橋梁設計報告

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一、 設計規定

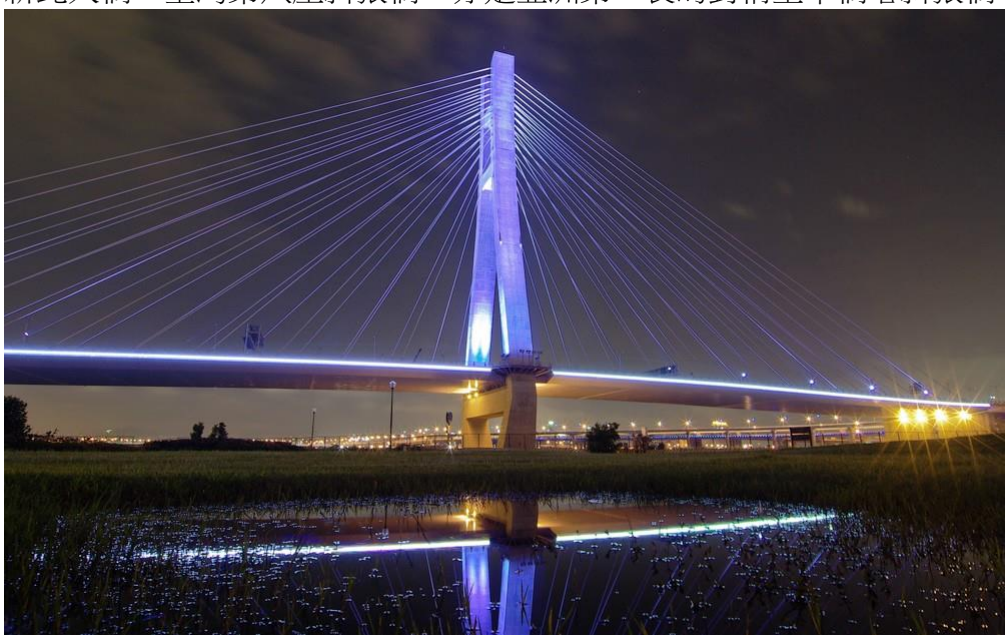
1. Only one bridge tower or pylon is allowed
2. Main span = 920 m
3. Live load deflection < L/800
4. Safe under the wind and earthquake load combinations

二、 工程背景

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。

三、 參考資料

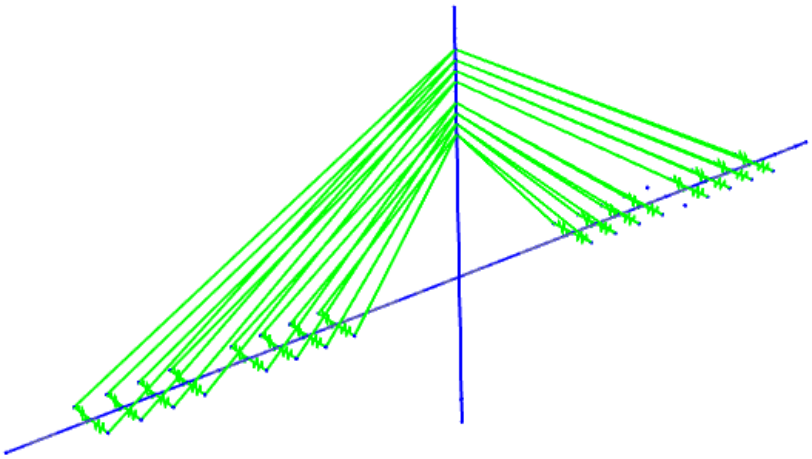
新北大橋：臺灣第八座斜張橋，亦是亞洲第一長的對稱型單橋塔斜張橋。



四、 相關規範

- 公路橋梁設計規範
- 分析設計軟體：SAP2000

五、　　模型圖



1　Model geometry

This section provides model geometry information, including items such as the layout line and lane definitions.

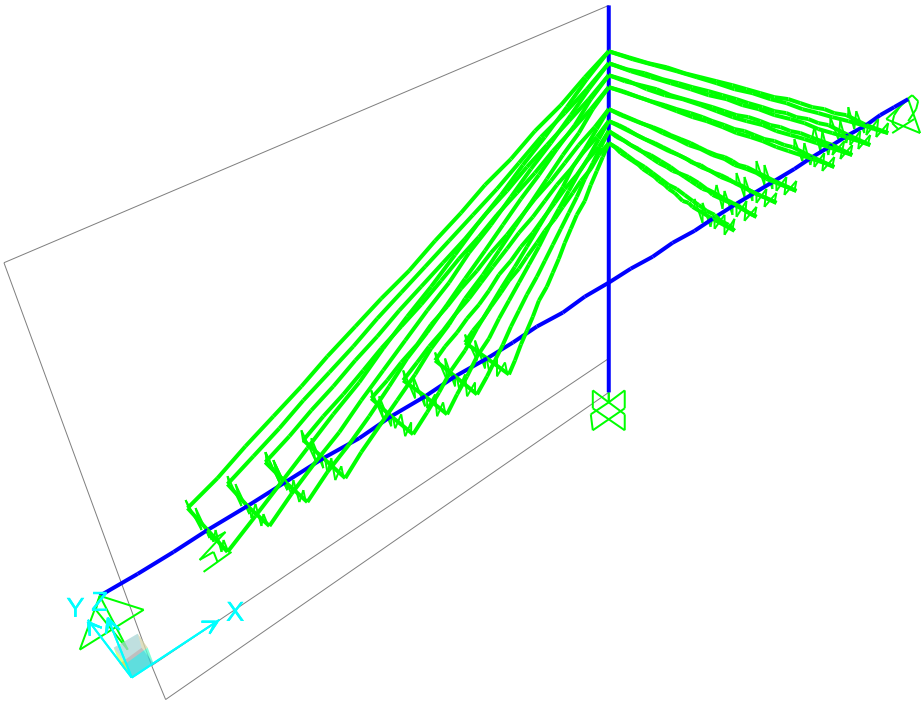


Figure 1: Finite element model

1.1. Layout Line

Table 1: Bridge Layout Line 2 - Horizontal Layout Data, Part 1 of 2

Table 1: Bridge Layout Line 2 - Horizontal Layout Data, Part 1 of 2

LayoutLine	SegType	Station	Radius	Bearing	CoordSys	X
		m	m			m
CLine	Initial Station and Bearing	0.		N900000E	GLOBAL	0.
CLine	Straight at Previous Bearing to End	920.			GLOBAL	920.

Table 1: Bridge Layout Line 2 - Horizontal Layout Data, Part 2 of 2

Table 1: Bridge Layout Line 2 - Horizontal Layout Data, Part 2 of 2

LayoutLine	Y	GlobalX	GlobalY
	m	m	m
CLine	0.	0.	0.
CLine	0.	920.	0.

Table 2: Bridge Layout Line 3 - Vertical Layout Data

Table 2: Bridge Layout Line 3 - Vertical Layout Data

LayoutLine	SegType	Station	Grade	CoordSys	Z	GlobalZ
		m	Percent		m	m
CLine	Initial Station, Elevation Z and Grade	0.	0.	GLOBAL	87.4	87.4
CLine	Constant at Previous Grade to End	920.	0.	GLOBAL	87.4	87.4

1.2. Lanes

Table 3: Lane Definition Data, Part 1 of 3

Table 3: Lane Definition Data, Part 1 of 3

Lane	LaneFrom	LayoutLine	Station	LaneType	Width	Offset	Radius	LoadGroup
			m		m	m	m	
L_LANE1	Layout Line	CLine	0.	Fixed Lane	1.82	-22.13	0.	Default
L_LANE1	Layout Line	CLine	920.		1.82	-22.13	0.	Default
L_LANE2	Layout Line	CLine	0.	Fixed Lane	3.98	-19.21	0.	Default
L_LANE2	Layout Line	CLine	920.		3.98	-19.21	0.	Default
L_LANE3	Layout Line	CLine	0.	Fixed Lane	3.98	-15.22	0.	Default
L_LANE3	Layout Line	CLine	920.		3.98	-15.22	0.	Default
L_LANE4	Layout Line	CLine	0.	Fixed Lane	3.98	-11.23	0.	Default
L_LANE4	Layout Line	CLine	920.		3.98	-11.23	0.	Default
R_LANE1	Layout Line	CLine	0.	Fixed Lane	1.82	22.13	0.	Default
R_LANE1	Layout Line	CLine	920.		1.82	22.13	0.	Default
R_LANE2	Layout Line	CLine	0.	Fixed Lane	3.98	19.21	0.	Default
R_LANE2	Layout Line	CLine	920.		3.98	19.21	0.	Default
R_LANE3	Layout Line	CLine	0.	Fixed Lane	3.98	15.22	0.	Default
R_LANE3	Layout Line	CLine	920.		3.98	15.22	0.	Default

Table 3: Lane Definition Data, Part 1 of 3

Lane	LaneFrom	LayoutLine	Station	LaneType	Width	Offset	Radius	LoadGroup
			m		m	m	m	
R_LANE4	Layout Line	CLine	0.	Fixed Lane	3.98	11.23	0.	Default
R_LANE4	Layout Line	CLine	920.		3.98	11.23	0.	Default

Table 3: Lane Definition Data, Part 2 of 3

Table 3: Lane Definition Data, Part 2 of 3

Lane	DiscAlong	DiscAcross	DiscSpan	DiscSpanFac	DiscLane	DiscLaneFac	LeftType	RightType
	m	m						
L_LANE1	3.	3.	Yes	4.	Yes	10.	Interior	Interior
L_LANE1								
L_LANE2	3.	3.	Yes	4.	Yes	10.	Interior	Interior
L_LANE2								
L_LANE3	3.	3.	Yes	4.	Yes	10.	Interior	Interior
L_LANE3								
L_LANE4	3.	3.	Yes	4.	Yes	10.	Interior	Interior
L_LANE4								
R_LANE1	3.	3.	Yes	4.	Yes	10.	Interior	Interior
R_LANE1								
R_LANE2	3.	3.	Yes	4.	Yes	10.	Interior	Interior
R_LANE2								
R_LANE3	3.	3.	Yes	4.	Yes	10.	Interior	Interior
R_LANE3								
R_LANE4	3.	3.	Yes	4.	Yes	10.	Interior	Interior
R_LANE4								

Table 3: Lane Definition Data, Part 3 of 3

Table 3: Lane Definition Data, Part 3 of 3

Lane	Color	Notes
L_LANE1	Blue	
L_LANE1		
L_LANE2	Green	
L_LANE2		
L_LANE3	Cyan	
L_LANE3		
L_LANE4	Orange	
L_LANE4		
R_LANE1	Blue	
R_LANE1		
R_LANE2	Green	
R_LANE2		
R_LANE3	Cyan	
R_LANE3		
R_LANE4	Orange	
R_LANE4		

1.3. Spans

Table 4: Bridge Object Definitions 03 - Spans 1 - General

Table 4: Bridge Object Definitions 03 - Spans 1 - General

BridgeObj	SpanName	BridgeSect	Variation
MainSpan	Span 1	MainSpan	No

1.4. Abutments

Table 5: Bridge Abutment Definitions

Table 5: Bridge Abutment Definitions

Abutment	GirderSup	SubType	FSProp
BABT1	Bottom	Spring	Fixed

1.5. Bearings

Table 6: Bridge Bearing Definitions

Table 6: Bridge Bearing Definitions

Bearing	Type	U1Type	U2Type	U3Type	R1Type	R2Type	R3Type
BBRG1	User	Fixed	Fixed	Fixed	Free	Free	Free

2. Material properties

This section provides material property information for materials used in the model.

Table 7: Material Properties 02 - Basic Mechanical Properties

Table 7: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight	UnitMass	E1	G12	U12	A1
	KN/m3	KN-s2/m4	KN/m2	KN/m2		1/C
4000Psi	2.3563E+01	2.4028E+00	24855578.06	10356490.86	0.2	9.9000E-06
A416Gr250	7.6973E+01	7.8490E+00	196500599.9			1.1700E-05
A416Gr270	7.6973E+01	7.8490E+00	196500599.9			1.1700E-05
A615Gr60	7.6973E+01	7.8490E+00	199947978.8			1.1700E-05
A709Gr50	7.6973E+01	7.8490E+00	199947978.8	76903068.77	0.3	1.1700E-05

Table 8: Material Properties 03a - Steel Data

Table 8: Material Properties 03a - Steel Data

Material	Fy	Fu	FinalSlope	CoupModType
	KN/m2	KN/m2		
A709Gr50	344737.89	448159.26	-0.1	Von Mises

Table 9: Material Properties 03b - Concrete Data

Table 9: Material Properties 03b - Concrete Data

Material	Fc	eFc	FinalSlope	CoupModType
	KN/m2	KN/m2		
4000Psi	27579.03	27579.03	-0.1	Modified Darwin-Peck nold

Table 10: Material Properties 03e - Rebar Data

Table 10: Material Properties 03e - Rebar Data

Material	Fy	Fu	FinalSlope	CoupModType
	KN/m2	KN/m2		
A615Gr60	413685.47	620528.21	-0.1	Von Mises

Table 11: Material Properties 03f - Tendon Data

Table 11: Material Properties 03f - Tendon Data

Material	Fy	Fu	FinalSlope	CoupModType
	KN/m2	KN/m2		
A416Gr250	1493404.56	1723689.47	-0.1	Von Mises
A416Gr270	1689905.16	1861584.63	-0.1	Von Mises

3. Section properties

This section provides section property information for objects used in the model.

3.1. Frames

Table 12: Frame Section Properties 01 - General, Part 1 of 4

Table 12: Frame Section Properties 01 - General, Part 1 of 4

SectionName	Material	Shape	FilletRadius	t3	t2	tf	tw
			m	m	m	m	m
BRD1	4000Psi	Bridge Section					

Table 12: Frame Section Properties 01 - General, Part 1 of 4

SectionName	Material	Shape	FilletRadius	t3	t2	tf	tw
			m	m	m	m	m
FSEC1	4000Psi	PC Conc Super-T Girder		1.225	1.99		
Pylon		Nonprismatic					
Pylonbottom'	A709Gr50	Box/Tube	0.	27.6	27.6	6.7	6.7
Pylontop'	A709Gr50	Box/Tube	0.	8.23	8.23	0.33	0.33
set	A709Gr50	Rectangular		50.	50.		
set_ VAR1		Nonprismatic					

Table 12: Frame Section Properties 01 - General, Part 2 of 4

Table 12: Frame Section Properties 01 - General, Part 2 of 4

SectionName	Area	TorsConst	I33	I22	I23	AS2	AS3
	m2	m4	m4	m4	m4	m2	m2
BRD1	308.835106	1763.983902	674.268941	127647.0374	0.	176.650179	308.835106
FSEC1	0.531962	0.006479	0.102241	0.106871	0.	0.251418	0.391706
Pylon							
Pylonbottom'	560.12	61166.5043	44968.3007	44968.3007	0.	369.84	369.84
Pylontop'	10.428	162.702878	108.657848	108.657848	0.	5.4318	5.4318
set	2500.	880208.333	520833.333	520833.333	0.	2083.333333	2083.333333
set_ VAR1							

Table 12: Frame Section Properties 01 - General, Part 3 of 4

Table 12: Frame Section Properties 01 - General, Part 3 of 4

SectionName	S33	S22	Z33	Z22	R33	R22
	m3	m3	m3	m3	m	m
BRD1	245.913722	4356.100389	622.544488	9400.965118	1.477588	20.330218
FSEC1	0.153313	0.107408	0.209356	0.207178	0.438402	0.448218
Pylon						
Pylonbottom'	3258.572512	3258.572512	4540.322	4540.322	8.960097	8.960097
Pylontop'	26.405309	26.405309	30.910919	30.910919	3.227974	3.227974
set	20833.33333	20833.33333	31250.	31250.	14.433757	14.433757
set_ VAR1						

Table 12: Frame Section Properties 01 - General, Part 4 of 4

Table 12: Frame Section Properties 01 - General, Part 4 of 4

SectionName	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
BRD1	1.	1.	1.	1.	1.	1.	0.40608	0.40608
FSEC1	1.	1.	1.	1.	1.	1.	1.	1.
Pylon								
Pylonbottom'	1.	1.	1.	1.	1.	1.	1.	1.

