I-580 Freeway Extension Project: Post-Tensioning and Grouting Challenges

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AMEC

Outline

- Introduction
- Construction Specifications
- Construction Challenges
- Design Changes
- Closing

Project Description

Location Map

Project Update

Project Update

Contract Specifications

New Grout Materials

Contract Specifications

Additional Vents

Contract Specifications

Grout Caps

Contract Specifications

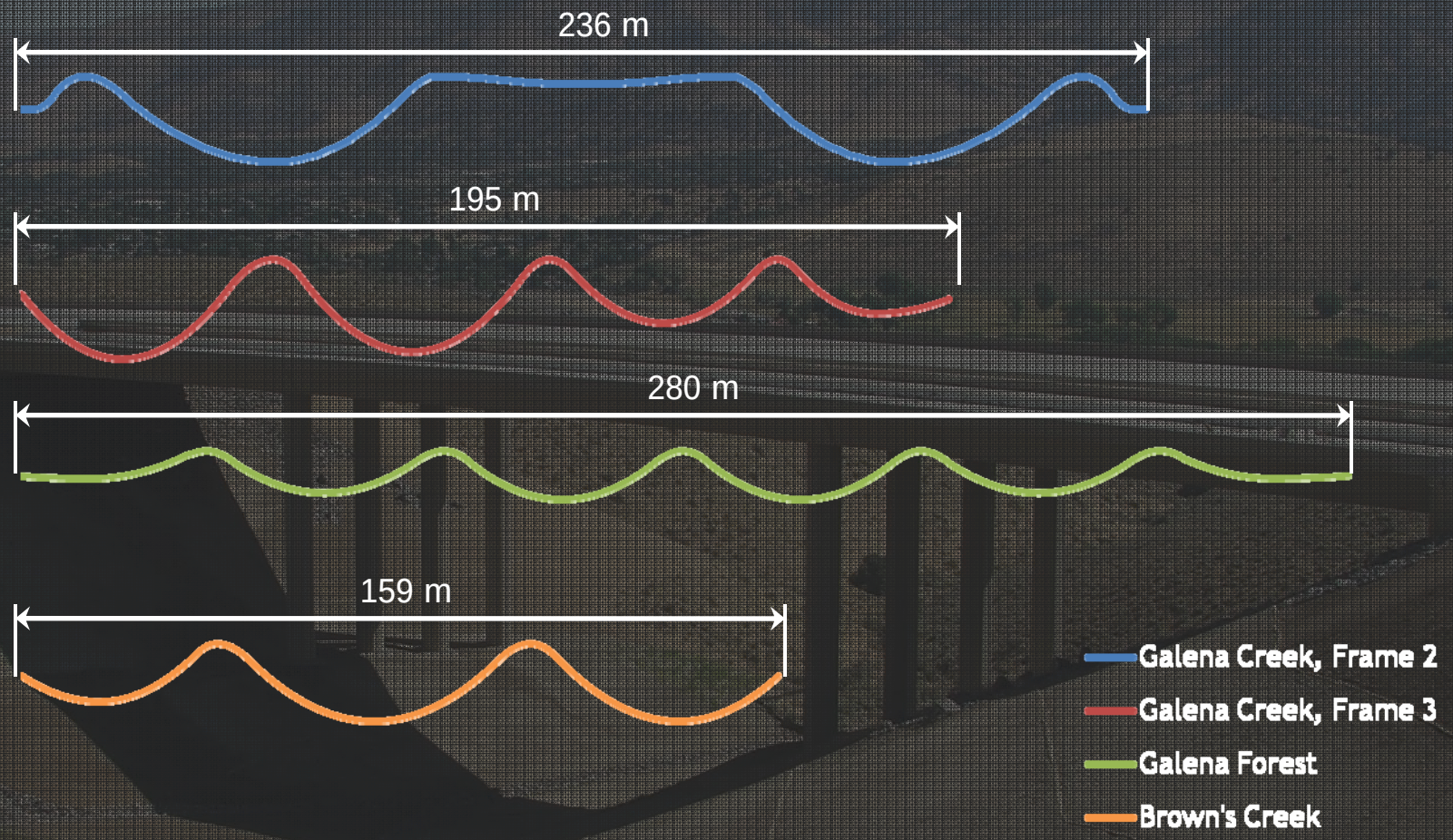
Air Pressure Test

Contract Specifications

Grouting Mockup

