土木工程實作專題

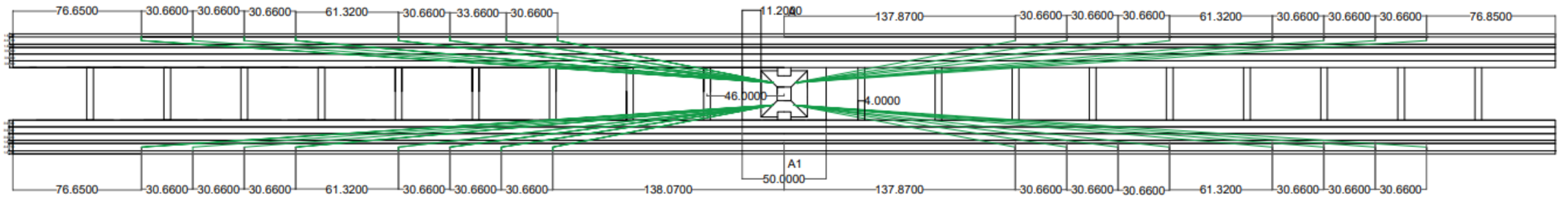
組別：第一組

組員：110612008沈昱翔
110612035劉沛宸
110612041張育瑋
110612066張誌剛
110612106陳良魁
110612158李明翰

OVERVIEW OF THE BRIDGE

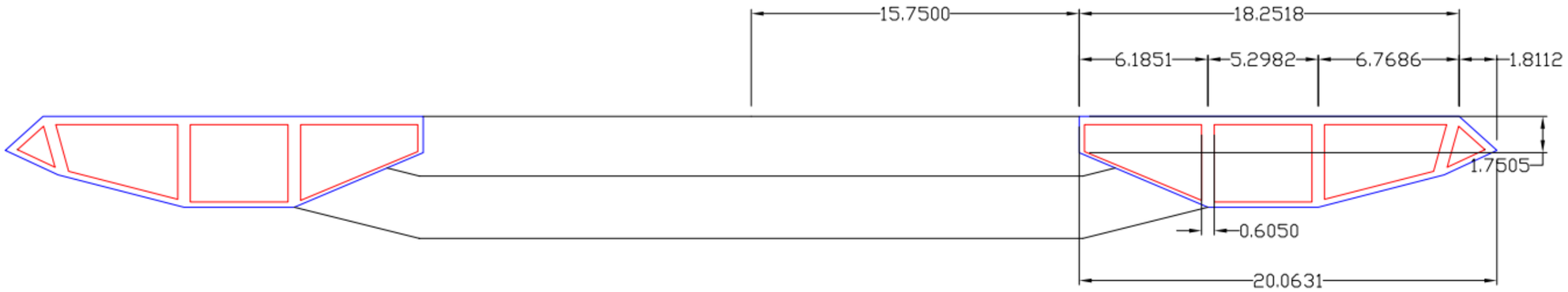
- 總長920公尺，為單一一座塔支撐
- 塔總高419公尺（本體高389公尺、基座高25公尺），橋斷面寬20.36公尺
- 來回共有6條車道來應對尖峰時期的車流量並在車道的最外側各設有1條人行道，以提供民眾能在橋上欣賞河川的景色。纜繩方面，總共使用了32條纜繩來支撐道路的重量。

TOP VIEW


76.6500
30.6600
30.6600
30.6600
61.3200
30.6600
33.6600
30.6600
11.2000
137.8700
30.6600
30.6600
30.6600
61.3200
30.6600
30.6600
30.6600
76.8500
46.0000
4.0000
A1
50.0000
76.6500
30.6600
30.6600
30.6600
61.3200
30.6600
30.6600
30.6600
138.0700
137.8700
30.6600
30.6600
30.6600
61.3200
30.6600
30.6600
30.6600

