



## An-Najah National University

Faculty of Engineering & Information Technology

Presented in partial fulfillment of the requirements for  
Bachelor degree in Computer Engineering

### Graduation Project 1

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# BuildFlow

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## **Acknowledgment**

We want to thank our parents for their amazing assistance, which has been essential to our success. Our parents have been a source of inspiration and patience for us. We like to thank our supervisor, Dr. Amjad AbuHassan, for his guidance and support throughout this project. We appreciate the contributions made by all of the instructors in the department of computer engineering. Additionally, we would like to thank our friends who have helped us and are grateful for their continuous presence.

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## Abstract

BuildFlow is a platform for managing construction projects that aims to solve the challenges that face the construction industry, including the difficulty of communication between project owners and their teams. The platform facilitates communication between project owners and their teams. This platform will primarily support personal home construction projects. We will use Flutter and Node.js as the core technologies to develop this platform.

BuildFlow provides several tools that facilitate communication, allowing users to contact various engineering offices through this platform. These offices offer many services, including creating new buildings (covering interior and exterior design), completing existing structures, and other services such as providing engineering consultancy.

Additionally, the platform enables communication between engineering offices and contractors.companies to ensure the successful execution of user requests. The platform also ensures that Users stay updated on the progress of their projects at every stage.

Through BuildFlow, we want to enhance the collaboration of all parties involved in construction projects, improving transparency at every stage.

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# Chapter 1

## Introduction

Smart and effective management solutions are becoming more and more necessary in the construction industry, especially in personal homebuilding. Given the increasing use of digital tools in many different fields, there is a clear chance to use technology to solve some of the persistent problems in the construction industry. Many individuals who plan to build or renovate their homes face difficulties in following up on their projects, communicating with different service providers, and ensuring that all work progresses smoothly and transparently. This situation calls for a simple, organized, and accessible platform that supports the entire construction process from start to finish.

### 1.1 Problem

One of the biggest obstacles to personal construction projects is the absence of constant and transparent communication between homeowners and the teams doing the work. There isn't a single system that unites engineering offices, contractors, and clients in one location, despite the availability of numerous tools. Misunderstandings are therefore frequent, and a lot of projects experience delays, unclear roles, or additional expenses as a result of inadequate coordination.

### 1.2 Objective

The goal of BuildFlow is to offer a practical digital solution that connects all parties involved in home construction. Through a single platform, users can request services, follow the progress of their projects, and communicate directly with engineering offices and contractors. BuildFlow incorporates a WebView to facilitate the early planning stage, enabling users to upload 2D design files to be transformed into interactive 3D models with Planner 5D. This makes the design process more comprehensible and visually appealing. The system is lessen misunderstandings, and increase project management's usability for non-technical people. BuildFlow was created

with Node.js for the back end and Flutter for the front end to guarantee a dependable, responsive, and seamless user experience.

## Chapter 2

# Literature Review

A major development in recent years has been the adoption of digital solutions in the architecture and construction sectors with the goal of enhancing workflow efficiency, data management, and coordination. To meet these demands, a number of platforms have surfaced that provide tools for document management, stakeholder communication, and project tracking.

For instance, the all-inclusive construction management platform Procore [1] allows project participants to collaborate more simply. Scheduling, RFIs, submittals, and real-time field updates are just a few of the many features it supports. Despite its strength, Procore is frequently designed for large-scale commercial construction settings and necessitates extensive training and licensing, which may not be appropriate for smaller or more localized projects.

Another instance is BuildNex, a platform created in 2024 by Tala Hamad and Khalid Jabr with the goal of bridging the divide between contractors, engineers, and users. With BuildNex, users can manage permits, interact with experts, and monitor the status of their projects. However, it still has limited support for 3D plans, land verification, and integration with official government data sources. Because the system relies on static form submissions, it can be improved in terms of user control and interactivity.

Realistic architectural data input, geolocation features, and land mapping are not well integrated in the majority of current systems. The ability to choose a plot location using real geographic and administrative information, like plot numbers or basin identifiers, is rarely offered by platforms. Likewise, not many solutions provide a seamless transition between 2D architectural planning and interactive 3D visualization.

In contrast, the development of BuildFlow was driven by the need to provide a more adaptable, user-friendly, and localized system tailored to real construction practices. BuildFlow integrates

features inspired by existing platforms but improves upon them by offering functionalities like interactive land location mapping using external services (such as GeoMOLG [2] and Palestinian Land and Water Settlement commission [3] ), and dynamic route planning to project sites using OpenRouteService [4], ensuring practical and accurate navigation support. as well as the ability to upload and convert 2D building plans into 3D visualizations via Planner 5D [5] integration. This allows users to better communicate their design preferences with offices and companies and bridges the gap between technical design and user understanding.

In summary, BuildFlow sets itself apart from platforms like Procore and BuildNex by emphasizing user accessibility, integrating real-world land data, supporting comprehensive construction documentation, and providing realistic collaboration tools—all of which are specifically tailored to the local context and regulatory environment.

## Chapter 3

# Constraints and Earlier coursework

### 3.1 Constraints

During the development of BuildFlow, we encountered several constraints and challenges, such as:

1. **Time and workload management:** Balancing the development of a feature-rich system with exams and coursework was challenging. It required handling complex ideas under tight deadlines while managing academic pressure.
2. **Technical constraints:** Compatibility and performance problems made it more difficult to integrate several technologies (such as Flutter, Node.js, and PostgreSQL).
3. **Data structure and location sourcing:** Since ready-made database schemas for real construction workflows are not publicly available, we consulted engineering offices and reviewed actual project documents to build a realistic structure. We also faced challenges sourcing accurate land location data in official formats, as few platforms provide structured, locally-relevant information.
4. **Team coordination:** As tasks were divided between frontend, backend, and database, consistent communication and version control were crucial.
5. **Limited prior experience:** Since we had no previous experience with full-stack development, we had to self-learn many concepts along the way.

## 3.2 Earlier Coursework

A number of the courses we previously took were crucial in the development of this project. We gained the theoretical understanding and practical abilities required for every BuildFlow component from these courses:

- **Database Systems:** Directed our use of PostgreSQL and assisted us in comprehending the design and normalization of relational databases.
- **Software Engineering:** Established a framework for applying best practices to the design and administration of an organized development process.
- **Advanced Software Engineering:** Improved our knowledge of system scalability, software architecture, and documentation, all of which we used to plan the expansion of our system and design it.
- **Web Development:** Taught us about front-end and back-end concepts, which we used with Flutter and Node.js.
- **IT Project Management:** Taught us how to efficiently assign tasks, plan projects, and meet deadlines.
- **Cybersecurity:** Increased knowledge of the user authentication and data protection procedures employed in our application.

# Chapter 4

## Methodology

### 4.1 Development Tools and Technologies

#### 4.1.1 Tools

We used a collection of useful tools that facilitated frontend and backend workflows, testing, and teamwork while developing BuildFlow:

- **Visual Studio Code:** acted as the primary code editor for the Node.js backend and the Flutter frontend. It facilitated our workflow throughout the project by offering crucial development features like syntax highlighting, an integrated terminal, real-time debugging, and Git support.
- **Emulator for Android:** used on various virtual Android devices to test and simulate the mobile application. This made it possible for us to confirm layout functionality, responsiveness, and performance across a range of screen sizes and system versions.
- **Postman:** Used to verify and test API endpoints. Throughout the backend development process, it assisted us in simulating various HTTP request types and inspecting responses to make sure the APIs operated as intended.
- **GitHub:** For collaborative development and version control. The group used GitHub's pull request system to review code changes, track issues, and maintain source code in private repositories.
- **Firebase:** incorporated into the program to provide specific backend functions. We were able to manage and support features like in app messaging and notifications.

- **WebView (Planner 5D):** To enable users to access and engage with Planner 5D, a WebView component was integrated into the program. By providing a more interactive and visual experience, this feature improved the planning stage of construction projects by allowing users to upload 2D design files and view them in 3D format.

### 4.1.2 Programming Languages and Frameworks

We chose technologies for BuildFlow’s development that facilitate scalability, cross platform functionality, and front-end and backend system integration.

- **Flutter:** The primary framework for creating the web and mobile interfaces. We were able to create a single codebase that functions on both Android and web browsers to its cross-platform capabilities. This ensured a consistent user experience across platforms.
- **Dart:** Flutter programming language that provides a clear and expressive syntax for creating reactive and responsive user interfaces.
- **Node.js:** Used for the backend because of its event-driven and asynchronous architecture. It enabled us to effectively manage numerous client requests and create scalable RESTful APIs. Through npm, Node.js also made a large number of packages available, which sped up backend development and frontend integration.
- **JavaScript:** Used for API routing, backend logic, and integration with third-party services like Firebase in the Node.js environment. It was a dependable option for server-side programming in our system because of its adaptability and community support.

### 4.1.3 Database Design and Management

During the development of BuildFlow, we chose PostgreSQL as our main database system because it is reliable, flexible, and supports complex relationships. It helped us organize and connect important data like users, companies, offices, and projects.

We created a clear and practical database structure that matches how people actually work together in construction. The main tables in the database include:

1. **Users Table:** Stores user profiles including personal information, contact details, location, ID number, and bank account. Each user can be a project owner who interacts with offices and companies.
2. **Offices and Companies Tables:** Contain essential details of engineering offices and construction companies such as email, location, capacity, rating, available branches, and profile images. These entities are linked to projects and can receive reviews and notifications.
3. **Projects Table:** Captures detailed information about user-initiated construction projects. It includes project name, budget, timeline, associated office and company, uploaded documents (such as 2D and 3D plans), agreement status, land details (plot number, basin number, area), and geographical location.
4. **Reviews Table:** Enables users to review and rate both companies and offices involved in their projects. Each review is linked to a specific project for contextual feedback.
5. **Notifications Table:** A versatile table that tracks system-generated or user-triggered notifications. It supports various recipient types (users, offices, companies), types of actions (e.g., new request, project approved), and links notifications to specific entities for context.
6. **Project Designs Table:** Stores architectural preferences and structural features of projects, such as number of rooms, bathrooms, kitchen types, special room directions, and interior design descriptions.
7. **User Favorites Table:** Allows users to bookmark offices, companies, or projects. The schema ensures no duplicate favorites exist using unique constraints.
8. **Permit Steps Table:** Manages a multi-step permit submission workflow for users, including timestamps and current progress indicators.

Relationships between tables are managed using foreign keys to keep the data accurate and connected. To make the database faster, we added indexes on important columns like ‘recipient-id’, ‘project-id’, and ‘user-id’. We also used flexible data types such as ‘JSONB’ and ‘TEXT[]’ to allow the system to grow and handle more complex data in the future.

By designing the database structure carefully and filling it with realistic data, we made sure the system works smoothly and reflects how construction projects work in real life.

## 4.2 Mobile App System Features

**Welcome Page:** When you enter the application, this interface is displayed.

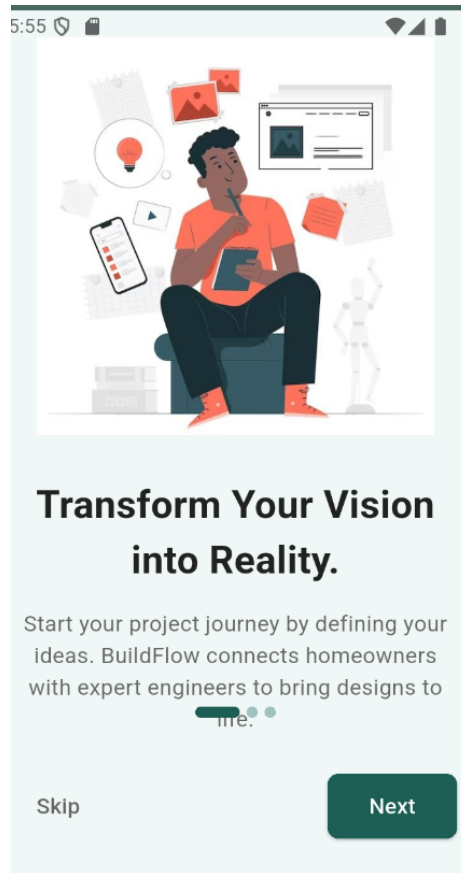


Figure 4.1: Welcome Page

### 4.2.1 Authentication and Validation:

BuildFlow implements secure user authentication and validation mechanisms to ensure only authorized individuals access the system. Users must register with verified email addresses and unique credentials. Upon login, credentials are validated securely using hashed passwords. Role-based access control ensures that users, companies, and engineering offices only access features relevant to their role. Screenshots below demonstrate the login process, account registration, and access control in action.

1. **Sign Up:** The platform provides separate registration interfaces for users, offices, and

companies, allowing each type to sign up with the required details for tailored access and services.

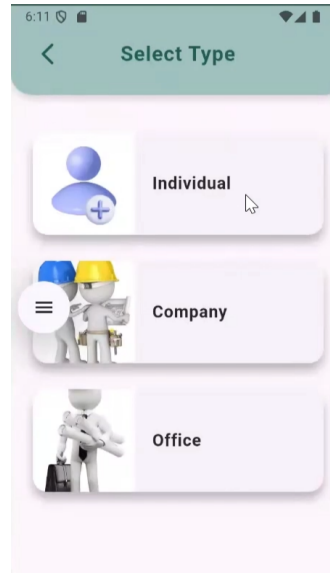
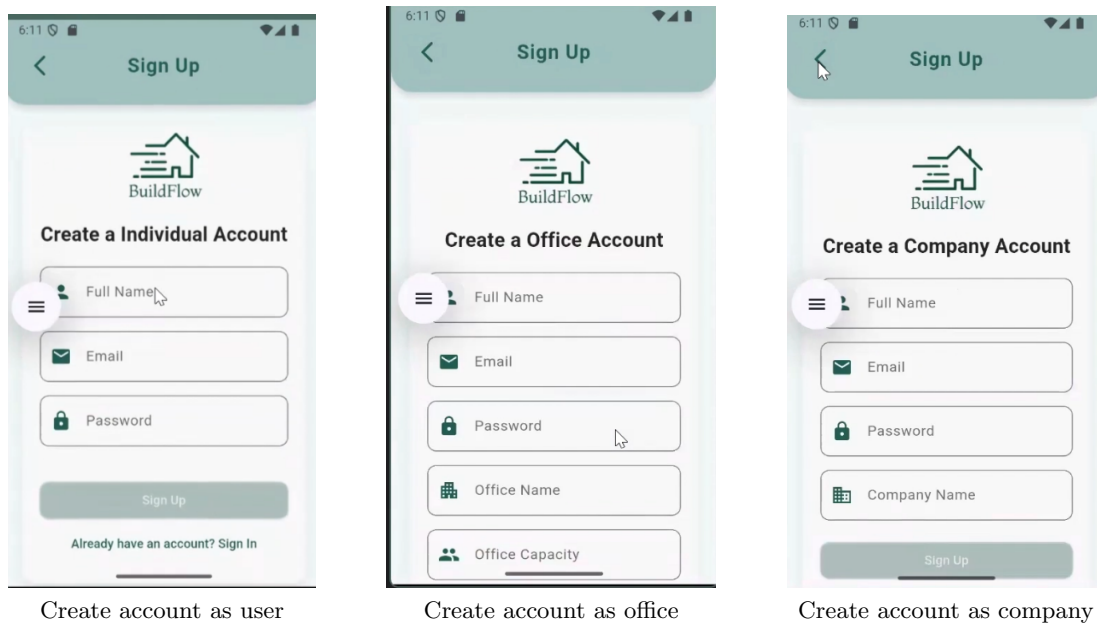


Figure 4.2: Select type for registered



Create account as user

Create account as office

Create account as company

Figure 4.3: User, Office, and Company registration screens

2. **Sign In:** Once registered, users can securely sign in to the platform using their credentials to access personalized dashboards and features based on their account type.

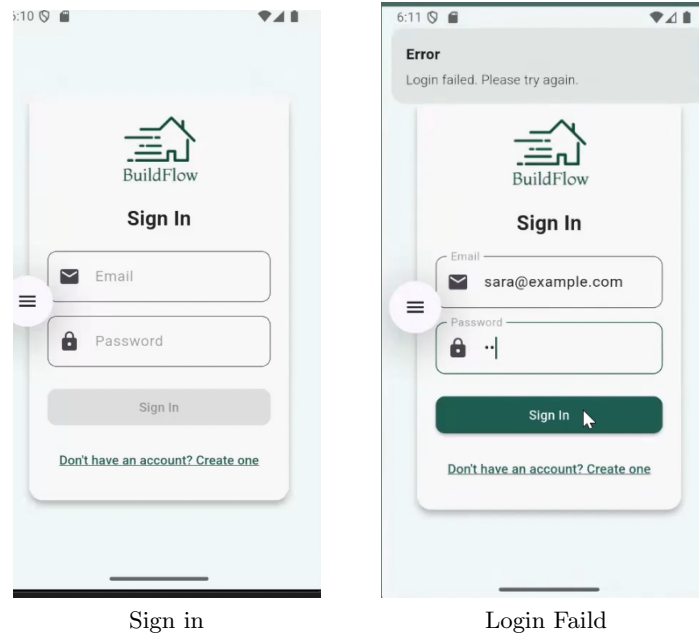
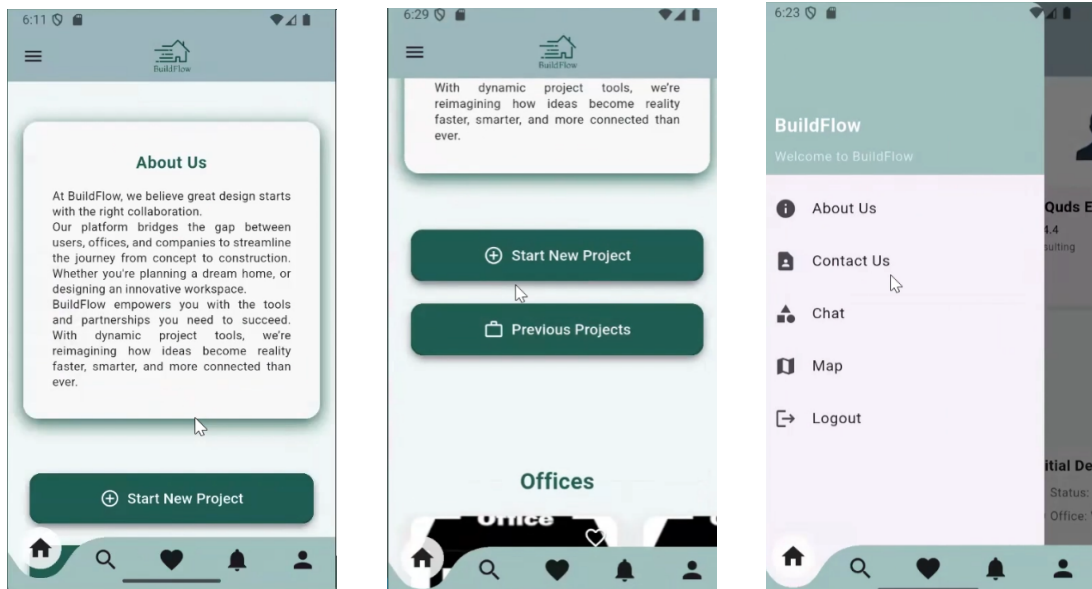


Figure 4.4: Sign in screen and login error message

#### 4.2.2 Home Page:

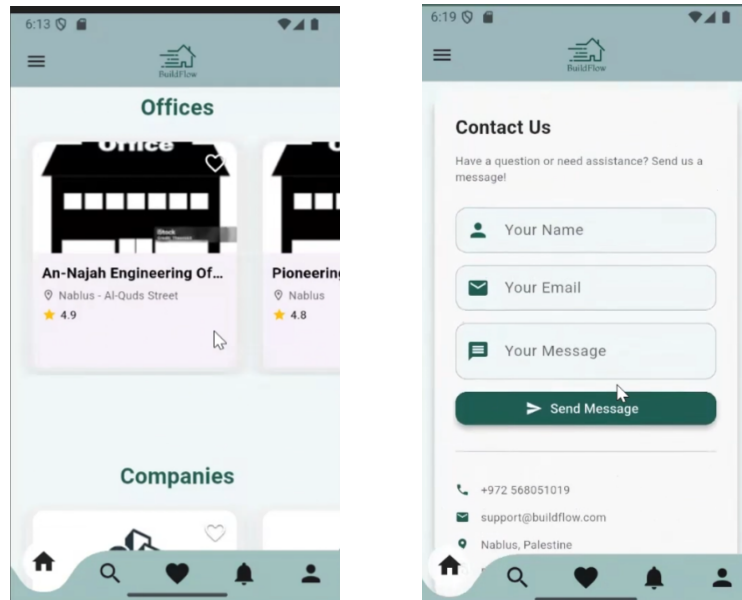
1. **About Section:** A section in the homepage that provides a brief description of the BuildFlow platform.
2. **Home Buttons:** Main buttons on the homepage that direct users to essential parts of the app.
3. **Suggestions Screen:** Display of recommended offices and companies based on user interests.
4. **Contact Us:** A form for users to contact the BuildFlow team for help or inquiries.



About Section

Home Buttons

Navigation Menu



Suggestions Screen

Contact Us

Figure 4.5: Interface screens from the BuildFlow mobile application.

### 4.2.3 Search Page:

The BuildFlow mobile application offers multiple search options to enhance user experience. Users can perform searches based on general input, specific office or company names, geographic location. This allows for quick and precise filtering, helping users find the most relevant construction service providers efficiently.

