**PROJECT BACKGROUND**
- Proposed pedestrian bridge between two developing communities in Germany
- To develop three preliminary and two detailed structural designs

**CONSTRAINTS**
- At least one timber design
- Clear span of 24 m
- Must not impact highway or existing infrastructure/utilities
- 6-ton service vehicle load
- Canadian (CSA) and German (DIN EN) design standards

**DESIGN 1: TIMBER ARCH BRIDGE**

**OVERVIEW**
- Deformations/Stresses from RFEM (300x Exaggeration)

**ESTIMATED DURATION:** 14 Weeks Onsite

**ESTIMATED COST:** $1.42M / €967K

**STURCTURAL ANALYSIS (ARCH)**
- MAX. DEF. @ MIDSPAN: 20.7mm
- MAX. AXIAL LOAD (TF): 49kN
- MAX. MOMENT (MF): 190 kNm

**ADVANTAGES**
- Concrete deck slab with mesh reinforcement
- Corrugated steel deck
- Glulam Timber Arches: GL28h (DIN 1052:2008-12)

**DISADVANTAGES**
- Reduced Constructability
- Complex Foundation/Design
- Many/Redundant Cables Required

**CONNECTIONS**
- Arch
- Cables
- Bridge Bearings

**FOUNDATIONS**
- Micropiles
- Abutments

**DESIGN 2: TIMBER TRUSS BRIDGE**

**OVERVIEW**
- Deformations/Stresses from RFEM (300x Exaggeration)

**ESTIMATED DURATION:** 13 Weeks Onsite

**ESTIMATED COST:** $1.34M / €909K

**STURCTURAL ANALYSIS (TRUSS)**
- MAX. DEF. @ MIDSPAN: 33.6 mm
- MAX. AXIAL LOAD (TF): 1317 kN
- MAX. MOMENT (MF): 90.9 kNm

**ADVANTAGES**
- Concrete Deck Slab with Mesh Reinforcement
- Corrugated Fiber Reinforced Polymer (FRP) Deck
- Glulam Timber Chords: GL28h (DIN 1052:2008-12)
- Vertical & Diagonal Truss Members: GL24h (DIN 1052:2008-12)

**DISADVANTAGES**
- Many Connections
- Complex Member Serviceability
- Higher Approach to Deck

**CONNECTIONS**
- Gusset Plates
- Deck Studs (Patrice Godonou, 2022)
- Bridge Bearings

**FOUNDATIONS**
- Concrete Piles
- Abutments