

Appendix to report:

SBJ-33-C5-OON-22-RE-018
DESIGN OF PONTOONS AND COLUMNS

Appendix title:

APPENDIX A – COLUMN ULS RESPONSE

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CONCEPT DEVELOPMENT FLOATING BRIDGE E39 BJØRNAFJORDEN

Norconsult 

 DR. TECHN.
OLAV OLSEN

 Prodtex
Production / Technology / Excellence

 IFE

 Pure Logic
The science of production reasoning

 HEYERDAHL ARKITEKTER AS

 H&BB

 MIKO
MARINE AS

 BUKSÉR og
BERGING

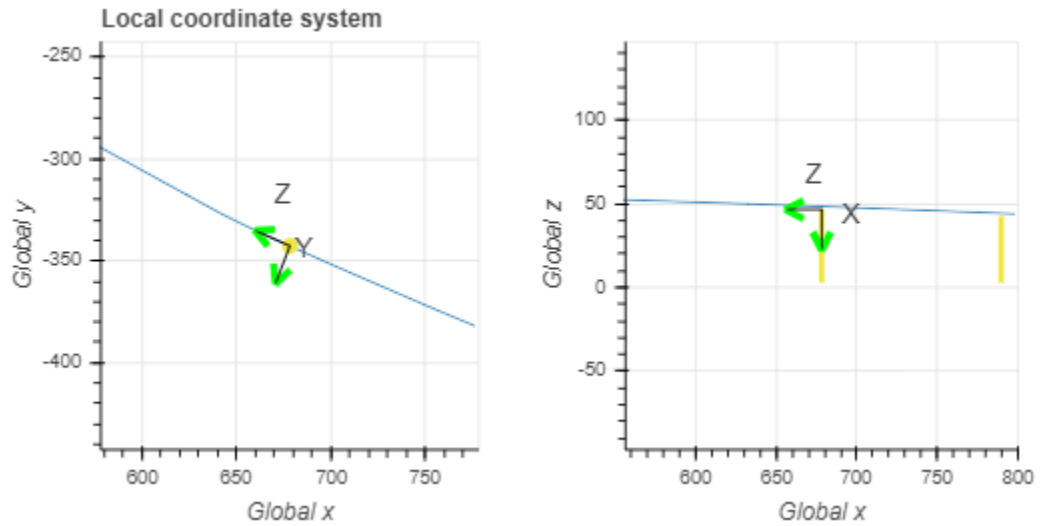
 FORCE
TECHNOLOGY

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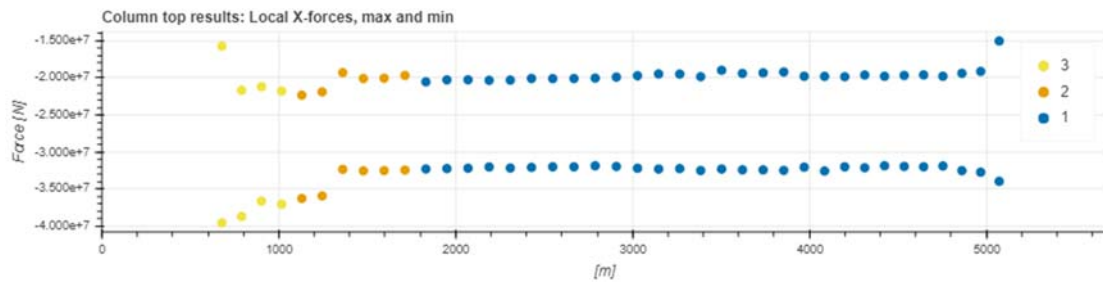
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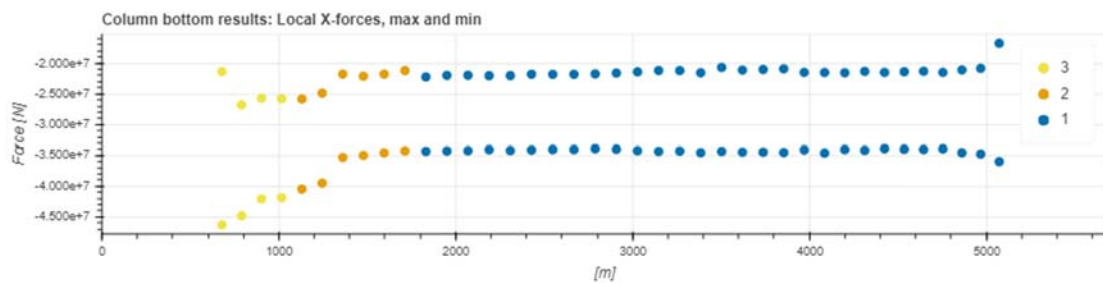
1 COLUMN ULS RESPONSE FROM GLOBAL ANALYSES (K12 MODEL 27)