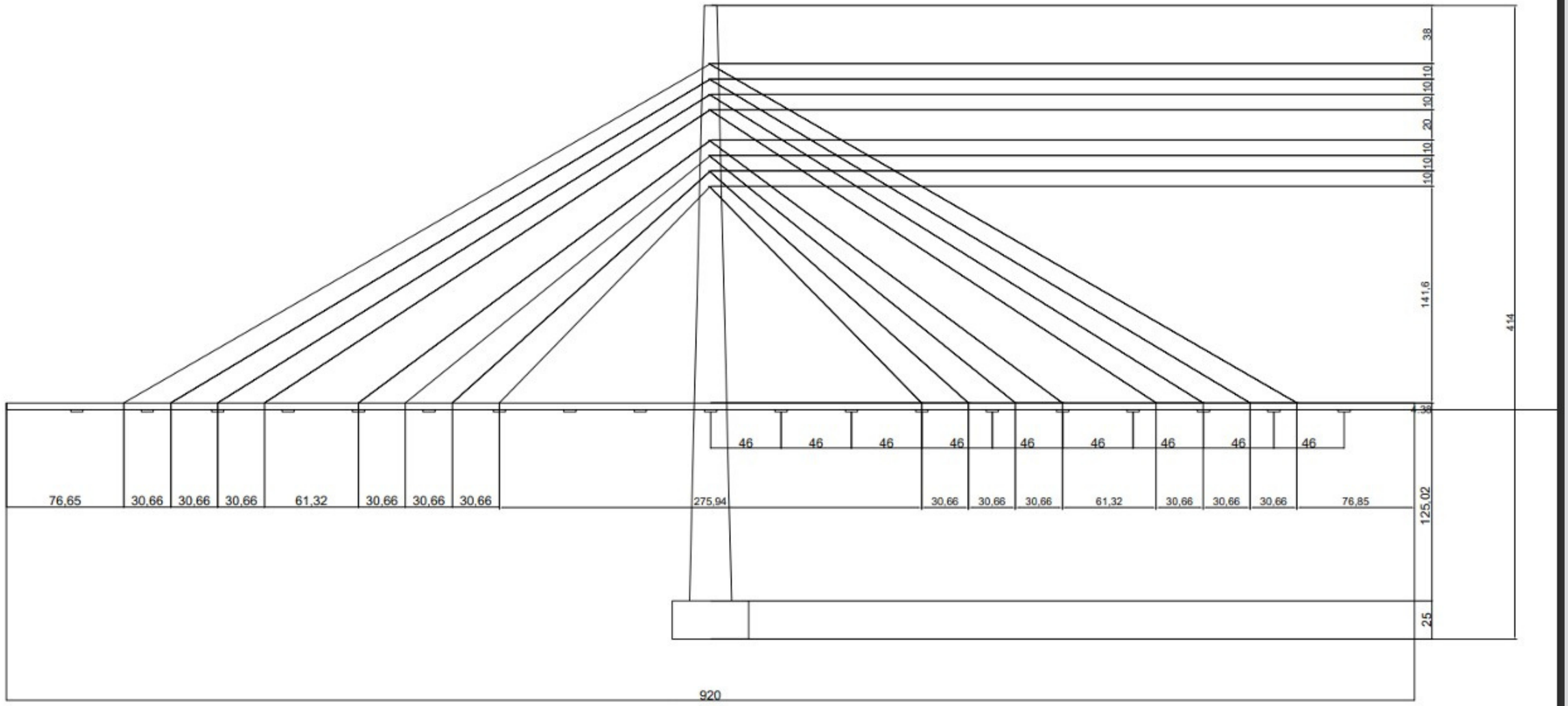
俯視圖

CROSS-SECTION



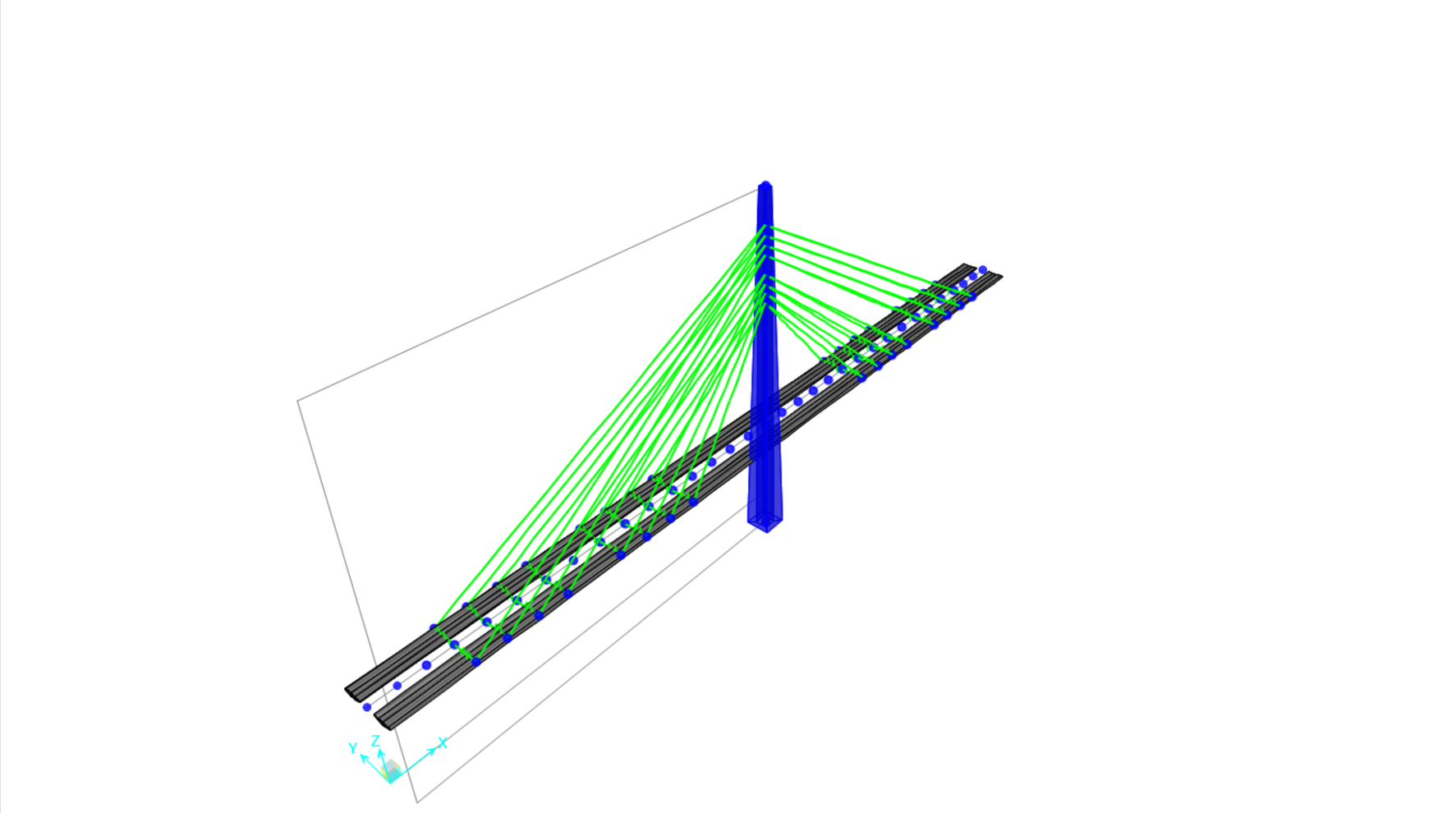
道路斷面圖

SIDE VIEW

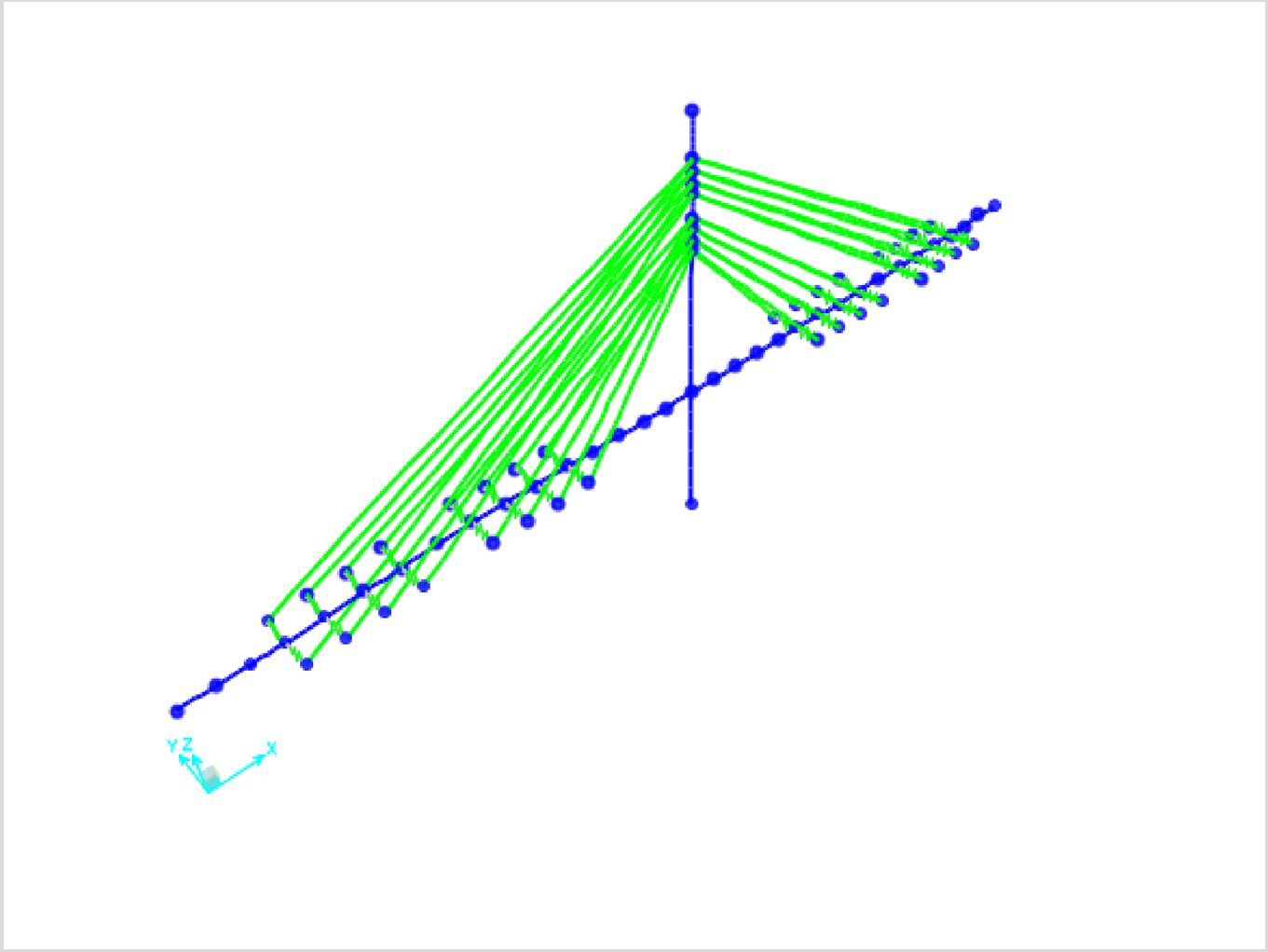


正立面圖

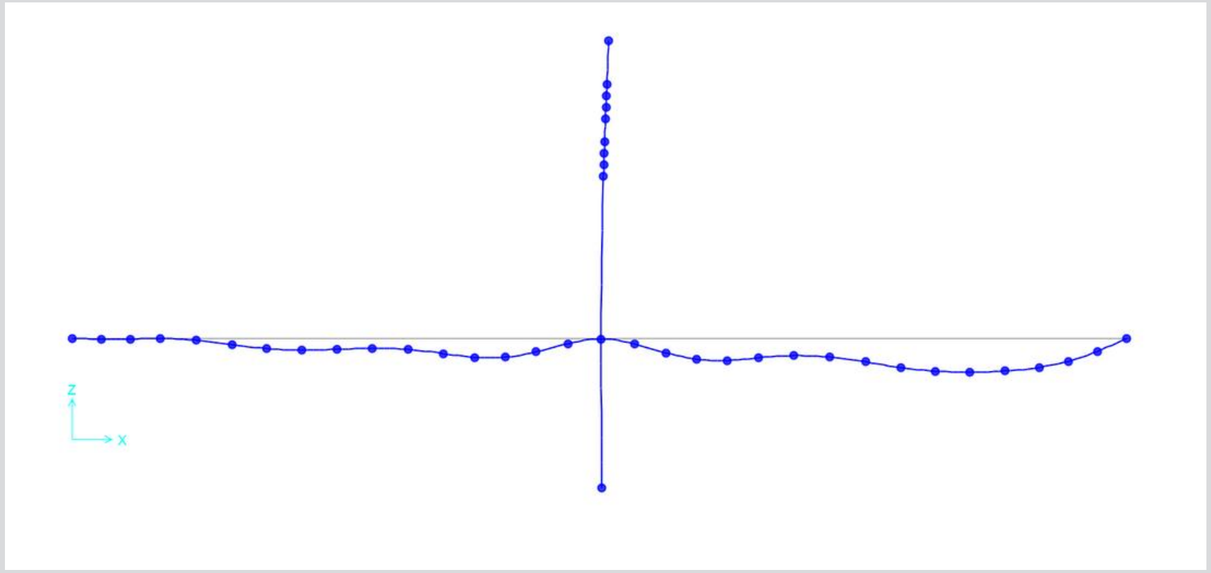
CSI BRIDGE

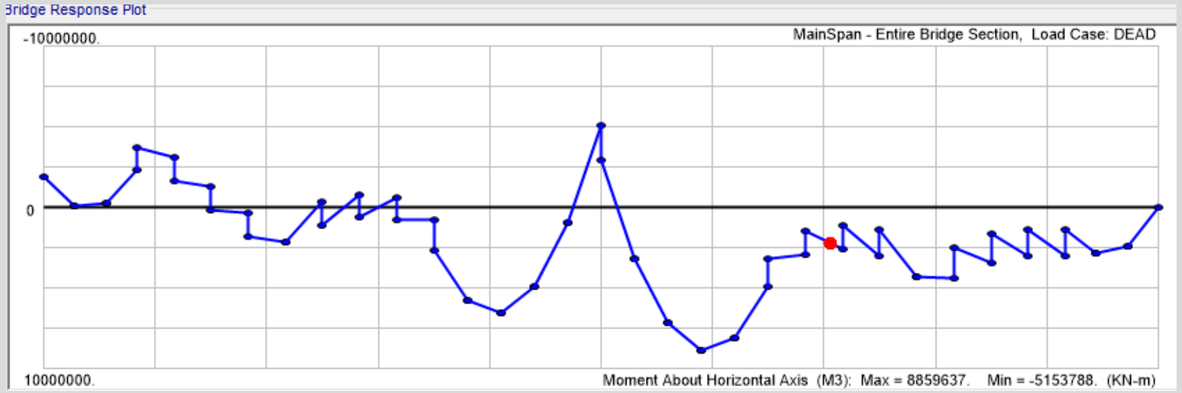


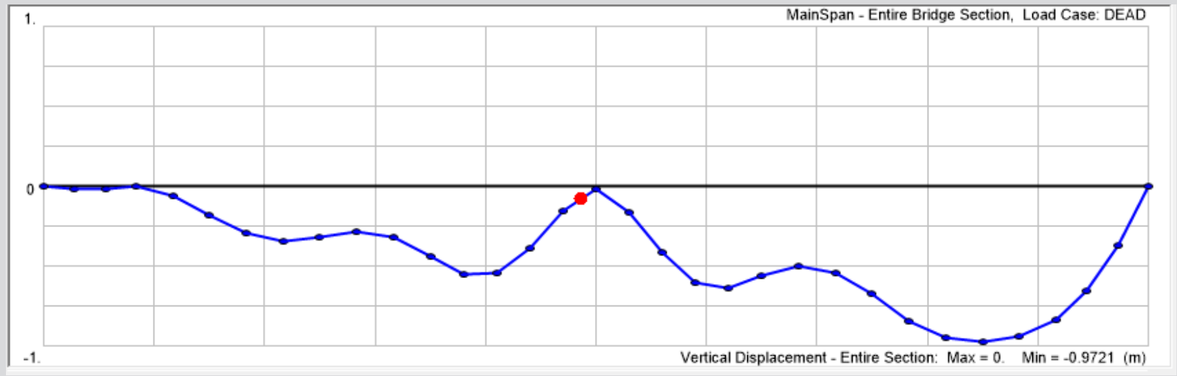
VEHICAL LOAD ANALYSIS



