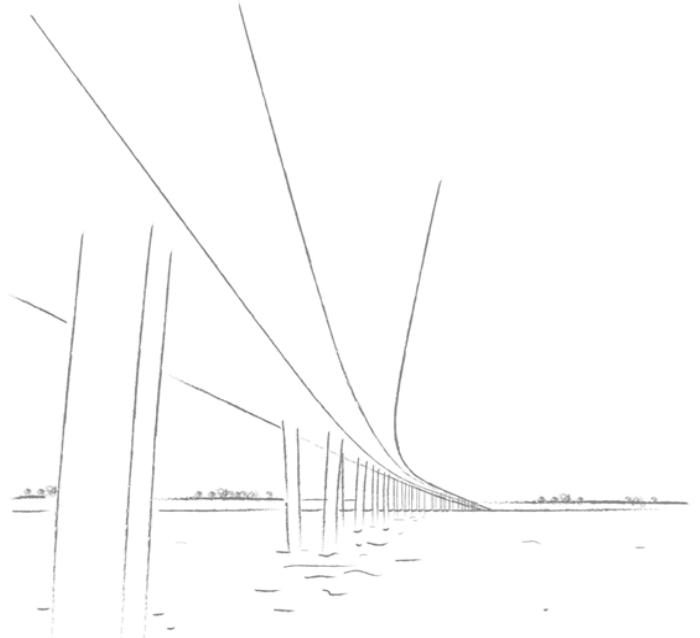


## Fjord Link Frederikssund

Dual carriageway Marbækvej-Skibbyvej,  
inclusive a High Bridge



## High Bridge Monitoring Report: Supports and Deck

**FFL-EX-MO-ST09-GEN-RBA-REP-0001-35.0**

11 December 2019. Week 48 & 49

	NAME	ROLE	DATE
<b>Author</b>	Andrés Hermoso	Civil Engineer	11/12/2019
<b>Approver</b>	Richard Novák	Senior Bridge Engineer	11/12/2019
<b>Approver</b>	Rob Demeersman	Design & Technical Office Manager	11/12/2019
<b>Approver</b>	Pablo Rodero	Construction Manager	11/12/2019

## 1. Introduction.

Horizontal movements and settlements of the High Bridge supports shall be monitored as per Project Requirement SWS20-01-5.4-050. This document summarizes the outcome of the monitoring as per the criteria established in the documents Monitoring Plan for High Bridge Supports (FFL-EX-MO-ST09-GEN-RBA-PLA-0001) & Monitoring Plan for High Bridge Deck (FFL-EX-MO-ST09-SUP1-RBA-PLA-0001).

This report is structured as follows:

- 1) Summary tables comparing the actual and the expected value for settlements, and longitudinal and transversal deflections in the High Bridge Supports.
- 2) The comparison is also displayed by means of graphs so that deviations from the design can easily be identified.
- 3) Graphs showing supports settlements, longitudinal and transversal deflections over time for each pier.
- 4) Graphs showing the deck deflection at the High Bridge mid-spans.

In case there are deviations of the measured values compared to the expected ones, the Designer should be contacted so that the impact of the deviations in the structural design is evaluated. Normal construction process could proceed unless there is an obvious fault.

Measuring of the western monitoring points (from Pier 01 to Pier 09) has not been performed during weeks 26, 27, 28 & 29 due to an issue with the power supply to the robotic total station.

## 2. Analysis of results. Settlements.

During week 48 & 49, settlements in all piers have been surveyed by means of the implemented monitoring system.

From the surveys done so far, the following can be derived:

- Abutment 18. Monitoring points have been placed after completion of the abutment. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 2mm. Expected settlement at this stage is 4mm.
- Pier 02. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 20mm. Expected settlement at this stage is 48mm.
- Pier 03. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 4mm. Expected settlement at this stage is 16mm.
- Pier 04. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 3mm. Expected settlement at this stage is 16mm.
- Pier 05. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 5mm. Expected settlement at this stage is 17mm.
- Pier 06. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 6mm. Expected settlement at this stage is 29mm.
- Pier 07. Monitoring points have been placed after completion of the pier. Survey done on 13/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 5mm. Expected settlement at this stage is 33mm.

- Pier 08. Monitoring points have been placed after completion of the pier. Survey done on 23/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 8mm. Expected settlement at this stage is 33mm.
- Pier 09. Monitoring points have been placed after completion of the pier. Survey done on 25/05/19 corresponding to "One-month intervals until the end of construction"; the value of the settlement measured is 8mm. Expected settlement at this stage is 3mm.
- Pier 10. Monitoring points have been placed after completion of the pier. Survey done on 12/08/19 corresponding to "After pavement"; the value of the settlement measured is 12mm. Expected settlement at this stage is 40mm.
- Pier 11. Monitoring points have been placed after completion of the pier. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 6mm. Expected settlement at this stage is 42mm.
- Pier 12. Monitoring points have been placed after completion of the pier. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 7mm. Expected settlement at this stage is 40mm.
- Pier 13. Monitoring points have been placed after completion of the pier. Survey done on 16/07/19 corresponding to "After pavement"; the value of the settlement measured is 5mm. Expected settlement at this stage is 36mm.
- Pier 14. Monitoring points have been placed after completion of the pier. Survey done on 19/07/19 corresponding to "After pavement"; the value of the settlement measured is 9mm. Expected settlement at this stage is 28mm.
- Pier 15. Monitoring points have been placed after completion of the pier. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 8mm. Expected settlement at this stage is 21mm.
- Pier 16. Monitoring points have been placed after completion of the pier. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 20mm. Expected settlement at this stage is 53mm.
- Pier 17. Monitoring points have been placed after completion of the pier. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 12mm. Expected settlement at this stage is 53mm.
- Abutment 18. Monitoring points have been placed after completion of the abutment. Survey done on 20/07/19 corresponding to "After pavement"; the value of the settlement measured is 8mm. Expected settlement at this stage is 16mm.

**Note:** The monitoring system started measuring settlements in Pier 09 after casting the closure pour with Pier 10; therefore, the construction phase "before next-span closure pour" is used as a reference for Pier 09 settlements.

### **3. Analysis of results. Differential settlements.**

Settlements observed in piers 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17 & 18 are very low compared with the maximum expected, as shown in the appendix.

### **4. Analysis of results. Longitudinal & Transversal Deflections.**

- The measured longitudinal deflection at Pier 02 is out of tolerance; the designer has checked it and concluded that it is acceptable.
- For the rest of the piers, longitudinal and transversal deflection measurements in the surveys done so far show values lower than the predicted maximum and minimum values for each pier, as shown in section 7. *Actual and Expected Values for Longitudinal & Transversal Deflections*.

### **5. Analysis of results. Settlements of mid-spans.**

- The geometry control of the deck during erection is not covered in this report. For this matter, please refer to Method Statement Geometry Control During Deck Erection (FFL-EX-ME-ST09-SUP1-RBA-MST-0002)
- Deflections observed in spans 03, 04, 05, 06, 07, 10, 11, 12, 13, 14, 15, 16 & 17 are negligible.

## 6. Conclusions.

- Measured settlements in Abutment 01, Pier 02, Pier 03, Pier 04, Pier 05, Pier 06, Pier 07, Pier 08, Pier 09, Pier 10, Pier 11, Pier 12, Pier 13, Pier 14, Pier 15, Pier 16, Pier 17 and Abutment 18 are lower than expected. Evolution of the settlements is to be analyzed in next construction sequences. No significant impacts are expected from the measurements observed so far.
- The differential settlements monitored so far are negligible.
- Deflections observed in spans 03, 04, 05, 06, 07, 10, 11, 12, 13, 14, 15, 16 & 17 are negligible.
- Measured longitudinal and transversal deflections are within the expected ranges.

## 7. Actual and Expected Values for Settlements.

## SETTLEMENTS HIGH BRIDGE

**DATE: 11/12/19**

### SETTLEMENTS ABUTMENTS AND SHALLOW FOUNDATIONS

Detailed breakdown of expected settlements at piers and abutments	Abutment 01			Pier 02			Pier 16			Pier 17			Abutment 18		
	Expected [mm]	Actual [mm]	Date												
Before placement of pier segment	0	1	24/04/19	0	0	28/03/19	0	-1	15/05/18	0	2	20/03/18	0	0	14/02/18
After segment 05U & 05D installation	NA	-	-	14	8	08/04/19	14	8	25/06/18	14	-	-	NA	-	-
After segment 10U & 10D installation	NA	-	-	29	-	-	29	-	-	29	-	-	NA	-	-
Before previous-span closure pour	NA	-	-	44	-	-	44	14	03/07/18	44	11	25/05/18	NA	-	-
Before next-span closure pour	4	2	05/05/19	46	20	03/05/19	46	14	23/07/18	46	12	03/07/18	12	6	25/05/18
One-month intervals until the end of construction	4	2	25/05/19	48	20	25/05/19	48	17	25/05/19	48	11	25/05/19	15	6	25/05/19
After pavement	6			54			53	20	20/07/19	53	12	20/07/19	16	8	20/07/19
Before project hand-over	7			59			56			56			17		
Once a year if no problems during construction occurred	7			59			56			56			18		

### SETTLEMENTS ONSHORE PILE FOUNDATIONS

Detailed breakdown of expected settlements at piers and abutments	Pier 03			Pier 04			Pier 05			Pier 06			Pier 07			Pier 14			Pier 15		
	Expected [mm]	Actual [mm]	Date																		
Before placement of pier segment	0	-1	10/03/19	0	-1	18/02/19	0	0	29/01/19	0	1	18/01/19	0	-1	25/11/18	0	0	25/07/18	0	0	06/07/18
After segment 05U & 05D installation	3	1	22/03/19	3	2	25/02/19	3	1	08/02/19	5	3	24/01/19	5	-1	10/12/18	3	1	03/08/18	3	2	16/07/18
After segment 10U & 10D installation	8	2	25/03/19	8	1	27/02/19	8	3	13/02/19	12	1	27/01/19	13	2	12/12/18	10	5	07/08/18	8	-	-
Before previous-span closure pour	13	3	27/03/19	13	3	01/03/19	13	2	15/02/19	19	5	28/01/19	21	4	14/12/18	17	5	12/08/18	13	4	21/07/18
Before next-span closure pour	14	1	09/04/19	14	2	27/03/19	15	3	01/03/19	27	4	15/02/19	30	5	29/01/19	23	4	11/09/18	15	6	12/08/18
One-month intervals until the end of construction	16	4	25/05/19	16	3	25/05/19	17	5	25/05/19	29	6	25/05/19	33	5	13/05/19	25	3	23/05/19	17	7	25/05/19
After pavement	20			20			21			35			39			28	9	19/07/19	21	8	20/07/19
Before project hand-over	24			24			26			37			40			31			26		
Once a year if no problems during construction occurred	24			24			26			37			40			31			26		

### SETTLEMENTS OFFSHORE PILE FOUNDATIONS

Detailed breakdown of expected settlements at piers and abutments	Pier 08			Pier 09			Pier 10			Pier 11			Pier 12			Pier 13		
	Expected [mm]	Actual [mm]	Date															
Before placement of pier segment	0	0	21/11/18	-	-	-	0	3	23/10/18	0	0	24/09/18	0	2	13/09/18	0	1	15/08/18
After segment 05U & 05D installation	5	-	-	-	-	-	5	3	01/11/18	5	2	12/10/18	5	2	24/09/18	5	0	30/08/18
After segment 10U & 10D installation	13	-	-	-	-	-	13	3	03/11/18	13	2	17/10/18	13	-	-	12	5	05/09/18
Before previous-span closure pour	21	-	-	-	-	-	21	6	05/11/18	21	6	18/10/18	21	9	02/10/18	19	5	11/09/18
Before next-span closure pour	30	3	14/12/18	0	0	02/12/18	30	9	18/11/18	30	9	05/11/18	30	8	18/10/18	27	8	02/10/18
One-month intervals until the end of construction	33	8	23/05/19	3	8	25/05/19	33	12	19/05/19	34	8	24/05/19	33	8	24/05/19	30	5	24/05/19
After pavement	40			8			40	12	12/08/19	42	6	20/07/19	40	7	20/07/19	36	5	16/07/19
Before project hand-over	42			9			42			46			43			39		
Once a year if no problems during construction occurred	42			9			42			46			43			39		

Note: The monitoring system started measuring settlements in Pier 09 after casting the closure pour with Pier 10; therefore, the construction phase "before next-span closure pour" is used as a reference for Pier 09 settlements.

Note: For further details, please refer to *Monitoring Plan for High Bridge Supports (FFL-EX-MO-ST09-GEN-RBA-PLA-0001)*

Note: Measuring of the western monitoring points (from Pier 01 to Pier 09) has not been performed during weeks 26, 27, 28 & 29 due to an issue with the power supply to the robotic total station.

## 8. Actual and Expected Values for Longitudinal & Transversal Deflections.

## MAXIMUM TOP LONGITUDINAL & TRANSVERSAL DEFLECTIONS HIGH BRIDGE

**DATE: 11/12/19**

### MAXIMUM TOP LONGITUDINAL & TRANSVERSAL DEFLECTIONS ABUTMENTS AND SHALLOW FOUNDATIONS

Maximum longitudinal & transversal deflections	Abutment 01			Pier 02			Pier 16			Pier 17			Abutment 18		
	Maximum [mm]	Actual [mm]	Date												
Longitudinal deflection	±0.0	-7	02/09/19	±3.0	11	20/11/19	±11.0	15	24/07/19	±3.0	14	24/07/19	±0.0	10	24/07/19
Transversal deflection	±0.0	-4	20/06/19	±7.0	-3	24/04/19	±16.0	9	24/07/19	±7.0	2	06/01/19	±0.0	-9	24/07/19

### MAXIMUM TOP LONGITUDINAL & TRANSVERSAL DEFLECTIONS ONSHORE PILE FOUNDATIONS

Maximum longitudinal & transversal deflections	Pier 03			Pier 04			Pier 05			Pier 06			Pier 07			Pier 14			Pier 15		
	Maximum [mm]	Actual [mm]	Date																		
Longitudinal deflection	±12.5	-6	10/12/18	±18.5	-7	10/12/18	±28.0	7	01/01/19	±47.0	-8	10/12/18	±61.0	11	17/12/18	±37.0	14	15/08/18	±24.0	15	23/07/19
Transversal deflection	±17.0	7	10/12/18	±23.5	-11	21/01/19	±32.0	15	10/12/18	±43.5	21	10/12/18	±55.0	27	10/12/18	±37.0	11	01/04/19	±27.0	16	23/07/19

### MAXIMUM TOP LONGITUDINAL & TRANSVERSAL DEFLECTIONS OFFSHORE PILE FOUNDATIONS. ARTICULATED PIERS.

Maximum longitudinal & transversal deflections	Pier 12			Pier 13		
	Maximum [mm]	Actual [mm]	Date	Maximum [mm]	Actual [mm]	Date
Longitudinal deflection	±69.0	-17	29/11/18	±49.0	-38	10/01/19
Transversal deflection	±66.0	26	01/04/19	±50.0	15	11/12/19

### MAXIMUM TOP LONGITUDINAL & TRANSVERSAL DEFLECTIONS OFFSHORE PILE FOUNDATIONS. FREYSSINET CONCRETE HINGES.

Maximum longitudinal & transversal deflections	Pier 08			Pier 09			Pier 10			Pier 11		
	Maximum [mm]	Actual [mm]	Date									
Positive longitudinal deflection	210.0	31	24/12/18	152.0	10	23/12/18	61.0	22	19/11/18	61.0	19	28/10/18
Negative longitudinal deflection	-61.0	-19	30/07/19	-61.0	-32	29/04/19	-161.0	-14	14/05/19	-224.0	-27	01/12/19
Transversal deflection	±63.0	27	10/12/18	±71.0	19	01/04/19	±80.0	27	27/11/19	±70.0	27	01/04/19

Note: For the longitudinal deflection, positive values means deflection in direction of chainage.

Note: For the transversal deflection, positive values means deflection in the northerner direction.

Note: For further details, please refer to *Monitoring Plan for High Bridge Supports (FFL-EX-MO-ST09-GEN-RBA-PLA-0001)*

## MAXIMUM BOTTOM LONGITUDINAL & TRANSVERSAL DEFLECTIONS HIGH BRIDGE

DATE: 11/12/19

### MAXIMUM BOTTOM LONGITUDINAL & TRANSVERSAL DEFLECTIONS ABUTMENTS AND SHALLOW FOUNDATIONS

Maximum longitudinal & transversal deflections	Abutment 01			Pier 02			Pier 16			Pier 17			Abutment 18		
	Maximum [mm]	Actual [mm]	Date												
Longitudinal deflection	±0.0	3	20/11/19	±1.5	-12	10/12/18	±3.0	11	23/07/19	±2.0	13	02/08/19	±0.0	10	02/08/19
Transversal deflection	±0.0	-3	29/08/19	±2.5	-2	06/09/19	±3.5	11	02/08/19	±3.0	3	09/05/19	±0.0	-9	24/07/19

### MAXIMUM BOTTOM LONGITUDINAL & TRANSVERSAL DEFLECTIONS ONSHORE PILE FOUNDATIONS

Maximum longitudinal & transversal deflections	Pier 03			Pier 04			Pier 05			Pier 06			Pier 07			Pier 14			Pier 15		
	Maximum [mm]	Actual [mm]	Date																		
Longitudinal deflection	±7.0	-9	10/12/18	±6.5	-5	10/12/18	±7.5	-8	10/12/18	±13.0	-8	10/12/18	±15.5	-9	10/12/18	±11.0	9	12/05/19	±8.0	16	23/07/19
Transversal deflection	±10.0	9	10/12/18	±10.0	9	10/12/18	±11.0	16	10/12/18	±15.5	20	10/12/18	±18.0	26	10/12/18	±14.0	18	12/05/19	±11.0	21	23/07/19

### MAXIMUM BOTTOM LONGITUDINAL & TRANSVERSAL DEFLECTIONS OFFSHORE PILE FOUNDATIONS. ARTICULATED PIERS.

Maximum longitudinal & transversal deflections	Pier 12			Pier 13		
	Maximum [mm]	Actual [mm]	Date	Maximum [mm]	Actual [mm]	Date
Longitudinal deflection	±25.0	-16	05/07/19	±17.0	-14	28/11/18
Transversal deflection	±31.0	23	01/04/19	±24.0	18	01/04/19

### MAXIMUM BOTTOM LONGITUDINAL & TRANSVERSAL DEFLECTIONS OFFSHORE PILE FOUNDATIONS. FREYSSINET CONCRETE HINGES.

Maximum longitudinal & transversal deflections	Pier 08			Pier 09			Pier 10			Pier 11		
	Maximum [mm]	Actual [mm]	Date									
Positive longitudinal deflection	15.5	14	17/12/18	15.5	1	24/12/18	15.5	0		15.5	8	17/11/18
Negative longitudinal deflection	-47.0	-9	11/06/19	-47.0	-26	18/06/19	-47.0	-14	07/04/19	-52.0	-10	18/07/19
Transversal deflection	±47.0	28	10/12/18	±47.0	20	31/08/19	±47.0	30	01/04/19	±44.0	23	01/04/19

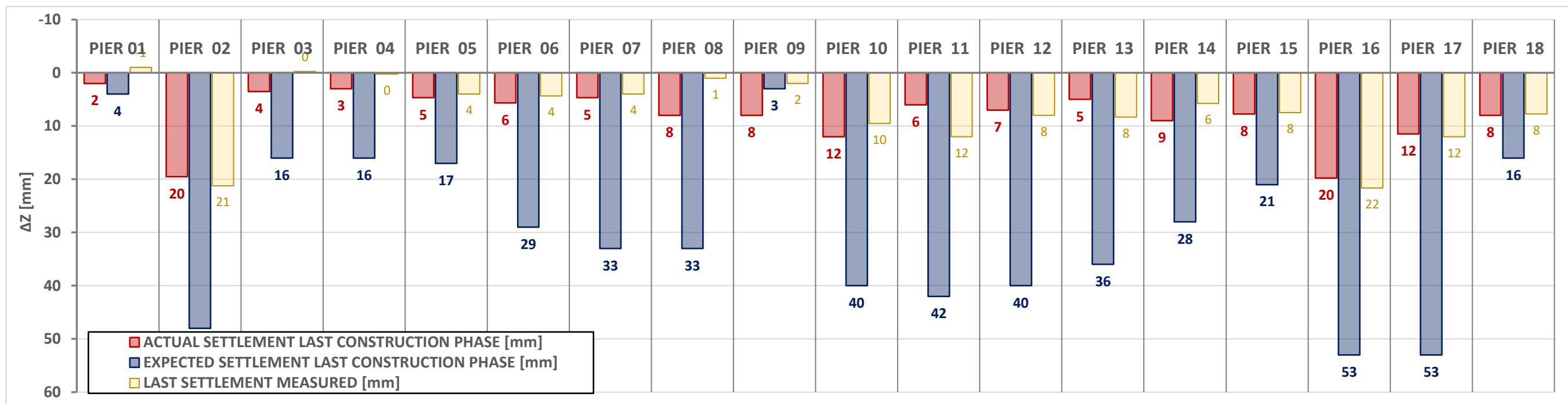
Note: For the longitudinal deflection, positive values means deflection in direction of chainage.

Note: For the transversal deflection, positive values means deflection in the northerner direction.

Note: For further details, please refer to *Monitoring Plan for High Bridge Supports (FFL-EX-MO-ST09-GEN-RBA-PLA-0001)*

## 9. Summary Graphs.

SETTLEMENTS HIGH BRIDGE SUPPORTS																	DATE: 11/12/19	
	PIER 01	PIER 02	PIER 03	PIER 04	PIER 05	PIER 06	PIER 07	PIER 08	PIER 09	PIER 10	PIER 11	PIER 12	PIER 13	PIER 14	PIER 15	PIER 16	PIER 17	PIER 18
EXPECTED SETTLEMENT LAST CONSTRUCTION PHASE [mm]	4	48	16	16	17	29	33	33	3	40	42	40	36	28	21	53	53	16
ACTUAL SETTLEMENT LAST CONSTRUCTION PHASE [mm]	2	20	4	3	5	6	5	8	8	12	6	7	5	9	8	20	12	8
LAST SETTLEMENT MEASURED [mm]	-1	21	0	0	4	4	4	1	2	10	12	8	8	6	8	22	12	8



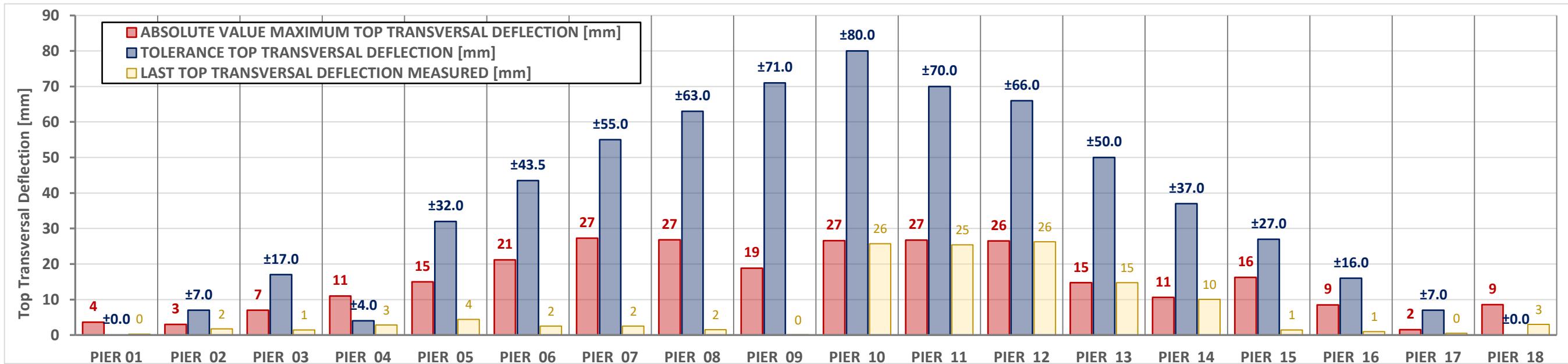
	DIFFERENTIAL SETTLEMENTS BETWEEN HIGH BRIDGE SUPPORTS																	DATE: 11/12/19	
	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6	6 & 7	7 & 8	8 & 9	9 & 10	10 & 11	11 & 12	12 & 13	13 & 14	14 & 15	15 & 16	16 & 17	17 & 18		
DIFFERENTIAL ΔZ [mm]	5	3	2	4	2	1	4	#VALUE!	5	9	1	1	5	3	2	7	1		
TOLERANCE DIFFERENTIAL ΔZ [mm]	20	31	10	10	10	10	10	10	10	10	10	10	10	10	27	18	17		

Differential ΔZ [mm]

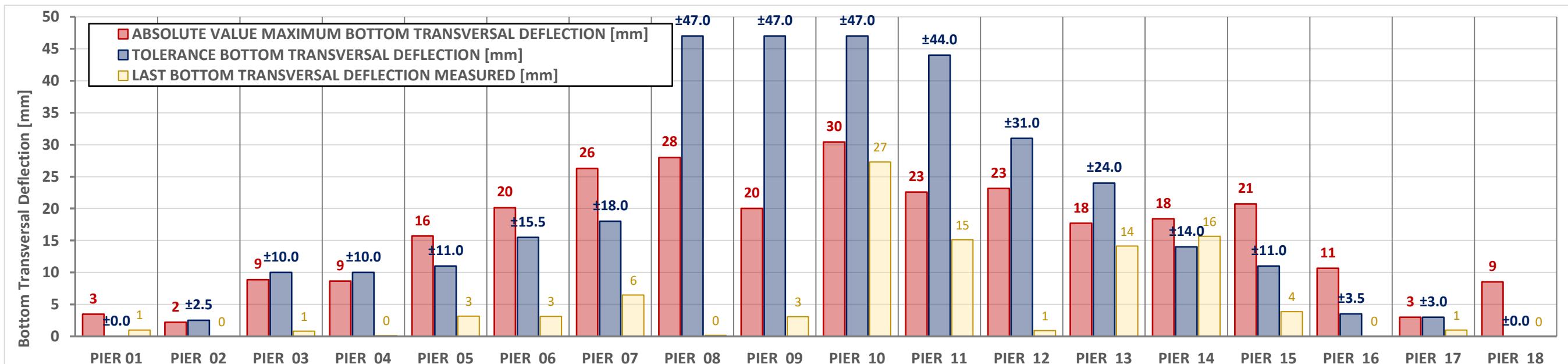
Tolerance Differential ΔZ [mm]

Note: Differential settlements are derived considering the settlement at the time of casting the closure pour as a reference .

TOP TRANSVERSAL DEFLECTIONS																	DATE: 11/12/19	
	PIER 01	PIER 02	PIER 03	PIER 04	PIER 05	PIER 06	PIER 07	PIER 08	PIER 09	PIER 10	PIER 11	PIER 12	PIER 13	PIER 14	PIER 15	PIER 16	PIER 17	PIER 18
ABSOLUTE VALUE MAXIMUM TOP TRANSVERSAL DEFLECTION [mm]	4	3	7	11	15	21	27	27	19	27	27	26	15	11	16	9	2	9
LAST TOP TRANSVERSAL DEFLECTION MEASURED [mm]	0	2	1	3	4	2	2	2	0	26	25	26	15	10	1	1	0	3
TOLERANCE TOP TRANSVERSAL DEFLECTION [mm]	±0.0	±7.0	±17.0	±4.0	±32.0	±43.5	±55.0	±63.0	±71.0	±80.0	±70.0	±66.0	±50.0	±37.0	±27.0	±16.0	±7.0	±0.0

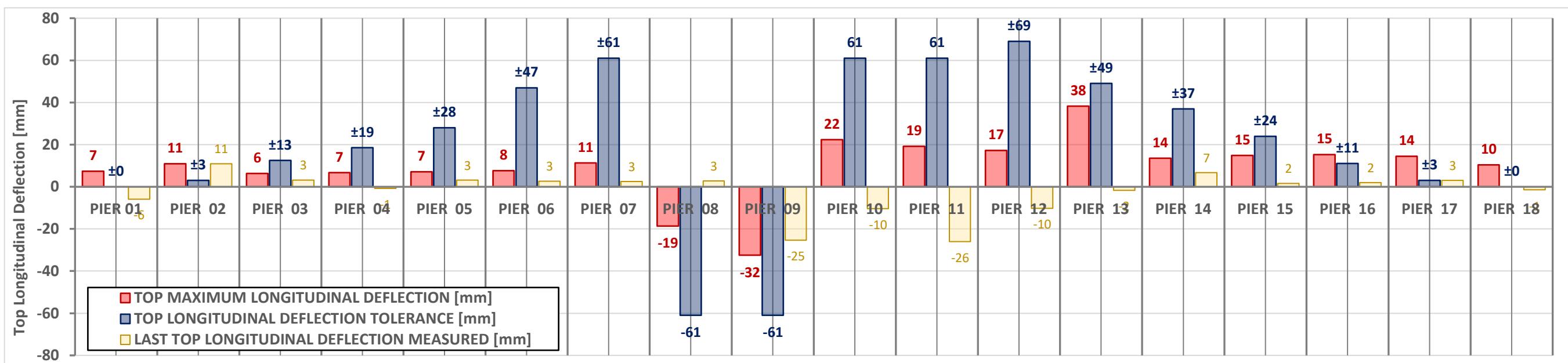


BOTTOM TRANSVERSAL DEFLECTIONS																	DATE: 11/12/19	
	PIER 01	PIER 02	PIER 03	PIER 04	PIER 05	PIER 06	PIER 07	PIER 08	PIER 09	PIER 10	PIER 11	PIER 12	PIER 13	PIER 14	PIER 15	PIER 16	PIER 17	PIER 18
ABSOLUTE VALUE MAXIMUM BOTTOM TRANSVERSAL DEFLECTION [mm]	3	2	9	9	16	20	26	28	20	30	23	23	18	18	21	11	3	9
LAST BOTTOM TRANSVERSAL DEFLECTION MEASURED [mm]	1	0	1	0	3	3	6	0	3	27	15	1	14	16	4	0	1	0
TOLERANCE BOTTOM TRANSVERSAL DEFLECTION [mm]	±0.0	±2.5	±10.0	±10.0	±11.0	±15.5	±18.0	±47.0	±47.0	±47.0	±44.0	±31.0	±24.0	±14.0	±11.0	±3.5	±3.0	±0.0



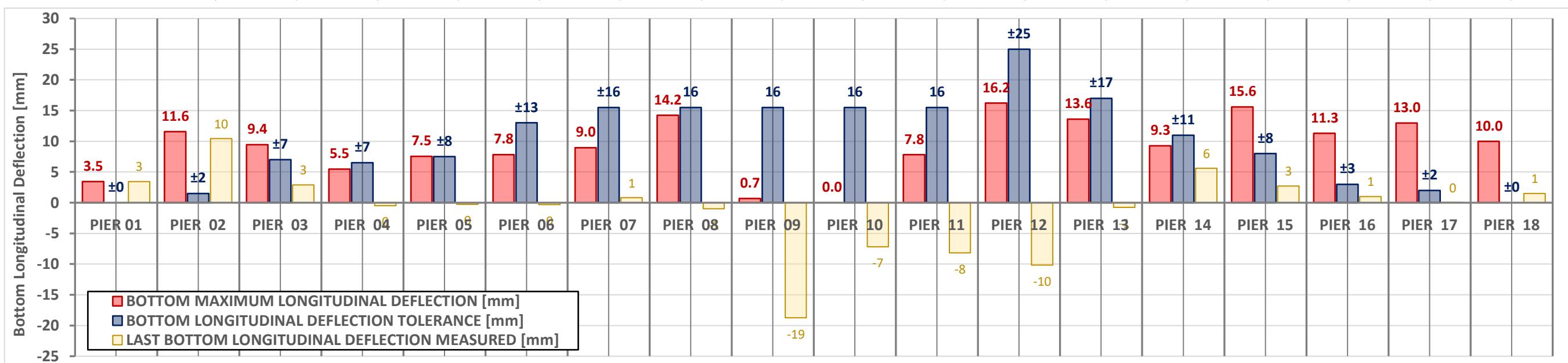
TOP LONGITUDINAL DEFLECTIONS																	DATE: 11/12/19
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	PIER 01	PIER 02	PIER 03	PIER 04	PIER 05	PIER 06	PIER 07	PIER 08	PIER 09	PIER 10	PIER 11	PIER 12	PIER 13	PIER 14	PIER 15	PIER 16	PIER 17	PIER 18
TOP MAXIMUM LONGITUDINAL DEFLECTION [mm]	7	11	6	7	7	8	11	-19	-32	22	19	17	38	14	15	15	14	10
LAST TOP LONGITUDINAL DEFLECTION MEASURED [mm]	-6	11	3	-1	3	3	3	3	-25	-10	-26	-10	-2	7	2	2	3	-1
TOP LONGITUDINAL DEFLECTION TOLERANCE [mm]	±0	±3	±13	±19	±28	±47	±61	-61	-61	61	61	±69	±49	±37	±24	±11	±3	±0