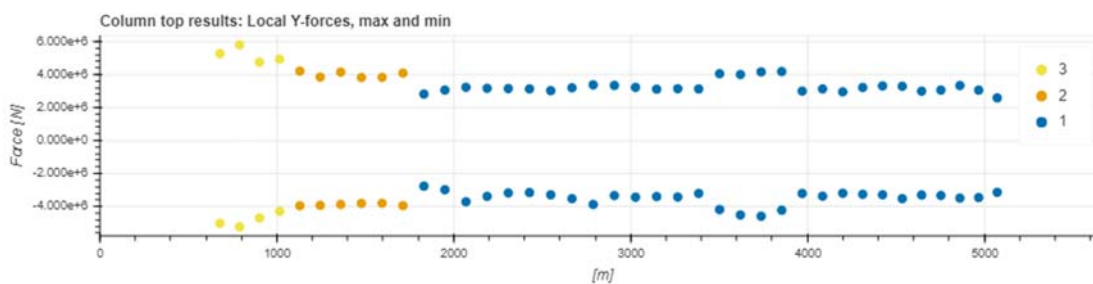
> Figure 1-1 Local coordinate system for columns



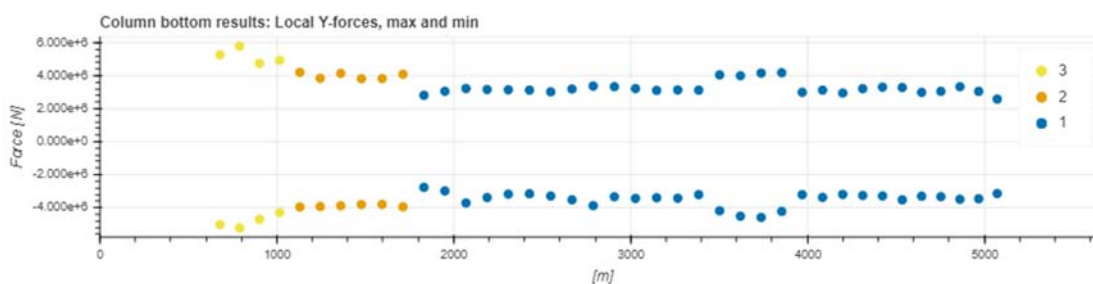
> Figure 1-2 Column top local F_x , max -15.7 MN, min -39.5 MN



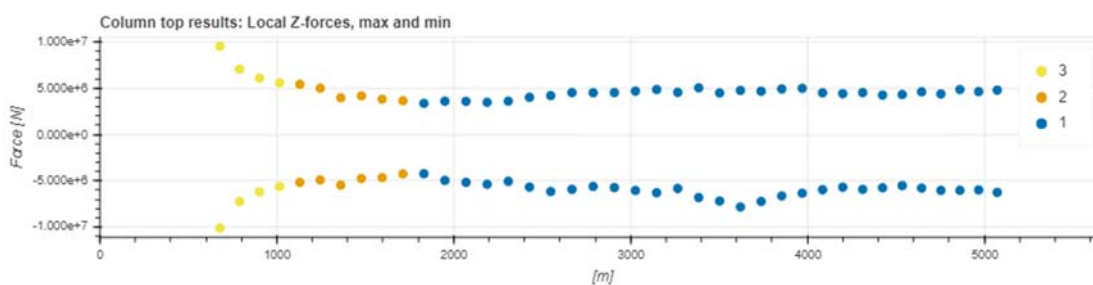
> Figure 1-3 Column bottom local F_x , max -21.4 MN, min -46.3 MN