Table 12: Frame Section Properties 01 - General, Part 4 of 4

SectionName	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
Pylontop'	1.	1.	1.	1.	1.	1.	1.	1.
set	1.	1.	1.	1.	1.	1.	1.	1.
set_ VAR1								

Table 13: Frame Section Properties 05 - Nonprismatic

Table 13: Frame Section Properties 05 - Nonprismatic

SectionName	SegmentNum	StartSect	EndSect	AbsLength	VarLength	EI33Var	EI22Var
				m			
Pylon	1	Pylonbottom'	Pylontop'		1.	Parabolic	Parabolic
set_	1	set	set		1.	Parabolic	Linear
VAR1	1	BRD1	BRD1		0.0278	Parabolic	Linear
VAR1	2	BRD1	BRD1		0.0278	Parabolic	Linear
VAR1	3	BRD1	BRD1		0.0278	Parabolic	Linear
VAR1	4	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	5	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	6	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	7	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	8	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	9	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	10	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	11	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	12	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	13	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	14	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	15	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	16	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	17	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	18	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	19	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	20	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	21	BRD1	BRD1		0.03	Parabolic	Linear
VAR1	22	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	23	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	24	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	25	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	26	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	27	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	28	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	29	BRD1	BRD1		0.0333	Parabolic	Linear
VAR1	30	BRD1	BRD1		0.0278	Parabolic	Linear
VAR1	31	BRD1	BRD1		0.0278	Parabolic	Linear
VAR1	32	BRD1	BRD1		0.0278	Parabolic	Linear

3.2. Cables

Table 14: Cable Section Definitions, Part 1 of 2

Table 14: Cable Section Definitions, Part 1 of 2

CableSect	Material	Diameter	Area	TorsConst	I	AS
		m	m2	m4	m4	m2
Cable	A416Gr250	0.76	0.453646	0.032753	0.016377	0.408281

Table 14: Cable Section Definitions, Part 2 of 2

Table 14: Cable Section Definitions, Part 2 of 2

CableSect	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
Cable	1.	1.	1.	1.	1.	1.	1.	1.

3.3. Tendons

Table 15: Tendon Section Definitions, Part 1 of 2

Table 15: Tendon Section Definitions, Part 1 of 2

TendonSect	ModelOpt	Material	Diameter	Area	TorsConst	I	AS
			m	m2	m4	m4	m2
TEN1	Elements	A416Gr270	0.028661	0.000645	6.625E-08	3.312E-08	0.000581

Table 15: Tendon Section Definitions, Part 2 of 2

Table 15: Tendon Section Definitions, Part 2 of 2

TendonSect	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
TEN1	1.	1.	1.	1.	1.	1.	1.	1.

3.4. Solids

Table 16: Solid Property Definitions

Table 16: Solid Property Definitions

SolidProp	Material	MatAngleA	MatAngleB	MatAngleC
		Degrees	Degrees	Degrees
Solid1	4000Psi	0.	0.	0.

4. Loading

This section provides loading information as applied to the model.

4.1. Load patterns

Table 17: Load Pattern Definitions

Table 17: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
DEAD	Dead	1.	
Barrier	Dead	0.	
VL	Vehicle Live	0.	
Wind000	Wind	0.	None

4.2. Vehicles

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 1 of 5

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 1 of 5

VehName	FromLibrary	LibraryName	FltAxleFac	AxleFac	UnifFac	SupportMom	IntSupport
AML	Yes	AASHTO.xml	1.	1.	1.	Yes	Yes
HSn-44	Yes	AASHTO.xml	1.	20.	1.	Yes	Yes
HSn-44L	Yes	AASHTO.xml	20.	1.	20.	Yes	Yes
Hn-44	Yes	AASHTO.xml	1.	20.	1.	Yes	Yes
Hn-44L	Yes	AASHTO.xml	20.	1.	20.	Yes	Yes
HL-93M	Yes	AASHTO.xml	1.	1.33	1.	Yes	Yes
HL-93K	Yes	AASHTO.xml	1.	1.33	1.	Yes	Yes
HL-93S	Yes	AASHTO.xml	1.	1.33	1.	Yes	Yes
HL-93LB	Yes	AASHTO.xml	1.	1.33	1.	Yes	Yes
HL-93F	Yes	AASHTO.xml	1.	1.15	1.	Yes	Yes

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 2 of 5

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 2 of 5

VehName	OtherResp	AxleMom	AxleMType	AxleMWidth	AxleMDbl	AxleOther	AxleOType
		KN		m		KN	
AML	Yes	0.	One Point		No	0.	One Point
HSn-44	Yes	0.	One Point		No	0.	One Point
HSn-44L	Yes	4.003	Fixed Width Line	3.048	Yes	5.783	Fixed Width Line
Hn-44	Yes	0.	One Point		No	0.	One Point
Hn-44L	Yes	4.003	Fixed Width Line	3.048	Yes	5.783	Fixed Width Line
HL-93M	Yes	0.	One Point		No	0.	One Point
HL-93K	Yes	0.	One Point		No	0.	One Point
HL-93S	No	0.	One Point		No	0.	One Point
HL-93LB	No	0.	One Point		No	0.	One Point
HL-93F	Yes	0.	One Point		No	0.	One Point

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 3 of 5

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 3 of 5

VehName	AxleOWidth	LEffAxle	LEffUnif	ForStraddle	StraddleFac	NumInter	MinExtDist
	m						m
AML		None	None	No		2	0.3048

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 3 of 5

VehName	AxleOWidth	LEffAxle	LEffUnif	ForStraddle	StraddleFac	NumInter	MinExtDist
	m						m
HSn-44		None	None	No		3	0.3048
HSn-44L	3.048	None	None	No		1	0.3048
Hn-44		None	None	No		2	0.3048
Hn-44L	3.048	None	None	No		1	0.3048
HL-93M		None	None	No		3	0.3048
HL-93K		None	None	No		4	0.3048
HL-93S		None	None	No		7	0.3048
HL-93LB		None	None	No		5	0.3048
HL-93F		None	None	No		3	0.3048

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 4 of 5

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 4 of 5

VehName	MinIntDist	StayInLane	CGHTAxle	CGHTUnif	Notes	AdjustSuper
	m		m	m		
AML	0.6096	No	0.	0.		No
HSn-44	0.6096	No	0.	0.		No
HSn-44L	0.6096	No	0.	0.		No
Hn-44	0.6096	No	0.	0.		No
Hn-44L	0.6096	No	0.	0.		No
HL-93M	0.6096	No	0.	0.		No
HL-93K	0.6096	No	0.	0.		No
HL-93S	0.6096	No	0.	0.		No
HL-93LB	0.6096	No	0.	0.		No
HL-93F	0.6096	No	0.	0.		No

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 5 of 5

Table 18: Vehicles 2 - General Vehicles 1 - General, Part 5 of 5

VehName	IgnoreVert	Centrifugal	Braking	NosingForce	DesignType
				KN	
AML	No	No	No	0.	Vehicle Live
HSn-44	No	No	No	0.	Vehicle Live
HSn-44L	No	No	No	0.	Vehicle Live
Hn-44	No	No	No	0.	Vehicle Live
Hn-44L	No	No	No	0.	Vehicle Live
HL-93M	No	No	No	0.	Vehicle Live
HL-93K	No	No	No	0.	Vehicle Live
HL-93S	No	No	No	0.	Vehicle Live
HL-93LB	No	No	No	0.	Vehicle Live
HL-93F	No	No	No	0.	Vehicle Fatigue

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 1 of 2

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 1 of 2

VehName	LoadType	InterUnif	UnifType	UnifWidth	InterAxle	AxleType	AxleWidth	InterMinD
		KN/m		m	KN		m	m
AML	Leading Load	0.	Fixed Width	0.3048	106.757	Two Points	1.8288	
AML	Fixed Length	0.	Fixed Width	0.3048	106.757	Two Points	1.8288	1.2192

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 1 of 2

VehName	LoadType	InterUnif	UnifType	UnifWidth	InterAxle	AxleType	AxleWidth	InterMinD
		KN/m		m	KN		m	m
HSn-44	Leading Load	0.	Fixed Width	0.3048	1.779	Two Points	1.8288	
HSn-44	Fixed Length	0.	Fixed Width	0.3048	7.117	Two Points	1.8288	4.2672
HSn-44	Variable Length	0.	Fixed Width	0.3048	7.117	Two Points	1.8288	4.2672
HSn-44L	Trailing Load	0.47	Fixed Width	3.048				
Hn-44	Leading Load	0.	Fixed Width	0.3048	1.779	Two Points	1.8288	
Hn-44	Fixed Length	0.	Fixed Width	0.3048	7.117	Two Points	1.8288	4.2672
Hn-44L	Trailing Load	0.47	Fixed Width	3.048				
HL-93M	Leading Load	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	
HL-93M	Fixed Length	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	1.2192
HL-93M	Trailing Load	9.34	Fixed Width	3.048				
HL-93K	Leading Load	9.34	Fixed Width	3.048	35.586	Two Points	1.8288	
HL-93K	Fixed Length	9.34	Fixed Width	3.048	142.343	Two Points	1.8288	4.2672
HL-93K	Variable Length	9.34	Fixed Width	3.048	142.343	Two Points	1.8288	4.2672
HL-93K	Trailing Load	9.34	Fixed Width	3.048				
HL-93S	Leading Load	8.41	Fixed Width	3.048	32.027	Two Points	1.8288	
HL-93S	Fixed Length	8.41	Fixed Width	3.048	128.109	Two Points	1.8288	4.2672
HL-93S	Fixed Length	8.41	Fixed Width	3.048	128.109	Two Points	1.8288	4.2672
HL-93S	Variable Length	8.41	Fixed Width	3.048	32.027	Two Points	1.8288	15.24
HL-93S	Fixed Length	8.41	Fixed Width	3.048	128.109	Two Points	1.8288	4.2672
HL-93S	Fixed Length	8.41	Fixed Width	3.048	128.109	Two Points	1.8288	4.2672
HL-93S	Trailing Load	8.41	Fixed Width	3.048				
HL-93LB	Leading Load	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	
HL-93LB	Fixed Length	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	1.2192
HL-93LB	Variable Length	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	7.9248
HL-93LB	Fixed Length	9.34	Fixed Width	3.048	111.206	Two Points	1.8288	1.2192
HL-93LB	Trailing Load	9.34	Fixed Width	3.048				
HL-93F	Leading Load	0.	Fixed Width	0.3048	35.586	Two Points	1.8288	
HL-93F	Fixed Length	0.	Fixed Width	0.3048	142.343	Two Points	1.8288	4.2672
HL-93F	Fixed Length	0.	Fixed Width	0.3048	142.343	Two Points	1.8288	9.144

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 2 of 2

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 2 of 2

VehName	InterMaxD
	m
AML	
AML	
HSn-44	
HSn-44	
HSn-44	9.144
HSn-44L	
Hn-44	
Hn-44	

Table 19: Vehicles 3 - General Vehicles 2 - Loads, Part 2 of 2

VehName	InterMaxD m
Hn-44L	
HL-93M	
HL-93M	
HL-93M	
HL-93K	
HL-93K	
HL-93K	9.144
HL-93K	
HL-93S	
HL-93S	
HL-93S	
HL-93S	0.
HL-93S	
HL-93S	
HL-93S	
HL-93LB	
HL-93LB	
HL-93LB	12.192
HL-93LB	
HL-93LB	
HL-93F	
HL-93F	
HL-93F	

Table 20: Vehicles 4 - Vehicle Classes

Table 20: Vehicles 4 - Vehicle Classes

VehClass	VehName	ScaleFactor
AML	AML	1.
HSn-44	HSn-44	1.
HSn-44L	HSn-44L	1.
Hn-44	Hn-44	1.
Hn-44L	Hn-44L	1.
HL-93M	HL-93M	1.
HL-93K	HL-93K	1.
HL-93S	HL-93S	1.
HL-93LB	HL-93LB	1.
HL-93F	HL-93F	1.

4.3. Bridge loading

Table 21: Bridge Load Definitions 02 - Line

Table 21: Bridge Load Definitions 02 - Line

Name	Type	CoordSys	Dir	RefLoc	Dist m	FOverL KN/m
Wind000Deck	Force	GLOBAL	Y	Left Edge of Deck	24.1	15.01

5. Load cases

This section provides load case information.

5.1. Definitions

Table 22: Load Case Definitions, Part 1 of 2

Table 22: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
DEAD	NonStatic	Zero				Prog Det
MODAL	LinModal	DEAD				Prog Det
VL	LinDirHist	DEAD				Prog Det
Wind	LinStatic	DEAD				Prog Det
RS1.0X+0.3Y+0.3V	LinRespSpec		MODAL			Prog Det
RS0.3X+1.0Y+0.3V	LinRespSpec		MODAL			Prog Det
RS0.3X+0.3Y+1.0V	LinRespSpec		MODAL			Prog Det
ACC1TH1.0X+0.3Y+0.3V	LinDirHist	DEAD				Prog Det
ACC1TH0.3X+1.0Y+0.3V	LinDirHist	DEAD				Prog Det
ACC1TH0.3X+0.3Y+1.0V	LinDirHist	DEAD				Prog Det

Table 22: Load Case Definitions, Part 2 of 2

Table 22: Load Case Definitions, Part 2 of 2

Case	DesignAct
DEAD	Non-Composite
MODAL	Other
VL	Short-Term Composite
Wind	Short-Term Composite
RS1.0X+0.3Y+0.3V	Short-Term Composite
RS0.3X+1.0Y+0.3V	Short-Term Composite
RS0.3X+0.3Y+1.0V	Short-Term Composite

Table 22: Load Case Definitions, Part 2 of 2

Case	DesignAct
ACC1TH1.0X+0.3Y+0.3V	Short-Term Composite
ACC1TH0.3X+1.0Y+0.3V	Short-Term Composite
ACC1TH0.3X+0.3Y+1.0V	Short-Term Composite

5.2. Static case load assignments

Table 23: Case - Static 1 - Load Assignments

Table 23: Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
DEAD	Load pattern	DEAD	1.
Wind	Load pattern	Wind000	1.

