Project Design Phase
Proposed Solution Template

Date	11 February 2026
Team ID	LTVIP2026TMIDS66291
Project Name	Civil Engineering Insight Studio
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	In modern construction projects, supervisors face challenges in accurately identifying and documenting materials used at various stages of building development. Manual inspection of construction materials such as concrete, steel, and bricks is time-consuming, prone to human error, and often lacks detailed documentation regarding material quantity and placement within the structure.
2.	Idea / Solution description	The ideal solution is to develop an AI-powered image analysis system integrated within the Civil Engineering Insight Studio that enables construction supervisors to automatically identify and document materials used on-site. The system should allow users to upload construction site images and optionally provide contextual notes. Using advanced computer vision and generative AI models, the tool would analyze the image to detect construction materials such as concrete, steel, and bricks, estimate their quantities, and determine their locations within the structure.
3.	Novelty / Uniqueness	The novelty of the Civil Engineering Insight Studio lies in its integration of artificial intelligence and computer vision specifically tailored for civil engineering applications. Unlike traditional construction monitoring methods that rely heavily on manual inspection and documentation, this system introduces an automated, image-based material identification approach.
4.	Social Impact / Customer Satisfaction	The Civil Engineering Insight Studio project has a positive social impact by promoting safer, more efficient, and higher-quality construction practices. By enabling accurate identification and documentation of construction materials, the system helps ensure that appropriate materials are used in building projects, reducing the risk of structural failures and enhancing public safety. Improved monitoring and quality control contribute to stronger and more reliable infrastructure, which directly benefits communities.
5.	Business Model (Revenue Model)	The Civil Engineering Insight Studio can adopt business model, offering AI-powered material identification and structural analysis as a subscription-based web application. Construction companies, contractors, engineering consultants, and infrastructure firms can subscribe to the platform to access image-based analysis tools that improve site monitoring and documentation efficiency.

6.	Scalability of the Solution	The Civil Engineering Insight Studio is designed to be highly scalable, both technically and operationally. Since the system is built as a web-based application using AI APIs, it can handle increasing numbers of users and image uploads by leveraging cloud infrastructure. As demand grows, the application can scale horizontally by adding more servers or cloud instances to manage higher traffic and processing loads without affecting performance.