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HRM-Design and Construction/Public Works

HALIFAX

Improving the Project Management Process at HRM

1. Problem Definition

The increasing number, size and complexity of Transportation Design and Construction (TD&C) projects result in face several complexities in the separate phases of planning and execution leading to increased delays in the project timeline.

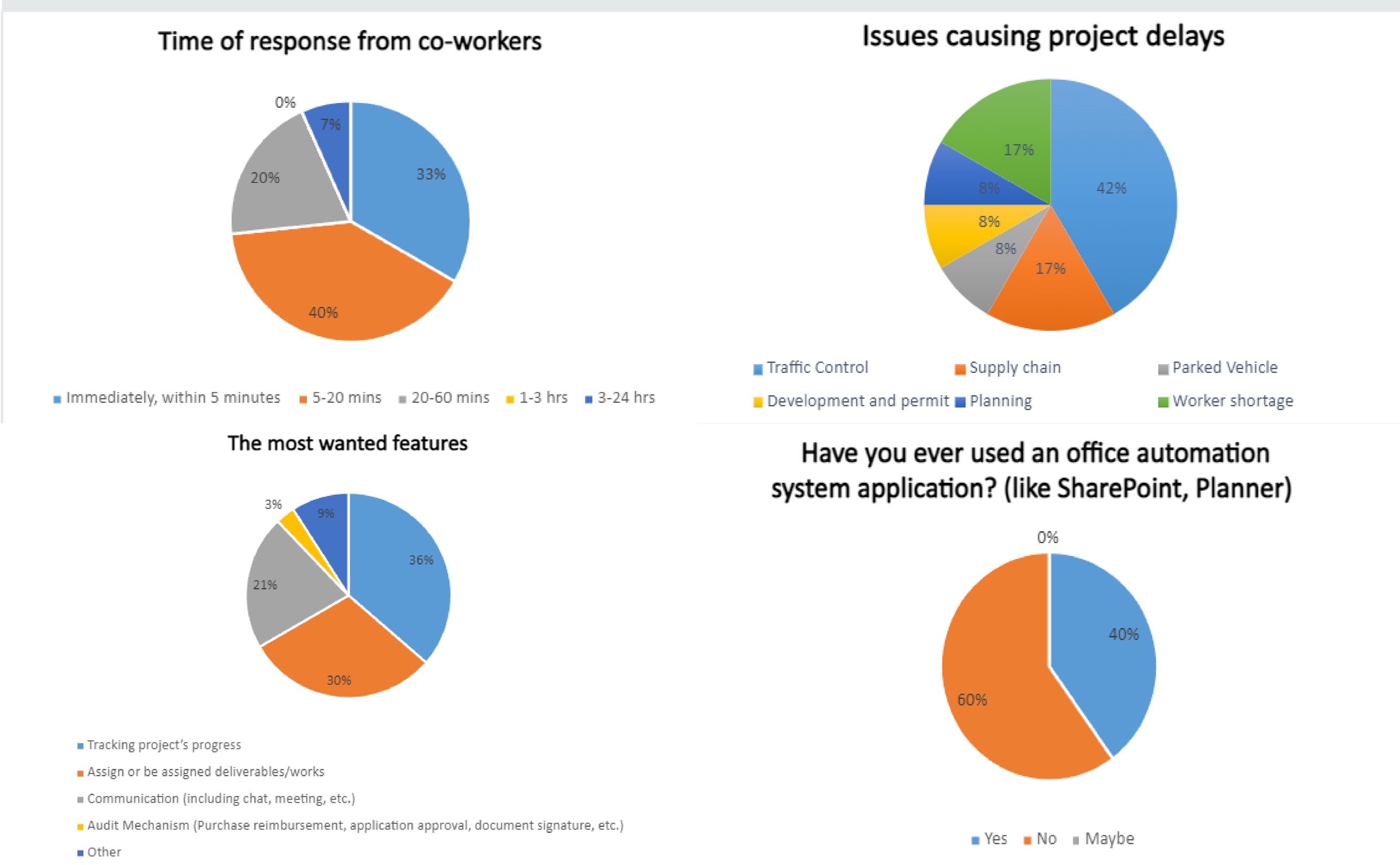
2. Project Objective

- Measure and analyze the current process.
- Identify the wasteful steps and root causes.
- Develop a resource planning model using IE tools to optimize resources.
- Propose a plan for D&C to optimize their process.

3. Data Collection

- Survey Results

Consultation with other departments, stakeholder constraints on decision making, approval process.



