Project Design Phase
Problem – Solution Fit

Date	7 February 2026
Team ID	LTVIP2026TMIDS24988
Project Name	Civil Engineering Insight Studio
Maximum Marks	2 Marks

Problem – Solution Fit:

1.Identified Customer Problem

Core Problem

Civil engineers and construction supervisors spend significant time manually analyzing site images and preparing structured engineering reports.

Observable Pain Points

- Manual image-based documentation is time-consuming.

- Identifying materials and structural components requires detailed inspection.

- Report formatting lacks consistency across projects.

- Tracking project progress through images is inefficient.

- Risk of missing critical structural observations.

Behavioral Patterns Identified

Example 1: Engineers manually observe site photos and prepare reports in Word or Excel.
Example 2: Supervisors rely on subjective judgment for documenting construction stages.

2.Proposed Solution

Civil Engineering Insight Studio is an AI-powered web application that:

- Analyzes construction images using Google Gemini Vision API.

- Generates structured engineering reports (structure type, materials, components, construction stage).

- Provides professional documentation format.

- Reduces manual effort in report preparation.

- Delivers AI-generated insights in seconds.

3.Problem–Solution Mapping

- Manual analysis takes too long → AI generates structured report instantly.

- Inconsistent formatting → Standardized AI-generated documentation.

- Risk of missing details → AI highlights materials and structural components.
- Inefficient progress tracking → Automated analysis from site images.
- Time pressure on engineers → Faster report generation improves productivity.

4.Why This Solution Fits the Customer

- Engineers already take site photos – tool leverages existing workflow.
- Integrates seamlessly into digital documentation process.
- Reduces workload without requiring additional technical skills.
- Enhances professional reporting standards.

5.Purpose Alignment (As Per Template)

- Solves complex documentation problems using AI automation.
- Speeds up engineering reporting process.
- Aligns with existing construction monitoring practices.
- Improves accuracy and professional communication.
- Builds trust through consistent structured output.

Template: