Orbital ATK Team D3

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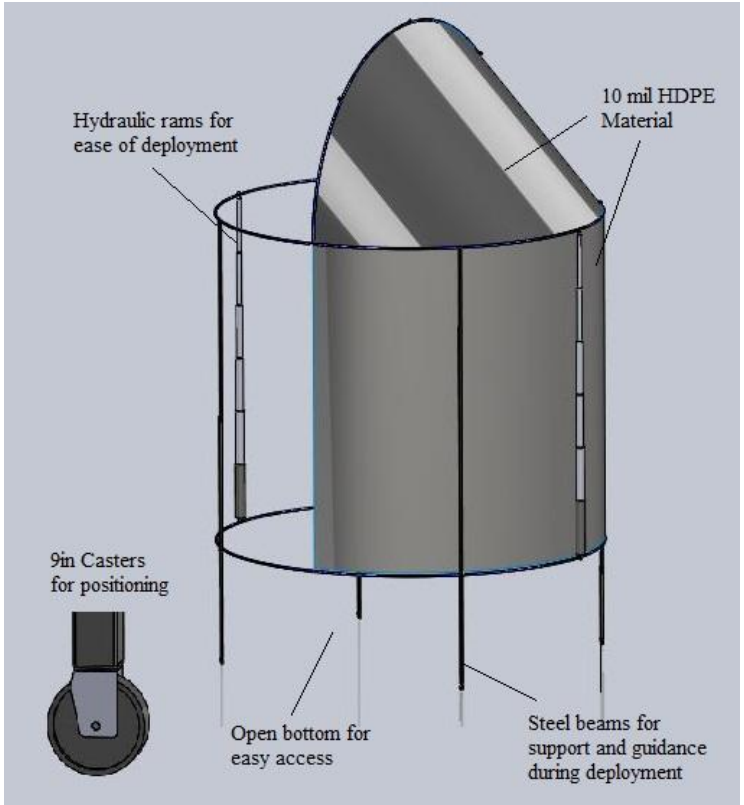
Project Description

- Client: Orbital ATK
- Project: Design an environmental enclosure for Orbital ATK’s launch vehicles
- Customer needs:
  - Quick setup and takedown
  - Protection from rain and sun
  - Durable and Safe
- Previous Designs: 10 designs narrowed down to 1 with pugh chart & decision matrix
- Current Designs: Orbital ATK has requested a presentation on 3 designs.

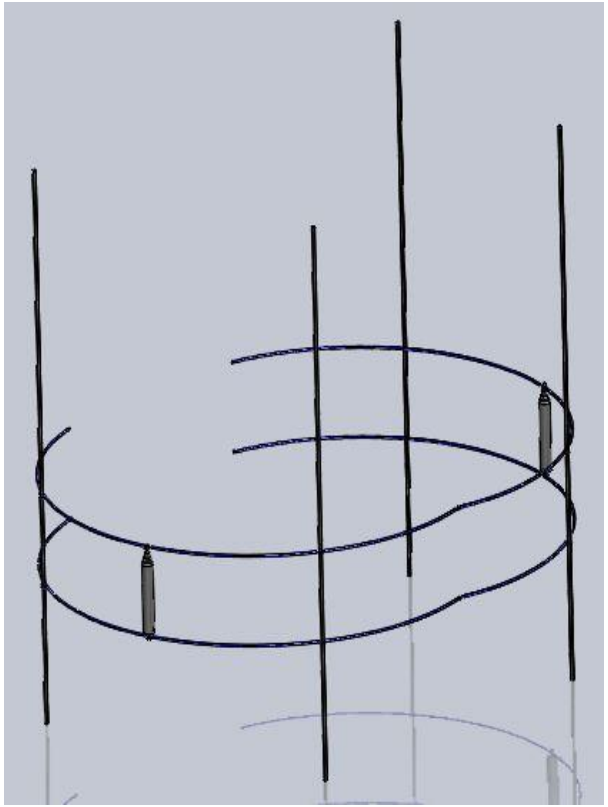
Miriam

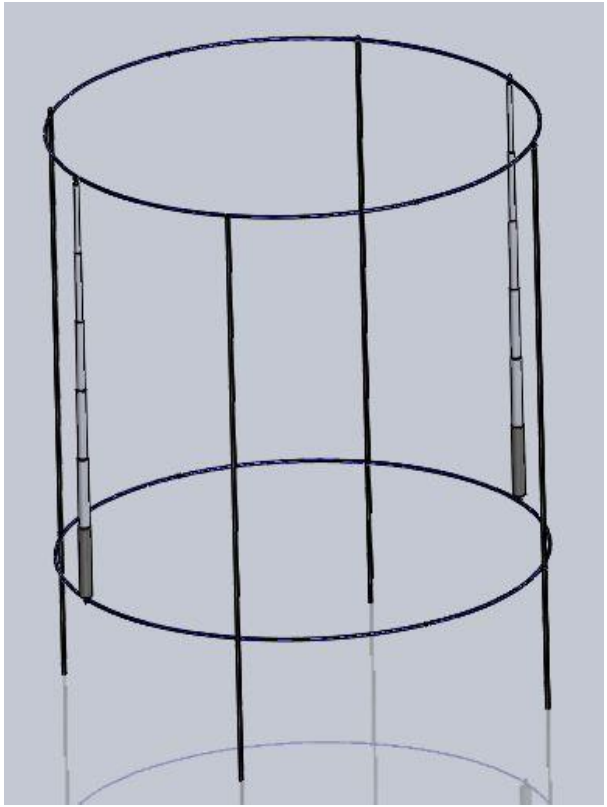
Proposed Design 1 - The Curtain

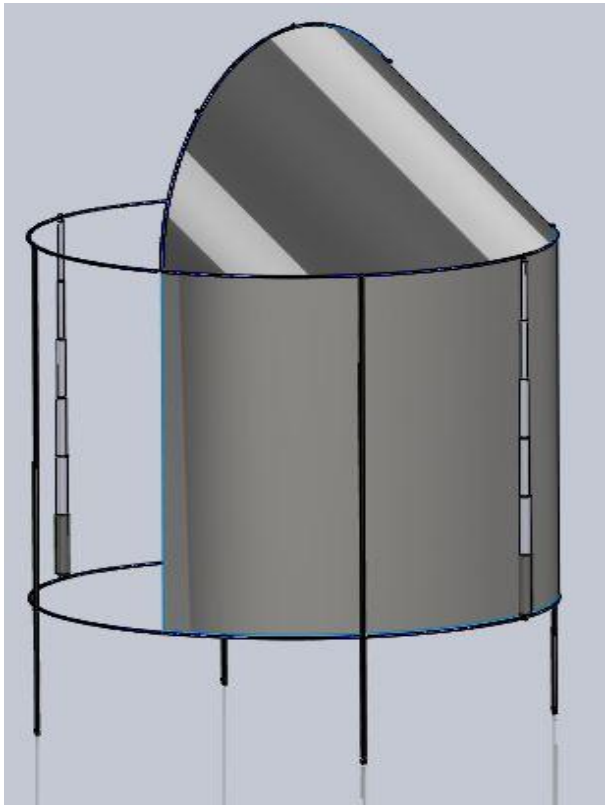
- Collapsible design for movement and storage
- Opening jaw-like system allows for easy positioning around launch vehicle
- Casters allow enclosure to be rolled/towed into place
- Hydraulic rams make deployment quick and less labor intensive
- High Density Polyethylene makes the enclosure water and sun resistant.
- 15ft high open bottom allows for easy access of vehicles and work equipment.