- Data collection lists from clients

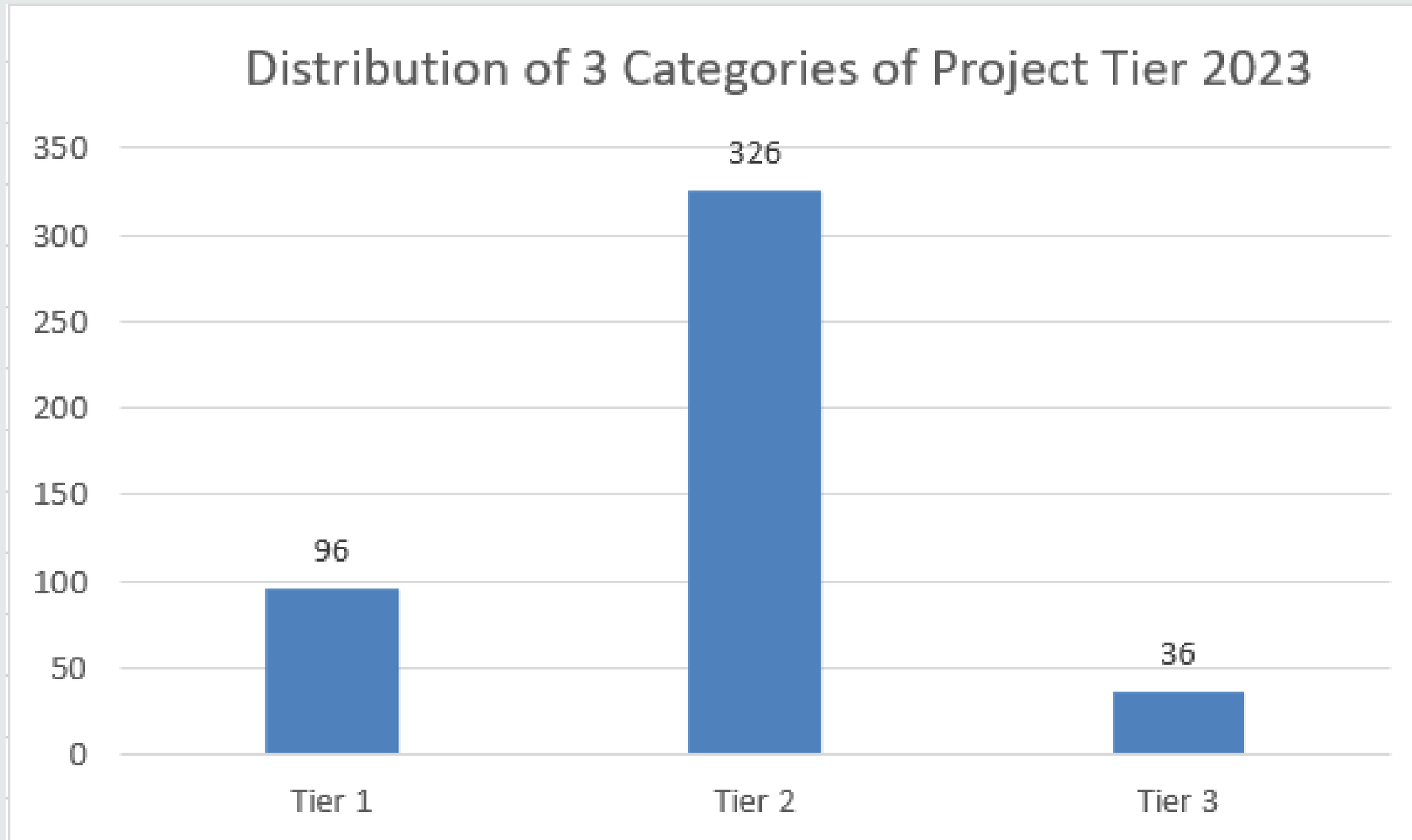
1. Capacity planning draft
2. Project and task list

