

# Banff Pedestrian Bridge

## **Client:**

Town of Banff

## **Project Team:**

*Prime Design/Build Contractor:* StructureCraft Builders

*Structural Engineers:* Fast + Epp

*Civil Designer/Contractor:* Trittech

*Geotechnical Engineer:* Thurber

*Landscape Architects:* Phillips Farevaag Smallenberg (PFS)



**From:** Field, Adrian [<mailto:Adrian.Field@banff.ca>]  
**Sent:** Tuesday, January 25, 2011 3:22 PM  
**To:** Gerald Epp  
**Cc:** McKay, Randall; Townsend, Chad; Dupuis, Michel  
**Subject:** Banff Pedestrian bridge at Muskrat street

# Design Criteria

Hi Gerry,

Good talking to you yesterday,

Please find attached an aerial view of the sanitary siphon crossing that we have identified for replacement in 2015. The location is from the south end of Muskrat street in Banff, the red lines are two existing sanitary lines that pass under the river bed. As discussed yesterday this pipe replacement project could (subject to build costs and approval from council) potentially be combined with a pedestrian bridge with the sanitary pipes attached to

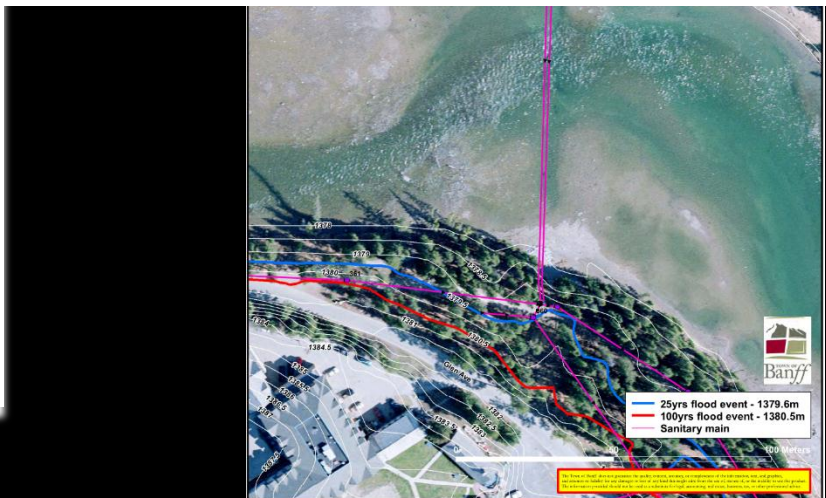


1. Crossing length is 135m (aprox)
2. The bridge should be designed to carry 2 number 16" pipes full of sanitary waste
3. The bridge is to be simple in design without the need for building an "art feature" in the townsite
4. Work within the river channel should be minimised
5. Durability – 75 year design life

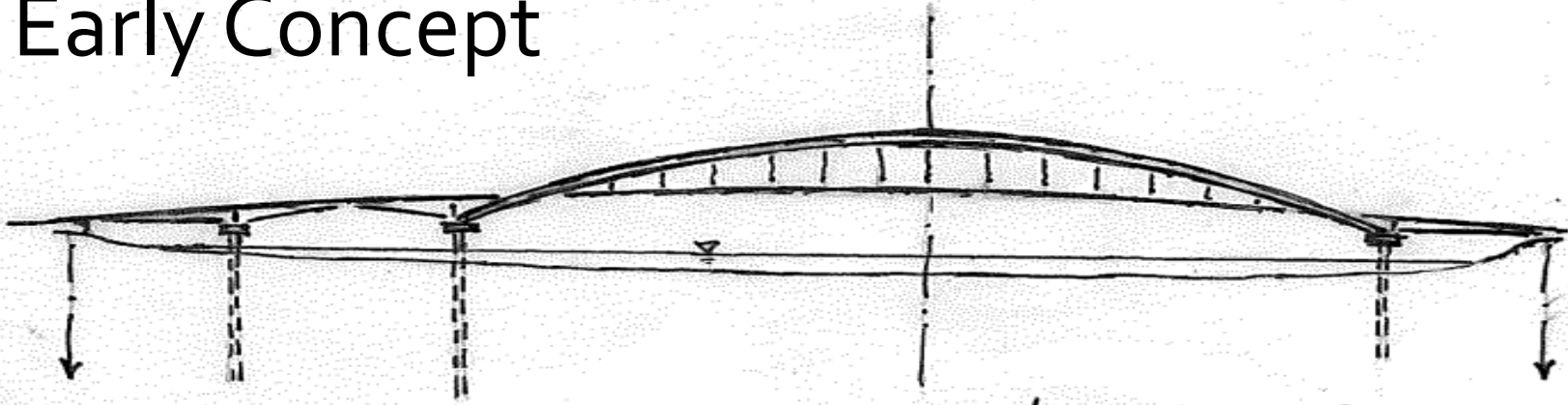
Many thanks

Adrian

**Adrian Field** | Manager of Engineering  
Engineering  
Town of Banff  
Banff Town Hall, 110 Bear Street  
Box 1260, Banff, Alberta, Canada T1L 1A1  
P 403.762.1111 F 403.762.1260  
[adrian.field@banff.ca](mailto:adrian.field@banff.ca)  
[www.banff.ca](http://www.banff.ca)



# Early Concept



Muskrat St. Bridge - Banff  
Looking East - Lower Profile.