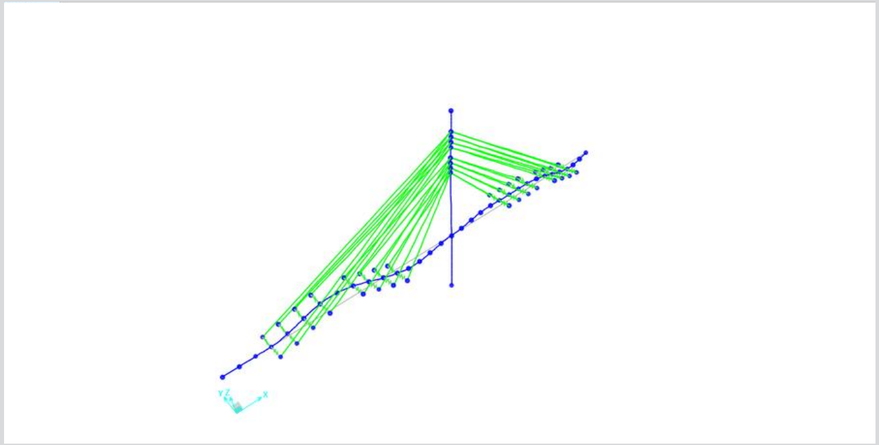
DEADLOAD ANALYSIS

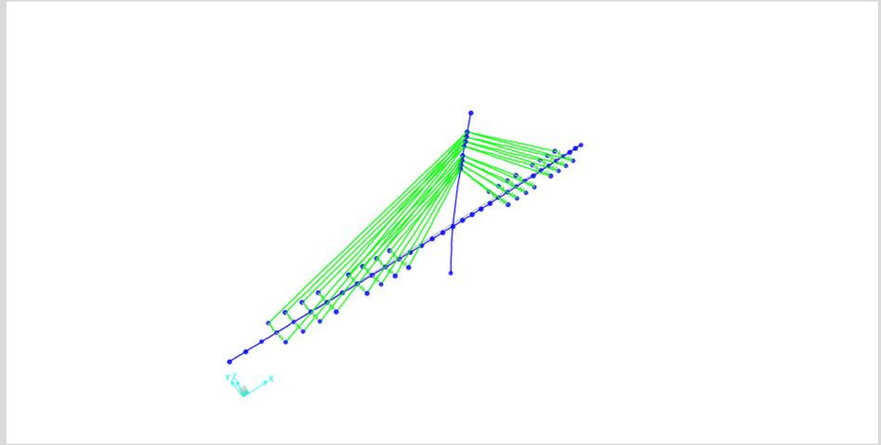




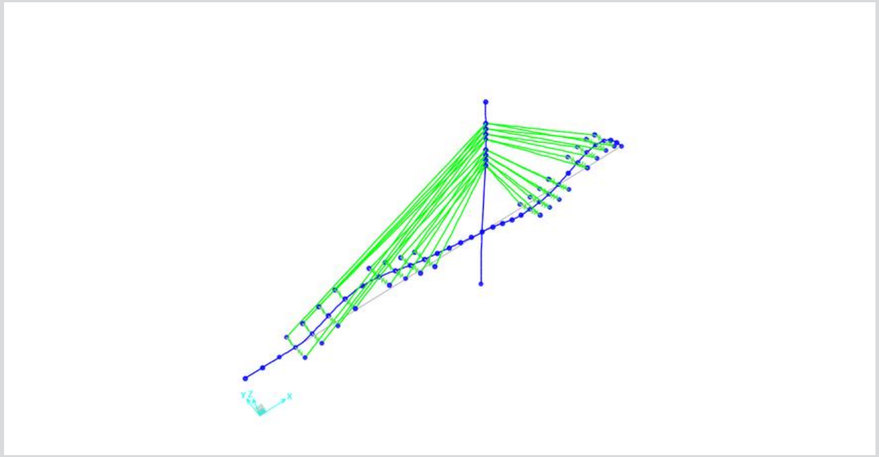


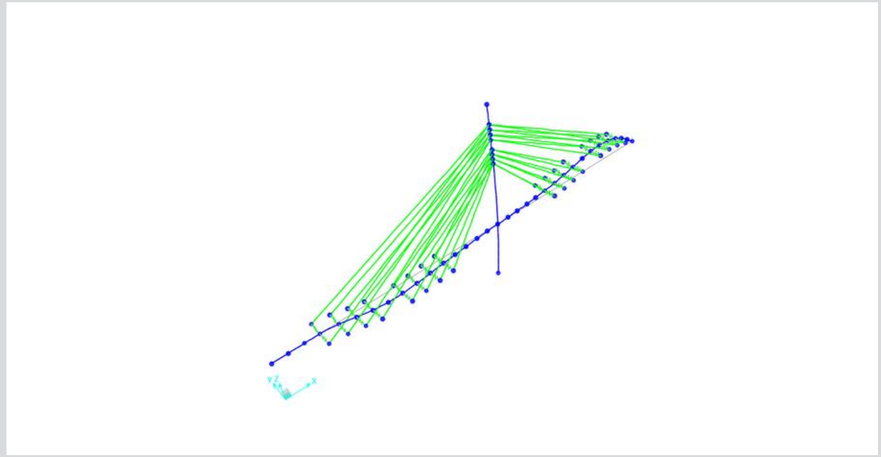
MODAL ANALYSIS





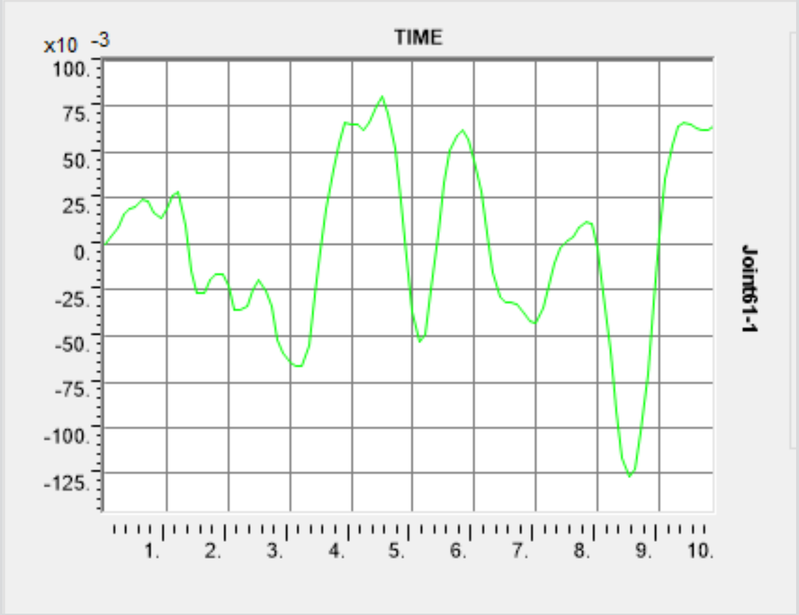
MODAL	Mode	90	0.091144	0.0008	2.62E-06	4.768E-05	0.97835	0.99746	0.99901	4.25E-09