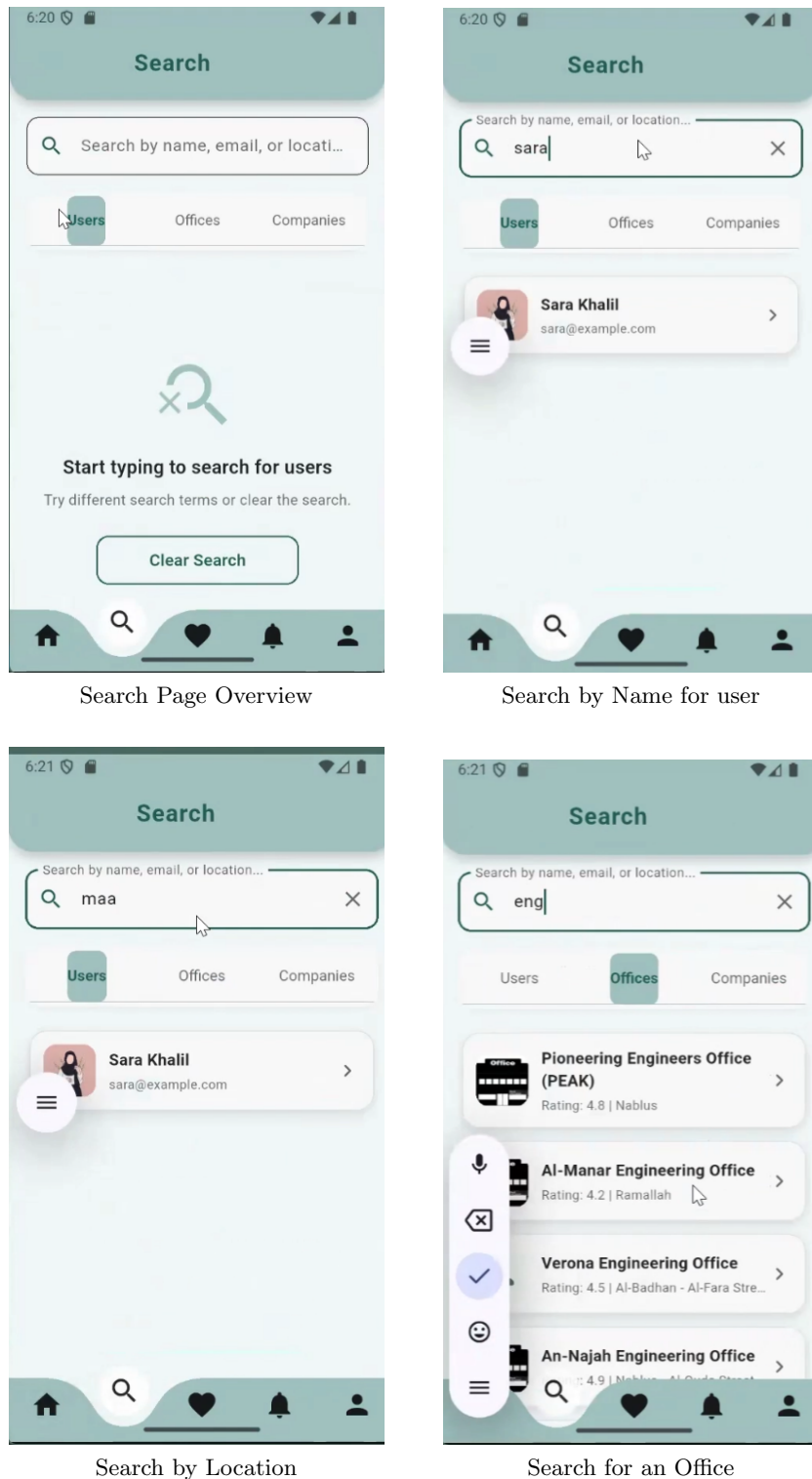


Figure 4.6: Search features in the BuildFlow mobile application.

#### 4.2.4 Favorite Page:

The Favorites page allows all users to save and quickly access preferred engineering offices, construction companies, and projects — making it easier to revisit and compare options.

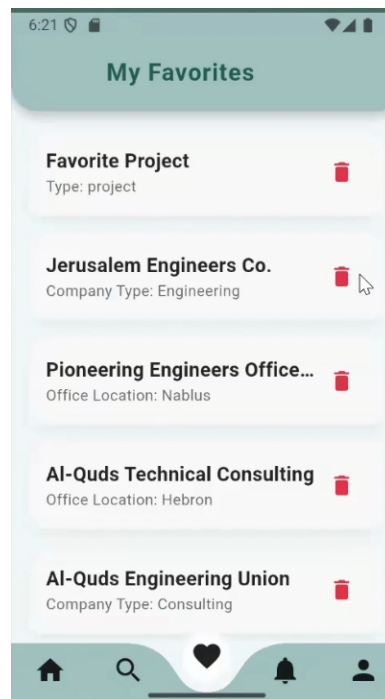


Figure 4.7: Favorite Page Overview

#### 4.2.5 Notification Page:

The Notifications page keeps users, offices, and companies informed of key updates, such as project approvals, new requests, and status changes. It also delivers weekly report updates, ensuring continuous tracking of project progress and smooth communication across the platform.

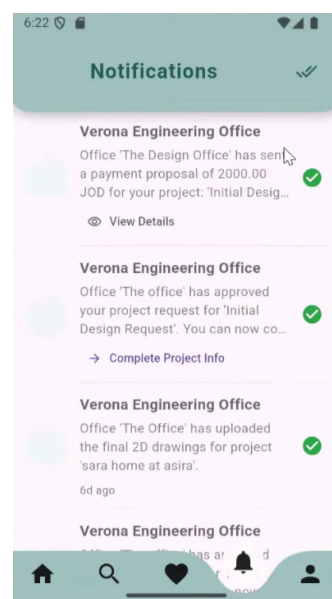
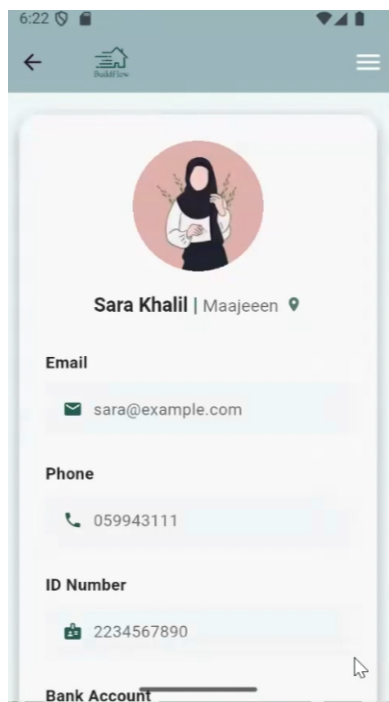


Figure 4.8: Notification Page Overview

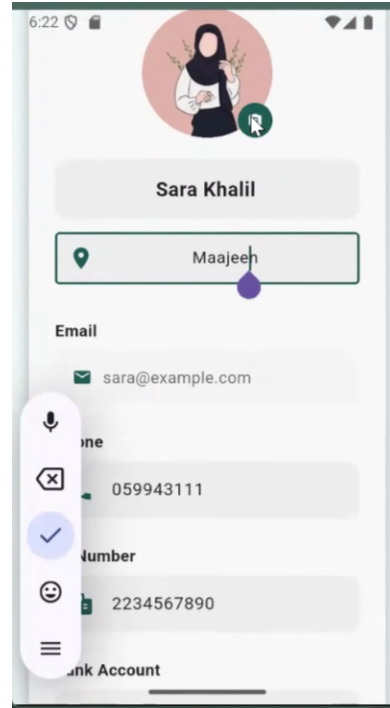
### 4.2.6 Profile Pages:

Every user type, including general users, engineering offices, and construction companies, has a dedicated profile page in the BuildFlow application. Viewing and editing relevant details, including location, contact information, and descriptions, is possible with these profiles.

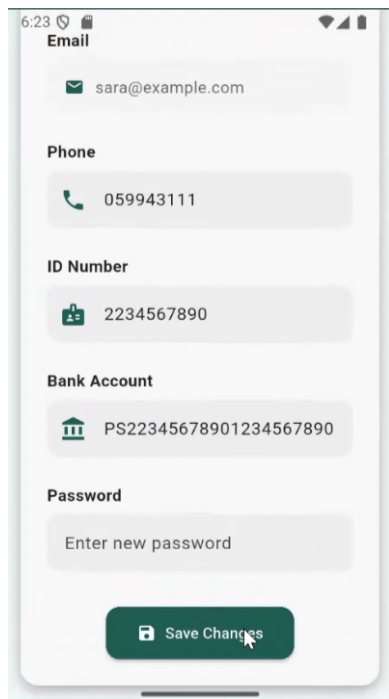
The user profile interface in particular is illustrated in the screenshots below, which also show how to view, edit, and save modifications to personal information.



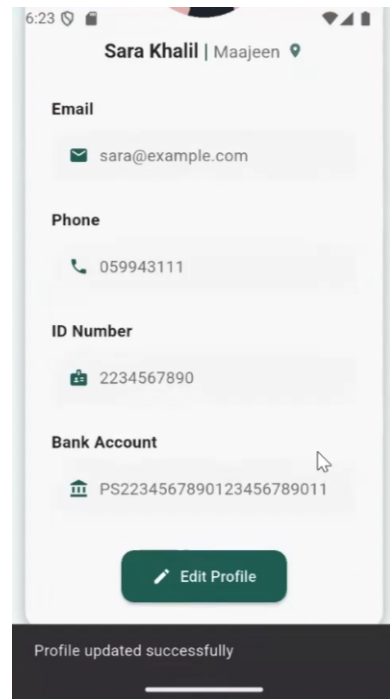
User Profile Page



Edit location, image or anything



Save Edit



After Edit

Figure 4.9: Screens showing the user profile view and editing process in the BuildFlow app.

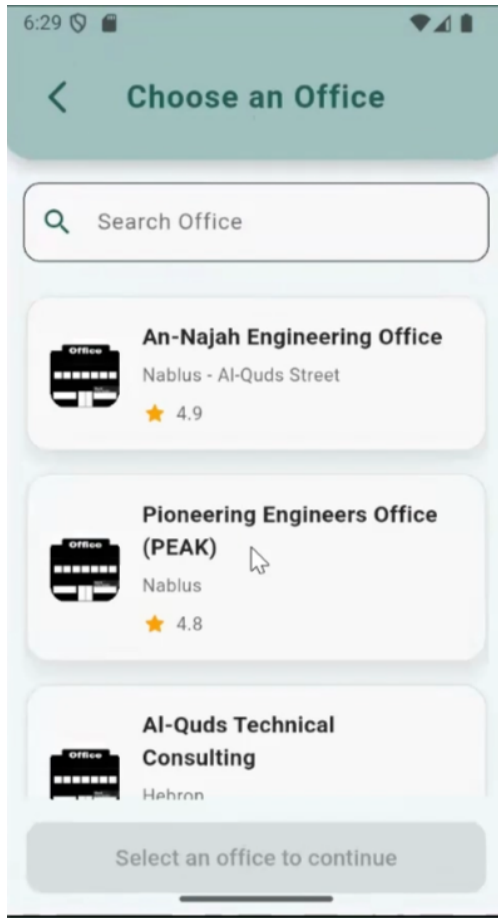
### 4.2.7 Design Track

The design track in BuildFlow guides the homeowner through four key steps: Step 1: the user selects an engineering office and receives either approval or rejection.

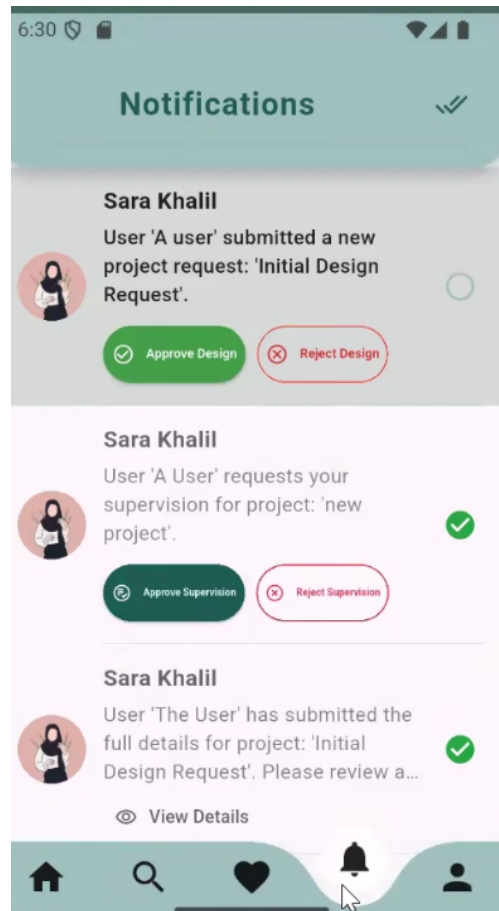
Step 2: once approved, the app shows a pre-submission checklist so the user can confirm that all required documents are ready.

Step 3: the user completes three licence-request forms—personal details, land information, and the signed agreement upload.

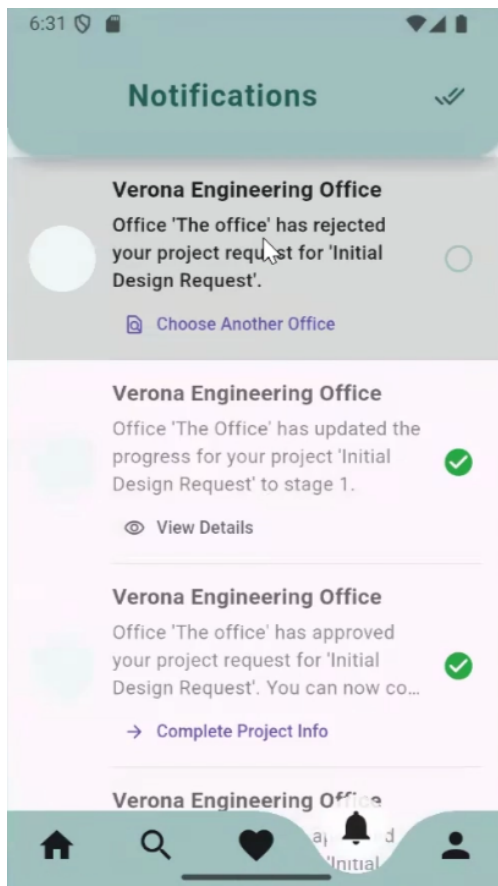
Step 4: finally, the user fills out detailed design preferences (room count, layout notes, style, etc.) that help the office prepare an accurate 2D/3D concept.



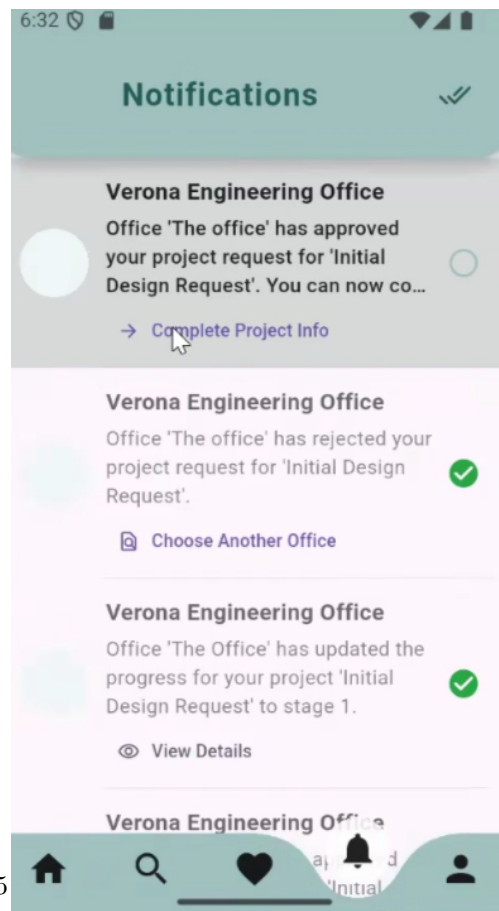
Choose Engineering Office



Office Notification



Rejection Message appears for user



Approval Message appears for user

Figure 4.10: Step 1 – Selecting an engineering office and receiving its response.

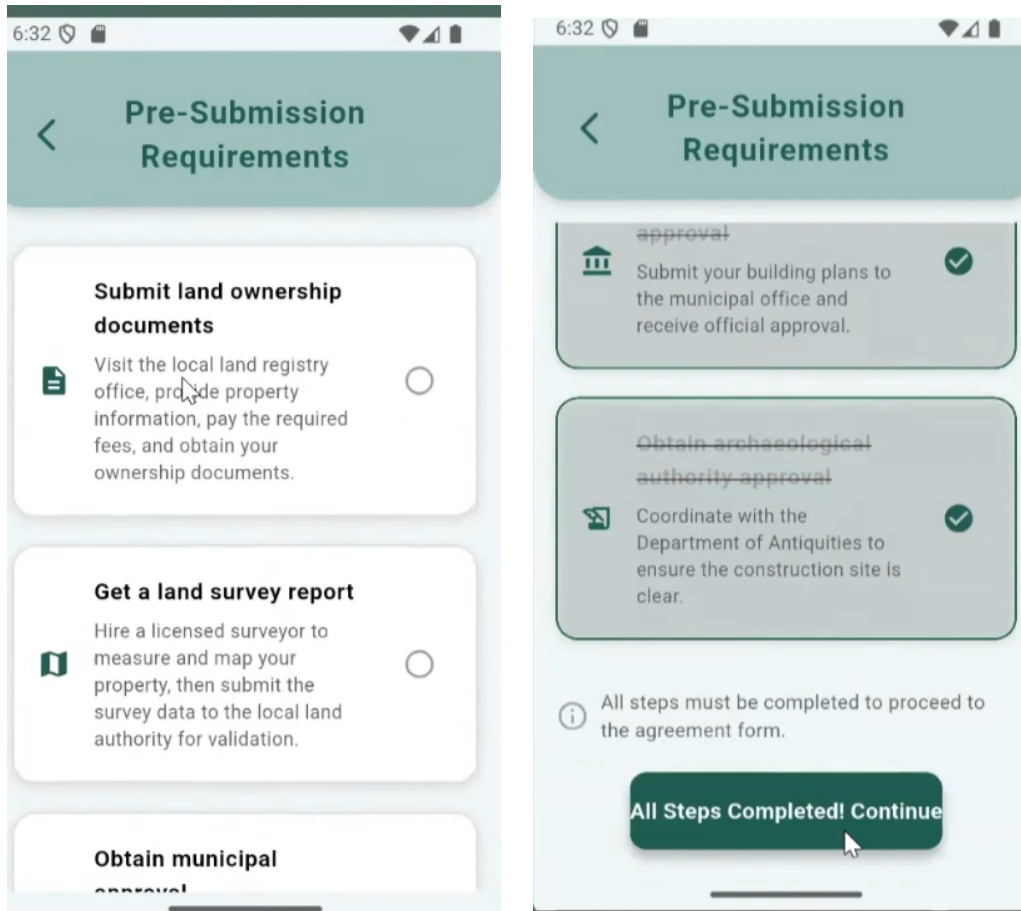
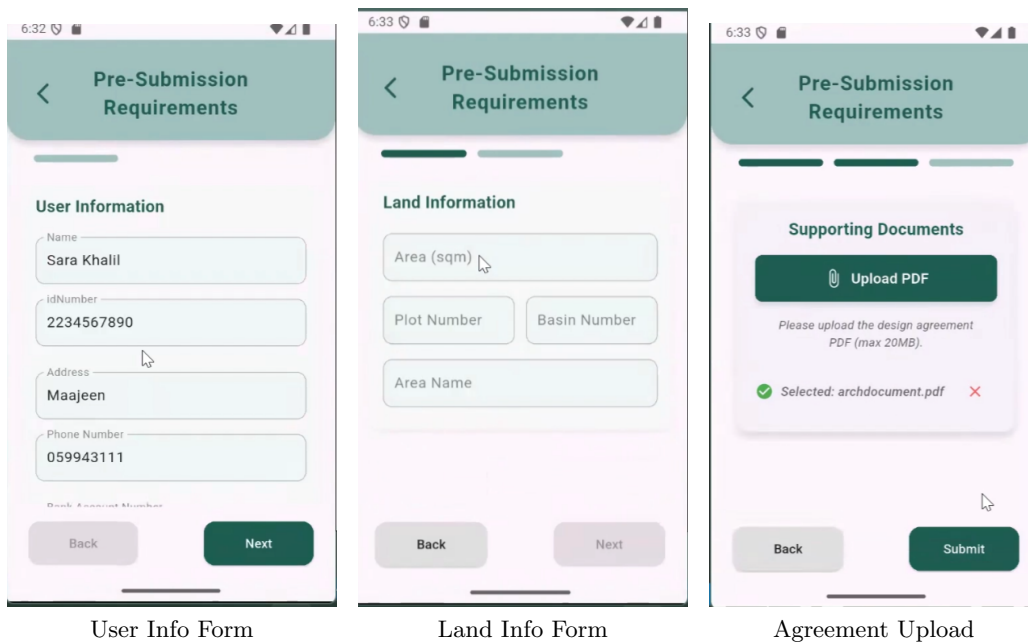


Figure 4.11: Step 2 – Pre-submission checklist displayed after office approval as a guidance.

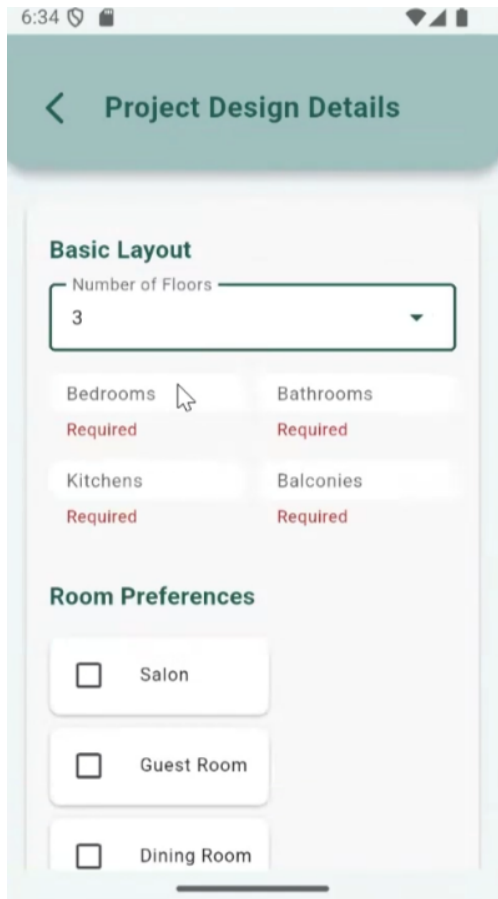


User Info Form

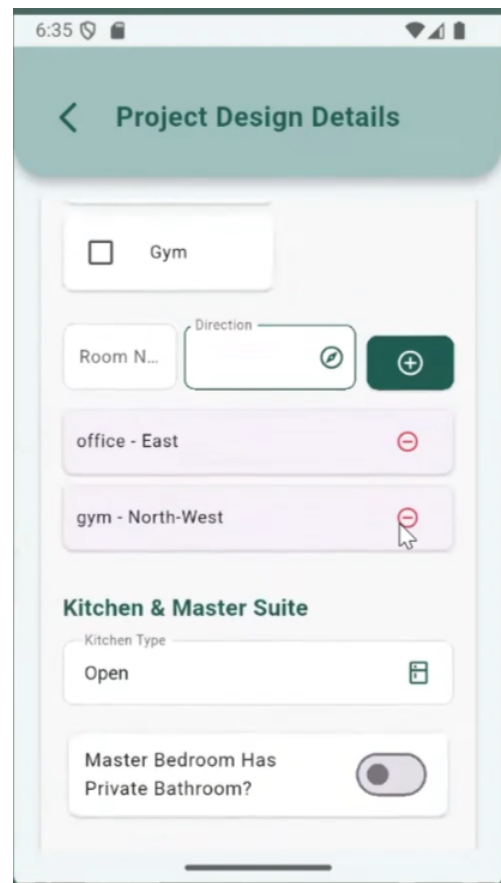
Land Info Form

Agreement Upload

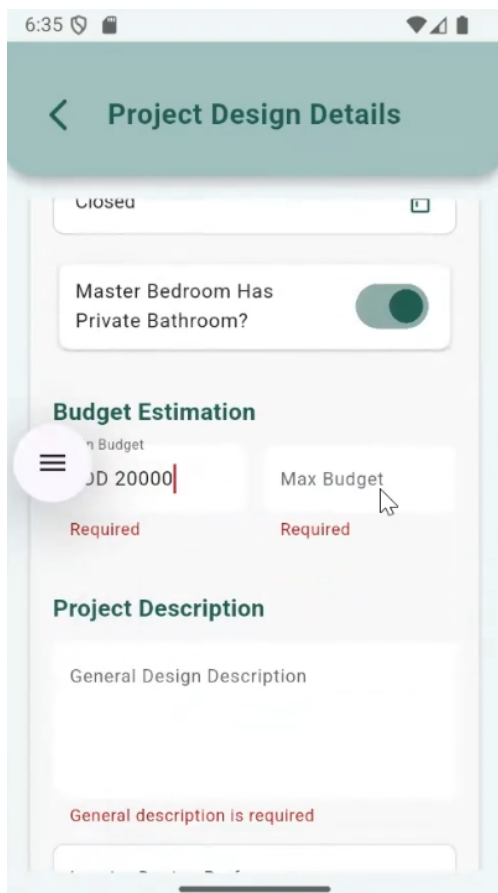
Figure 4.12: Step 3 – Licence request forms: user and land information plus agreement upload.