5.3. Response spectrum case load assignments

Table 24: Case - Response Spectrum 1 - General, Part 1 of 2

Table 24: Case - Response Spectrum 1 - General, Part 1 of 2

Case	ModalCombo	GMCf1 Cyc/sec	GMCf2 Cyc/sec	PerRigid	DirCombo	ABSSF	MotionType
RS1.0X+0.3Y+0.3V	CQC	1.0000E+00	0.0000E+00	SRSS	ABS	1.	Acceleration
RS0.3X+1.0Y+0.3V	CQC	1.0000E+00	0.0000E+00	SRSS	ABS	1.	Acceleration
RS0.3X+0.3Y+1.0V	CQC	1.0000E+00	0.0000E+00	SRSS	ABS	1.	Acceleration

Table 24: Case - Response Spectrum 1 - General, Part 2 of 2

Table 24: Case - Response Spectrum 1 - General, Part 2 of 2

Case	DampingType	ConstDamp
RS1.0X+0.3Y+0.3V	Constant	0.03
RS0.3X+1.0Y+0.3V	Constant	0.03
RS0.3X+0.3Y+1.0V	Constant	0.03

Table 25: Case - Response Spectrum 2 - Load Assignments

Table 25: Case - Response Spectrum 2 - Load Assignments

Case	LoadType	LoadName	CoordSys	Function	Angle	TransAccSF
					Degrees	m/sec2
RS1.0X+0.3Y+0.3V	Acceleration	U1	GLOBAL	Sail	0.	9.81
RS1.0X+0.3Y+0.3V	Acceleration	U2	GLOBAL	Sail	0.	2.943
RS1.0X+0.3Y+0.3V	Acceleration	U3	GLOBAL	Sail	0.	1.962
RS0.3X+1.0Y+0.3V	Acceleration	U1	GLOBAL	Sail	0.	2.943
RS0.3X+1.0Y+0.3V	Acceleration	U2	GLOBAL	Sail	0.	9.81
RS0.3X+1.0Y+0.3V	Acceleration	U3	GLOBAL	Sail	0.	1.962
RS0.3X+0.3Y+1.0V	Acceleration	U1	GLOBAL	Sail	0.	2.943
RS0.3X+0.3Y+1.0V	Acceleration	U2	GLOBAL	Sail	0.	2.943
RS0.3X+0.3Y+1.0V	Acceleration	U3	GLOBAL	Sail	0.	6.54

Table 26: Function - Response Spectrum - User

Table 26: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
UNIFRS	0.	1.	0.05
UNIFRS	1.	1.	
Sail	0.25	0.3328	0.05
Sail	0.2841	0.3328	
Sail	0.2857	0.3328	
Sail	0.2874	0.3328	
Sail	0.289	0.3328	
Sail	0.2907	0.3328	
Sail	0.2924	0.3328	
Sail	0.2941	0.3328	
Sail	0.2959	0.3328	
Sail	0.2976	0.3328	
Sail	0.2994	0.3328	
Sail	0.3012	0.3328	
Sail	0.303	0.3328	
Sail	0.3049	0.3328	
Sail	0.3067	0.3328	
Sail	0.3086	0.3328	
Sail	0.3106	0.3328	
Sail	0.3125	0.3328	
Sail	0.3145	0.3328	
Sail	0.3165	0.3328	
Sail	0.3185	0.3328	
Sail	0.3205	0.3328	
Sail	0.3226	0.3328	
Sail	0.3247	0.3328	
Sail	0.3268	0.3328	
Sail	0.3289	0.3328	

Table 26: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
Sail	0.3311	0.3328	
Sail	0.3333	0.3328	
Sail	0.3356	0.3328	
Sail	0.3378	0.3328	
Sail	0.3401	0.3328	
Sail	0.3425	0.3328	
Sail	0.3448	0.3328	
Sail	0.3472	0.3328	
Sail	0.3497	0.3328	
Sail	0.3521	0.3328	
Sail	0.3546	0.3328	
Sail	0.3571	0.3328	
Sail	0.3597	0.3328	
Sail	0.3623	0.3328	
Sail	0.365	0.3328	
Sail	0.3676	0.3328	
Sail	0.3704	0.3328	
Sail	0.3731	0.3328	
Sail	0.3759	0.3328	
Sail	0.3788	0.3328	
Sail	0.3817	0.3328	
Sail	0.3846	0.3328	
Sail	0.3876	0.3328	
Sail	0.3906	0.3328	
Sail	0.3937	0.3328	
Sail	0.3968	0.3328	
Sail	0.4	0.3328	
Sail	0.4032	0.3328	
Sail	0.4065	0.3328	
Sail	0.4098	0.3328	
Sail	0.4132	0.3328	
Sail	0.4167	0.3328	
Sail	0.4202	0.3328	
Sail	0.4237	0.3328	
Sail	0.4274	0.3328	
Sail	0.431	0.3328	
Sail	0.4348	0.3328	
Sail	0.4386	0.3328	
Sail	0.4425	0.3328	
Sail	0.4464	0.3328	
Sail	0.4505	0.3328	
Sail	0.4545	0.3328	
Sail	0.4587	0.3328	
Sail	0.463	0.3328	
Sail	0.4673	0.3328	
Sail	0.4717	0.3328	
Sail	0.4762	0.3328	
Sail	0.4808	0.3328	
Sail	0.4854	0.3328	
Sail	0.4902	0.3328	
Sail	0.495	0.3328	
Sail	0.5	0.3328	
Sail	0.5051	0.3328	
Sail	0.5102	0.3328	

Table 26: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
Sail	0.5155	0.3328	
Sail	0.5208	0.3328	
Sail	0.5263	0.3328	
Sail	0.5319	0.3328	
Sail	0.5376	0.3328	
Sail	0.5435	0.3328	
Sail	0.5495	0.3328	
Sail	0.5556	0.3328	
Sail	0.5618	0.3328	
Sail	0.5682	0.3328	
Sail	0.5747	0.3328	
Sail	0.5814	0.3328	
Sail	0.5882	0.3328	
Sail	0.5952	0.3328	
Sail	0.6024	0.3328	
Sail	0.6098	0.3328	
Sail	0.6173	0.3328	
Sail	0.625	0.3328	
Sail	0.6329	0.3328	
Sail	0.641	0.3328	
Sail	0.6494	0.3328	
Sail	0.6579	0.3328	
Sail	0.6667	0.3328	
Sail	0.6757	0.3328	
Sail	0.6849	0.3329	
Sail	0.6944	0.3375	
Sail	0.7042	0.3423	
Sail	0.7143	0.3471	
Sail	0.7246	0.3522	
Sail	0.7353	0.3574	
Sail	0.7463	0.3627	
Sail	0.7576	0.3682	
Sail	0.7692	0.3738	
Sail	0.7813	0.3797	
Sail	0.7937	0.3857	
Sail	0.8065	0.3919	
Sail	0.8197	0.3984	
Sail	0.8333	0.405	
Sail	0.8475	0.4119	
Sail	0.8621	0.419	
Sail	0.8772	0.4263	
Sail	0.8929	0.4339	
Sail	0.9091	0.4418	
Sail	0.9259	0.45	
Sail	0.9434	0.4585	
Sail	0.9615	0.4673	
Sail	0.9804	0.4765	
Sail	1.	0.486	
Sail	1.0204	0.4959	
Sail	1.0417	0.5063	
Sail	1.0638	0.517	
Sail	1.087	0.5283	
Sail	1.1111	0.54	
Sail	1.1364	0.5523	

Table 26: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
Sail	1.1628	0.5651	
Sail	1.1905	0.5786	
Sail	1.2195	0.5927	
Sail	1.25	0.6075	
Sail	1.2821	0.6231	
Sail	1.3158	0.6395	
Sail	1.3514	0.6568	
Sail	1.3889	0.675	
Sail	1.4286	0.6943	
Sail	1.4706	0.7147	
Sail	1.5152	0.7364	
Sail	1.5625	0.7594	
Sail	1.6129	0.7839	
Sail	1.6667	0.81	
Sail	1.7241	0.832	
Sail	1.7857	0.832	
Sail	1.8519	0.832	
Sail	1.9231	0.832	
Sail	2.	0.832	
Sail	2.0833	0.832	
Sail	2.1739	0.832	
Sail	2.2727	0.832	
Sail	2.381	0.832	
Sail	2.5	0.832	
Sail	2.6316	0.832	
Sail	2.7778	0.832	
Sail	2.9412	0.832	
Sail	3.125	0.832	
Sail	3.3333	0.832	
Sail	3.5714	0.832	
Sail	3.8462	0.832	
Sail	4.1667	0.832	
Sail	4.5455	0.832	
Sail	5.	0.832	
Sail	5.5556	0.832	
Sail	6.25	0.832	
Sail	7.1429	0.832	
Sail	8.3333	0.832	
Sail	10.	0.7601	
Sail	12.5	0.6746	
Sail	16.6667	0.5892	
Sail	25.	0.5037	
Sail	50.	0.4183	
Sail	100.	0.3755	

6. Load combinations

This section provides load combination information.

Table 27: Combination Definitions

Table 27: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
CombII	Linear Add	DEAD	1.
CombII		Wind	1.
CombIA	Envelope	DEAD	1.
CombIA		VL	2.2
CombIII	Envelope	DEAD	1.
CombIII		VL	1.
CombIII		Wind	0.3
E_RS	Envelope	RS0.3X+0.3Y+1.0V	1.
E_RS		RS0.3X+1.0Y+0.3V	1.
E_RS		RS1.0X+0.3Y+0.3V	1.
CombVII_EQrs	Linear Add	E_RS	1.
E_TH	Envelope	ACC1TH1.0X+0.3Y+0.3V	1.
E_TH		ACC1TH0.3X+1.0Y+0.3V	1.
E_TH		ACC1TH0.3X+0.3Y+1.0V	1.
CombVII_EQth	Linear Add		

7. Structure results

This section provides structure results, including items such as structural periods and base reactions.

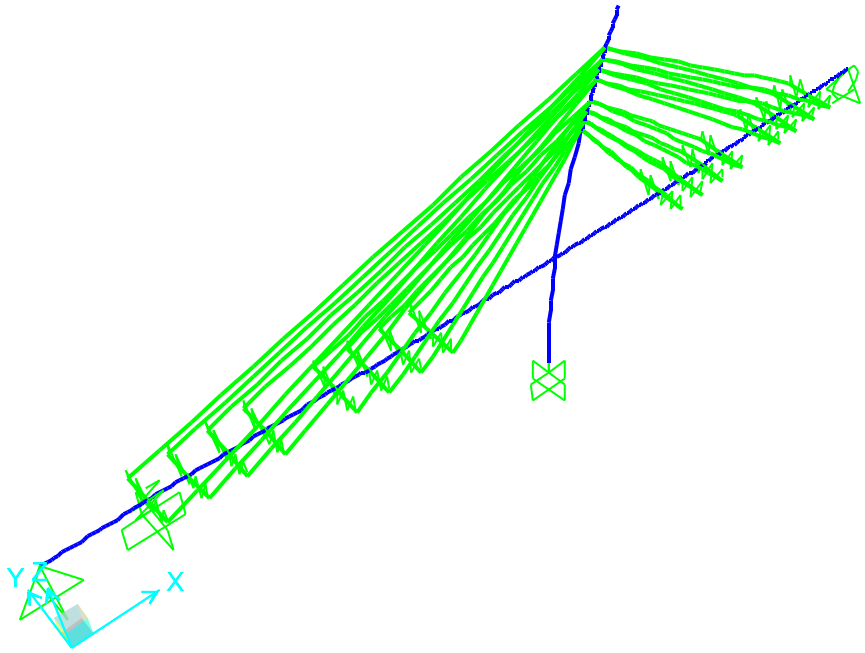


Figure 2: Deformed shape

7.1. Modal results

Table 28: Modal Participating Mass Ratios

Table 28: Modal Participating Mass Ratios

OutputCase	StepNum	Period	UX	UY	UZ	SumUX	SumUY	SumUZ
		Sec						
MODAL	1.	5.527942	1.452E-05	0.49825	5.299E-06	1.452E-05	0.49825	5.299E-06
MODAL	2.	5.162546	0.09846	0.00012	0.02092	0.09848	0.49837	0.02093
MODAL	3.	2.845384	0.09075	1.667E-05	0.08637	0.18923	0.49839	0.1073
MODAL	4.	2.237219	0.0167	4.458E-06	0.04375	0.20593	0.49839	0.15105
MODAL	5.	2.088865	0.01155	1.566E-05	0.01015	0.21748	0.49841	0.1612
MODAL	6.	2.051674	0.00132	2.925E-06	0.09359	0.2188	0.49841	0.25479
MODAL	7.	1.744087	0.353	1.925E-05	0.00284	0.5718	0.49843	0.25762
MODAL	8.	1.7158	5.176E-05	0.21591	9.636E-06	0.57185	0.71434	0.25763
MODAL	9.	1.344961	0.03736	5.366E-06	0.00259	0.60921	0.71434	0.26022
MODAL	10.	1.338013	0.01785	0.00036	0.00061	0.62706	0.71471	0.26083
MODAL	11.	1.325295	9.363E-05	0.17411	8.220E-06	0.62715	0.88882	0.26084
MODAL	12.	1.062541	0.22725	0.00039	0.0011	0.8544	0.8892	0.26194
MODAL	13.	1.039238	0.01554	0.00455	0.00477	0.86995	0.89375	0.26671
MODAL	14.	0.92429	0.00223	0.00031	0.00087	0.87218	0.89406	0.26757
MODAL	15.	0.883613	9.419E-06	0.01263	5.572E-05	0.87218	0.90669	0.26763
MODAL	16.	0.864311	1.907E-06	0.01999	0.00052	0.87219	0.92668	0.26815
MODAL	17.	0.746169	3.576E-05	0.01768	3.686E-05	0.87222	0.94437	0.26818
MODAL	18.	0.728095	0.0565	1.088E-05	4.602E-05	0.92872	0.94438	0.26823

