

I PRO 341

NEW PRODUCT EVALUATION AND IMPROVEMENT

SPONSORED BY:

VERSATILITY TOOL WORKS
& MANUFACTURING COMPANY

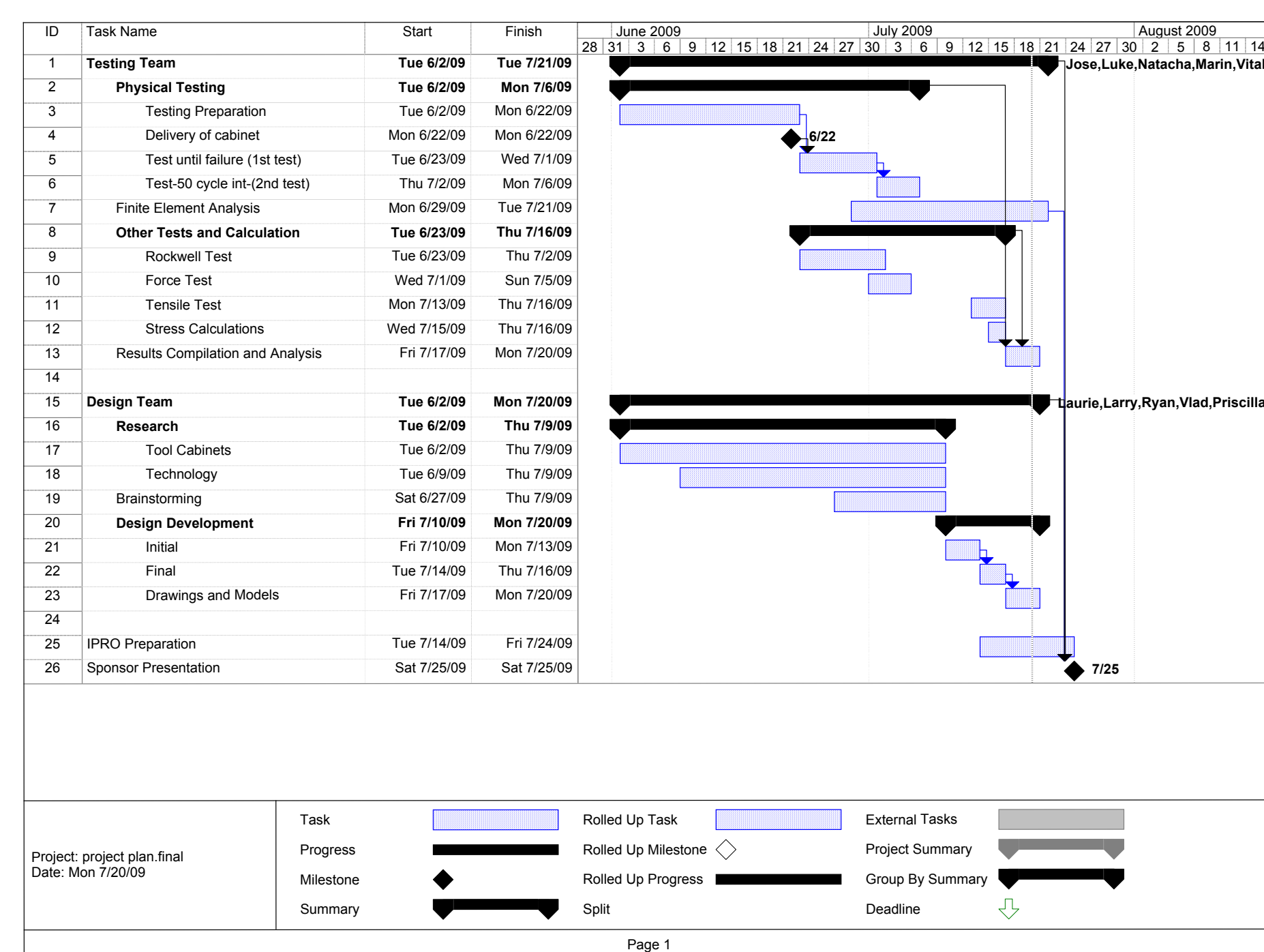
Background

- Sponsor: Versatility Tool Works and Manufacturing (VTW)
- Small metal works company based in Alsip, Illinois.
- Company has started producing tooling cabinets.
- Problems concerning the life span and durability of the tool cabinets.
- IPRO continuation from last semester
- issues concerning the previous design were determined and corrected.
- IPRO this semester
- dealing with an improved design
- very different than last semester