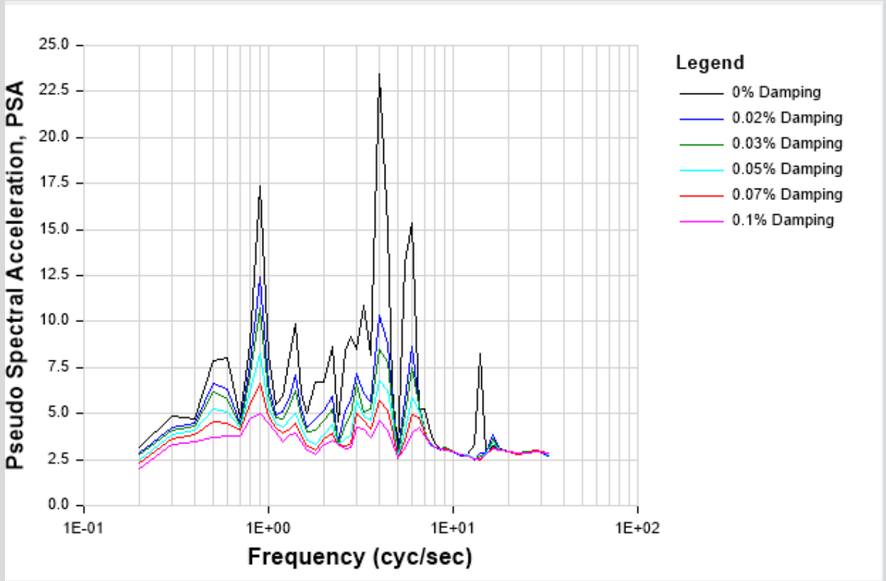




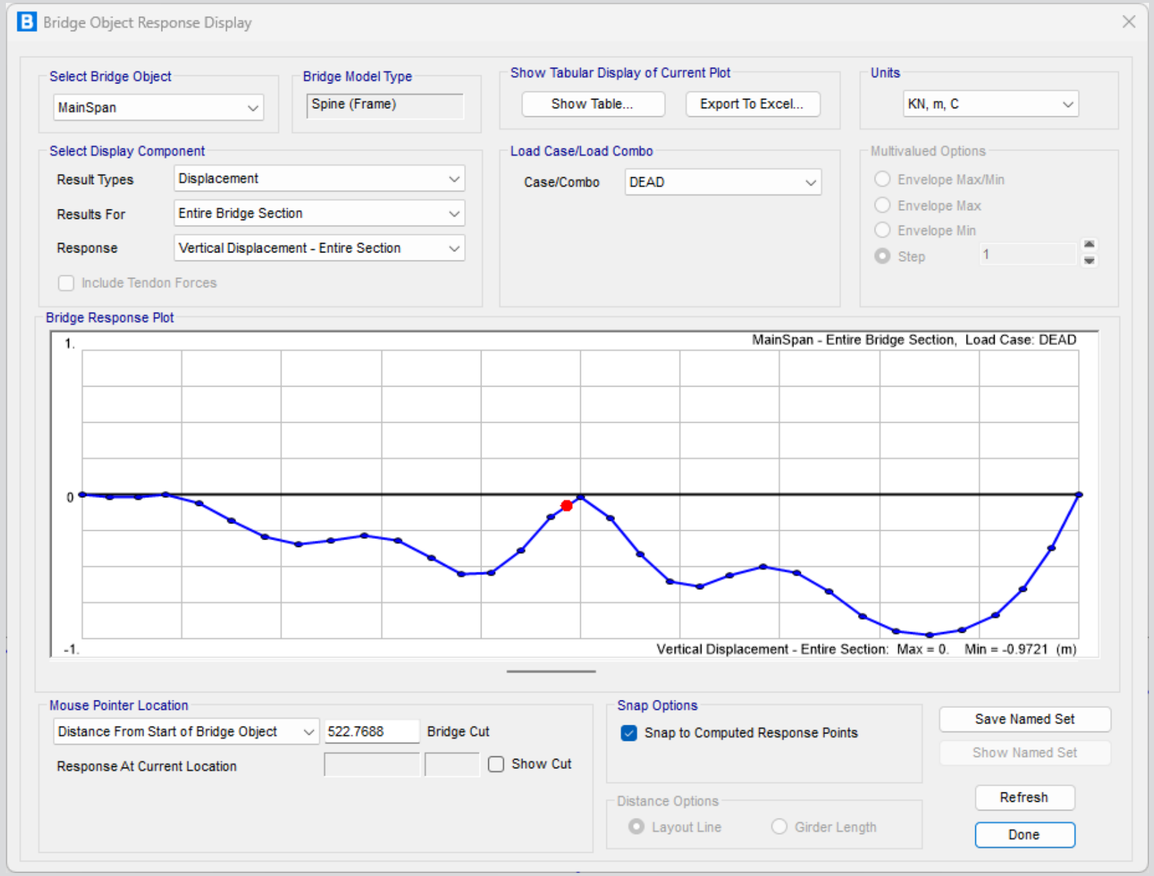
TIME HISTORY ANALYSIS

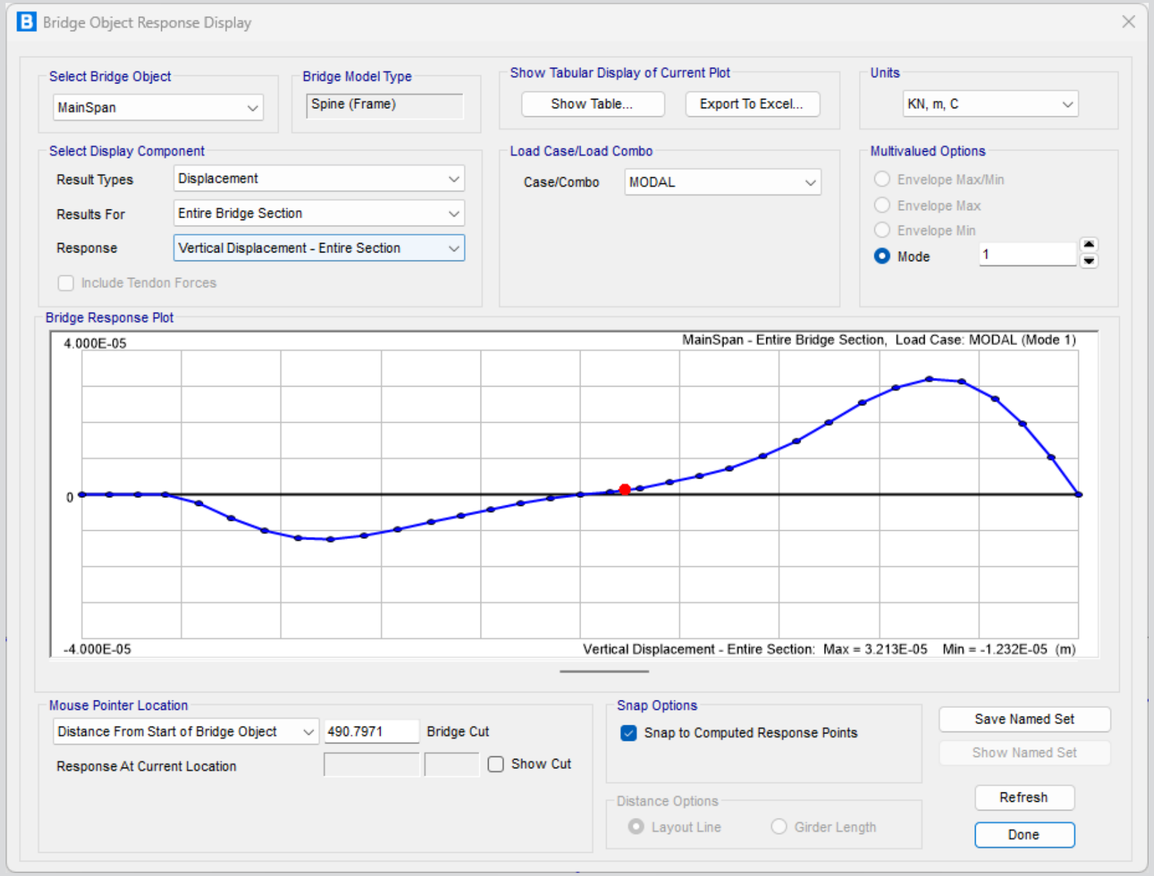
OutputCase	CaseType Text	StepType Text	GlobalFX KN	GlobalFY KN	GlobalFZ KN	GlobalMX KN-m	GlobalMY KN-m	GlobalMZ KN-m	GlobalX m	GlobalY m
CombII	Combination		316750.31	-18490.232	11511792.58	2723696.989	-5308518053	-10498738.6	0	0
CombIA	Combination	Max	3133064942	1326748947	11530000000	96310000000	5196000000...	8503000000...	0	0
CombIA	Combination	Min	-2893584068	-1376688715	-11880000000	-104100000...	-503800000...	-824500000...	0	0
CombIII	Combination	Max	1424120428	603067703	5242982448	43780000000	2362000000...	3865000000...	0	0
CombIII	Combination	Min	-1315265485	-625767598	-5399963353	-473300000...	-229000000...	-374800000...	0	0
E_RS	Combination	Max	3515566.921	8557107.715	3713243.487	1621882010	1795512368	4383106689	0	0
E_RS	Combination	Min	-3515566.9	-8557107.7	-3713243.5	-1621882010	-1795512368	-4383106689	0	0
CombVII_EQrs	Combination	Max	3515566.921	8557107.715	3713243.487	1621882010	1795512368	4383106689	0	0
CombVII_EQrs	Combination	Min	-3515566.9	-8557107.7	-3713243.5	-1621882010	-1795512368	-4383106689	0	0
E_TH	Combination	Max	2001785.702	1987079.831	3524037.539	344594883	2031141592	1066605942	0	0
E_TH	Combination	Min	-1633649.32	-2787504.65	-4408387.1	-360474442	-1607824029	-1442097786	0	0

