

Android App for a Site Engineer

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Abstract: The main objective here is to establish a communication between the various engineers and managers concerned with a construction company. Site Engineer is concerned with the construction that takes place at the site location, so any task performed by him has to be brought to the notice of the managers. The Site Engineers can file a request for any material required at the site location, they can also be aware of the various materials requested by them and also by other engineers for that site location. The request made by the site engineer for any material has to be accepted by the General Manager, Finance Manager and the Project Manager. Once the materials are delivered, the SE also updates the details of the delivered materials so that the delivered quantity can be compared with that of the request.

Keywords: Site Engineer (SE), android application, material details, milestone, labour details

1. Introduction

All the communication between the Site Engineer and the managers of the construction company have been maintained manually till now which is very challenging as it may result in wrong data capture, miscommunication, delay in operations and tedious job. This results in difficulties in financial settlements and hence may damage the reputation in the market. So this android application can be designed for the use of On-Site Site Engineers enabling them to make their job more transparent and easy. It requires the Site Engineer(SE) to enable the location of his mobile phone, so that the location of the SE can be kept in track by his managers.

The app consists of two modules, namely: Material Details and Labour Details.

i. Material Details

This module comprises where the SE updates for the request of any material which is required at the site location. It also displays the list of various materials which have been requested by him in the past, so that he can be aware of the status of those requested materials.

ii. Labour Details

The labour details module enables the SE to enter various details regarding the labourers who will perform any tasks at the site location. These details include the name of the labourers, type of labour to be performed, per day wage, and the picture of the task which is to be accomplished.

Login

The application can be accessed by the engineers and managers concerned, only with their valid login credentials. The app can be accessed by the Site Engineer, General Manager, Project Manager, and Finance Manager. Once the user selects the user type, he has to enter the valid username and password in order to access the app. The login page of the app is shown in the figure, where the user enters username and password after selecting the appropriate user type.

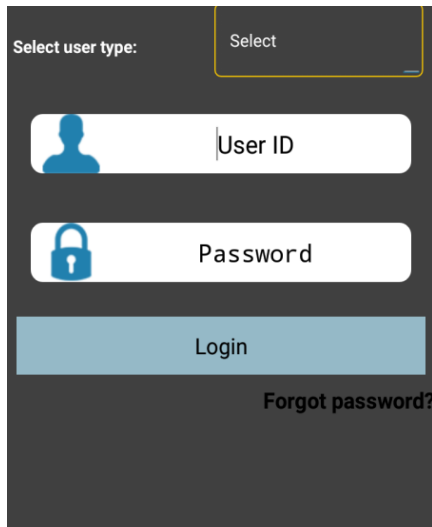


Figure 1.1: Login Screen

The below screenshot shows the authorized users who can login into the application. The user has to select the appropriate user type from the spinner showing the user types as PM, FM, GM, or SE. The login screen also provides the user a forgot password button. Once the user clicks on this button, he has to enter the username so that the password is sent to that username.

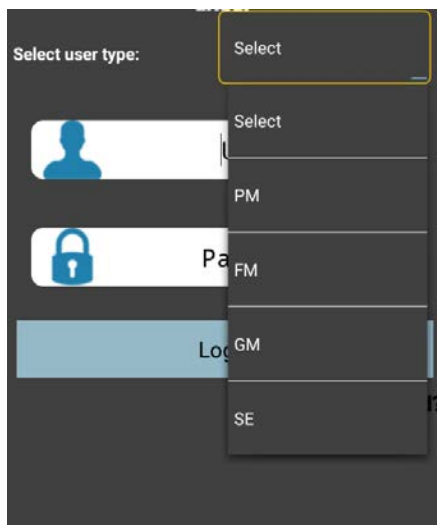


Figure 1.2: Authorized Users for Login

Once the user enters the correct credentials, he is allowed access to the

application. The user is directed to the below shown screen, where the user has option to click on Change password, Material details, Stock details, Labour details, Chat, and Update milestone Details buttons. These icons shown in the below screens are the different modules of the application when the user logs in as a Site Engineer. If the user intends to change the password, he can click on the change password button. After clicking on it the user is directed to a page wherein he has to enter the old and new password, hence the password can be changed.

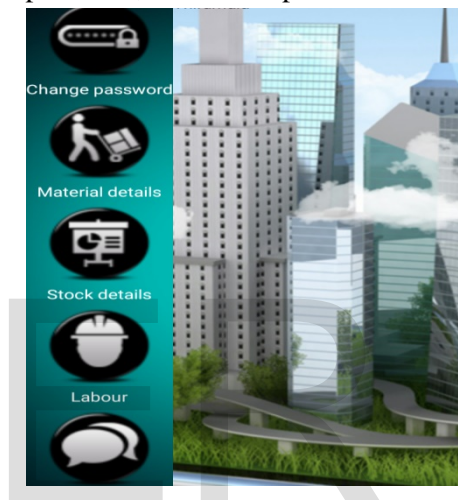


Figure1.3: Dashboard icons



Figure1.4: Dashboard icons(contd.)