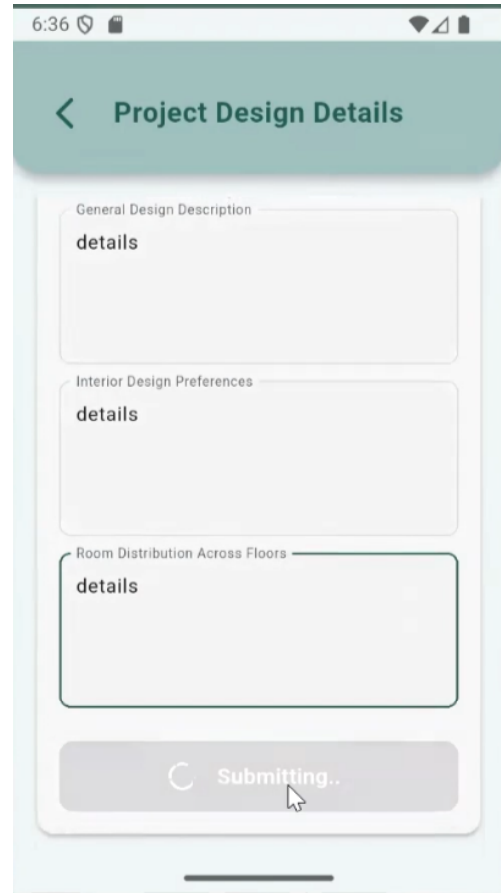
Design Description (1)



Design Description (2)



Design Description (3)



Design Description (4)

Figure 4.13: Step 4 – Entering detailed project design requirements.

**Project Details for Office**

This section illustrates how engineering offices manage project details. They can view land and user information, send payment proposals, track progress, and upload required documents.

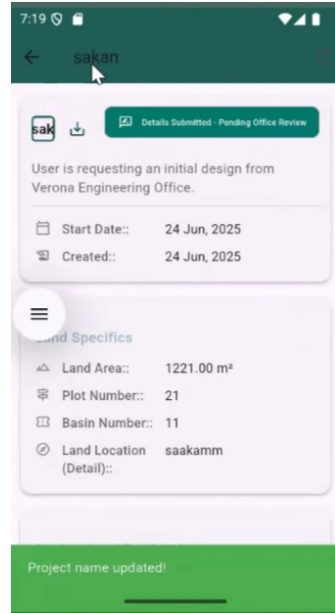


Figure 4.14: Project details and Land Specifics for office, office can edit name

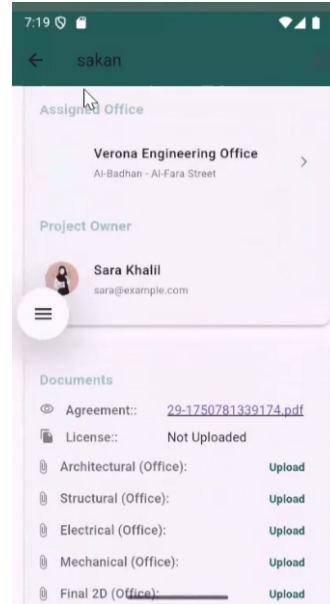


Figure 4.15: Assigned Office, Project Owner, and Documents

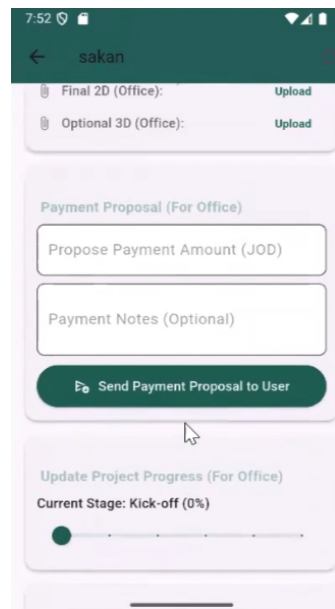


Figure 4.16: Payment Proposal Interface for office

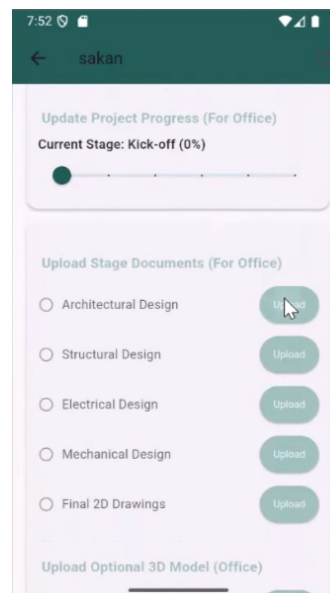


Figure 4.17: Upload Progress and Stage Documents by office

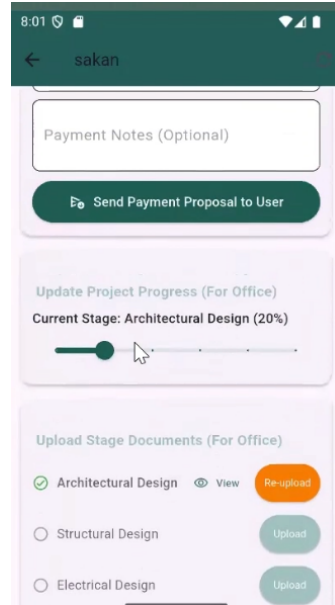


Figure 4.18: View After Uploading Documents from office

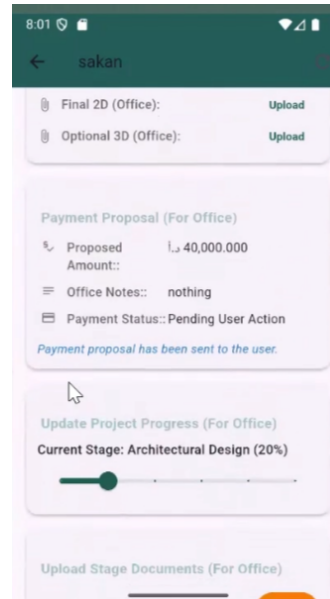


Figure 4.19: Payment Proposal from office to user

### Project Details for Owner

This section allows the homeowner to view the full scope of their project details. The first part presents a clear summary of the project description along with land-specific data. It is followed by an overview of the requested design specifications. Users can also access and review uploaded official documents relevant to the project. Additionally, a comprehensive screen displays the current progress of the project stages, along with any attached documents and the option to preview the architectural plans in 3D using integrated visualization features.

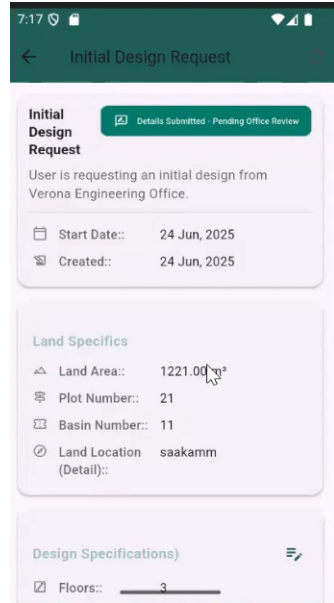


Figure 4.20: Project Description and Land Specifics for user

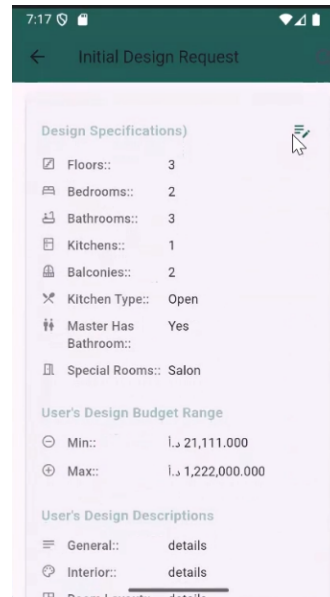


Figure 4.21: Design Specifications, user can edit

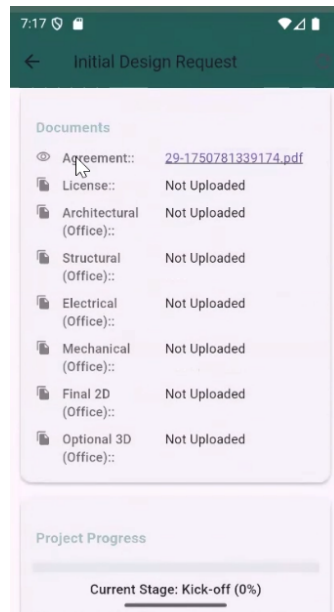


Figure 4.22: Documents appear for user

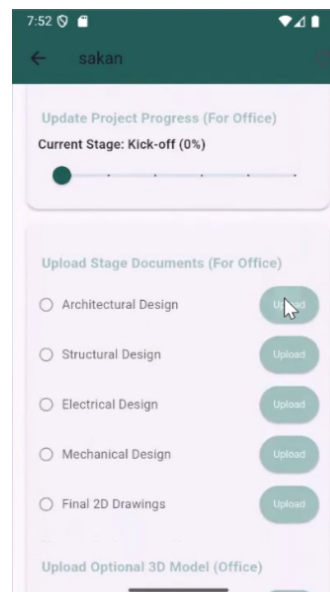


Figure 4.23: Project Progress, Documents for stages and 3D uploading from office

### 4.2.8 3D Visualization via Planner 5D

This feature allows users to explore the architectural design of their future home in a realistic and interactive 3D environment. Through integration with the Planner 5D web platform, users can view structural layouts, navigate interior and exterior perspectives, and better understand the spatial distribution and aesthetic of the proposed design. This visualization enhances

communication between homeowners and engineers, helping to align expectations and provide feedback before finalizing construction.

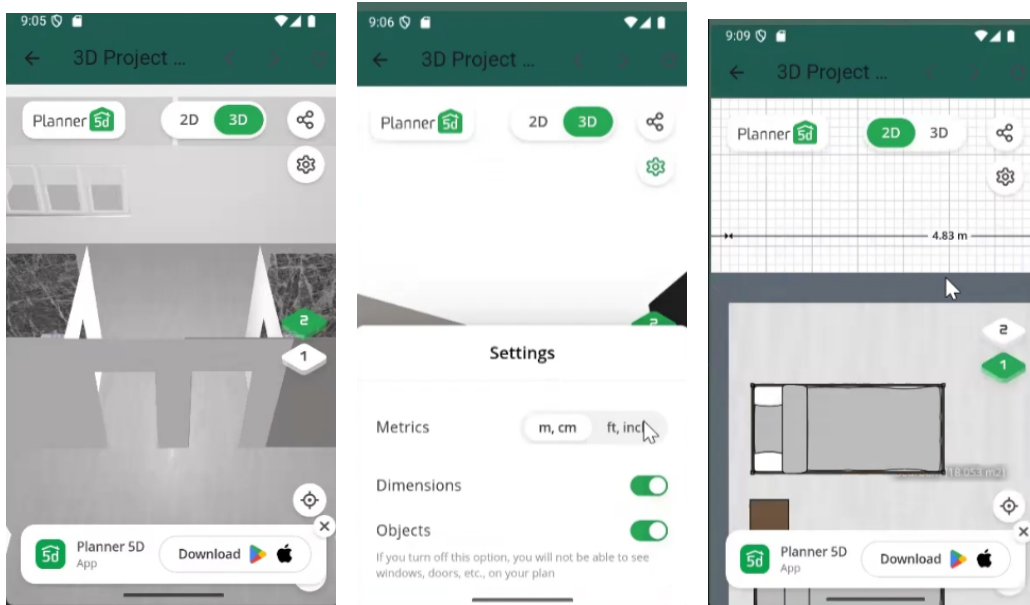


Figure 4.24: 3D design visualization using the integrated Planner 5D web view

### 4.2.9 Supervision Track

This track enables users to request supervision services for a specific project, starting with selecting the project, choosing a contractor company and engineering office, notifying them, and then completing required document submissions and tracking updates.

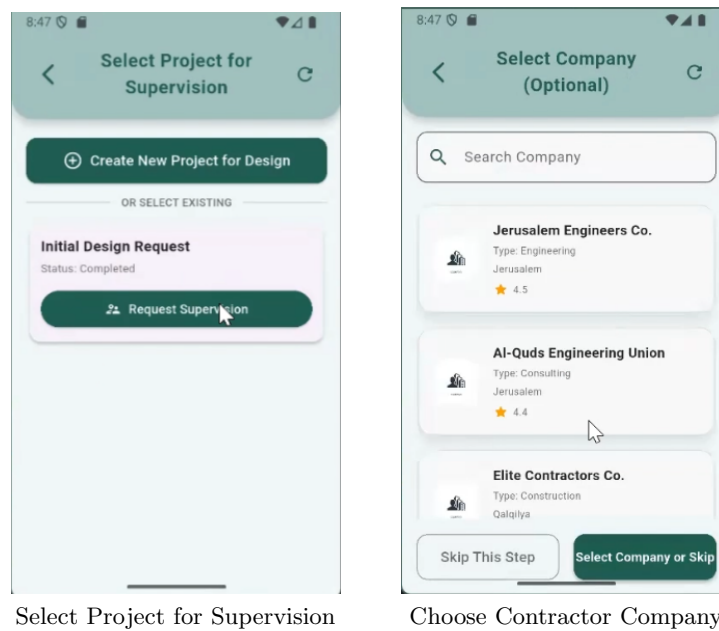


Figure 4.25: Step 1 – Selecting a project and assigning a contractor for supervision.

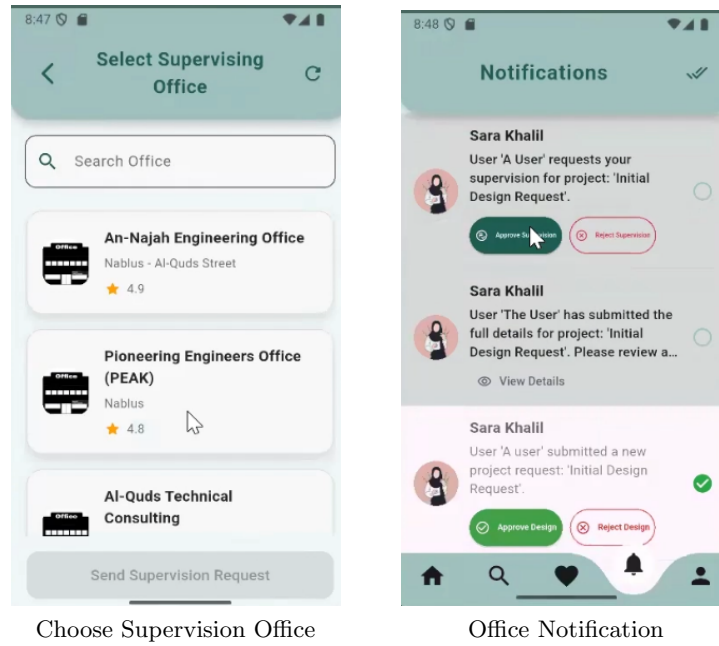
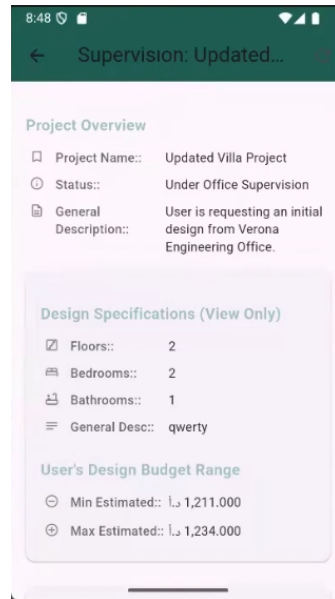


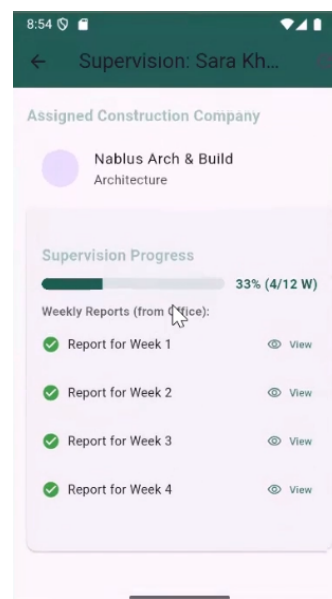
Figure 4.26: Step 2 – Selecting the supervising office and sending them a request.

### Project Details for Supervision Office

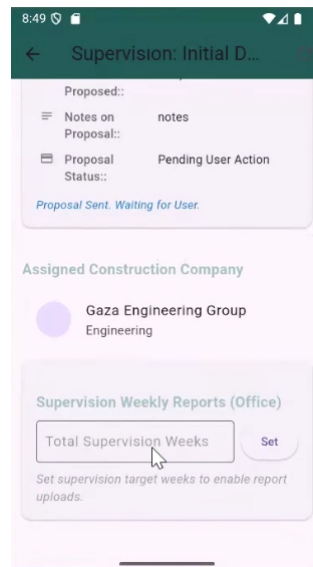
This section enables the office to view, manage, and update the supervision process. The office can review basic details, track implementation stages, and upload relevant documentation.



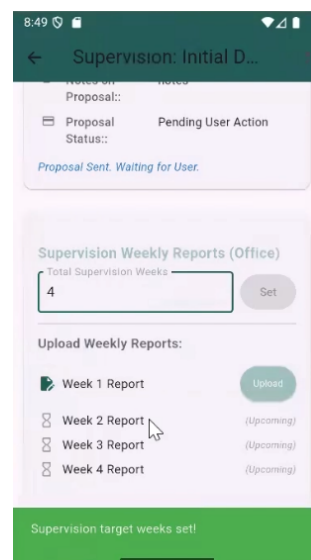
Supervision details for user



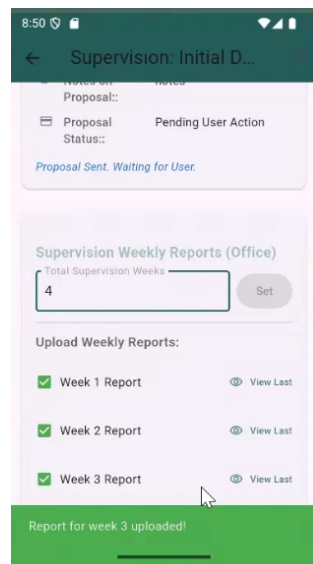
User view weekly reports



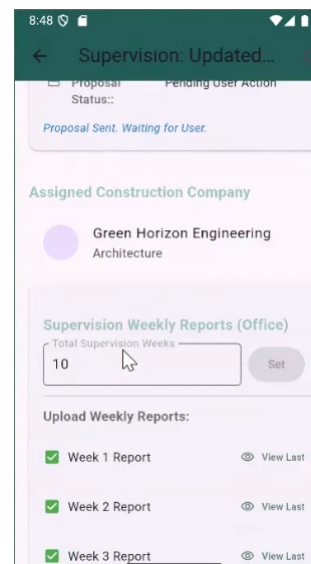
Supervision details for office



Office set number of weeks



Office upload weekly report



Supervision reports

Figure 4.27: Office & user view to track and manage project supervision stages.

### 4.2.10 Consultation Track

This track provides a dynamic chat system that enables communication between all parties within the BuildFlow platform. Users can initiate and continue conversations with engineering offices and construction companies. Likewise, offices and companies can communicate with each other or with users based on the context of the project. All conversations can be accessed through the chat icon in the navigation bar.

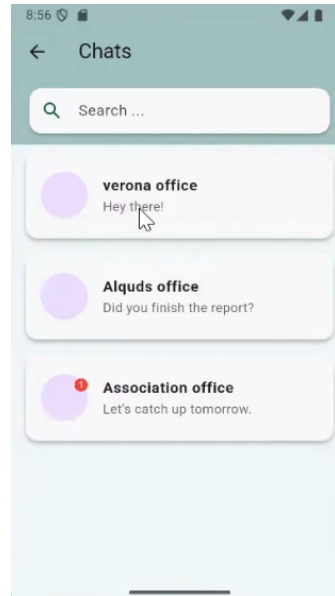


Figure 4.28: Chat List, Displays all conversations between users, offices, and companies.

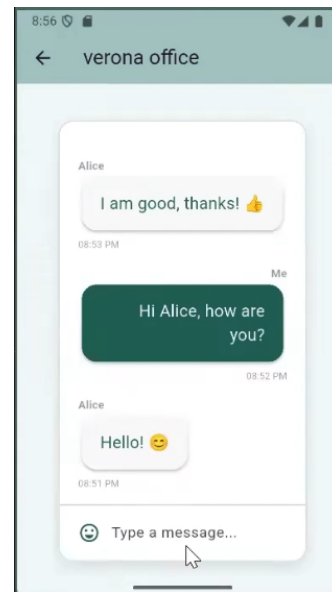


Figure 4.29: Chat Interface, Supports real-time messaging between all platform roles.

### 4.2.11 Map Feature

The Flutter Map library was used to display an interactive map that allows the user to specify the land location in two ways: manually from the map or by entering the area name, plot number, and basin number, with a search feature available within the map. The application can also determine the user's current location and plot the shortest route to the land location using a navigation algorithm, helping the office or company to reach it easily. The map is displayed via an open-source API without storing the location in the database, with reliance on the official GeoMOLG website when available.