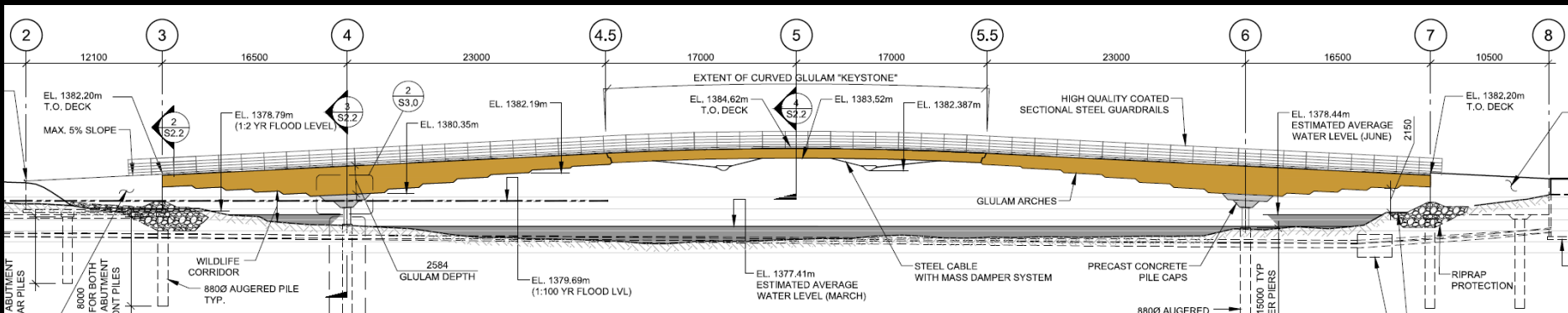




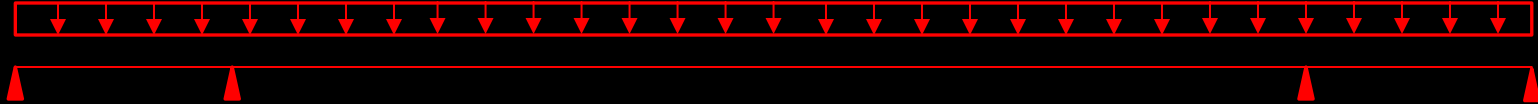




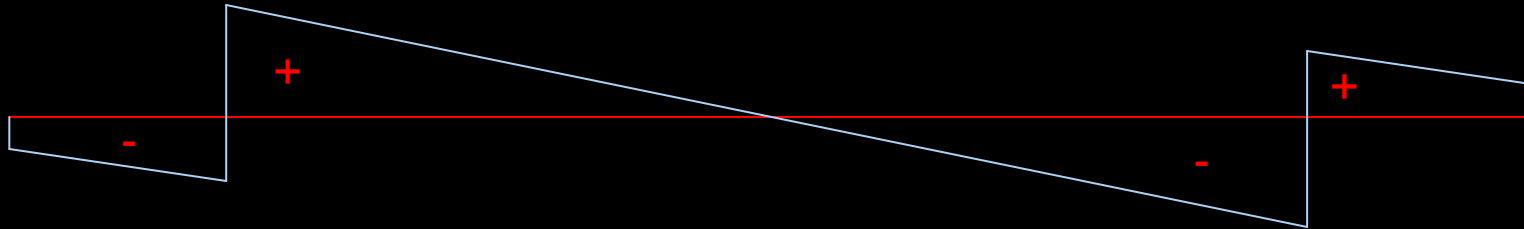
# Structural System



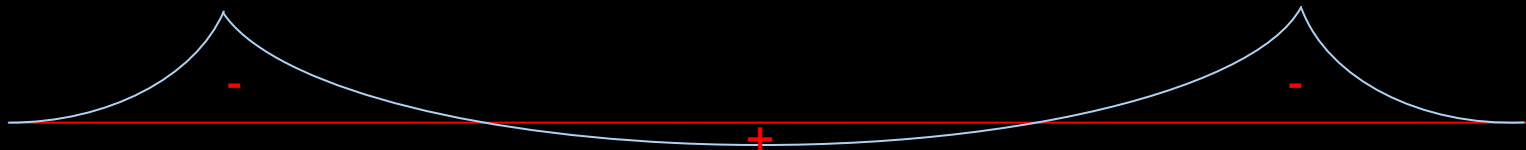
UDL



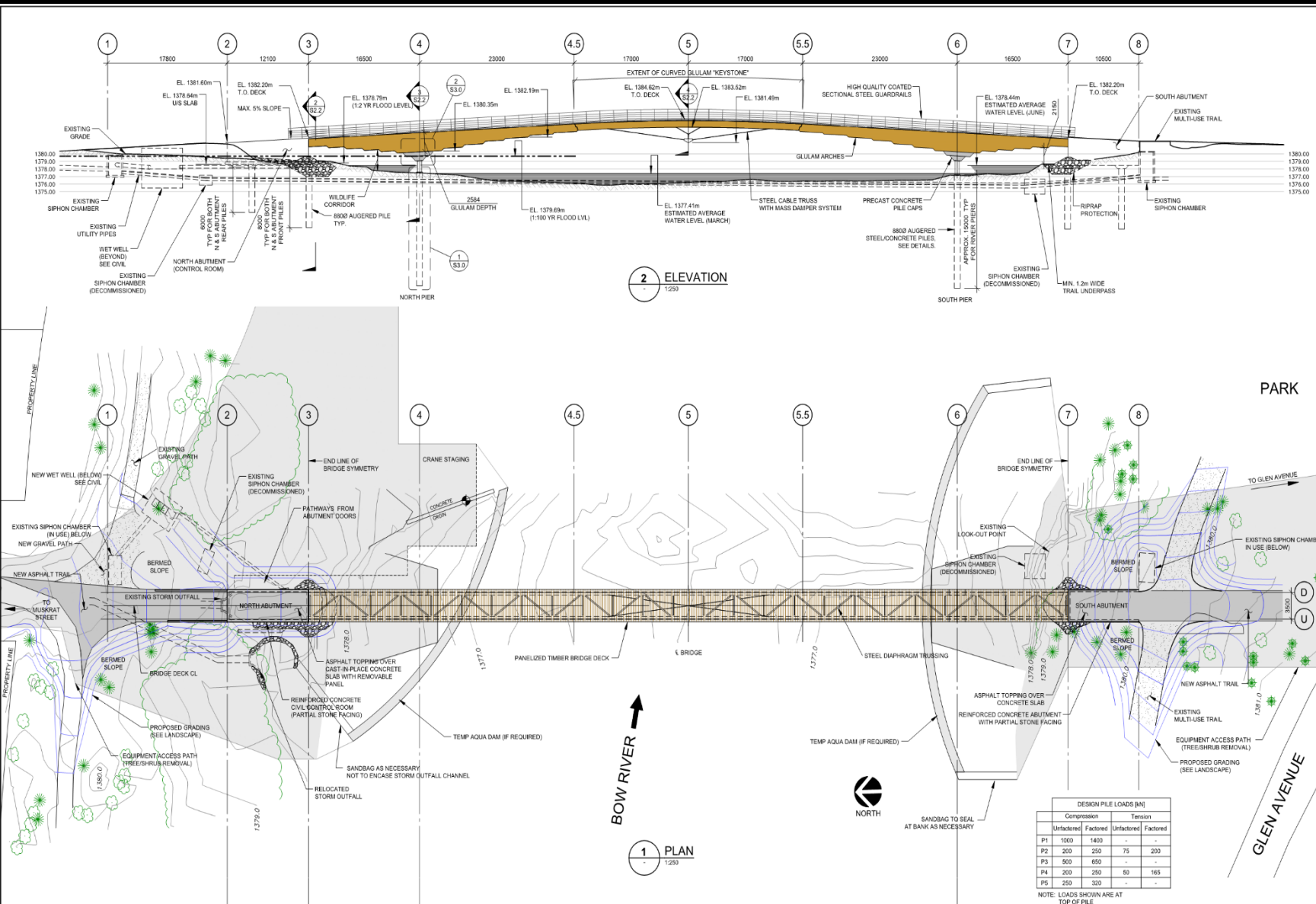
SFD



BMD







**StructureCraft**  
8275 River Way  
Delta, BC  
Canada V4L 1G4  
