

The Design Process

1. Review the Identified Problem
2. Define the Problem and Write a Problem Statement
3. Analyze the Problem using Investigative Methodology
4. Gather data to formulate:
 1. A criteria list
 2. A constraints list
5. Develop Solutions
6. Evaluate each Solution against the Criteria and Constraints list and choose the Optimum Solution

Review the Identified Problem

- Before the problem can be solved group members must have an understanding of the problem
 - What are the HPPV competition rules
 - What is the competition
 - Evaluate past performance
 - Set targets



Define the Problem and Write a Problem Statement

- The Problem Statement should be as broad as possible and not restrict the solution
- An incorrect or improperly defined problem statement will cause time to be wasted and could lead to a solution that is inappropriate or incorrect
- Sample Problem Statements

Feed Distribution:

To find the most economical method of transferring feed from producer to consumer.

People Transportation:

To transfer a large number of people between their residence, their businesses, their places of recreation and their shopping locations.

Analyze the Problem using Investigative Methodology

This is the step of the problem solving process used to gather data and ask questions about the problem

- What materials are readily available
- What tools can we use/have access to
- How many hours can the team work each week
- What is our budget
- What Cad systems can we access

Gather Data to Formulate a Criteria and Constraints List

Criteria: A list that is used to compare possible solutions

Examples:

Solution must accommodate a build rate of 30 trucks per day

Material movement must be minimized

Constraints: Also used to compare possible solutions but these cannot be changed

Examples:

Project must be complete in 10 weeks

The total cost of the project cannot exceed \$30.00

Develop Solutions

- Brainstorm Solutions
 - Everyone in the team contributes and provides ideas
 - Notes are taken and no negative comments are made no matter how improbable or strange they seem
 - Group continues brainstorming until everyone in the group has had a chance to share their ideas
 - Ideas are voted as options by the team and the best ideas are reviewed for solutions

Evaluate each Solution against the Criteria and Constraints list

1. Solutions are now compared with each other based on the Criteria and Constraints list using a matrix
2. These criteria/constraints can be weighted
3. Choose optimum solution

Project Management

1. Gantt Charts

- List tasks on Y axis
- List time on X axis
- Estimate amount of time to complete each task
- Update and review Gantt Chart each week
- Shade completed task area
- Identify current date
- Review for tasks that are ahead/behind schedule