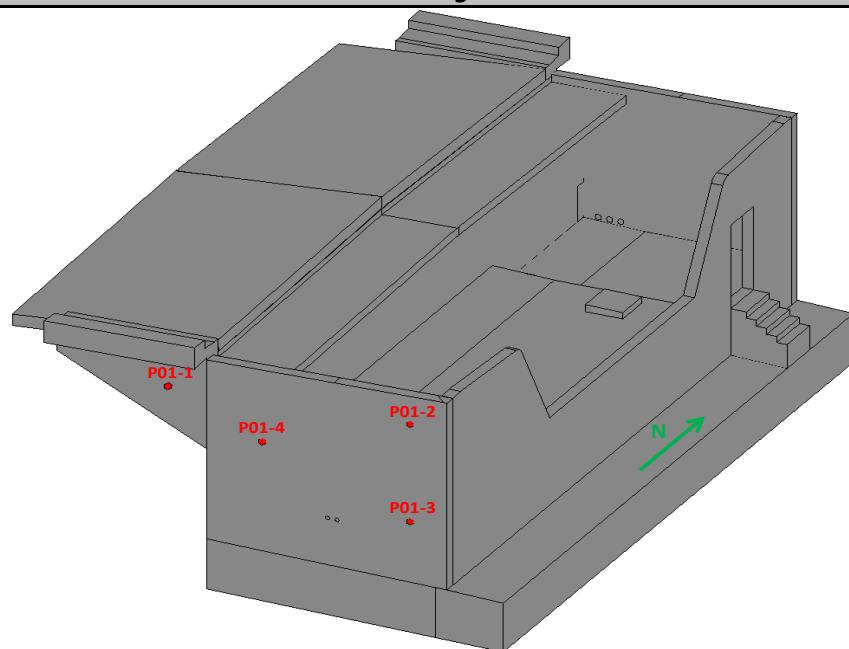
BOTTOM LONGITUDINAL DEFLECTIONS																	DATE: 11/12/19
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	PIER 01	PIER 02	PIER 03	PIER 04	PIER 05	PIER 06	PIER 07	PIER 08	PIER 09	PIER 10	PIER 11	PIER 12	PIER 13	PIER 14	PIER 15	PIER 16	PIER 17	PIER 18
BOTTOM MAXIMUM LONGITUDINAL DEFLECTION [mm]	3	12	9	5	8	8	9	14	1	0	8	16	14	9	16	11	13	10
LAST BOTTOM LONGITUDINAL DEFLECTION MEASURED [mm]	3	10	3	0	0	0	1	-1	-19	-7	-8	-10	-1	6	3	1	0	1
BOTTOM LONGITUDINAL DEFLECTION TOLERANCE [mm]	±0	±2	±7	±7	±8	±13	±16	16	16	16	16	±25	±17	±11	±8	±3	±2	±0

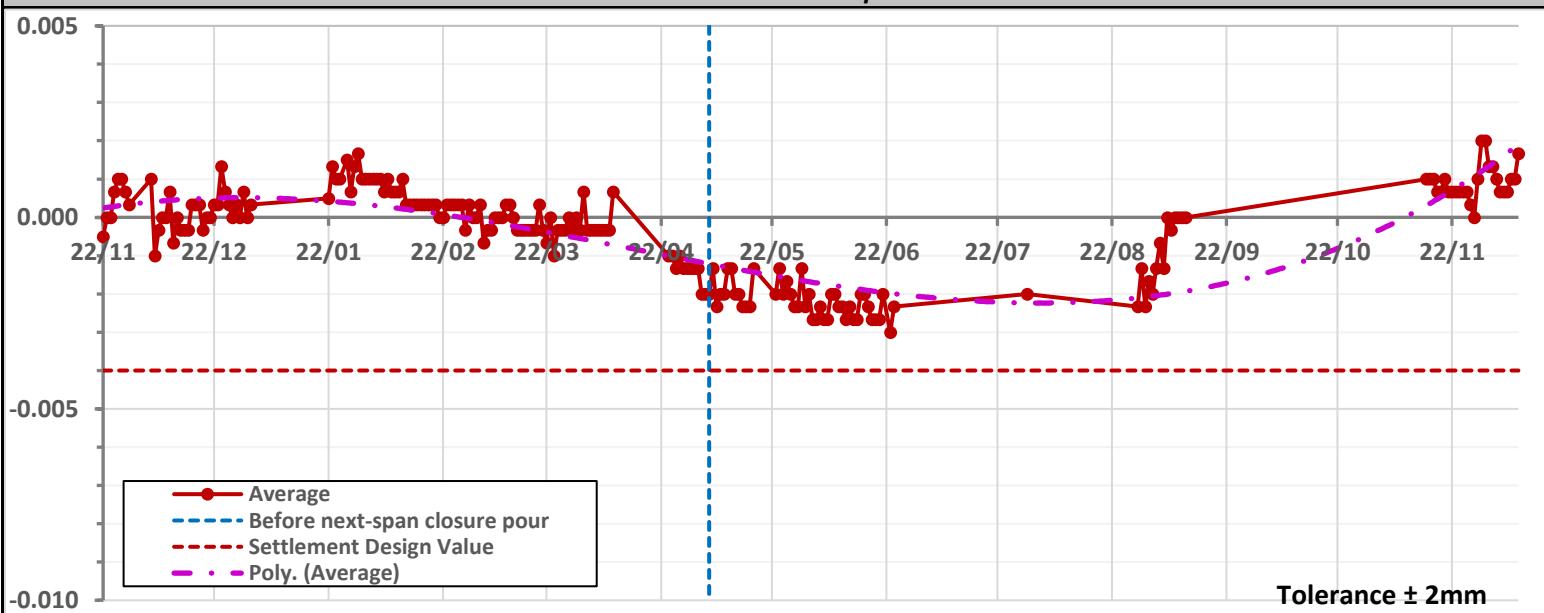


## 10. Settlement Reports per Pier.

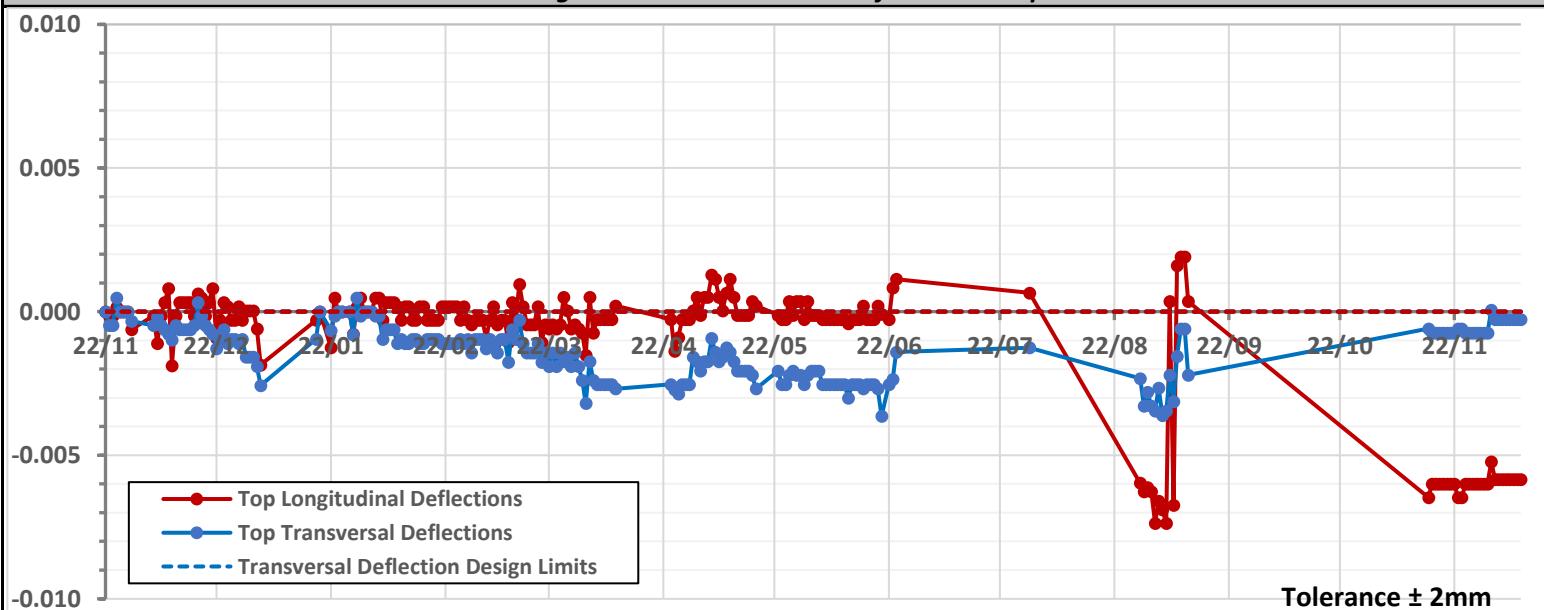
### Monitoring Points



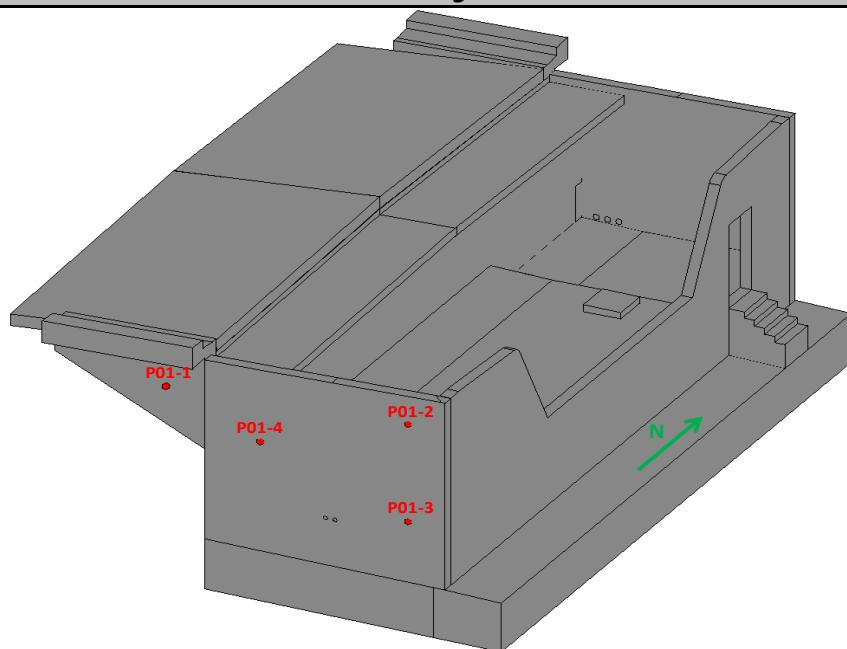
### Settlement Graph



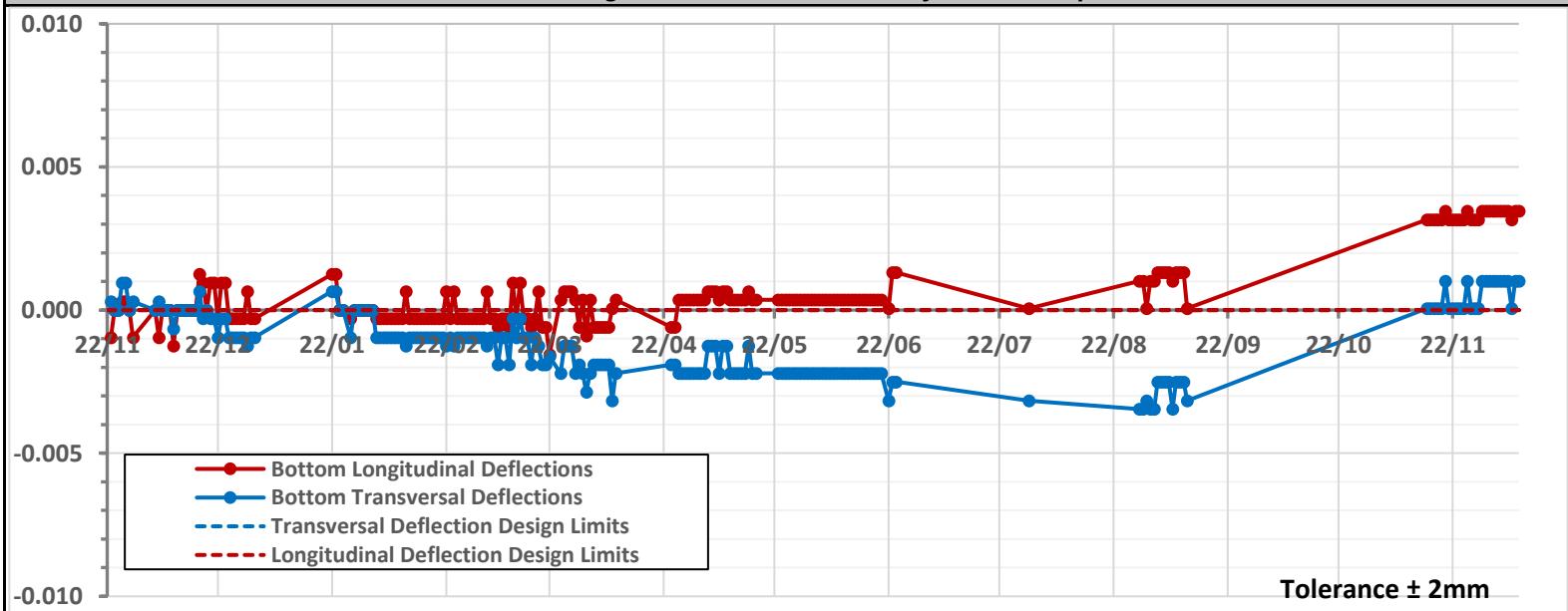
### Longitudinal & Transversal Deflections Graph



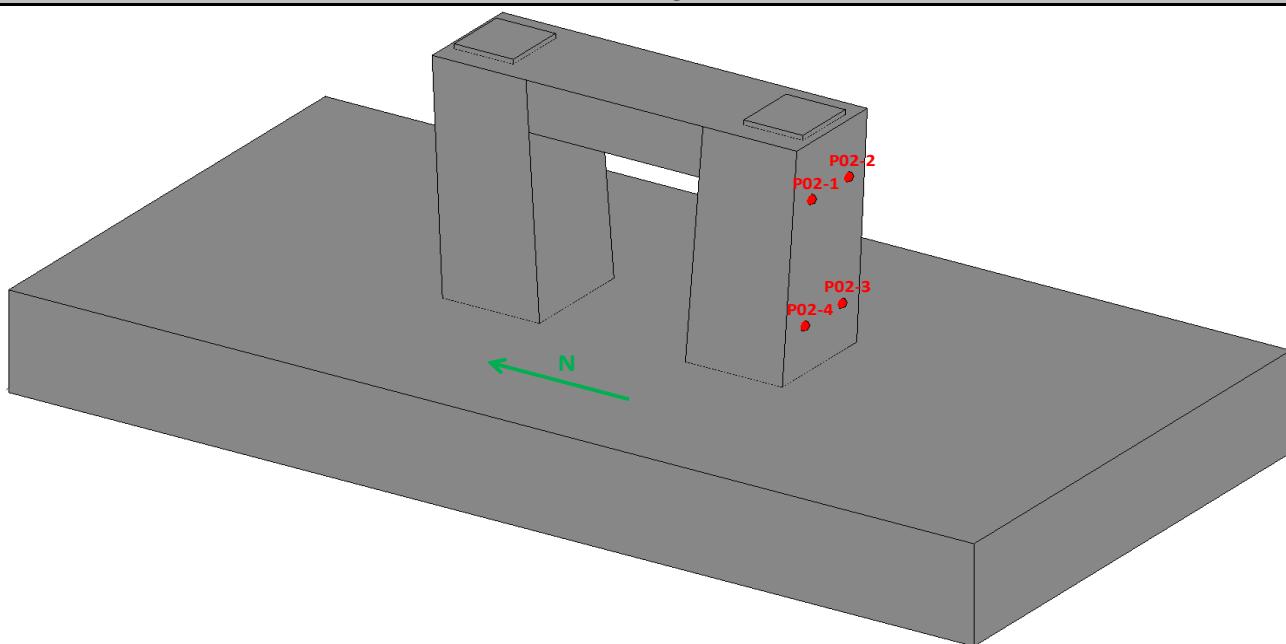
### Monitoring Points



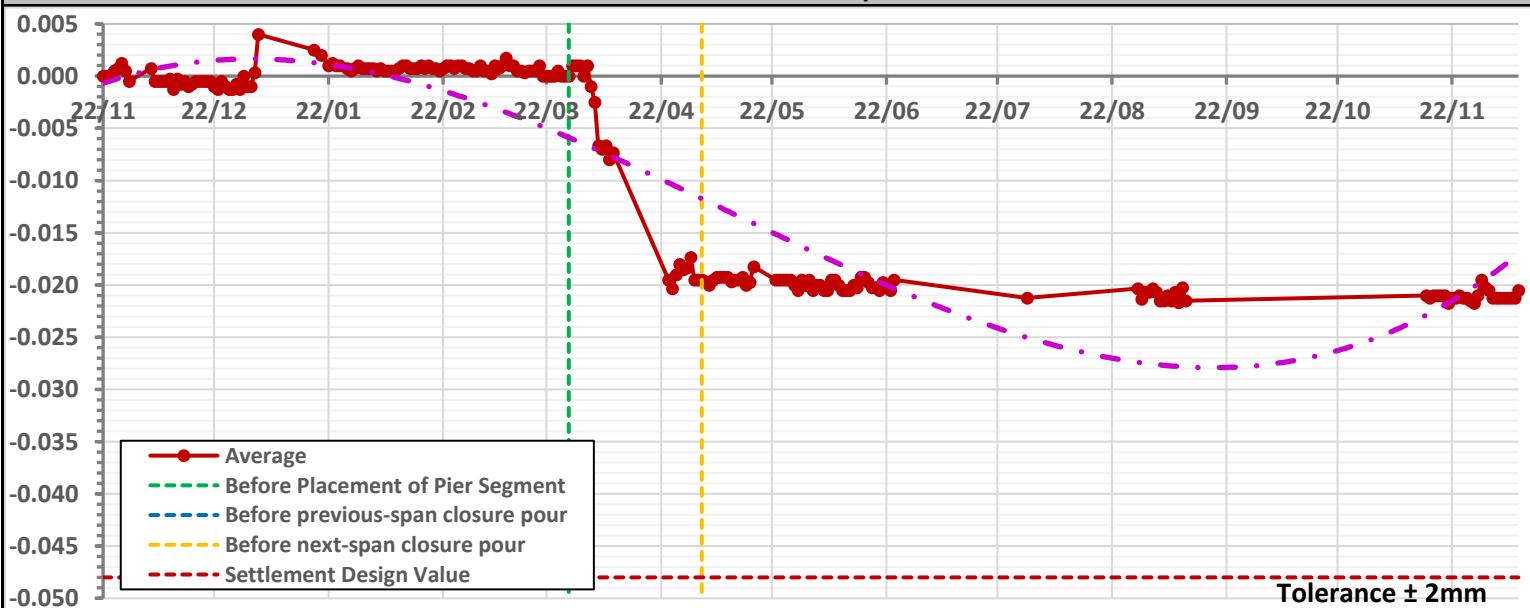
### Bottom Longitudinal & Transversal Deflections Graph



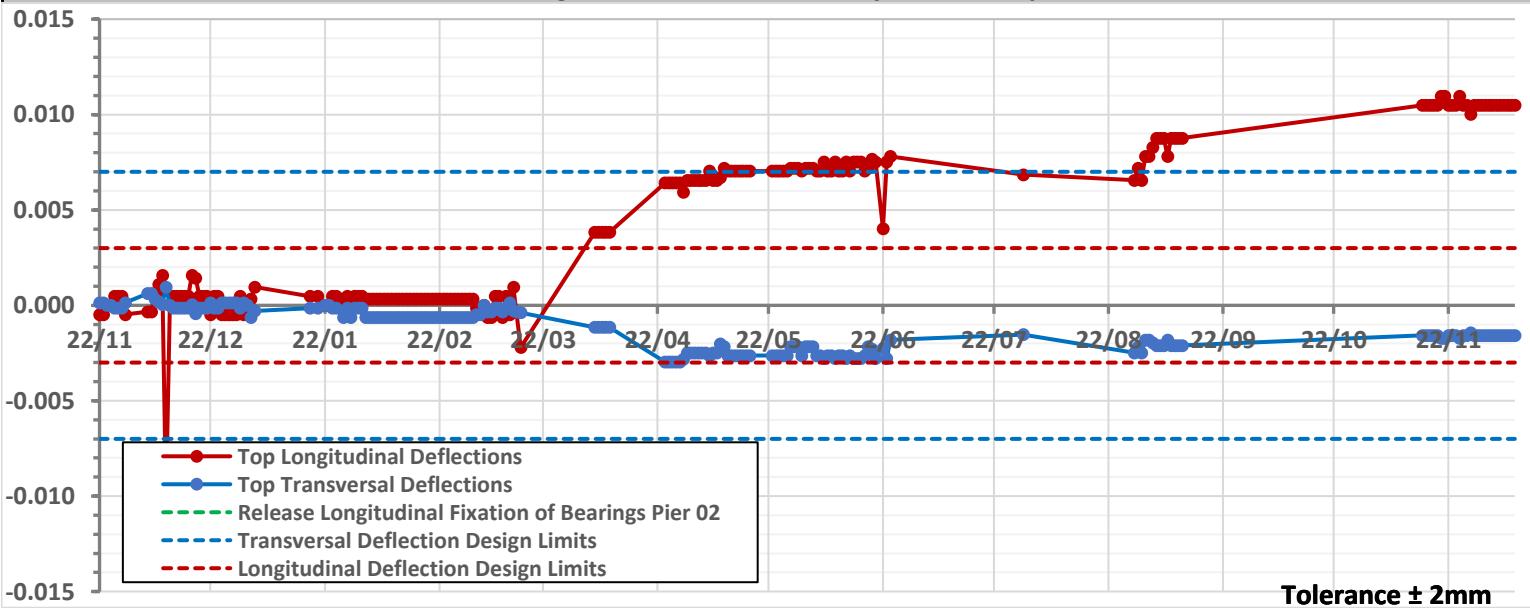
### Monitoring Points



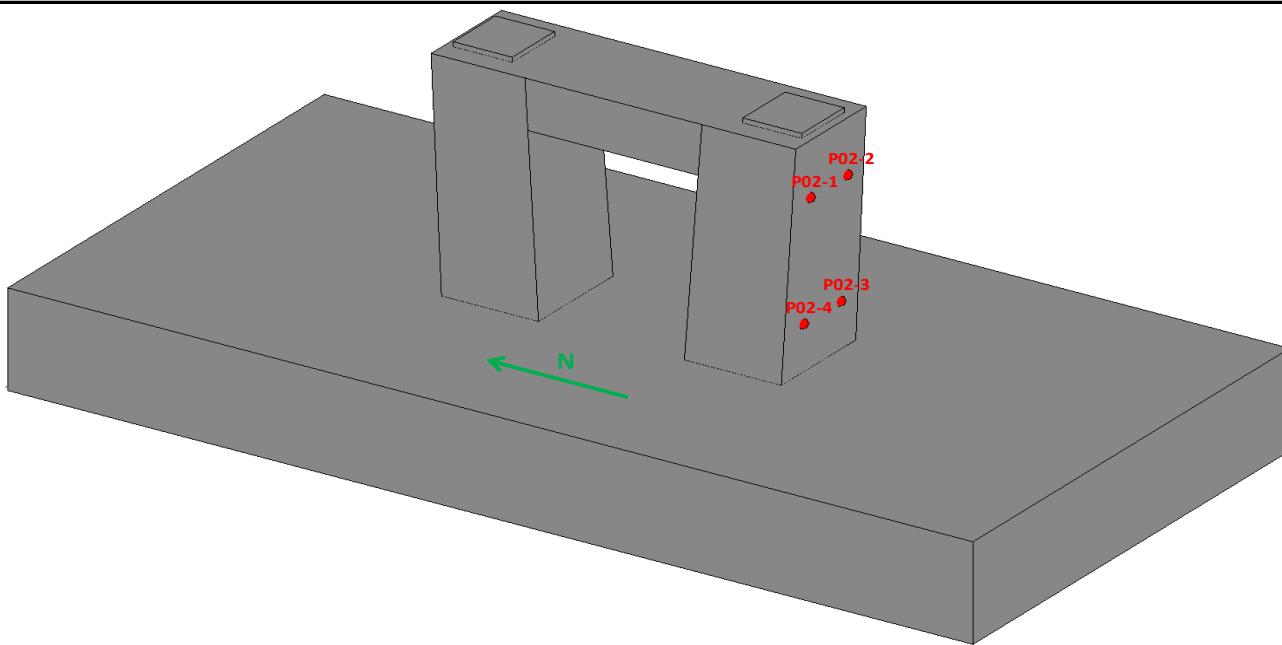
### Settlement Graph



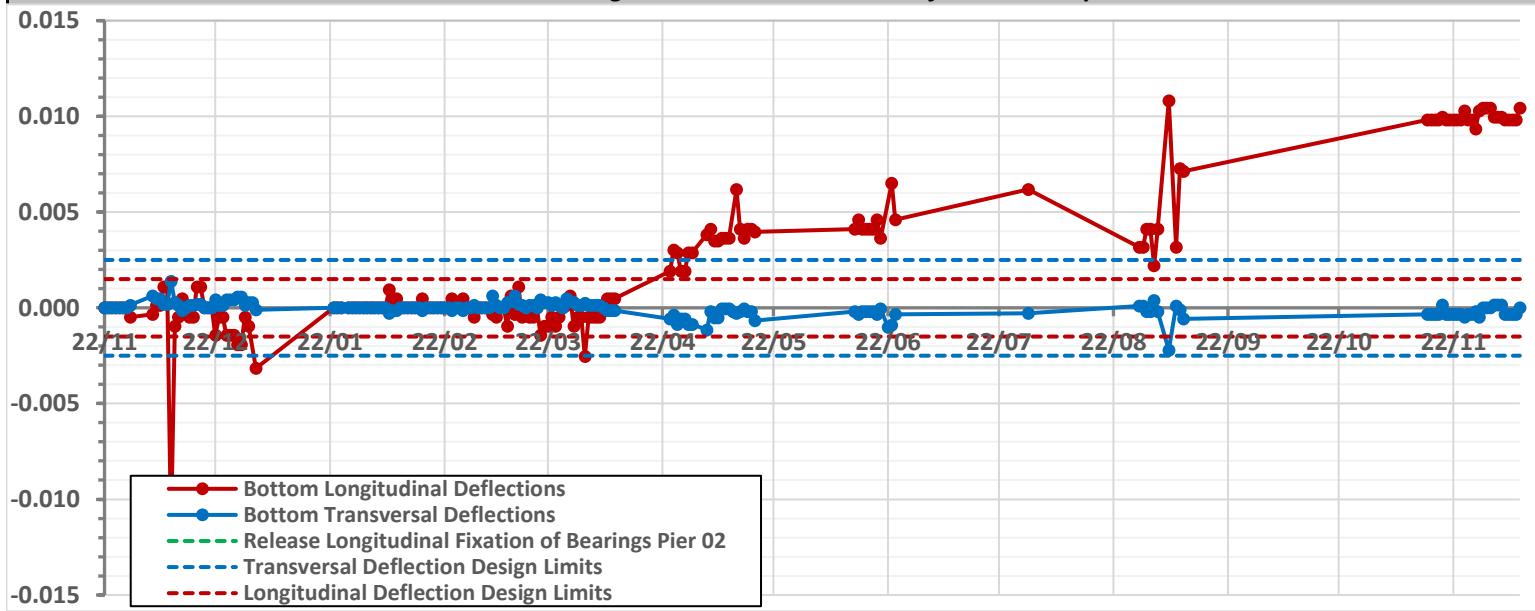
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

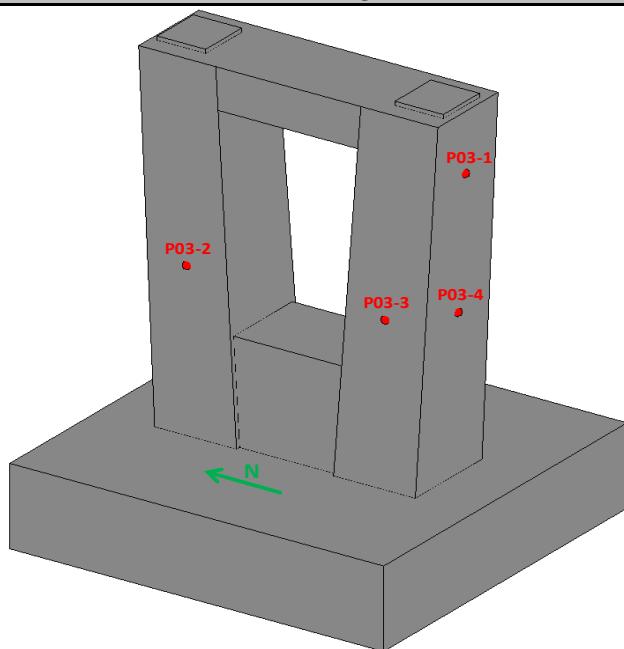


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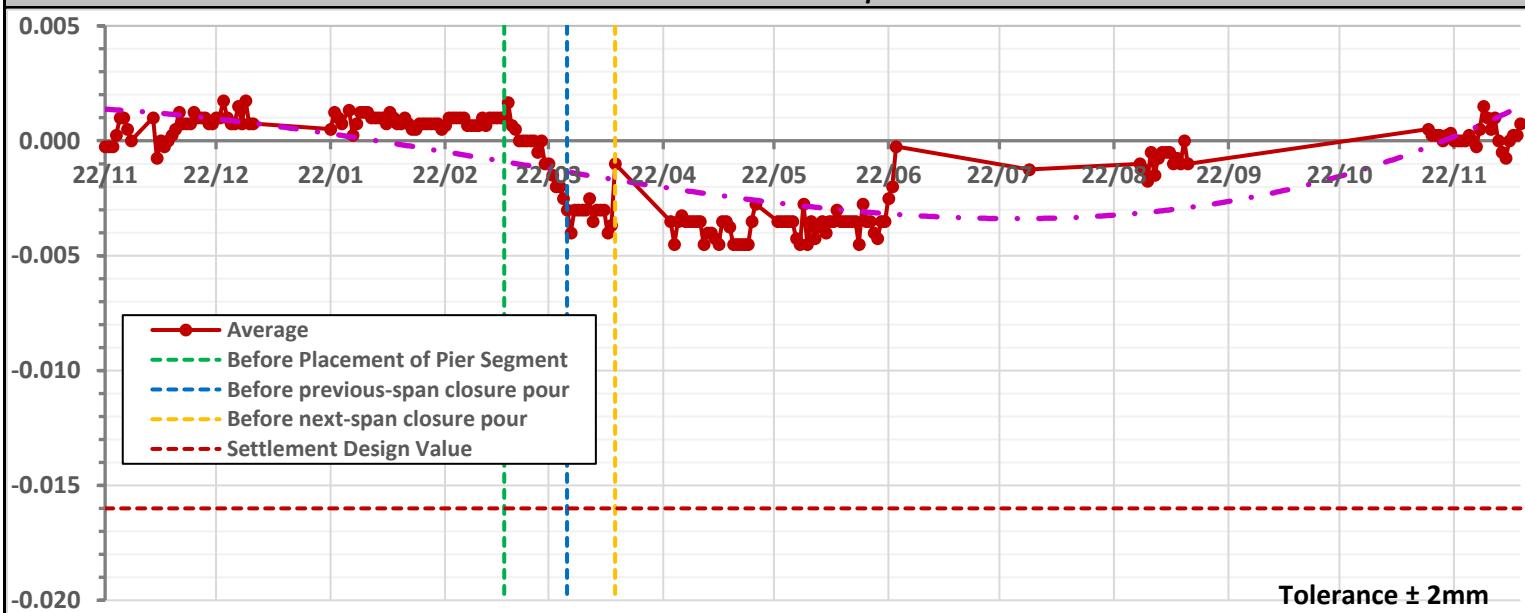