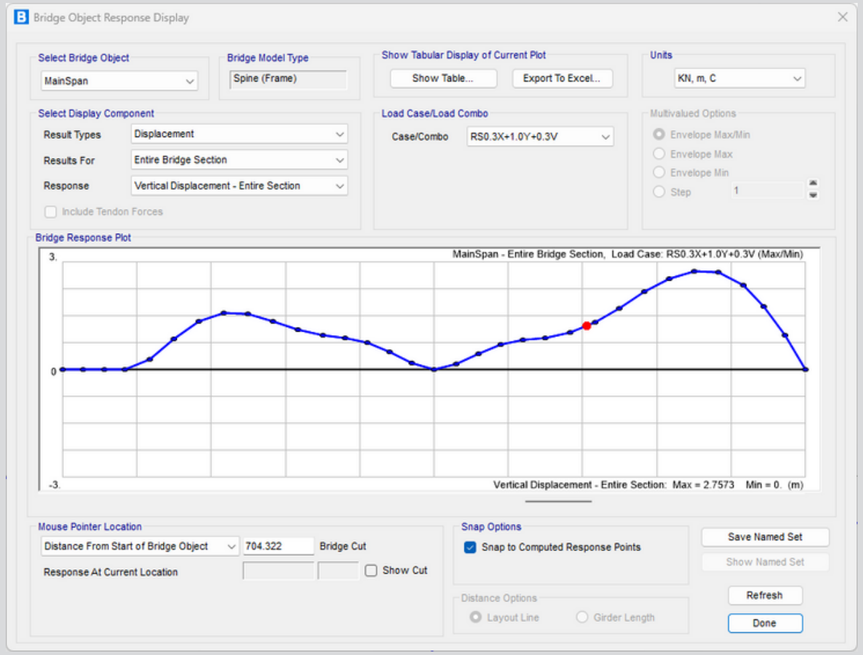


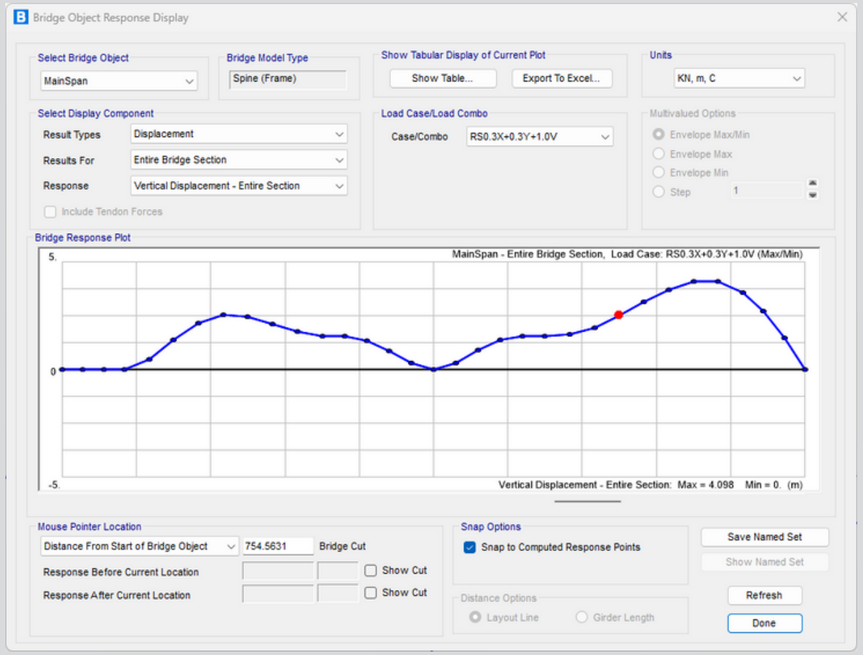


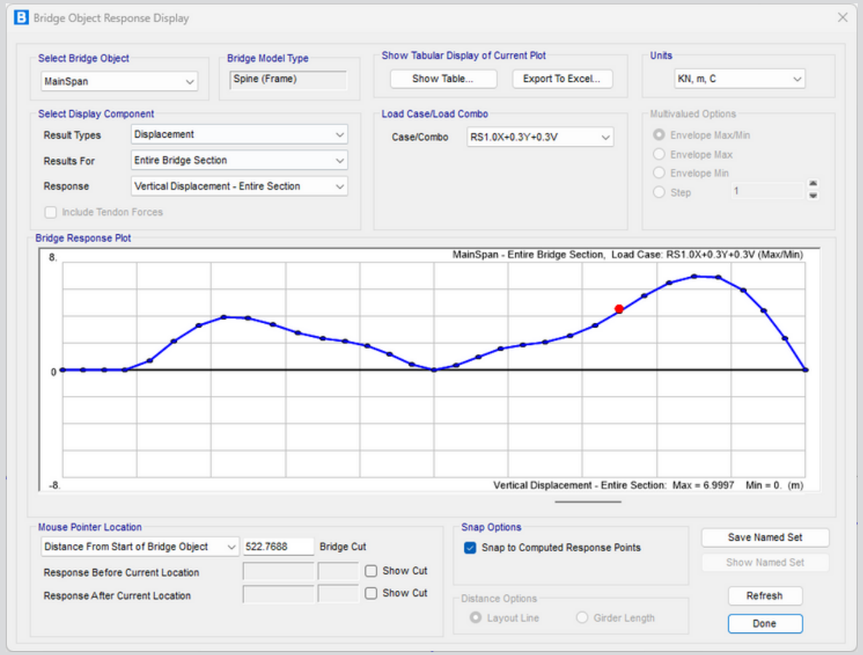
DISPLACEMENT IN EVERY COMBO/BASE

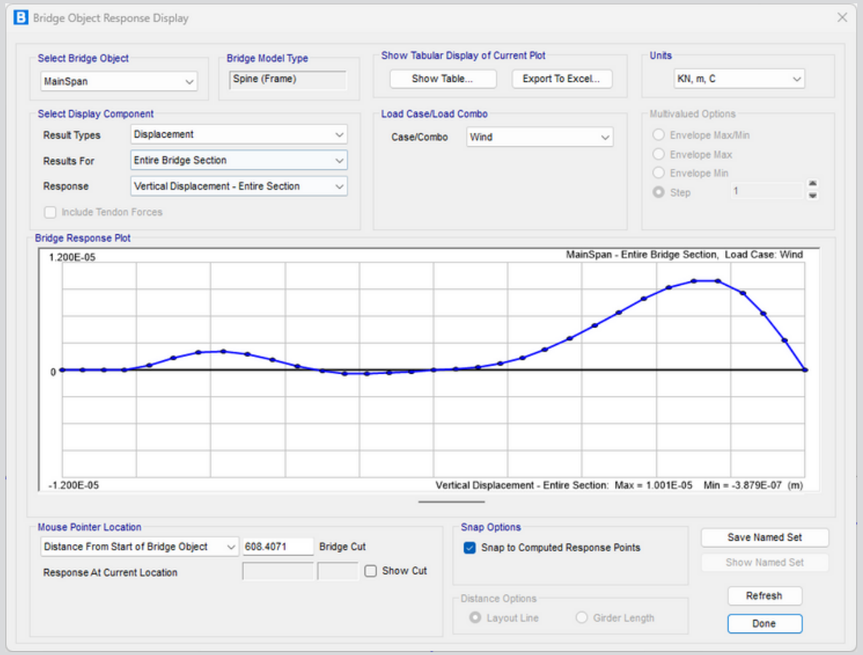





Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
RS0.3X+1.0Y+0.3V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
MainSpan - Entire Bridge Section, Load Case: RS0.3X+1.0Y+0.3V (Max/Min)
3.
0
-3.
Vertical Displacement - Entire Section: Max = 2.7573 Min = 0. (m)
Mouse Pointer Location
Distance From Start of Bridge Object
704.322
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done


Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
RS0.3X+0.3Y+1.0V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
MainSpan - Entire Bridge Section, Load Case: RS0.3X+0.3Y+1.0V (Max/Min)
5.
0
-5.
Vertical Displacement - Entire Section: Max = 4.098 Min = 0. (m)
Mouse Pointer Location
Distance From Start of Bridge Object
754.5631
Bridge Cut
Response Before Current Location
Response After Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done


Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
RS1.0X+0.3Y+0.3V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
MainSpan - Entire Bridge Section, Load Case: RS1.0X+0.3Y+0.3V (Max/Min)
8.
0
-8.
Vertical Displacement - Entire Section: Max = 6.9997 Min = 0. (m)
Mouse Pointer Location
Distance From Start of Bridge Object
522.7688
Bridge Cut
Response Before Current Location
Response After Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done


Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
Wind
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
MainSpan - Entire Bridge Section, Load Case: Wind
1.200E-05
0
-1.200E-05
Vertical Displacement - Entire Section: Max = 1.001E-05 Min = -3.879E-07 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
608.4071
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

Bridge Object Response Display

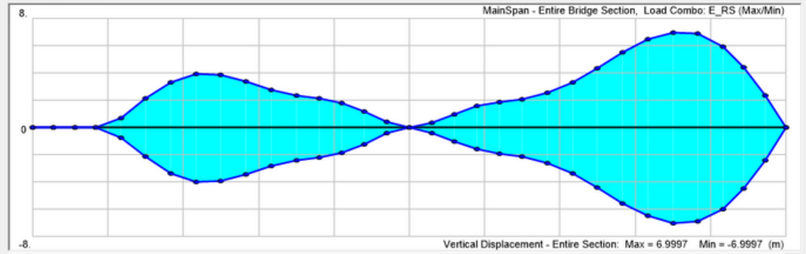
Select Bridge Object: MainSpan
Bridge Model Type: Spine (Frame)
Show Tabular Display of Current Plot: Show Table... Export To Excel...
Units: KN, m, C

Select Display Component
Result Types: Displacement
Results For: Entire Bridge Section
Response: Vertical Displacement - Entire Section
Include Tendon Forces

Load Case/Load Combo
Case/Combo: E_RS

Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step 1

Bridge Response Plot



Mouse Pointer Location
Distance From Start of Bridge Object 181.3575 Bridge Cut
Response At Current Location Show Cut

Snap Options
Snap to Computed Response Points

Distance Options
Layout Line Girder Length

Save Named Set
Show Named Set
Refresh
Done

Bridge Object Response Display

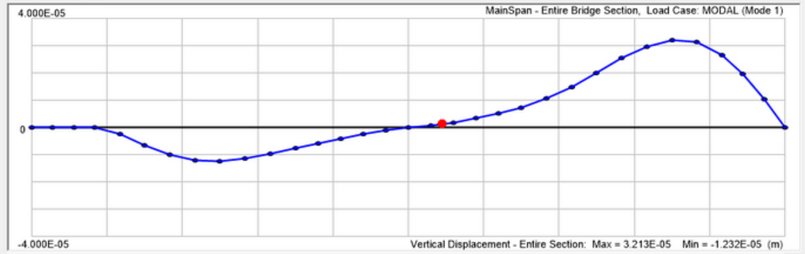
Select Bridge Object: MainSpan
Bridge Model Type: Spine (Frame)
Show Tabular Display of Current Plot: Show Table... Export To Excel...
Units: KN, m, C

Select Display Component
Result Types: Displacement
Results For: Entire Bridge Section
Response: Vertical Displacement - Entire Section
Include Tendon Forces

Load Case/Load Combo
Case/Combo: MODAL

Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Mode 1

Bridge Response Plot



Mouse Pointer Location
Distance From Start of Bridge Object 490.7971 Bridge Cut
Response At Current Location Show Cut

Snap Options
Snap to Computed Response Points

Distance Options
Layout Line Girder Length

Save Named Set
Show Named Set
Refresh
Done

Bridge Object Response Display

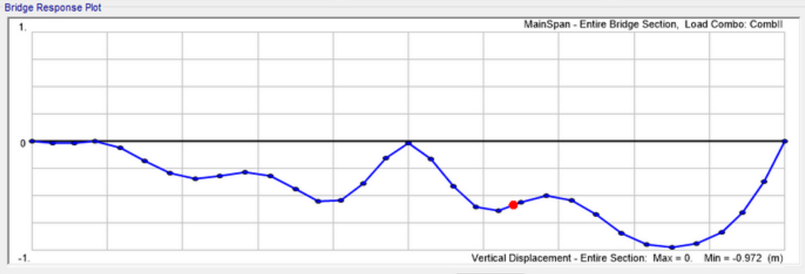
Select Bridge Object: MainSpan
Bridge Model Type: Spine (Frame)
Show Tabular Display of Current Plot: Show Table... Export To Excel...
Units: KN, m, C

Select Display Component
Result Types: Displacement
Results For: Entire Bridge Section
Response: Vertical Displacement - Entire Section
Include Tendon Forces

Load Case/Load Combo
Case/Combo: Combll

Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step 1

Bridge Response Plot



Mouse Pointer Location
Distance From Start of Bridge Object 562.7333 Bridge Cut
Response At Current Location Show Cut

Snap Options
Snap to Computed Response Points

Distance Options
Layout Line Girder Length

Save Named Set
Show Named Set
Refresh
Done

Bridge Object Response Display

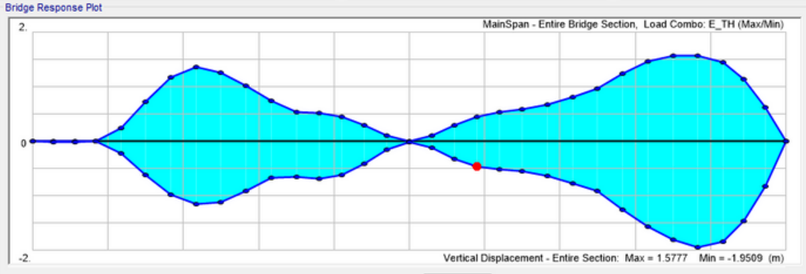
Select Bridge Object: MainSpan
Bridge Model Type: Spine (Frame)
Show Tabular Display of Current Plot: Show Table... Export To Excel...
Units: KN, m, C

Select Display Component
Result Types: Displacement
Results For: Entire Bridge Section
Response: Vertical Displacement - Entire Section
Include Tendon Forces