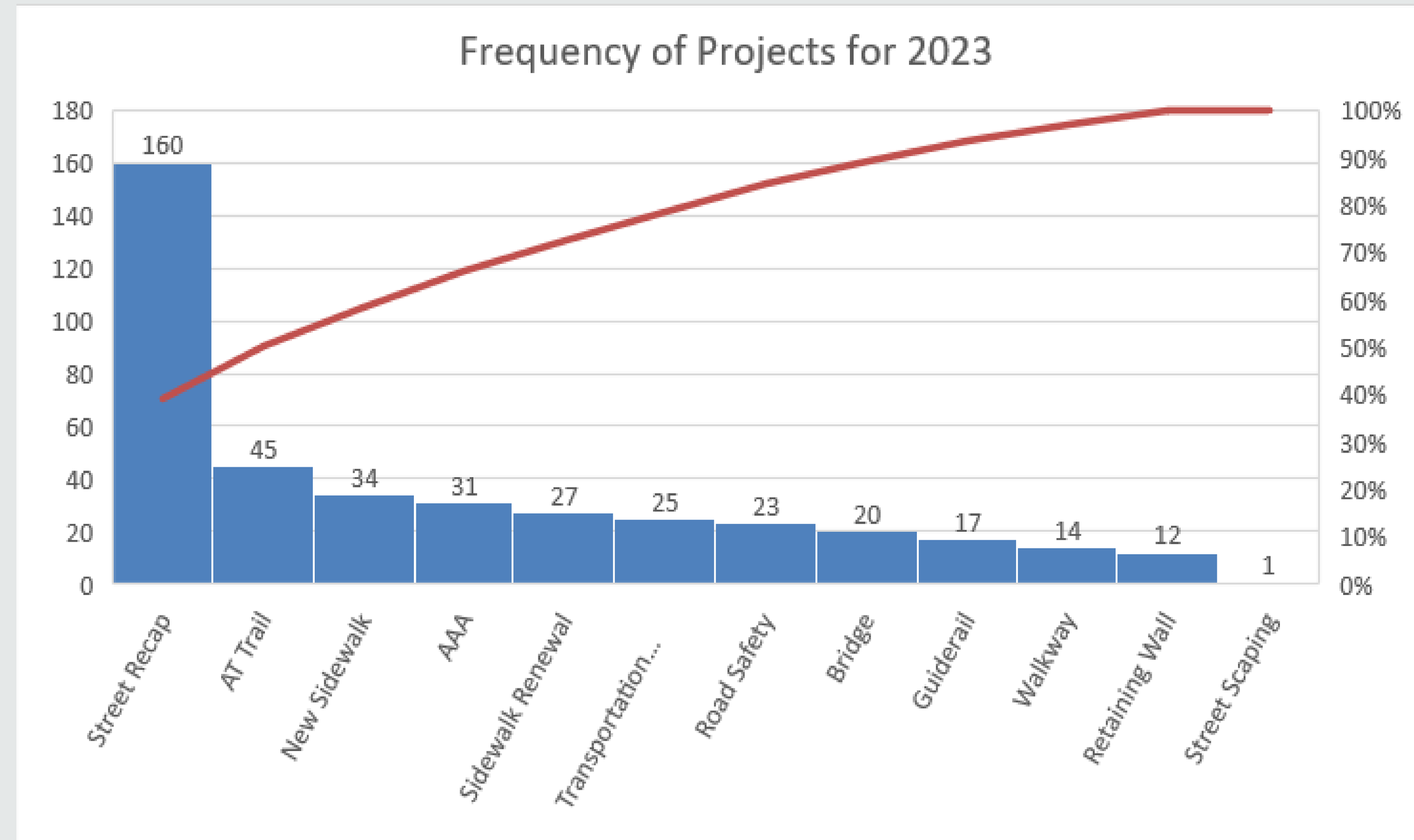
- Process map

Goal: Identify and visualize different stages in AT, Design, Technical, and Construction Dept, and label outliers for upcoming analysis