Objectives

- Test new cabinet design
- ensure cabinet functionality
- determine life span (weight and cycle threshold)
- Identify weak points and design failures
- Develop innovative ideas for a next generation tool storage cabinet.
- different tool storage concept
- be unique and functional at the same time

Gantt Chart



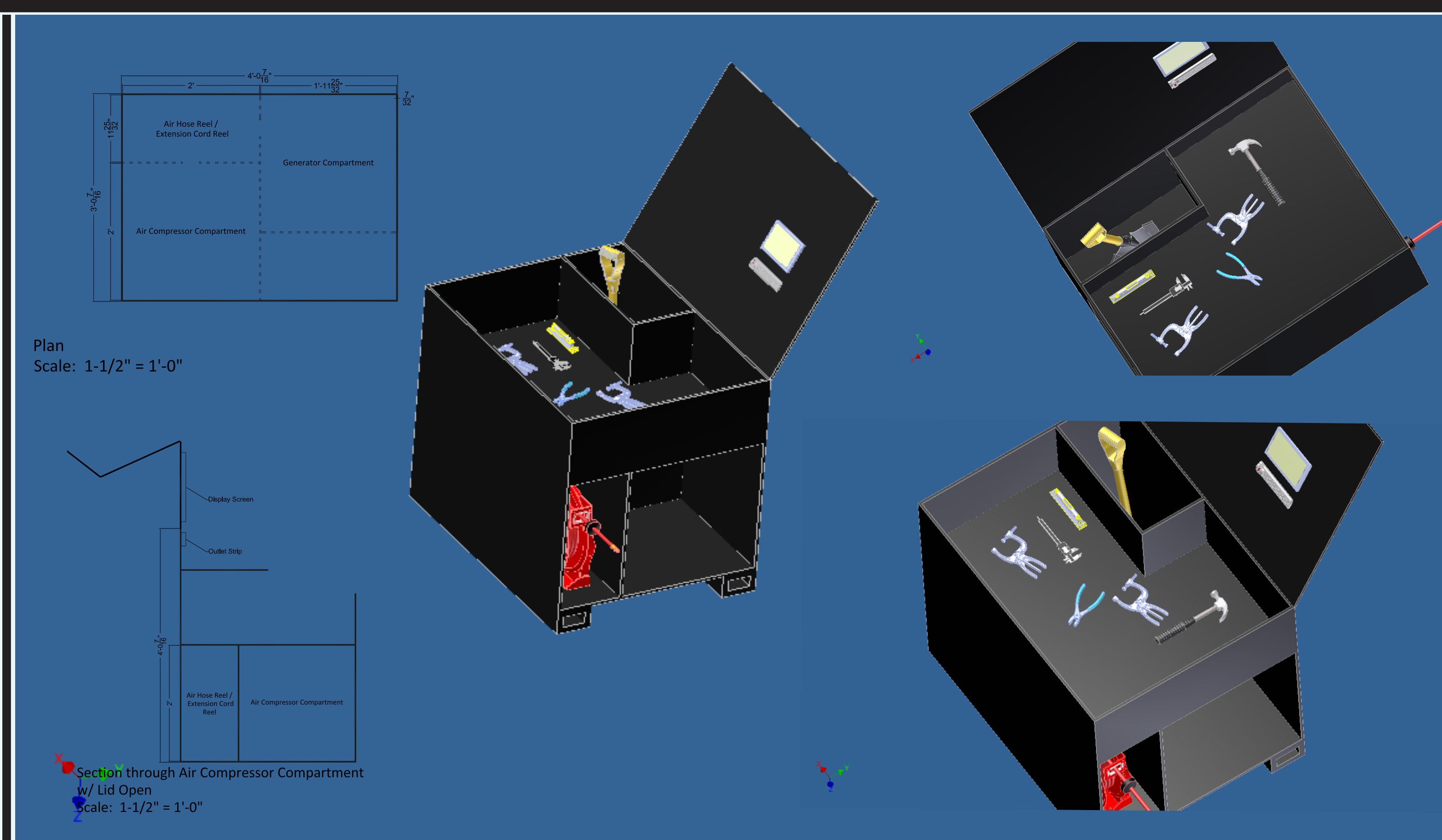
Design

Jobsite Box

- Benefits :**
- Built in compressor and generator
 - Decreases theft by locking movable tools to the box
 - Can store different sizes and shapes of tools, as well as other types of tools not normally found in regular tool boxes.
 - It is desirable that appliances and tools that are widely used by tradesmen on the work side, are integrated into the bottom portion of the tool box.
 - Provides way of breaking into new market.
 - No drawers involved, which means less design issues to be found.

Disadvantages :

- Just changing existing product
- The generator and air compressor can cause unwanted vibrations in the job site storage unit.
- Cost Effectiveness



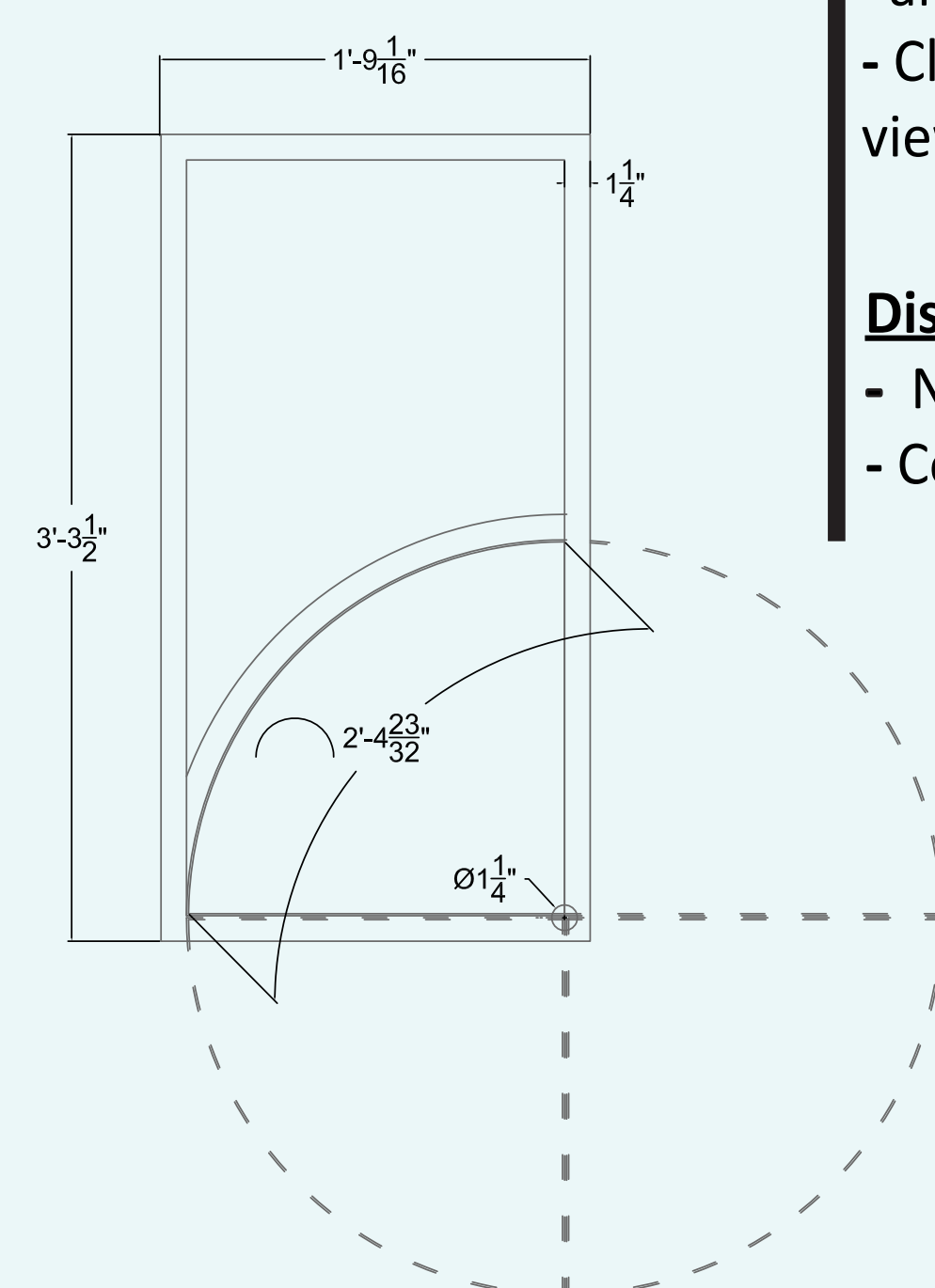
Combination Box

Benefits :

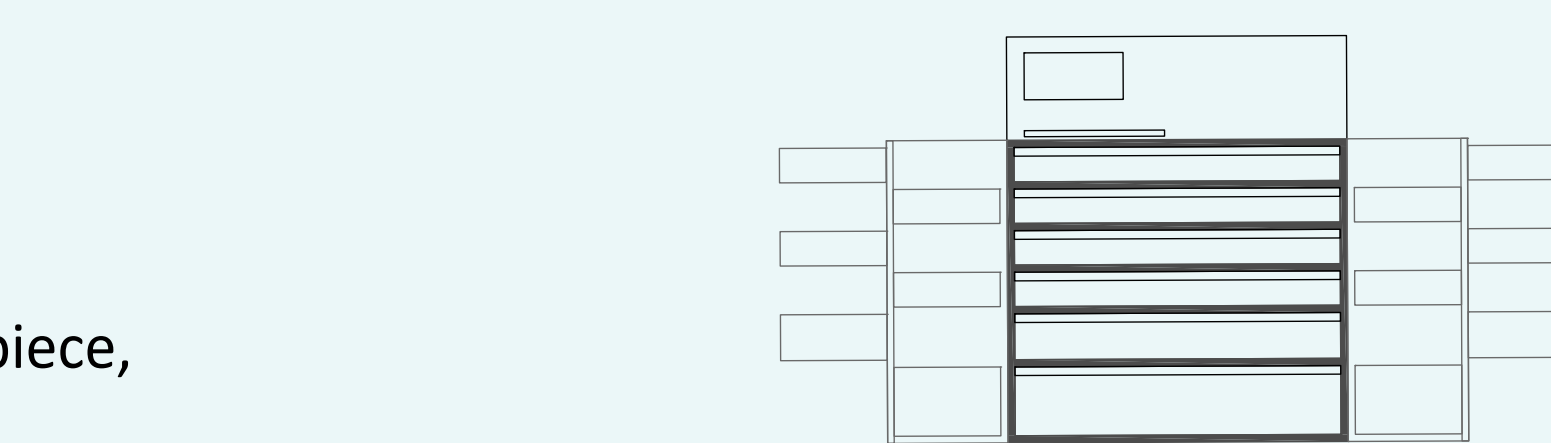
- Easy access
- It can be utilized as an end piece, Wastes no space
- Storage for different geometric shapes and long pipes or pieces
- Close to current VTW design, can be viewed as an add-on.

Disadvantages :

- Not a radical idea
- Cost effectiveness

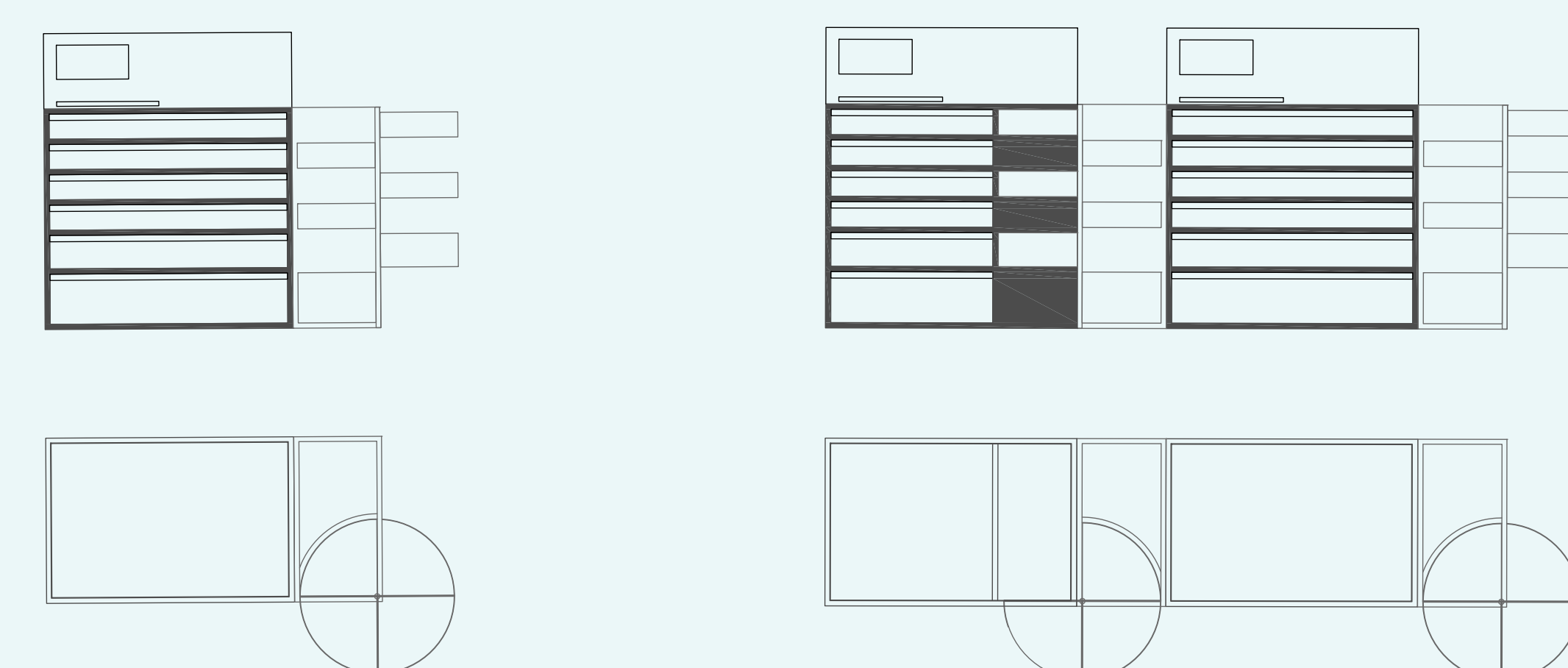


Plan of Rotary Component w/ Open Drawers Scale: 1-1/2" = 1'-0"



Typical Configuration Scale: 1/2" = 1'-0"

Double Rotary Configuration Scale: 1/2" = 1'-0"



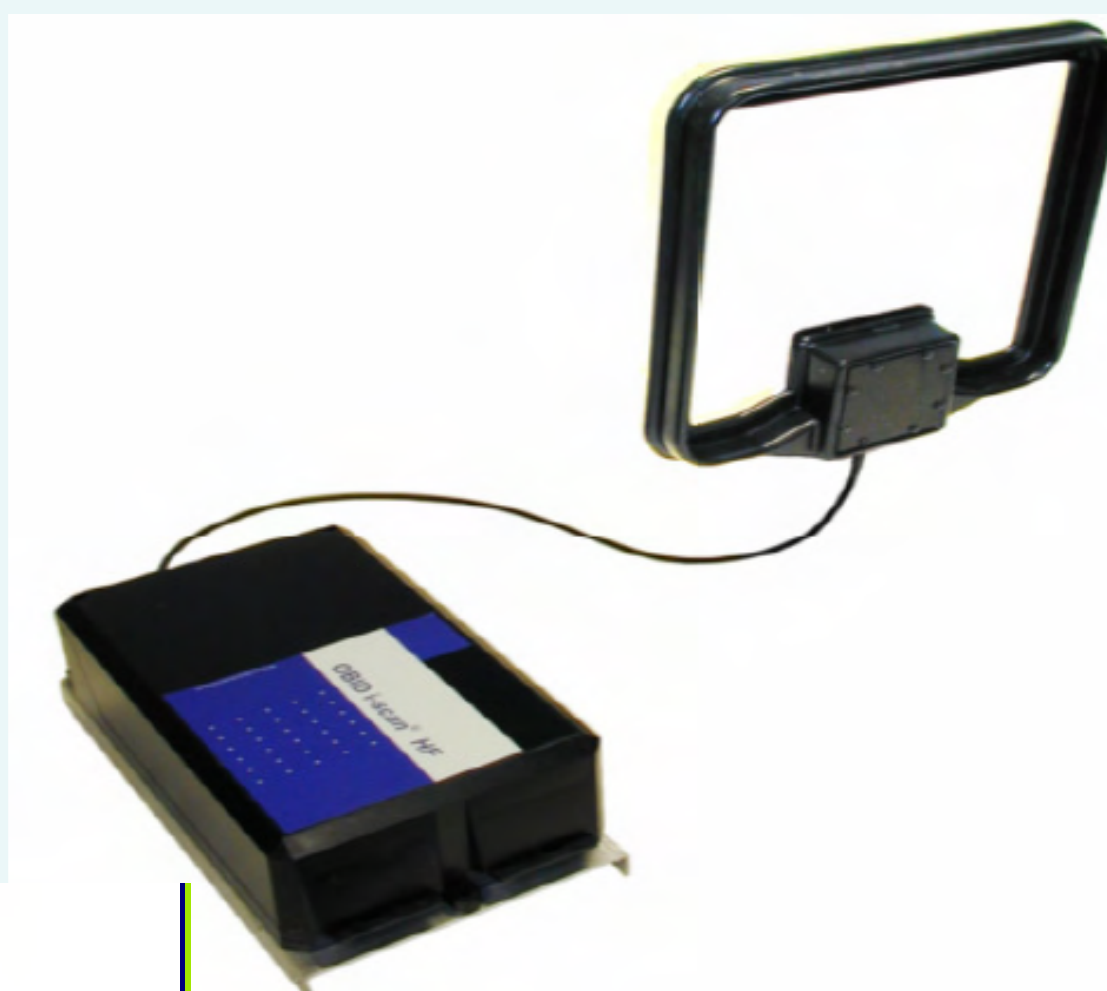
Continuous Configuration Scale: 1/2" = 1'-0"