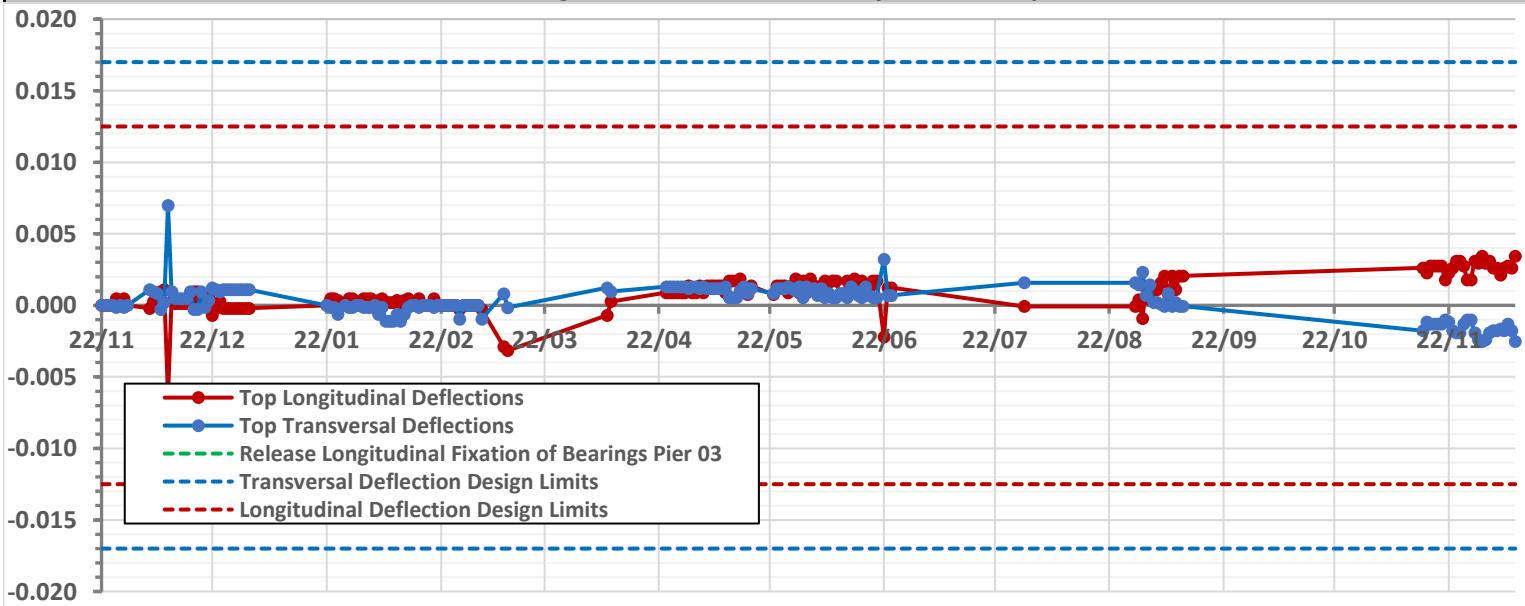
### Monitoring Points



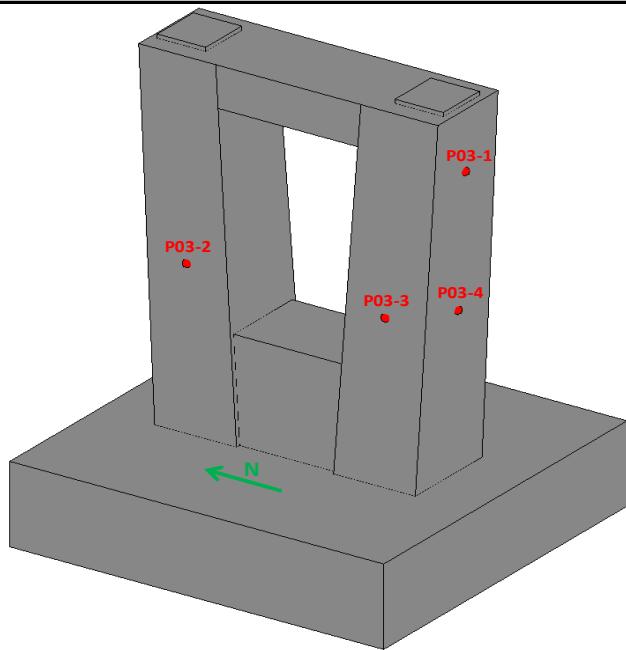
### Settlement Graph



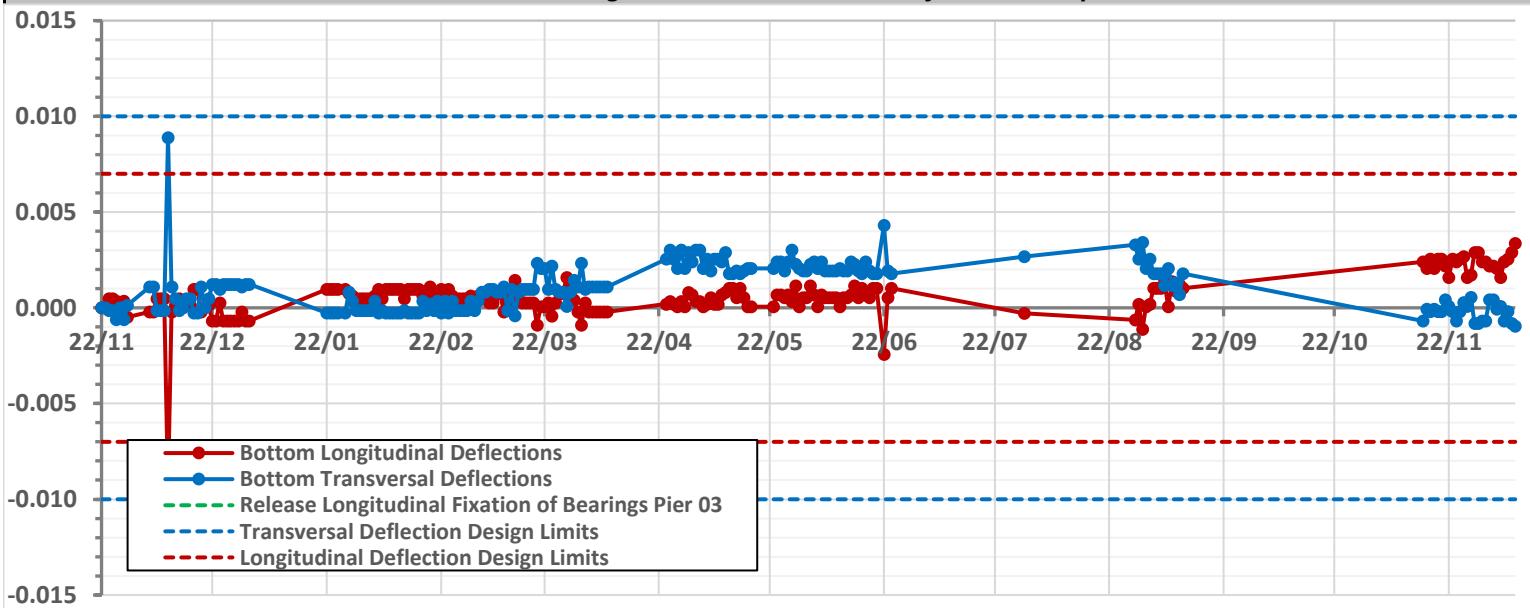
### Longitudinal & Transversal Deflections Graph



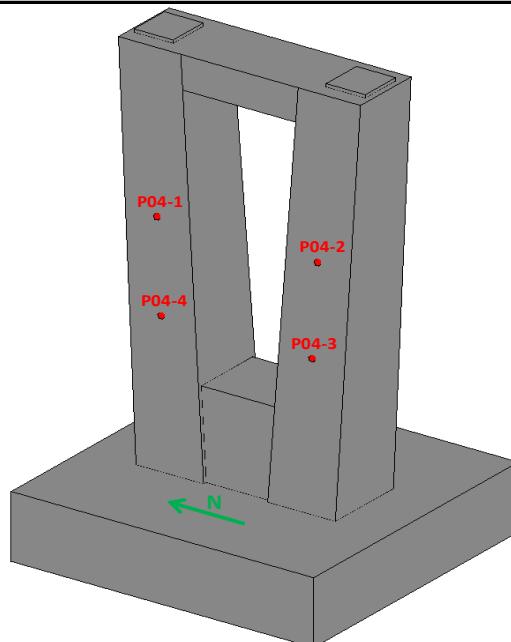
### Monitoring Points



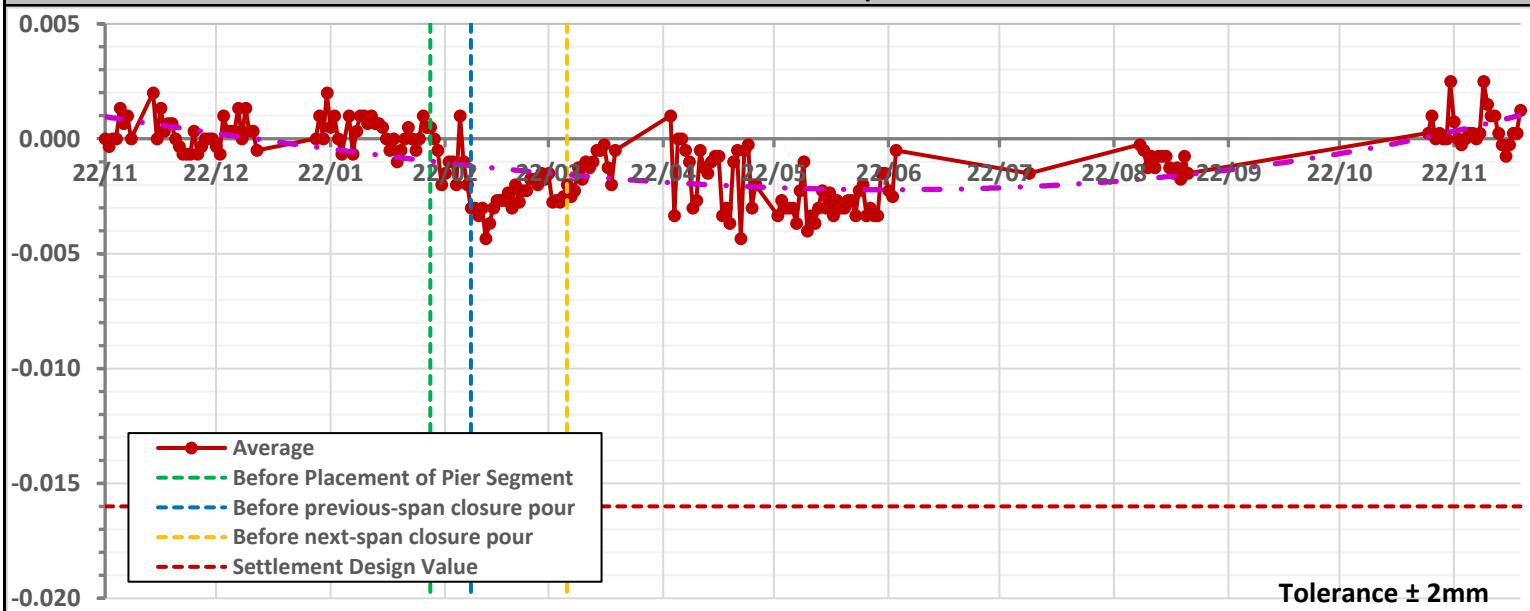
### Bottom Longitudinal & Transversal Deflections Graph



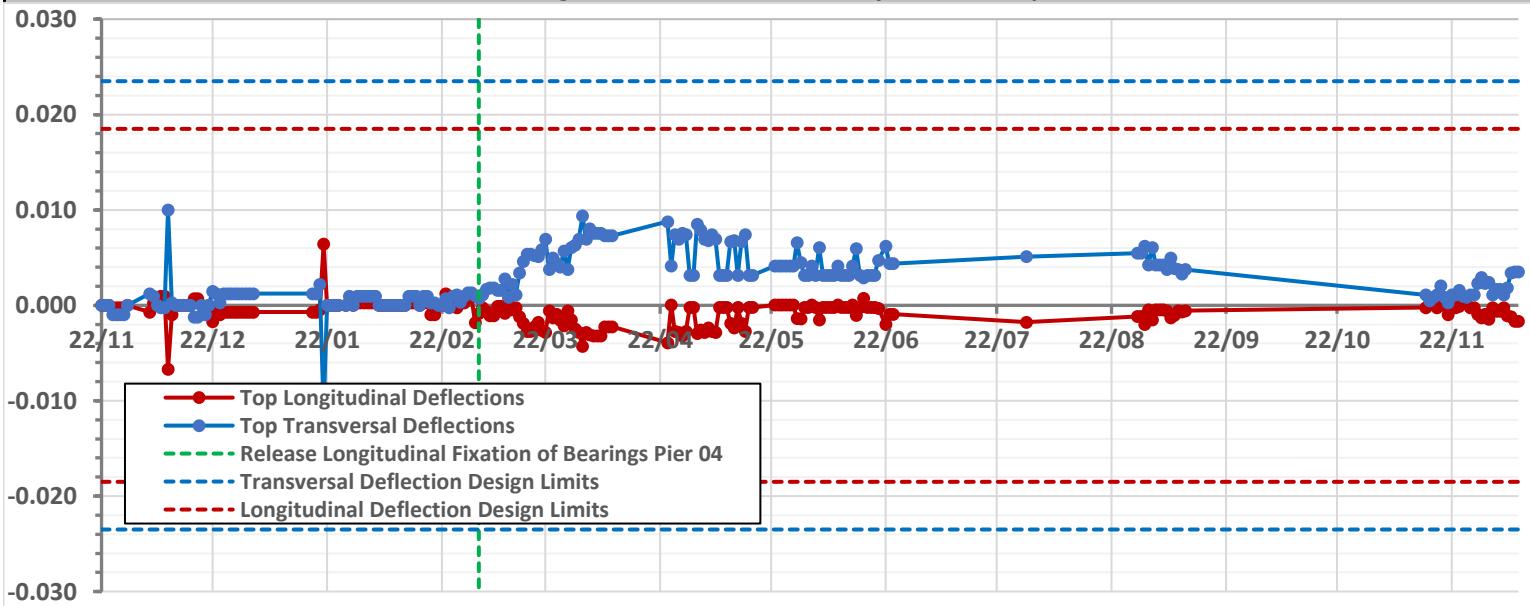
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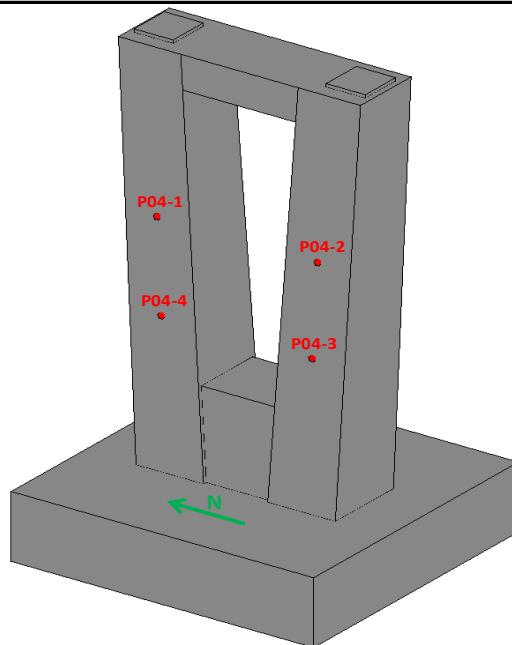
### Settlement Graph



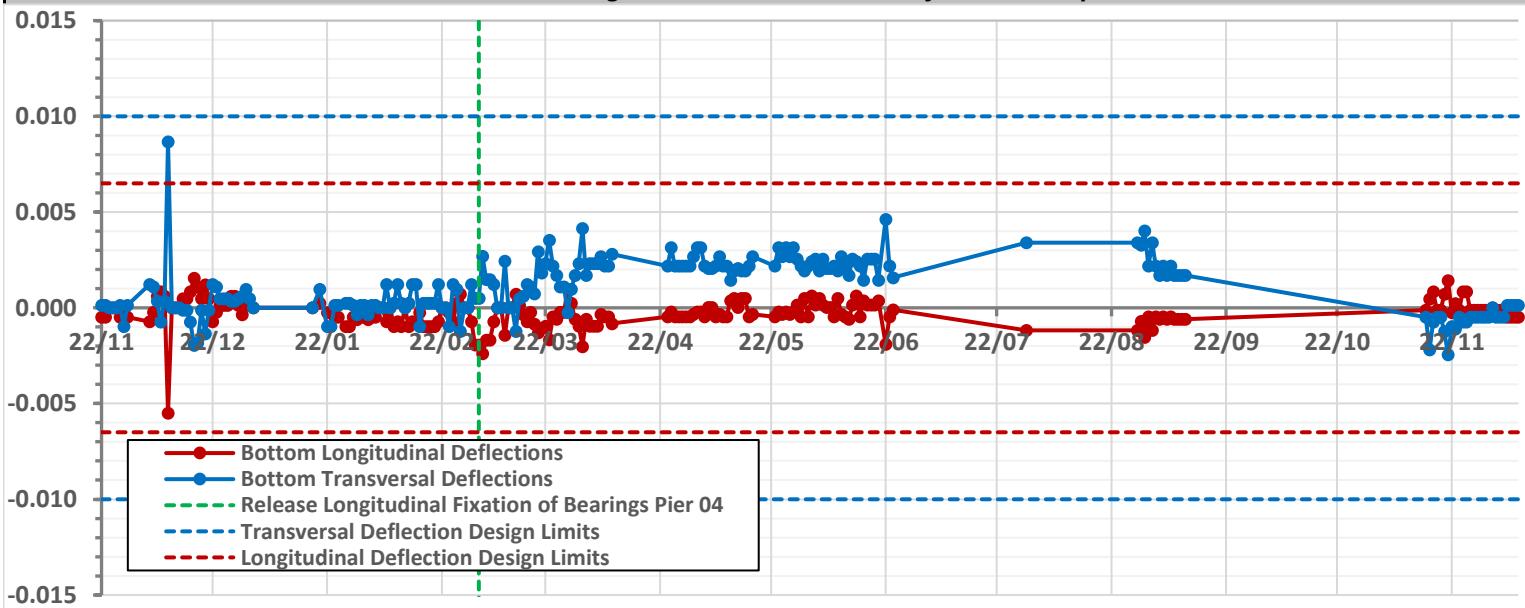
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

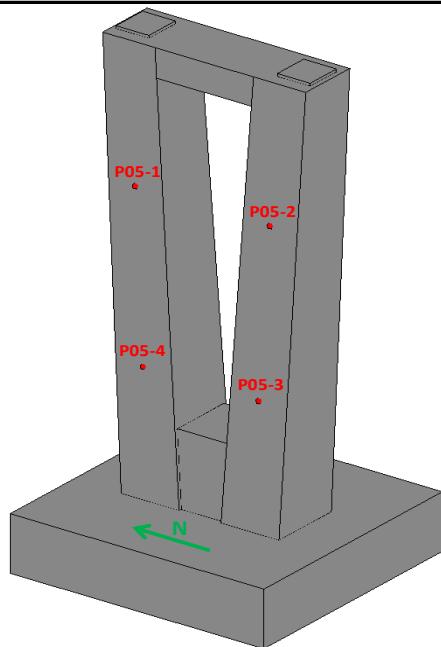


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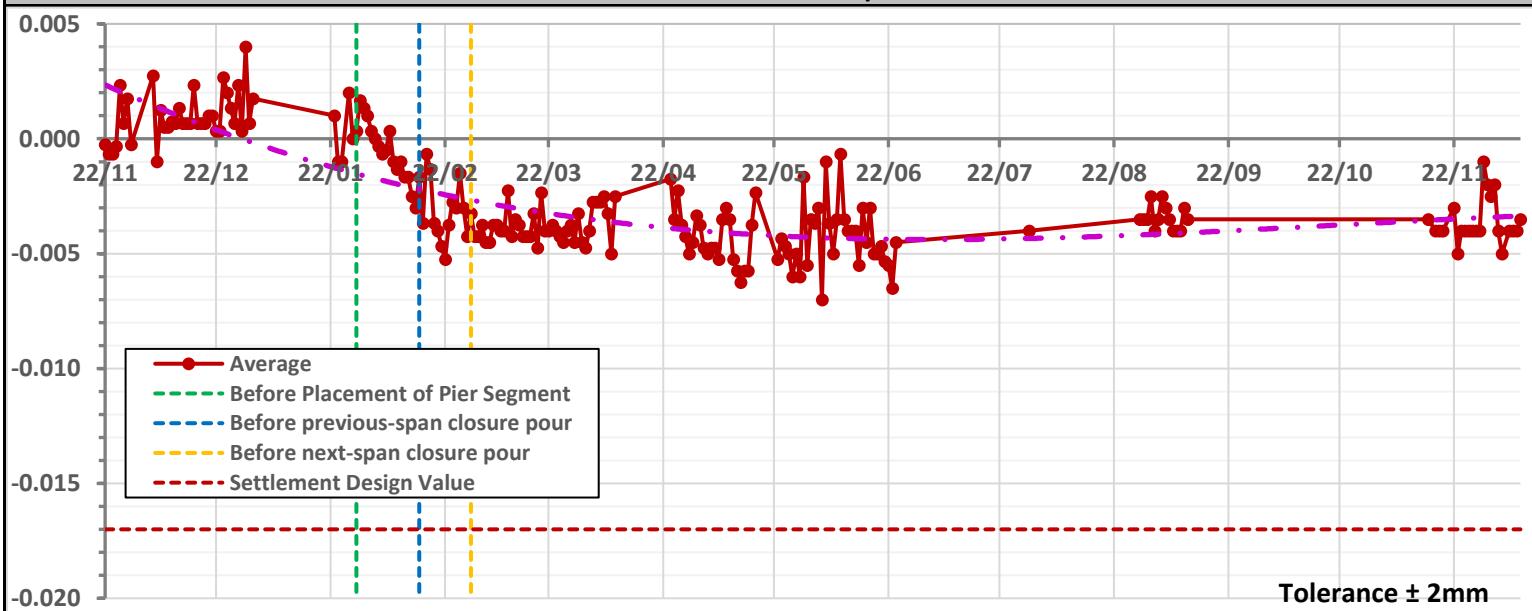




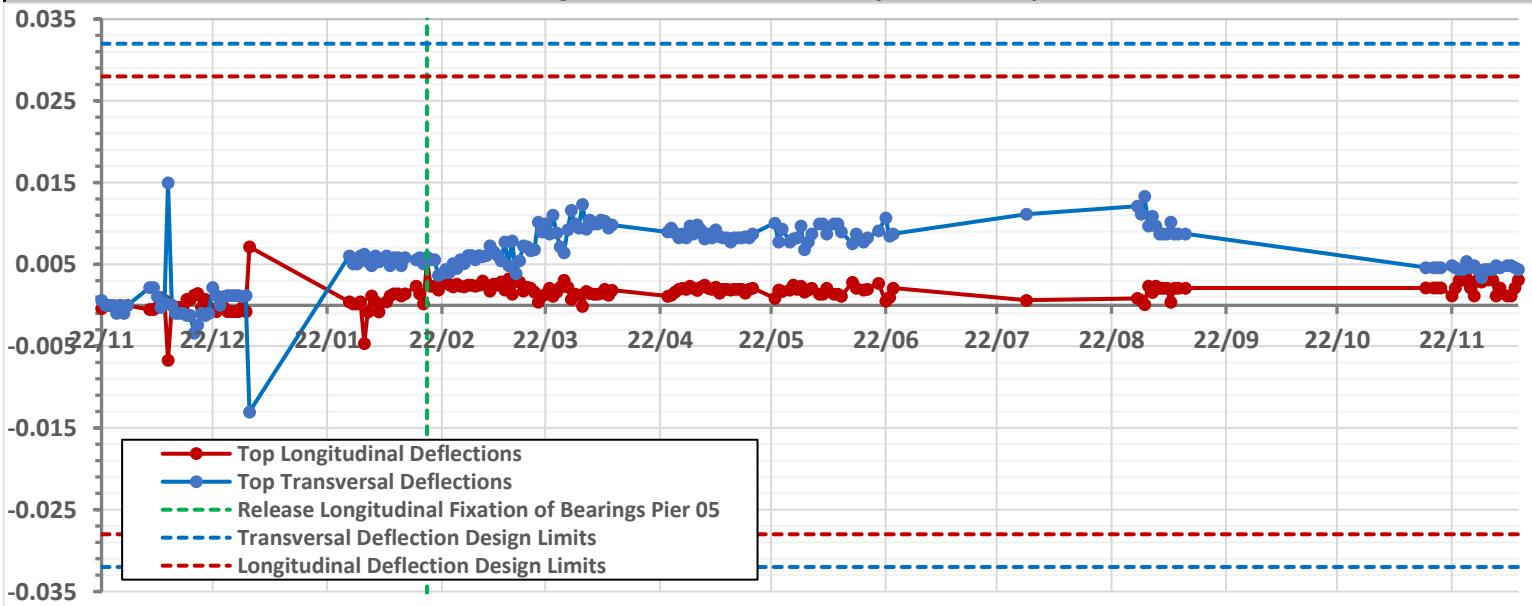
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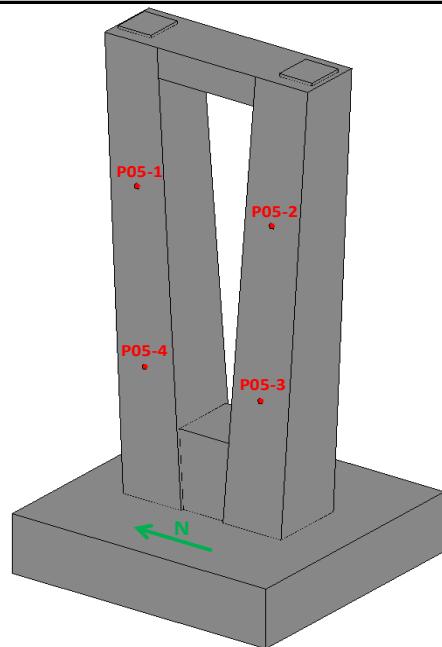
### Settlement Graph



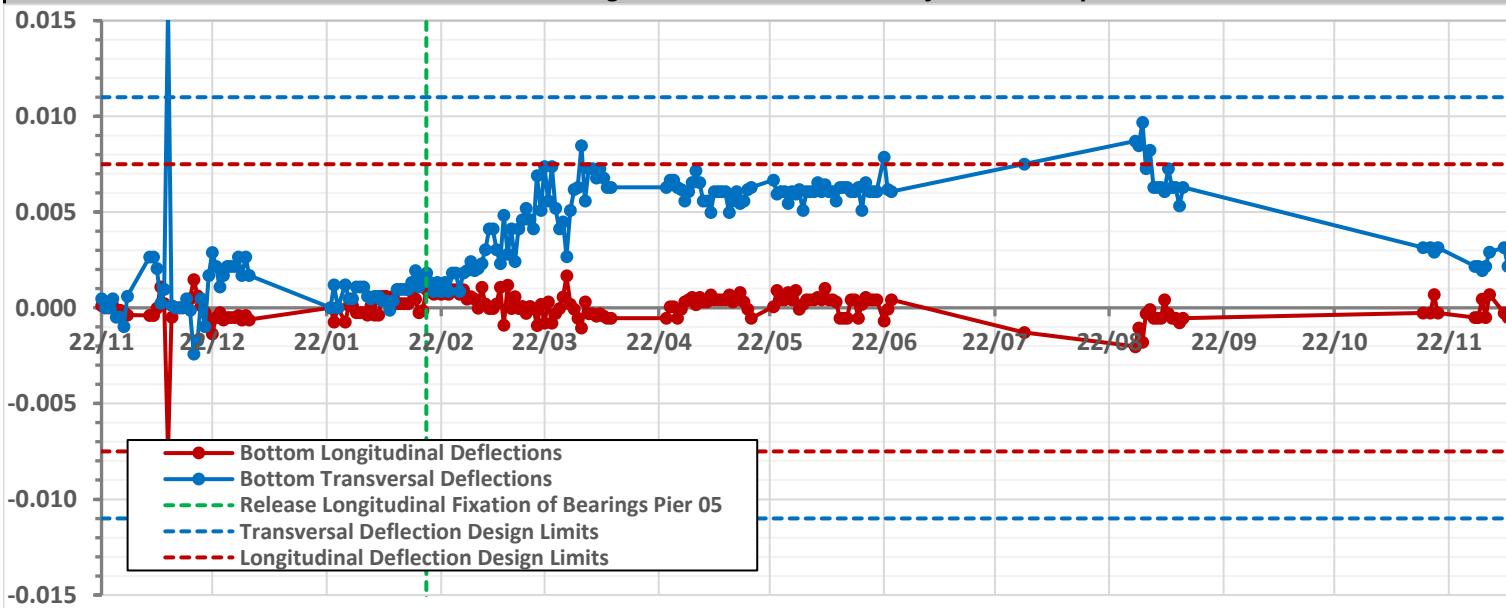
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