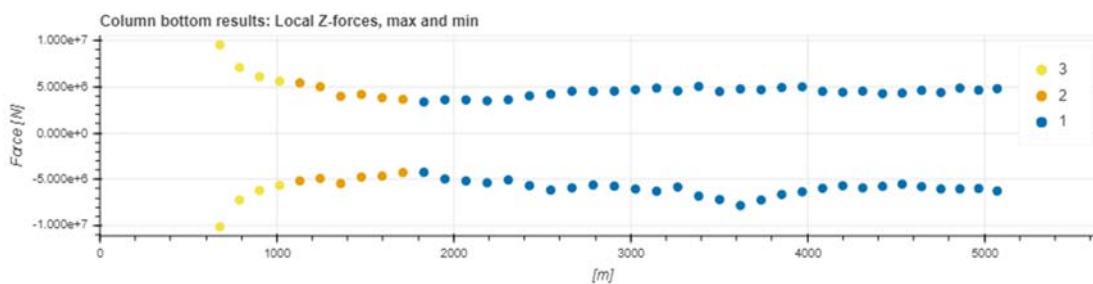
> Figure 1-4 Column top local F_y , max 5.8 MN, min -5.2 MN



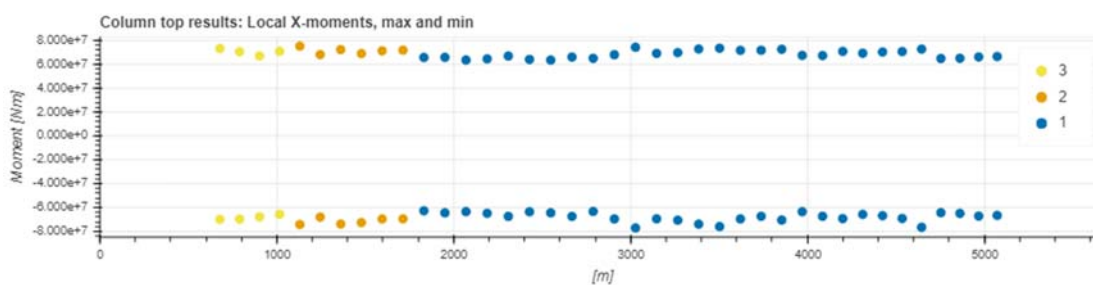
> Figure 1-5 Column bottom local F_y , max 5.8 MN, min -5.2 MN



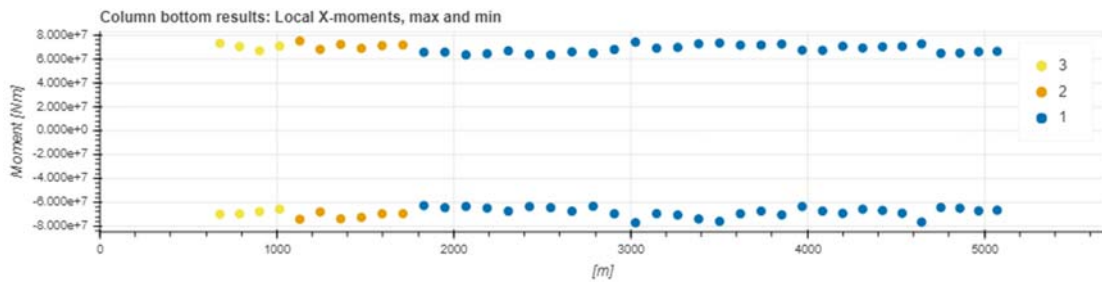
> Figure 1-6 Column top local F_z , max 9.5 MN, min -10.1 MN



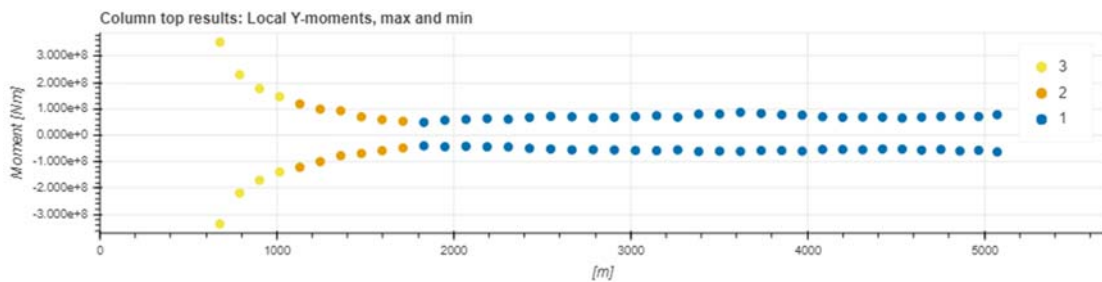
> Figure 1-7 Column bottom local F_z , max 9.5 MN, min -10.1 MN