Table 28: Modal Participating Mass Ratios

OutputCase	StepNum	Period	UX	UY	UZ	SumUX	SumUY	SumUZ
		Sec						
MODAL	19.	0.688042	5.537E-06	1.294E-05	0.00059	0.92873	0.94439	0.26882
MODAL	20.	0.650344	5.196E-07	2.205E-06	2.637E-05	0.92873	0.94439	0.26884
MODAL	21.	0.616294	0.00012	3.490E-05	0.01071	0.92885	0.94443	0.27955
MODAL	22.	0.571789	1.958E-05	0.00853	4.863E-06	0.92887	0.95296	0.27956
MODAL	23.	0.529697	9.454E-07	1.546E-06	0.00282	0.92887	0.95296	0.28238
MODAL	24.	0.500158	3.932E-07	0.00015	0.00214	0.92887	0.9531	0.28452
MODAL	25.	0.461512	0.00982	5.762E-07	0.00091	0.93869	0.9531	0.28543
MODAL	26.	0.459451	0.00023	8.004E-07	0.00017	0.93892	0.9531	0.2856
MODAL	27.	0.423847	4.906E-07	0.00091	0.00051	0.93892	0.95401	0.28611
MODAL	28.	0.409289	4.151E-05	6.937E-05	0.00098	0.93896	0.95408	0.28709
MODAL	29.	0.386172	1.037E-06	0.00651	6.284E-05	0.93896	0.96059	0.28715
MODAL	30.	0.385335	8.215E-07	0.00083	0.00135	0.93896	0.96142	0.2885
MODAL	31.	0.370151	0.0001	3.082E-15	0.01627	0.93906	0.96142	0.30478
MODAL	32.	0.355094	6.162E-06	0.00017	0.01767	0.93907	0.96159	0.32245
MODAL	33.	0.345386	7.209E-08	0.00115	0.0039	0.93907	0.96273	0.32635
MODAL	34.	0.336328	3.373E-05	0.00076	0.01809	0.9391	0.96349	0.34444
MODAL	35.	0.317149	2.101E-06	0.00108	0.0675	0.93911	0.96458	0.41193
MODAL	36.	0.312506	1.073E-05	0.00023	0.47994	0.93912	0.9648	0.89187
MODAL	37.	0.299535	1.467E-06	0.0005	0.00771	0.93912	0.9653	0.89958
MODAL	38.	0.292385	3.114E-09	0.00031	9.949E-05	0.93912	0.96561	0.89968
MODAL	39.	0.290725	0.00111	5.910E-07	2.544E-06	0.94023	0.96561	0.89969
MODAL	40.	0.282087	7.531E-05	0.0001	0.00295	0.9403	0.96571	0.90264
MODAL	41.	0.27962	3.141E-06	4.312E-06	0.00472	0.94031	0.96571	0.90736
MODAL	42.	0.274208	1.442E-05	9.705E-06	4.021E-08	0.94032	0.96572	0.90736
MODAL	43.	0.266879	2.182E-08	7.457E-05	6.814E-05	0.94032	0.9658	0.90742
MODAL	44.	0.246403	5.116E-06	4.822E-06	4.116E-06	0.94033	0.9658	0.90743
MODAL	45.	0.244314	3.428E-09	1.409E-05	0.00025	0.94033	0.96582	0.90768
MODAL	46.	0.230922	1.076E-05	0.00028	9.393E-05	0.94034	0.9661	0.90777
MODAL	47.	0.229018	1.880E-09	3.149E-05	0.00011	0.94034	0.96613	0.90788
MODAL	48.	0.224191	0.02525	5.400E-06	4.536E-05	0.96559	0.96613	0.90793
MODAL	49.	0.214368	1.073E-05	5.827E-07	1.062E-05	0.9656	0.96613	0.90794
MODAL	50.	0.212884	4.510E-06	6.117E-06	3.248E-05	0.9656	0.96614	0.90797
MODAL	51.	0.204918	7.041E-06	0.00018	6.220E-06	0.96561	0.96632	0.90798
MODAL	52.	0.201699	8.133E-07	0.00109	7.588E-06	0.96561	0.96741	0.90798
MODAL	53.	0.198118	1.610E-05	0.00516	8.087E-06	0.96563	0.97257	0.90799
MODAL	54.	0.195782	1.082E-05	0.00044	1.241E-05	0.96564	0.97301	0.908
MODAL	55.	0.19121	1.322E-06	1.643E-06	0.0002	0.96564	0.97301	0.9082
MODAL	56.	0.187966	1.701E-05	1.080E-05	0.00044	0.96566	0.97302	0.90865
MODAL	57.	0.1836	0.00017	2.003E-06	7.487E-05	0.96583	0.97302	0.90872
MODAL	58.	0.179578	2.063E-14	0.017	1.773E-14	0.96583	0.99002	0.90872
MODAL	59.	0.177718	5.272E-08	0.00042	0.00013	0.96583	0.99044	0.90885
MODAL	60.	0.175874	9.290E-06	0.00046	0.00059	0.96584	0.9909	0.90944
MODAL	61.	0.163305	3.153E-08	1.050E-08	4.734E-06	0.96584	0.9909	0.90945
MODAL	62.	0.159743	0.00155	1.608E-15	9.230E-05	0.96739	0.9909	0.90954
MODAL	63.	0.158377	4.413E-07	0.00061	0.00721	0.96739	0.9915	0.91675
MODAL	64.	0.156564	1.006E-06	0.00033	0.03758	0.96739	0.99183	0.95433
MODAL	65.	0.154276	5.412E-06	7.083E-07	0.00491	0.96739	0.99183	0.95925
MODAL	66.	0.151958	2.136E-09	0.00024	0.03236	0.96739	0.99207	0.99161
MODAL	67.	0.150936	4.628E-07	0.00026	0.00707	0.9674	0.99233	0.99867
MODAL	68.	0.146525	5.906E-07	0.00041	9.359E-06	0.9674	0.99274	0.99868
MODAL	69.	0.137449	1.954E-10	5.588E-05	2.180E-09	0.9674	0.9928	0.99868
MODAL	70.	0.137062	5.514E-07	2.895E-10	1.523E-07	0.9674	0.9928	0.99868
MODAL	71.	0.128361	1.592E-06	0.00313	3.746E-05	0.9674	0.99592	0.99872
MODAL	72.	0.126664	0.0068	6.107E-06	1.379E-07	0.9742	0.99593	0.99872

Table 28: Modal Participating Mass Ratios

OutputCase	StepNum	Period	UX	UY	UZ	SumUX	SumUY	SumUZ
		Sec						
MODAL	73.	0.121235	2.173E-05	5.886E-07	5.491E-05	0.97422	0.99593	0.99877
MODAL	74.	0.119255	9.771E-06	0.0001	7.310E-08	0.97423	0.99603	0.99877
MODAL	75.	0.11679	3.426E-09	9.451E-05	4.585E-06	0.97423	0.99613	0.99878
MODAL	76.	0.115199	8.324E-06	6.065E-05	1.265E-09	0.97424	0.99619	0.99878
MODAL	77.	0.104738	1.055E-08	1.448E-07	7.551E-07	0.97424	0.99619	0.99878
MODAL	78.	0.104007	4.461E-06	1.214E-06	3.871E-05	0.97424	0.99619	0.99882
MODAL	79.	0.100936	2.059E-05	2.418E-09	4.773E-07	0.97426	0.99619	0.99882
MODAL	80.	0.100814	9.130E-17	6.440E-08	5.217E-14	0.97426	0.99619	0.99882
MODAL	81.	0.100595	2.789E-05	0.00047	8.727E-06	0.97429	0.99666	0.99883
MODAL	82.	0.09957	2.928E-05	2.888E-07	1.282E-05	0.97432	0.99666	0.99884
MODAL	83.	0.09888	0.00296	5.375E-06	4.048E-05	0.97728	0.99666	0.99888
MODAL	84.	0.09835	6.442E-05	1.620E-05	1.517E-05	0.97735	0.99668	0.9989
MODAL	85.	0.098071	2.192E-05	0.00012	5.290E-06	0.97737	0.9968	0.9989
MODAL	86.	0.097515	0.00012	2.208E-08	3.237E-05	0.97749	0.9968	0.99893
MODAL	87.	0.095224	2.389E-05	0.00065	2.145E-05	0.97751	0.99745	0.99896
MODAL	88.	0.092717	1.785E-06	5.915E-09	4.197E-06	0.97752	0.99745	0.99896
MODAL	89.	0.091706	3.199E-05	8.531E-06	1.635E-06	0.97755	0.99746	0.99896
MODAL	90.	0.091144	0.0008	2.620E-06	4.768E-05	0.97835	0.99746	0.99901

7.2. Base reactions

Table 29: Base Reactions

Table 29: Base Reactions

OutputCase	StepType	GlobalFX	GlobalFY	GlobalFZ	GlobalMX	GlobalMY	GlobalMZ
		KN	KN	KN	KN-m	KN-m	KN-m
DEAD	Max	316751.76	5.182E-11	11511791.37	-1.171E-08	-5308517822.	1.830E-09
DEAD	Min	316751.76	5.182E-11	11511791.37	-1.171E-08	-5308517822.	1.830E-09
VL	Max	1424120428.	603067703.	5242982448.	4.378E+10	2.362E+12	3.865E+11
VL	Min	-1315265485.	-625767598.	-5399963353.	-4.733E+10	-2.290E+12	-3.748E+11
Wind		-1.45	-18490.232	1.217	2723696.989	-230.2652	-10498738.6
RS1.0X+0.3Y+0.3V	Max	3515566.921	2641377.4	3020515.528	496917919.	1656718879.	1356643020.
RS0.3X+1.0Y+0.3V	Max	1305858.522	8557107.715	1620909.372	1621882010.	835535513.	4383106689.
RS0.3X+0.3Y+1.0V	Max	1796550.102	2616450.343	3713243.487	492575865.	1795512368.	1345573082.
ACC1TH1.0X+0.3Y+0.3V	Max	2001785.702	595741.287	1364820.99	103321593.	704283749.	319511775.
ACC1TH1.0X+0.3Y+0.3V	Min	-1633649.32	-835327.863	-1441673.69	-108179549.	-689579294.	-432029607.
ACC1TH0.3X+1.0Y+0.3V	Max	564855.261	1987079.831	1076171.156	344594883.	631278924.	1066605942.
ACC1TH0.3X+1.0Y+0.3V	Min	-434469.666	-2787504.65	-1349948.85	-360474442.	-485522103.	-1442097786.
ACC1TH0.3X+0.3Y+1.0V	Max	470498.188	596559.557	3524037.539	103407988.9	2031141592.	320069384.
ACC1TH0.3X+0.3Y+1.0V	Min	-441966.4	-836423.742	-4408387.1	-108240075.	-1607824029.	-432975794.

8. Joint results

This section provides joint results, including items such as displacements and reactions.

Table 30: Joint Reactions, Part 1 of 2

Table 30: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
1	DEAD	Max	522477.342	2.206E-12	11273863.56	-7.470E-09	37932499.9
1	DEAD	Min	522477.342	2.206E-12	11273863.56	-7.470E-09	37932499.9
1	VL	Max	1424120431.	460976810.	5488575358.	5.229E+10	7.707E+10
1	VL	Min	-1315265488.	-488427719.	-5658039736.	-4.950E+10	-7.236E+10
1	Wind		-1.45	-13514.061	1.594	2856370.124	95.1143
1	RS1.0X+0.3Y+0.3V	Max	3513944.447	2423164.044	2729687.674	579431867.	291323098.5
1	RS0.3X+1.0Y+0.3V	Max	1304235.275	7852611.213	1519976.384	1889549579.	102976828.3
1	RS0.3X+0.3Y+1.0V	Max	1791138.714	2396643.102	3598924.79	573897881.	142857151.9
1	ACC1TH1.0X+0.3Y+0.3V	Max	1997292.048	512840.977	1232490.795	126854248.6	162373130.9
1	ACC1TH1.0X+0.3Y+0.3V	Min	-1631708.61	-753451.858	-1412229.19	-124482356.	-149387292.
1	ACC1TH0.3X+1.0Y+0.3V	Max	563057.149	1710400.72	1066655.285	422972039.	48029523.9
1	ACC1TH0.3X+1.0Y+0.3V	Min	-432881.221	-2511411.42	-1332396.2	-414741113.	-47173945.
1	ACC1TH0.3X+0.3Y+1.0V	Max	440979.537	513072.426	3500190.672	126855935.6	49961936.9
1	ACC1TH0.3X+0.3Y+1.0V	Min	-392158.778	-753637.431	-4362389.5	-124422809.	-56262343.
12	DEAD	Max	-205725.582	4.783E-11	106896.698	0.	0.
12	DEAD	Min	-205725.582	4.783E-11	106896.698	0.	0.
12	VL	Max	14.738	1.370E-14	959.748	0.	0.
12	VL	Min	-2749.633	-4.507E-14	-5.607	0.	0.
12	Wind		5.306E-15	-530.129	-2.928E-16	0.	0.
12	RS1.0X+0.3Y+0.3V	Max	41956.17	15634.437	18726.034	0.	0.
12	RS0.3X+1.0Y+0.3V	Max	31928.376	52114.157	13017.99	0.	0.
12	RS0.3X+0.3Y+1.0V	Max	96397.556	15634.526	37684.268	0.	0.
12	ACC1TH1.0X+0.3Y+0.3V	Max	54629.669	17582.746	19358.358	0.	0.
12	ACC1TH1.0X+0.3Y+0.3V	Min	-43125.552	-13570.364	-26391.099	0.	0.
12	ACC1TH0.3X+1.0Y+0.3V	Max	45363.49	58609.152	13687.703	0.	0.
12	ACC1TH0.3X+1.0Y+0.3V	Min	-34582.519	-45234.546	-18964.258	0.	0.
12	ACC1TH0.3X+0.3Y+1.0V	Max	143349.75	17582.746	41224.004	0.	0.
12	ACC1TH0.3X+0.3Y+1.0V	Min	-106732.029	-13570.364	-55787.352	0.	0.
15	DEAD	Max	0.	0.	0.	0.	0.
15	DEAD	Min	0.	0.	0.	0.	0.

Table 30: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
15	VL	Max	0.	0.	0.	0.	0.
15	VL	Min	0.	0.	0.	0.	0.
15	Wind		0.	0.	0.	0.	0.
15	RS1.0X+0.3Y+0.3V	Max	0.	0.	0.	0.	0.
15	RS0.3X+1.0Y+0.3V	Max	0.	0.	0.	0.	0.
15	RS0.3X+0.3Y+1.0V	Max	0.	0.	0.	0.	0.
15	ACC1TH1.0X+0.3Y+0.3V	Max	0.	0.	0.	0.	0.
15	ACC1TH1.0X+0.3Y+0.3V	Min	0.	0.	0.	0.	0.
15	ACC1TH0.3X+1.0Y+0.3V	Max	0.	0.	0.	0.	0.
15	ACC1TH0.3X+1.0Y+0.3V	Min	0.	0.	0.	0.	0.
15	ACC1TH0.3X+0.3Y+1.0V	Max	0.	0.	0.	0.	0.
15	ACC1TH0.3X+0.3Y+1.0V	Min	0.	0.	0.	0.	0.
44	DEAD	Max	0.	1.784E-12	131031.109	0.	0.
44	DEAD	Min	0.	1.784E-12	131031.109	0.	0.
44	VL	Max	0.	295353858.3	342241454.	0.	0.
44	VL	Min	0.	-291345485.	-293756715.	0.	0.
44	Wind		0.	-4446.042	-0.377	0.	0.
44	RS1.0X+0.3Y+0.3V	Max	0.	381565.392	363278.715	0.	0.
44	RS0.3X+1.0Y+0.3V	Max	0.	1177629.584	152213.044	0.	0.
44	RS0.3X+0.3Y+1.0V	Max	0.	378042.112	238747.229	0.	0.
44	ACC1TH1.0X+0.3Y+0.3V	Max	0.	114596.434	176924.761	0.	0.
44	ACC1TH1.0X+0.3Y+0.3V	Min	0.	-112019.601	-134713.279	0.	0.
44	ACC1TH0.3X+1.0Y+0.3V	Max	0.	382450.743	57612.822	0.	0.
44	ACC1TH0.3X+1.0Y+0.3V	Min	0.	-372608.768	-44802.124	0.	0.
44	ACC1TH0.3X+0.3Y+1.0V	Max	0.	114968.334	72472.028	0.	0.
44	ACC1TH0.3X+0.3Y+1.0V	Min	0.	-112752.878	-64474.345	0.	0.

Table 30: Joint Reactions, Part 2 of 2

Table 30: Joint Reactions, Part 2 of 2

Joint	M3
	KN-m
1	-8.267E-10
1	-8.267E-10
1	4.543E+10
1	-4.576E+10
1	-191911.899
1	29549466.17

Table 30: Joint Reactions, Part 2 of 2

Joint	M3
	KN-m
1	91784091.7
1	28969865.22
1	7988936.2
1	-8882679.8
1	26627283.71
1	-29622946.6
1	8036364.64
1	-8917982.8
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
12	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
15	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.
44	0.

9. Bridge object forces

This section provides bridge object forces at the program determined section cuts.

10. Material take-off

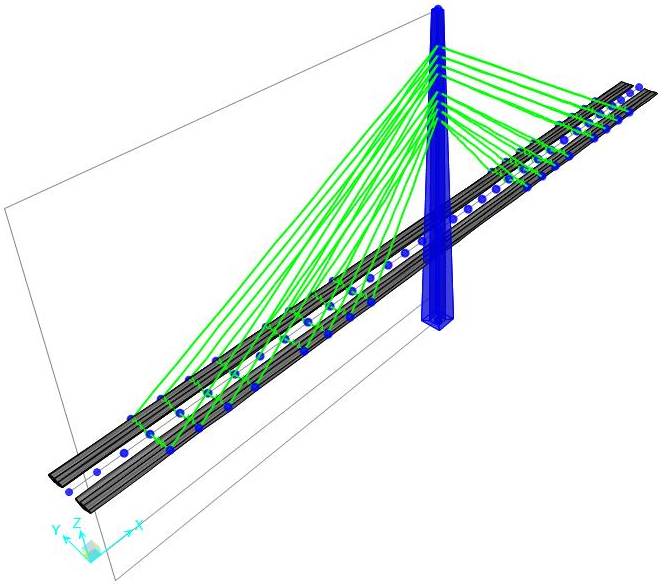
This section provides a material take-off.