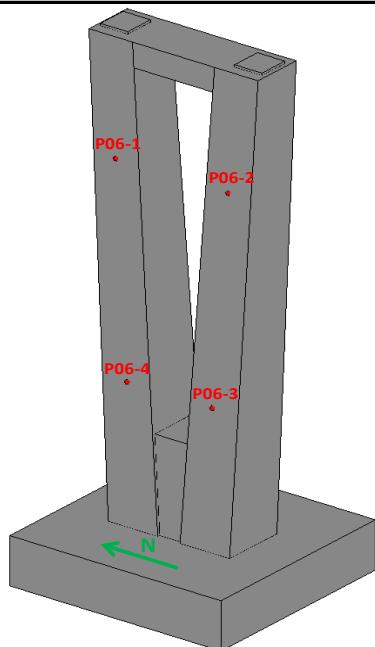


### Bottom Longitudinal & Transversal Deflections Graph

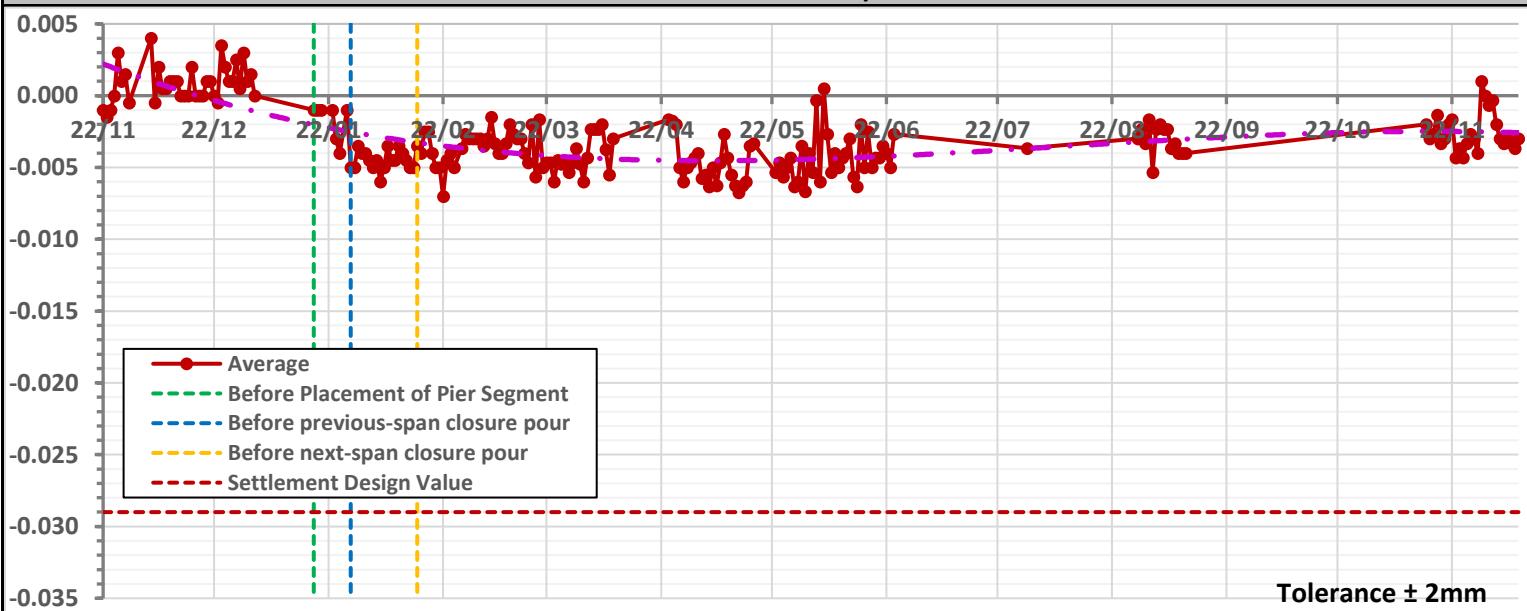




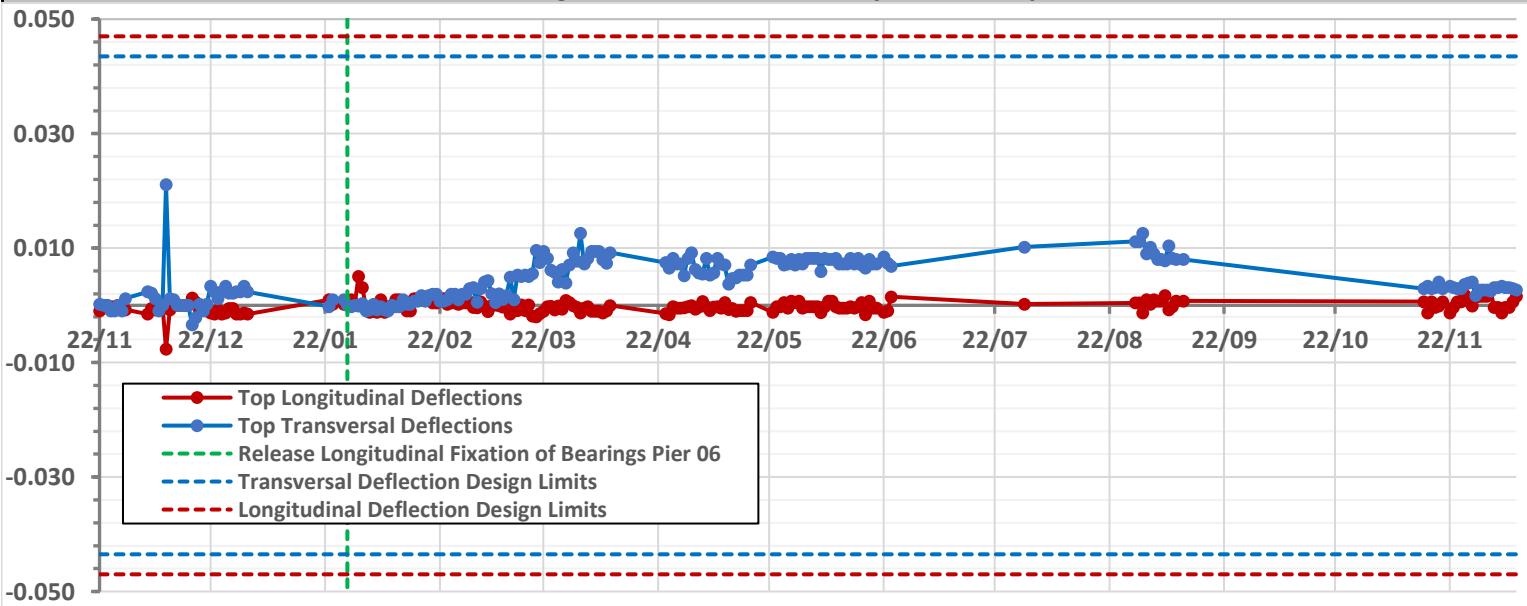
### Monitoring Points



### Settlement Graph

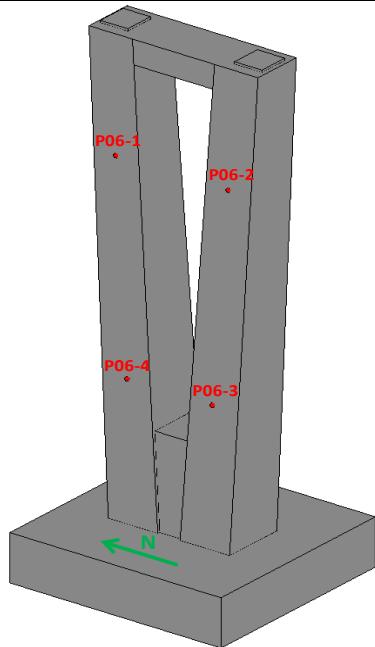


### Longitudinal & Transversal Deflections Graph

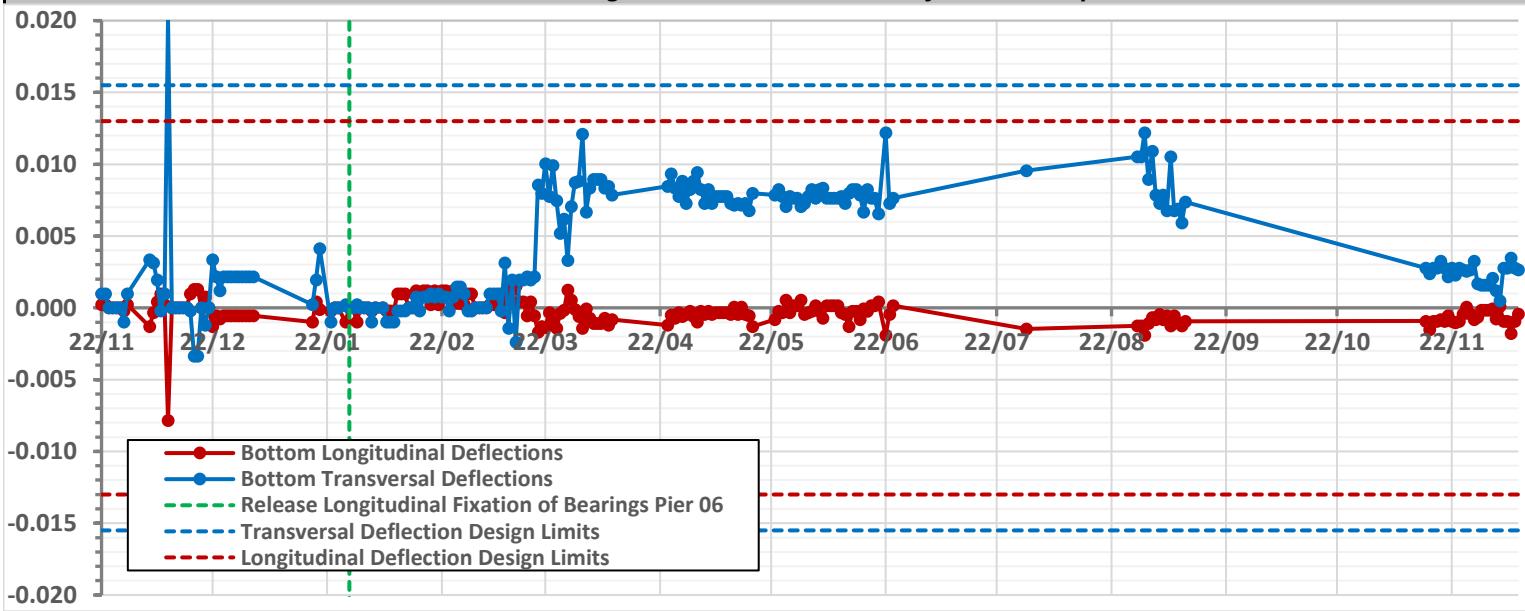




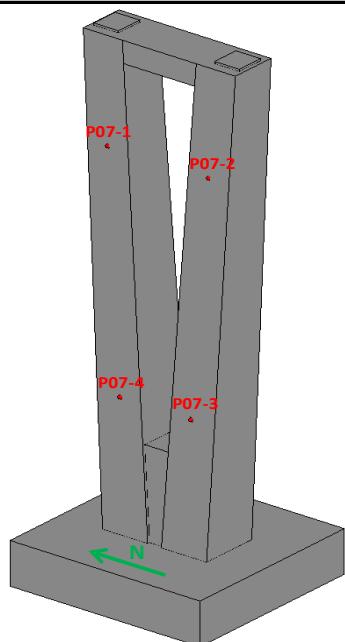
### Monitoring Points



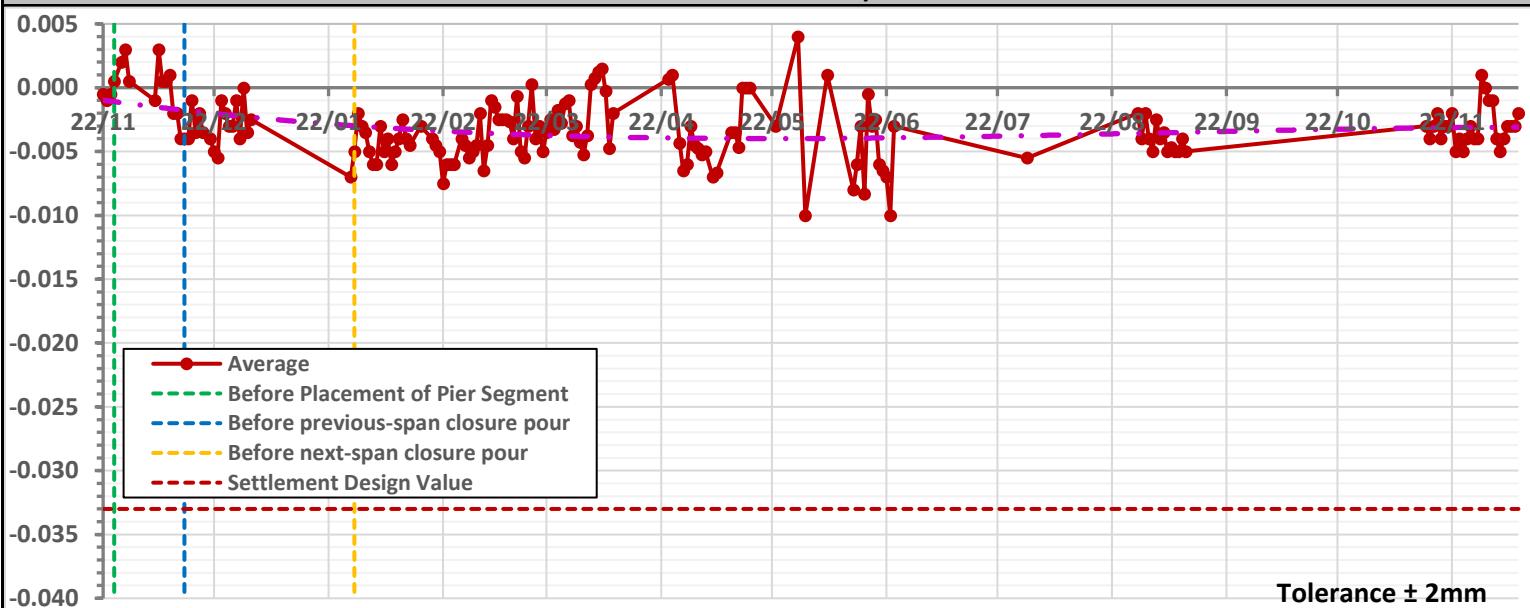
### Bottom Longitudinal & Transversal Deflections Graph



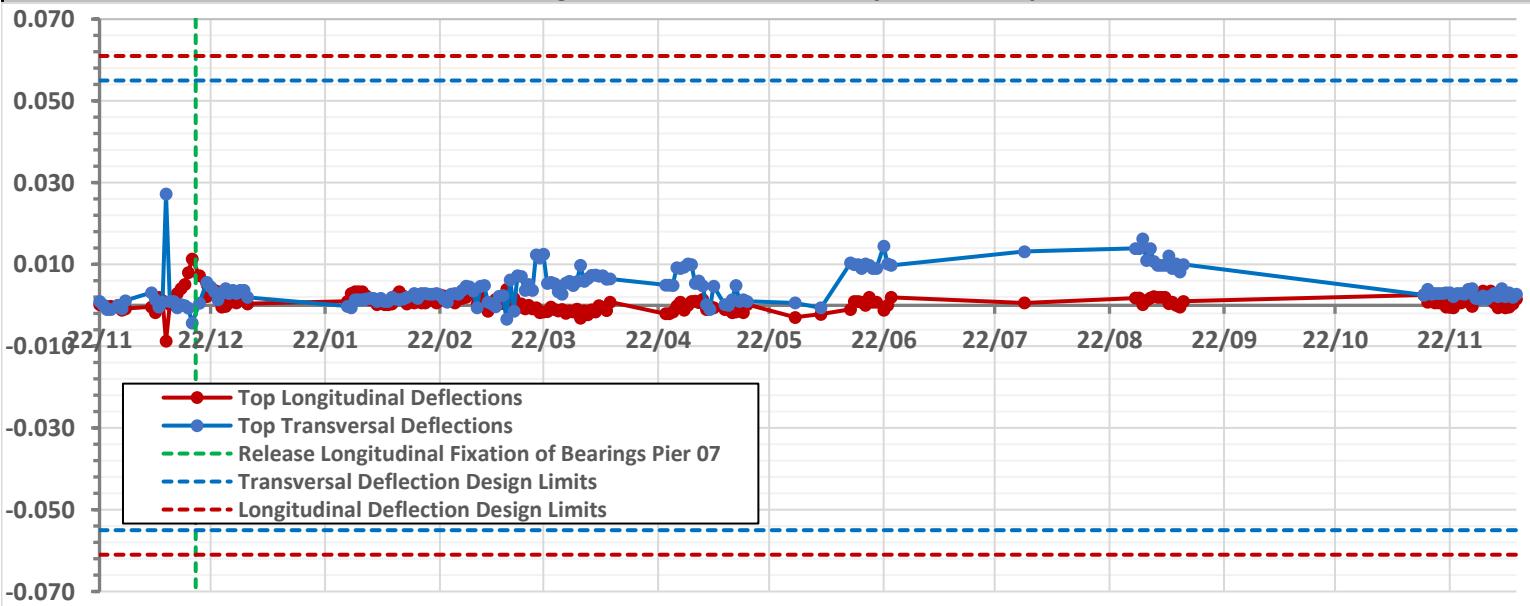
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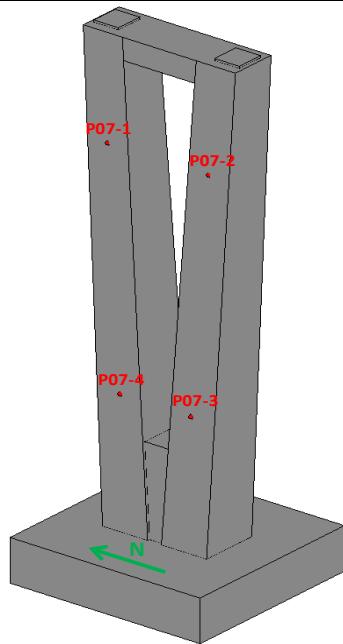
### Settlement Graph



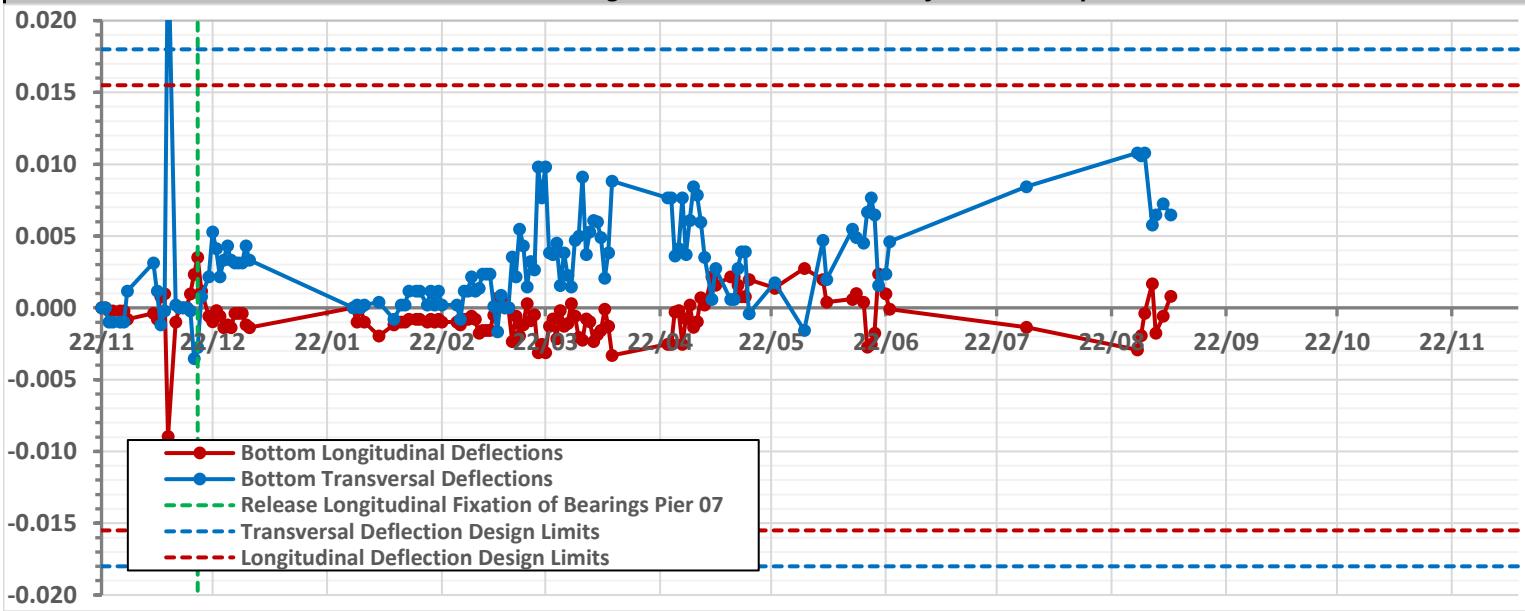
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

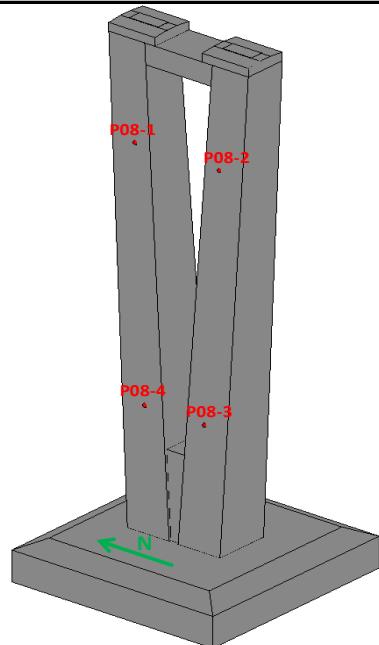


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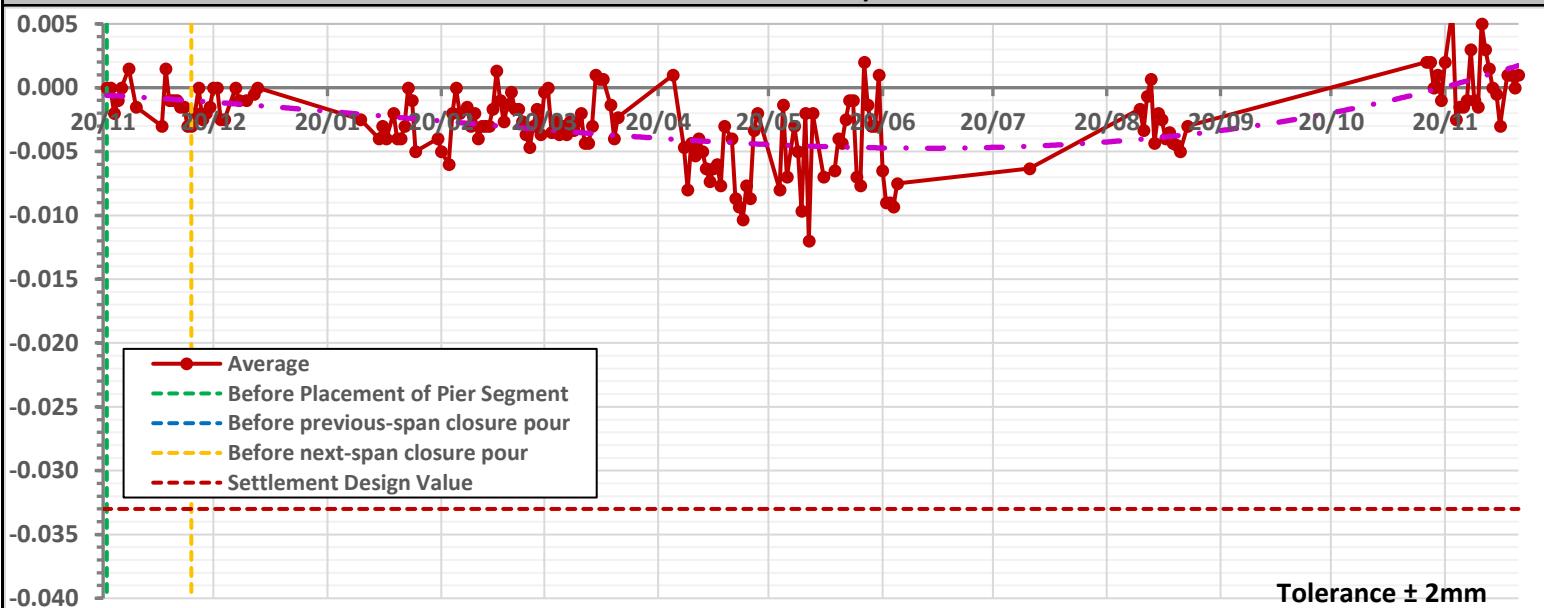




### Monitoring Points



### Settlement Graph

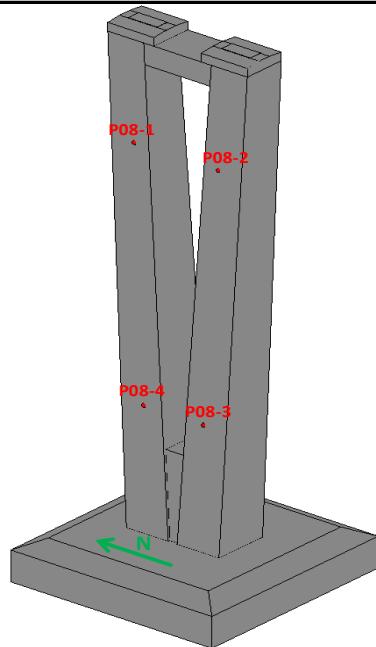


### Longitudinal & Transversal Deflections Graph

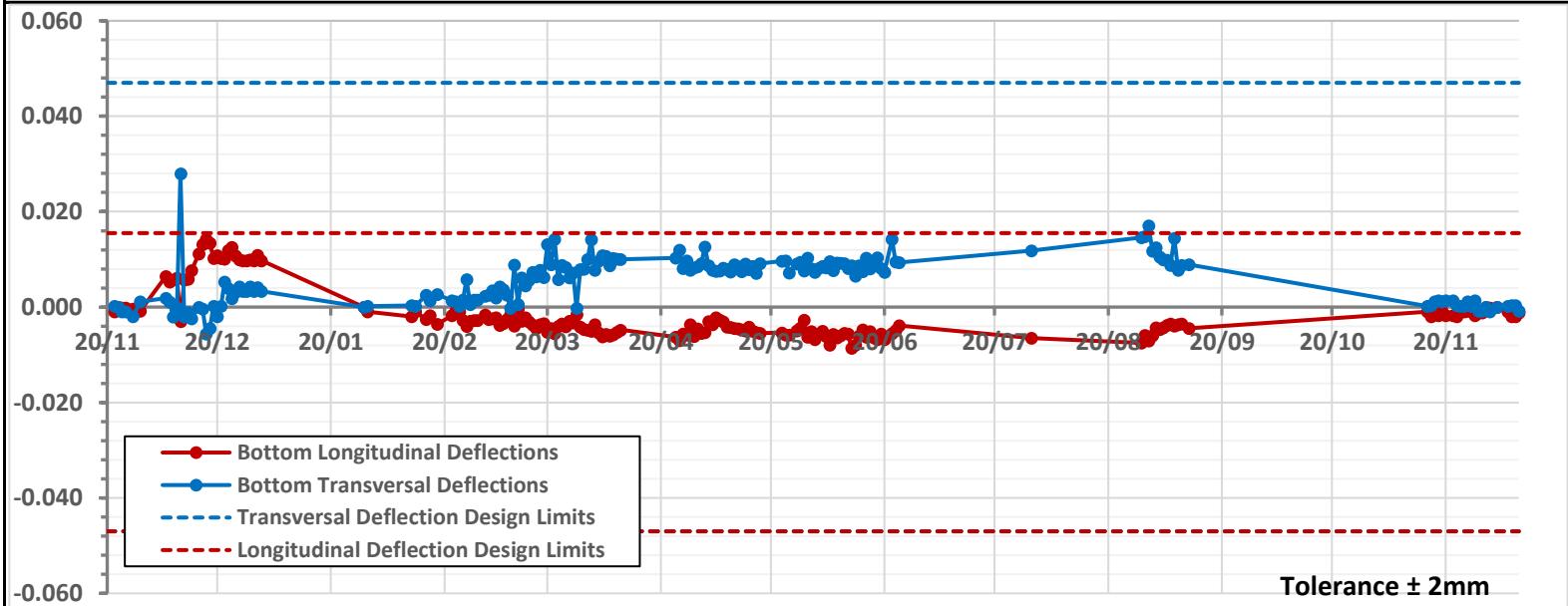




### Monitoring Points

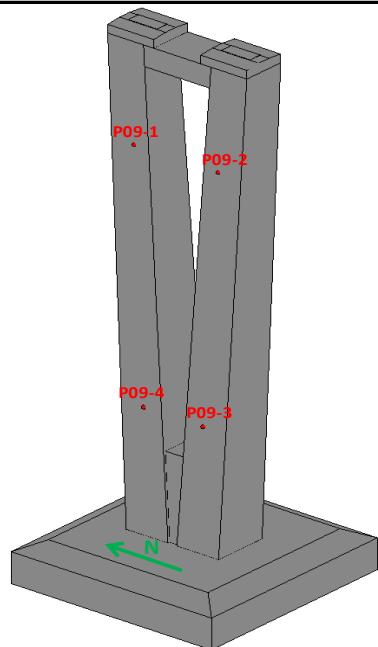


### Bottom Longitudinal & Transversal Deflections Graph

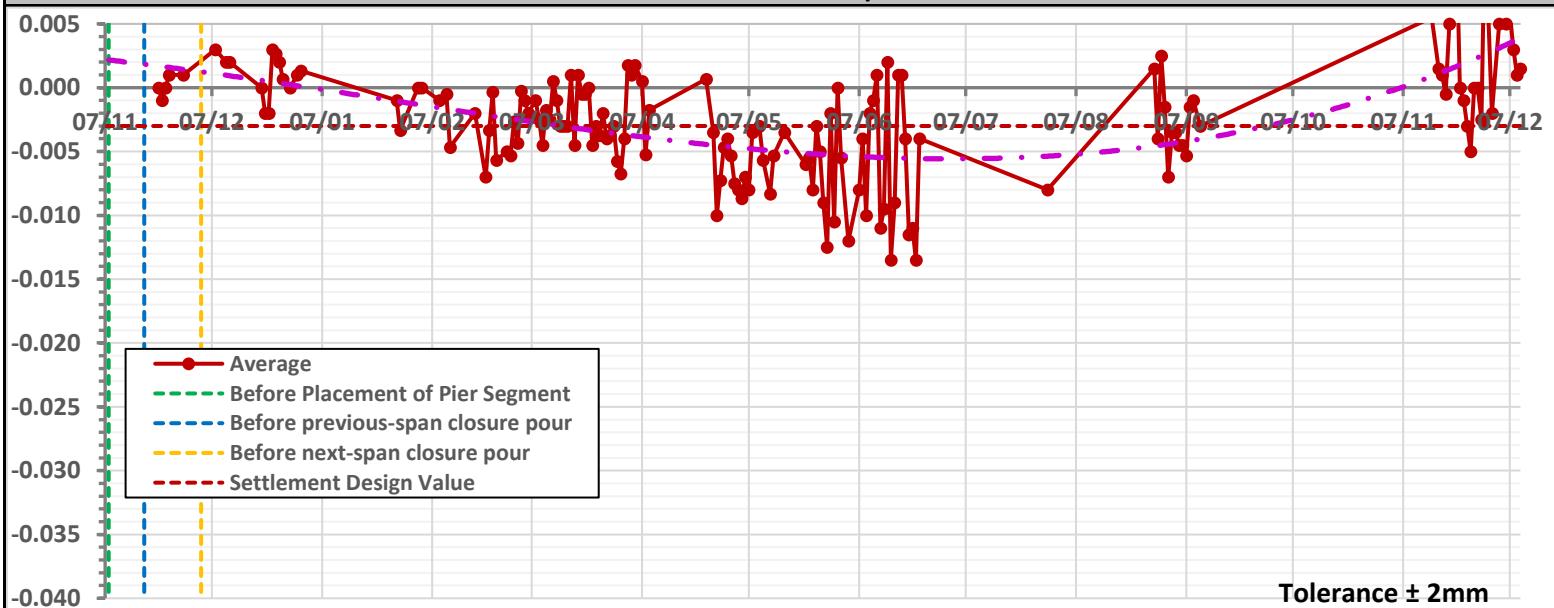




### Monitoring Points



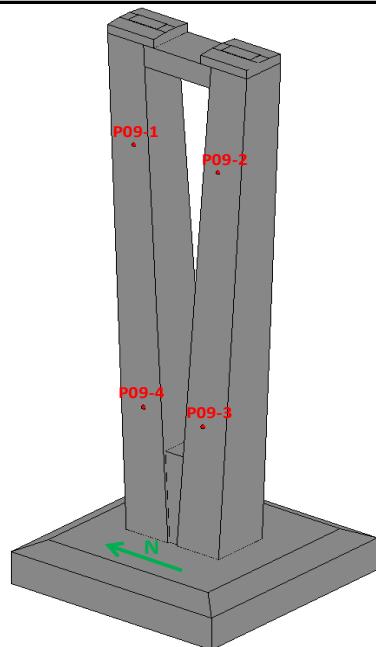
### Settlement Graph



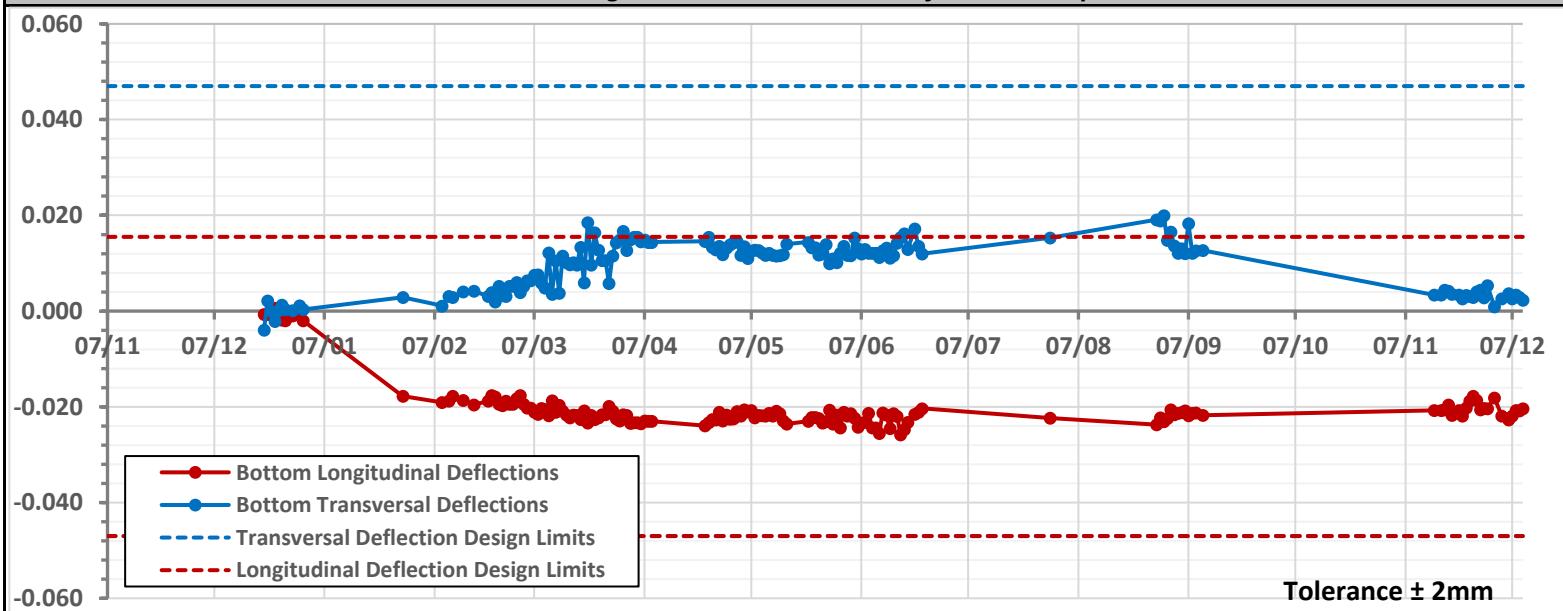
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