T 604.940.8819  
mail@structurecraft.com

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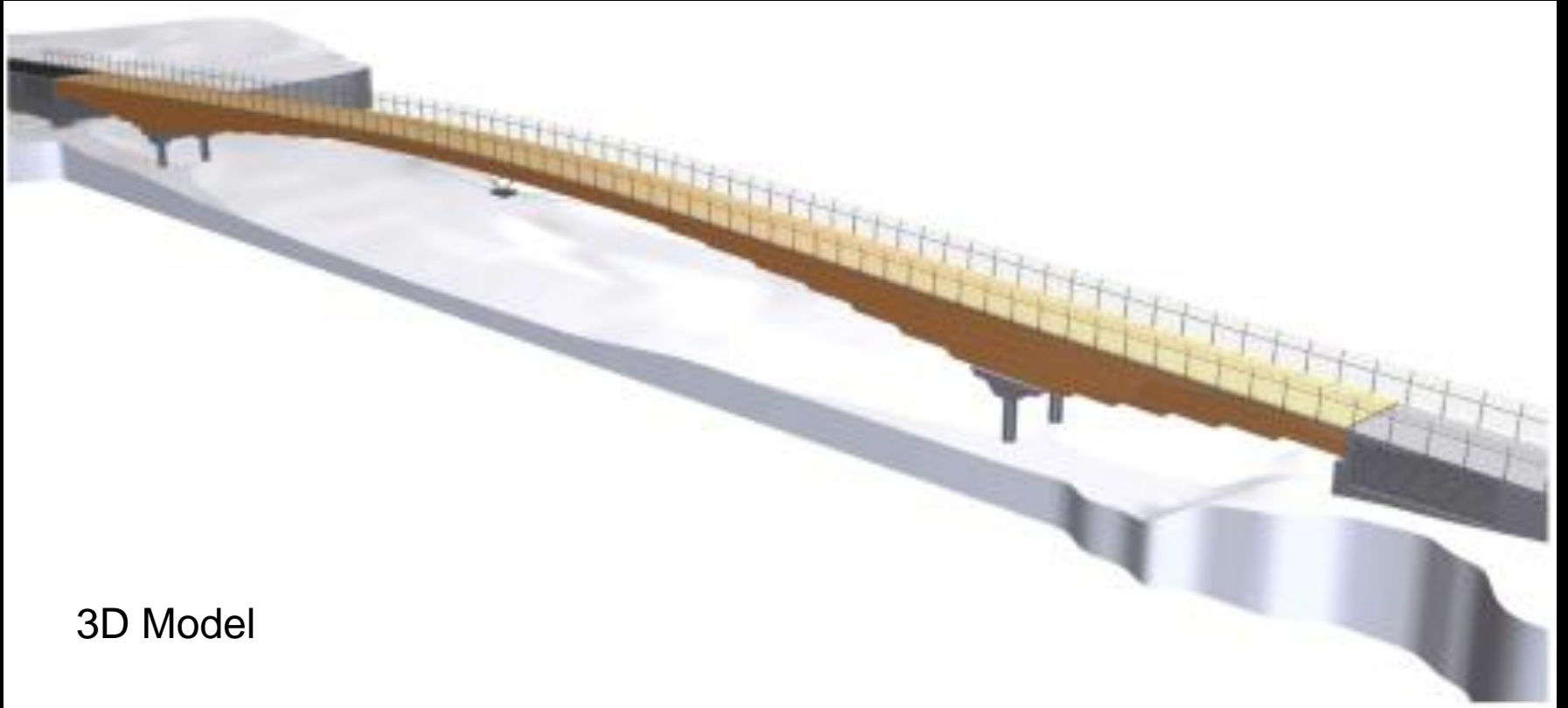
**TRITECH**  
Water Infrastructure Solutions

**Fast + Epp**  
structural engineers  
Suite 201  
1672 West 1st Ave  
Vancouver BC  
Canada V6L 1G1  
F 604.731.7620  
mail@fastepp.com