Design

RFID: Radio Frequency Identification

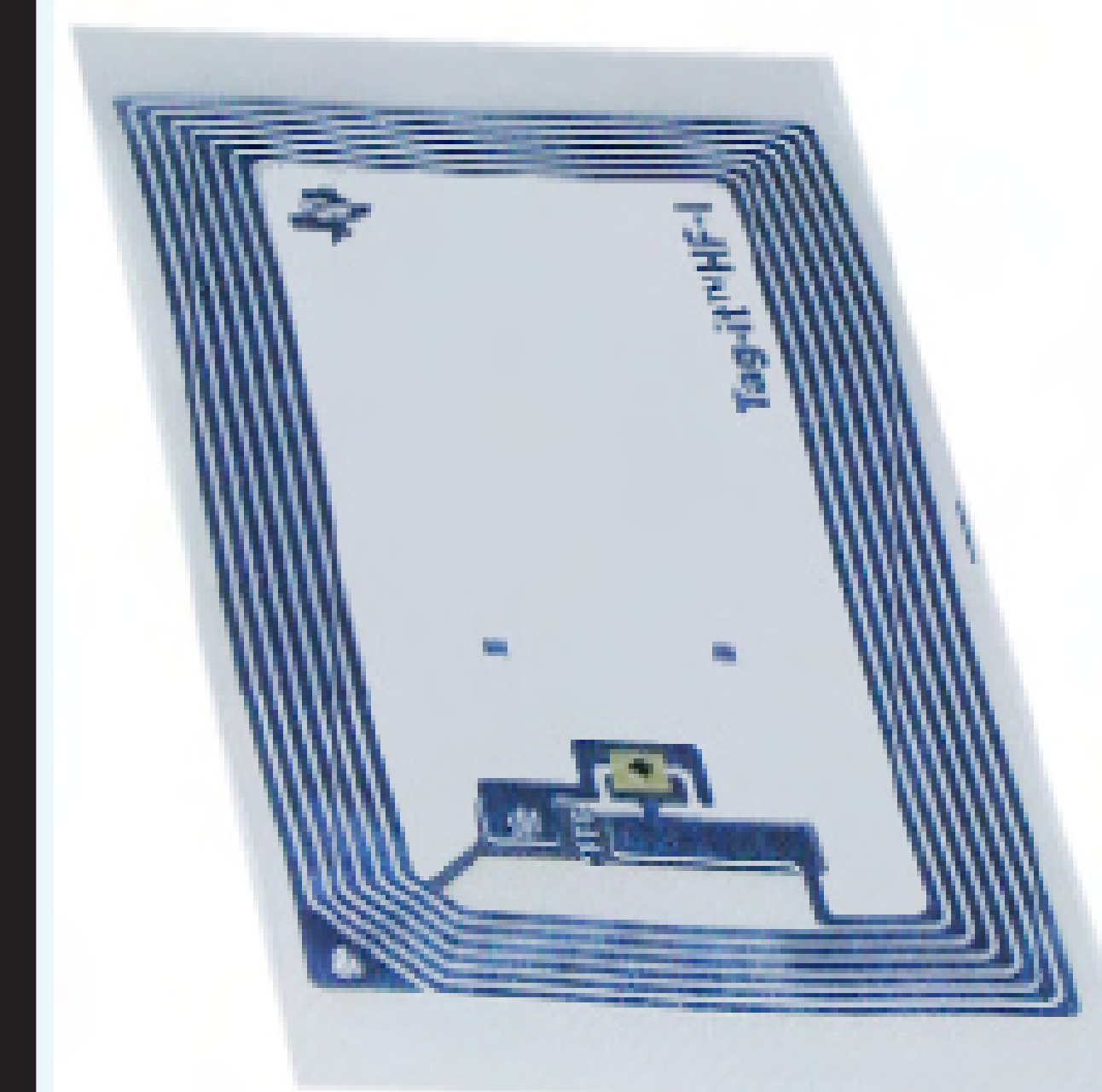
Benefits :

- Locks up expensive equipment, allows only specific personnel to access tools
- tracks expensive equipment
- provide insight into process/product design as well as more accurate managerial accounting
- being able to locate which drawer contains the appropriate part
- can decrease wear by eliminating the extra use of opening the wrong drawer



Disadvantages :

- cost effectiveness
- there are a lot of little additions that can be made using RFID and some computing device
- perception of benefits by customers
- effectiveness of RFID with so much metal around



Conclusions

Testing

- Resulted in premature deformation.
- Increasing the number of bearings will distribute the load, and with more contact points, it will take longer to fail.
- Inner slides deformed, as well as a small part of the slide assembly.
- Thicker parts are recommended so as to increase the stiffness.
- Strong and stiffer materials can be chosen to also address both problems.

Design

- Multi-purpose toolboxes.
- Jobsite Tool Cabinet
 - not only holds tools, but also holds a compressor, power chords, and other useful equipment would make the toolbox a one-stop storage for all your needs.
- Combination Toolbox
 - both circular and rectangular drawers
 - can connect corners, end pieces, and mid-sections of a row of tool cabinets
 - most versatile
 - Complications with manufacturing.
- RFID
 - Useful
 - Complications with manufacturing.

Aknowledgments

- | | | |
|---------------------|----------------------------------------|--------------------------|
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