Table 31: Material List 2 - By Section Property

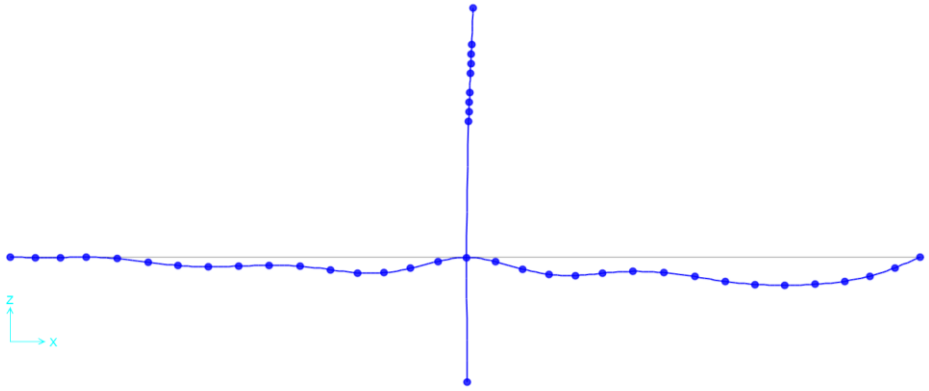
Table 31: Material List 2 - By Section Property

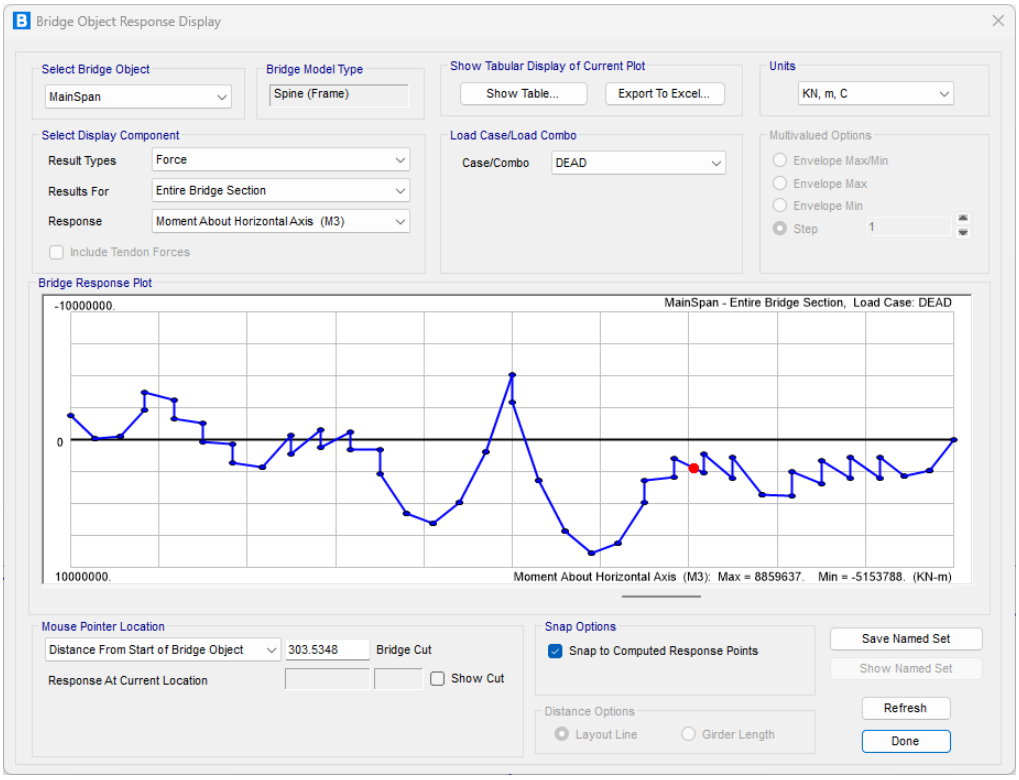
Section	ObjectType	NumPieces	TotalLength	TotalWeight
			m	KN
Pylon	Frame	1	389.	8541800.791
VAR1	Frame	32	920.	2718685.588
Cable	Cable	32	10239.44443	357545.326
Rigidlink	Link	34		0.

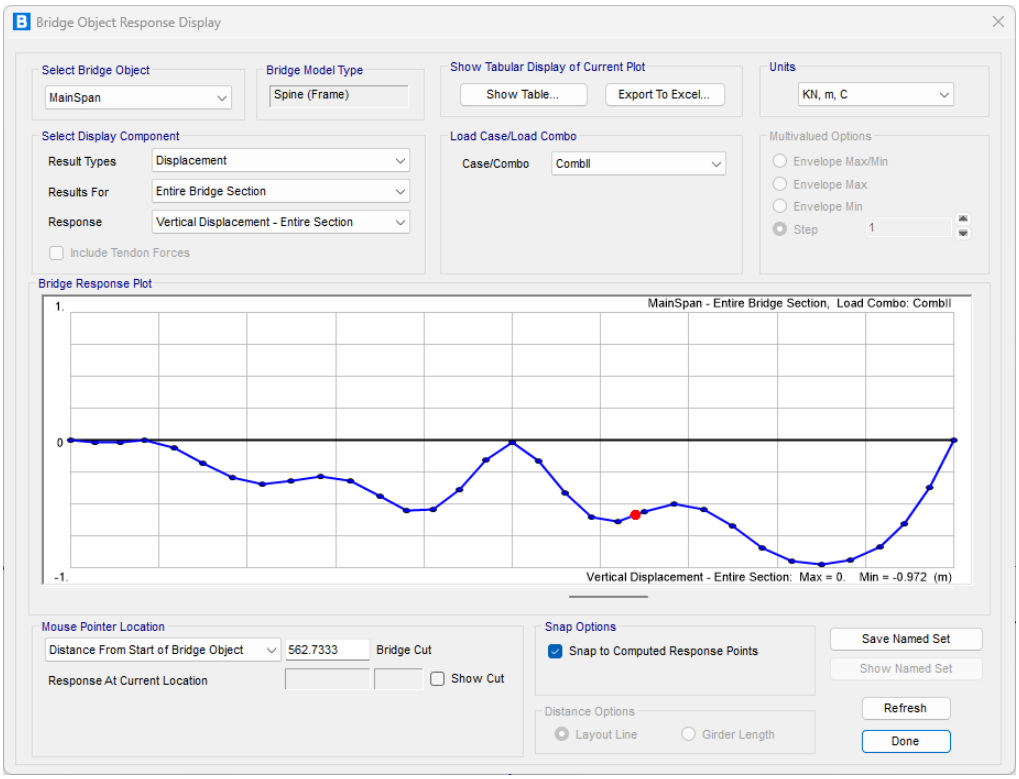
- CSI bridge design schematic



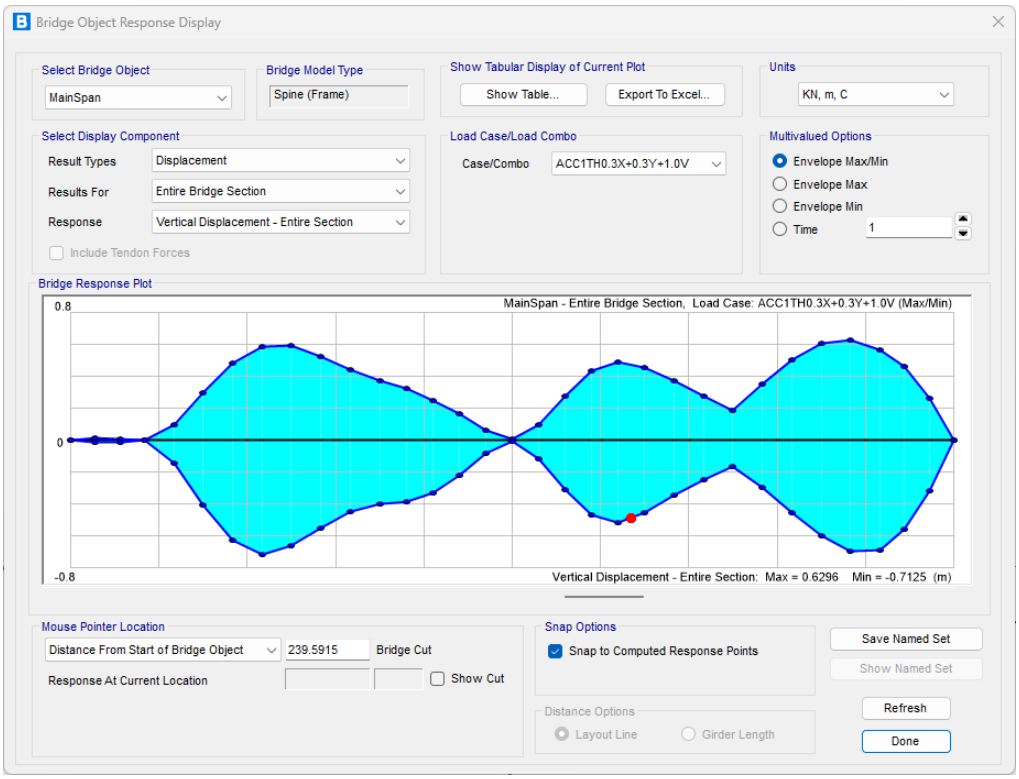
- Dead load analysis

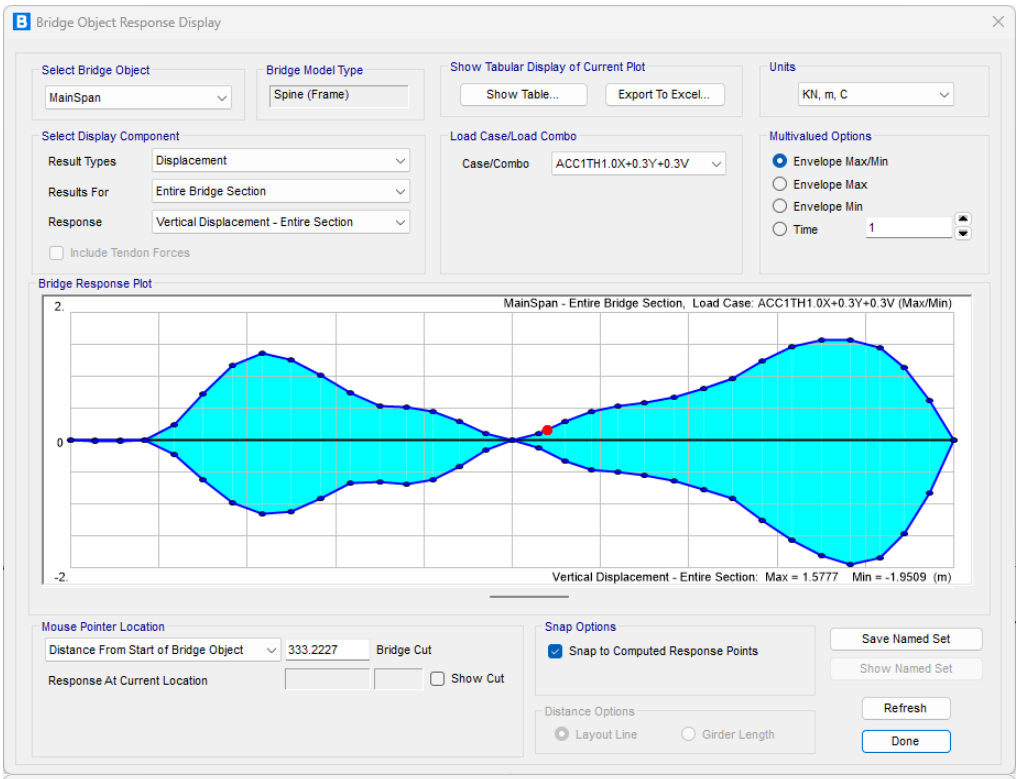


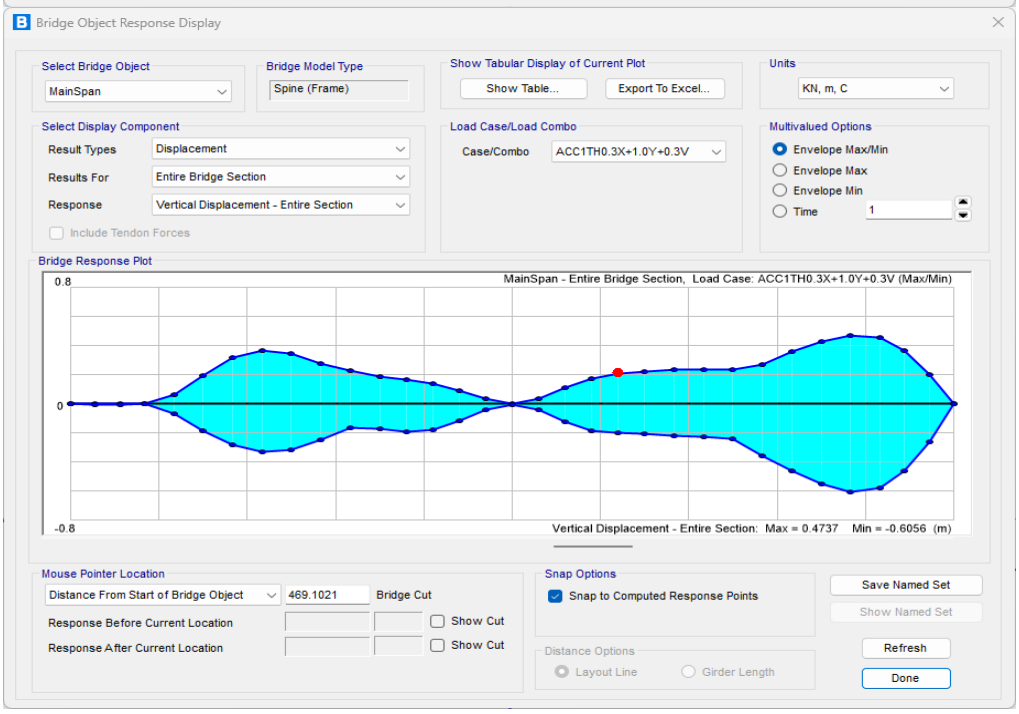


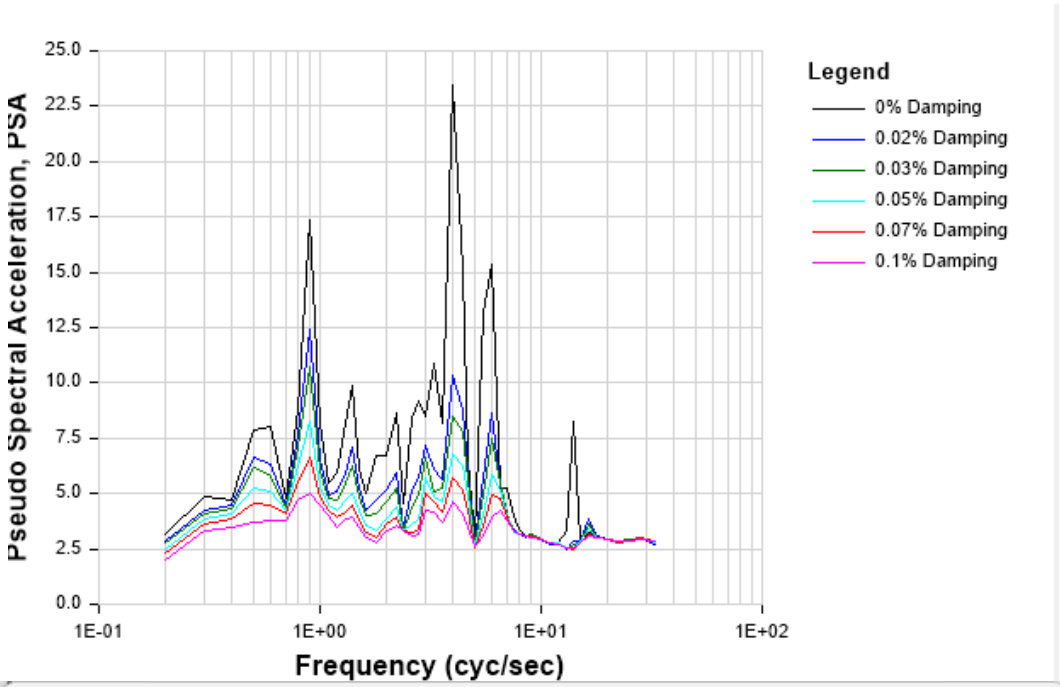


- Time history analysis




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
MainSpan - Entire Bridge Section, Load Case: ACC1TH1.0X+0.3Y+0.3V (Max/Min)
2.
0
-2.
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+1.0Y+0.3V
Multivalued Options
Envelope Max/Min
Envelope Max
Envelope Min
Time
1
Bridge Response Plot
MainSpan - Entire Bridge Section, Load Case: ACC1TH0.3X+1.0Y+0.3V (Max/Min)
0.8
0
-0.8
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
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