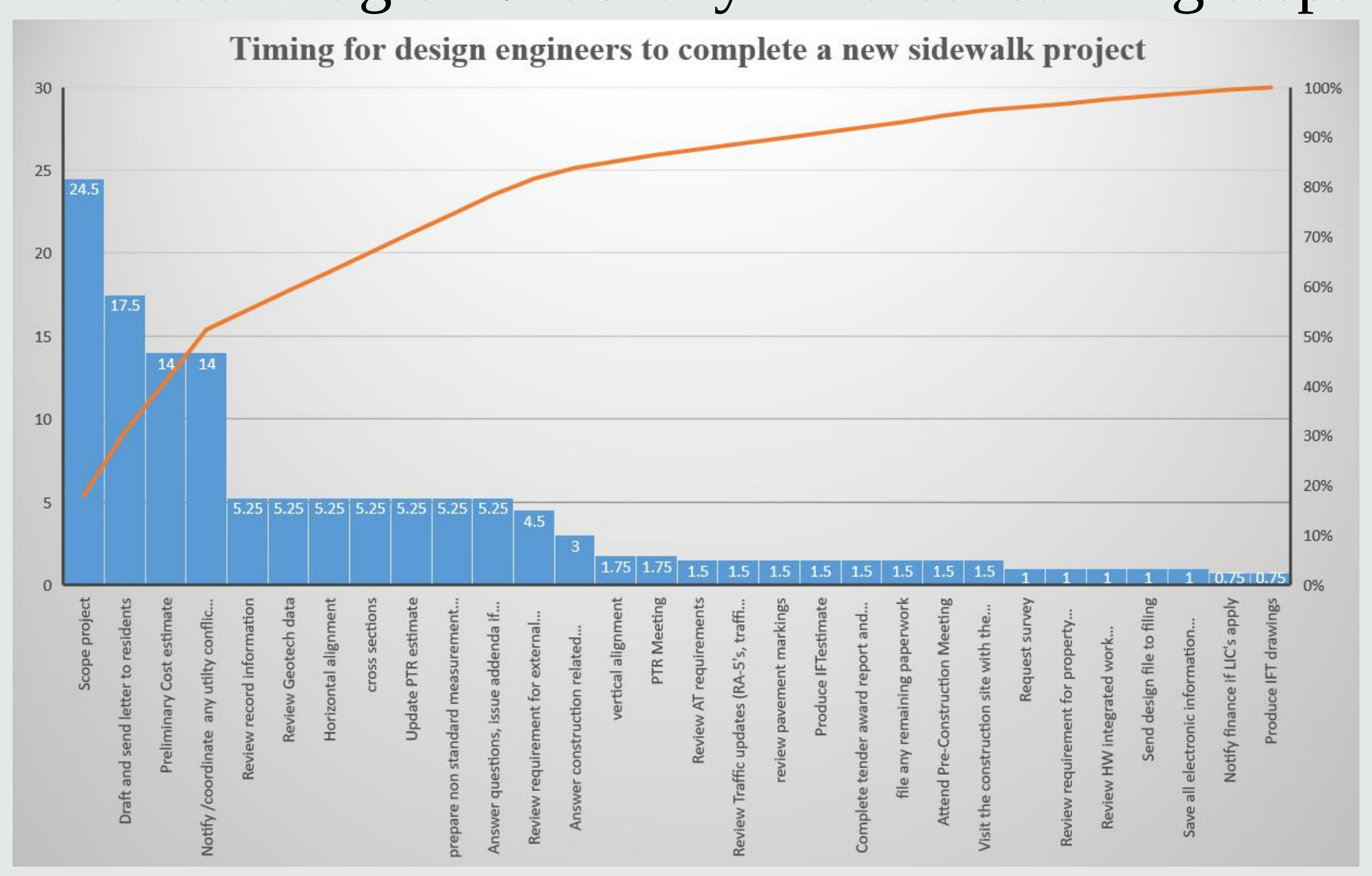
4. Data Measurement & Analysis

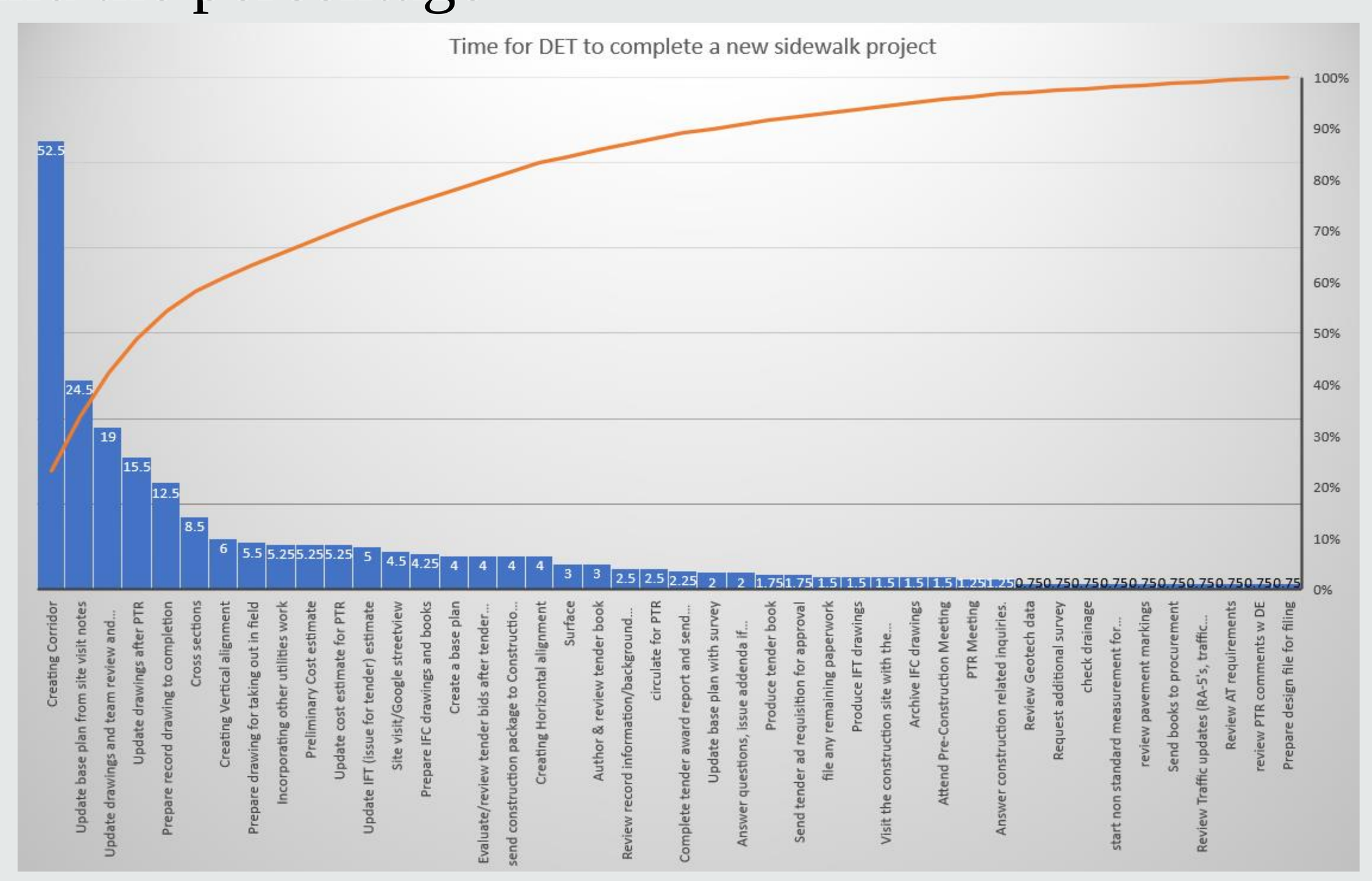
- General analysis of the number and frequency of projects