**CLIENT**  
TOWN OF BANFF

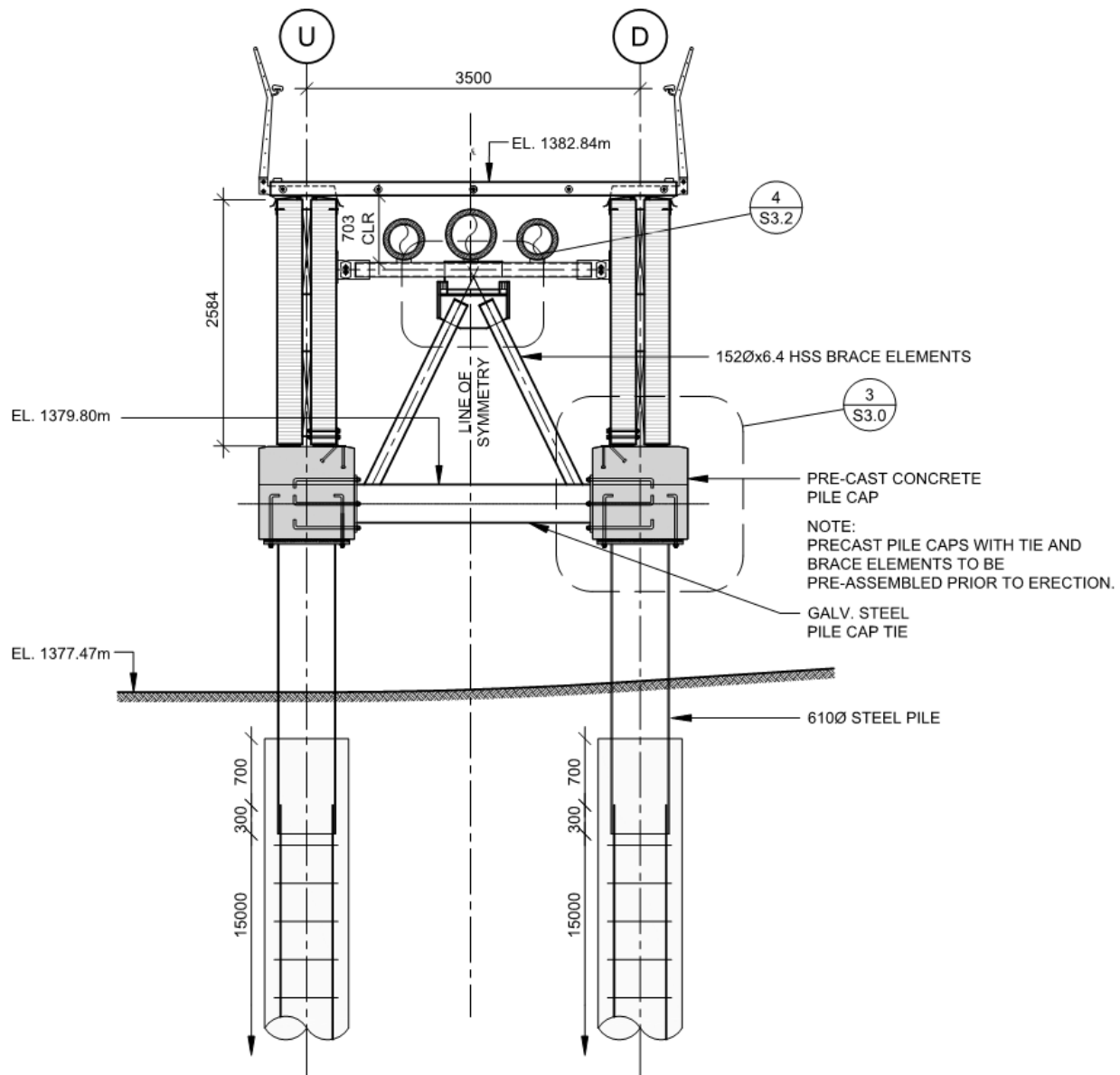
**PROJECT**  
MUSKRAT STREET FOOTBRIDGE



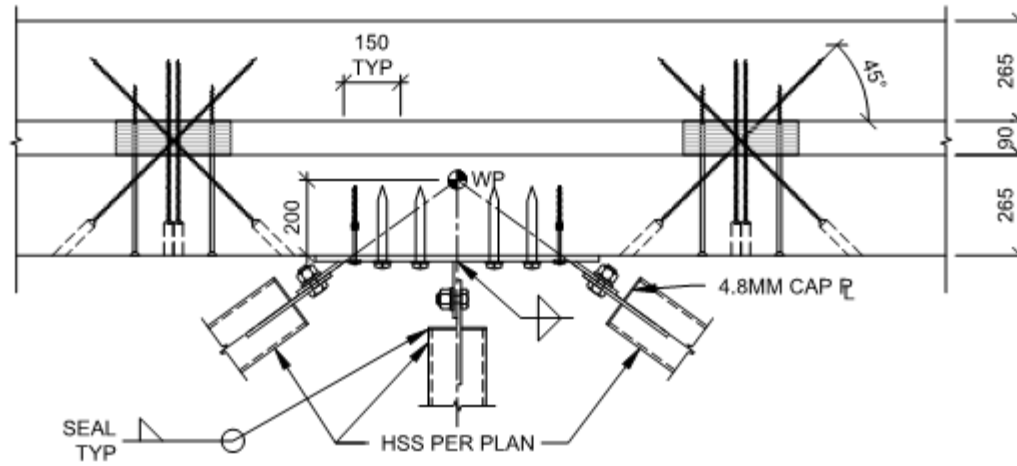


3D Model

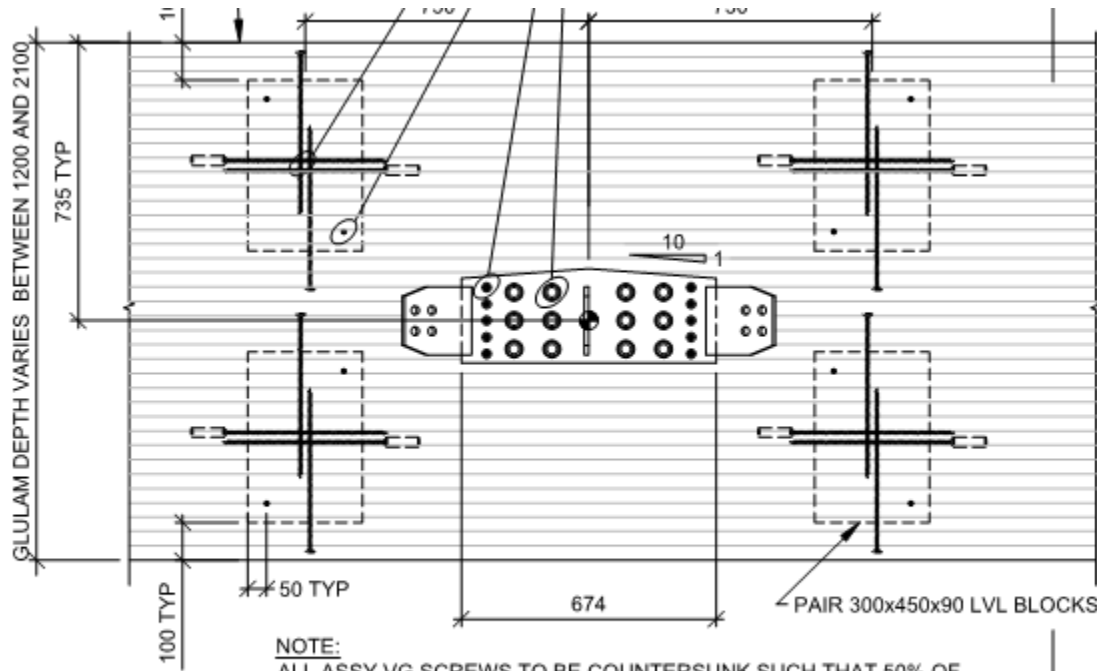