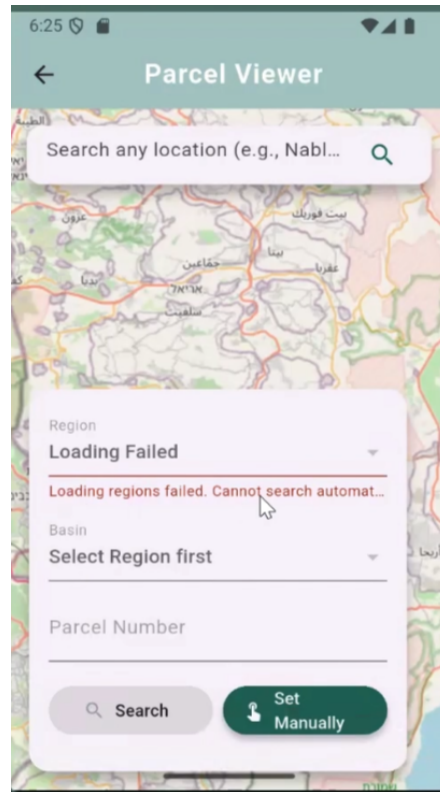


Figure 4.30: Map Screen

Office Profile

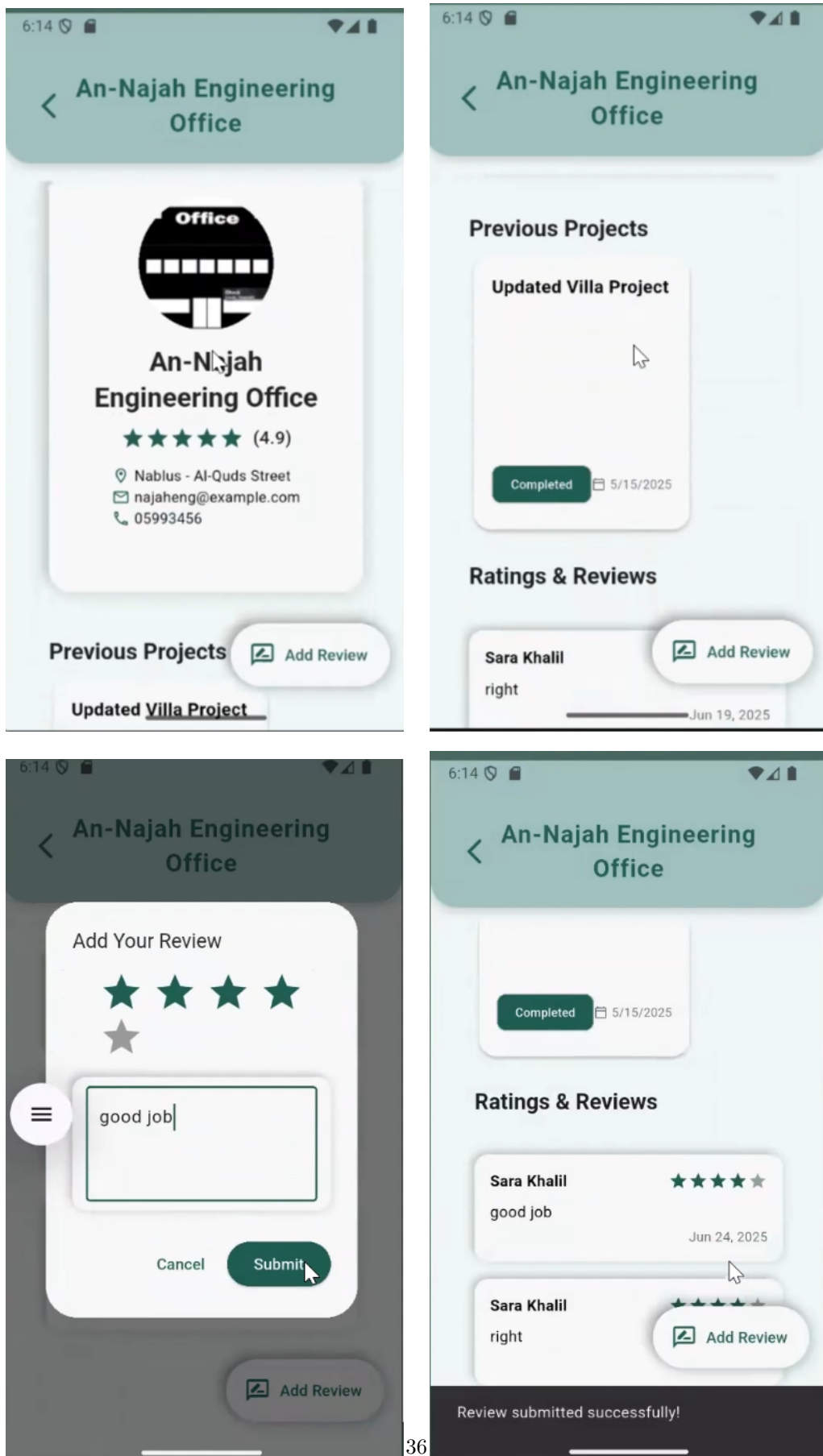


Figure 4.31: Office profile read-only for non-owners, with adding a review

### Company Profile

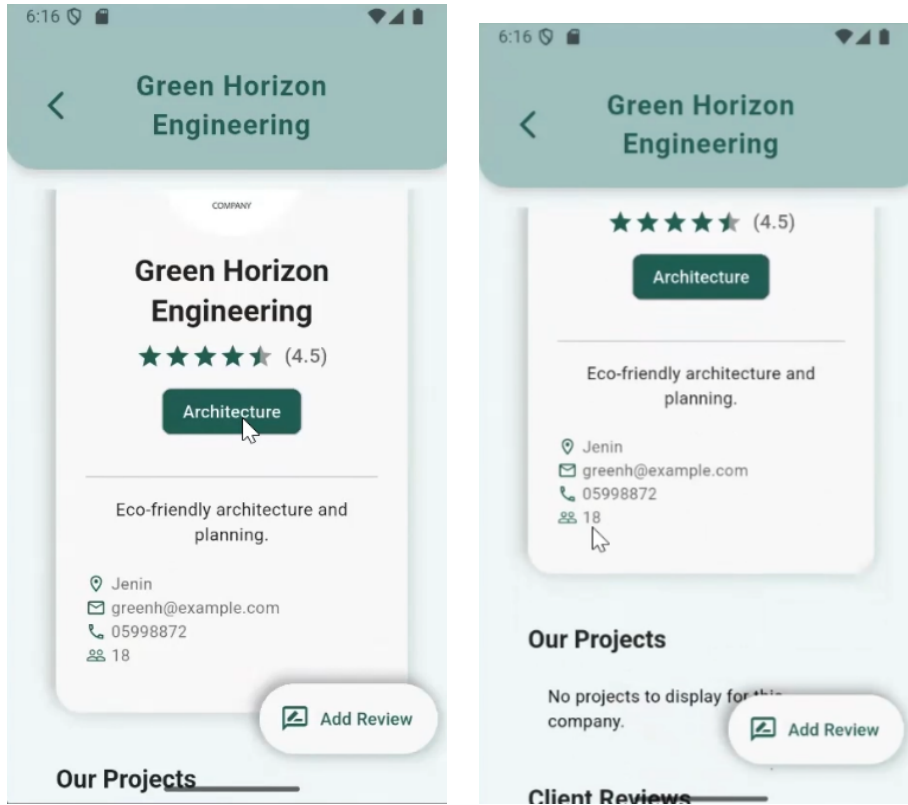


Figure 4.32: Company Profile Read-only for non-owners, adding a review

Project Profile

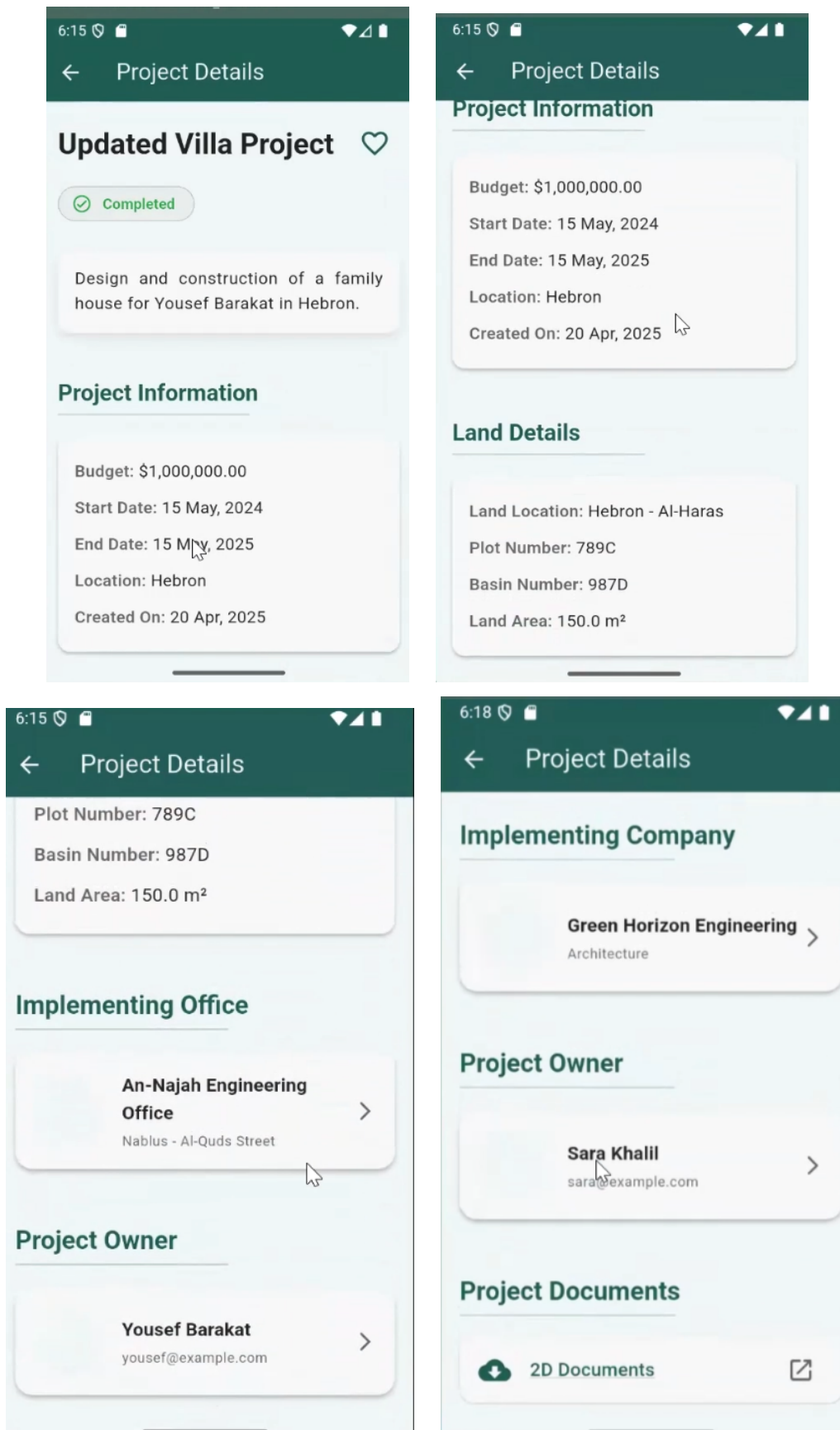


Figure 4.33: Project Profile Read-only for non-owners

# Chapter 5

## Results and Discussion

### 5.1 Results

BuildFlow delivers a set of features that streamline collaboration among homeowners, engineering offices, and construction companies:

1. **User Registration and Authentication:** secure sign-up and authentication for users, offices, and companies.
2. **Project Creation and Management:** homeowners submit project details (budget, land data, documents) and track status.
3. **Permit Submission Workflow:** step-by-step form for uploading official documents and completing approval stages.
4. **Office and Company Selection:** users browse providers, view ratings, and invite them to projects.
5. **Agreement and Document Storage:** parties upload licences, contracts, and 2D/3D drawings in one place..
6. **3D/2D House Visualization via Planner 5D (WebView Integration):** interactive preview of house designs in both 2D and 3D.
7. **Interactive Land Location Map (Flutter Map):** displays exact plot and basin location for each project.
8. **Notification System:** real-time alerts for new requests, approvals, reviews, or document uploads.
9. **Review and Rating System:** users evaluate offices and companies at milestones or after completion.
10. **Favorites System:** quick bookmarking of preferred offices, companies, or projects.
11. **Real-Time Chat:** in-app messaging between users, offices, and companies for rapid clarification and decision-making.
12. **Weekly Project Reports:** engineering offices upload structured progress summaries

each week, visible to homeowners.

13. **Realistic Data Integration:** preloaded users, offices, companies, and projects drawn from real Palestinian contexts for meaningful testing.

## 5.2 Discussion

BuildFlow achieves its goal of providing a practical, transparent workspace for residential construction:

- **Real-world alignment** – Accurate land mapping and official document handling ground every project in verifiable data.
- **Enhanced visual insight** – WebView integration with Planner 5D converts flat 2D plans into navigable 3D models, helping all parties understand design intent before construction begins.
- **Continuous communication** – The real-time chat system eliminates slow email exchanges, while weekly reports keep homeowners and contractors synchronised on progress and next steps.
- **Scalable architecture** – A PostgreSQL schema that uses JSONB and arrays is ready for new modules (e.g., payments or extended messaging) without major refactoring.
- **Challenges met** – Balancing academic deadlines with development and sourcing reliable land data were significant hurdles, yet the team met core milestones and delivered a working platform.
- **Future potential** – User feedback can guide UI refinements, deeper map integrations, and advanced analytics, positioning BuildFlow to evolve alongside industry needs.

Together, these results and insights demonstrate that BuildFlow is not only technically sound but also well-suited for real-world deployment in the Palestinian construction landscape and beyond.

## Chapter 6

# Conclusion and Future Work

### 6.1 Conclusion

BuildFlow successfully bridges the gap between homeowners, engineering offices, and construction companies through a unified and interactive digital platform. By integrating real-world data such as land location, legal documents, and architectural plans, the system provides users with clarity, control, and collaboration throughout the project lifecycle. Transparency and communication between all stakeholders are improved by essential features like the weekly reporting, real-time chat, 2D-to-3D visual conversion, and the step-based permit workflow.

The project achieved its main objectives and demonstrated its technical and practical viability, despite difficulties in finding realistic data and striking a balance between development and academic obligations. These days, BuildFlow is a solid basis for scalable and intuitive construction workflow digitization.

### 6.2 Future Work

Several enhancements are planned for upcoming versions of BuildFlow, including:

1. An integrated payment system that facilitates safe transactions between offices, businesses, and users.
2. Advanced Analytics: offering information on project budgets, schedules, and performance patterns.
3. The Admin Dashboard gives system administrators the ability to control user behavior, keep an eye on approvals, and resolve conflicts.
4. Mobile optimization, which adds offline functionality to the existing app for users in places with spotty internet service.
5. Smart Recommendations: these offer workplaces and businesses based on user preferences

and previous evaluations.

6. The Mapping API has been expanded to include official government GIS data for more precise land verification.
7. Multilingual Support: enhancing usability for both English and Arabic users.
8. AI Chatbot for Consultation: An intelligent chatbot will be added to the chat system to provide instant answers, guide users through platform features, and offer basic consultation—reducing the need for human support.

BuildFlow will continue to develop as a dependable and cutting-edge platform that meets the changing demands of construction stakeholders in Palestine to these enhancements.

# Bibliography

- [1] Procore Technologies, Inc., *Procore - construction management software*, Accessed: 2025-06-27, 2024. [Online]. Available: <https://www.procore.com>.
- [2] Ministry of Local Government - Palestine, *Geomolg land information viewer*, Accessed: 2025-06-27, 2025. [Online]. Available: <https://geomolg.ps/L5/index.html?viewer=A3.V1>.
- [3] Local Water Utilities Administration, *Lwsc geo portal*, Accessed: 2025-06-27, 2025. [Online]. Available: <https://geo.lwsc.ps/>.
- [4] H. I. for Geoinformation Technology, *Openrouteservice*, <https://openrouteservice.org>, Accessed: 2025-06-27, 2025.
- [5] Planner 5D, *Planner 5d: Home design software*, Accessed: 2025-06-27, 2025. [Online]. Available: <https://planner5d.com>.

# Appendix

## .1 Webs Application

### .1.1 Authentication and Validation

#### 1. Sign Up:

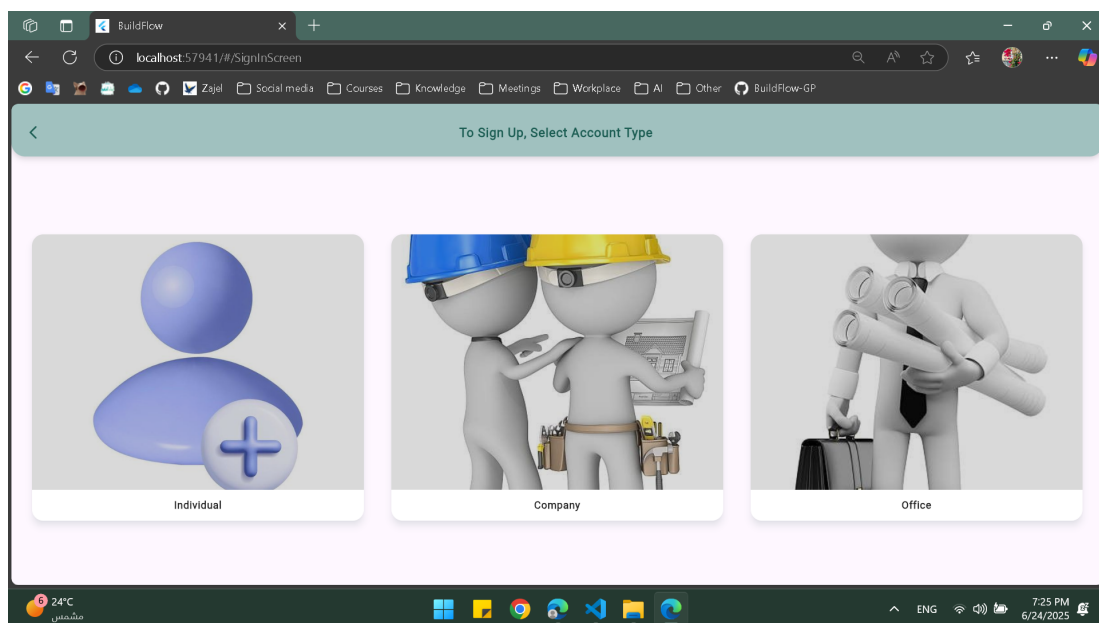
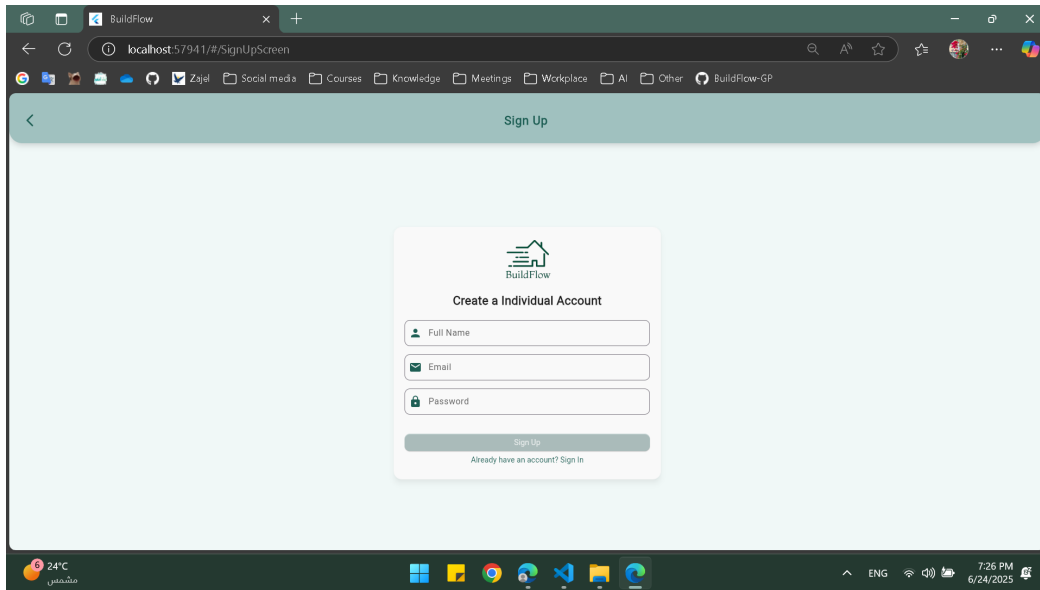
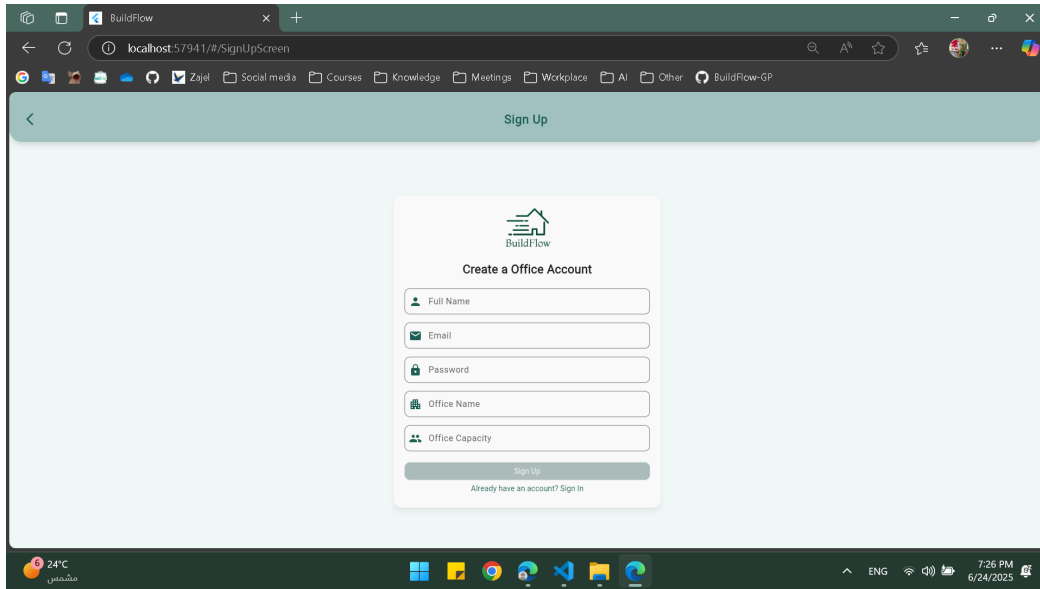