Load Case/Load Combo
Case/Combo: E_TH

Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step 1

Bridge Response Plot

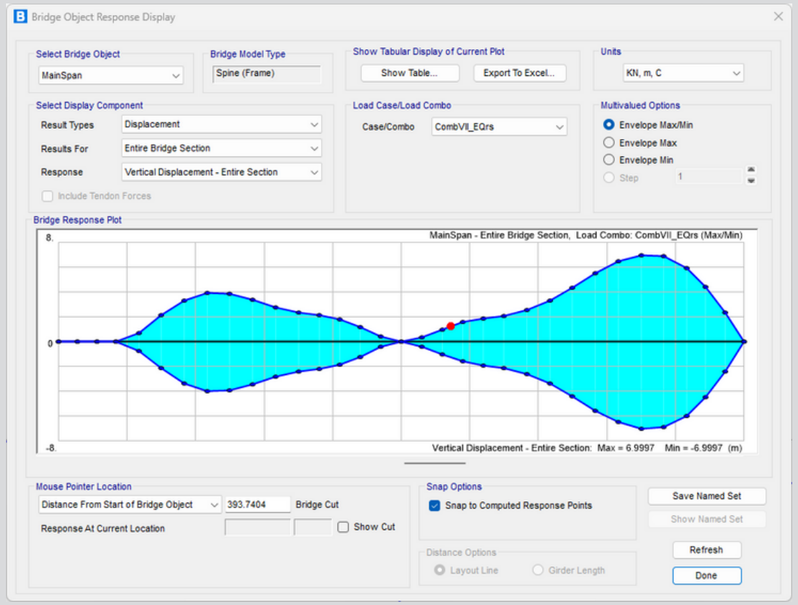


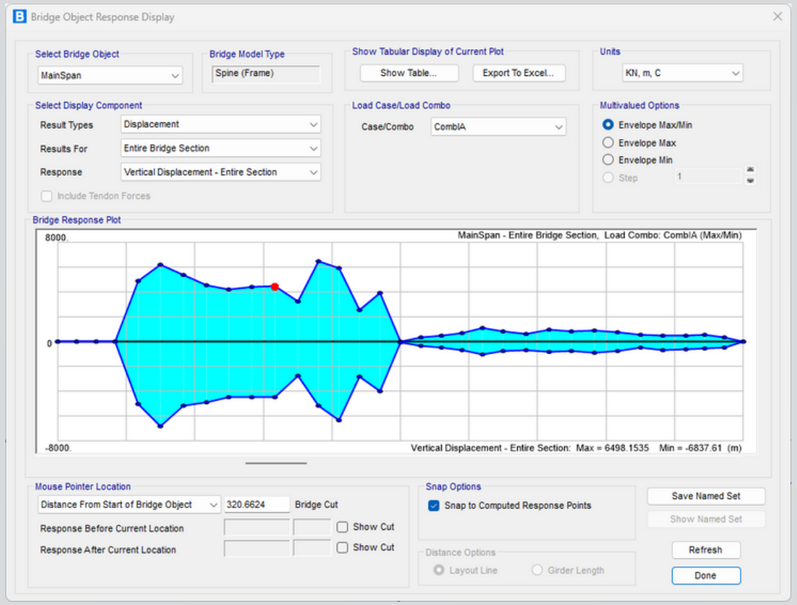
Mouse Pointer Location
Distance From Start of Bridge Object 451.9745 Bridge Cut
Response Before Current Location Show Cut
Response After Current Location Show Cut

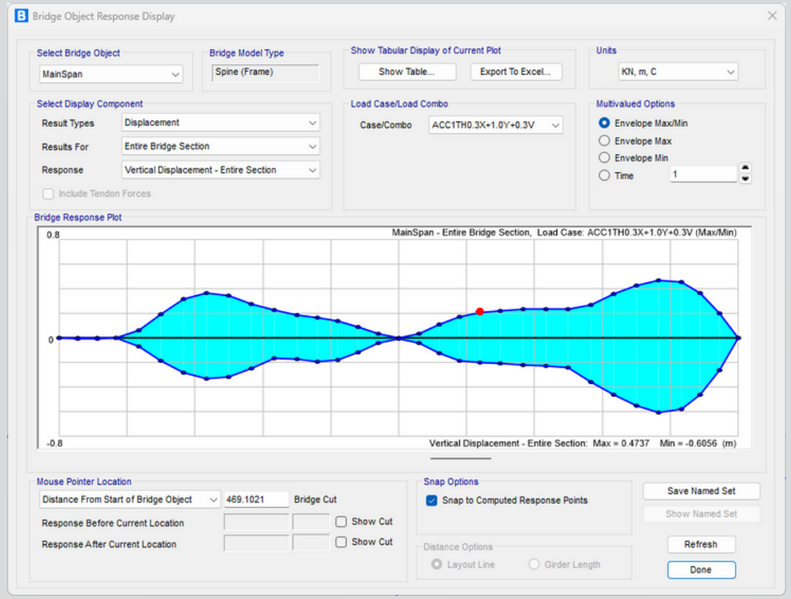
Snap Options
Snap to Computed Response Points

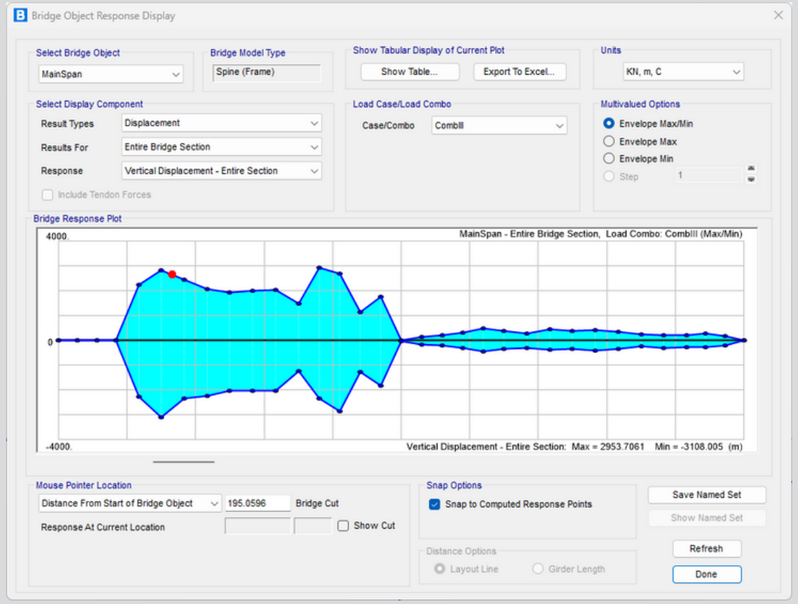
Distance Options
Layout Line Girder Length

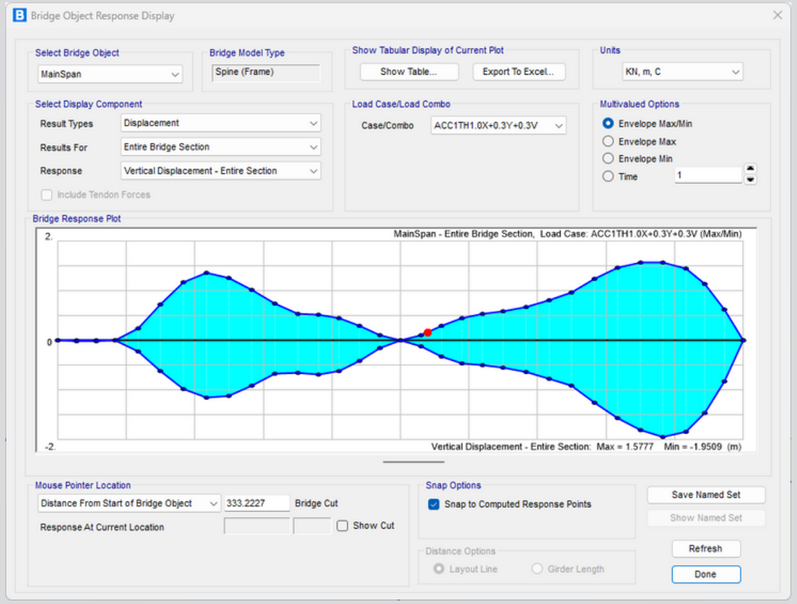
Save Named Set
Show Named Set
Refresh
Done

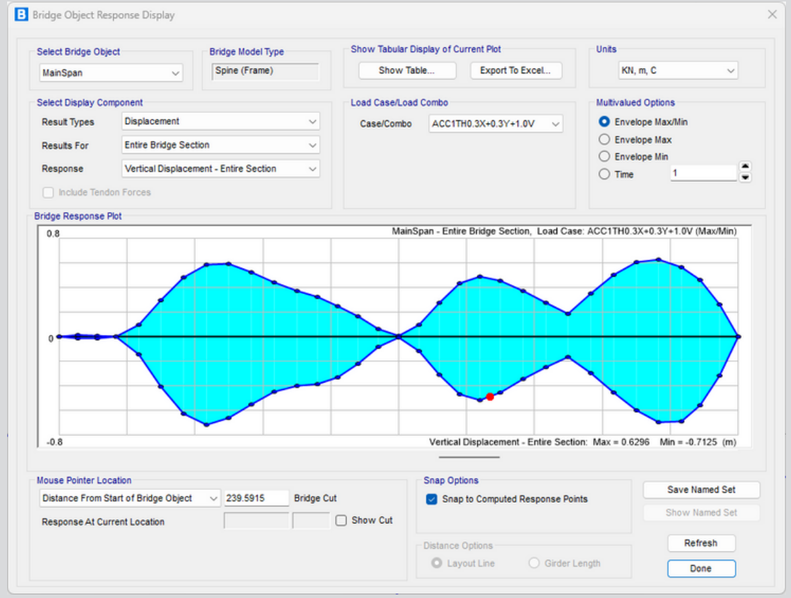

Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
CombVII_EQrs
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
8.
0
-8.
MainSpan - Entire Bridge Section, Load Combo: CombVII_EQrs (Max/Min)
Vertical Displacement - Entire Section: Max = 6.9997 Min = -6.9997 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
393.7404
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done


Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
CombIA
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
8000.
0
-8000.
MainSpan - Entire Bridge Section, Load Combo: CombIA (Max/Min)
Vertical Displacement - Entire Section: Max = 6498.1535 Min = -6837.61 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
320.6624
Bridge Cut
Response Before Current Location
Response After Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

