

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	12 th February 2026
Team ID	LTVIP2026TMIDS84448
Project Name	Civil Engineering Insight Studio
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as follows:

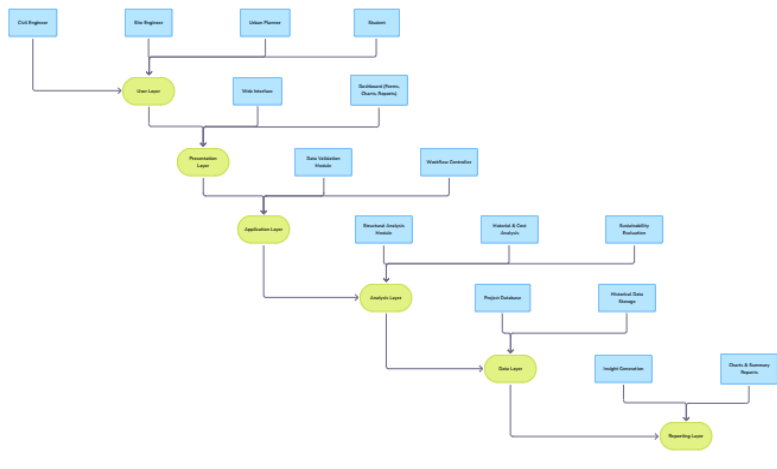


Table-1 : Components & Technologies:

S. No	Component	Description	Technology
1.	User Layer	End users such as civil engineers, site engineers, planners, and students interact with the system.	Web Browser
2.	Presentation Layer	Provides a user-friendly interface to enter project details and view analytical results.	HTML CSS JavaScript
3.	Application Layer	Validates user inputs and manages the flow of data between modules.	Python Streamlit(Web Framework)
4.	Analysis Layer	Core component where structural safety, cost efficiency, and sustainability are evaluated.	Python Engineering formulas & logic
5.	Data Layer	Stores project data, analysis	CSV files

		results, and historical records for future reference.	Local storage / File system
6.	Report Layer	Generates final insights, graphs, and reports for decision-making.	Python Matplotlib / Charts HTML reports

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Uses open-source tools to reduce cost and improve flexibility and maintainability.	Python's Streamlit
2.	Scalability	The system can support multiple civil engineering project types such as buildings, roads, and bridges.	Modular architecture
3.	Performance	Provides fast analysis and report generation for engineering insights.	Efficient Python logic
4.	Availability	Accessible whenever required for project analysis and planning.	Local / Web deployment
5.	Usability	Easy-to-use interface suitable for engineers and students.	HTML, CSS
6.	Security	Protects project data from unauthorized access.	input validation, access control