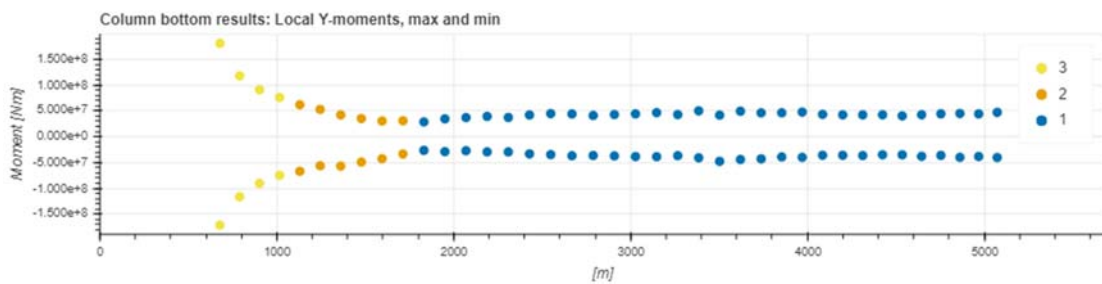
> Figure 1-8 Column top local M_x , max 75.2 MNm, min -77.1 MNm



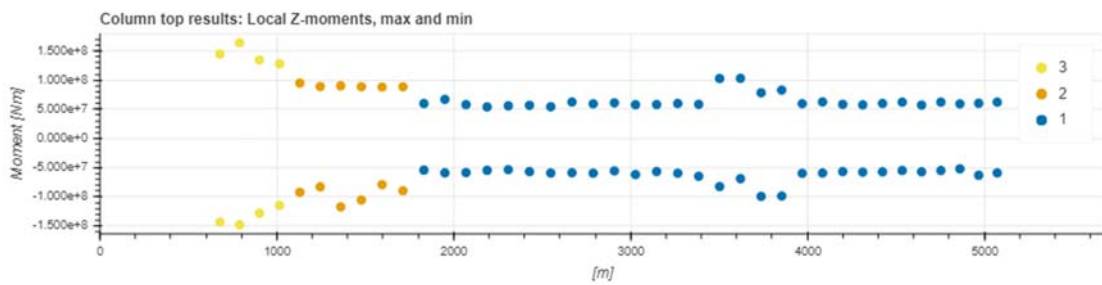
> Figure 1-9 Column bottom local M_x , max 75.2 MNm, min -77.1 MNm



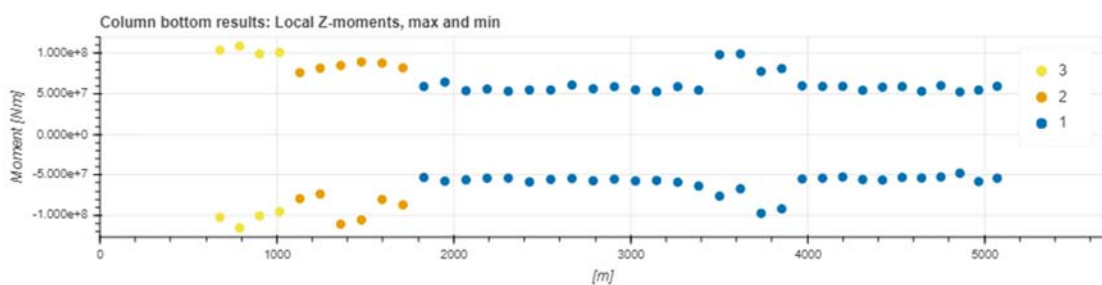
> Figure 1-10 Column top local M_y , max 353.3 MNm, min -336.1 MNm



> Figure 1-11 Column bottom local M_y , max 180.8 MNm, min -171.5 MNm



> Figure 1-12 Column top local M_z , max 163.7 MNm, min -148.0 MNm



> Figure 1-13 Column bottom local M_z , max 108.9 MNm, min -115.5 MNm

2 REFERENCES

- [1] Håndbok N400 , «Bruprosjektering,» Statens vegvesen Vegdirektoratet, 2015.
- [2] SBJ-32-C4-SVV-90-BA-001, «Design Basis Bjørnafjorden floating bridges,» Statens Vegvesen, 2018.
- [3] NS-EN 1993-1-1:2005+A1:2014+NA:2015, «Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings,» Standard Norge, 2005.