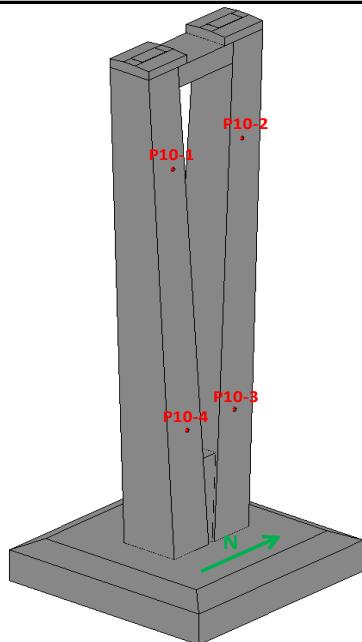


### Bottom Longitudinal & Transversal Deflections Graph

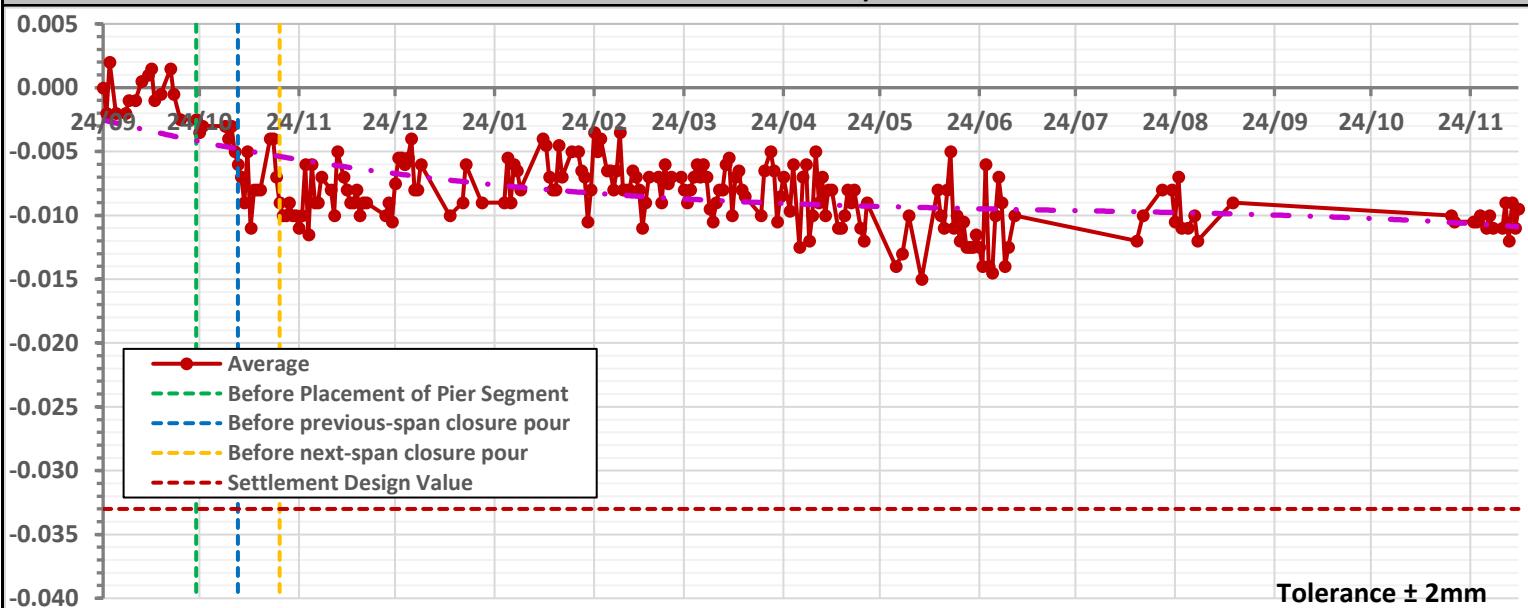




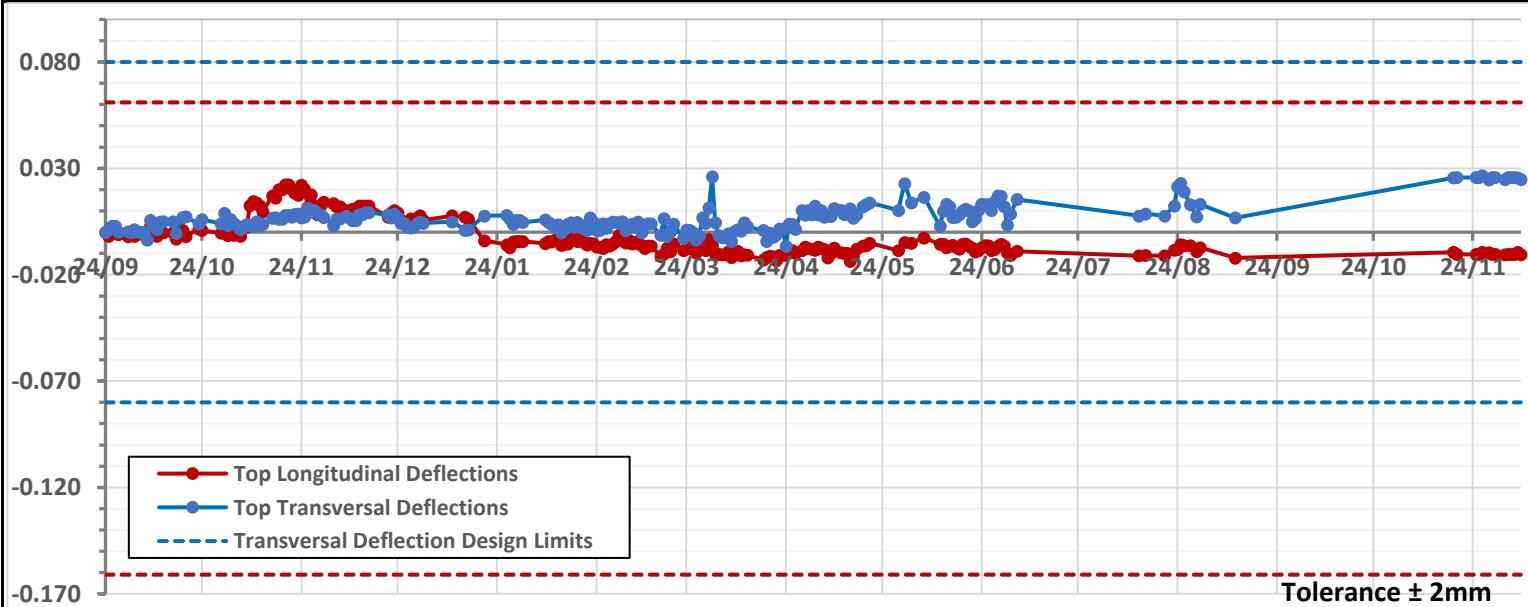
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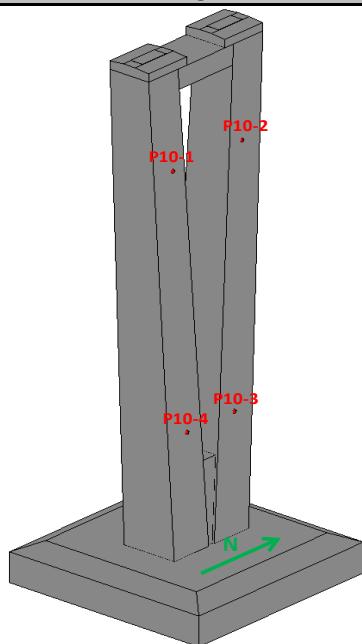
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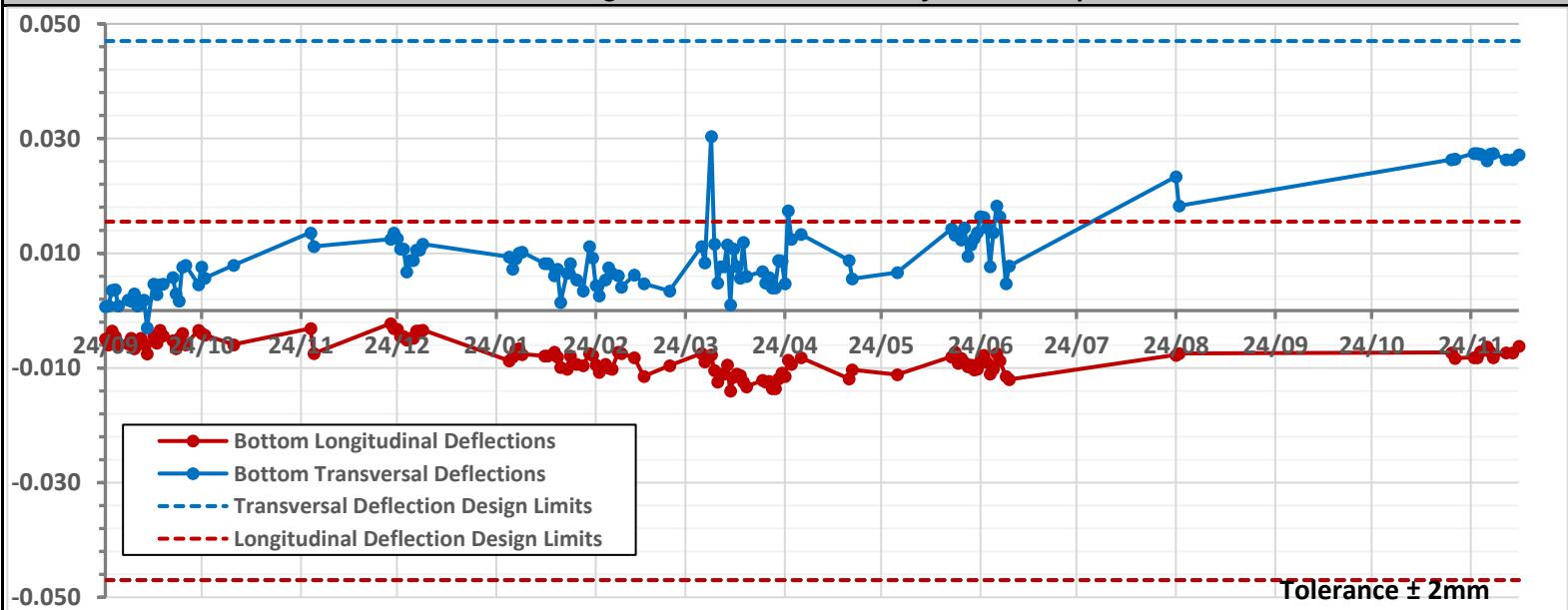
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

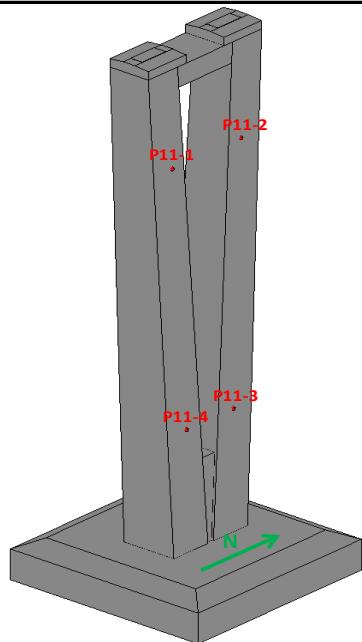


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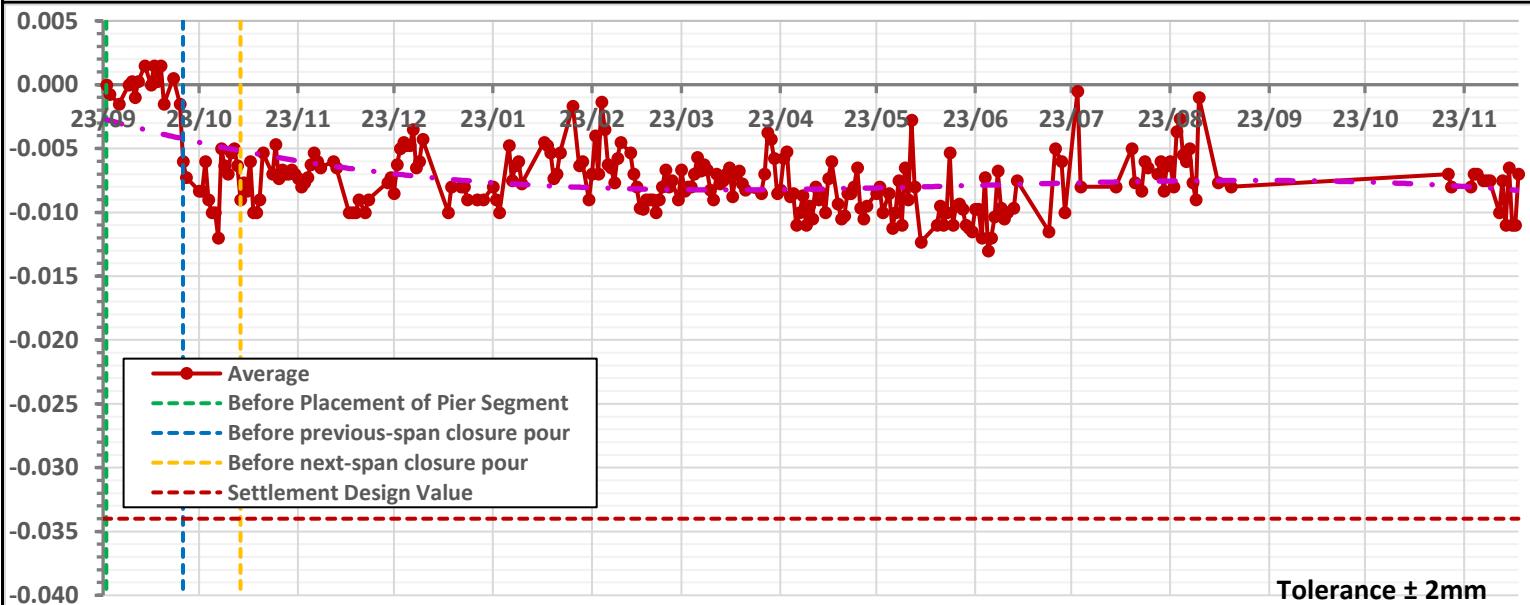




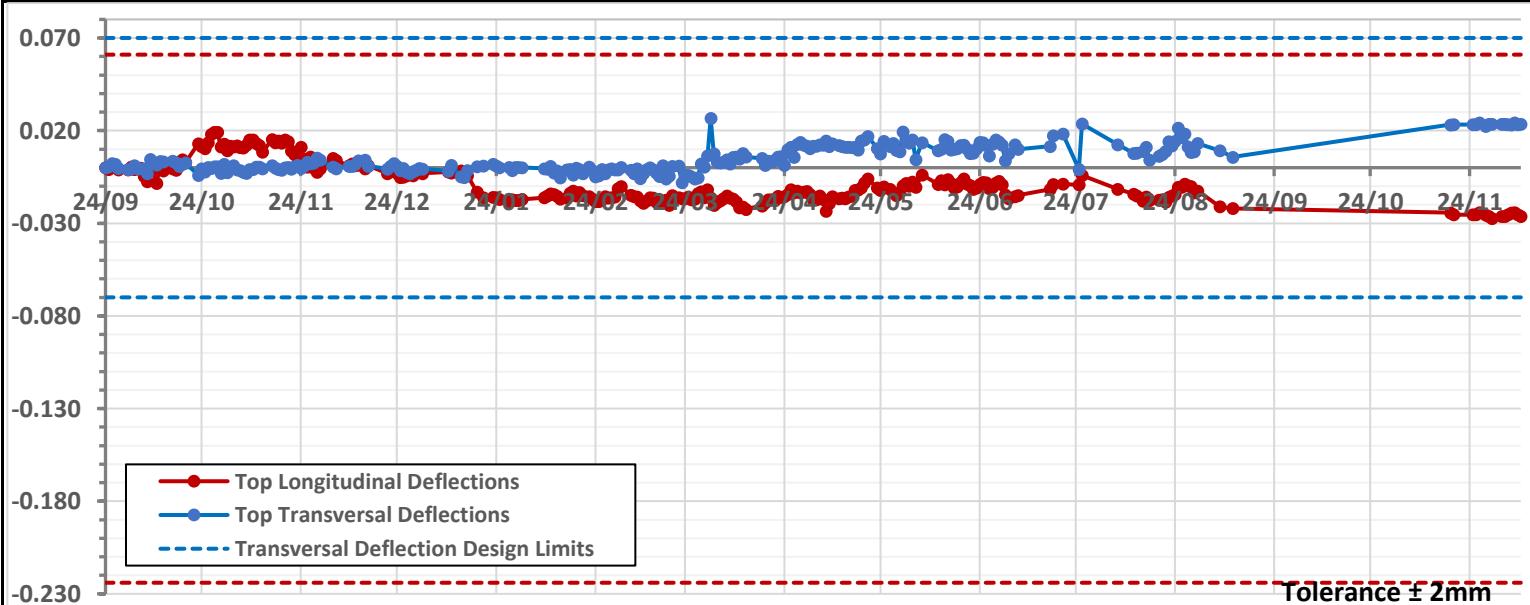
### Monitoring Points



### Settlement Graph

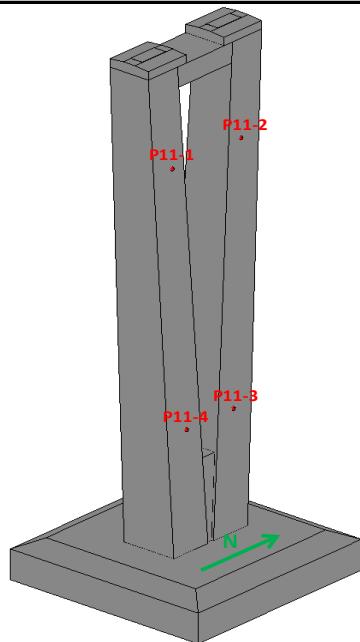


### Longitudinal & Transversal Deflections Graph

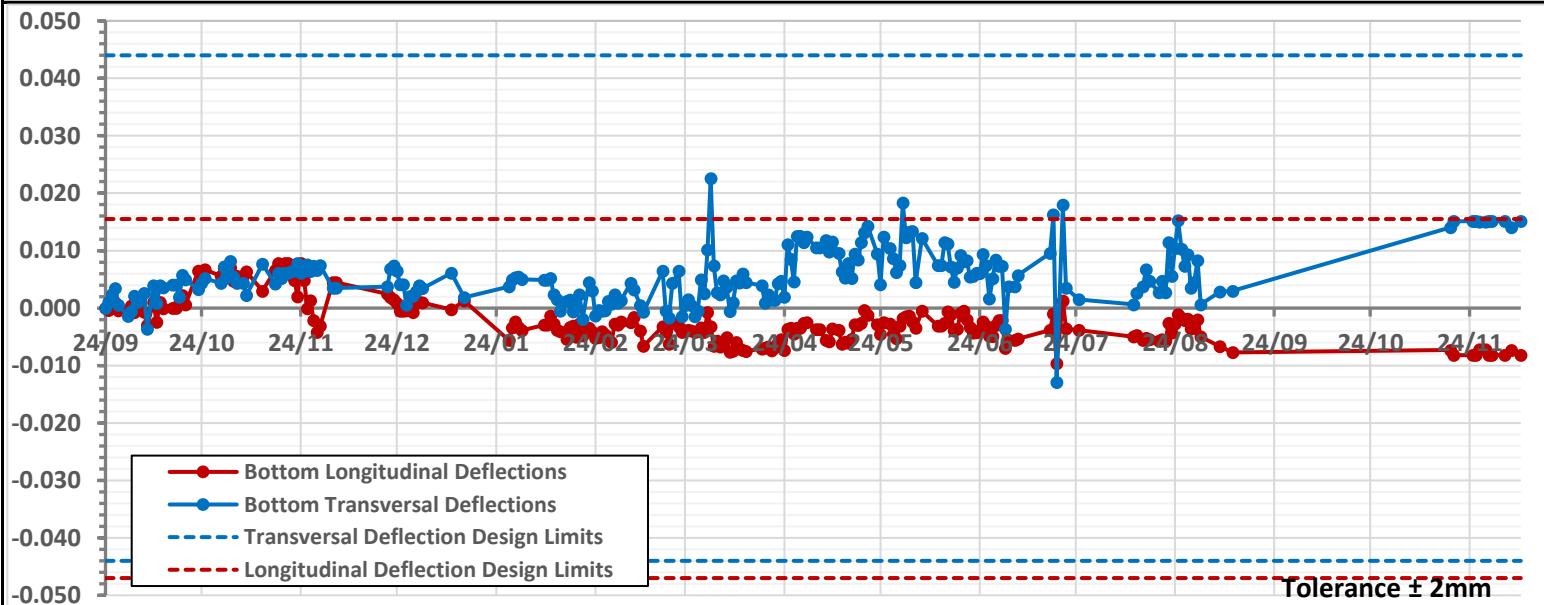




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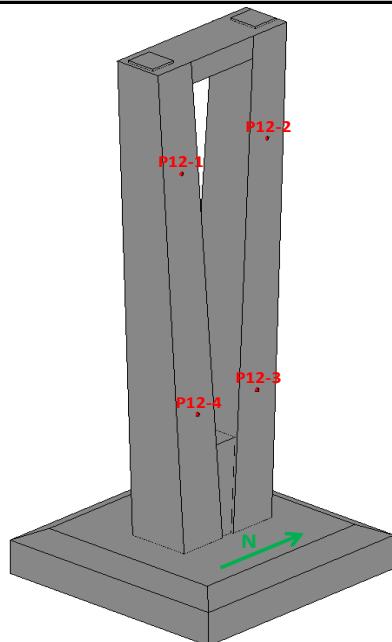


### Bottom Longitudinal & Transversal Deflections Graph

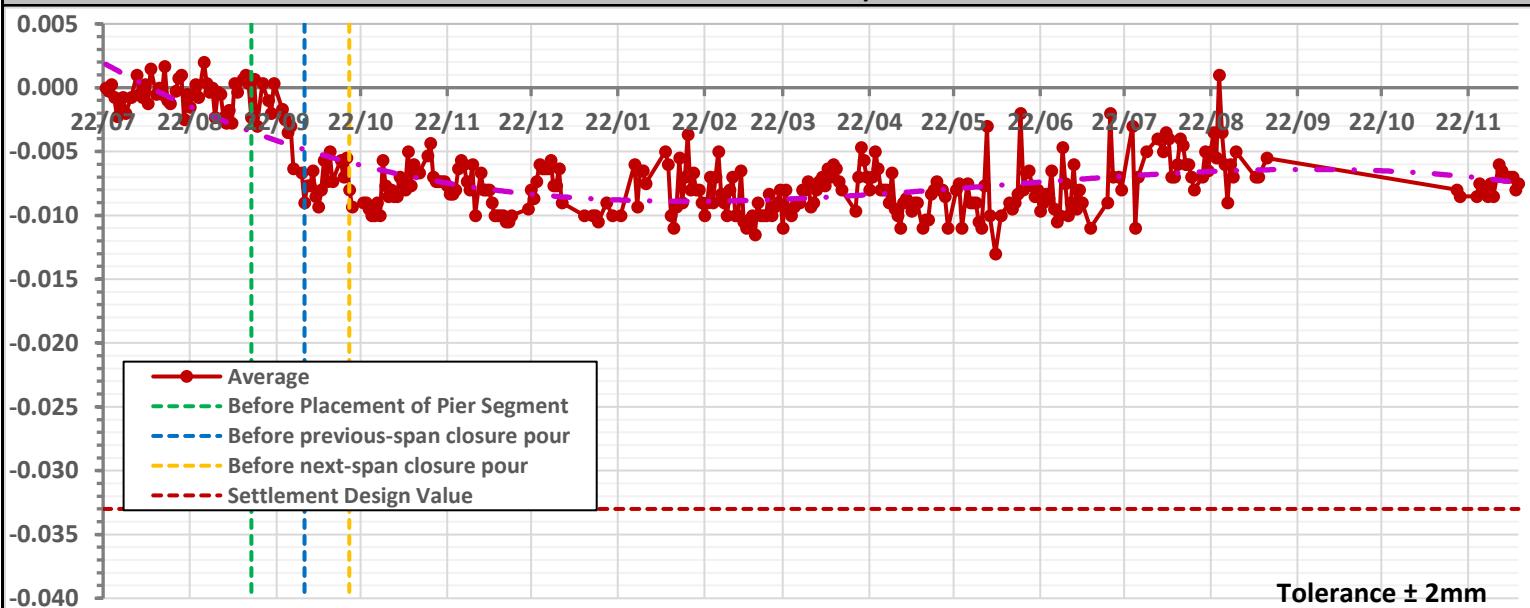




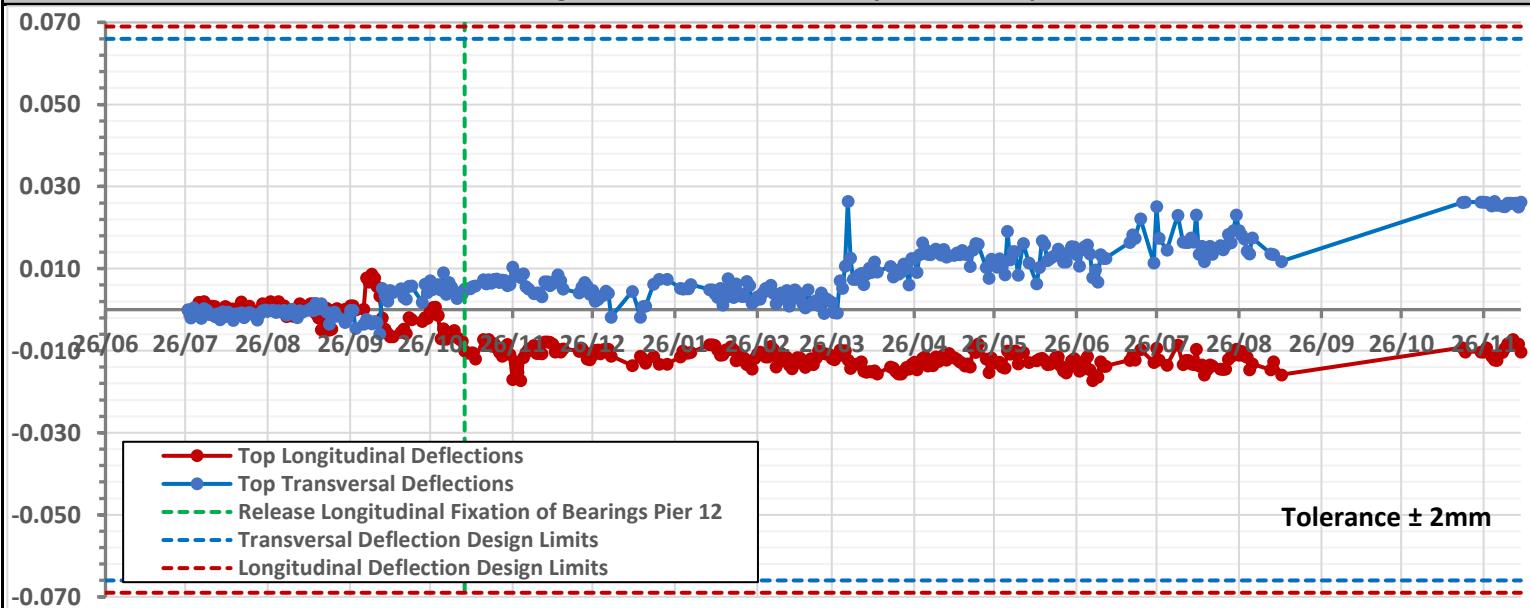
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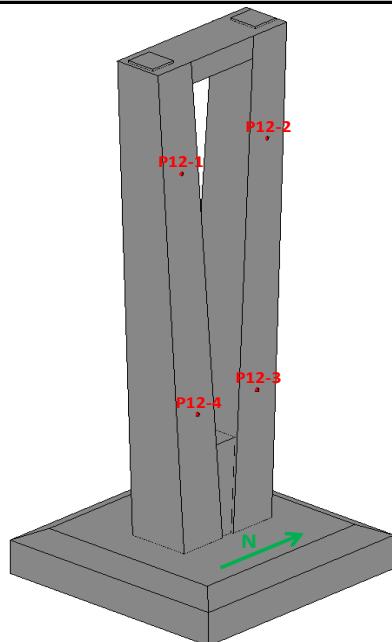
### Settlement Graph



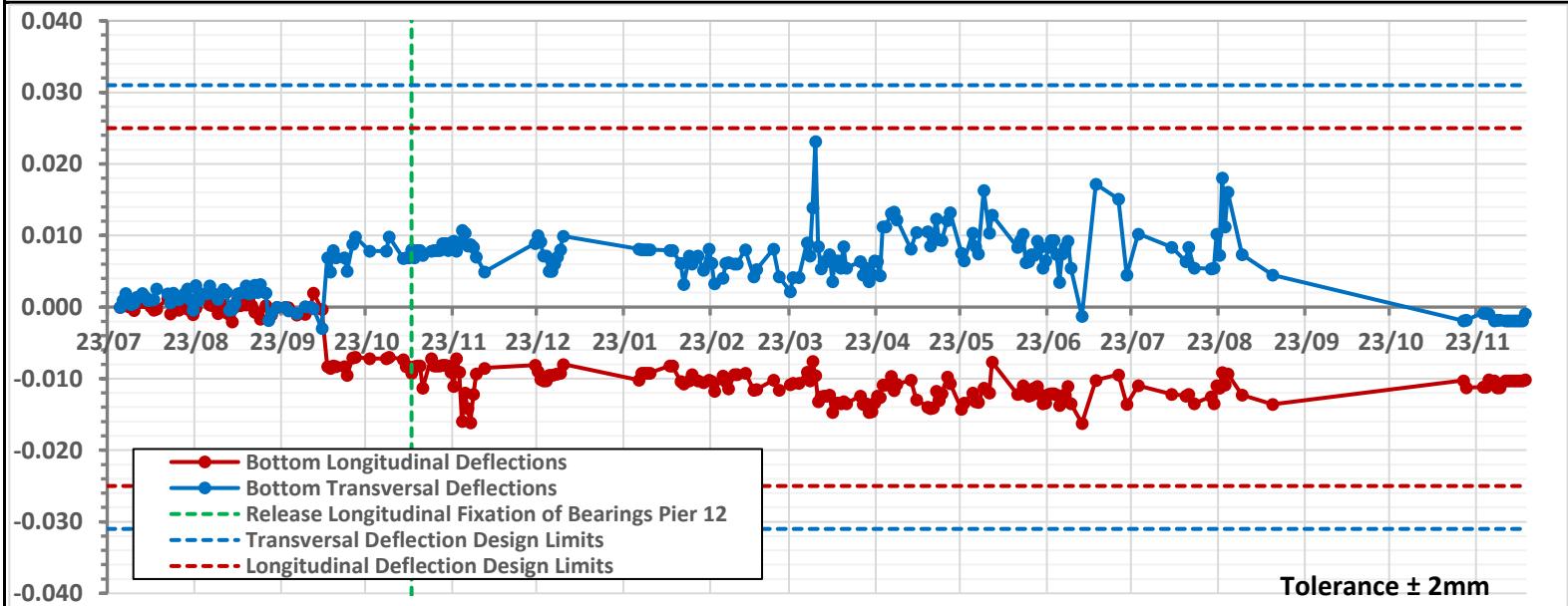
### Longitudinal & Transversal Deflections Graph



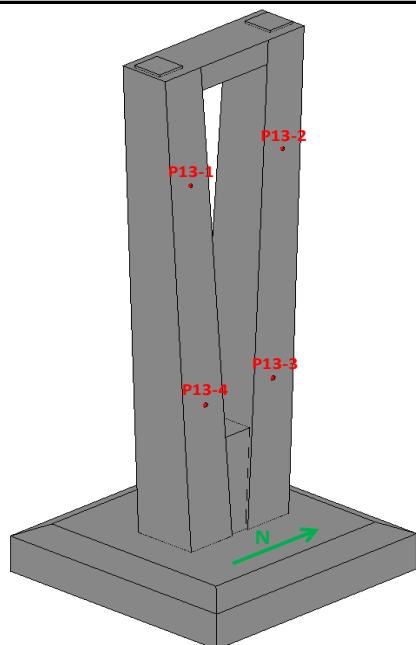
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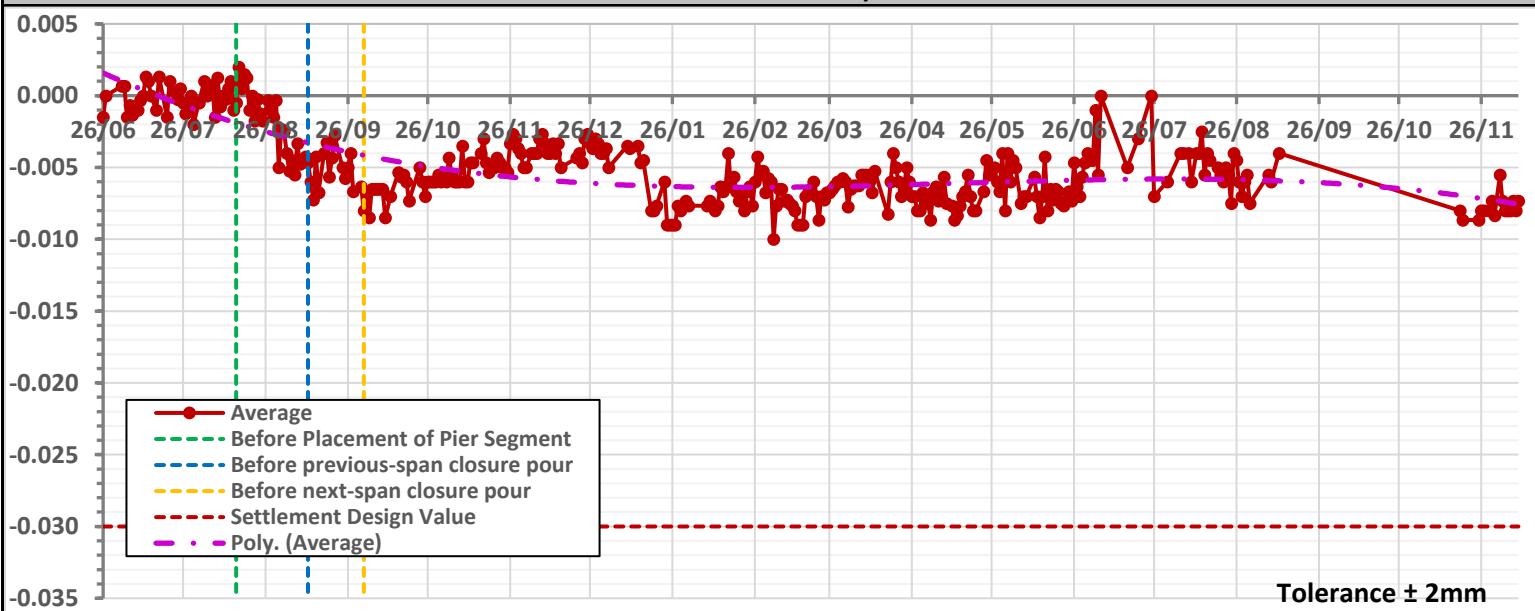
### Bottom Longitudinal & Transversal Deflections Graph