Proposed Design1 - The Curtain Setup



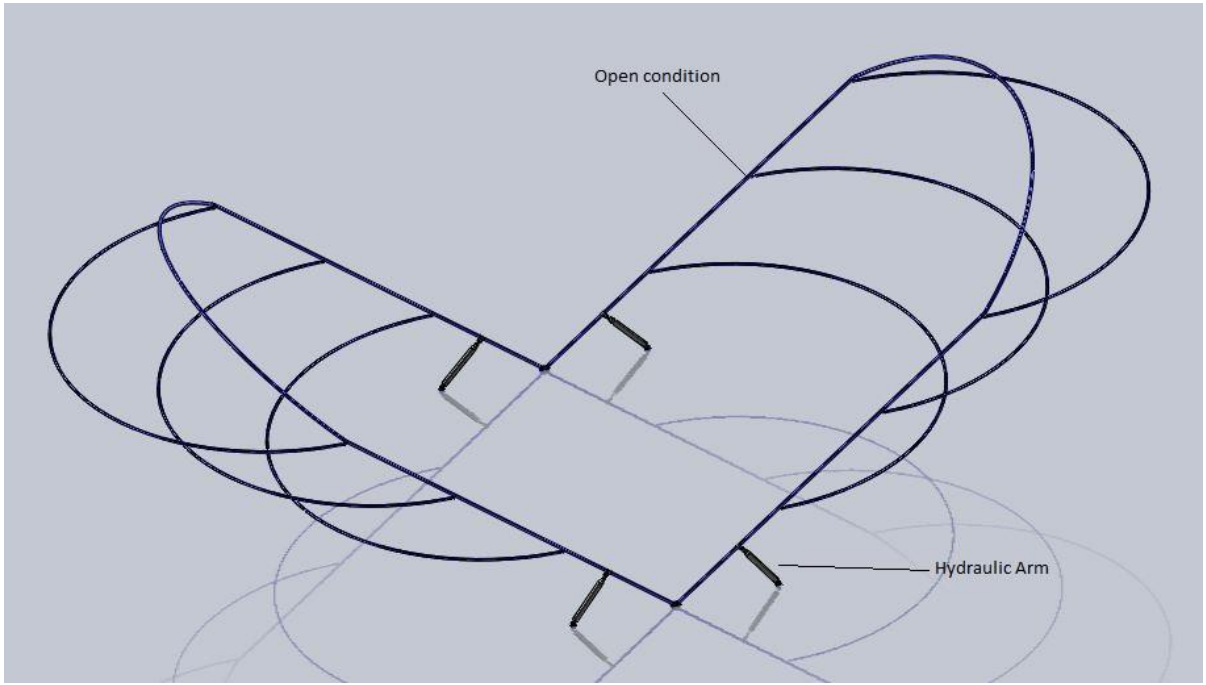




Requirements - The Curtain

- Met:
  - Accessibility
  - Time of assembly and disassembly
  - Work environment temperature
  - Solar Protection
  - Moisture Protection
  - Scaleable
- Not Met:
  - Cost
  - Lifespan
  - Ease of assembly

Proposed Design 2 - The Bear Trap

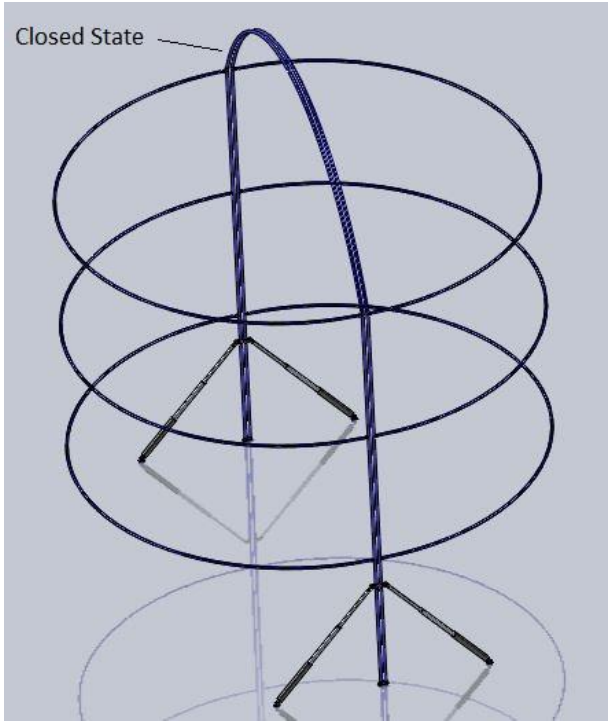


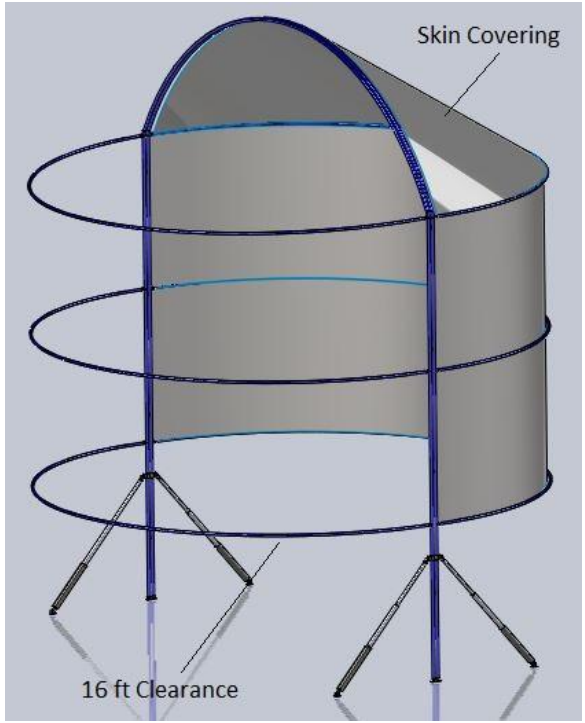
- Deployable Frame
  - Size
  - Steel
  - Large Clearances
  - Open Bottom
    - Ventilation
    - Access
- Polymer Skin
  - Light
  - Inexpensive
  - Easily Repaired

Dan

Requirements Met -The Bear Trap

- Met
  - Accessibility
  - No contact
  - Solar Protection
  - Time of Disassembly
  - Cost
  - Adaptability
- Weak Points
  - Moisture
  - Maintenance
  - Positioning
  - Anchored to Pad

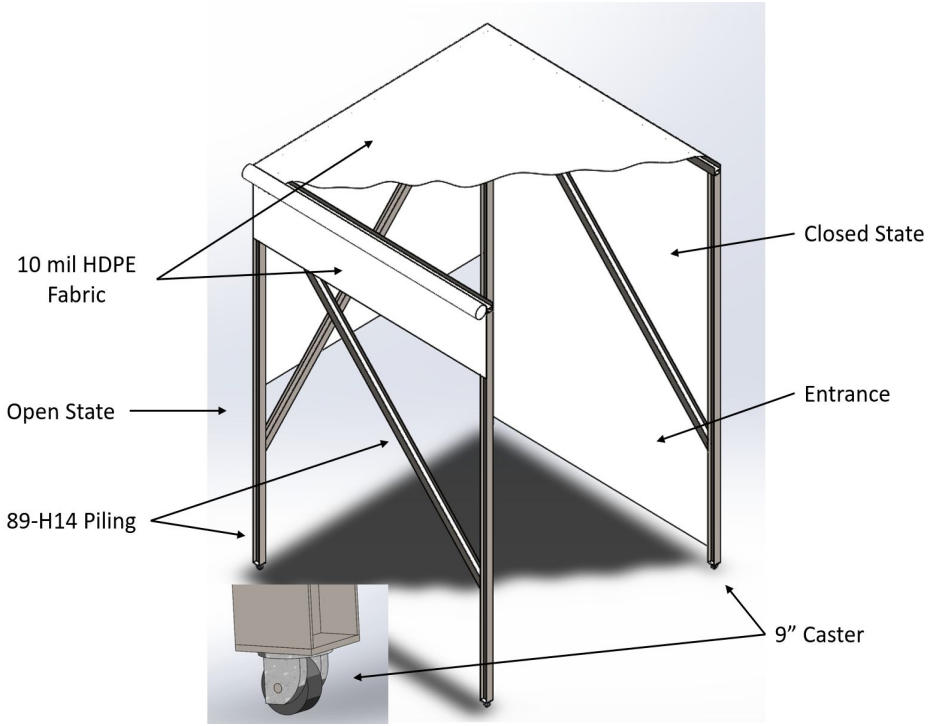




Dan

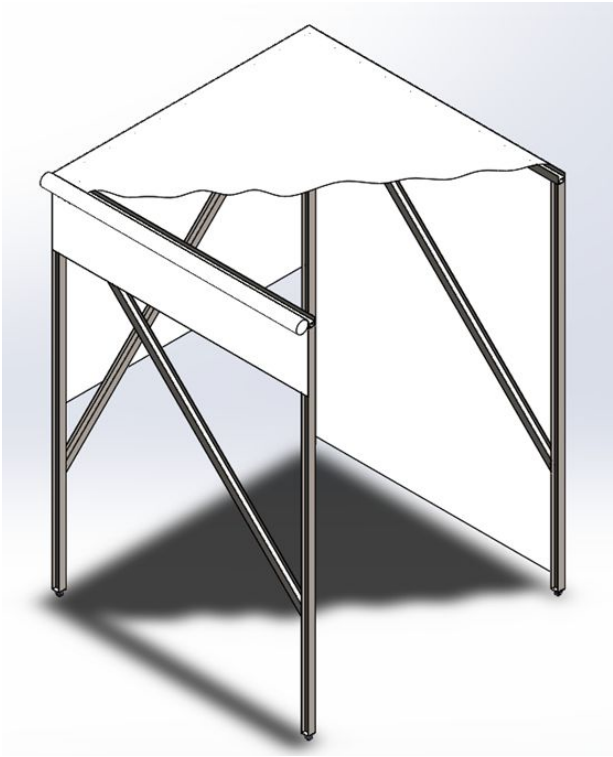
Proposed Design 3 - Rocket Awning

- Overall Dimensions: 44’ x 45’ x 65’
- Simplistic design
- Primarily constructed using High Density Polyethylene fabric and Steel piling
- Ability to be pushed/towed into position
- Siding can be manipulated via motor or human through pulley system
- Casters must lock to prevent movement along with concrete anchors.