Long Tendon Paths

Long Tendon Paths



Grouting Temperatures

Grout Bleeding

Grout Bleed Material

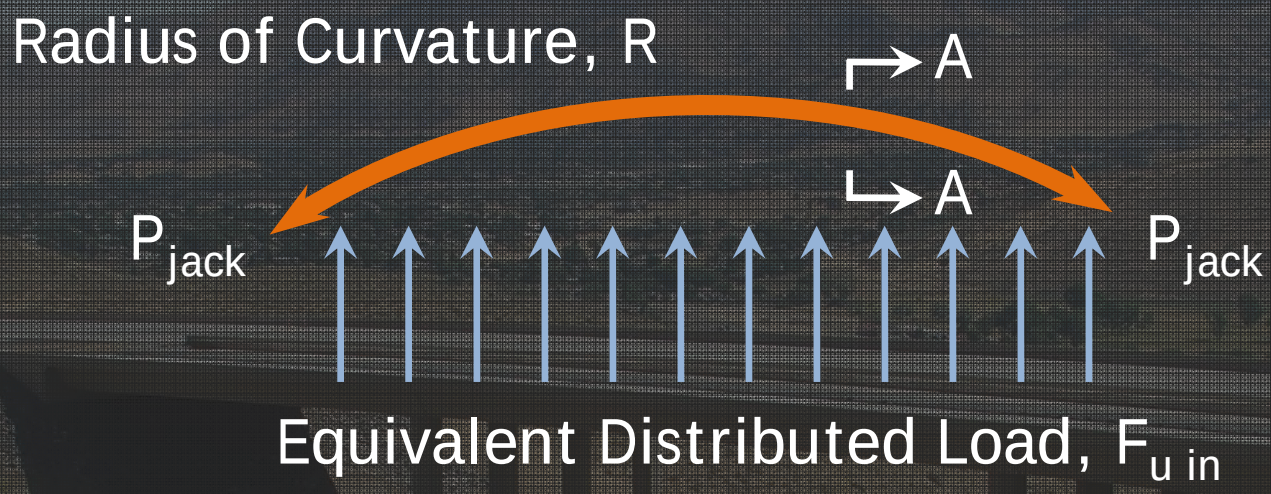
Air Pressure Test Issues

Duct Materials

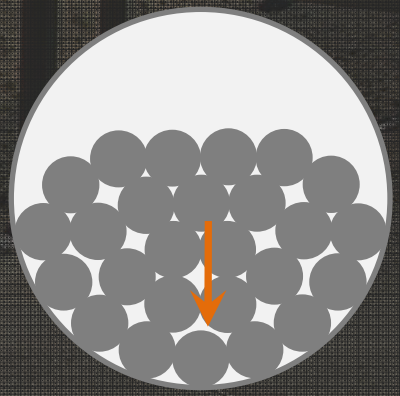
Air Pressure Test Issues

Post-Tensioning Forces