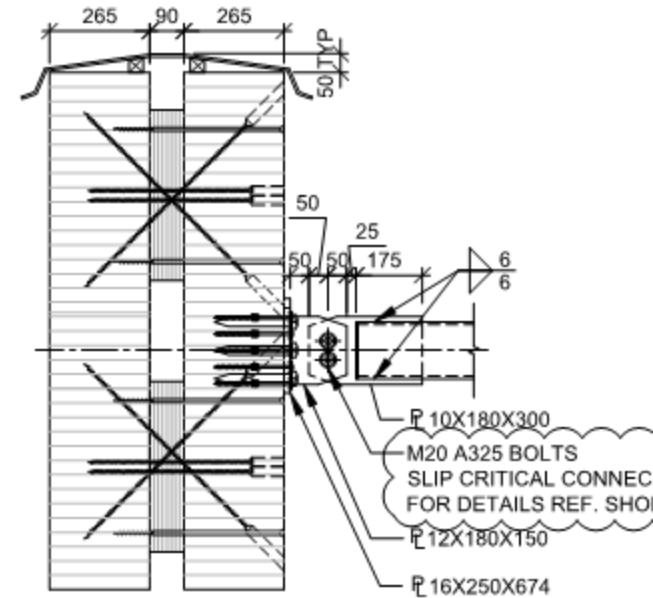
**3** SECTION AT NORTH PIER  
S1.1 1:50 (SOUTH PIER SIMILAR)



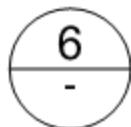
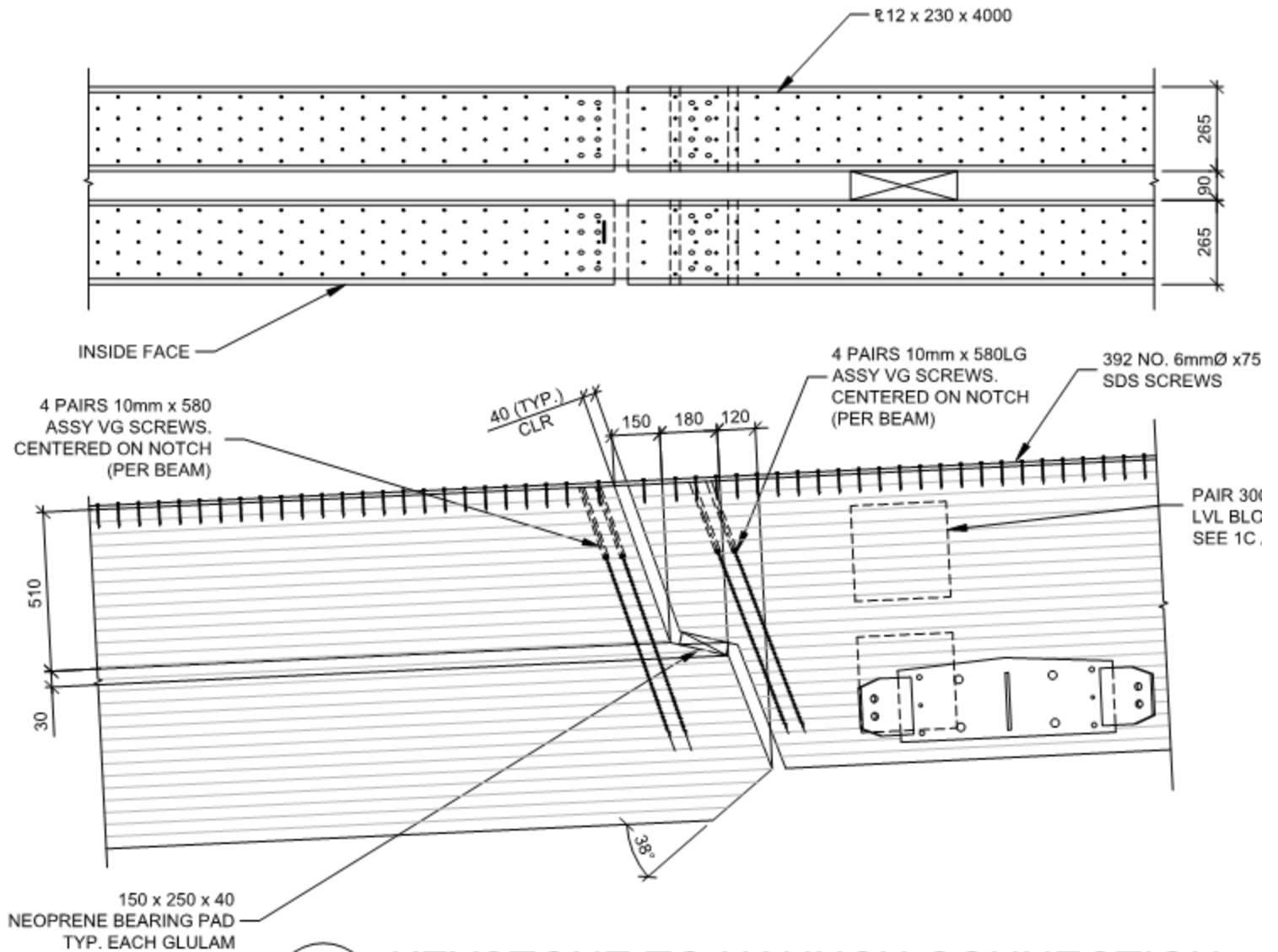
PLAN VIEW: C