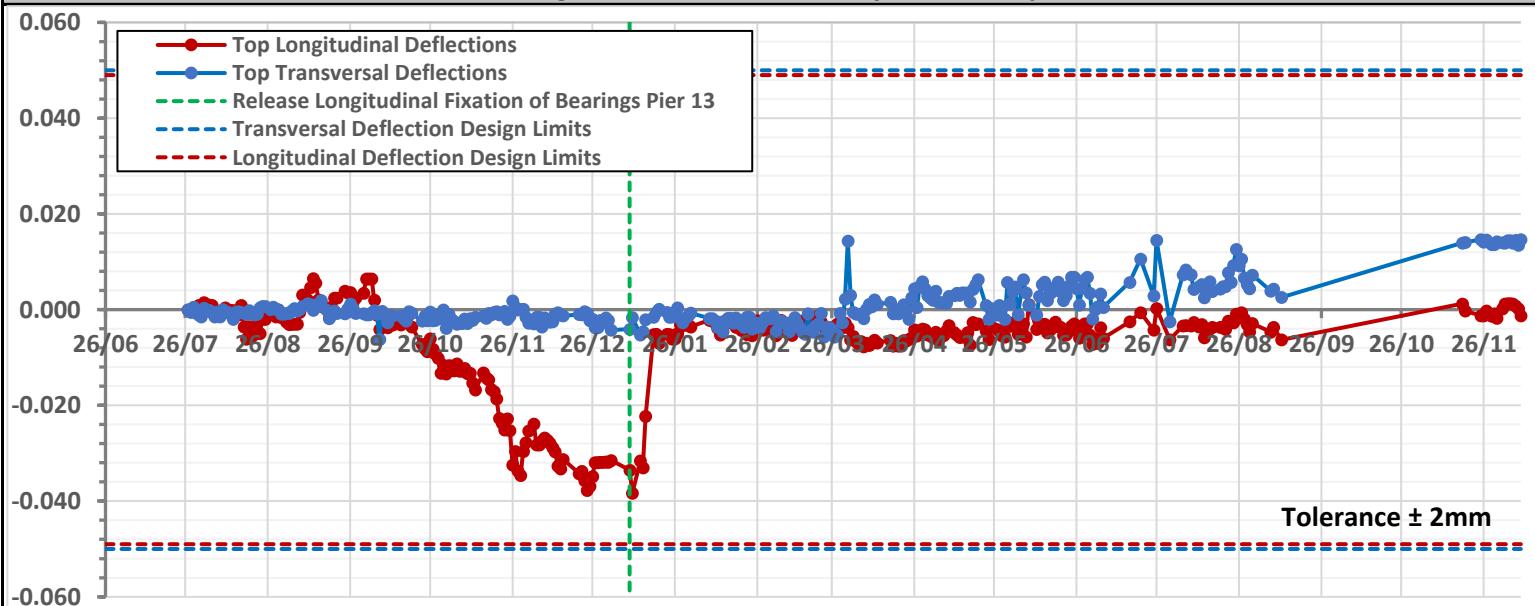
### Monitoring Points



### Settlement Graph

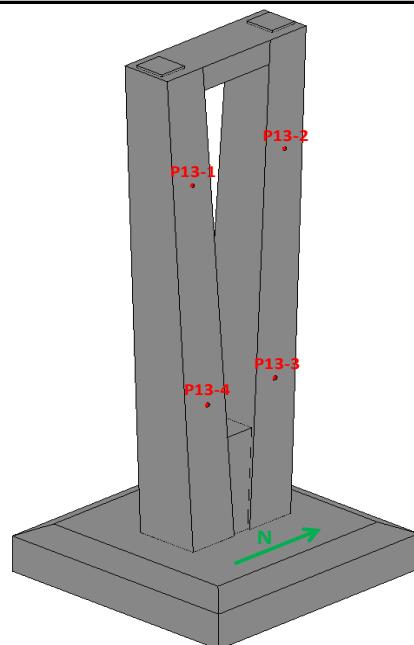


### Longitudinal & Transversal Deflections Graph

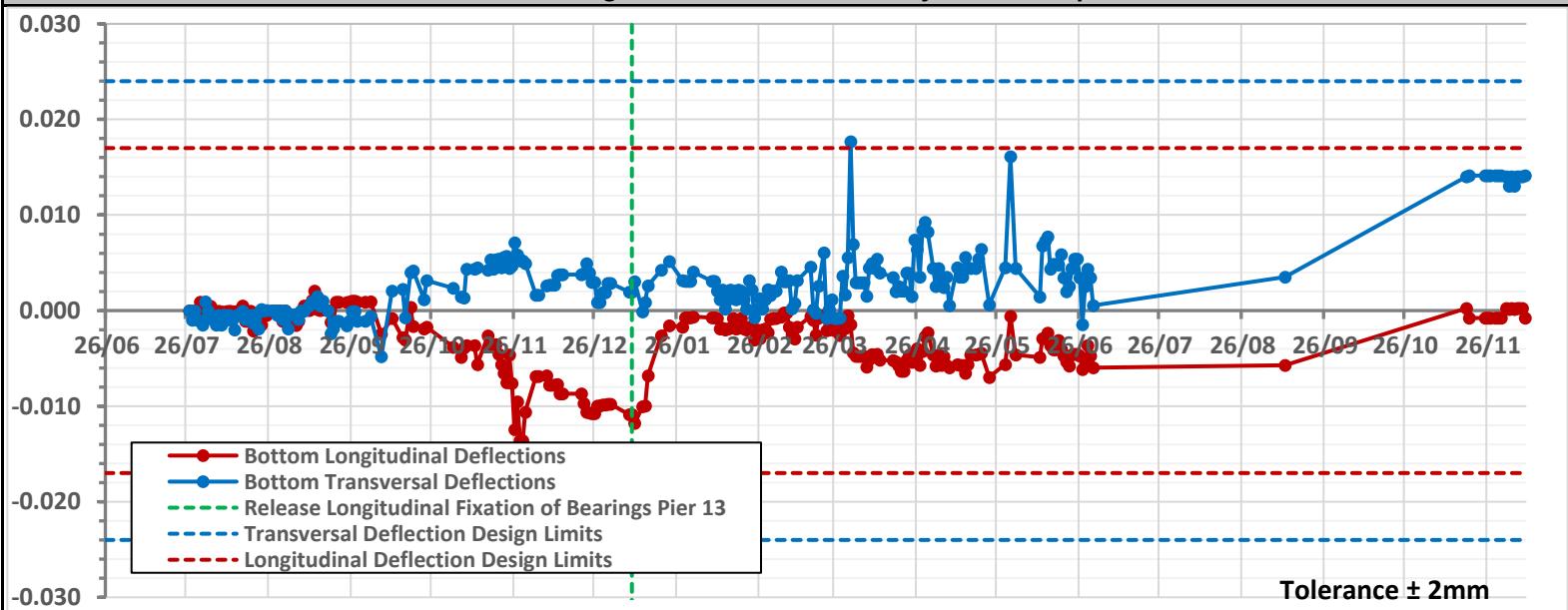




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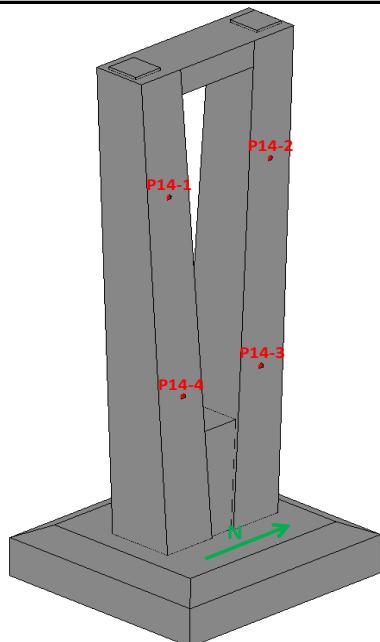


### Bottom Longitudinal & Transversal Deflections Graph

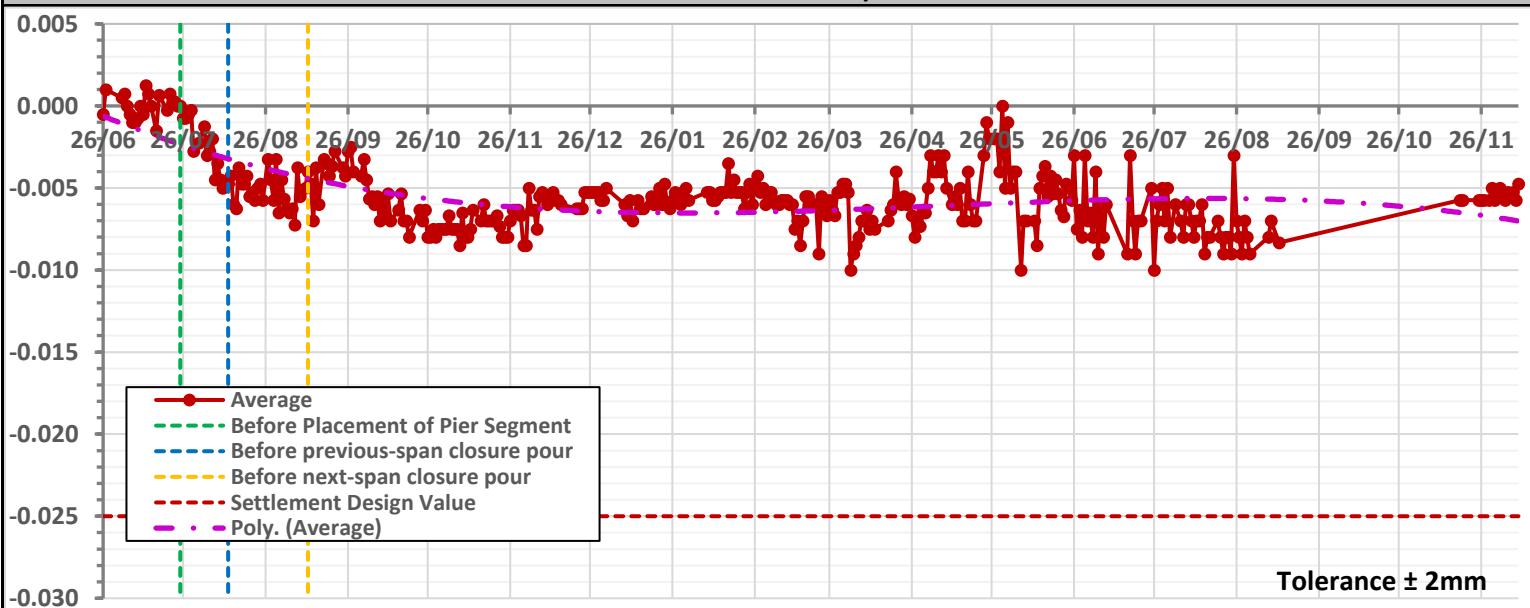




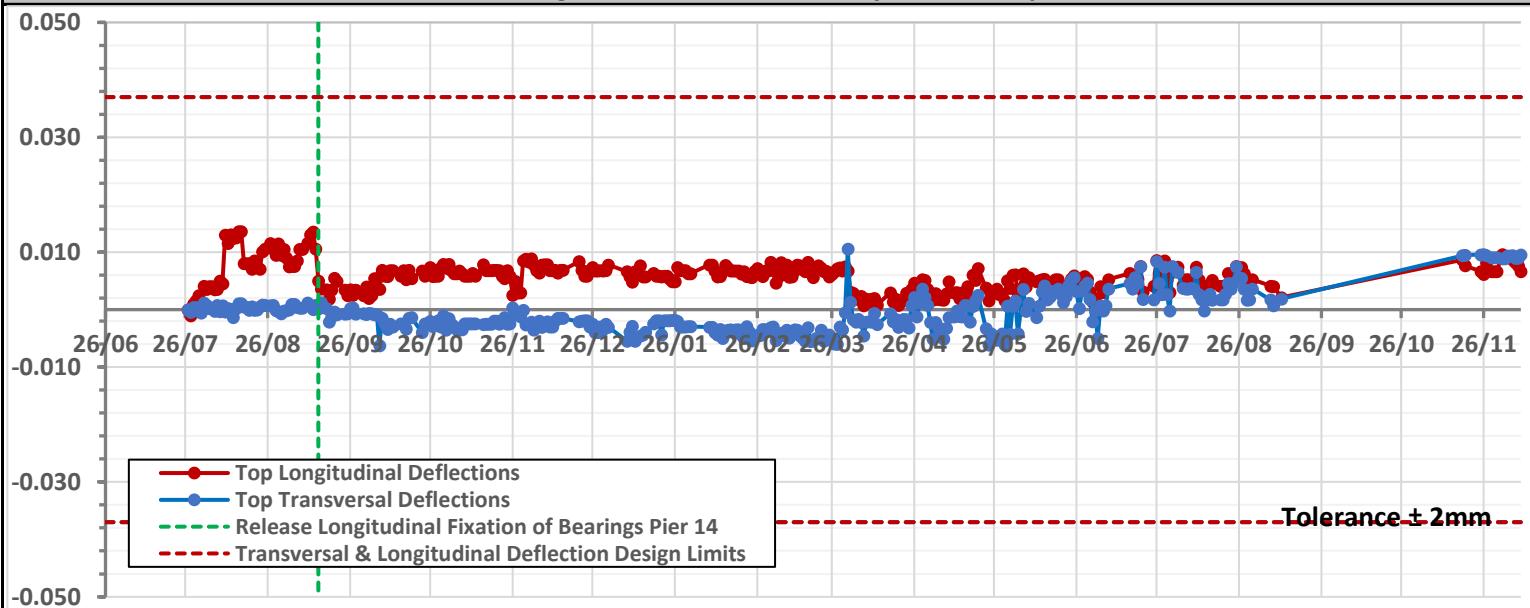
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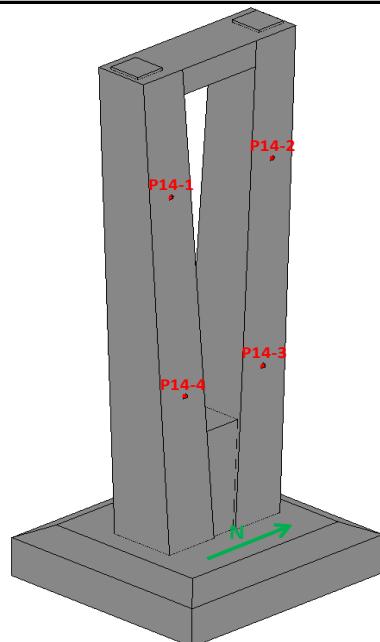
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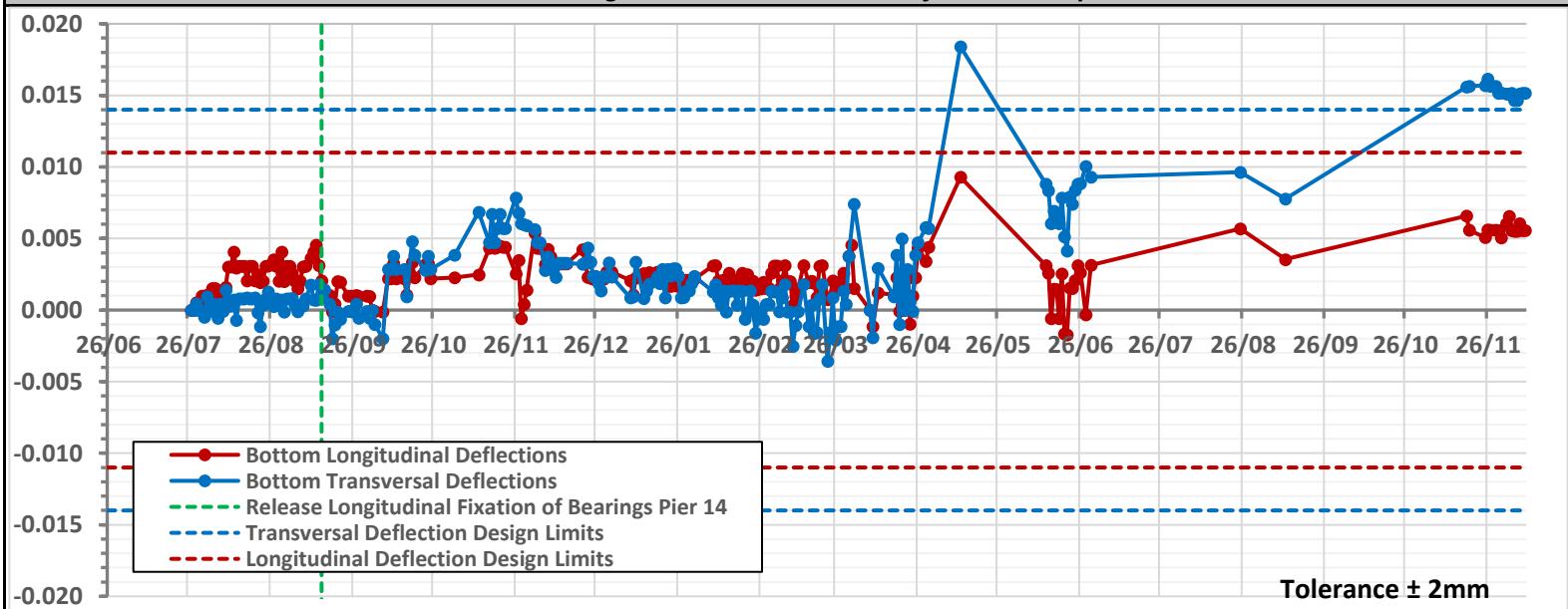
### Longitudinal & Transversal Deflections Graph



### Monitoring Points

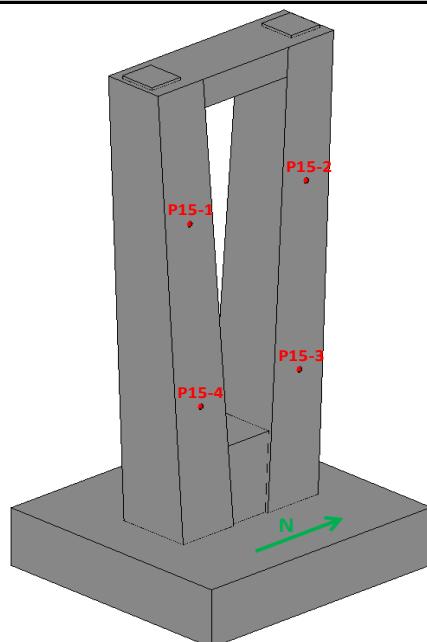


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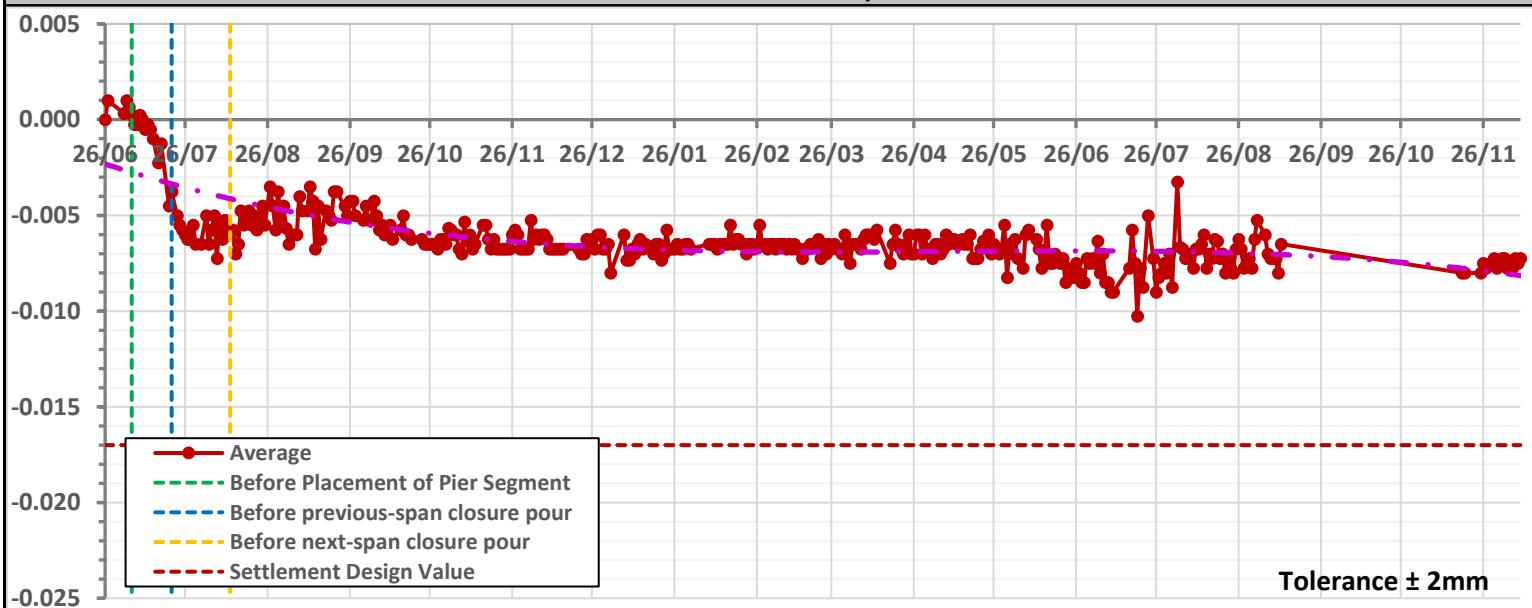




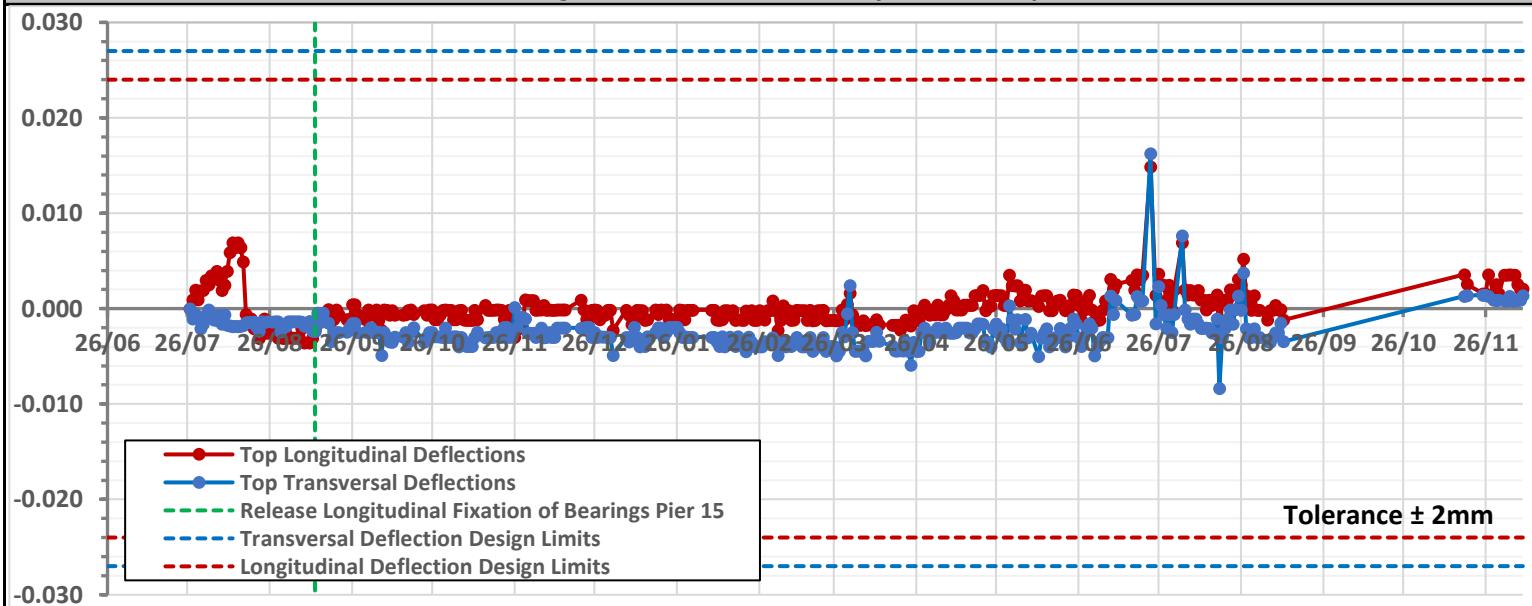
### Monitoring Points



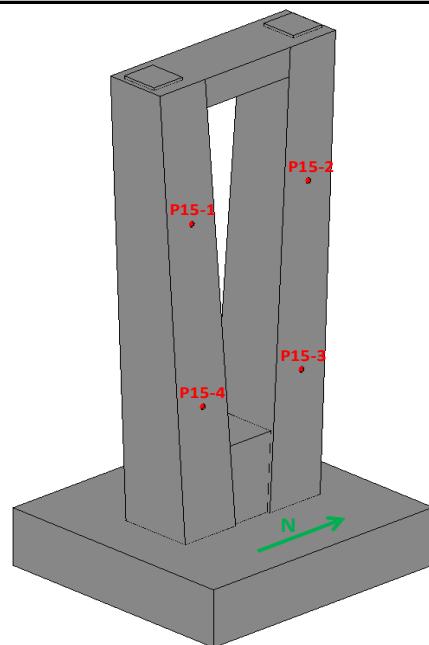
### Settlement Graph



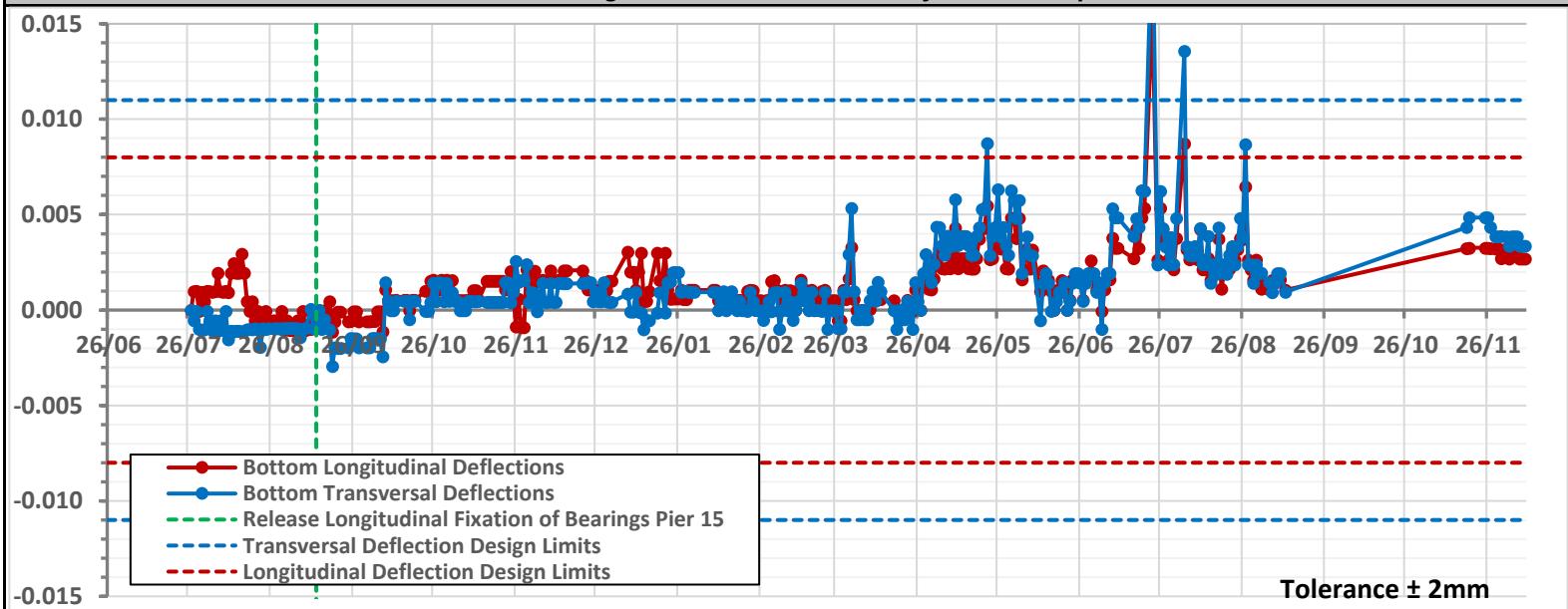
### Longitudinal & Transversal Deflections Graph



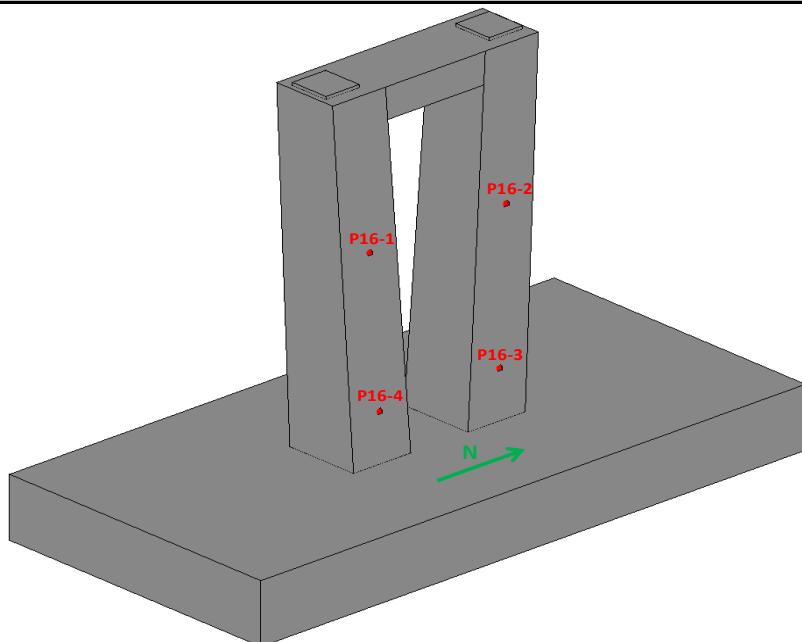
### Monitoring Points



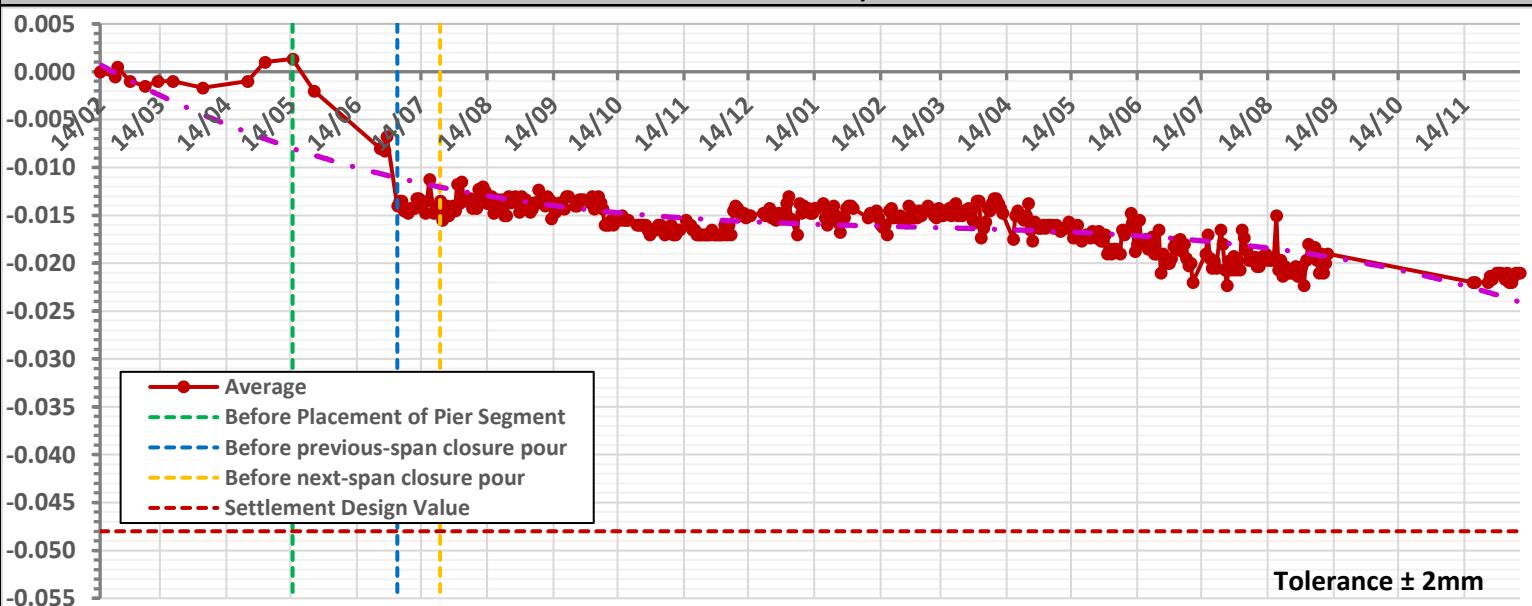
### Bottom Longitudinal & Transversal Deflections Graph



