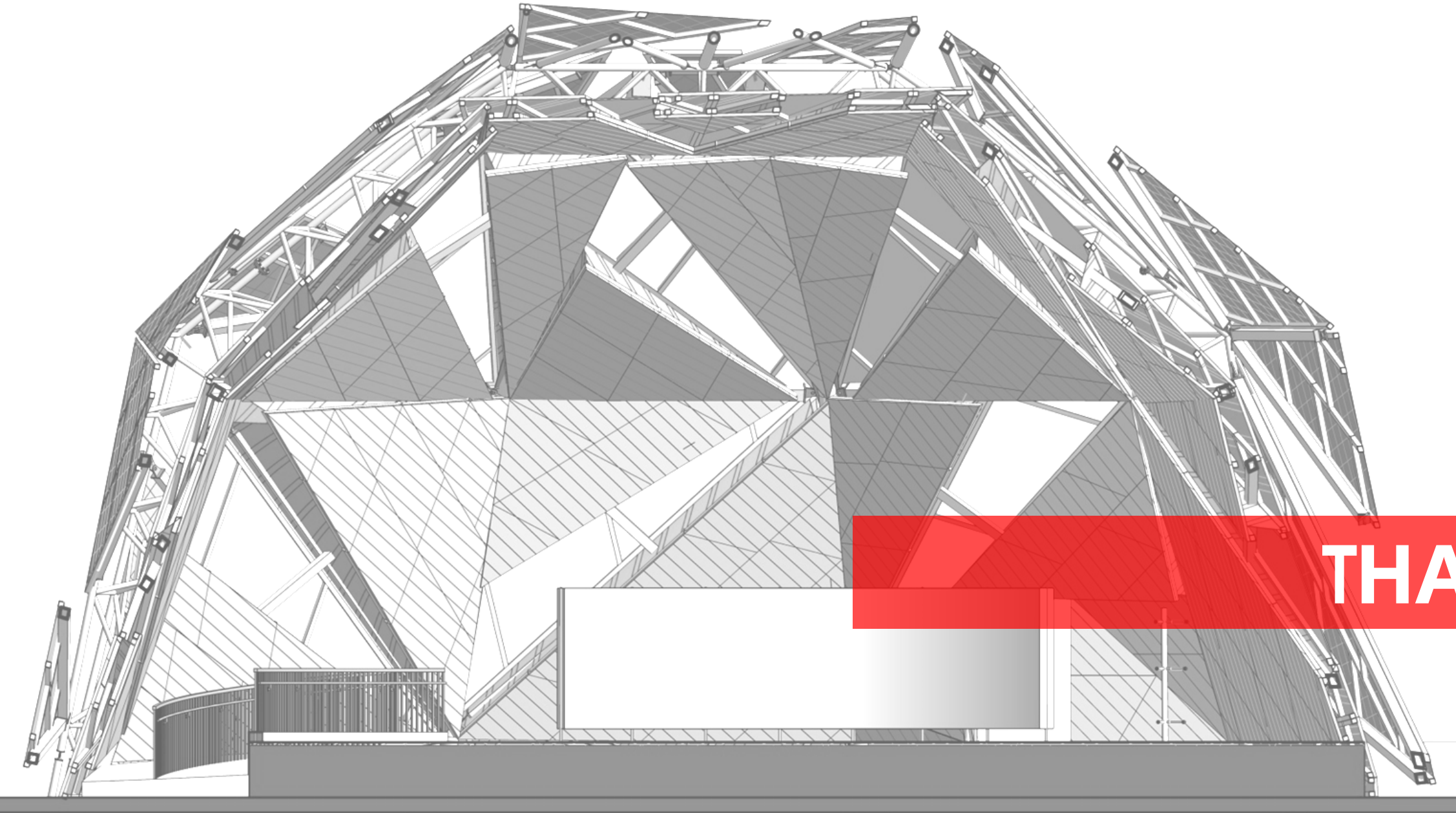
Diagonal = 2396mm

Height = 1000mm (Fixed)

Material Width= $\text{Diagonal}^2 + \text{Height}^2$



VIDEO



THANK YOU