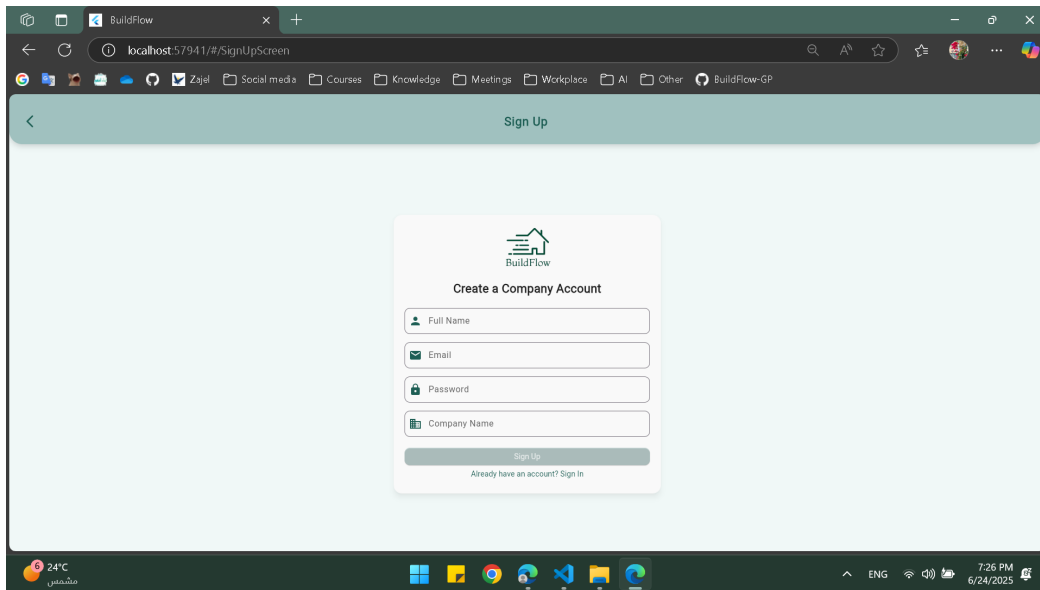
Figure 1: Select type for registered



Create account as user



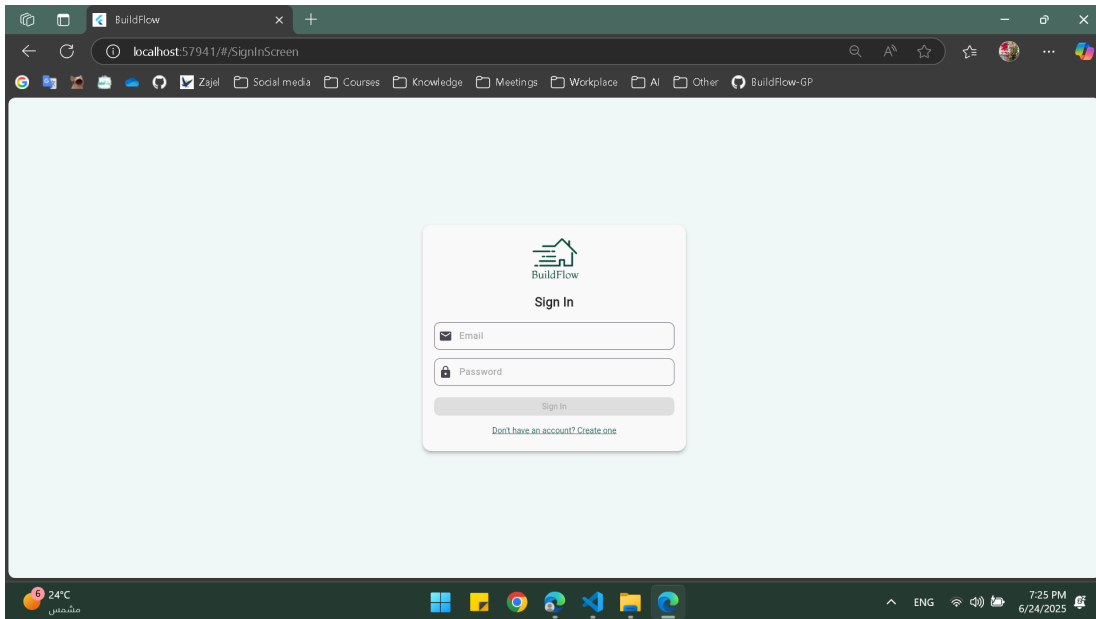
Create account as office



Create account as company

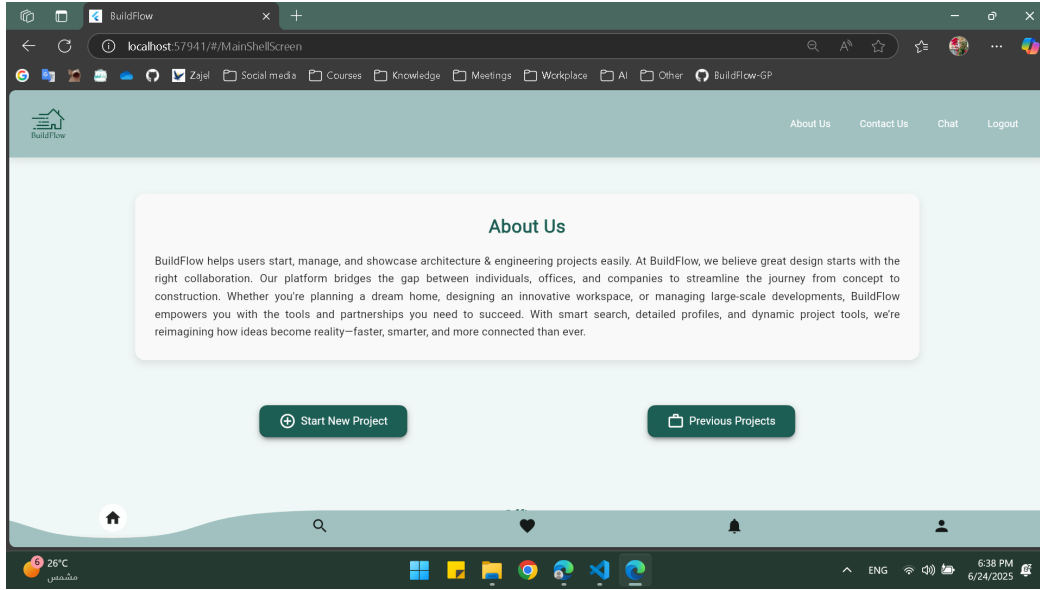
Figure 2: User, Office, and Company registration screens

## 2. Sign In:

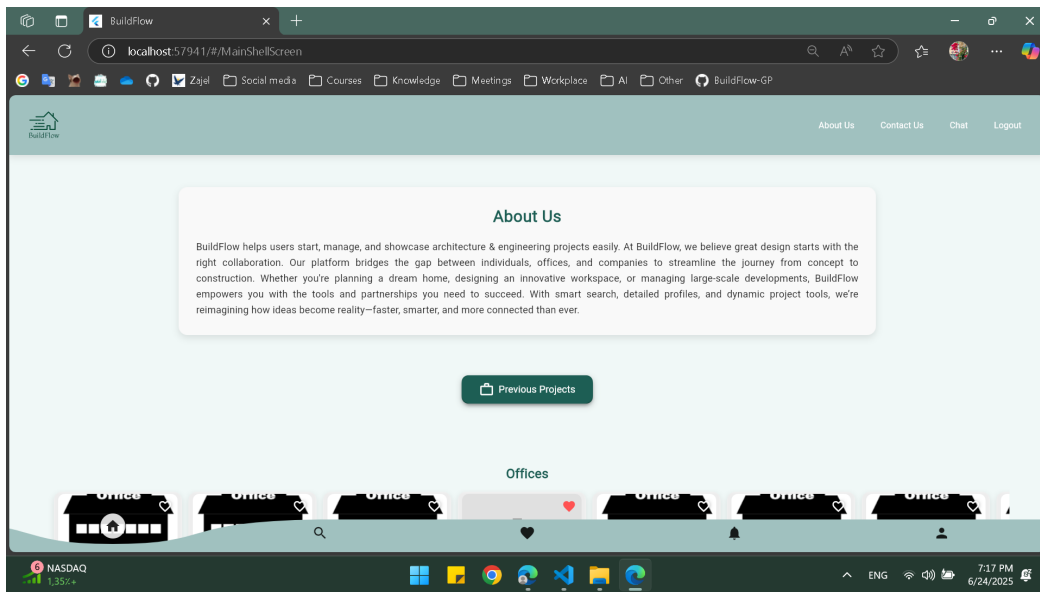


Sign in

.1.2 Home Page:

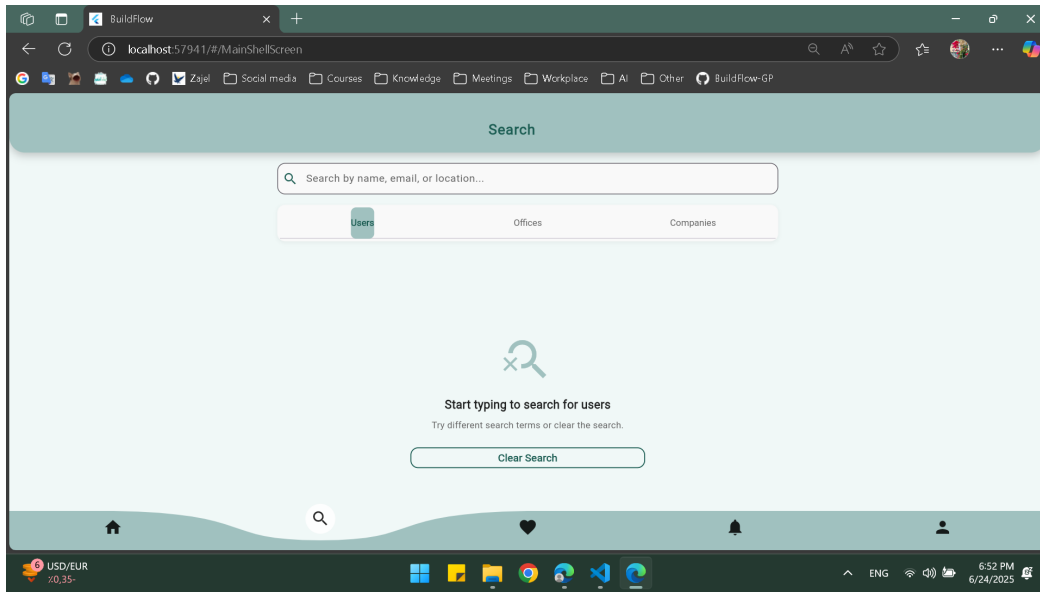


Home page For Users

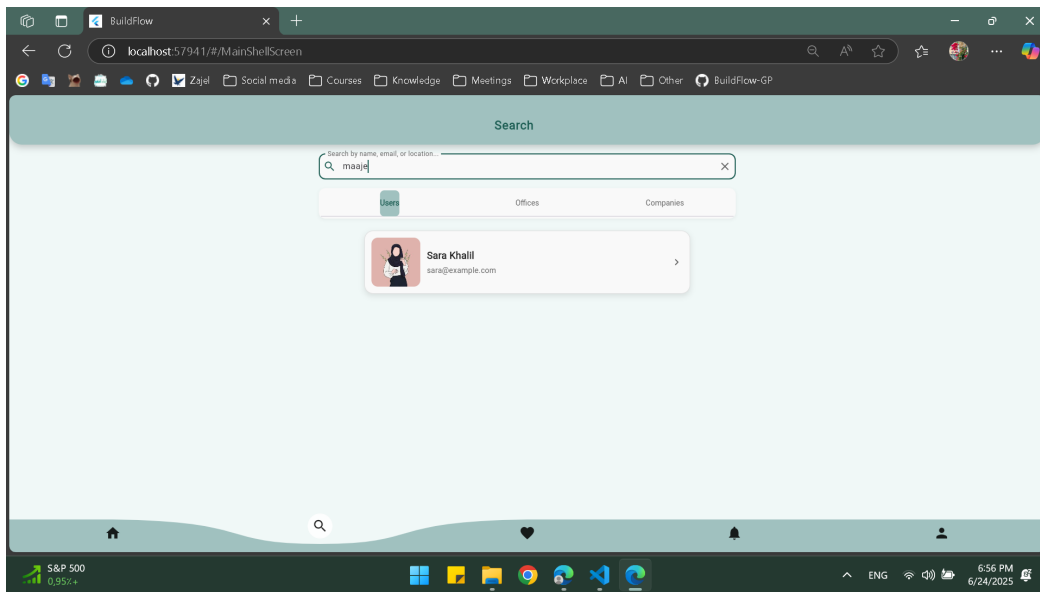


Home page for office and company

### .1.3 Search Page:



Search Page Overview



Search by Location

Figure 3: Search features in the BuildFlow web application.

### .1.4 Favorite Page:

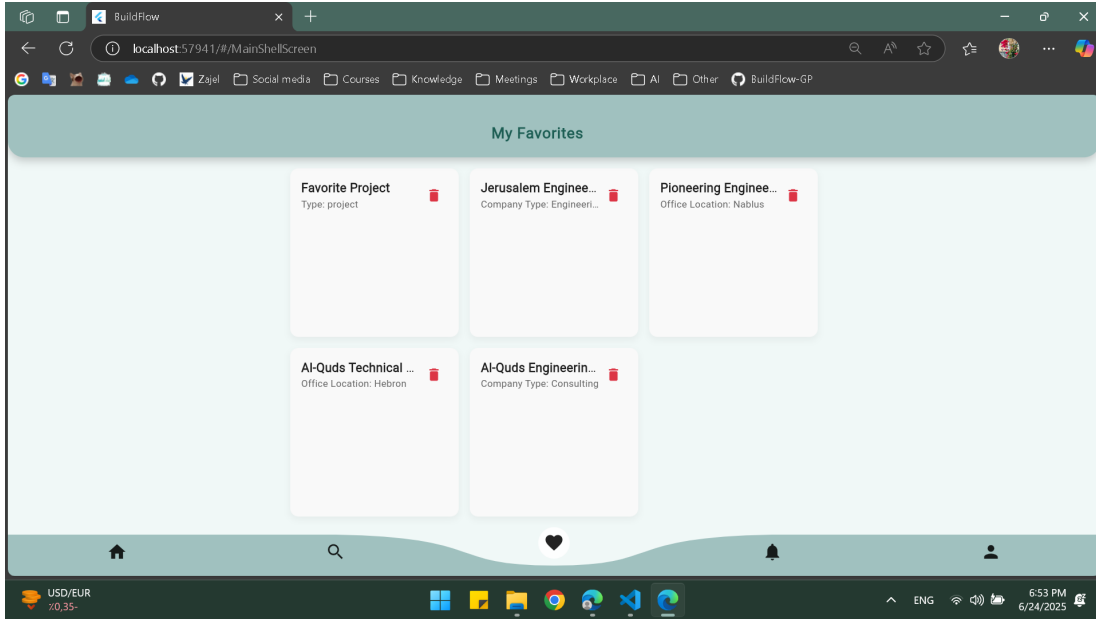


Figure 4: Favorite Page Overview

### .1.5 Notification Page:

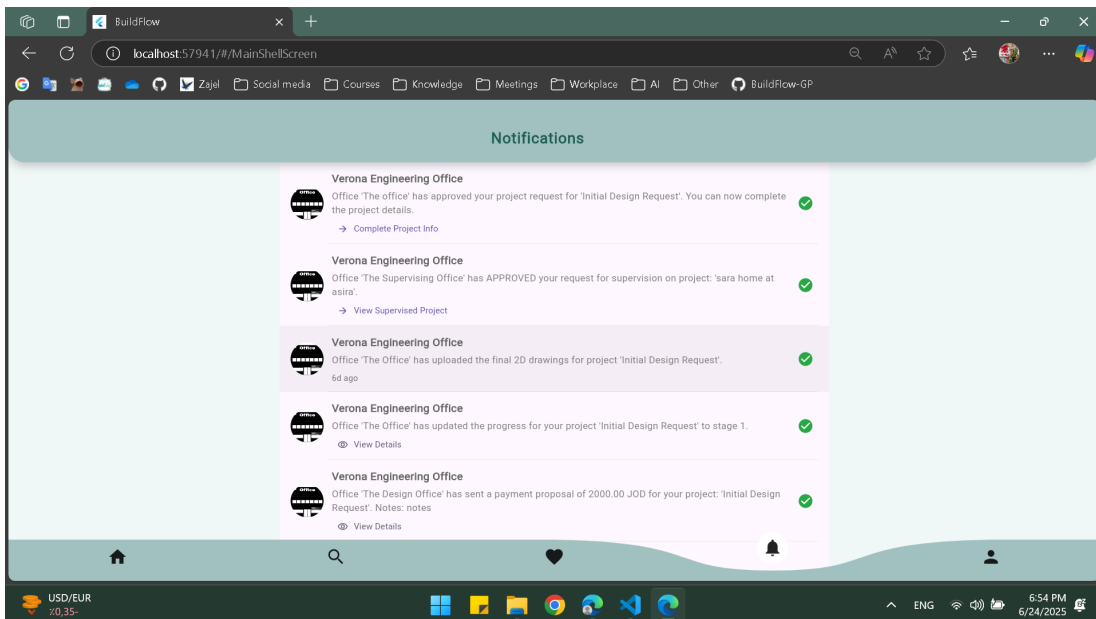
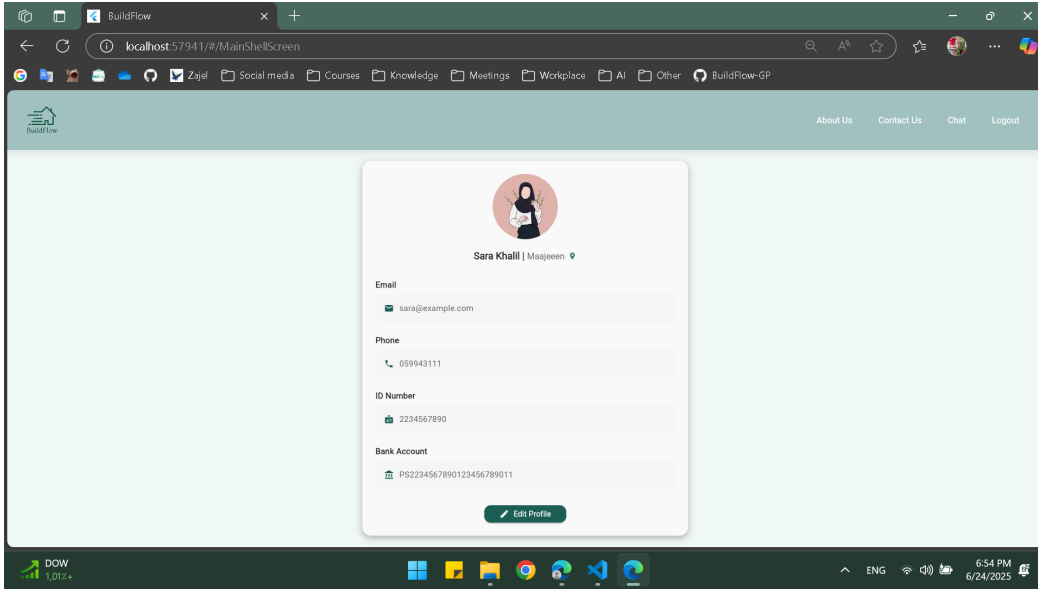
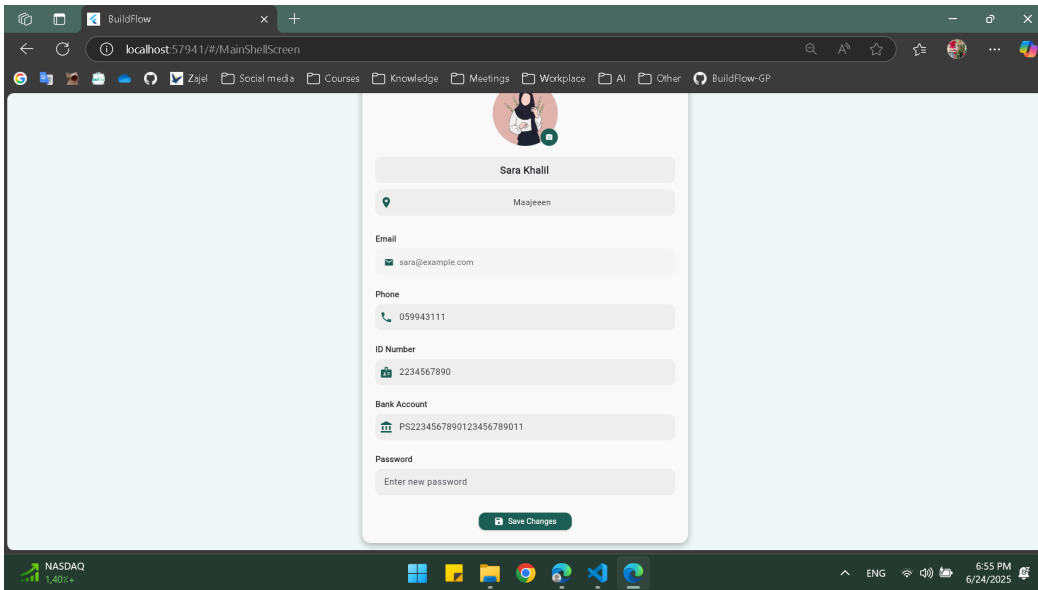


Figure 5: Notification Page Overview

.1.6 Profile Pages:



User Profile Page

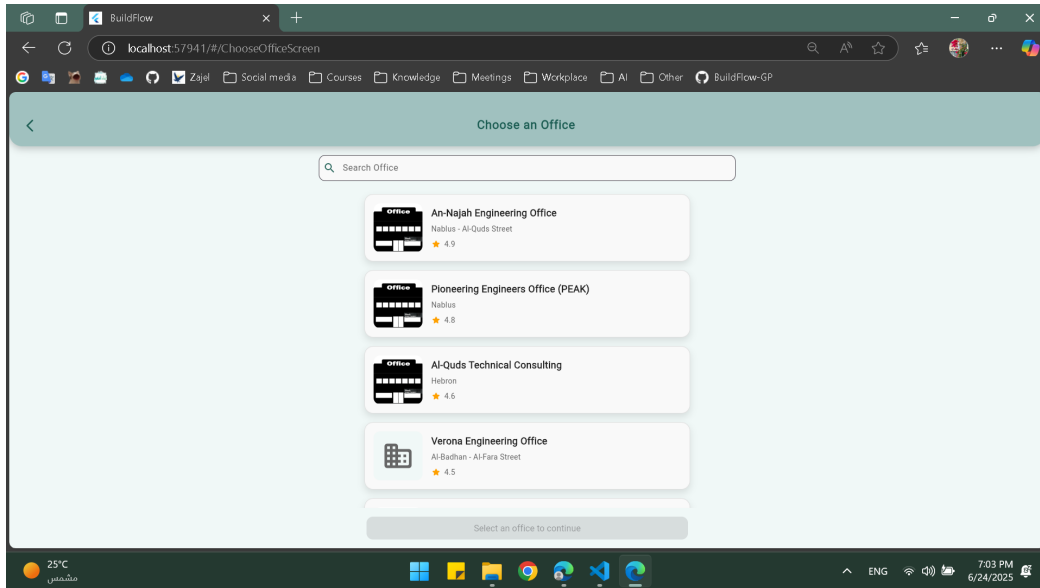


Edit location, image or anything

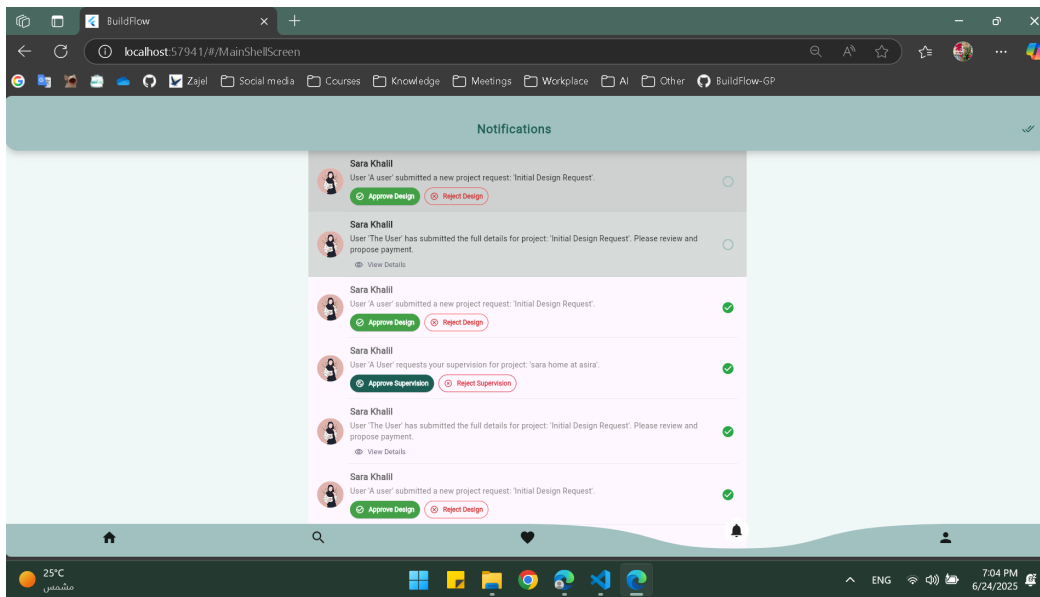
Figure 6: Screens showing the user profile



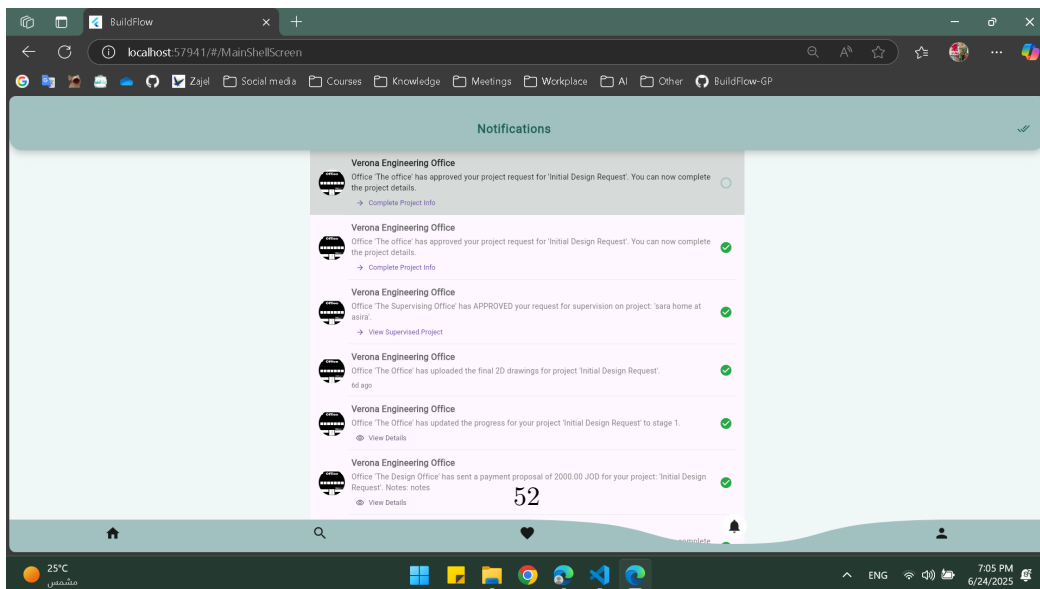
### .1.7 Design Track



Choose Engineering Office



Office Notification



Design order complete

**Pre-Submission Requirements**

**User Information**

Name: Sara Khalil | ID Number: 2234567890

Address: Maajeen | Phone Number: 059943111

Bank Account Number: PS2234567890123456789011

Back | Next

User Info Form

**Pre-Submission Requirements**

**Land Information**

Area (sqm)

Plot Number | Basin Number

Area Name

Back | Next

Land Info Form

**Pre-Submission Requirements**

**Supporting Documents**

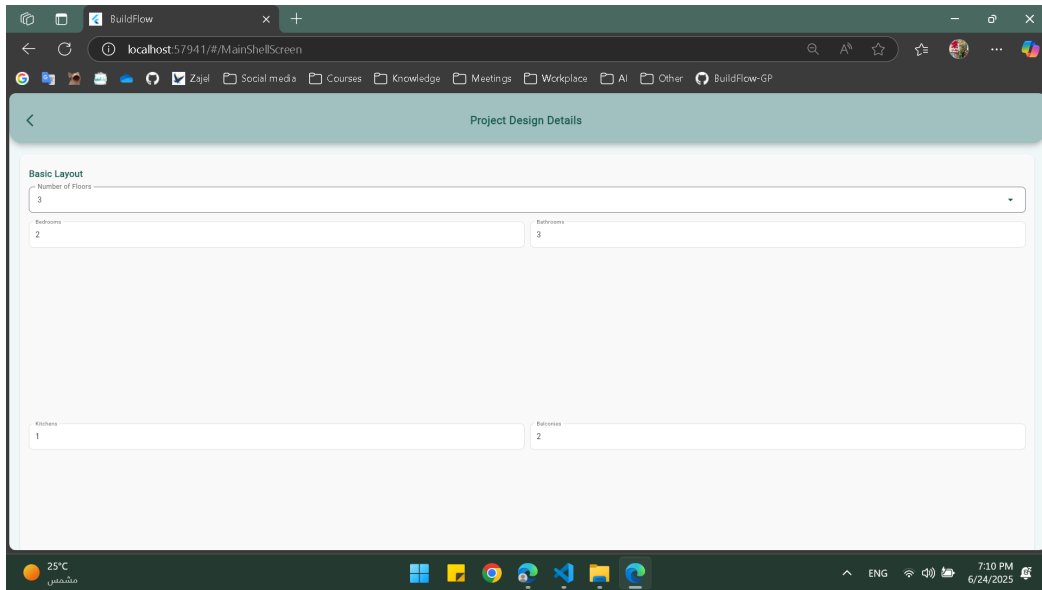
Upload PDF

Please upload the design agreement PDF (max 5MB).

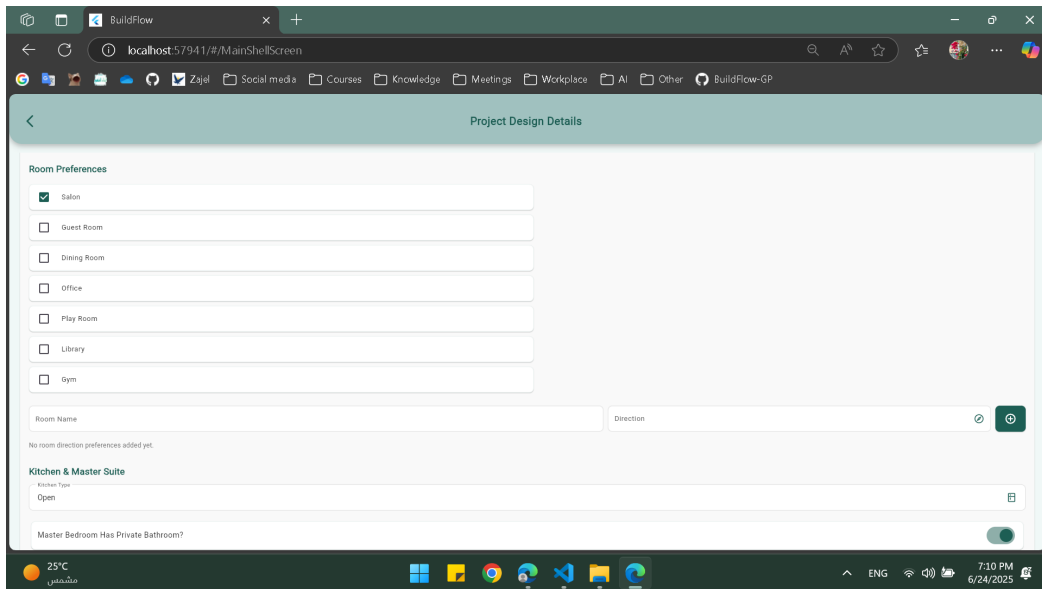
Back | Submit

Agreement Upload

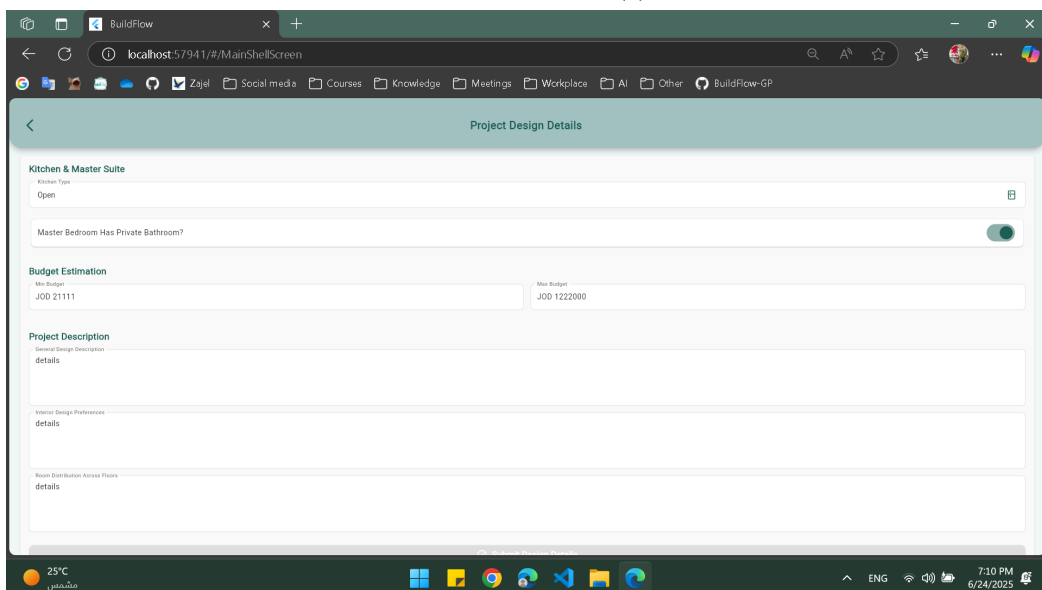
Figure 8: Licence request forms: user and land information plus agreement upload.



Design Description (1)



Design Description (2)



Design Description (3)

### Project Details for Office

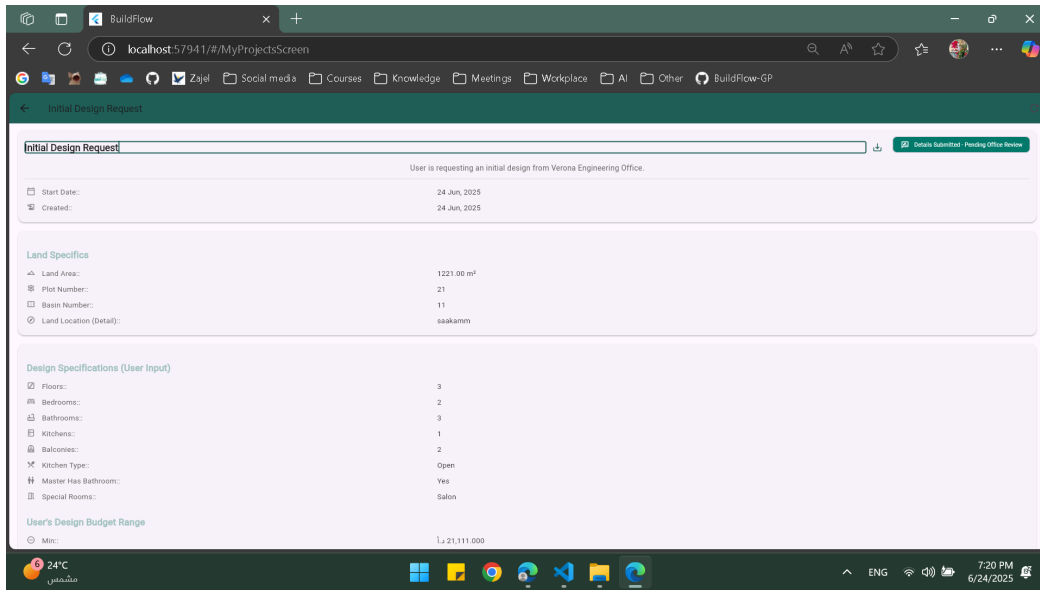


Figure 9: Project details and Land Specifics for office, office can edit name

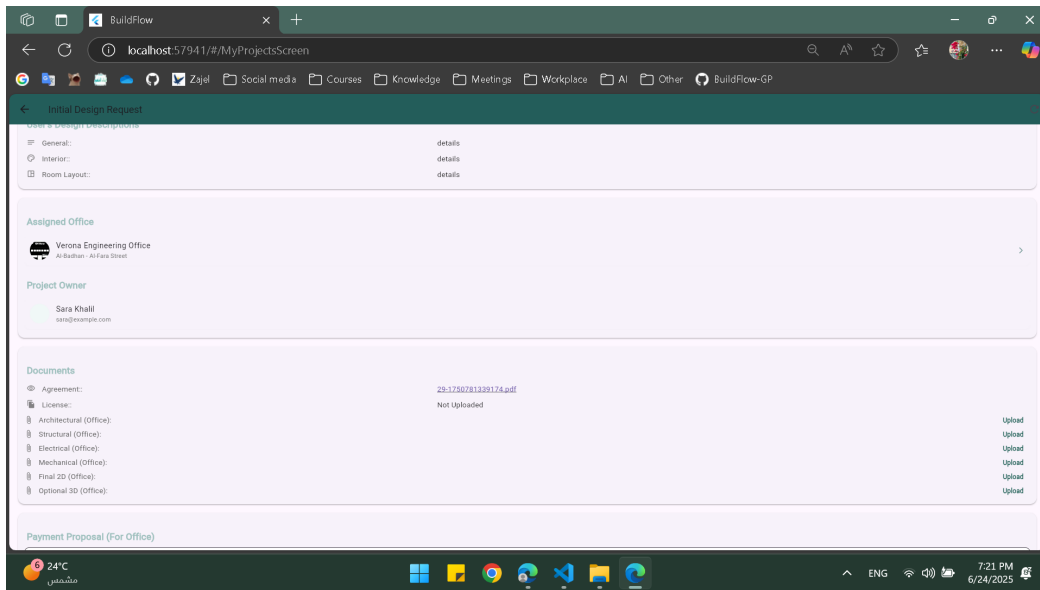


Figure 10: Assigned Office, Project Owner, and Documents

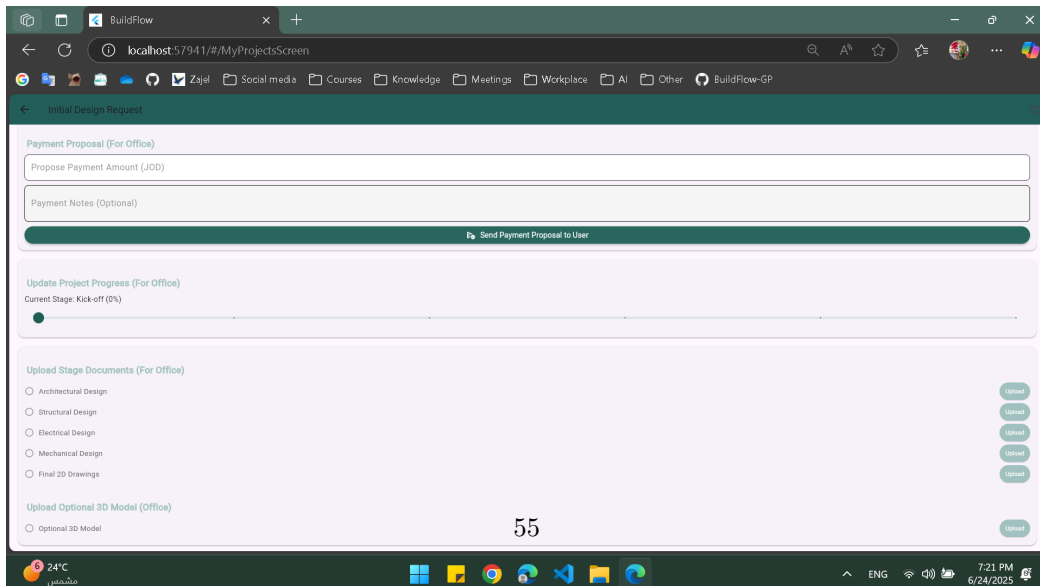
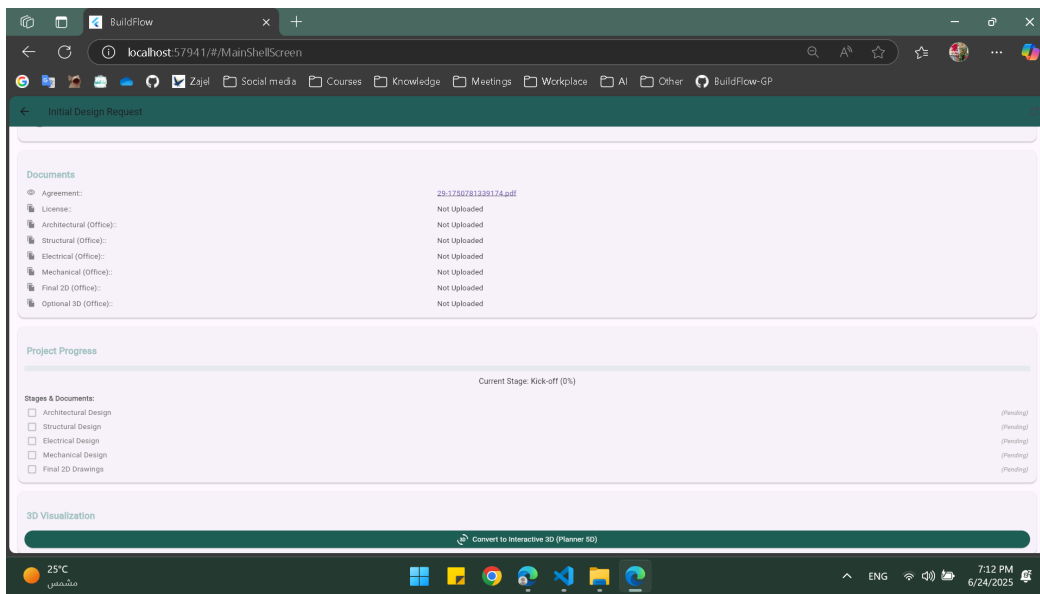
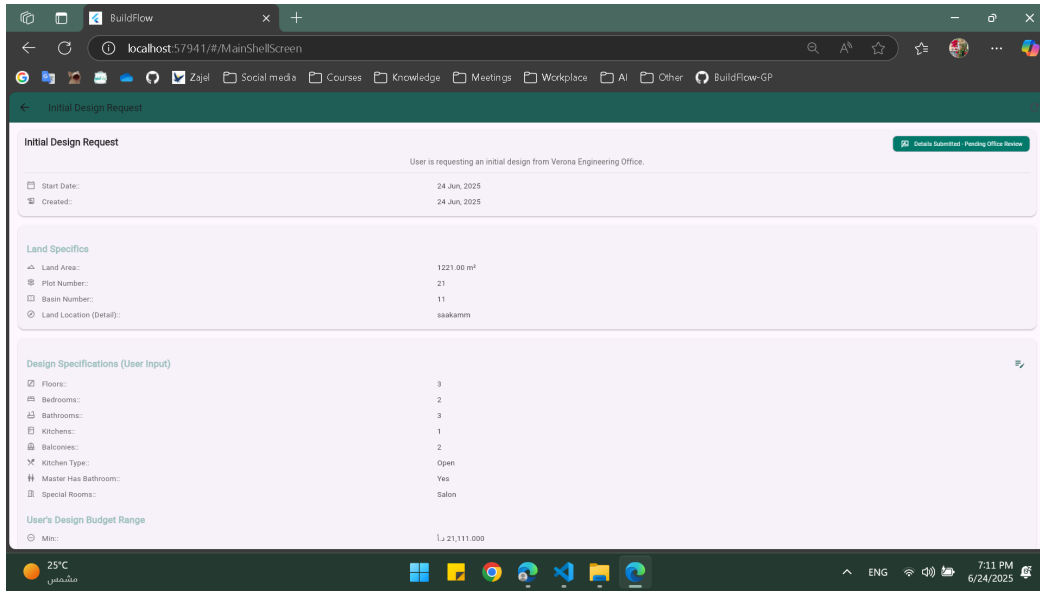
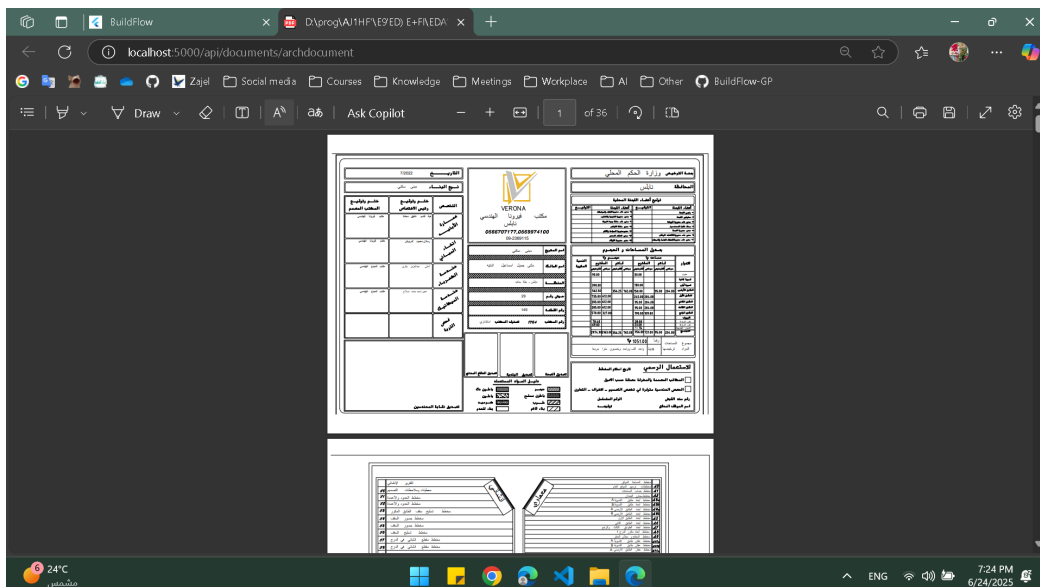
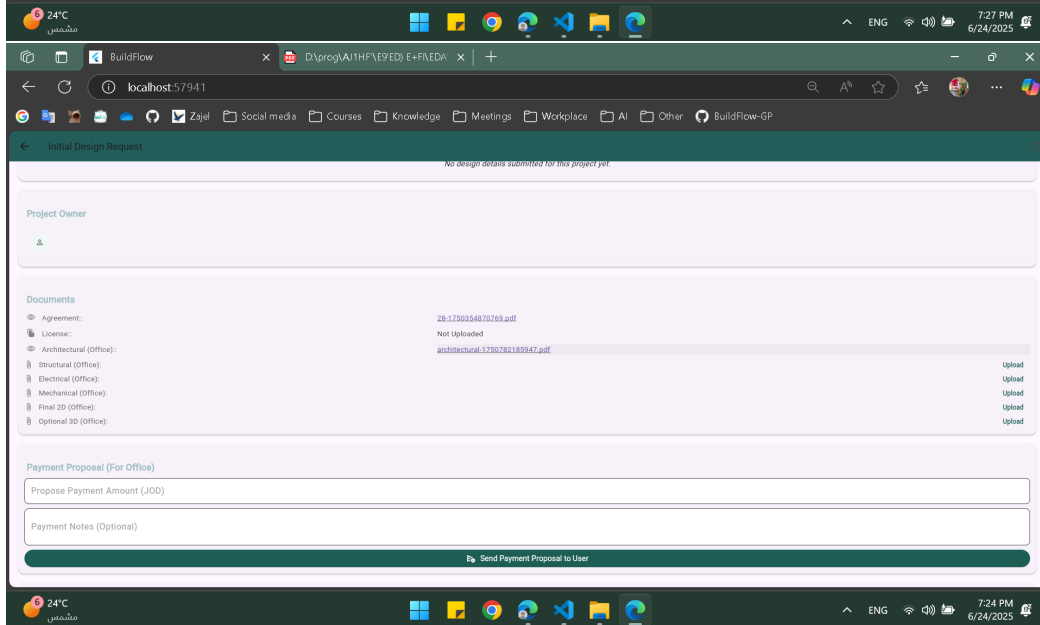
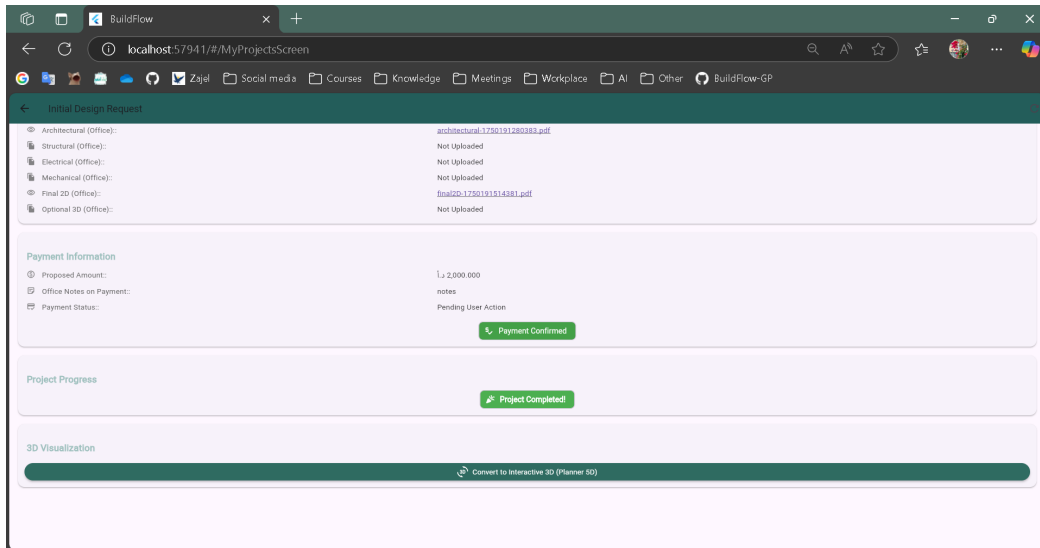