VIEW: A

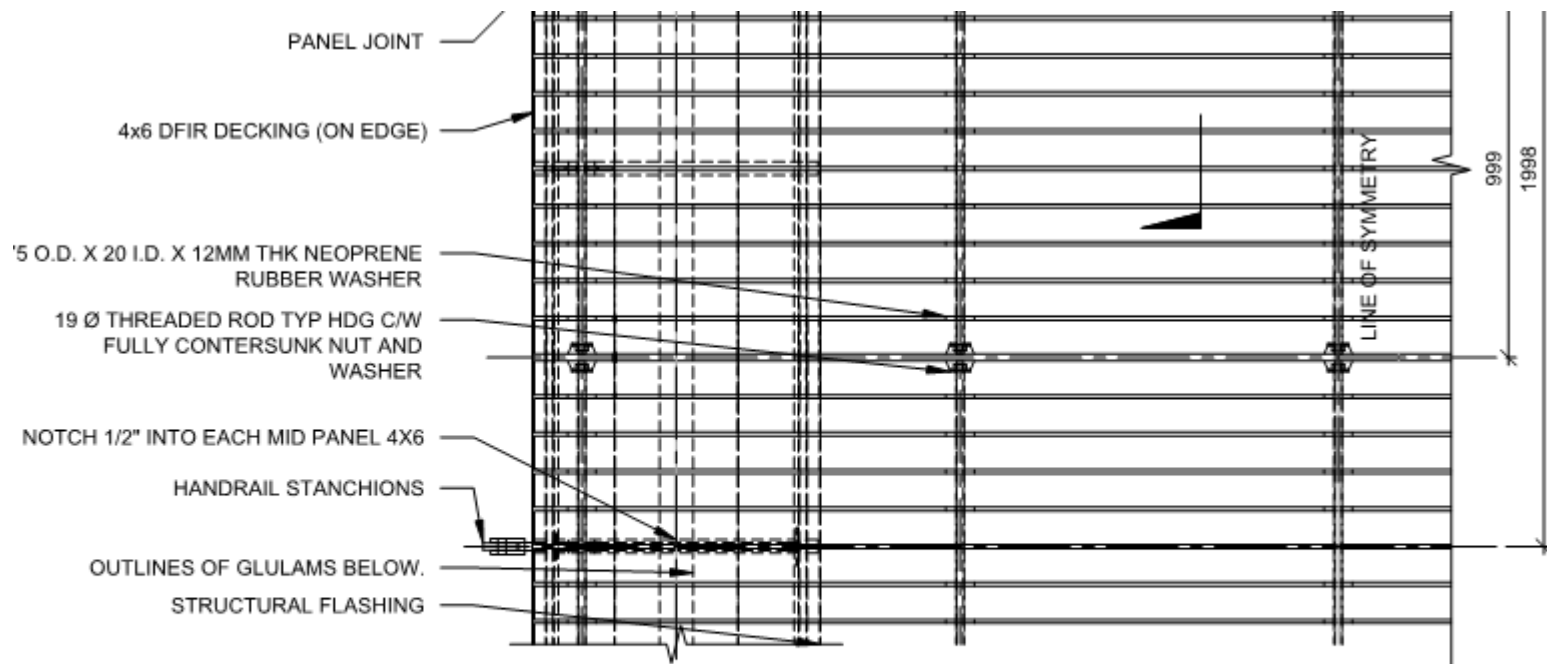
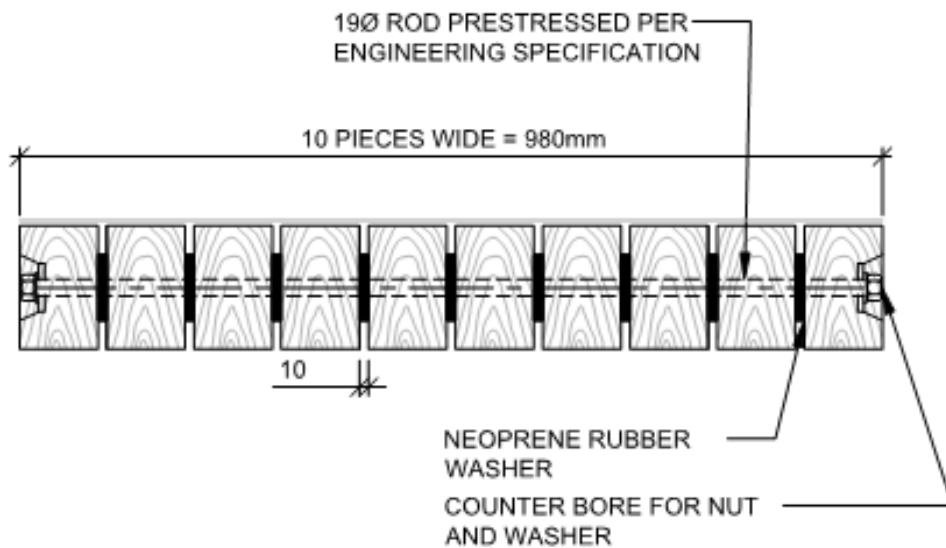