In-Plane Force

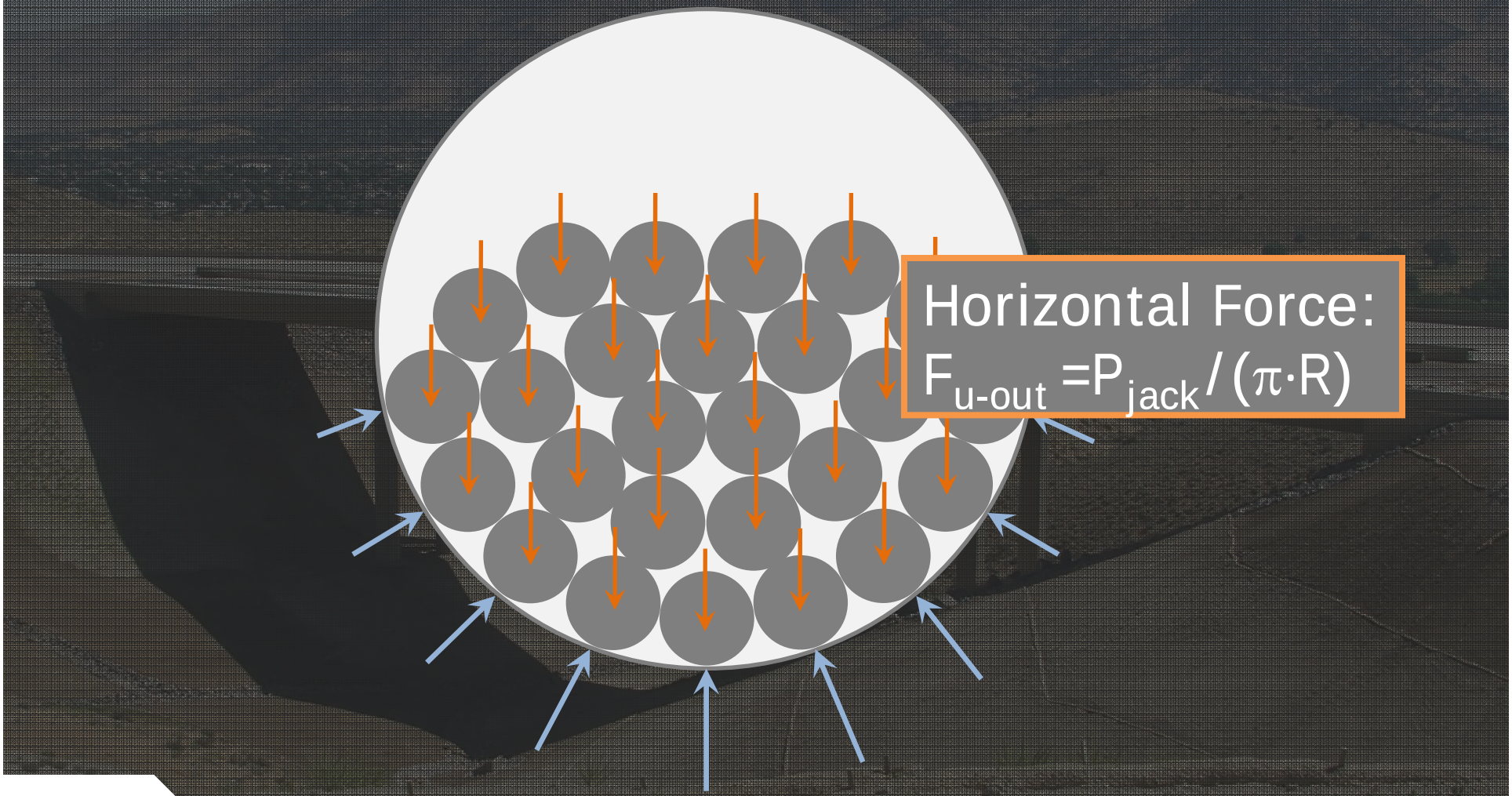


$$F_{u\ in} = P_{jack} / R$$



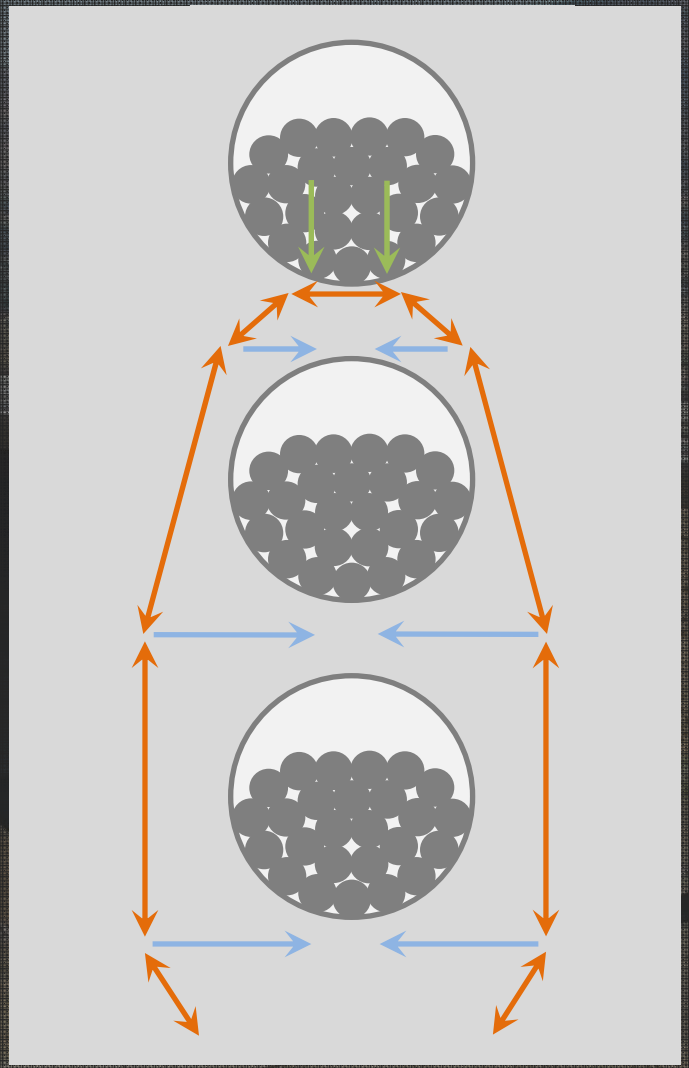
Post-Tensioning Forces

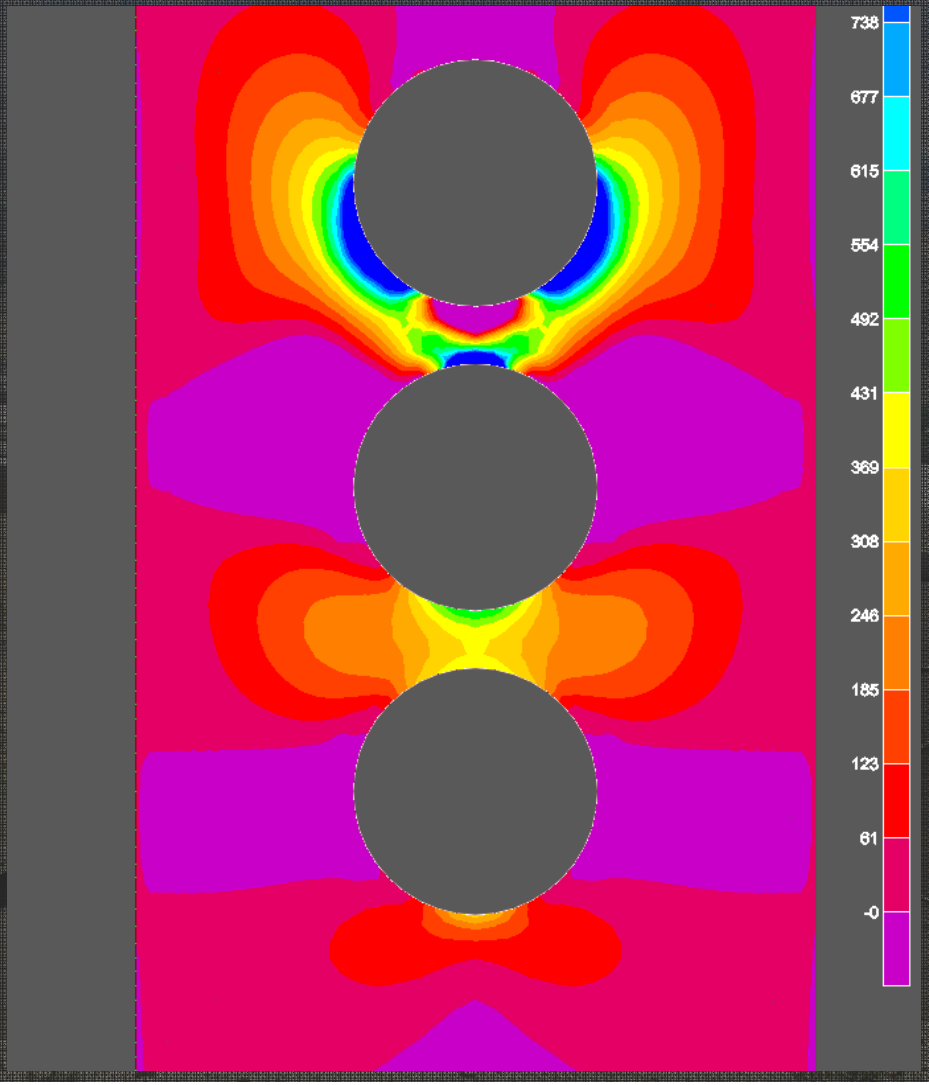
Tendon Equilibrium



Post-Tensioning Forces

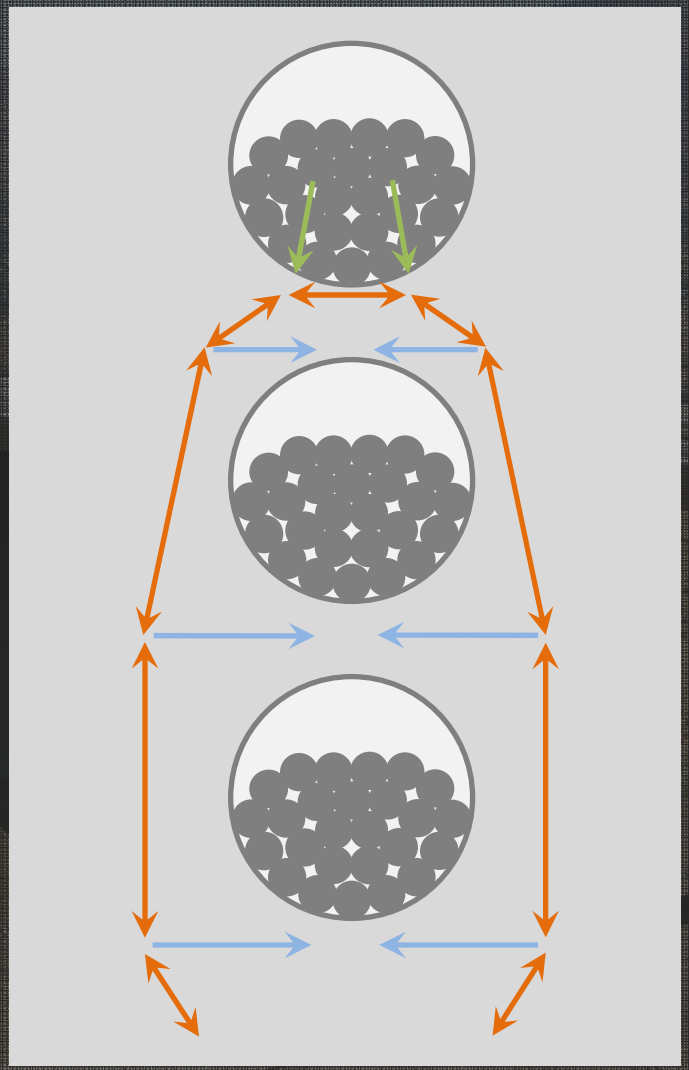