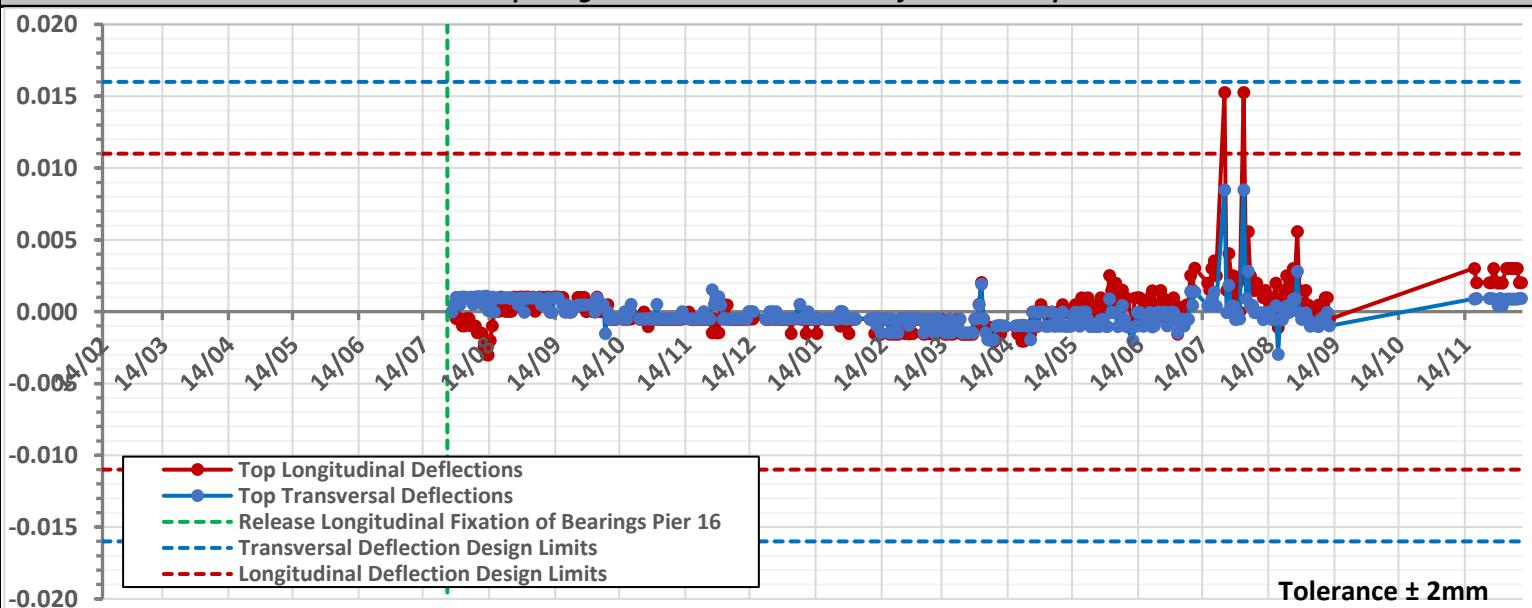
### Monitoring Points



### Settlement Graph

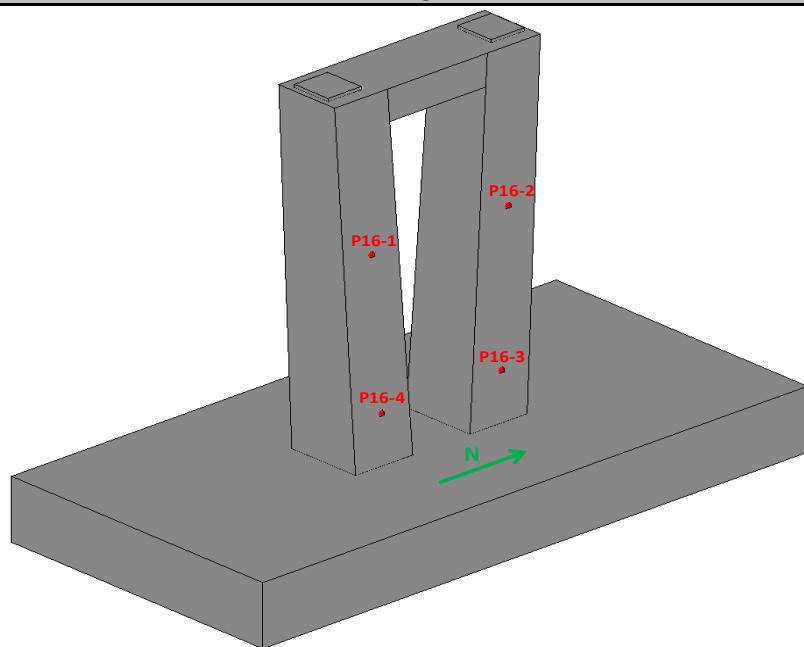


### Top Longitudinal & Transversal Deflections Graph

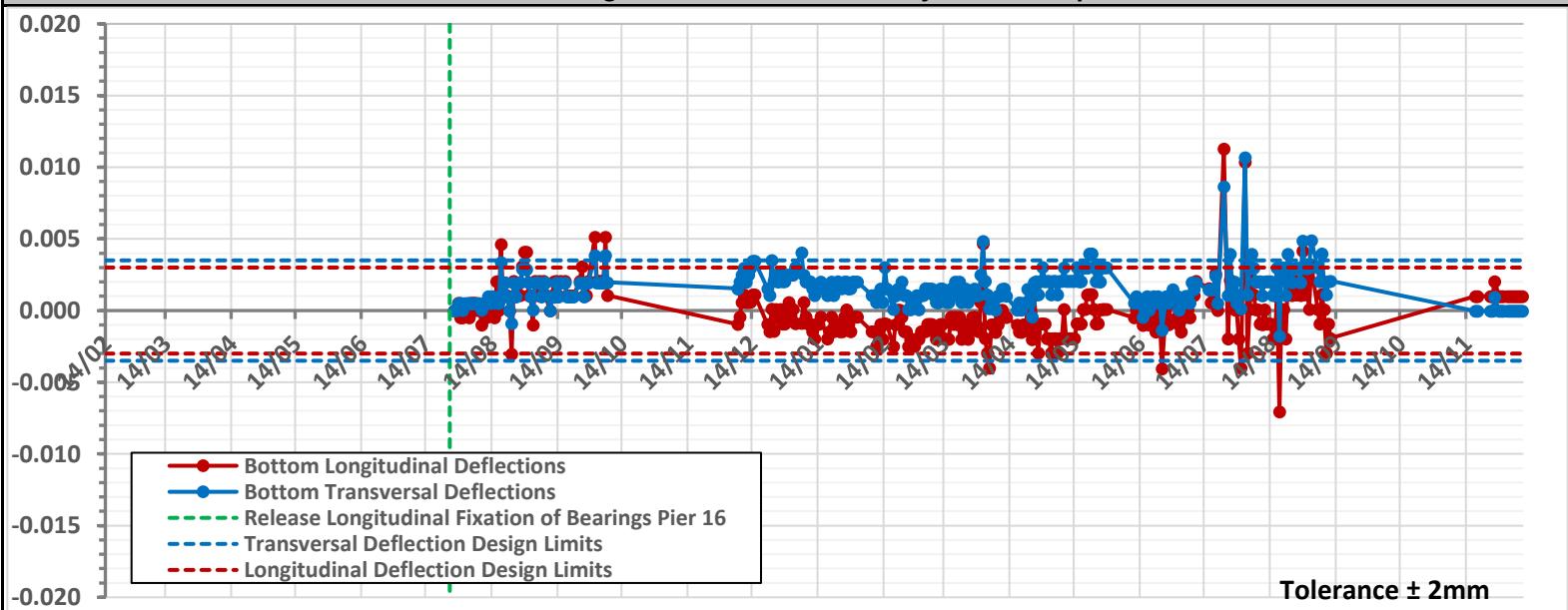




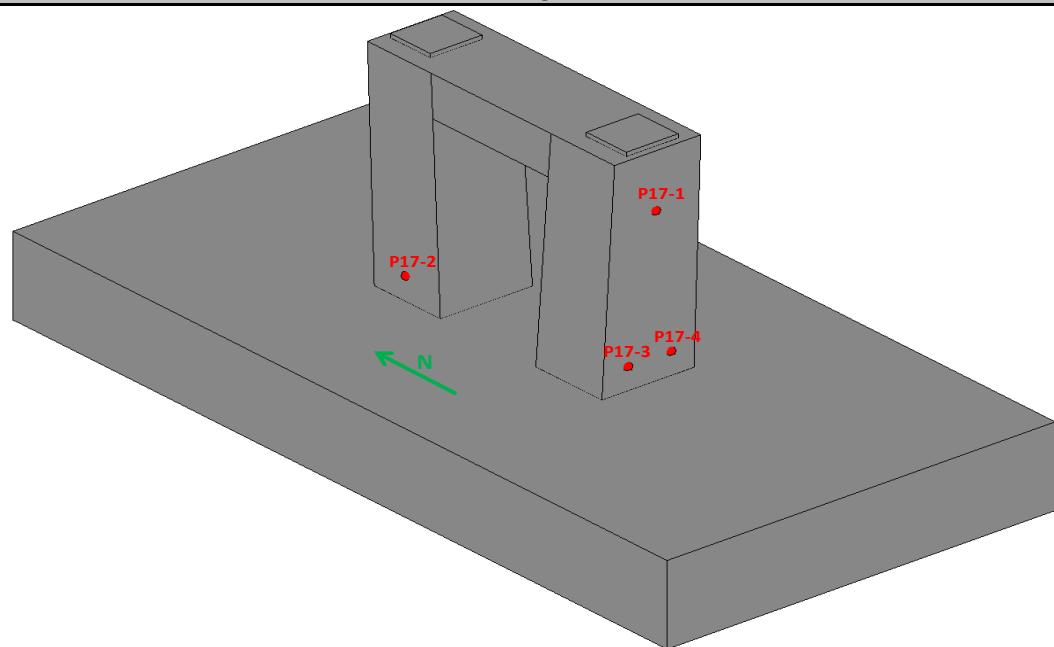
### Monitoring Points



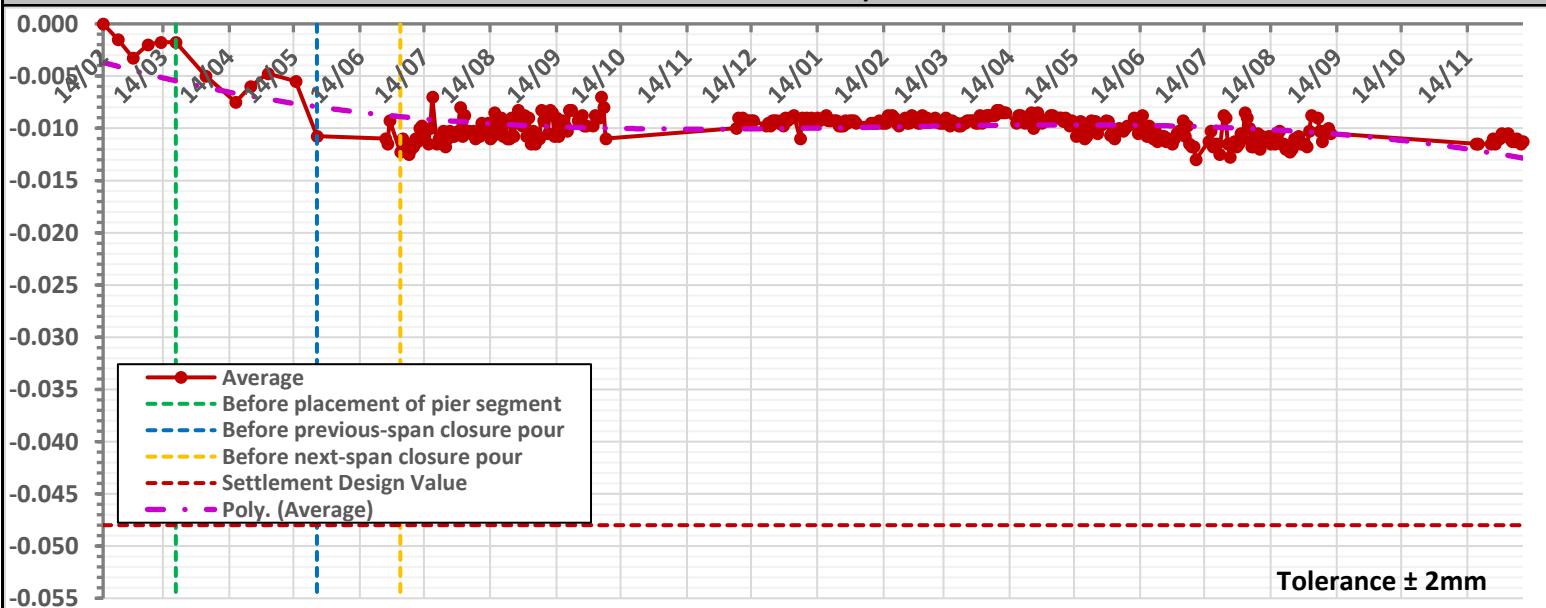
### Bottom Longitudinal & Transversal Deflections Graph