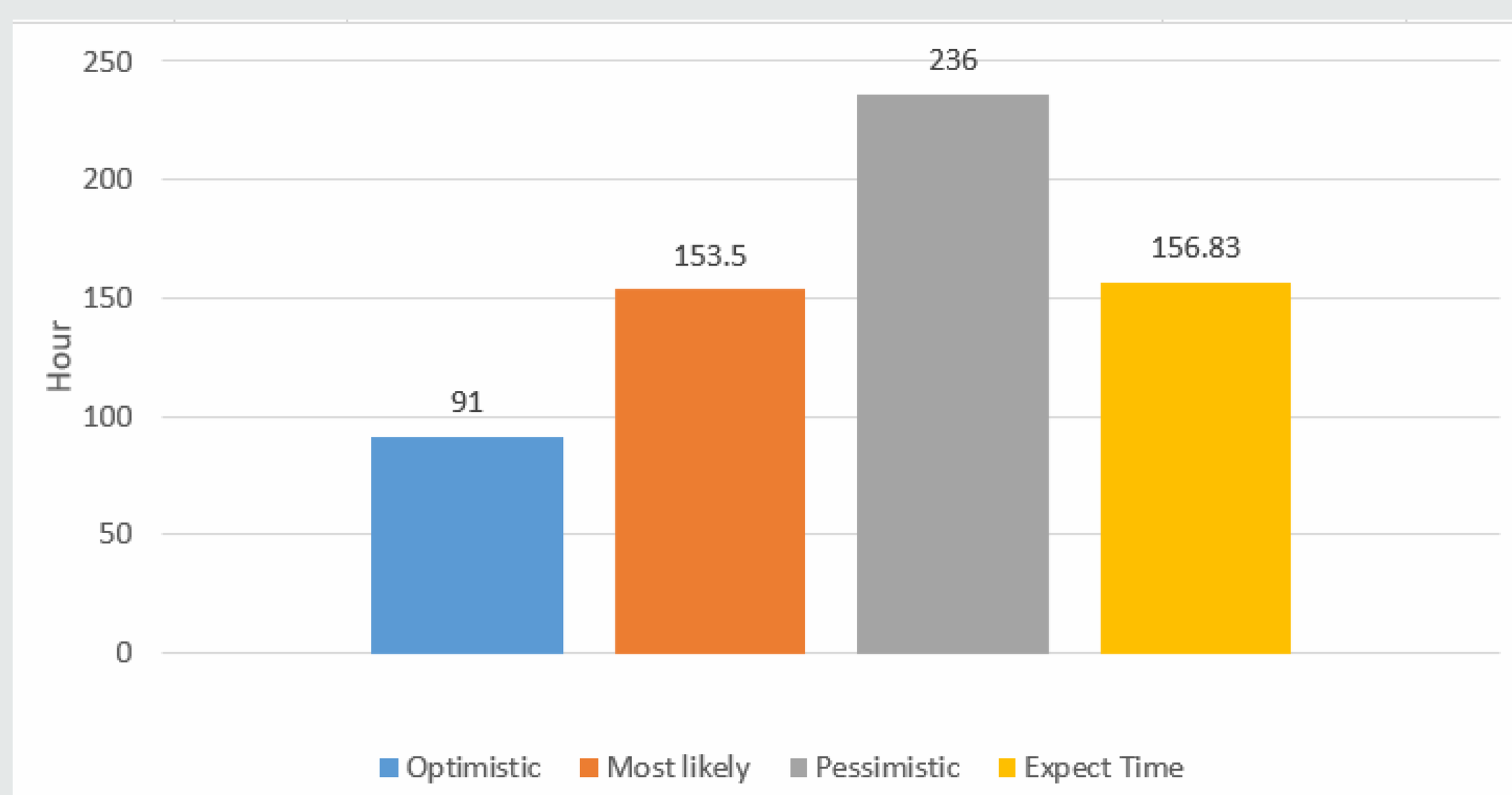


- Pareto Diagram: Identify time-consuming steps and the percentage





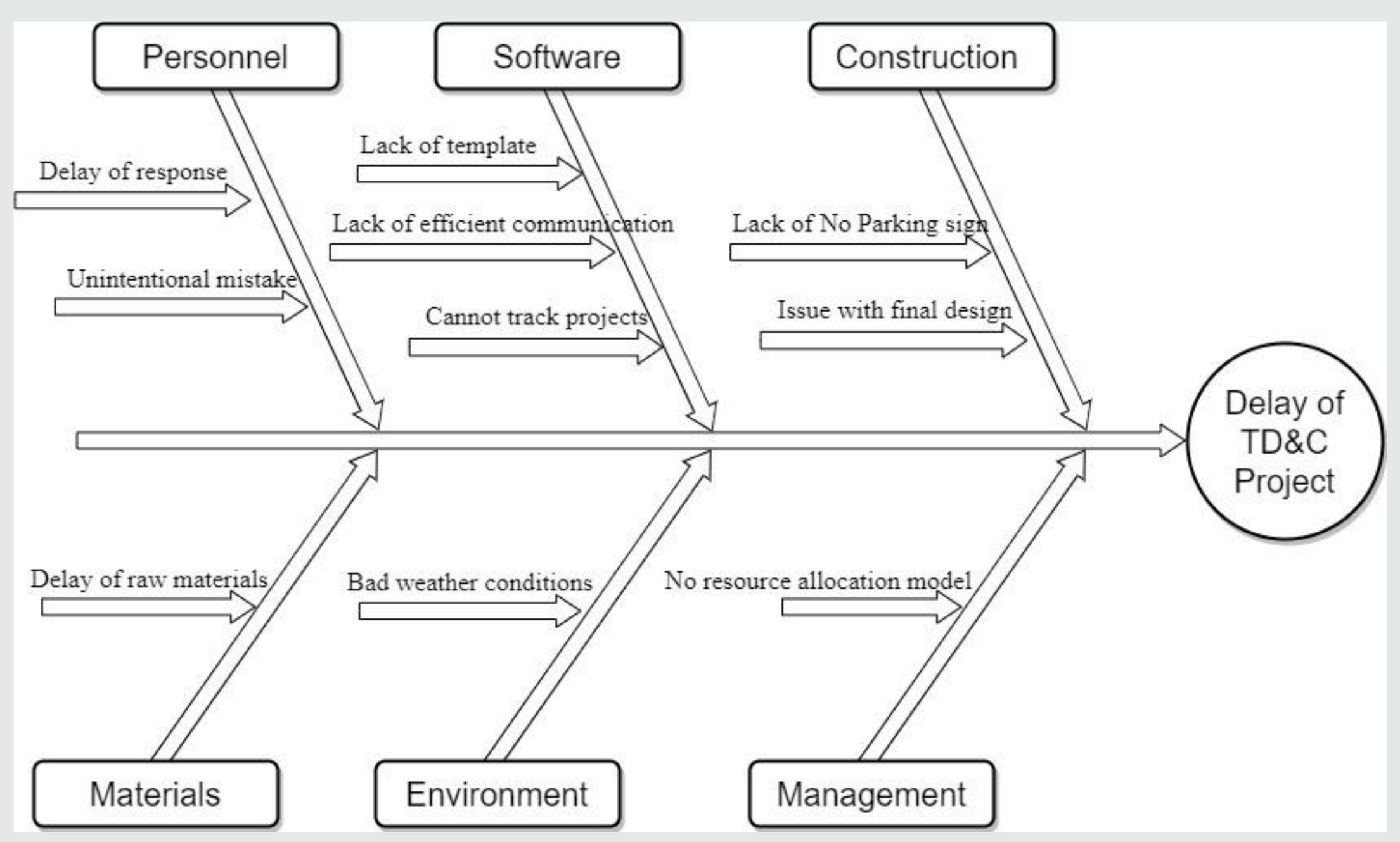
- PERT Analysis



- Measure the expect time to complete D&C projects
- Calculate the probability that design engineers finish project

Standard Normal Distribution	
P(AT<=150) = P[Z<=(150-163.5)/6.17) =	1.5%
P(AT>170) = P(Z>170-163.5)/6.17) = P(Z > 1.05) = 1 - P(Z<=1.05) =	14.7%