Pseudo Spectral Acceleration, PSA
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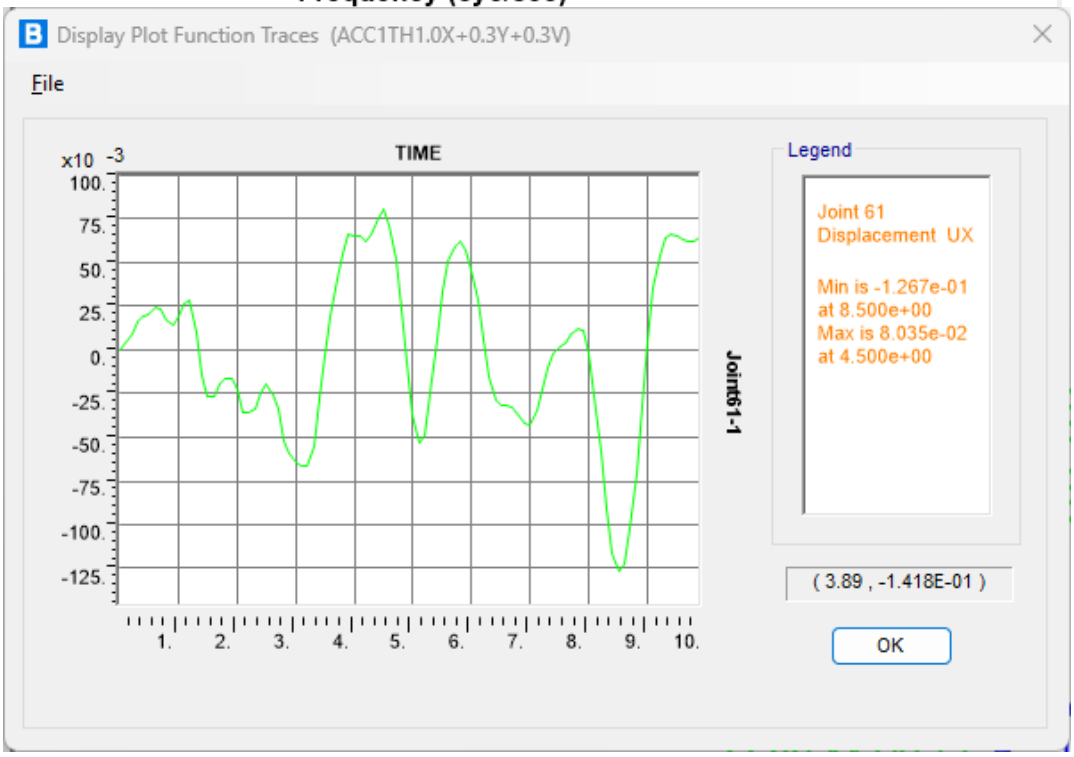
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
1E-01
1E+00
1E+01
1E+02
Frequency (cyc/sec)
Legend
0% Damping
0.02% Damping
0.03% Damping
0.05% Damping
0.07% Damping
0.1% Damping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File
x10 -3
TIME
100.
75.
50.
25.
0.
-25.
-50.
-75.
-100.
-125.
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
Joint61-1
Legend
Joint 61
Displacement UX
Min is -1.267e-01
at 8.500e+00
Max is 8.035e-02
at 4.500e+00
(3.89 , -1.418E-01)
OK

Base Reactions

File View Edit Format-Filter-Sort Select Options

Units: As Noted

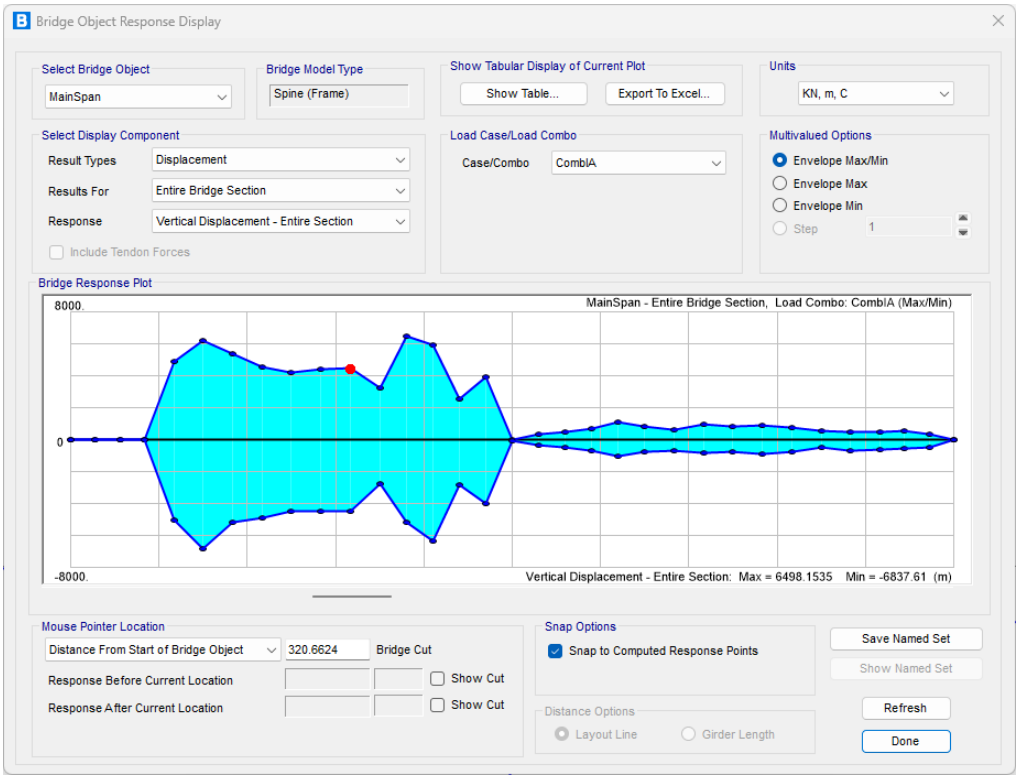
Filter:

Base Reactions

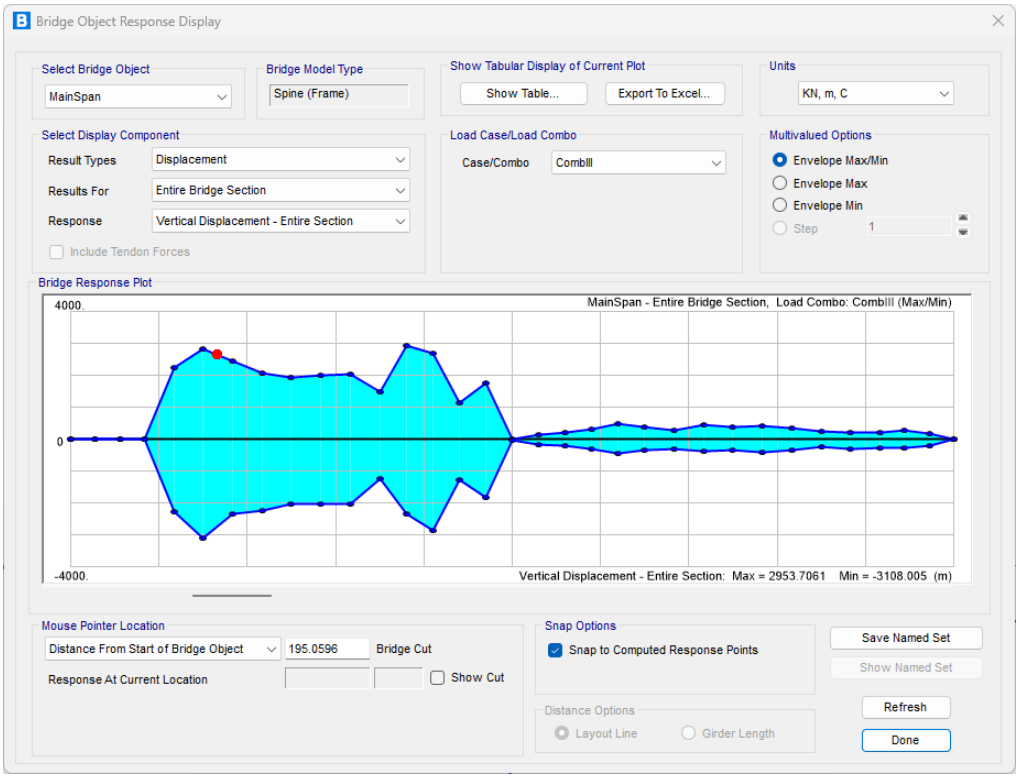
	OutputCase	CaseType Text	StepType Text	GlobalFX KN	GlobalFY KN	GlobalFZ KN	GlobalMX KN-m	GlobalMY KN-m	GlobalMZ KN-m	GlobalX m	GlobalY m	Glo
▶	CombII	Combination		316750.31	-18490.232	11511792.58	2723696.989	-5308518053	-10498738.6	0	0	
	CombIA	Combination	Max	3133064942	1326748947	11530000000	96310000000	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	