Vertical Load

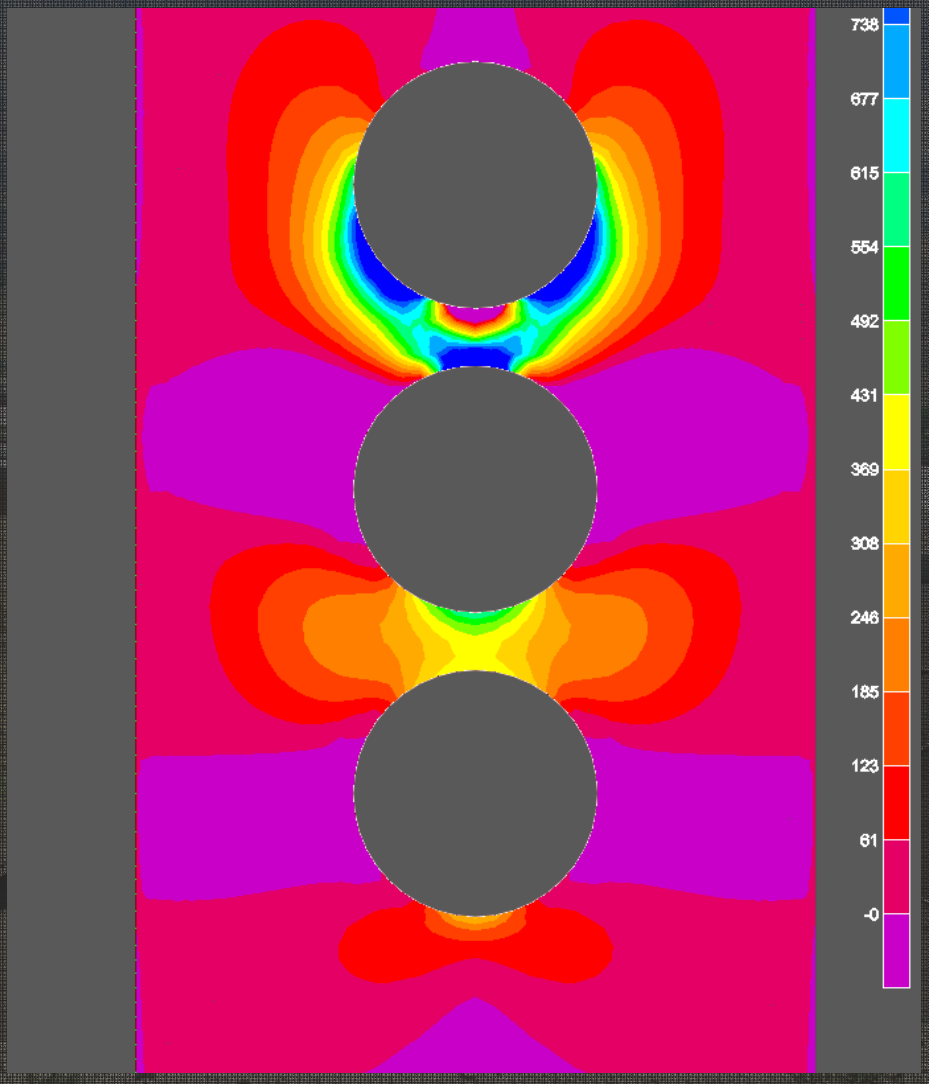




Post-Tensioning Forces

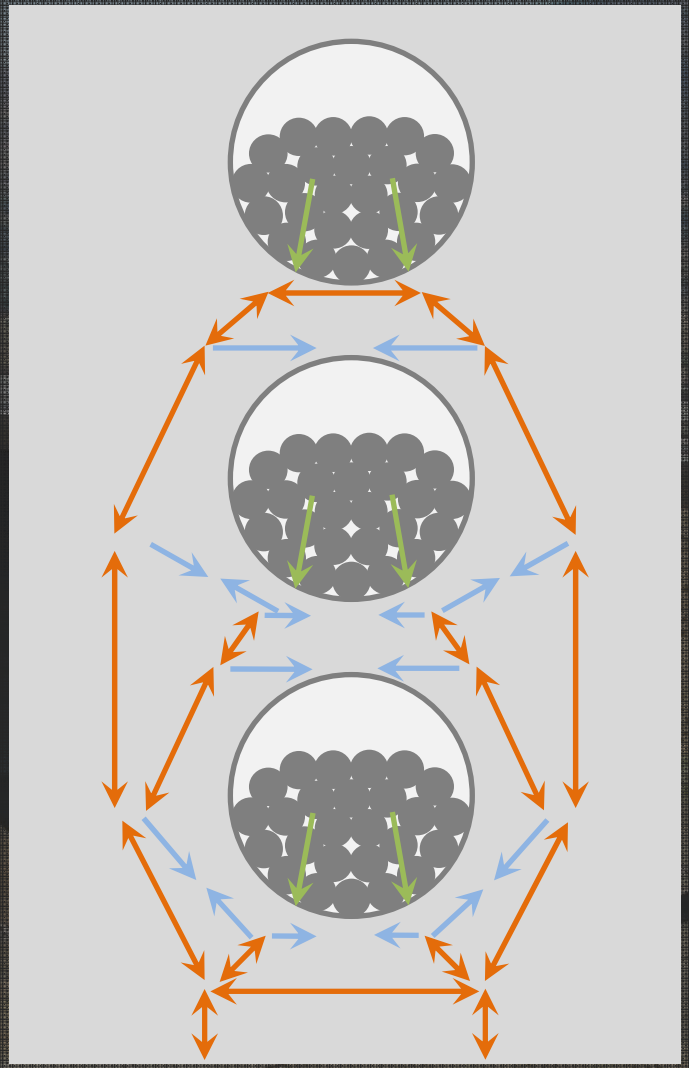
Vertical & Dilation

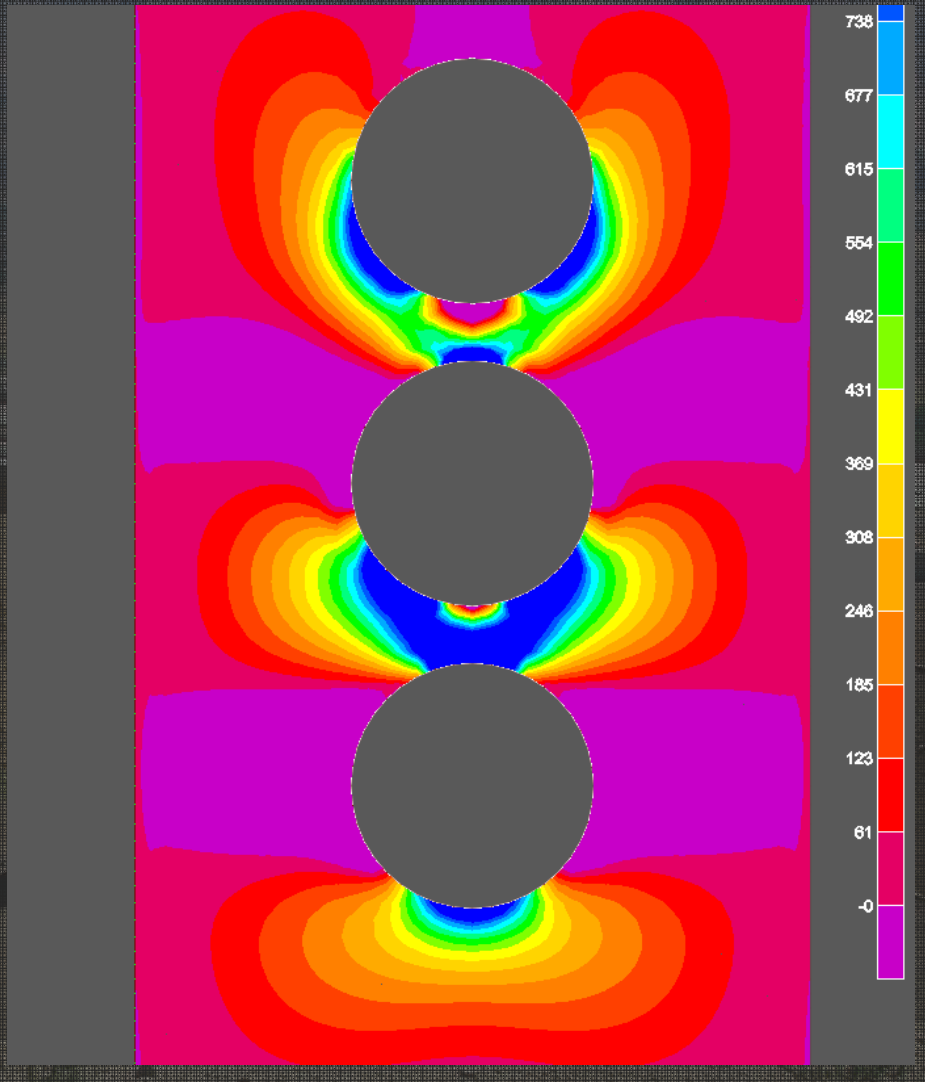




Post-Tensioning Forces

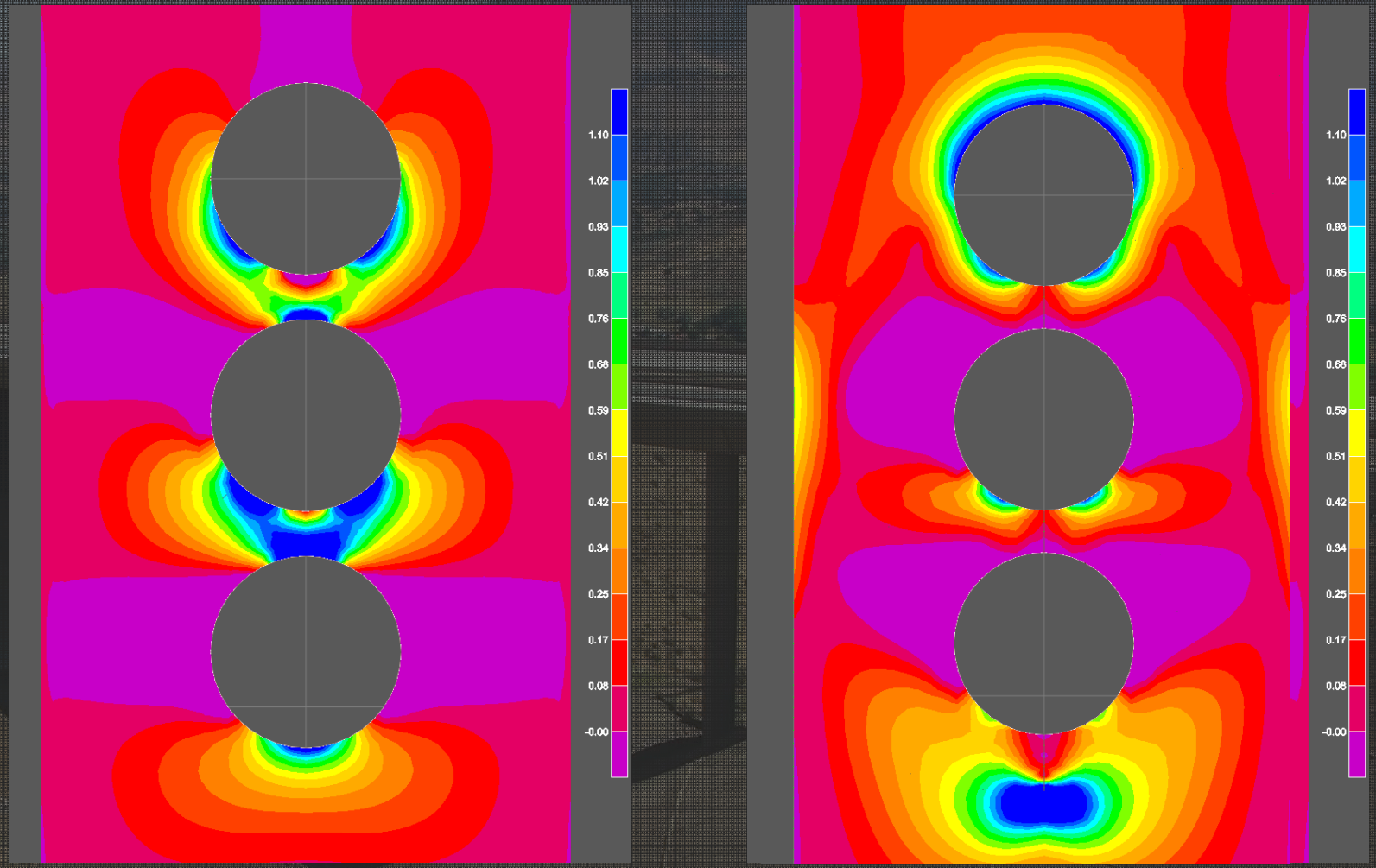
Multiple Tendons Loaded