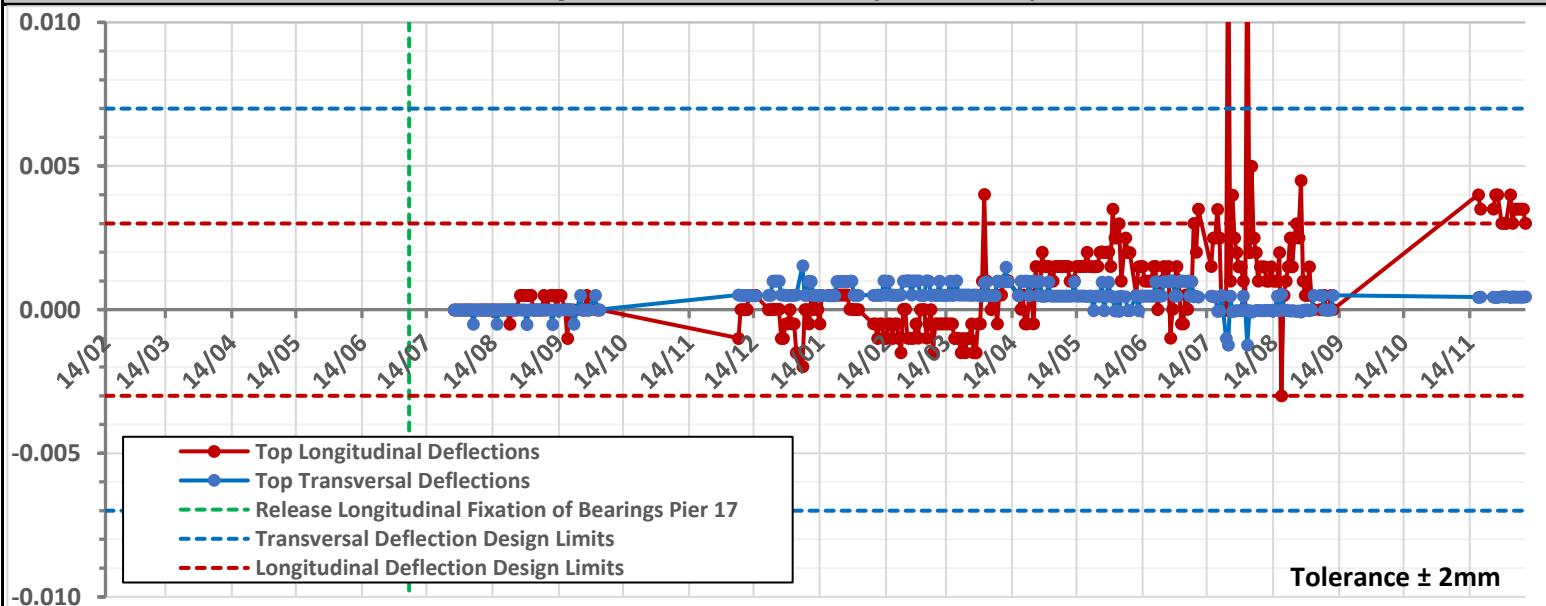
### Monitoring Points



### Settlement Graph

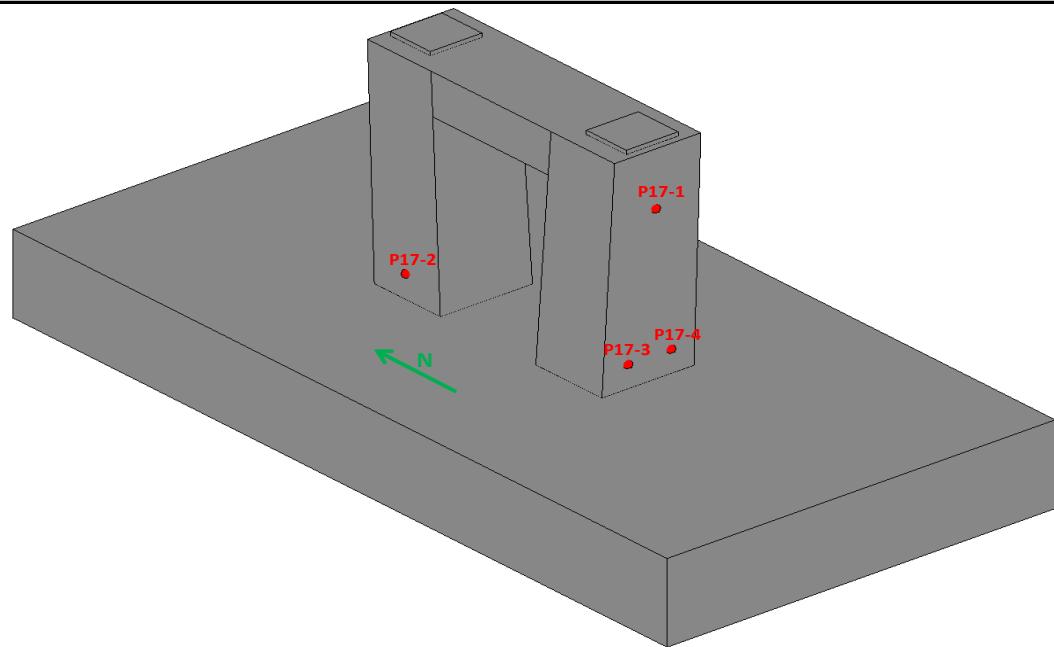


### Longitudinal & Transversal Deflections Graph

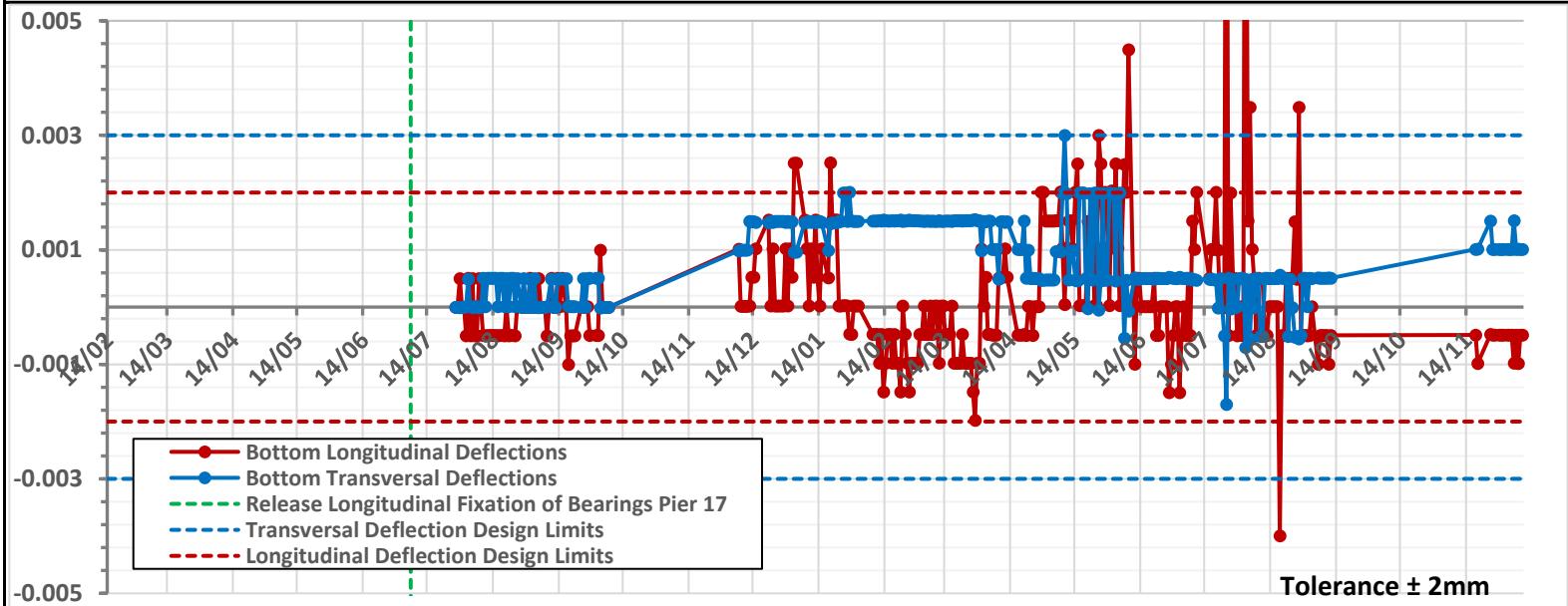




### Monitoring Points

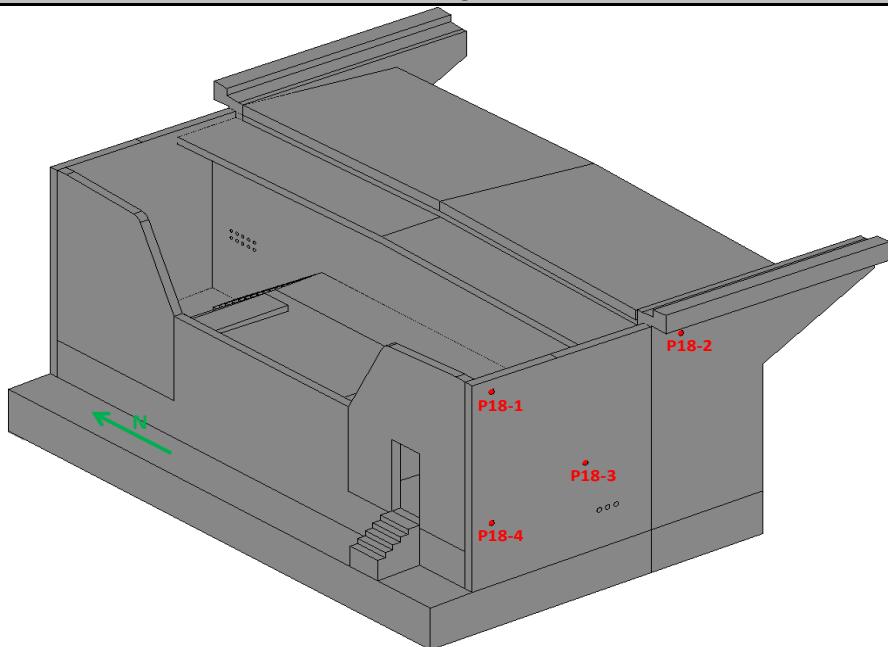


### Bottom Longitudinal & Transversal Deflections Graph

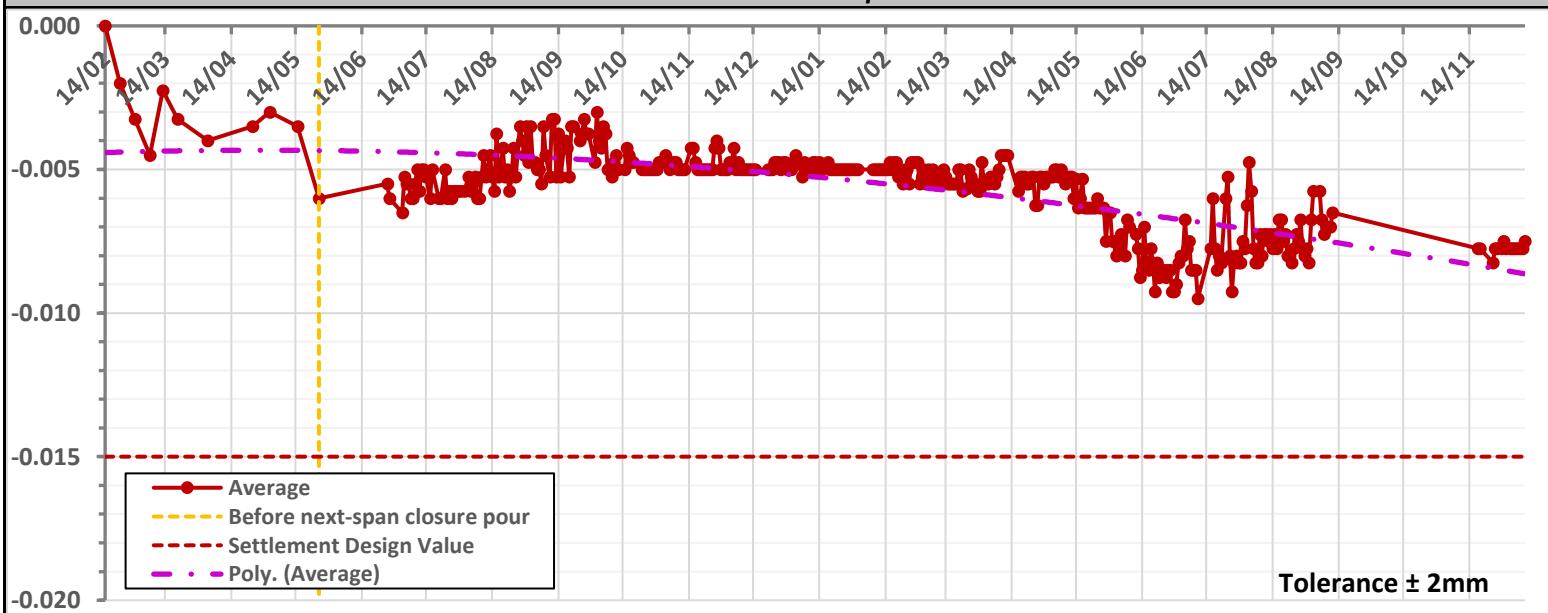




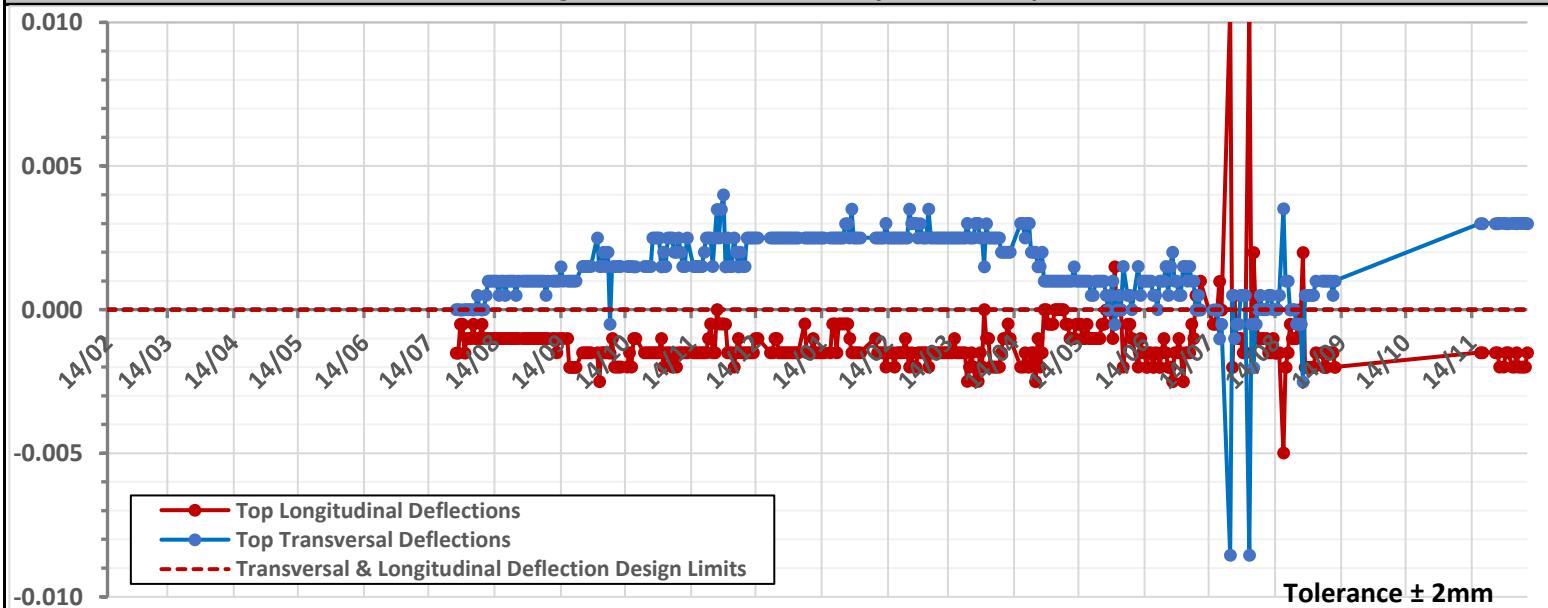
### Monitoring Points



### Settlement Graph

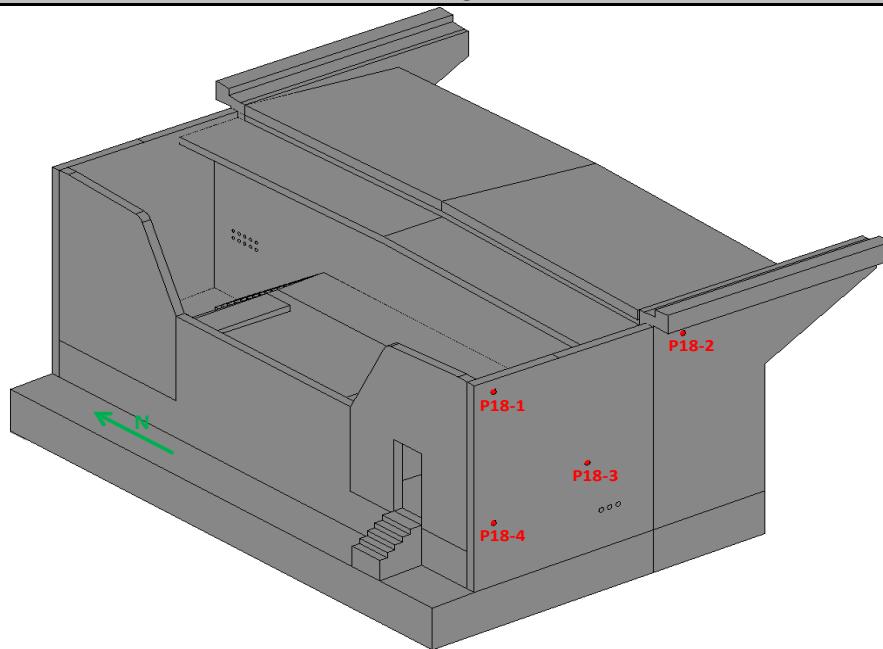


### Longitudinal & Transversal Deflections Graph

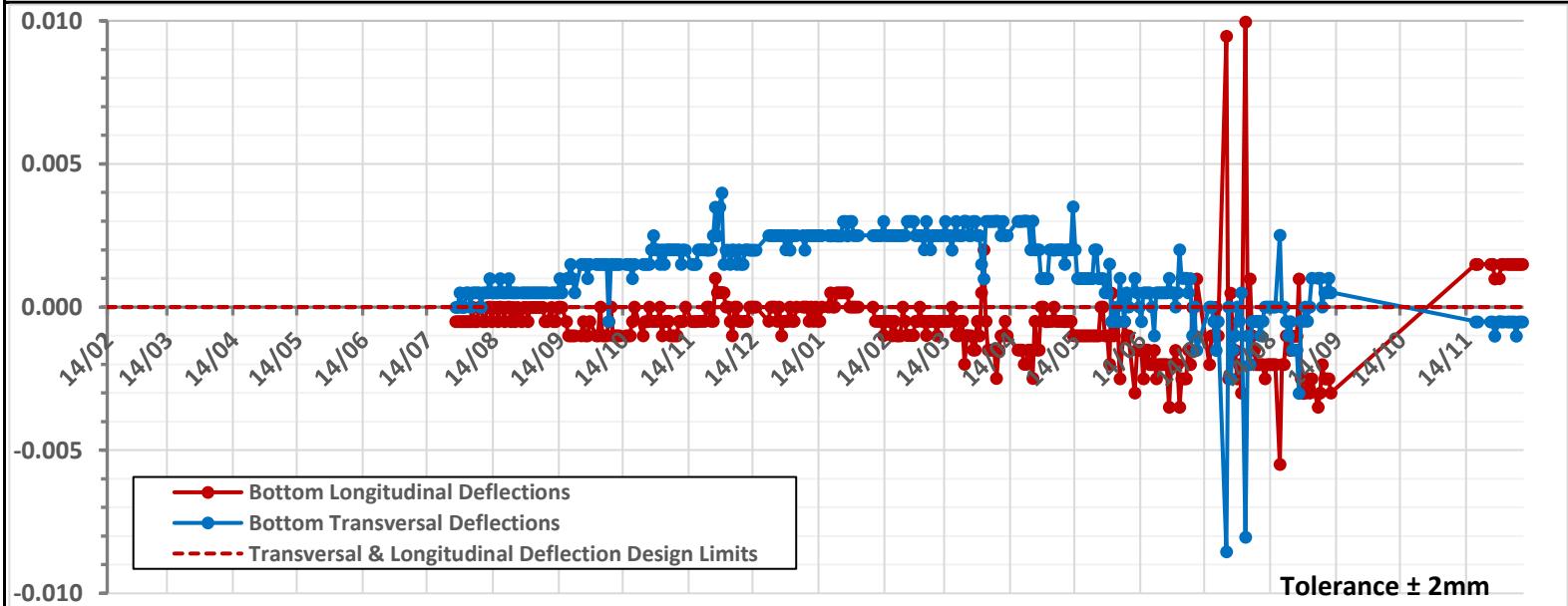




### Monitoring Points



### Bottom Longitudinal & Transversal Deflections Graph

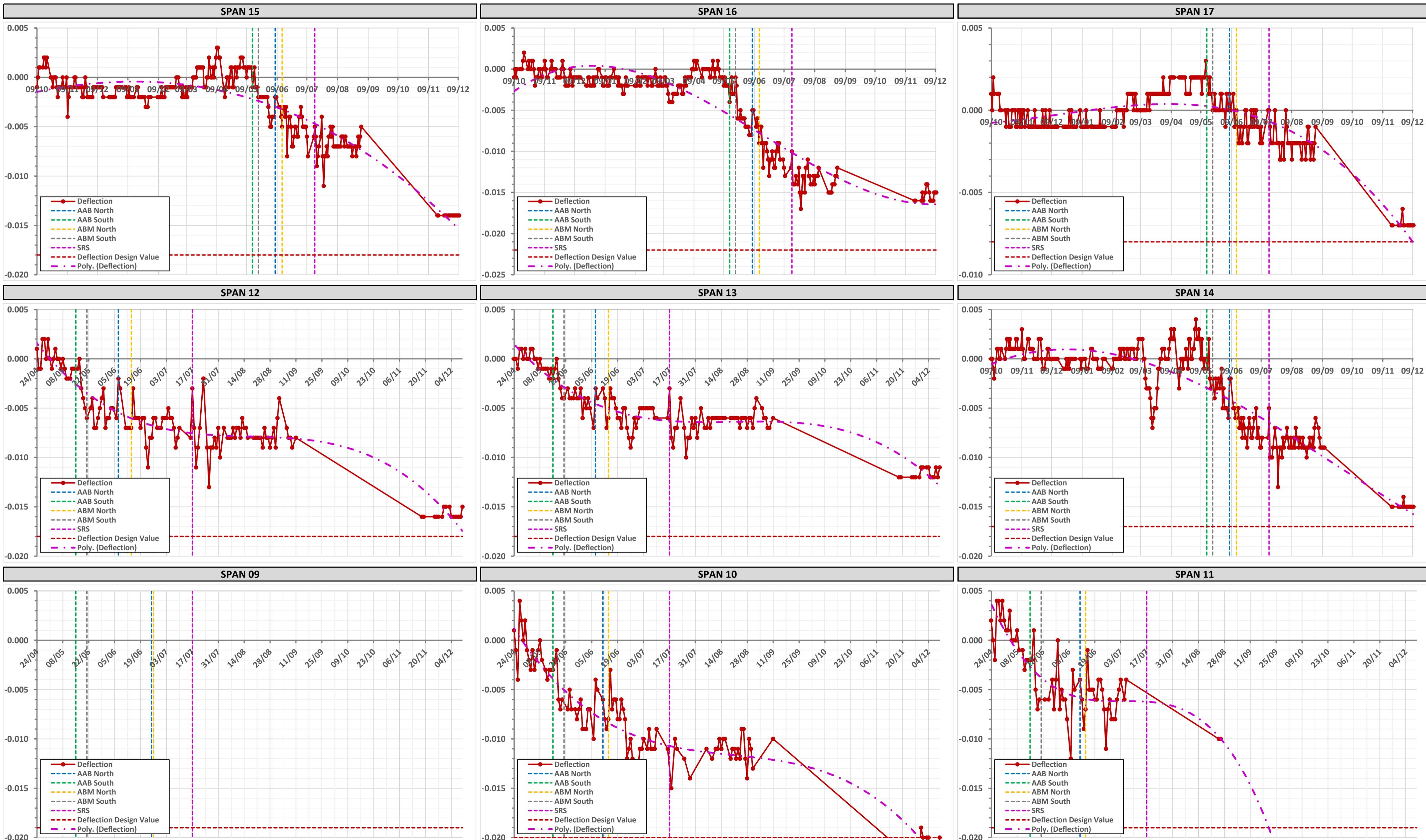
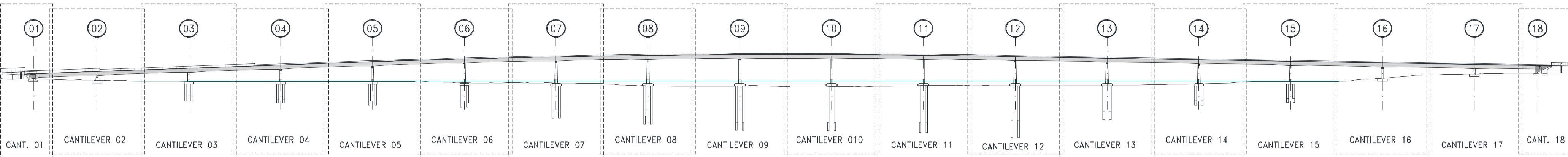


## 11. Monitoring High Bridge Deck.

In this section includes the measurements of the settlement at the mid-spans.

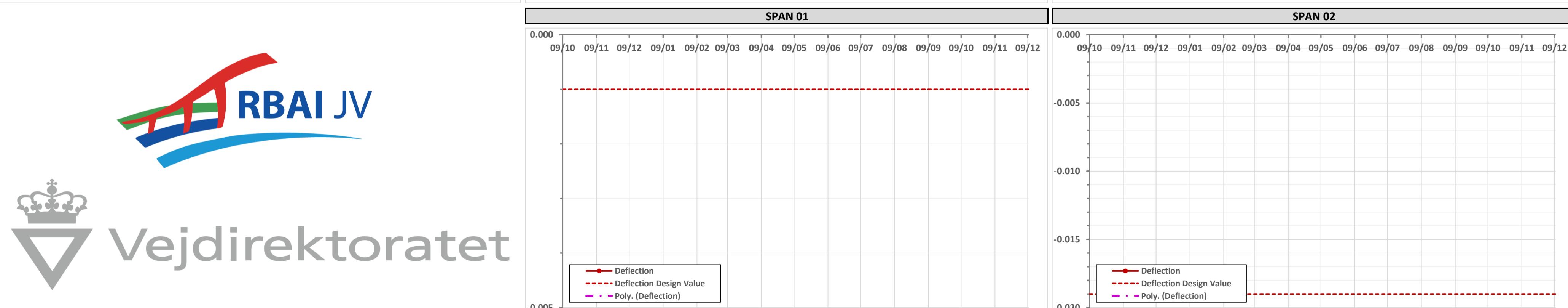
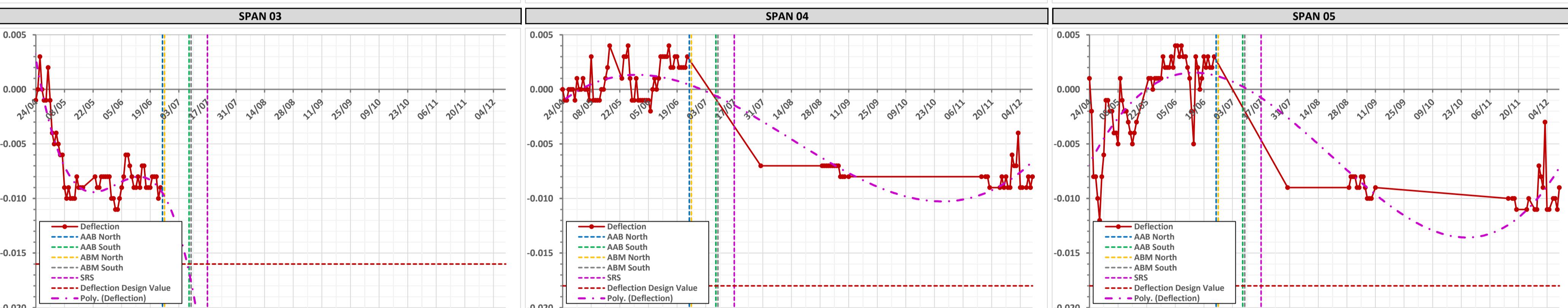
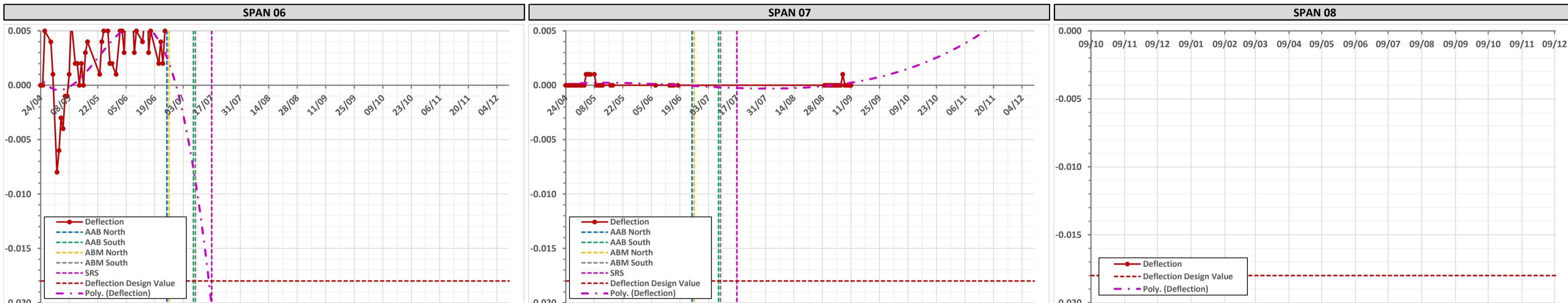
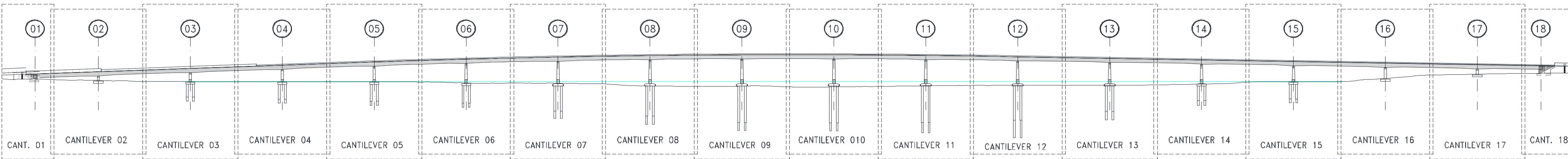
## SPAN DEFLECTIONS

DATE: 11/12/2019



## SPAN DEFLECTIONS

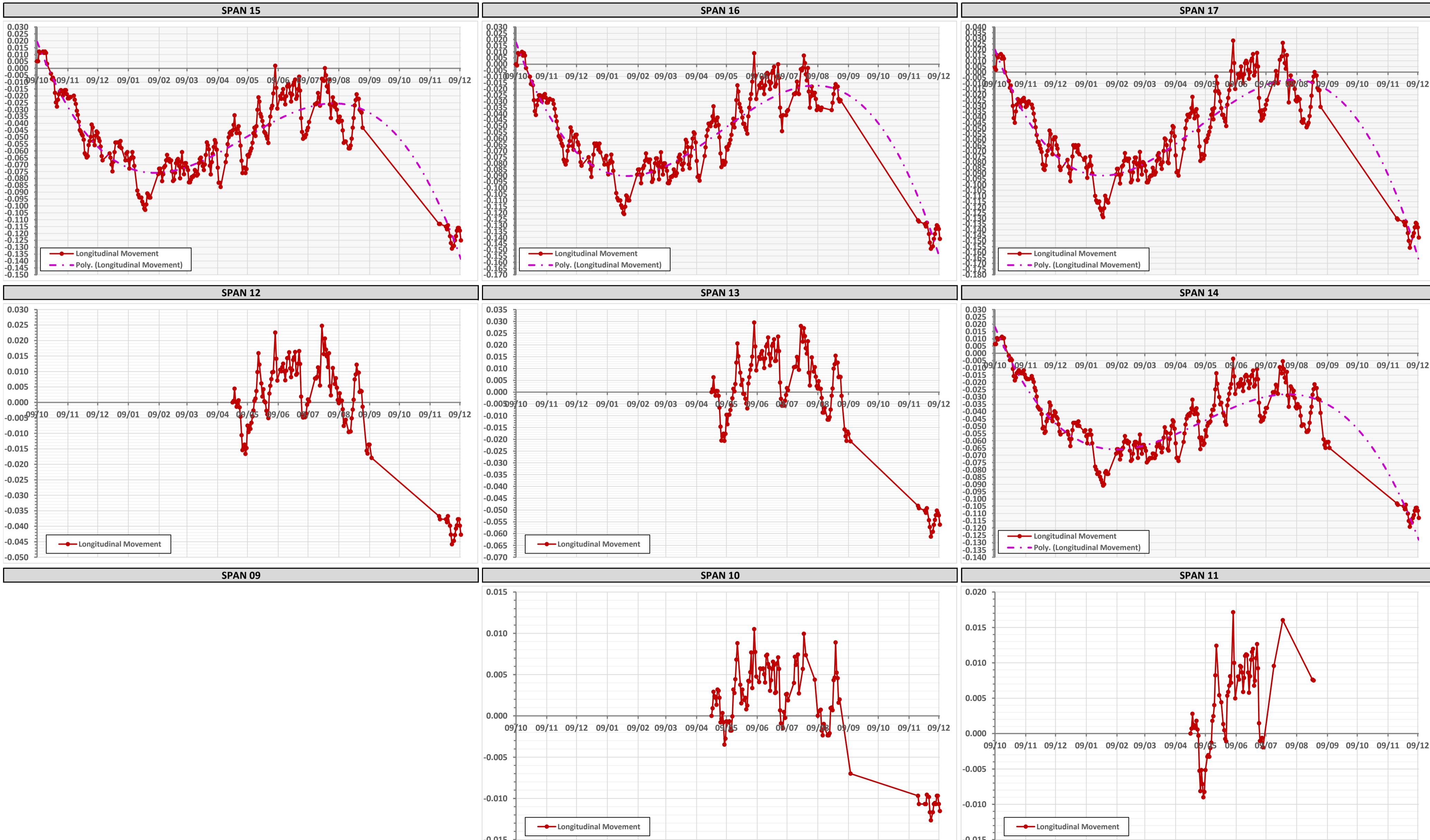
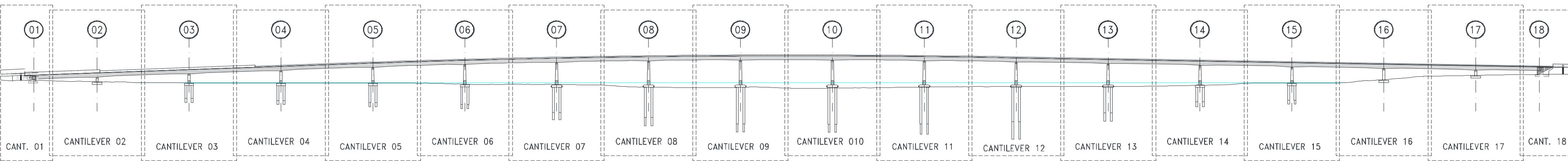
DATE: 11/12/2019



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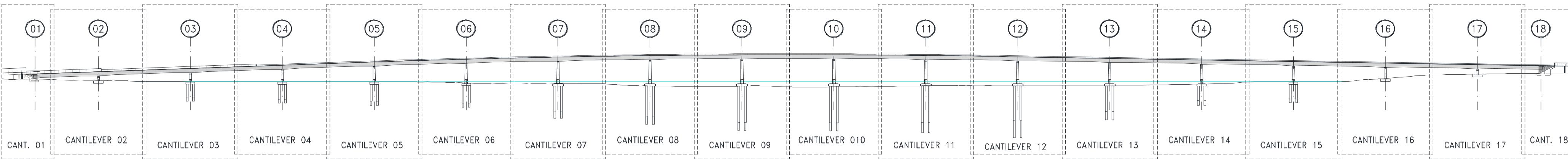
## SPAN LONGITUDINAL MOVEMENTS

DATE: 11/12/2019

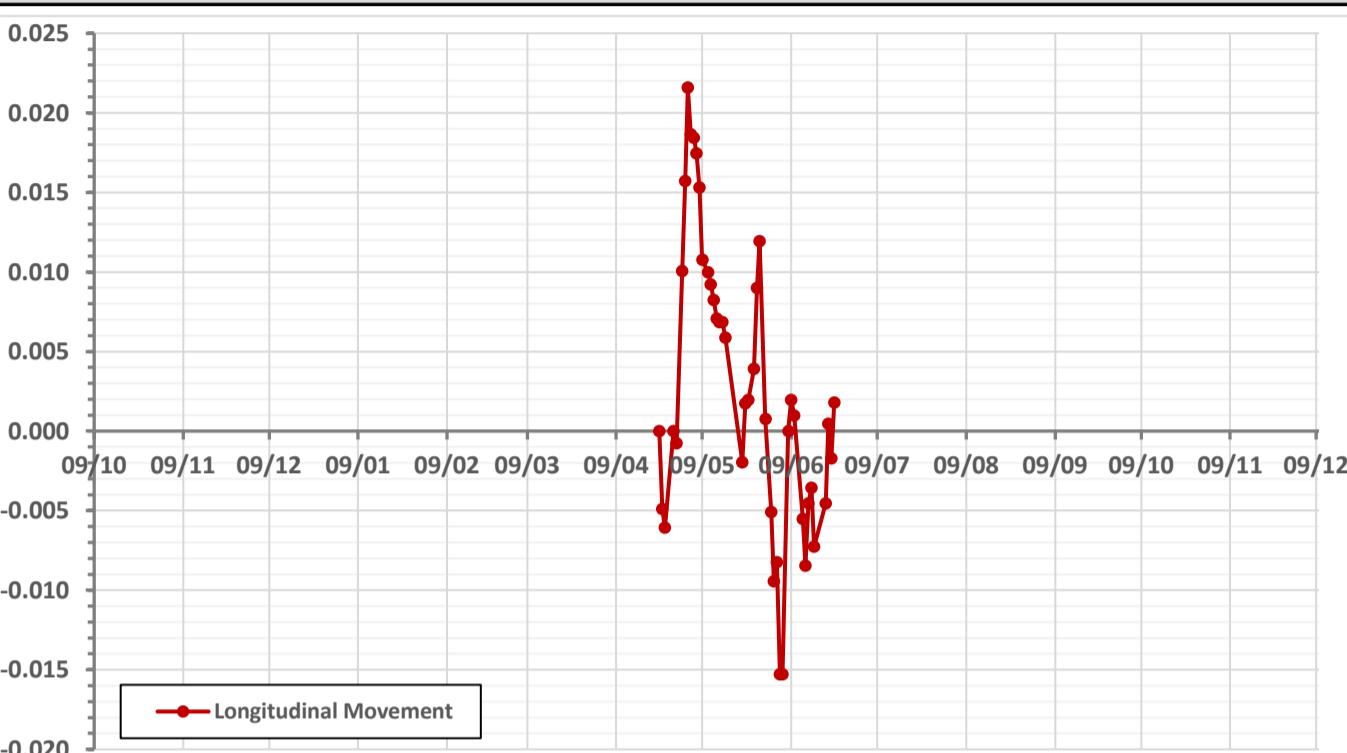


## SPAN DEFLECTIONS

DATE: 11/12/2019



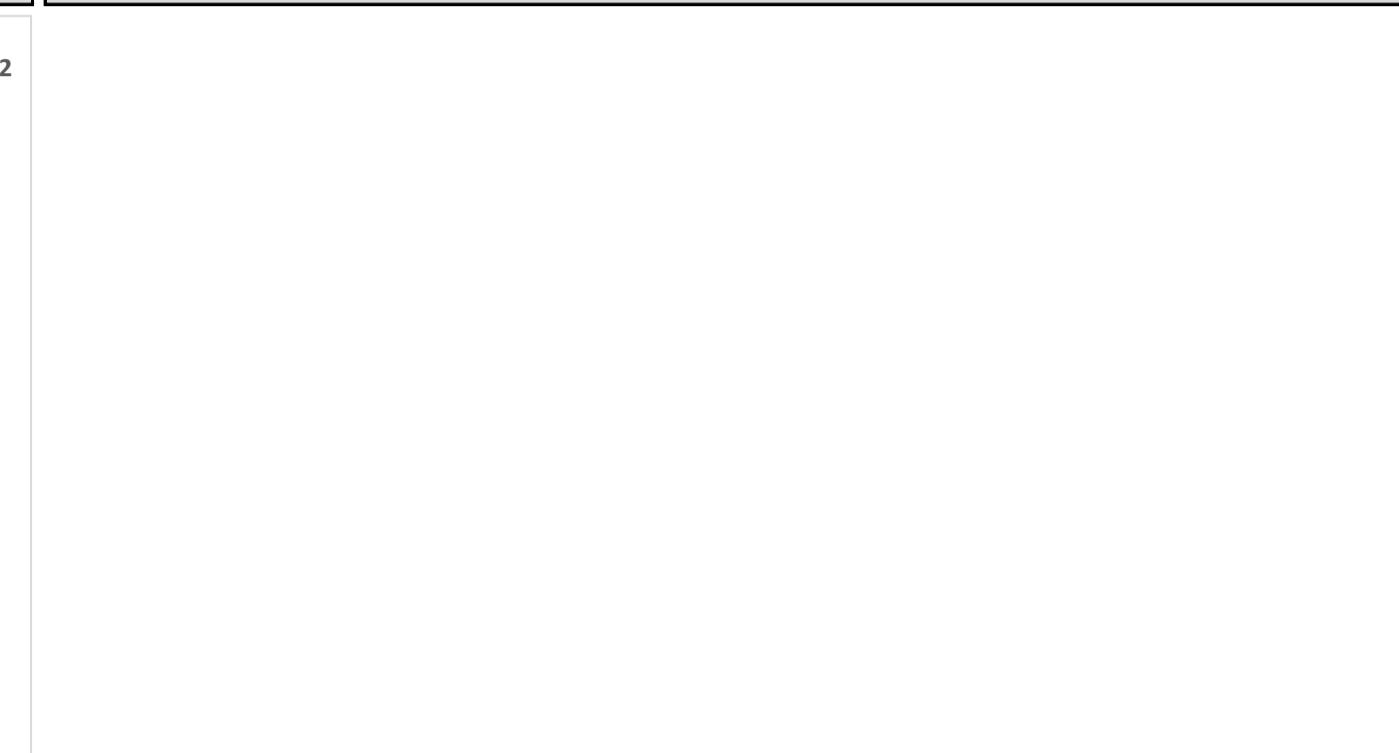
SPAN 06



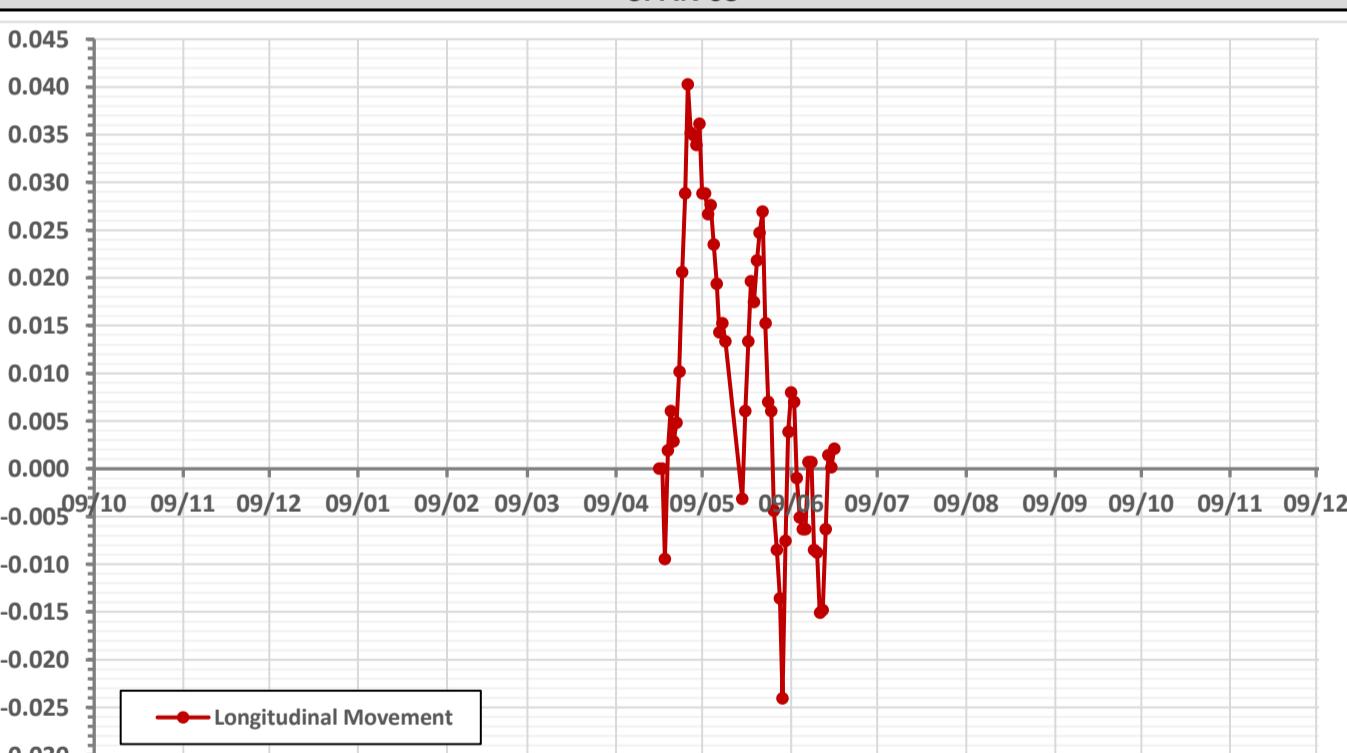
SPAN 07



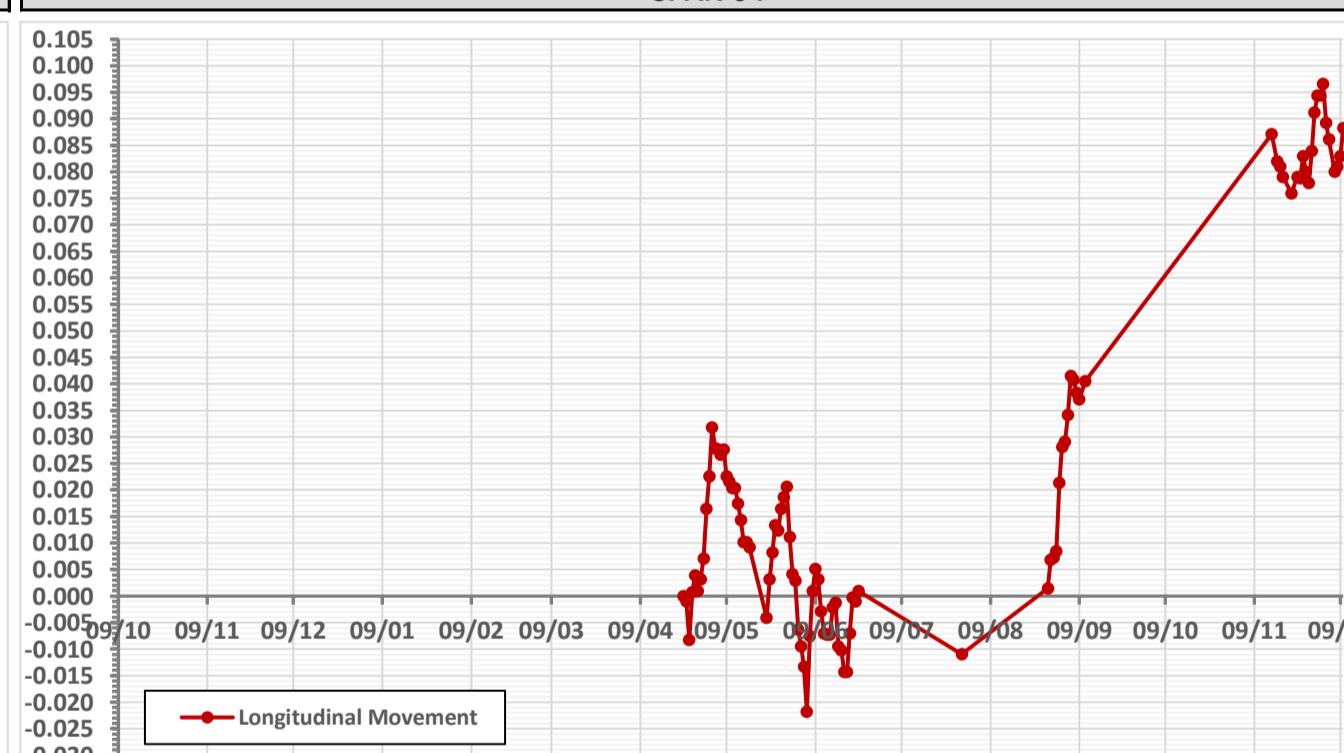
SPAN 08



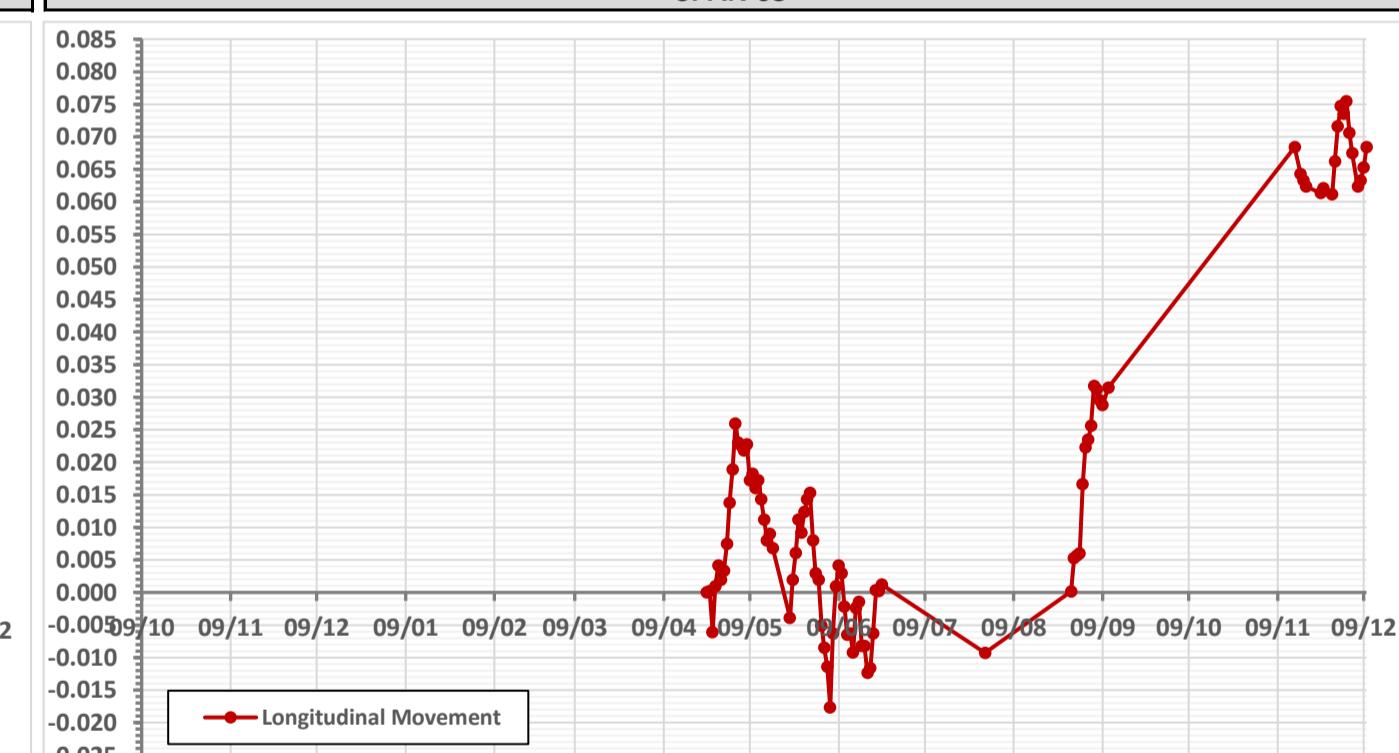
SPAN 03



SPAN 04



SPAN 05



SPAN 01



SPAN 02



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