Project Design Phase
Proposed Solution

Date	8 February 2026
Team ID	LTVIP2026TMIDS24988
Project Name	Civil Engineering Insight Studio
Maximum Marks	2 Marks

Proposed Solution:

Project team shall fill the following information in the proposed solution.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Civil engineers and construction supervisors spend significant time manually analyzing construction site images and preparing structured engineering reports. Identifying materials, structural components, and construction stages requires manual inspection and technical expertise. Traditional documentation methods are time-consuming, subjective, and prone to human error.
2.	Idea / Solution description	Civil Engineering Insight Studio is an AI-powered web application that analyzes construction site images using Google Gemini Vision API. The system generates structured engineering reports including structure type, materials used, structural components (beams, columns, slabs), construction stage, and notable observations. The application provides instant AI-generated insights through a Streamlit-based interface.
3.	Novelty / Uniqueness	Unlike traditional manual reporting systems, this solution integrates multimodal Generative AI (image + text analysis) to automatically generate professional engineering documentation. The uniqueness lies in combining AI-driven structural analysis with real-time web deployment for practical field usage.
4.	Social Impact / Customer Satisfaction	The platform reduces documentation workload for engineers, improves reporting accuracy, and enhances productivity in construction projects. It supports better decision-making and enables faster project communication among stakeholders.
5.	Business Model (Revenue Model)	Potential revenue streams include: 1) Subscription model for premium analysis features, 2) Enterprise licensing for construction firms, 3) API integration services for infrastructure companies, 4) Custom AI solutions for large-scale construction projects.
6.	Scalability of the Solution	The application follows a stateless architecture and can be deployed on Streamlit Cloud or other cloud hosting platforms. Since AI processing is handled by the Gemini API, scalability primarily depends on API limits and cloud infrastructure. Horizontal scaling can be achieved by deploying multiple instances in cloud environments.