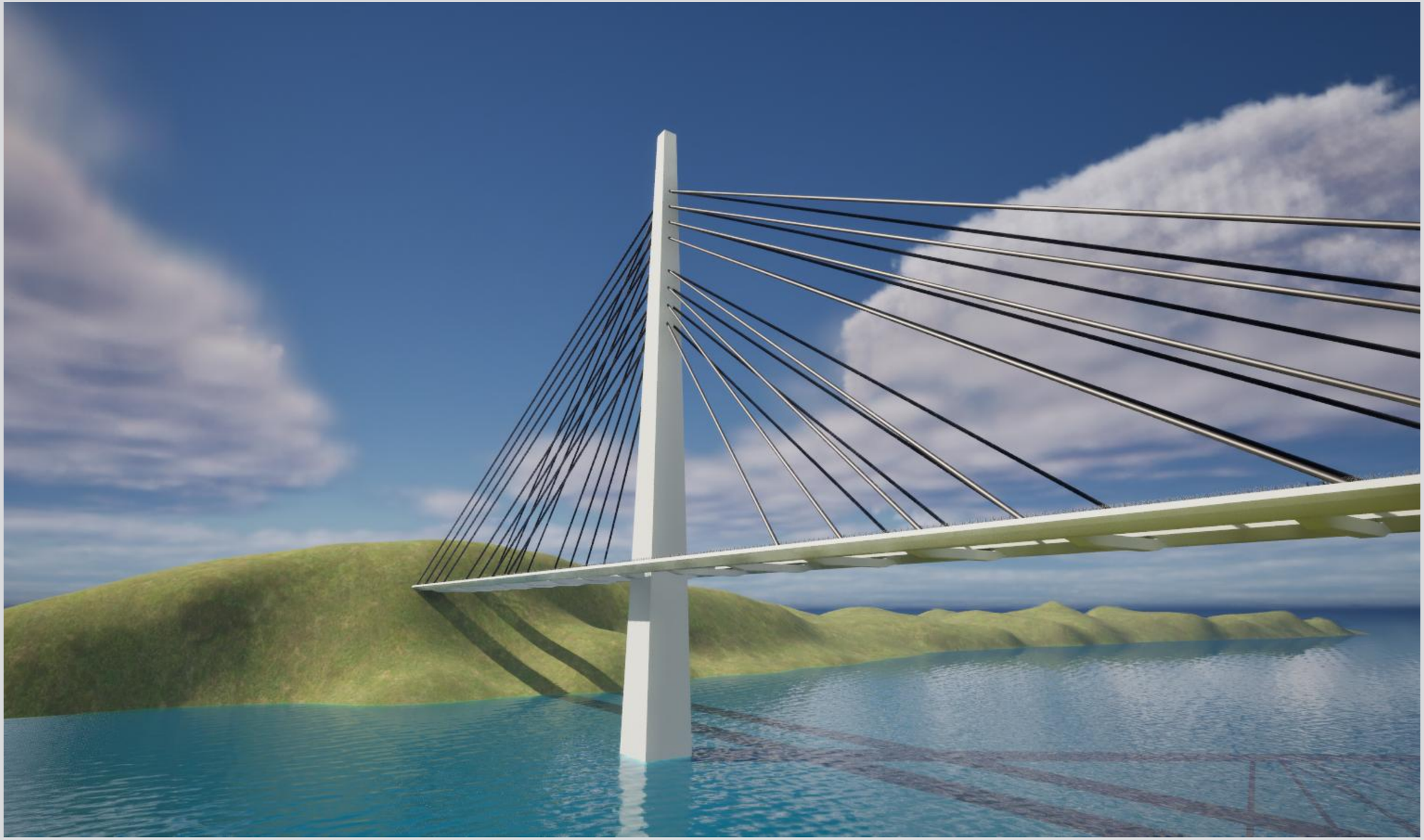

Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
ACC1TH0.3X+1.0Y+0.3V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Time
1
Bridge Response Plot
0.8
0
-0.8
MainSpan - Entire Bridge Section, Load Case: ACC1TH0.3X+1.0Y+0.3V (Max/Min)
Vertical Displacement - Entire Section: Max = 0.4737 Min = -0.6056 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
469.1021
Bridge Cut
Response Before Current Location
Response After Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

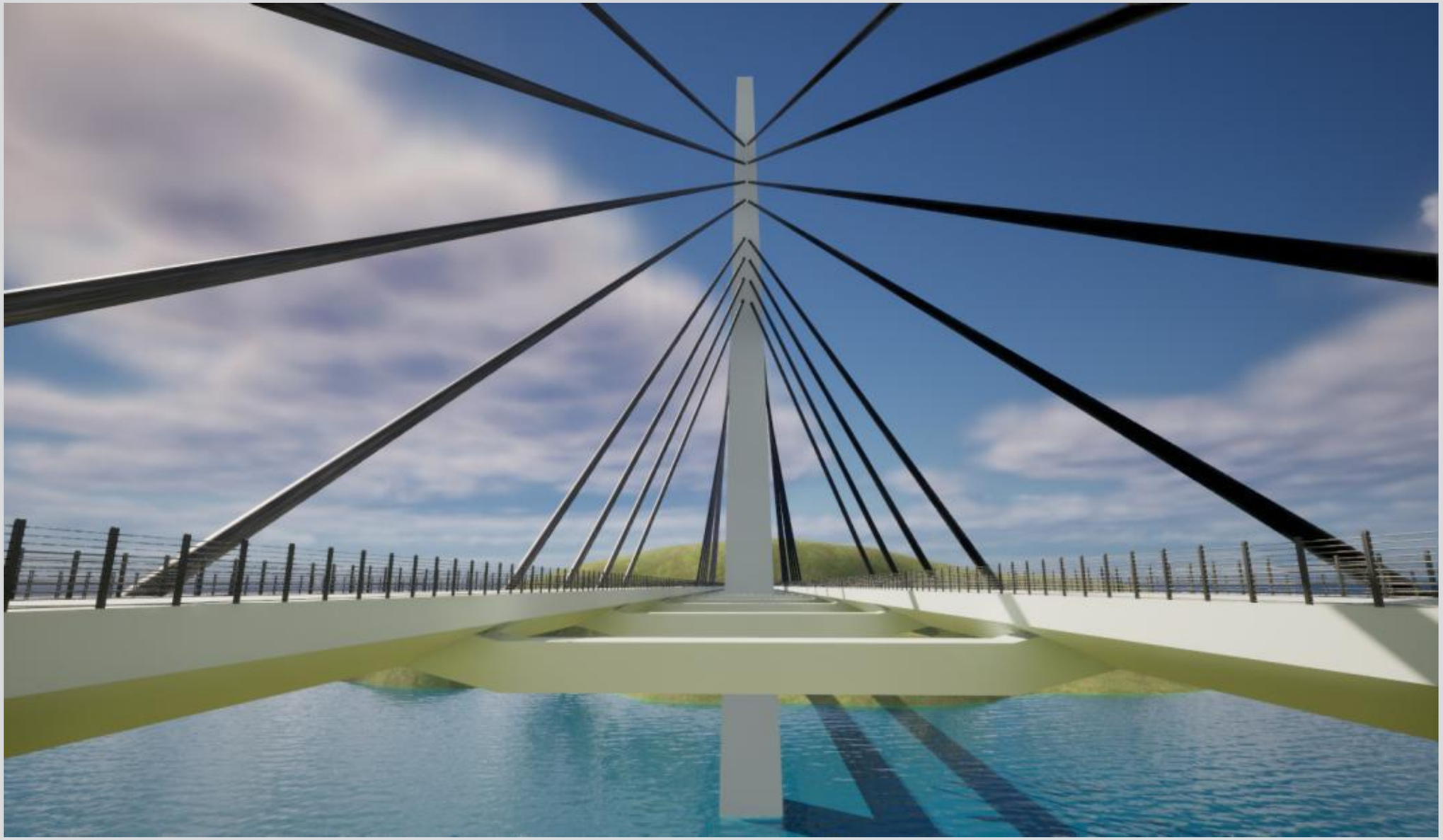

Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
CombIII
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Step
1
Bridge Response Plot
4000.
0
-4000.
MainSpan - Entire Bridge Section, Load Combo: CombIII (Max/Min)
Vertical Displacement - Entire Section: Max = 2953.7061 Min = -3108.005 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
195.0596
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

