The Aluminum Frame Erector Set is designed to be a permanent, modular, rapid build structure. The structure is 12’ tall and 16’ wide. The structures length varies from 16’ to 32’ consisting of three (3) to five (5) frames spaced 8’ apart. The structure is deployed via a pump that inflates the structure.

**ALUMINUM FRAME STRUCTURE - ERECTOR SET**

Inflatable Air Beam Structure is a one-piece rapid deployable structure. The structure is a 22'-4" wide, 25' long, and 11'-8" tall. It is composed of six (6) inflatable arches, spaced 4'-2" apart. The structure is deployed via a pump that inflates the structure.

**INFLATABLE AIR BEAM STRUCTURE**

- **20” diameter pressurized tubes spanning 20’ long.**
  
  These inflatable arches will be the structures main gravity load resisting system. The arch geometry provides great compressional strength but also creates a horizontal thrust. This thrust is resolved at the foundation via soil anchors.

**INFLATABLE PURLINS**

- 8” diameter pressurized tubes, joining arches together.

**TENSILE FABRIC**

- Membrane acts similarly to a shear wall, utilizing fibers in tension to resist in-plane lateral forces.

**TENSION CABLE & ANCHORING**

- 8” Arrowhead Anchors connected to 3/8” Stainless Steel Tension Cables.

**STRUCTURE SELECTION**

- The structure selection diagram was designed to account for two key variables: Accessibility and Urgency.

**ALUMINUM FRAME STRUCTURE - ERECTOR SET**

Gravity loads are resisted by a pretensioned woven fabric membrane which are attached to the aluminum members. These loads are then resisted by the King Post Truss Frame and Beams which sits below.

**LATERAL SYSTEM**

Lateral loads are resisted by 1/2” Dia. 1x19 Strand Stainless Steel Tension Cables. The steel cable bracing are braced to the aluminum members by looping the cable through a clevis attached to a turnbuckle which is braced to the column. All hardware was specified to be made of stainless steel to be resistant towards weathering.

- **GRAVITY SYSTEM**

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**INFLATABLE ARCHES**

**ARCH ANCHORING**

- Two (2) 36” Penetrator Anchors at Arch Base

**AIR BEAM STRUCTURE CONSTRUCTION**

- **ESTIMATED COST**: $19,495
- **ERECTION TIME**: 10 hours

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