Record: << < 1 > >> of 11 Add Tables... Done

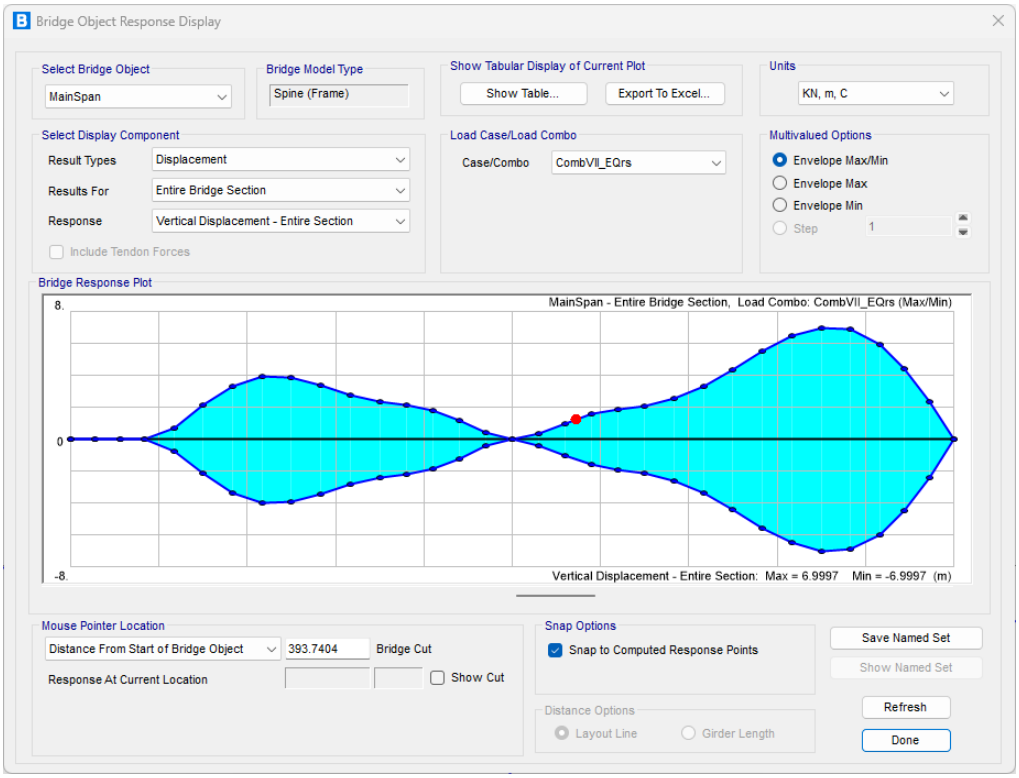
- CombIA

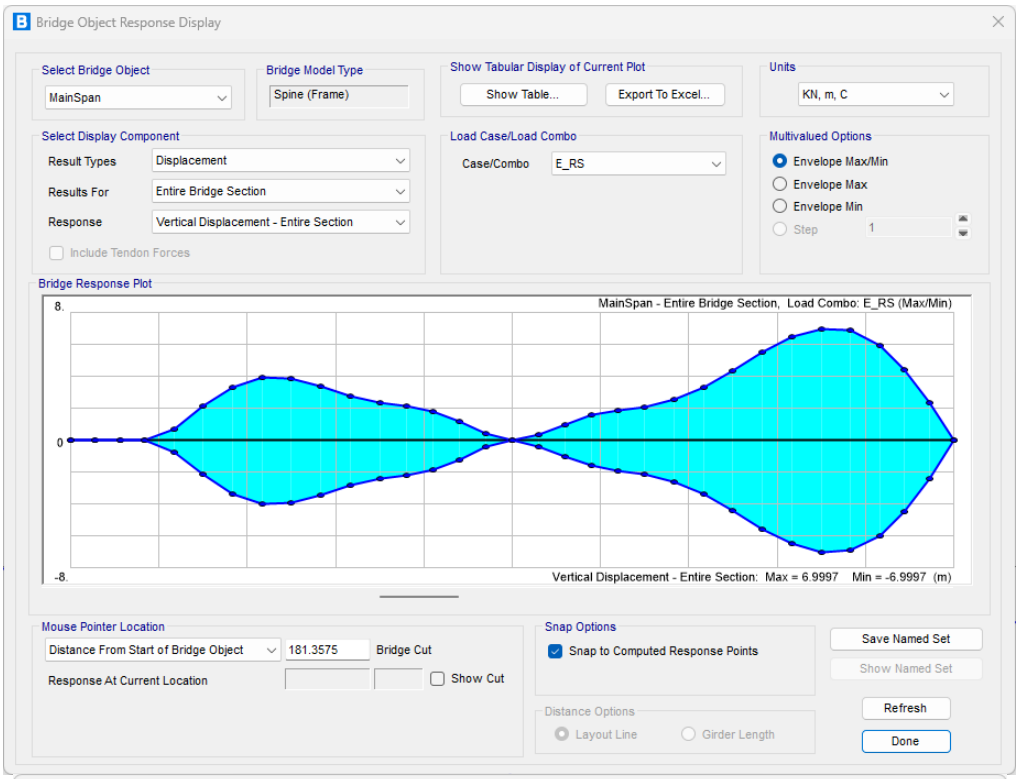


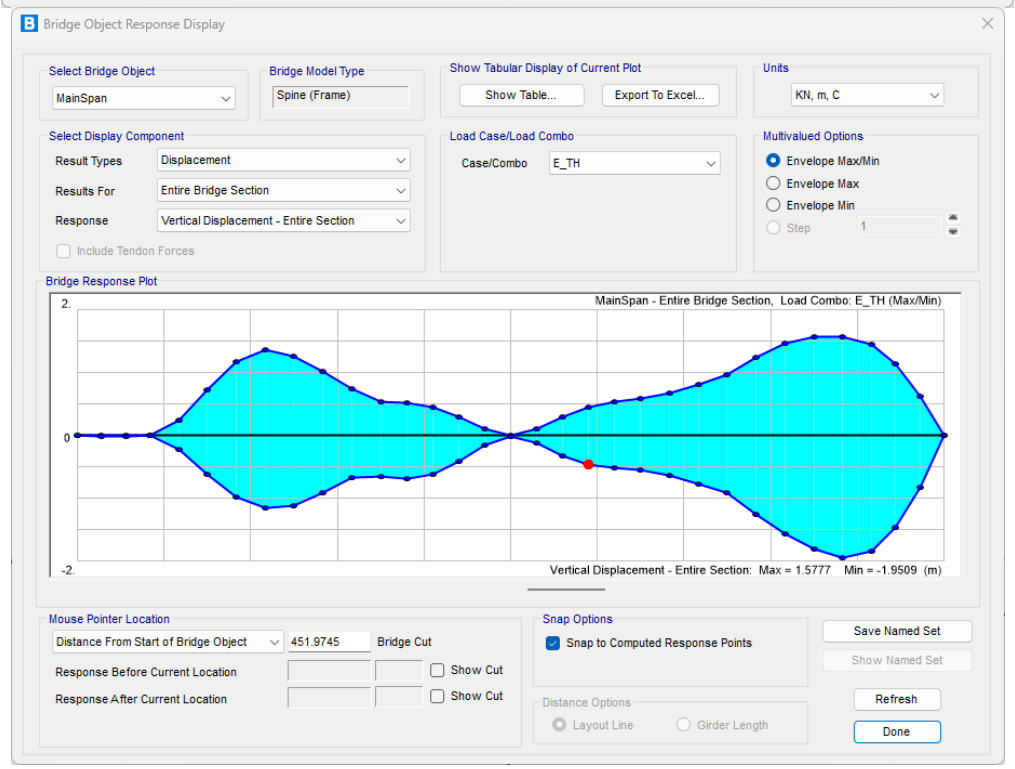
- CombII



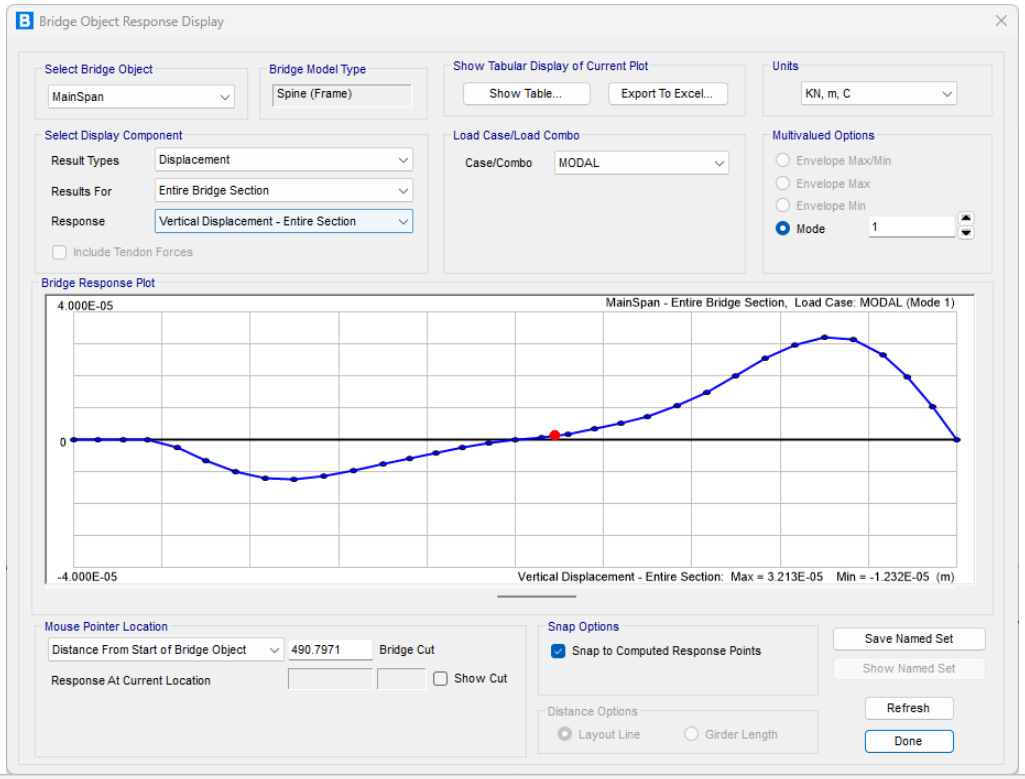
- Earthquake analysis

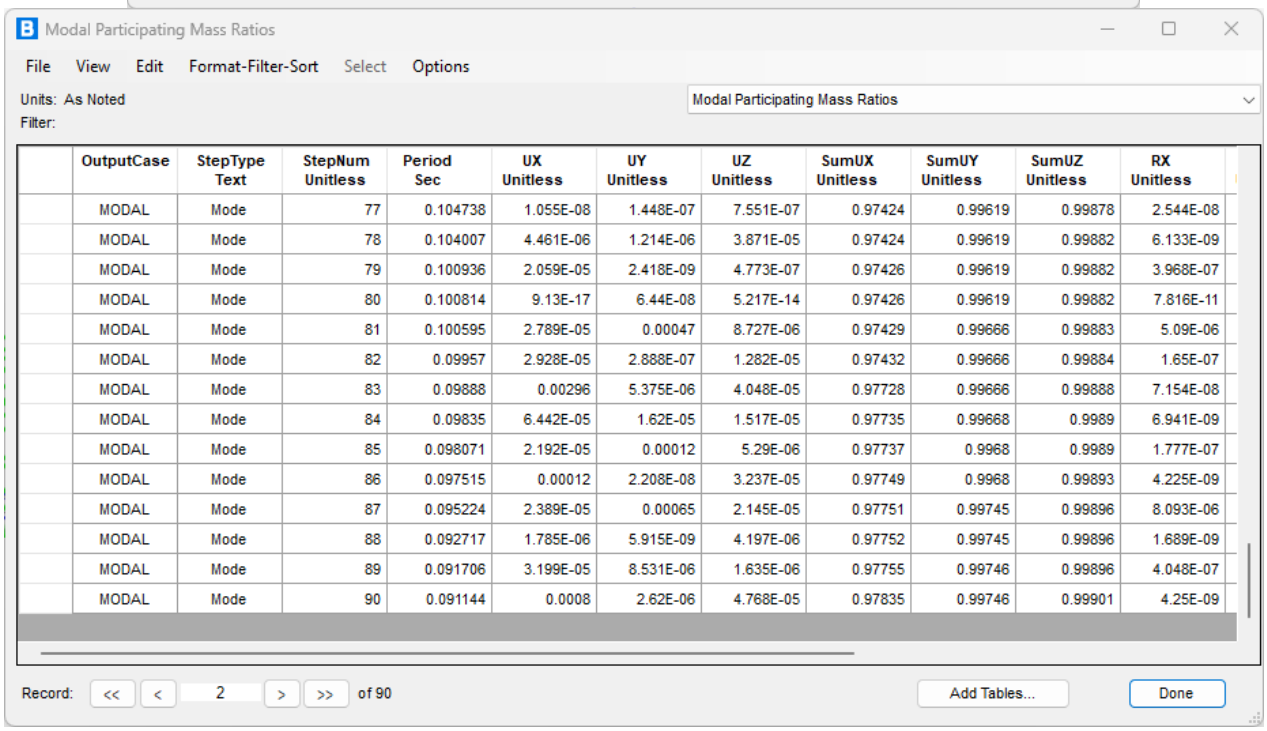




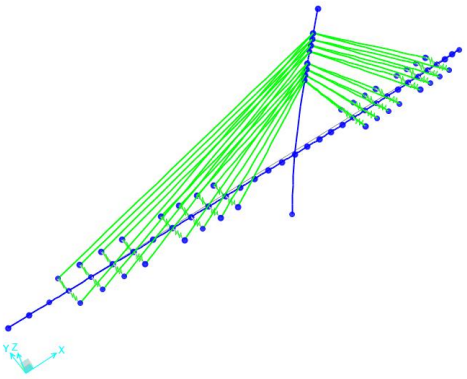


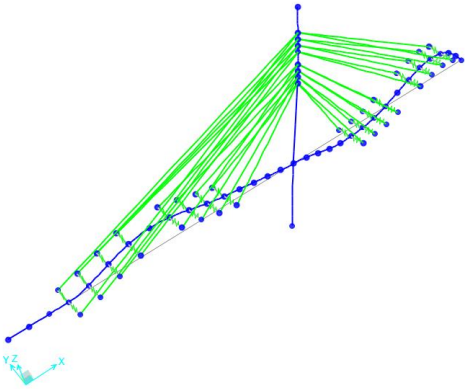
- Modal analysis





	OutputCase	StepType Text	StepNum Unitless	Period Sec	UX Unitless	UY Unitless	UZ Unitless	SumUX Unitless	SumUY Unitless	SumUZ Unitless	RX Unitless
	MODAL	Mode	77	0.104738	1.055E-08	1.448E-07	7.551E-07	0.97424	0.99619	0.99878	2.544E-08
	MODAL	Mode	78	0.104007	4.461E-06	1.214E-06	3.871E-05	0.97424	0.99619	0.99882	6.133E-09
	MODAL	Mode	79	0.100936	2.059E-05	2.418E-09	4.773E-07	0.97426	0.99619	0.99882	3.968E-07
	MODAL	Mode	80	0.100814	9.13E-17	6.44E-08	5.217E-14	0.97426	0.99619	0.99882	7.816E-11
	MODAL	Mode	81	0.100595	2.789E-05	0.00047	8.727E-06	0.97429	0.99666	0.99883	5.09E-06
	MODAL	Mode	82	0.09957	2.928E-05	2.888E-07	1.282E-05	0.97432	0.99666	0.99884	1.65E-07
	MODAL	Mode	83	0.09888	0.00296	5.375E-06	4.048E-05	0.97728	0.99666	0.99888	7.154E-08
	MODAL	Mode	84	0.09835	6.442E-05	1.62E-05	1.517E-05	0.97735	0.99668	0.9989	6.941E-09
	MODAL	Mode	85	0.098071	2.192E-05	0.00012	5.29E-06	0.97737	0.9968	0.9989	1.777E-07
	MODAL	Mode	86	0.097515	0.00012	2.208E-08	3.237E-05	0.97749	0.9968	0.99893	4.225E-09
	MODAL	Mode	87	0.095224	2.389E-05	0.00065	2.145E-05	0.97751	0.99745	0.99896	8.093E-06
	MODAL	Mode	88	0.092717	1.785E-06	5.915E-09	4.197E-06	0.97752	0.99745	0.99896	1.689E-09
	MODAL	Mode	89	0.091706	3.199E-05	8.531E-06	1.635E-06	0.97755	0.99746	0.99896	4.048E-07
	MODAL	Mode	90	0.091144	0.0008	2.62E-06	4.768E-05	0.97835	0.99746	0.99901	4.25E-09


