Kennedy Space Center
Center Operations Directorate

Co-op Showcase – Summer 2012

By: Kevin Ricksecker

Introduction

- Attending the University of Central Florida (UCF)
- Working towards Bachelors degree in Mechanical Engineering
- Starting junior year in Fall of 2012
- Plan to graduate at the end of 2014
- Working in the Mechanical / Electrical Branch of Construction of Facilities (TA-B3B) as a co-op since January of 2012

Background

- Interned in the Fluid Testing and Technology Development Branch (NE-F6) Summer of 2011
- Worked under James Fesmire

*Cryogenics TestLab at KSC

*liquid nitrogen tank

Background

Cup Cyrostat

Insulation of Cryogenic Piping

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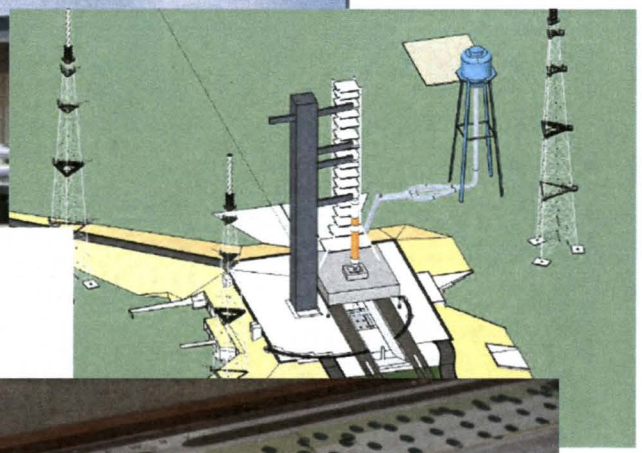
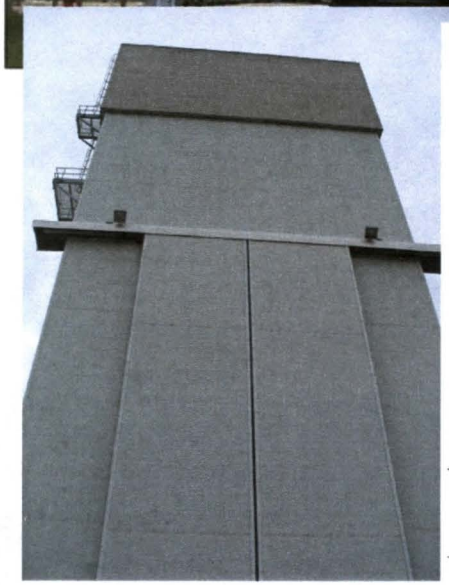
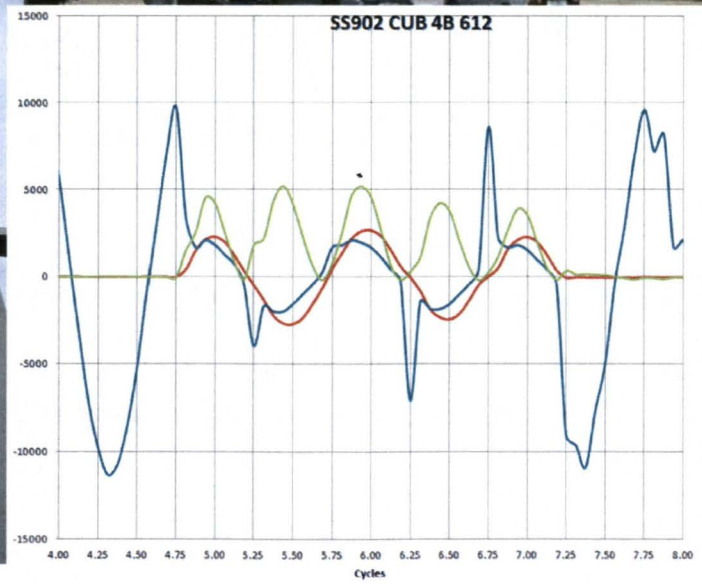
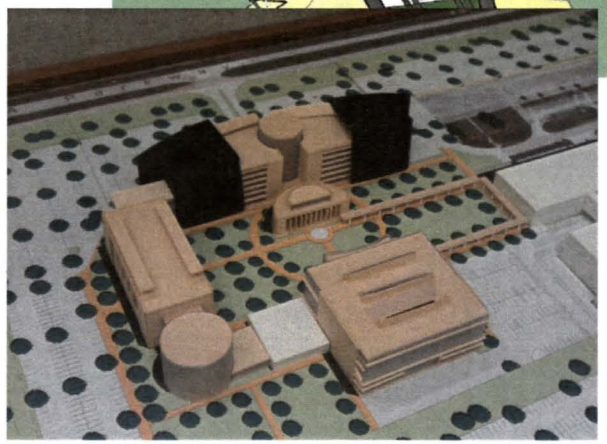
Construction of Facilities