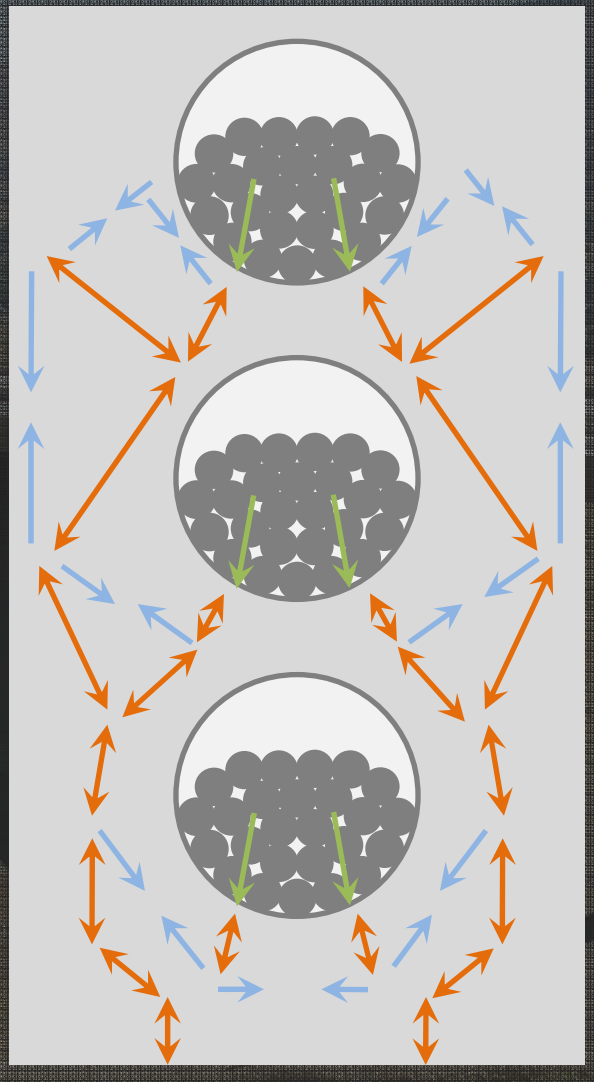
Post-Tensioning Forces

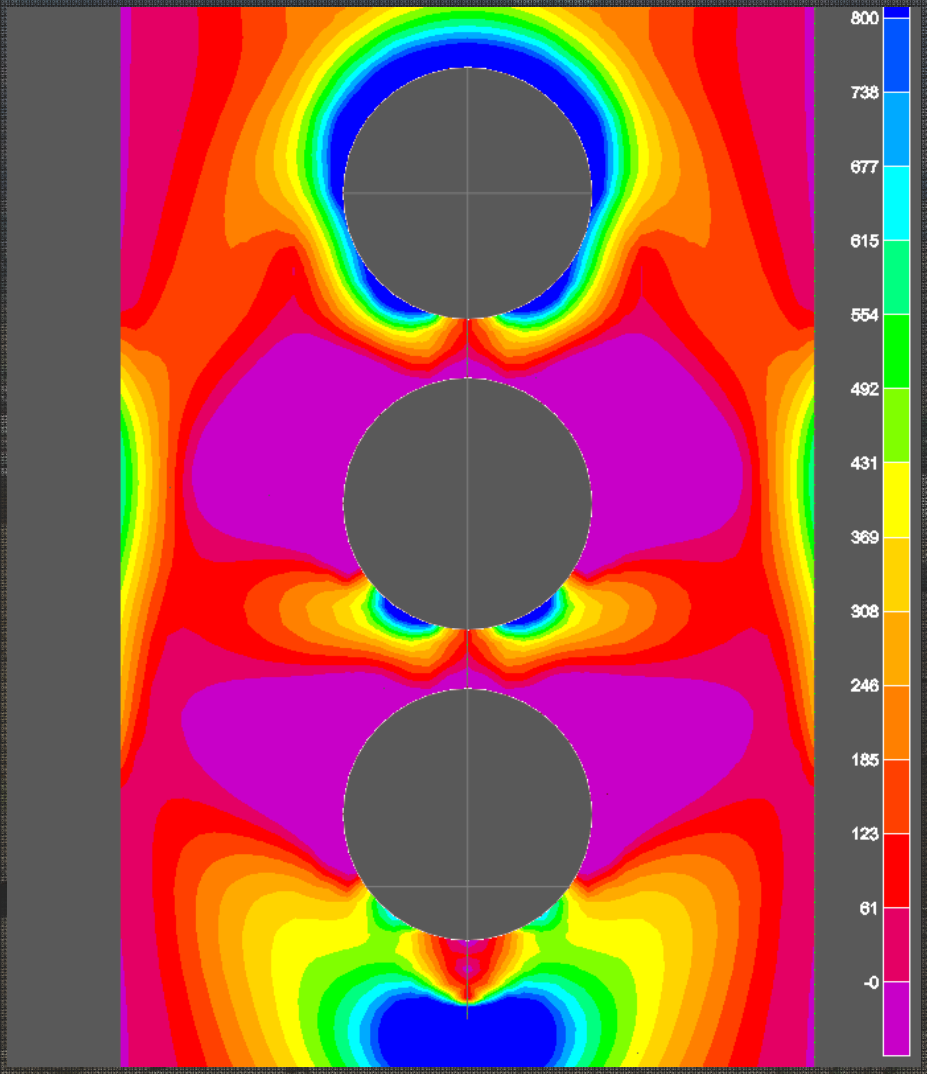
Tendon Loads + Air Pressure



Post-Tensioning Forces

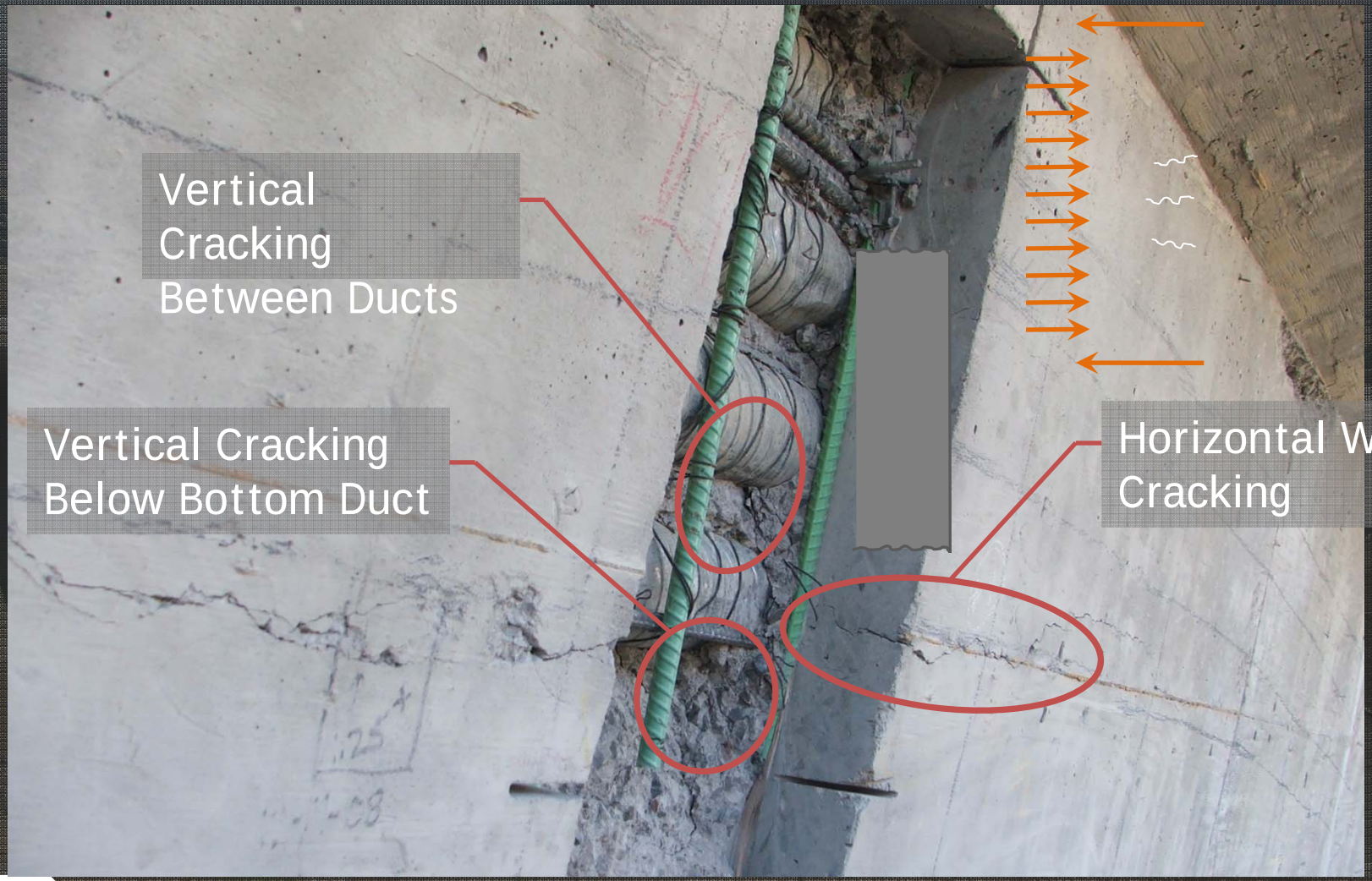
Web Cracking





Air Pressure Test Issues

Web Cracking