Figure 11: Assigned Office, Project Owner, and Documents

### Project Details for Owner





### 1.8 3D Visualization via Planner 5D

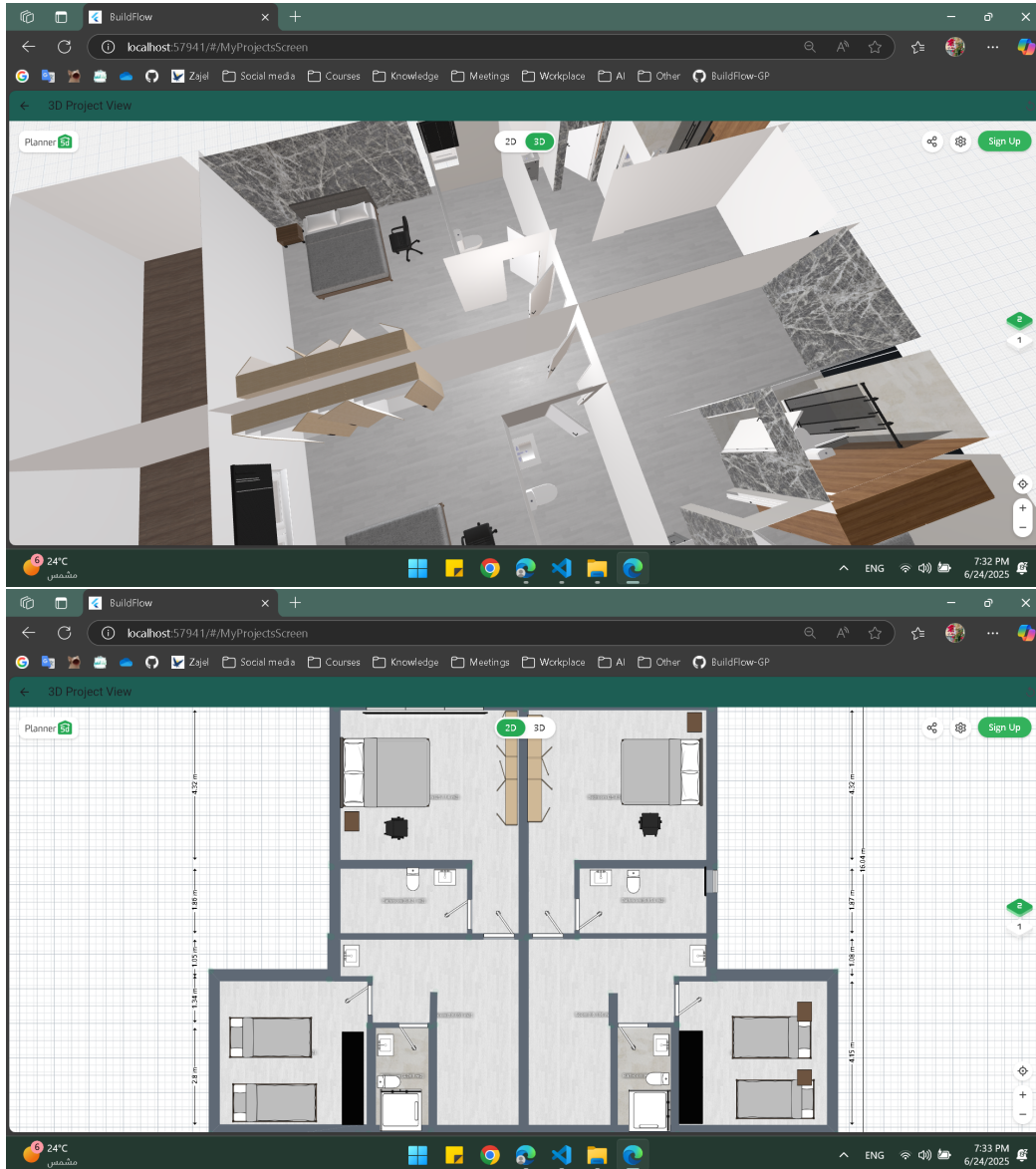
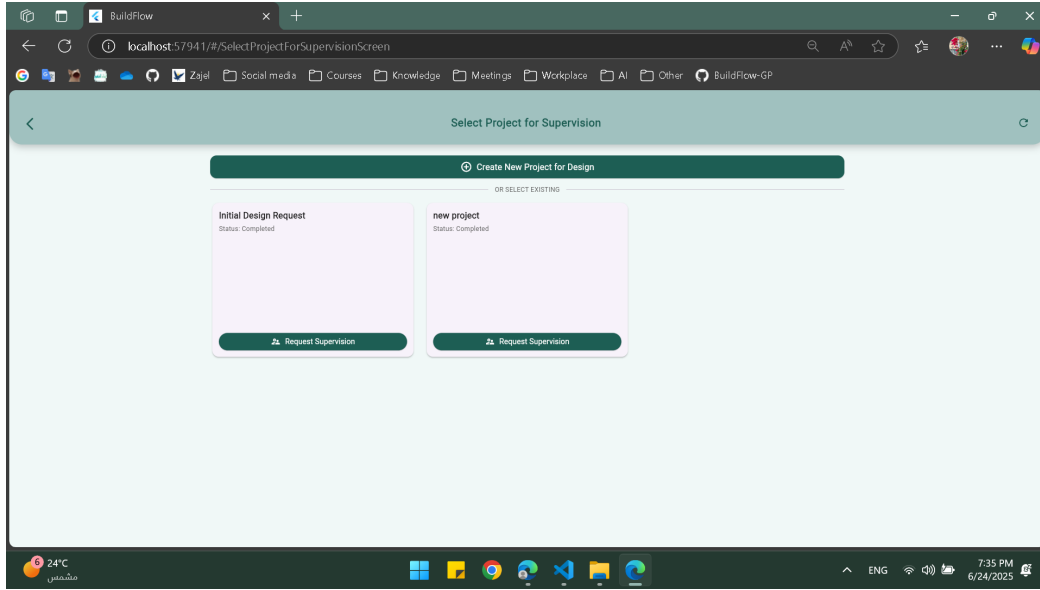
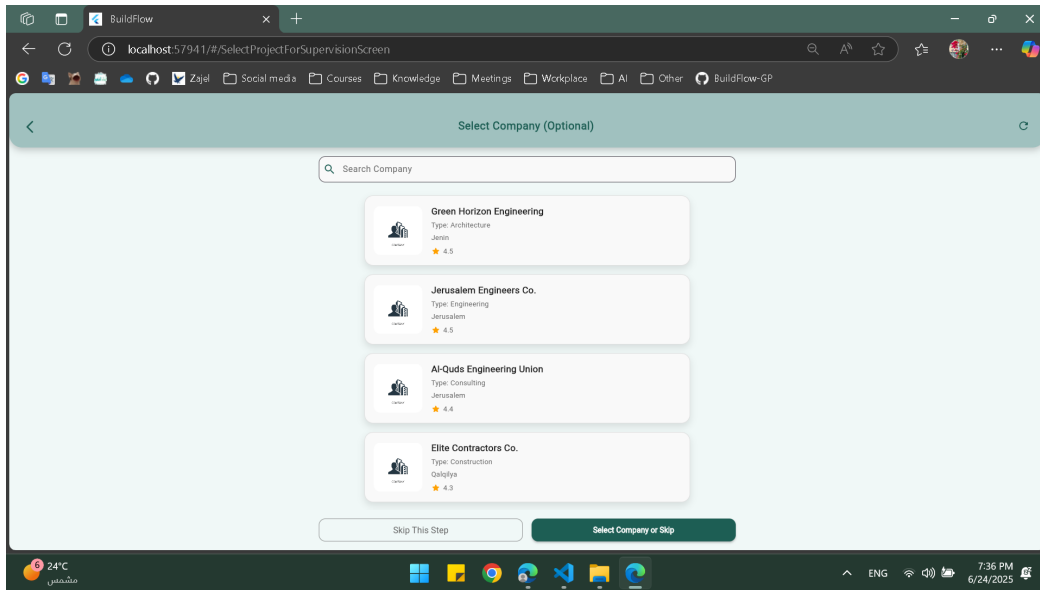


Figure 14: 3D design visualization using the integrated Planner 5D web view

### .1.9 Supervision Track

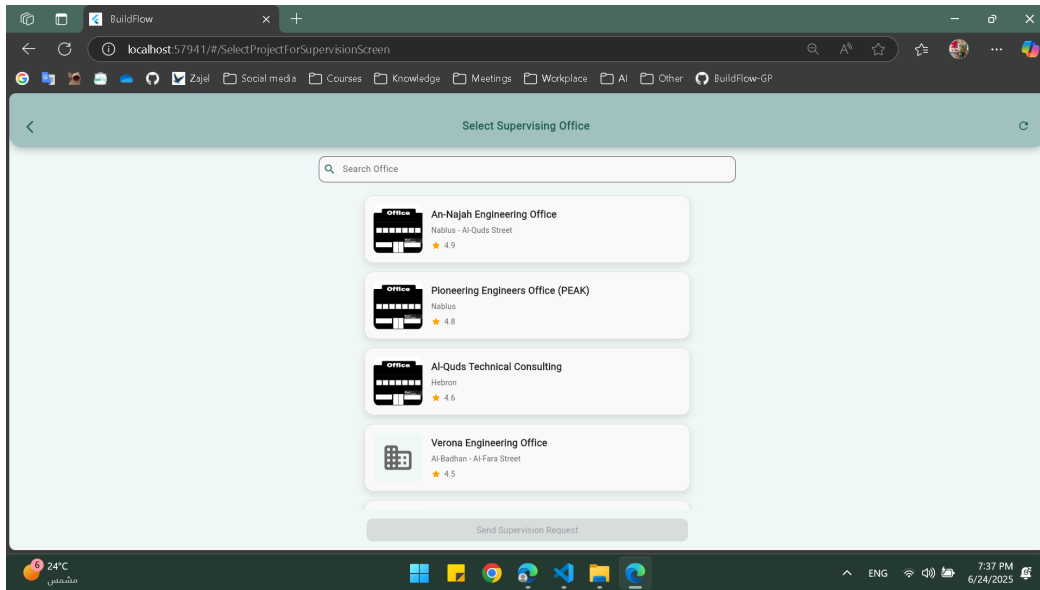


Select Project for Supervision

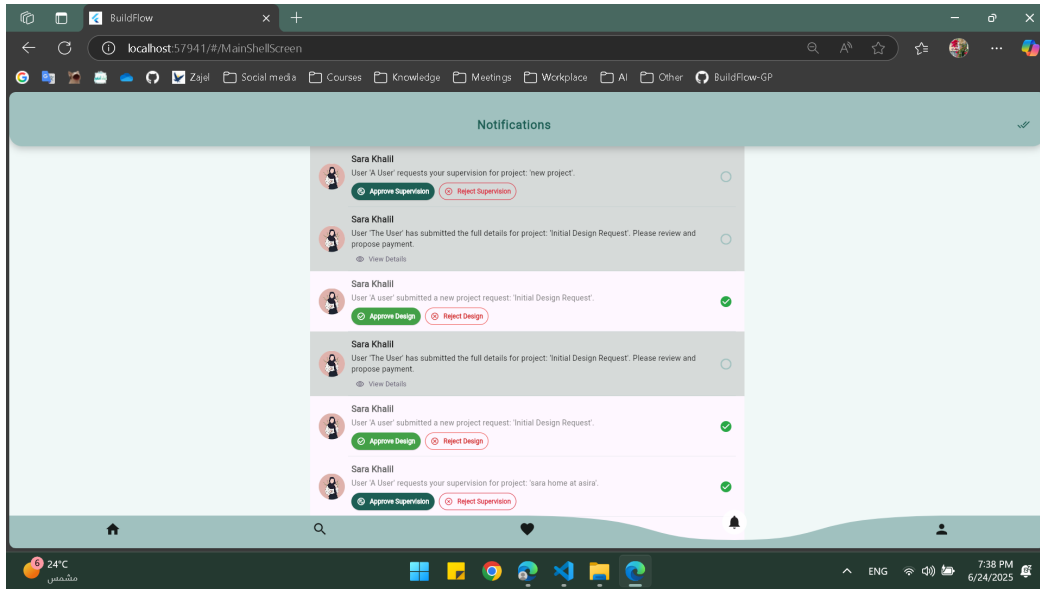


Choose Contractor Company

Figure 15: Selecting a project and assigning a contractor for supervision.



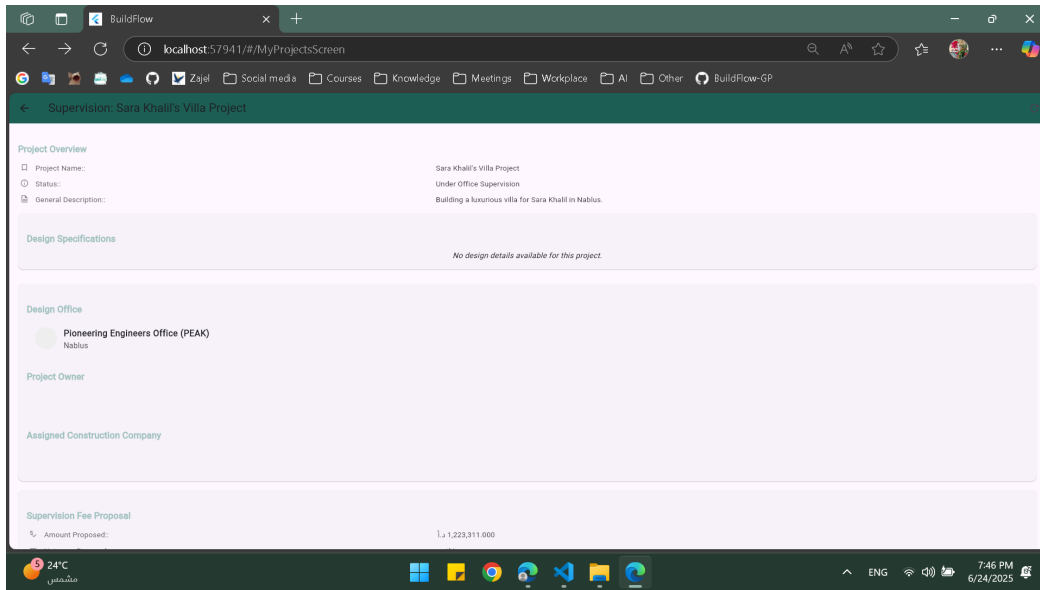
Choose Supervision Office



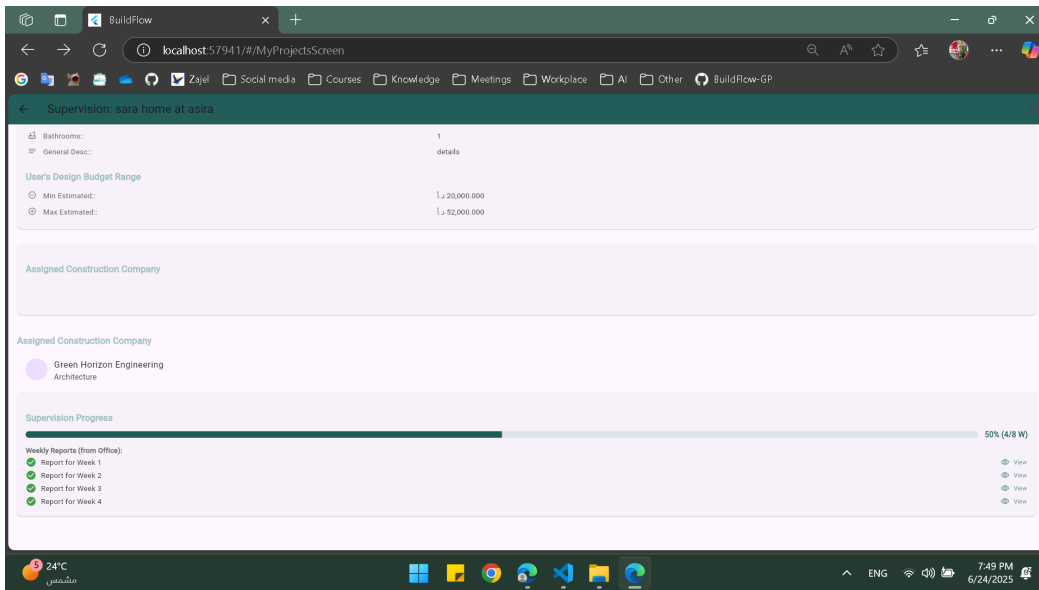
Office Notification

Figure 16: Selecting the supervising office and sending them a request.