- Worked under Nick Rivieccio
- Vital department that affects the entire center



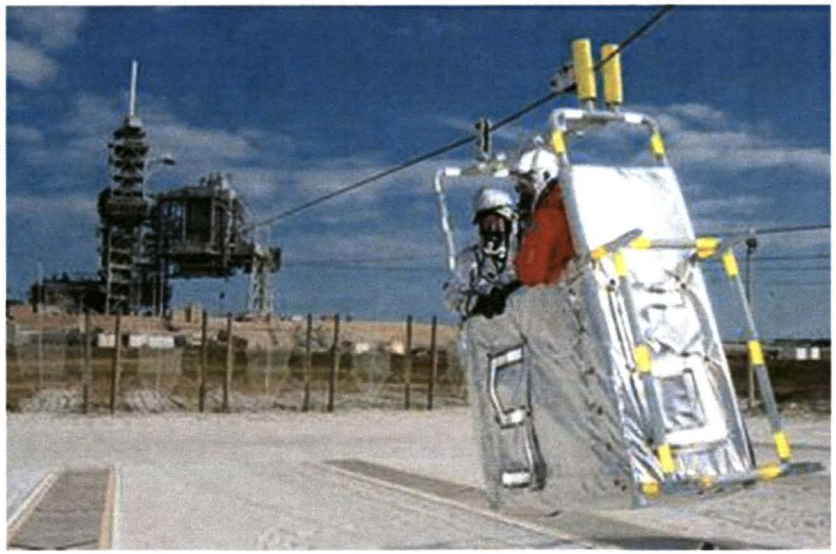






Emergency Egress System

- Needed to replace old egress system of the baskets on slide wires
- Design of an egress system that can be used for different types of vehicles at different heights



Emergency Egress System

Brainstorming:

Drop Cart

Zip-Line

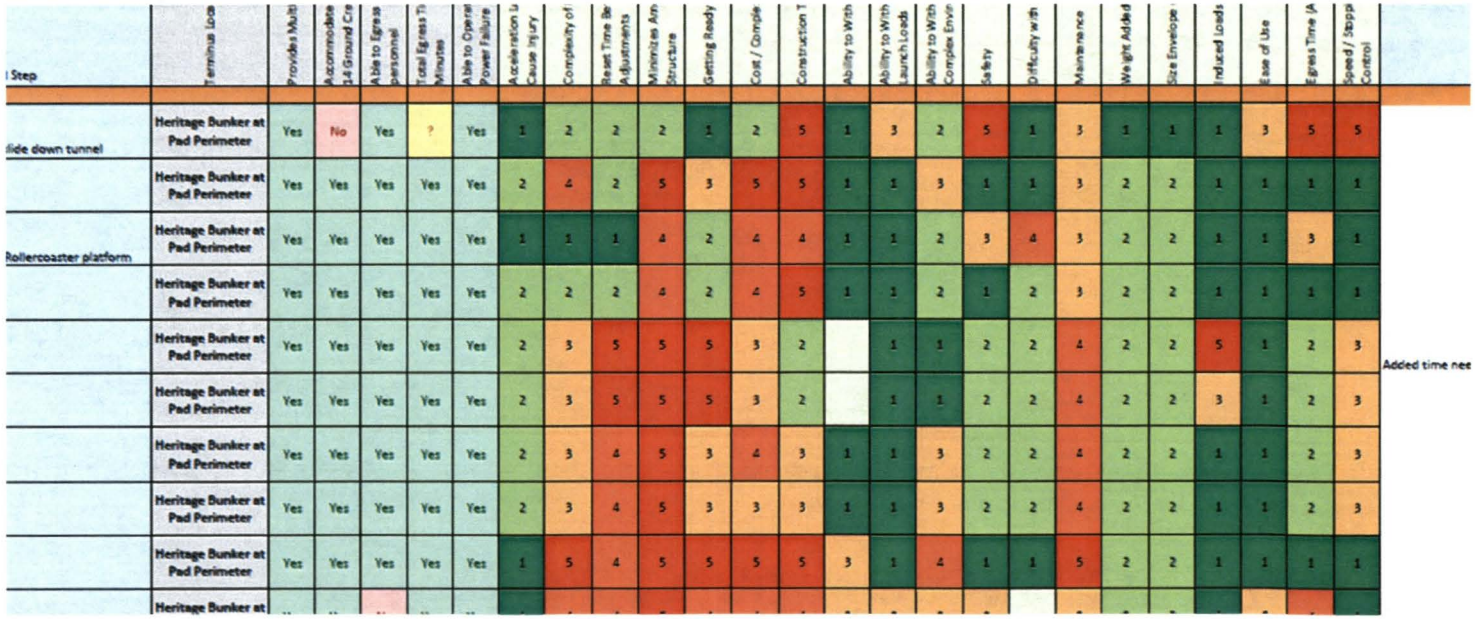
Slide

Hang Gliding

Base Jumping

Emergency Egress System

- Direct to Bunker
- Vertical to Tunnel
- Two Steps to Bunker
- Other

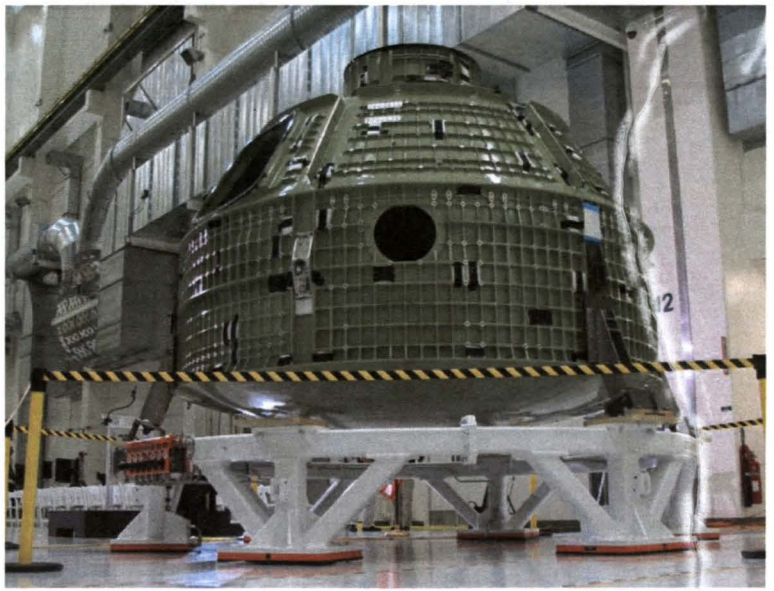


Step	Terminus Loca	Provides Multi	Accommodate 14 Ground Cre	Able to Egress personnel	Total Egress Ti Minutes	Able to Operat Power Failure	Acceleration Cause Injury	Complexity of	Reset Time Be Adjustments	Minimizes Am Structure	Getting Ready	Cost / Comple	Construction T	Ability to With	Ability to With Launch Loads	Ability to With Complex Envir	Safety	Difficulty with	Maintenance	Weight Added	Size Envelope	Induced Loads	Ease of Use	Egress Time (A	Speed / Stopp Control	
lide down tunnel	Heritage Bunker at Pad Perimeter	Yes	No	Yes	?	Yes	1	2	2	2	1	2	5	1	3	2	5	1	3	1	1	1	3	5	5	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	4	2	5	3	5	5	1	1	3	1	1	3	2	2	1	1	1	1	
Rollercoaster platform	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	1	1	1	4	2	4	4	1	1	2	3	4	3	2	2	1	1	3	1	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	2	2	4	2	4	5	1	1	2	1	2	3	2	2	1	1	1	1	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	3	5	5	5	3	2		1	1	2	2	4	2	2	5	1	2	3	Added time nee
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	3	5	5	5	3	2		1	1	2	2	4	2	2	3	1	2	3	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	3	4	5	3	4	3	1	1	3	2	2	4	2	2	1	1	2	3	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	2	3	4	5	3	3	3	1	1	3	2	2	4	2	2	1	1	2	3	
	Heritage Bunker at Pad Perimeter	Yes	Yes	Yes	Yes	Yes	1	5	4	5	5	5	5	3	1	4	1	1	5	2	2	1	1	1	1	
	Heritage Bunker at																									

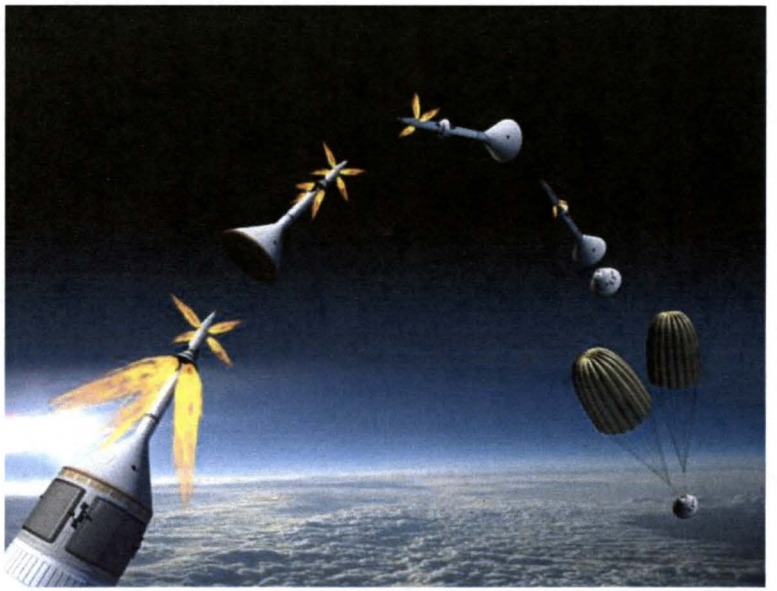
*example of final analysis

Canister Rotation Facility (CRF)

- Was used to rotate a Space Shuttle payload canister and the payloads it houses
- Modify the CRF for testing Exploration Flight Test 1's (EFT-1) Launch Abort System (LAS)



*Orion capsule



*EFT-1's LAS

Canister Rotation Facility (CRF)

- Helped with the contract changes between the A&E contractor, construction contractor, and the government
- Participated in the construction management and and recorded the meetings' minutes
- Participated in site visits to verify work and requirements
- Assisted TA-B3 engineers in various other tasks

Canister Rotation Facility (CRF)

- Completed Phase 1 construction early May of 2012
- Working on activation / turn over of the facility now

Ascent Weather Systems Facility

- Assigned as the Lead Design Engineer (LDE)
- Project given to TA-B3 co-ops
- Create a support facility for the Ascent Weather Profiler

Ascent Weather Systems Facility

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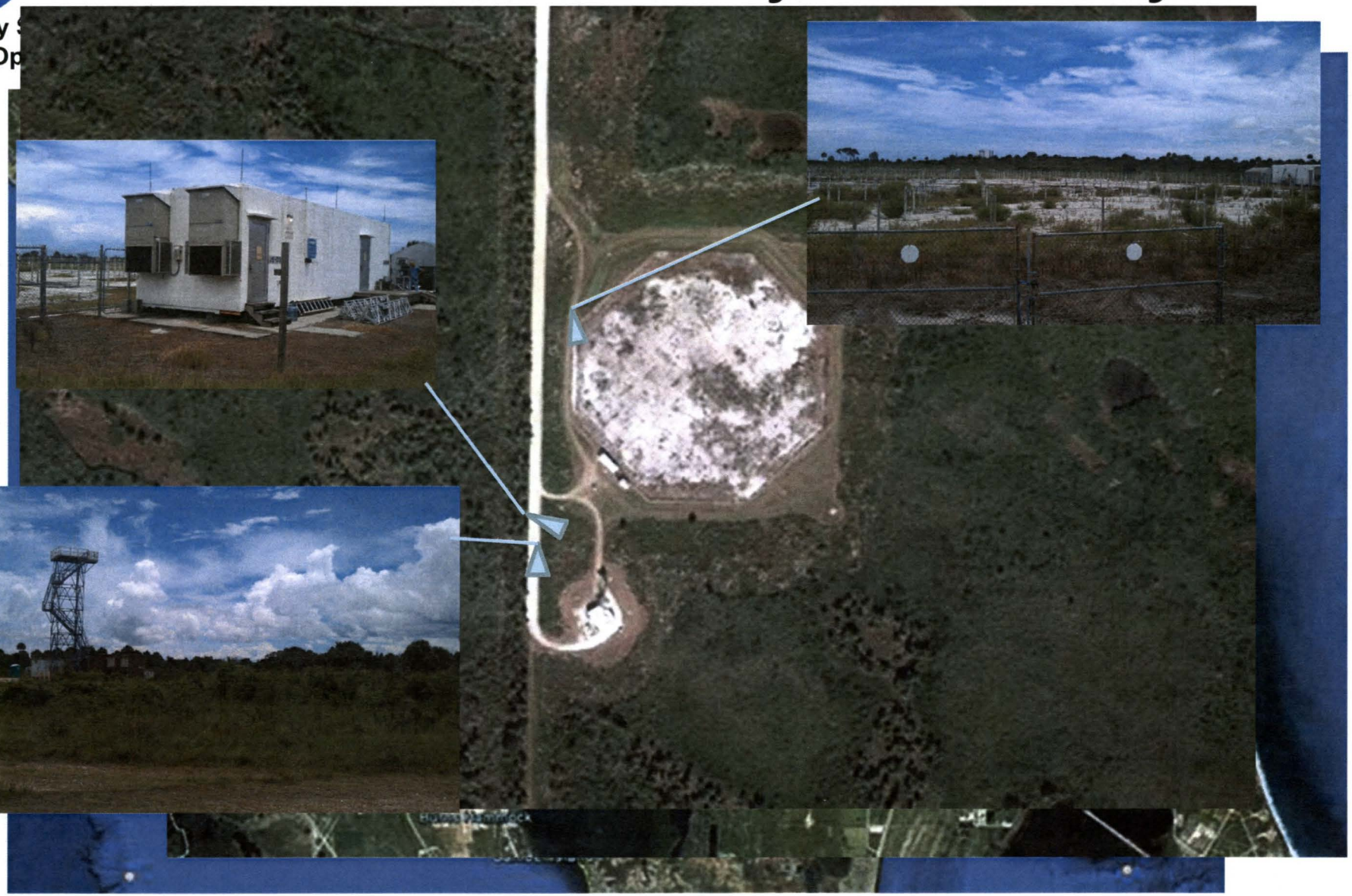

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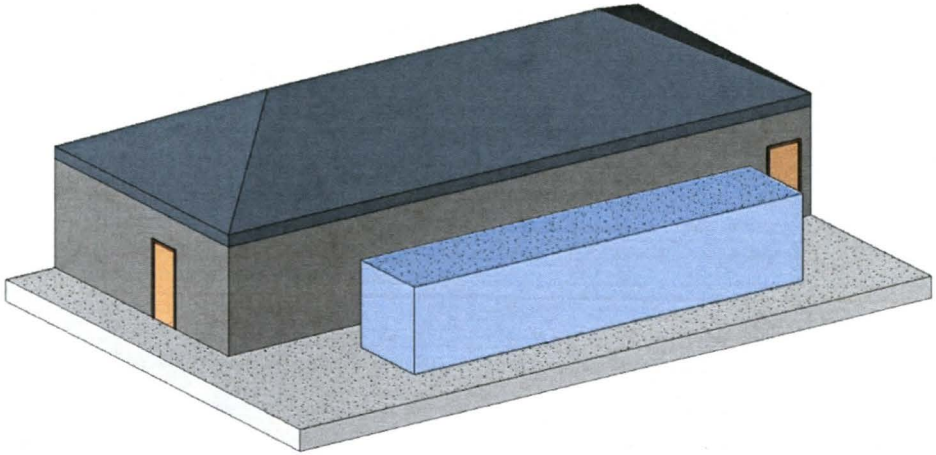
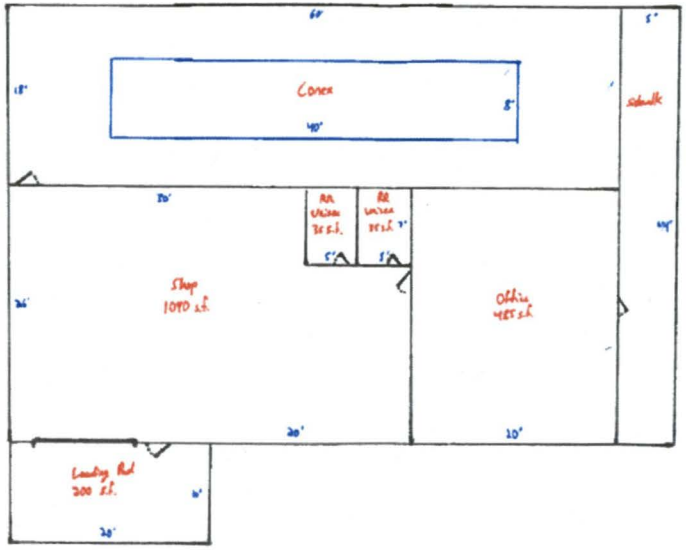
Ascent Weather Systems Facility

- Complete the items in the Construction of Facilities Project Checklist
- Complete the Statement of Work and requirements for the contractor
- Have project moving towards the procurement stage by the end of my rotation



*example of AWSF (3D view)



*example of AWSF floor plan

Outreach

All American Picnic

Lunabotics Mining Competition

Conclusion

- Learned about engineering project management
- Learned about specifying requirements and meeting those requirements the most efficient way
- Learned how to effectively work with contractors
- Real world experience that used what I have learned in school and will help me in my future schoolwork

Questions/Comments

Questions or comments?