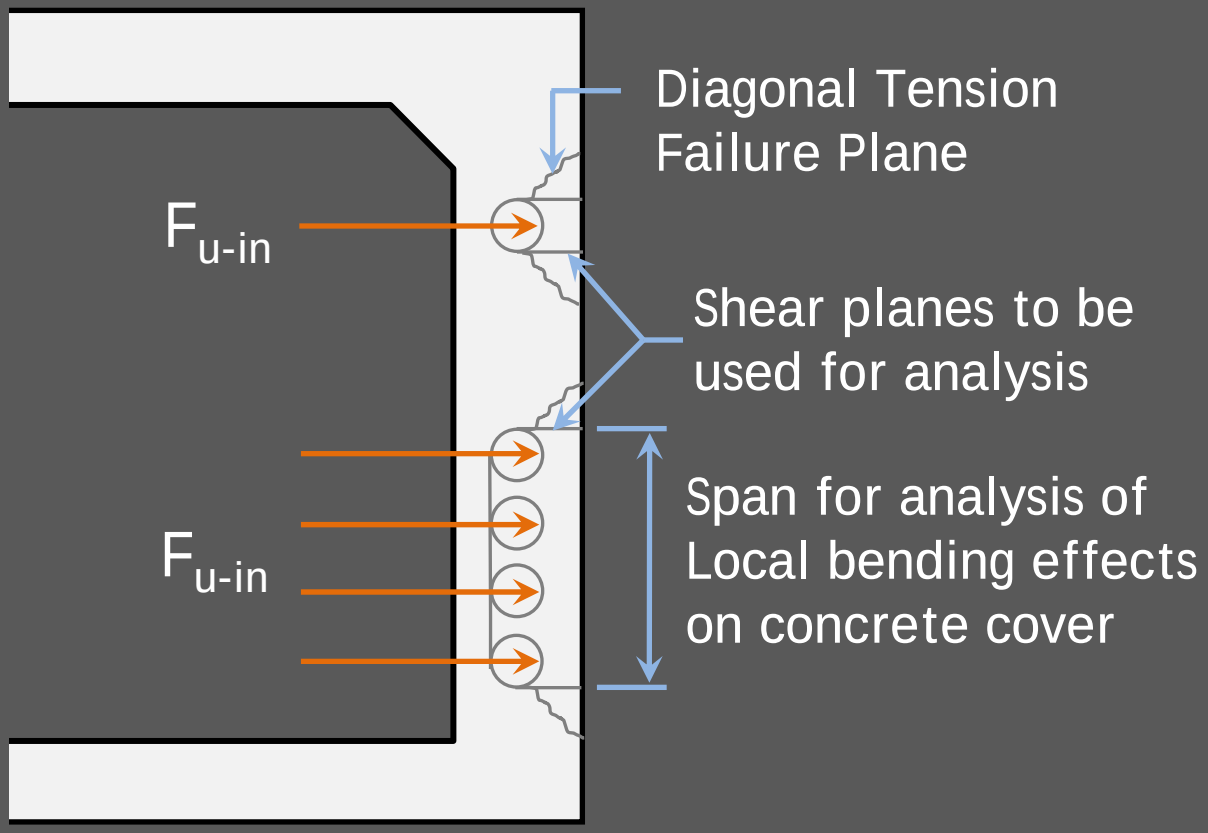


Air Pressure Test Issues

Web Cracking

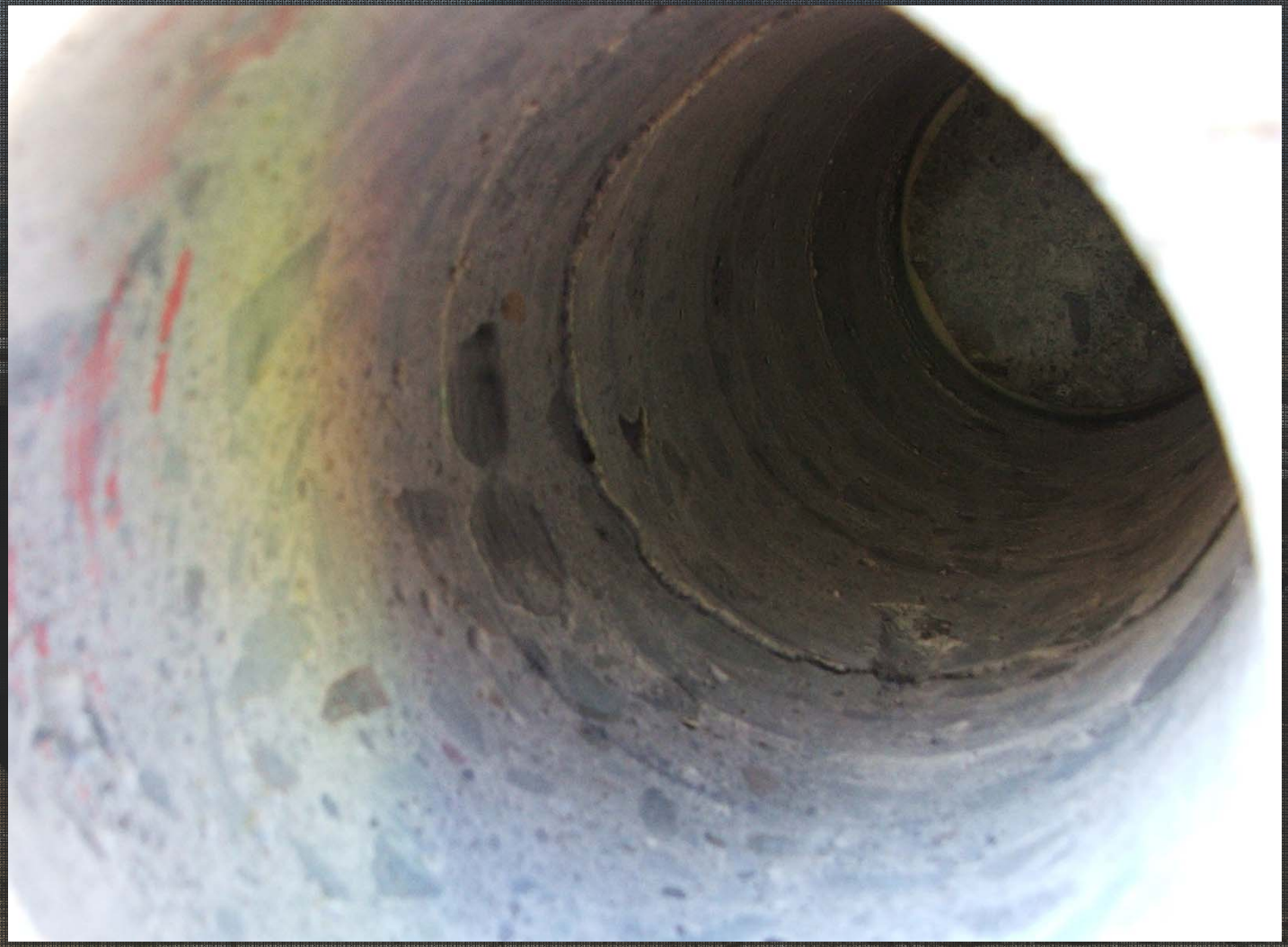
Design Changes

AASHTO LRFD Provisions



Design Changes

Tension Splitting



Design Changes

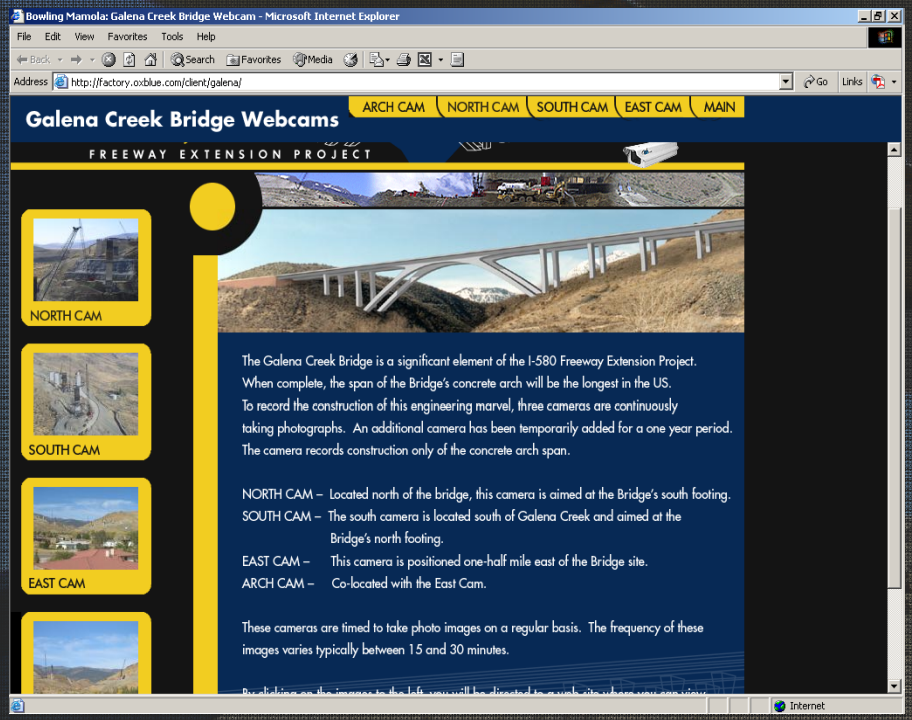
Duct Ties

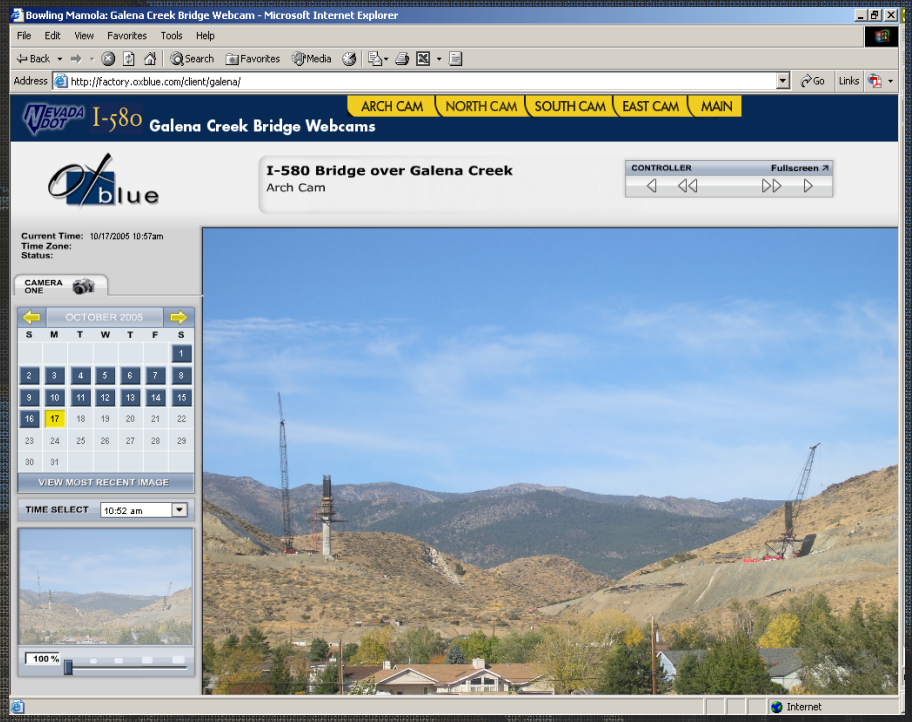
Additional Recommendations

1. Mix Grout 3 Minutes
2. Use Long Vent Tubes
3. Perform Air Pressure Mockup
4. Add Duct Ties
5. Avoid Multiple Duct Pressurization

Project Website

www.freewayextension.com





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