Requirements Met - Rocket Awning

- Steel Structure Benefits
  - Safety
  - Launch Vehicle Contact
  - Durability
  - Scalability
- Adjustable Siding Benefits
  - Work Environment Temperature
  - Solar Protection
  - Moisture Protection
  - Wind Protection
- Disadvantages
  - Difficult to assemble
  - Extremely heavy (~ 16T)
  - Fabrication cost



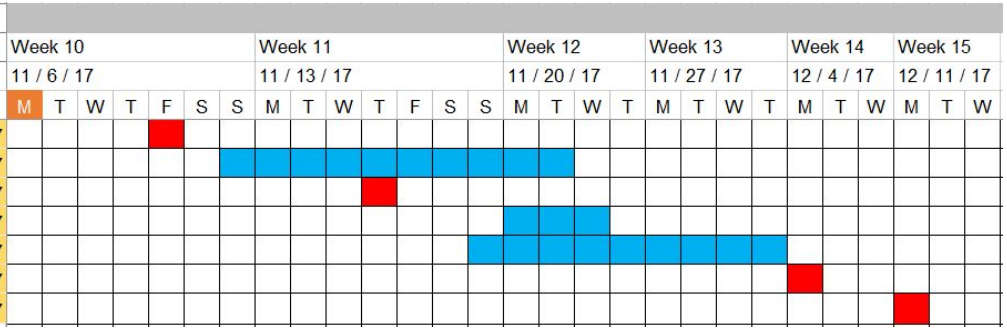
Budget

Current Budget Allocation	
Transportation	$200
Prototyping	$3,700
Testing	$1,100
Total	$5,000

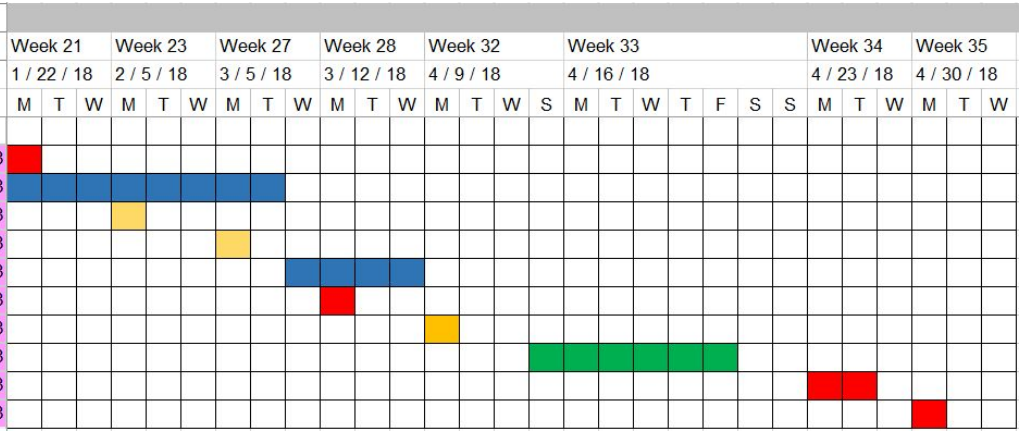
Miriam

Schedule

Project Start Date:	9/5/2017 (Tuesday)			
Display Week:	1			
Task	**Lead**	Predecessor	**Start**	**End**
Final Proposal Submittal			Fri 11/10/17	Fri 11/10/17
Prototyping			Sun 11/12/17	Tue 11/21/17
PDR			Thu 11/16/17	Thu 11/16/17
BOM			Mon 11/20/17	Wed 11/22/17
CAD			Sun 11/19/17	Thu 11/30/17
Full Prototype, BOM, & CAD Package			Mon 12/04/17	Mon 12/04/17
Final Proposal Revision Submittal			Mon 12/11/17	Mon 12/11/17



Project Start Date:	9/5/2017 (Tuesday)			
Display Week:	1			
Task	**Lead**	Predecessor	**Start**	**End**
Phase 3: Spring 2018				
CDR			Mon 1/22/18	Mon 1/22/18
Construction			Tue 1/23/18	Tue 3/06/18
Hardware Review I			Mon 2/05/18	Mon 2/05/18
Hardware Review II			Mon 3/05/18	Mon 3/05/18
Testing			Wed 3/07/18	Sun 4/08/18
Midpoint Presentation			Mon 3/12/18	Mon 3/12/18
Final Product Testing Proof			Mon 4/09/18	Mon 4/09/18
UGRADS Practice			Mon 4/16/18	Fri 4/20/18
UGRADS			Mon 4/23/18	Tue 4/24/18
Final Report & CAD Package			Mon 4/30/18	Mon 4/30/18



Miriam

Questions?