- Root Cause Analysis – Fishbone Diagram



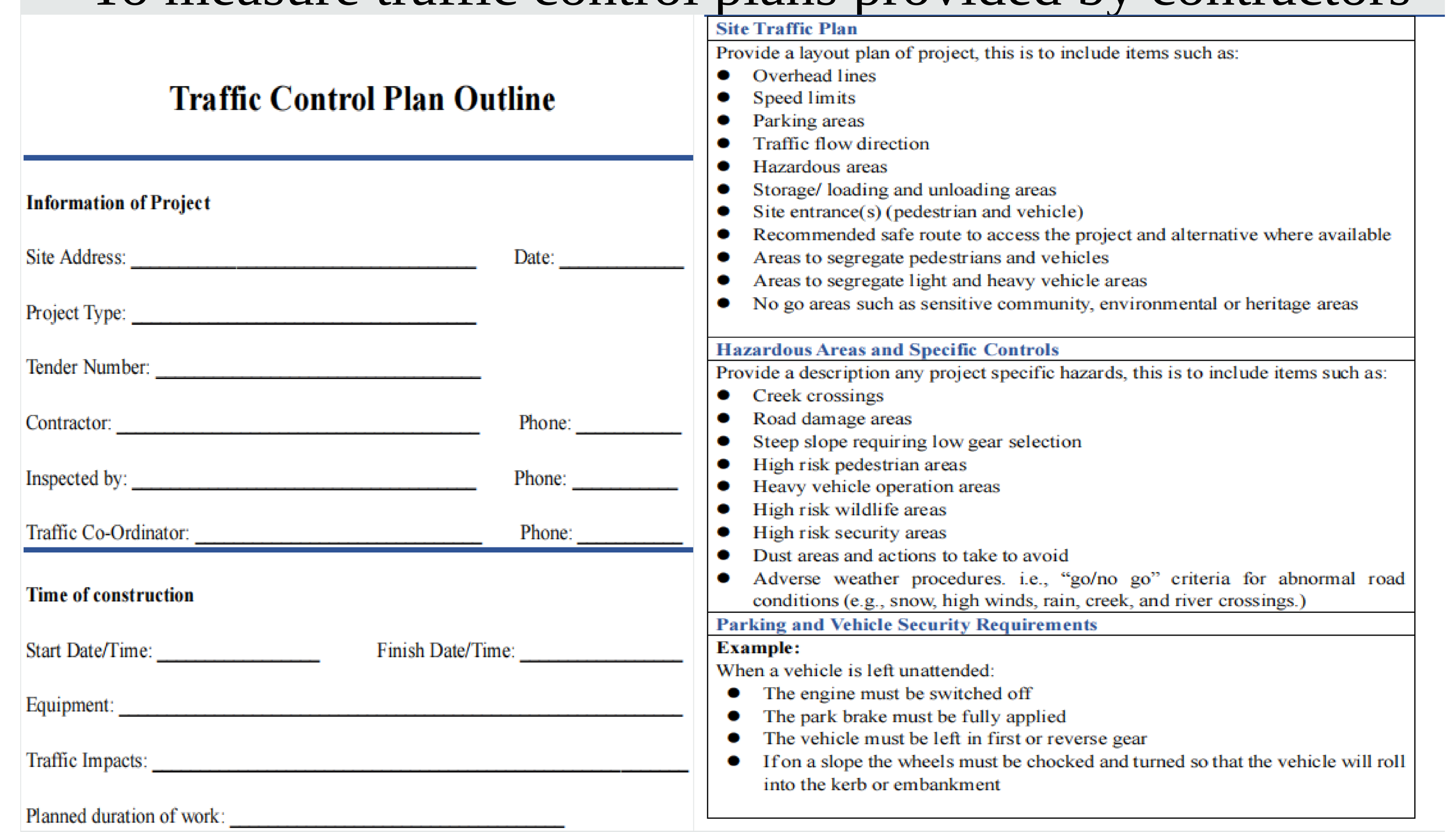
- Proposal of solutions according the existing problems analyzed from fishbone diagram

Existing Problems	Departments	Solution
No model to assign people and allocate resource	Design, Tech, Construction	Resource Planning Model
Lack of project tracking system	AT, Design, Tech, Construction	Resource Planning Model
Delay of response between departments and stakeholders	AT, Design, Tech, Construction	Resource Planning Model
Lack of measurement of traffic control plan	Construction	Traffic Control Plan outline

5. Solution and Evaluation

Traffic Control Plan Outline:

- To measure traffic control plans provided by contractors


Traffic Control Plan Outline

Information of Project

Site Address: ________ Date: ________

Project Type: ________

Tender Number: ________

Contractor: ________ Phone: ________

Inspected by: ________ Phone: ________

Traffic Co-Ordinator: ________ Phone: ________

Time of construction

Start Date/Time: ________ Finish Date/Time: ________

Equipment: ________

Traffic Impacts: ________

Planned duration of work: ________

Site Traffic Plan

Provide a layout plan of project, this is to include items such as:
- Overhead lines
- Speed limits
- Parking areas
- Traffic flow direction
- Hazardous areas
- Storage/ loading and unloading areas
- Site entrance(s) (pedestrian and vehicle)
- Recommended safe route to access the project and alternative where available
- Areas to segregate pedestrians and vehicles
- Areas to segregate light and heavy vehicle areas
- No go areas such as sensitive community, environmental or heritage areas