## KEYSTONE TO HAUNCH CONNECTION

1:20



## DECK PANEL PARTIAL PLAN

1:20







































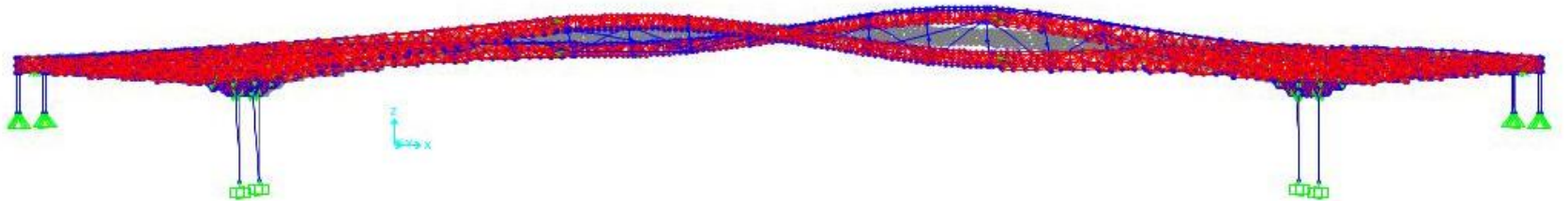
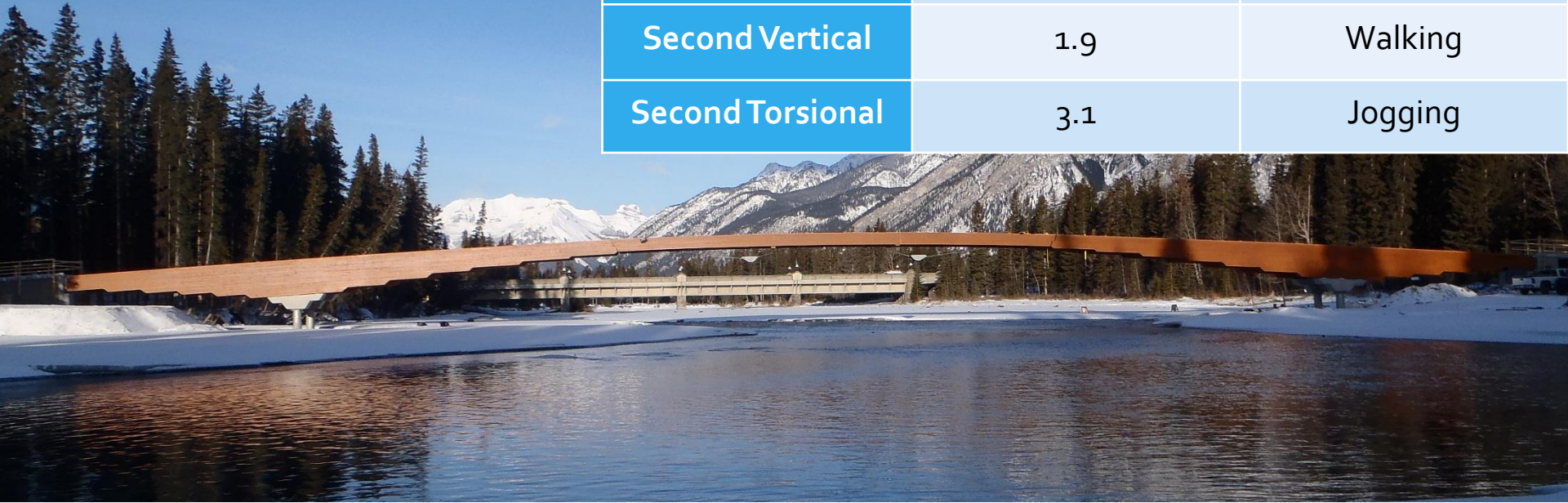






# Structural Dynamics

Mode Description	Predicted Frequency (Hz)	Mechanism
First Lateral	0.8	Walking
Second Vertical	1.9	Walking
Second Torsional	3.1	Jogging









FDD

Test Setup 1

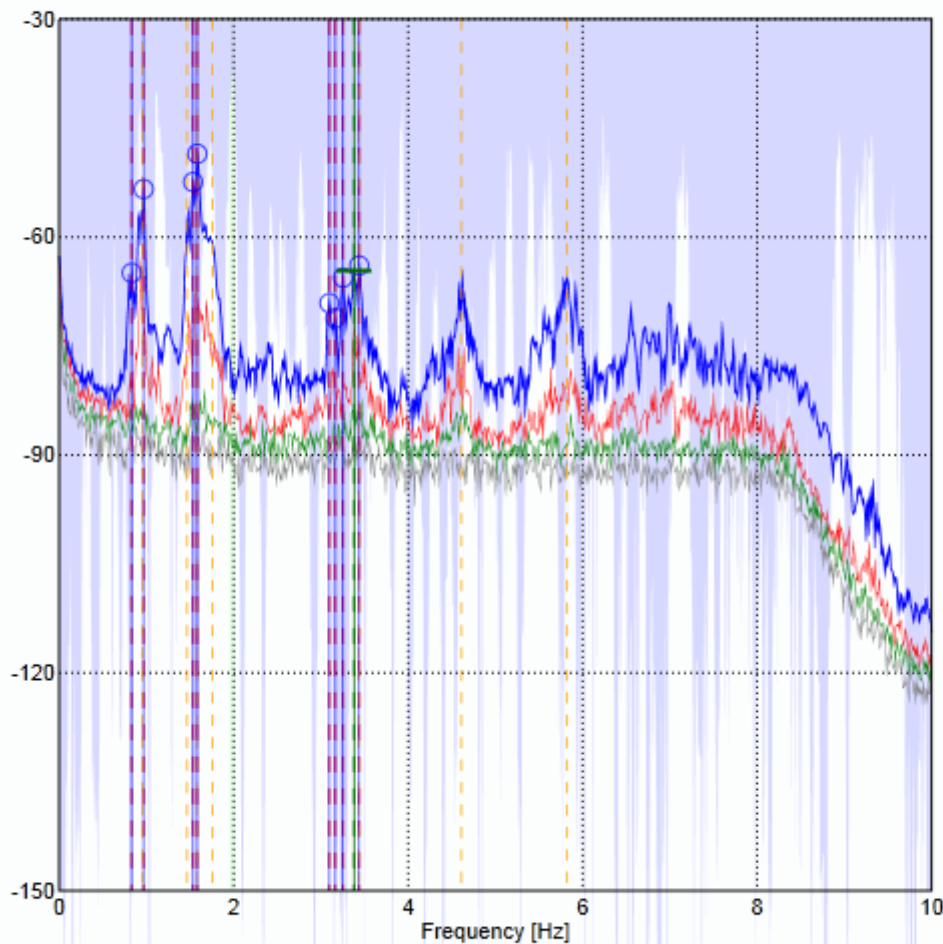


Auto

dB | (1 g)<sup>2</sup> / Hz

Singular Values of Spectral Densities of Test Setup:

AVT #1 - 15 min (200 Hz)



## Cursor Values

X = 3.38 [Hz]