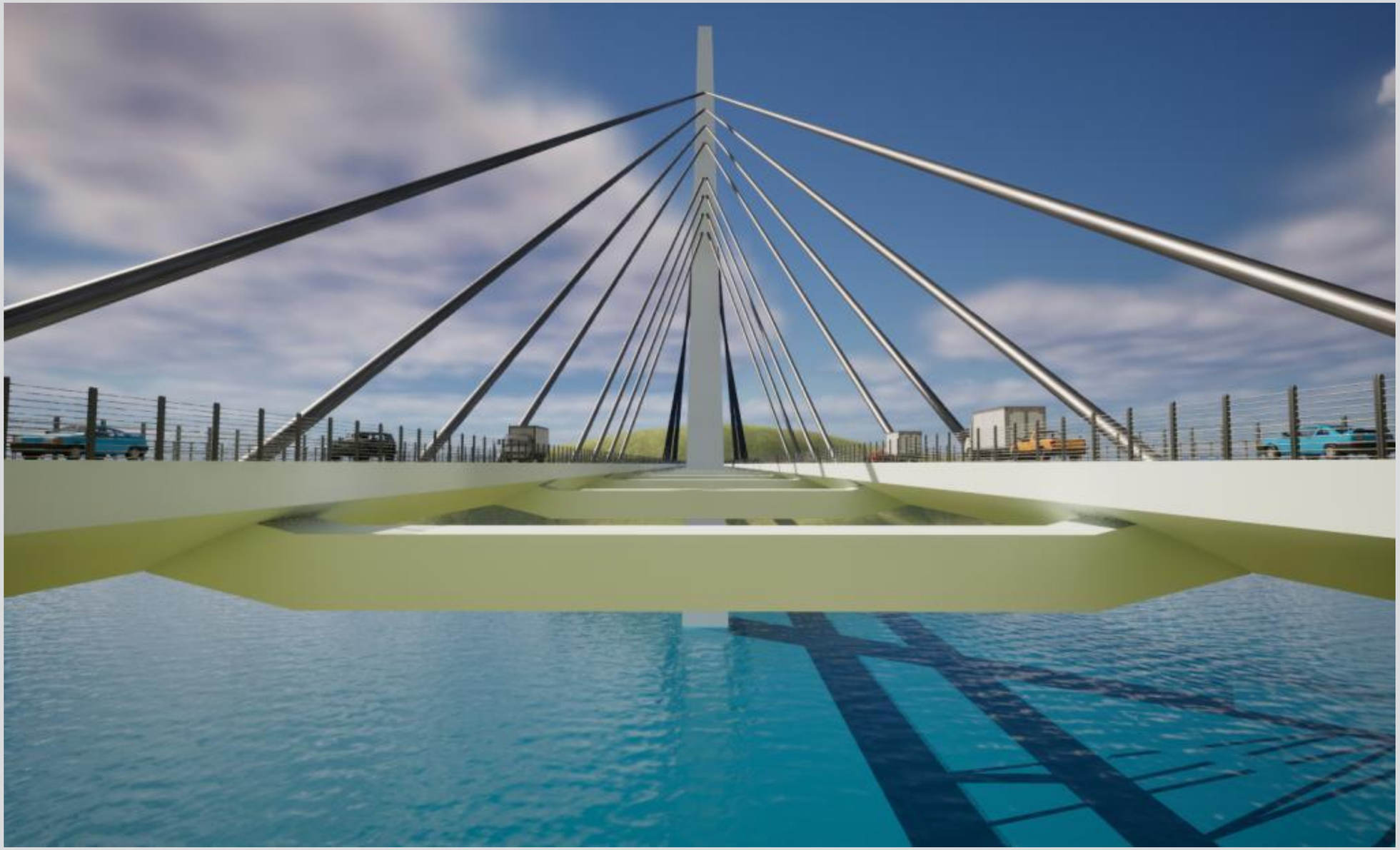

Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
ACC1TH1.0X+0.3Y+0.3V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Time
1
Bridge Response Plot
2.
0
-2.
MainSpan - Entire Bridge Section, Load Case: ACC1TH1.0X+0.3Y+0.3V (Max/Min)
Vertical Displacement - Entire Section: Max = 1.5777 Min = -1.9509 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
333.2227
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

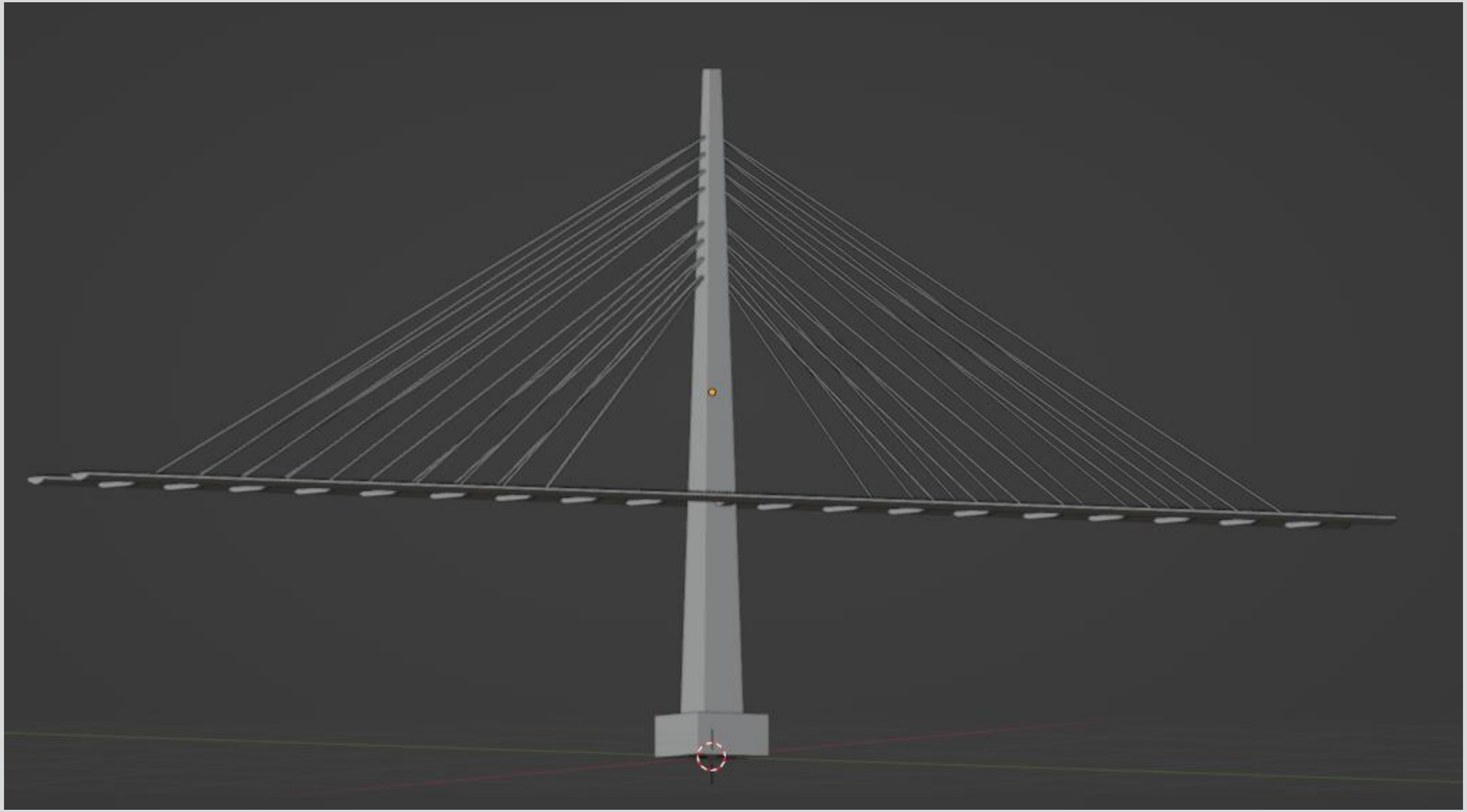

Bridge Object Response Display
Select Bridge Object
MainSpan
Bridge Model Type
Spine (Frame)
Show Tabular Display of Current Plot
Show Table...
Export To Excel...
Units
KN, m, C
Select Display Component
Result Types
Displacement
Results For
Entire Bridge Section
Response
Vertical Displacement - Entire Section
Include Tendon Forces
Load Case/Load Combo
Case/Combo
ACC1TH0.3X+0.3Y+1.0V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Time
1
Bridge Response Plot
0.8
0
-0.8
MainSpan - Entire Bridge Section, Load Case: ACC1TH0.3X+0.3Y+1.0V (Max/Min)
Vertical Displacement - Entire Section: Max = 0.6296 Min = -0.7125 (m)
Mouse Pointer Location
Distance From Start of Bridge Object
239.5915
Bridge Cut
Response At Current Location
Show Cut
Snap Options
Snap to Computed Response Points
Distance Options
Layout Line
Girder Length
Save Named Set
Show Named Set
Refresh
Done

3D MODEL

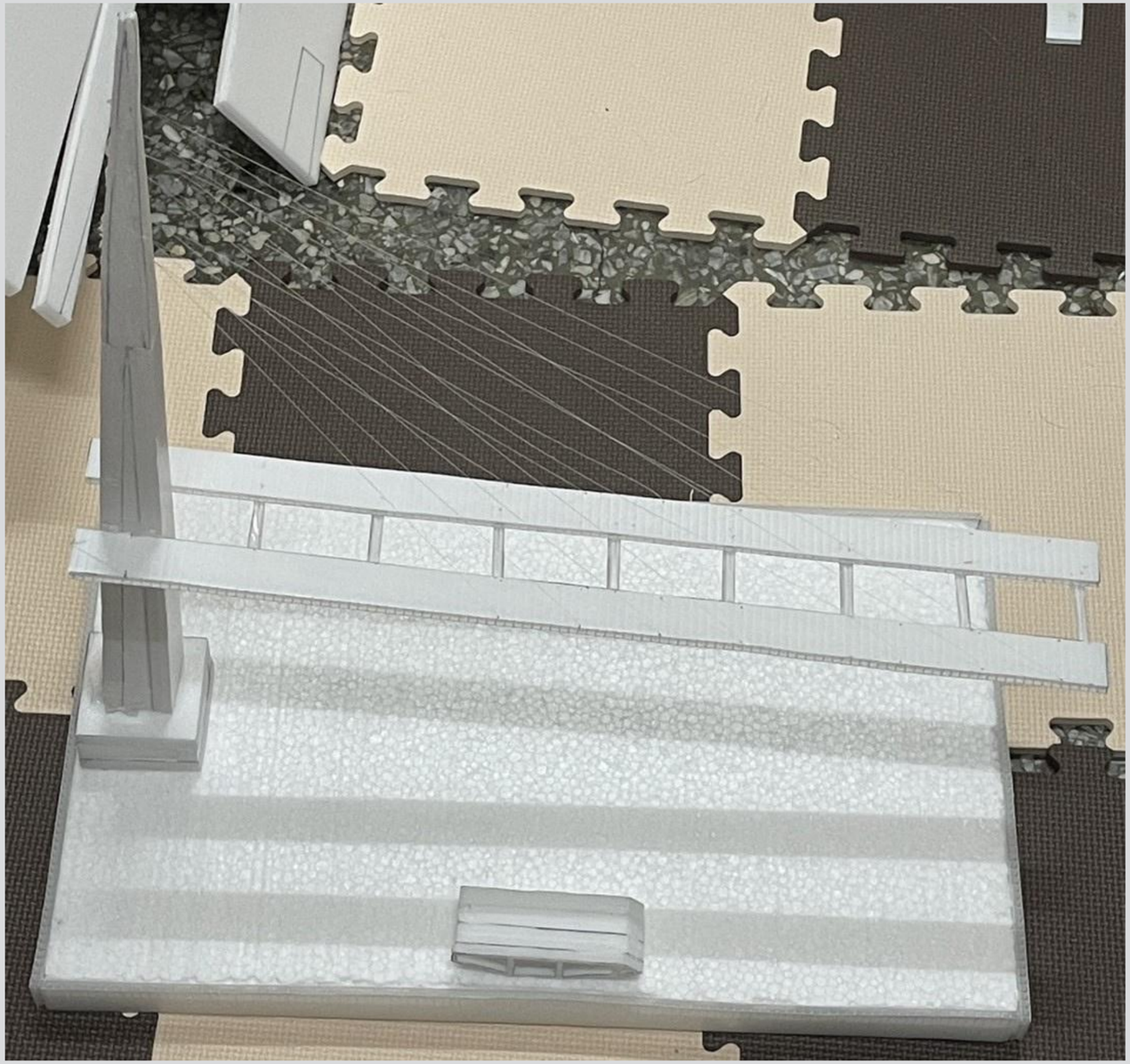








PHYSICAL MODEL



THANK YOU