Hazardous Areas and Specific Controls

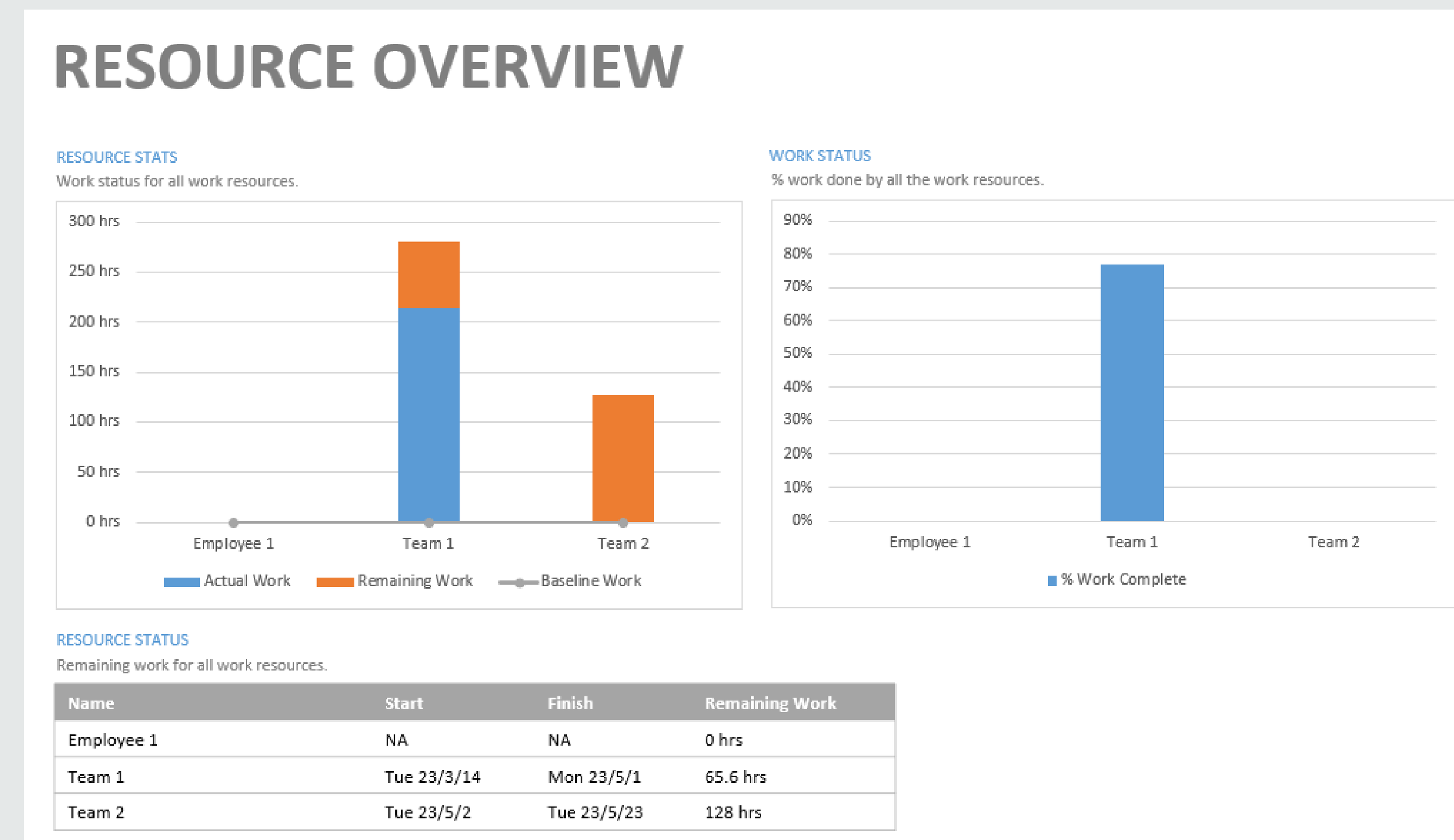
Provide a description any project specific hazards, this is to include items such as:
- Creek crossings
- Road damage areas
- Steep slope requiring low gear selection
- High risk pedestrian areas
- Heavy vehicle operation areas
- High risk wildlife areas
- High risk security areas
- Dust areas and actions to take to avoid
- Adverse weather procedures. i.e., "go/no go" criteria for abnormal road conditions (e.g., snow, high winds, rain, creek, and river crossings.)

Parking and Vehicle Security Requirements

Example:

When a vehicle is left unattended:
- The engine must be switched off
- The park brake must be fully applied
- The vehicle must be left in first or reverse gear
- If on a slope the wheels must be chocked and turned so that the vehicle will roll into the kerb or embankment

Resource Planning Model – MS Project



Benefit:

- Understand bandwidth used and available
- Visualize resources
- Monitoring and tracking of project progress

Evaluation: Failure Modes and Effect Analysis

Process function	Potential Failure mode	RPN	Change	RPN after change
Tracking project	Different departments working together on different projects, low communication	378	Use the same project planning tool to communicate between different employees and departments	140
Gathering survey data	Ineffective communication on site between stakeholders and different groups	336	Use a better means of channel, and better communication by planning out the talks	168
CAD Drawings	CAD drawings taking longer than usual because of availability of employees	324	Cross-train employees	75
Tracking projects	Late response from stakeholders	300	Set up meeting with stakeholders in advance	40