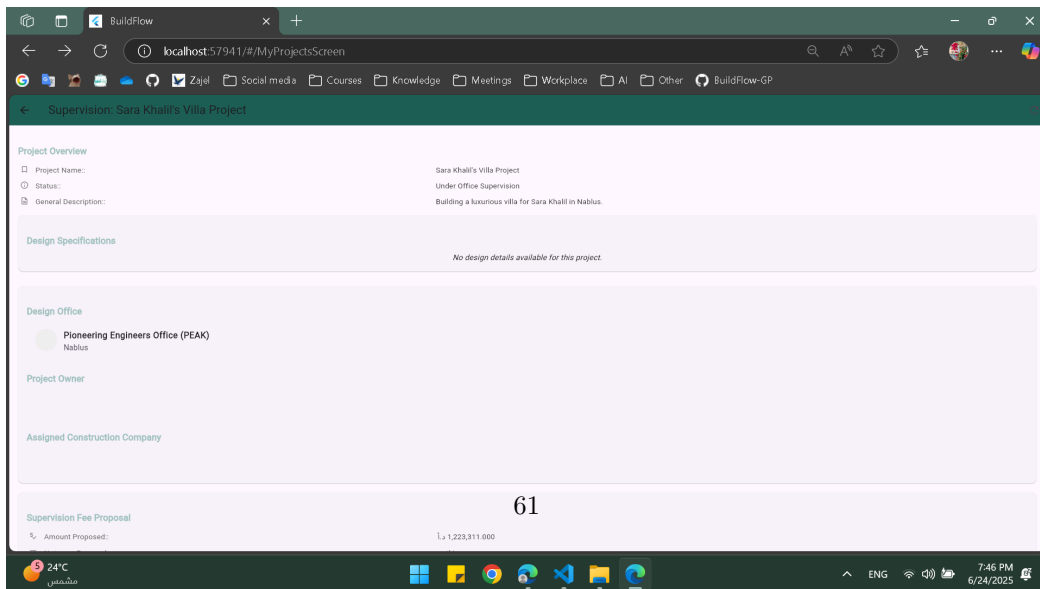
### Project Details for Supervision Office



Supervision details for user (1)



Supervision details for user (2)



Supervision details for office (1)

### .1.10 Consultation Track

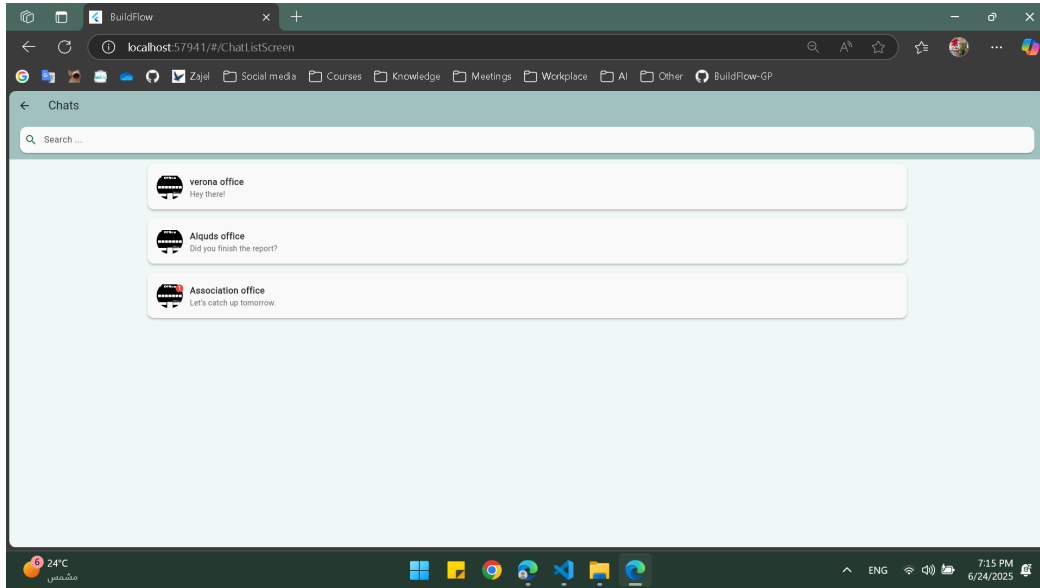


Figure 17: Chat List.

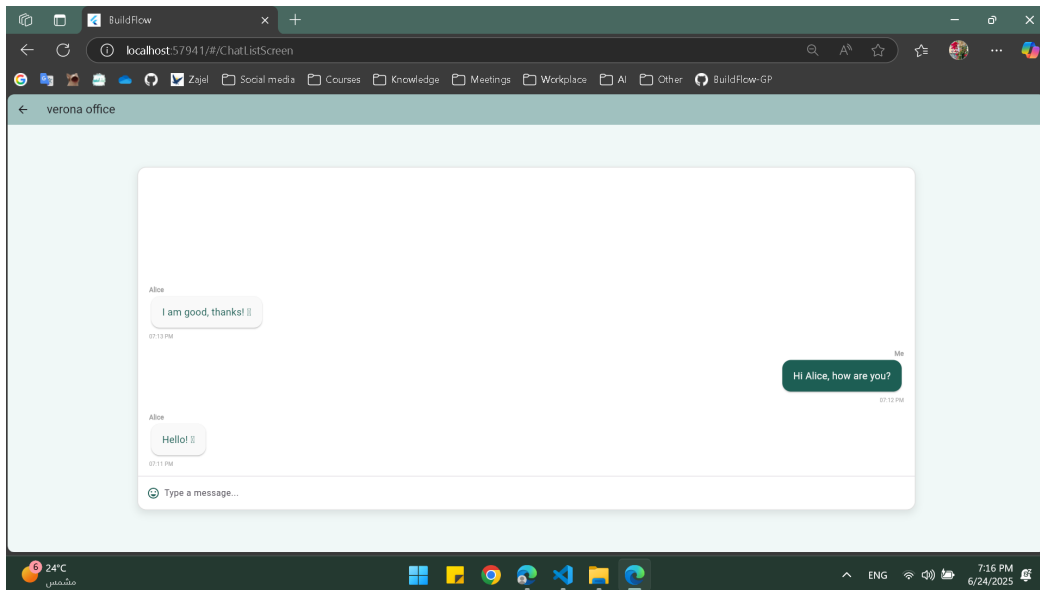


Figure 18: Chat Interface.

### .1.11 Map Feature

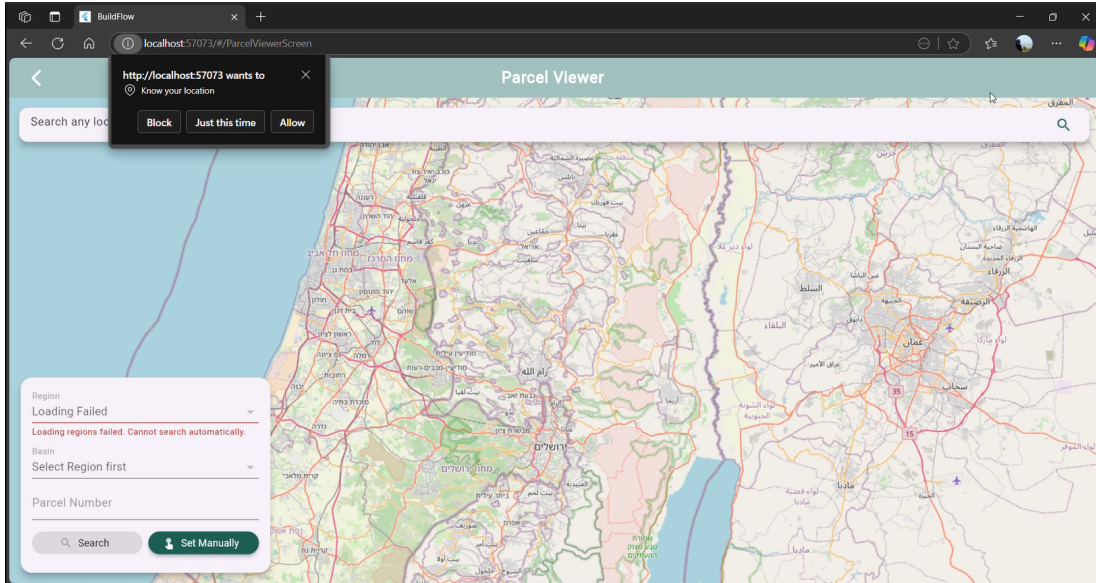


Figure 19: Map Screen (1)

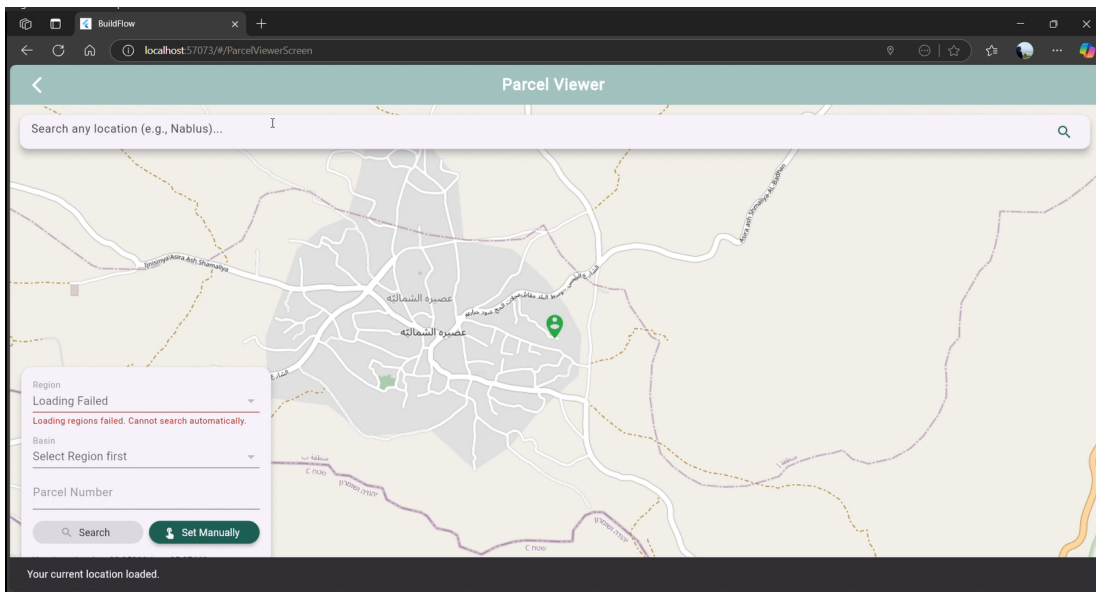


Figure 20: Map Screen (2)

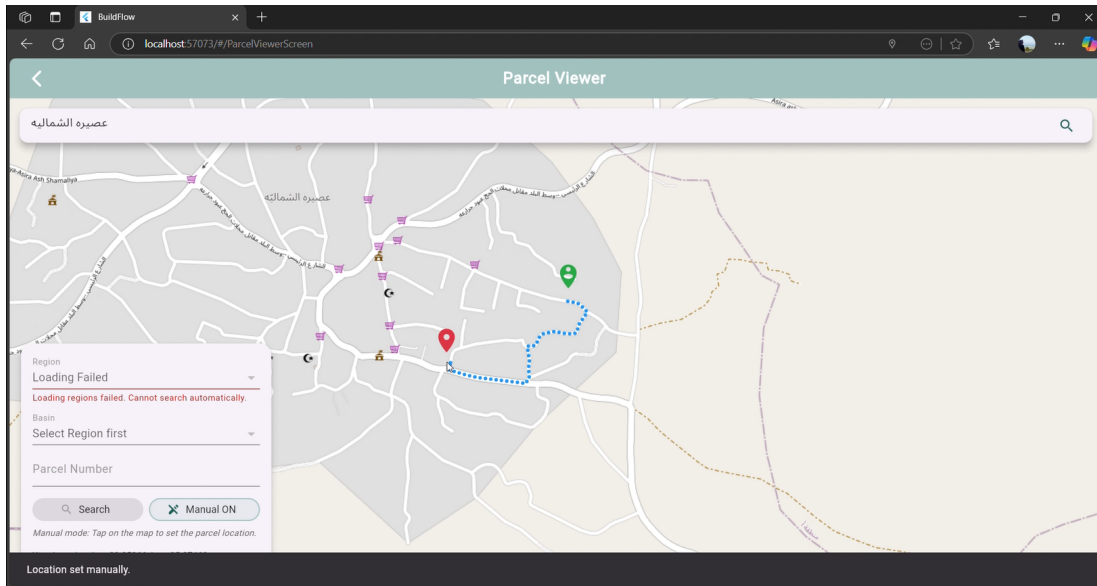


Figure 21: Map Screen (3)

### Office Profile

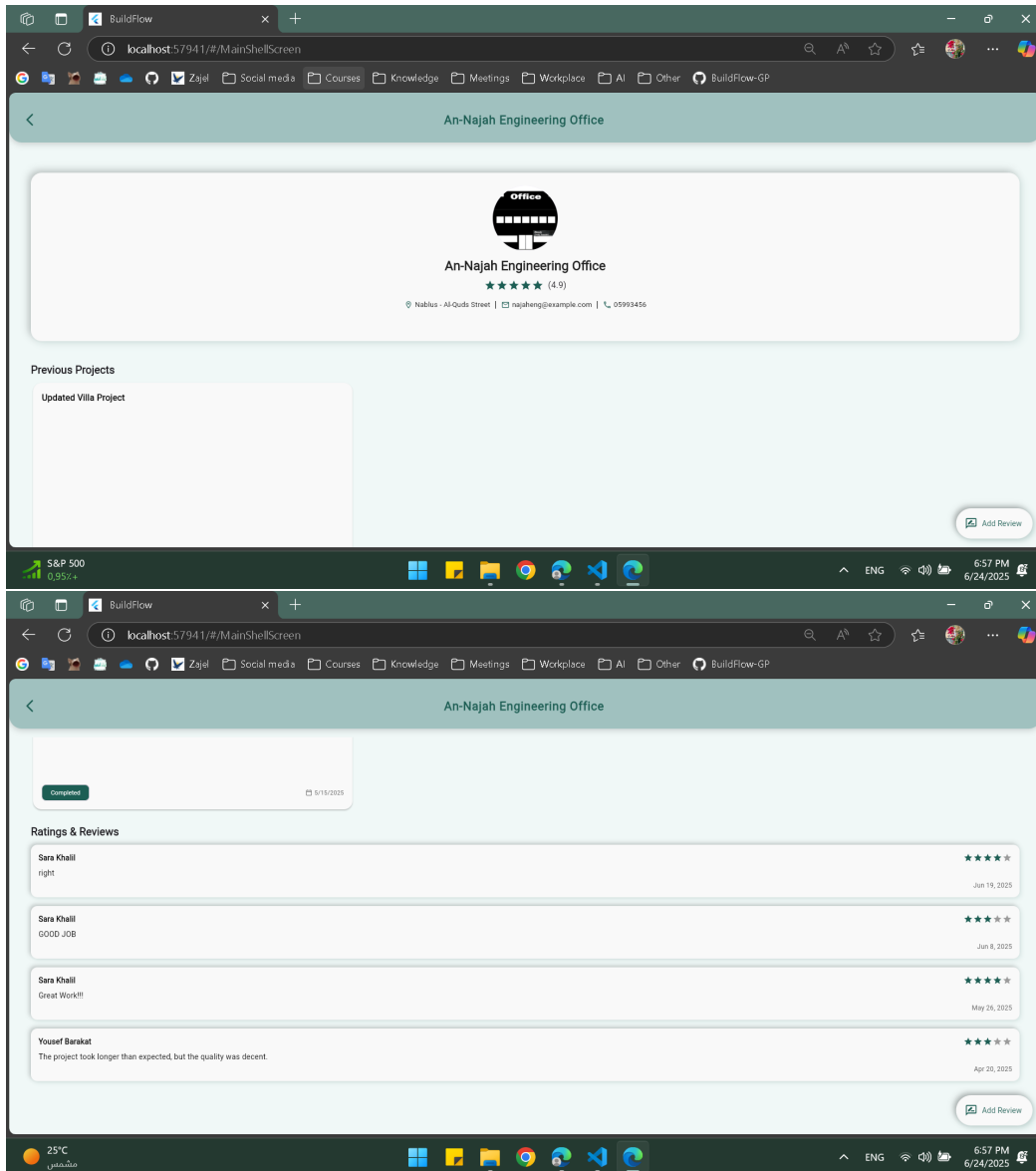


Figure 22: Office profile read-only for non-owners, with adding a review

### Company Profile

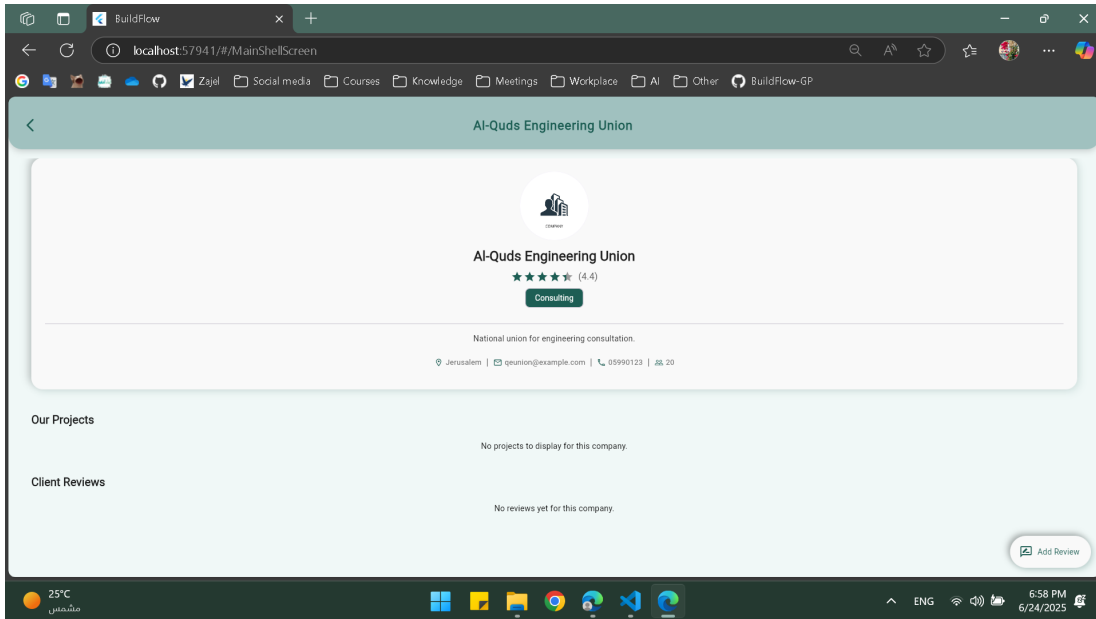


Figure 23: Company Profile Read-only

### .1.12 Review

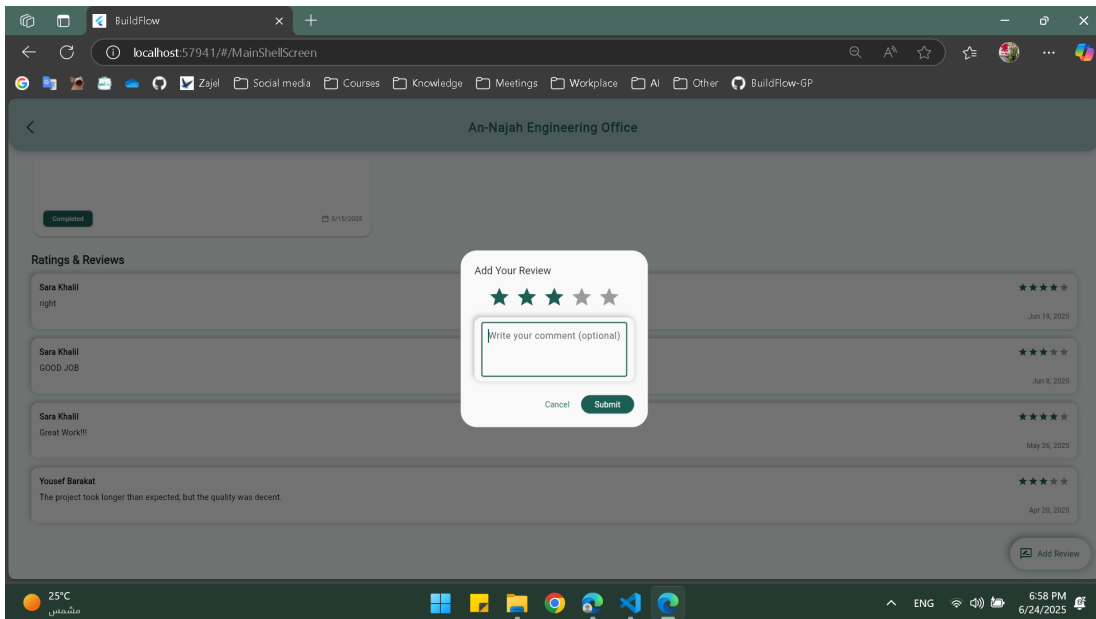


Figure 24: adding a review

### Project Profile

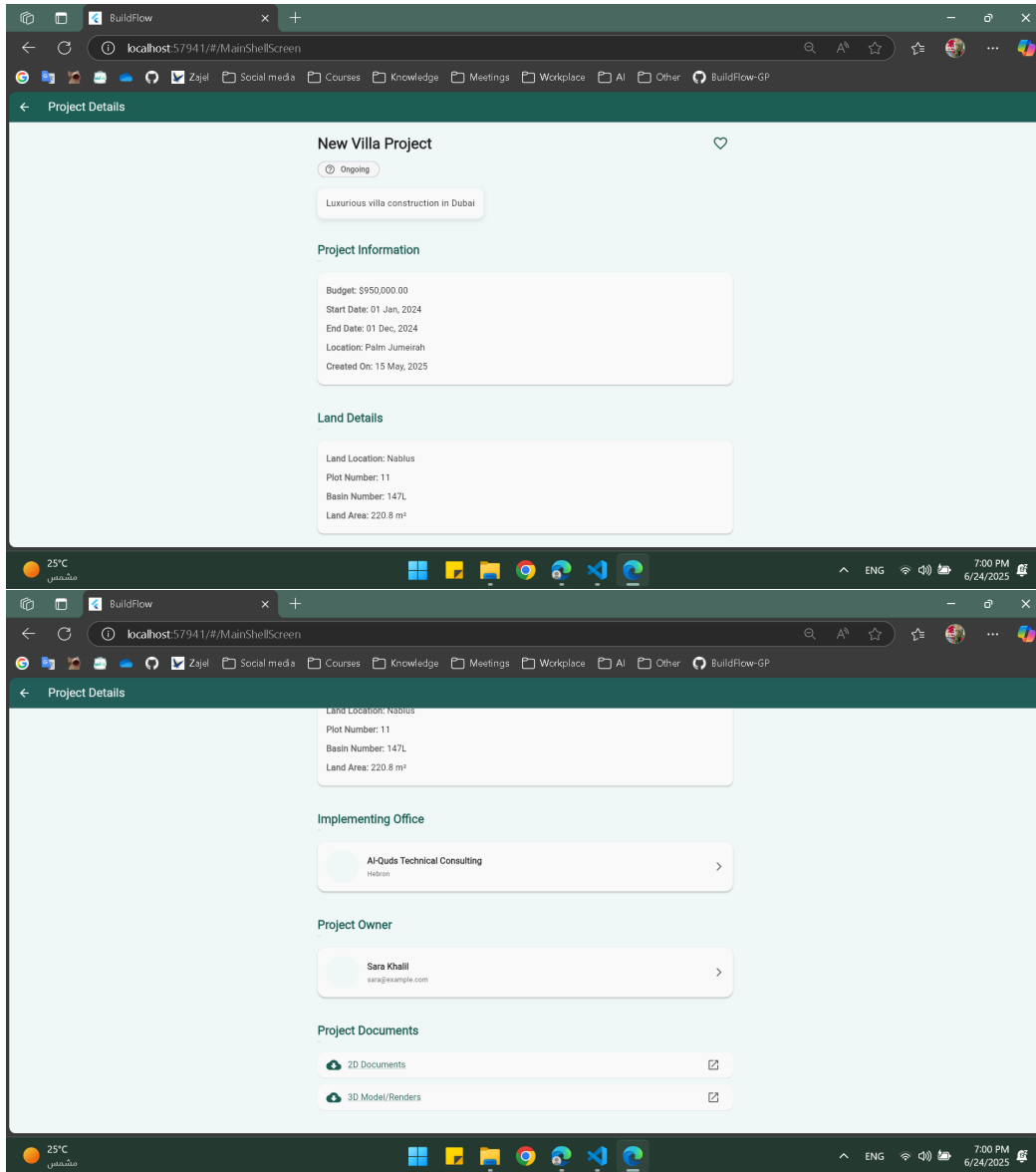


Figure 25: Project Profile Read-only for non-owners