Y
Z
X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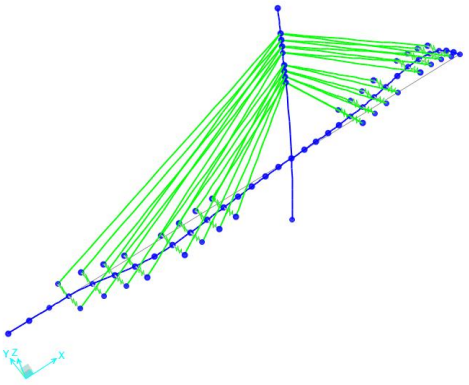
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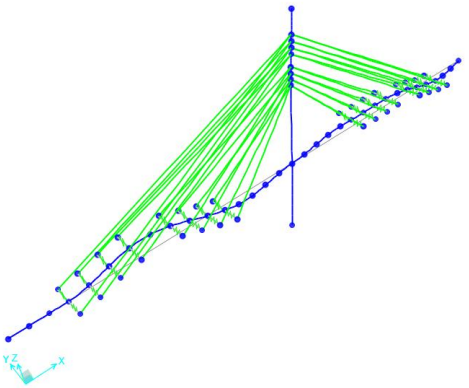
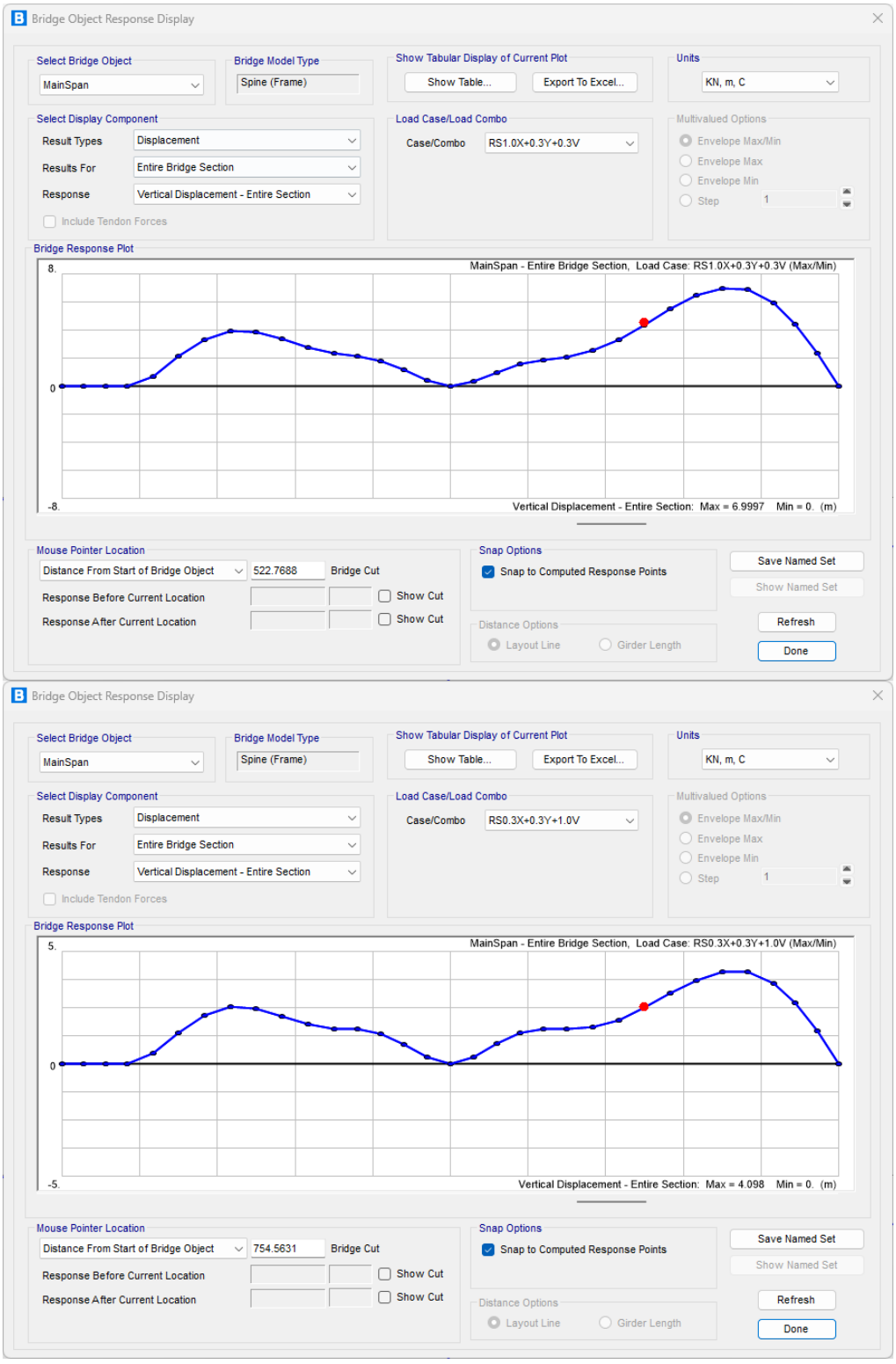
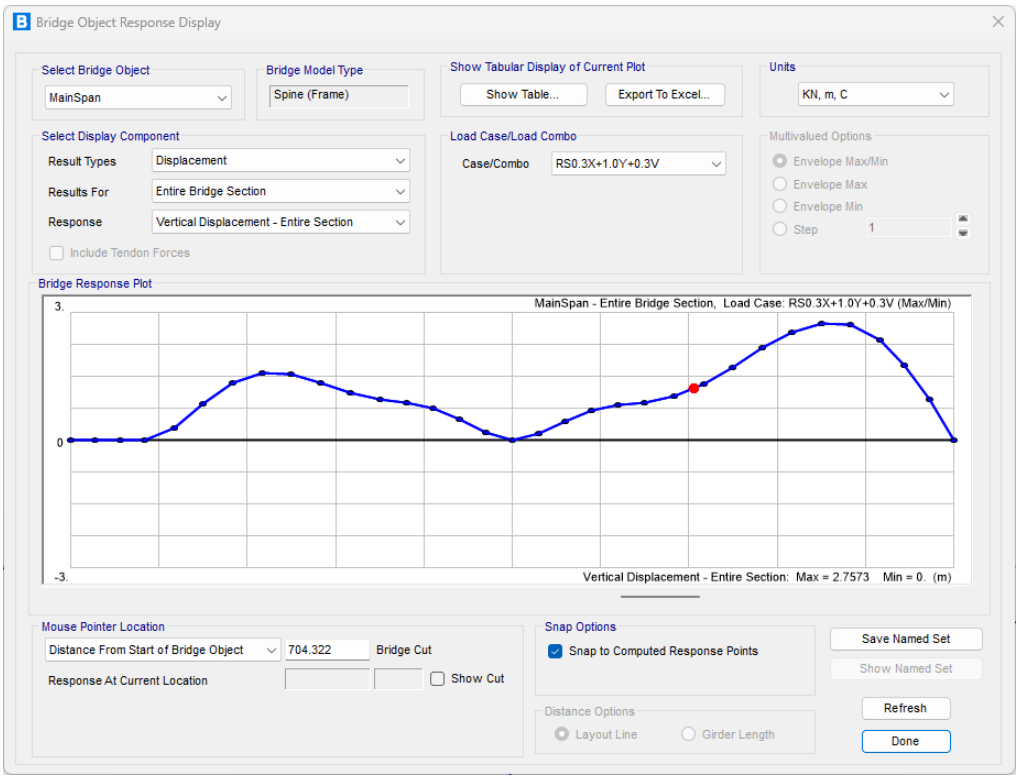
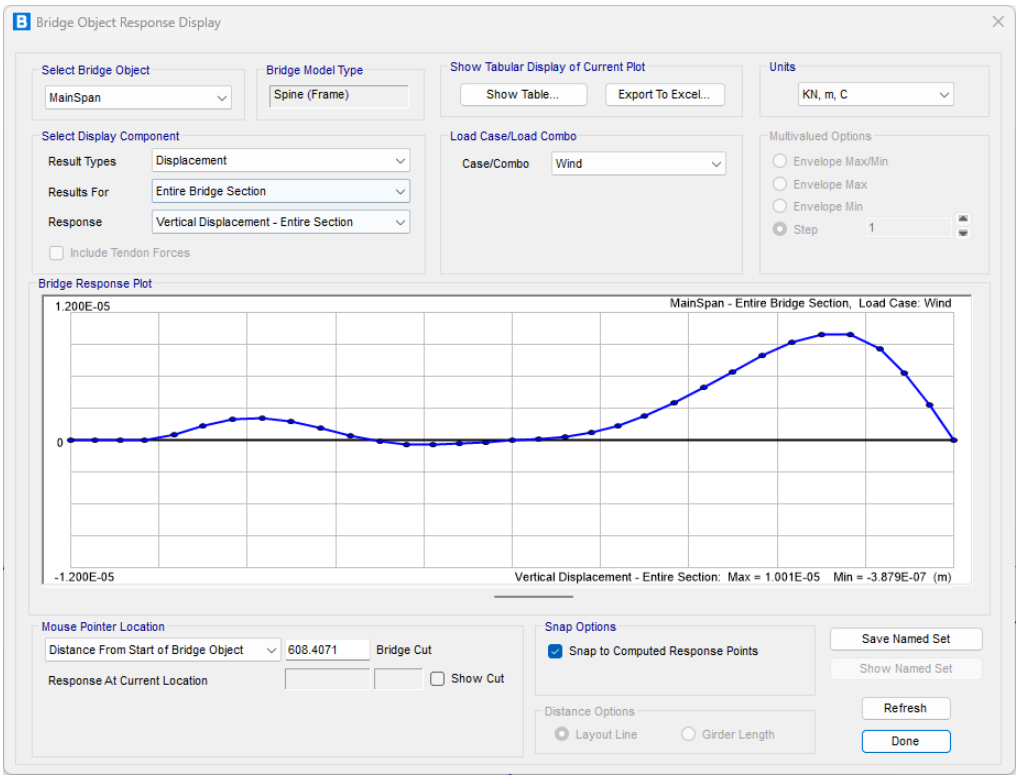

Y
Z
X

- Response spectrum analysis

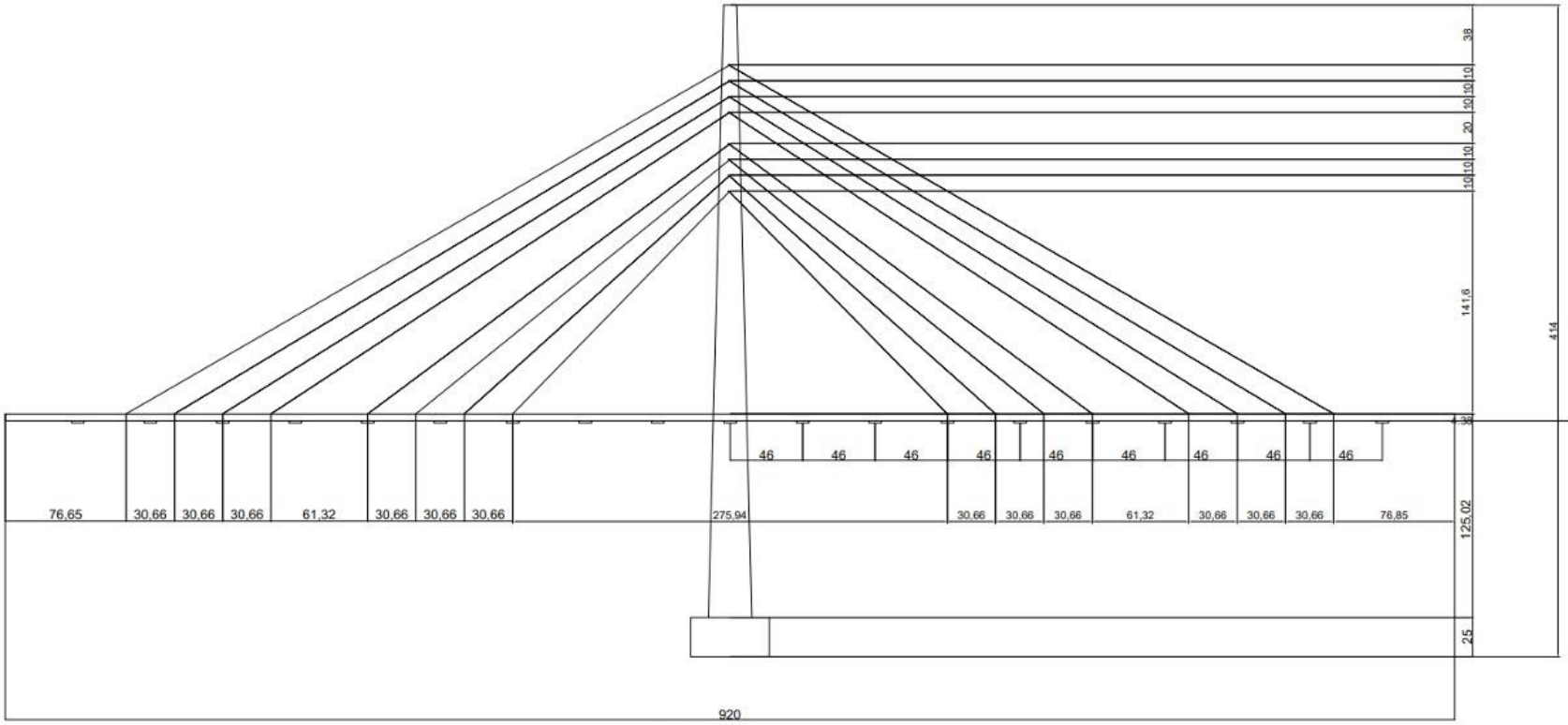




- Wind analysis

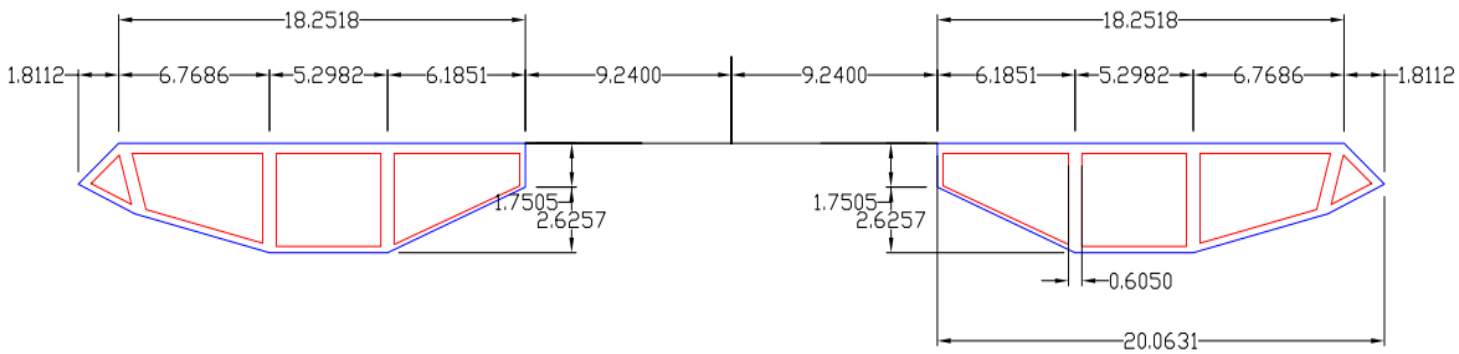


Autocad
Figure:



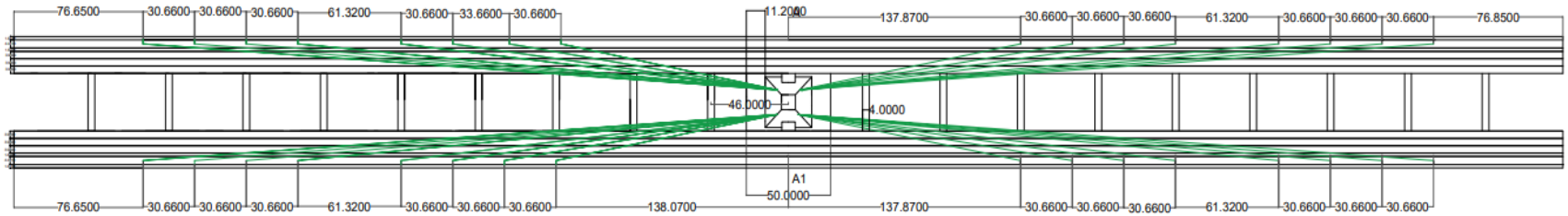
正立面圖

比例尺 1:2500



道路斷面圖

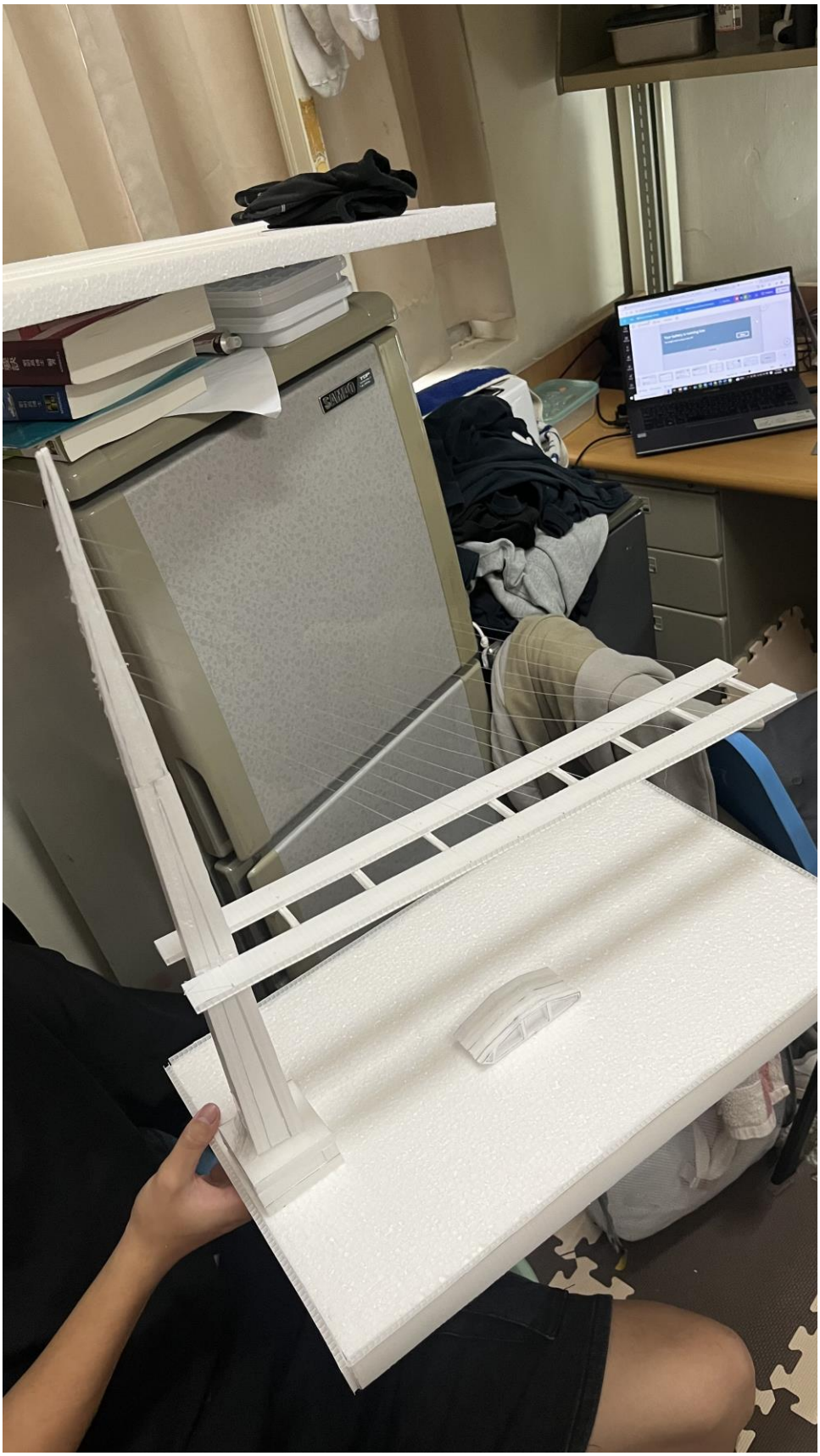
比例尺 1:200



俯視圖

比例尺 1:2500

Physical model:



3D model