Y = -64.63 dB | (1 g)<sup>2</sup> / Hz

## Indicators

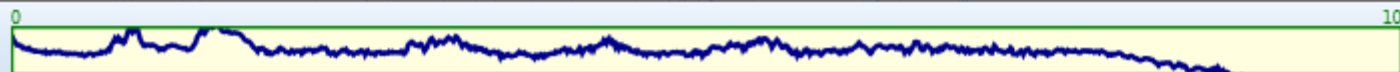
- Modal Coherence
- Modal Domain

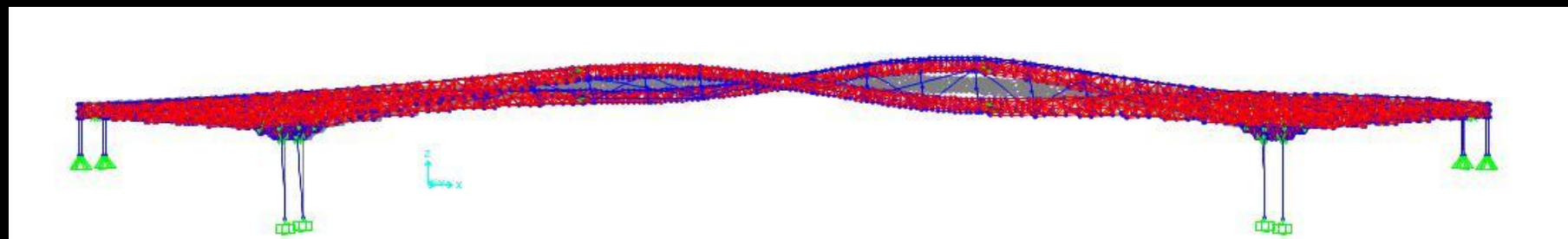
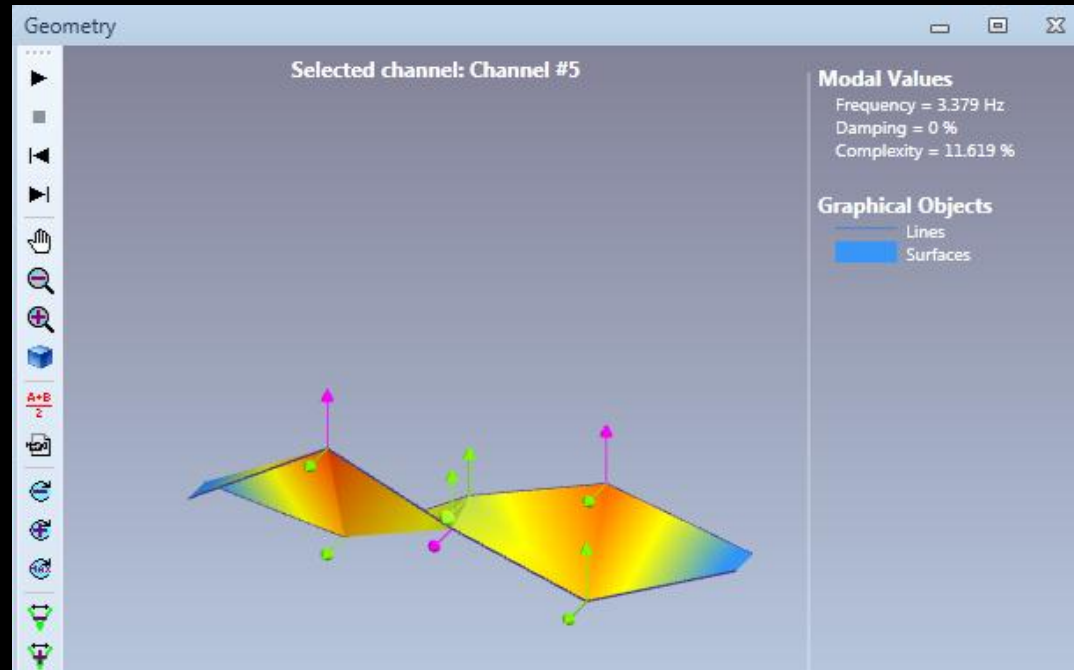
## Mode Markers

- Current Estimator
- Other Estimators

## Lines

- SVD Line #1
- SVD Line #2
- SVD Line #3
- SVD Line #4





Mode Description	Predicted Frequency (Hz)	Measured Frequency (Hz)
First Lateral	0.8	0.8
Second Vertical	1.9	1.5
Second Torsional	3.1	3.3

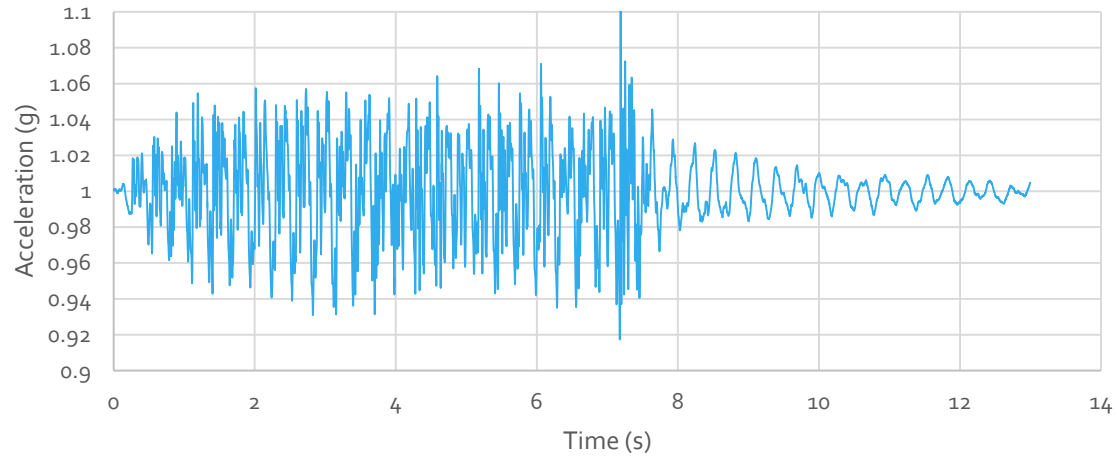








### Acceleration Time History



### Exponential Damping Curve