2. Material Details Module

The material details module is where the Site Engineer files the request for the required materials for the construction process in the specified location. Once the Site Engineer clicks on the material details button on the dashboard screen, he is directed to the below shown screen in the figure 2.1.

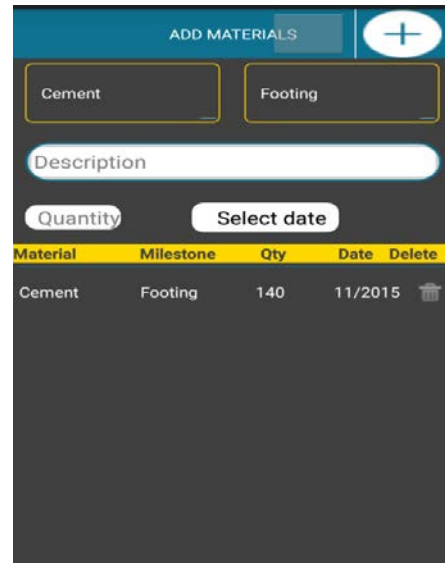


Date	Material Name	Req Qty	Update
7/24/2015	Iron - Ton	100	
8/12/2015	Sand - Load	5000000	
8/12/2015	Poly Carbonate sheets - Metres	1	
8/15/2015	Sand - Load	12	
8/15/2015	RMC - Load	222	
8/25/2015	Iron - Ton	23	
9/12/2015	Sand - Load	8888	
9/12/2015	Brick - Nos	55	

Figure 2.1: Material Details Screen

The above shown screen shows the list of the different materials which the SE would have requested for delivery in the past. The list shows the details of the items, with the date on which it was requested and the required quantity of the material. Like RMC was requested on 15 Aug 2015 with the quantity being 222 loads. Also this list of items were requested for the milestone Footing, and the status of these requests is Pending.

Now if the Site Engineer (SE) intends to request for any other material, he clicks on the plus icon present at the top most right corner of the screen. When he clicks this button, he is directed to the next screen, which is shown in below figure 2.2.



ADD MATERIALS (+)

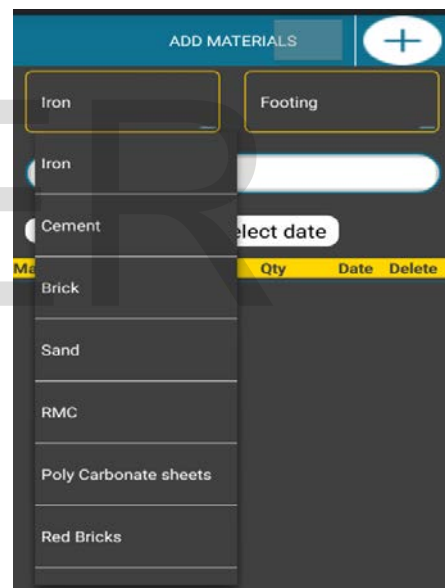
Cement Footing

Description

Quantity Select date

Material	Milestone	Qty	Date	Delete
Cement	Footing	140	11/2015	

Figure 2.2: Add Materials Screen



ADD MATERIALS (+)

Iron Footing

Iron

Cement

Select date

Material	Milestone	Qty	Date	Delete
Brick				
Sand				
RMC				
Poly Carbonate sheets				
Red Bricks				

Figure 2.3: Spinner showing the materials

On this screen the SE has to enter the details of the material which he needs at the site location. The first spinner shows the list of various materials, among which the SE has to choose one. The list of materials present in the spinner is shown in figure 2.3. Once the SE selects the material which he is requesting for, he can give a brief

description about the need of the material, has to enter the quantity of the material and select the date by when the material is required to be delivered. Once the SE clicks on the plus icon at the top most right corner, the requested material is added in the list. Once the SE updates the request for the material, it shows a pop up saying that the request has been updated successfully. This is shown in the figure 2.4.

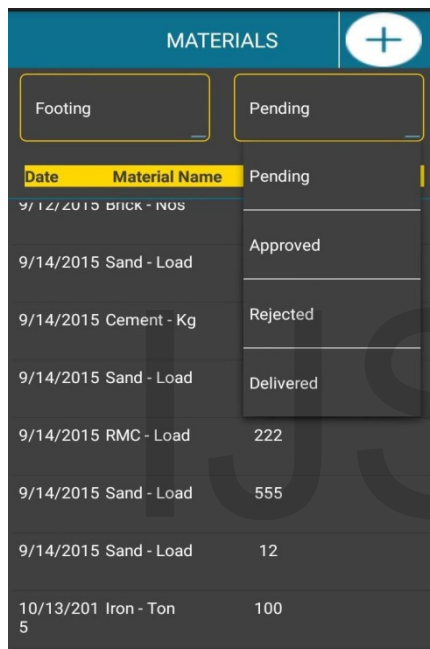


Figure 2.4: Materials added successfully

The figure 2.5 shows the various statuses of the materials, like it shows the list of materials which are in pending, or approved, or rejected, or delivered state. From the list the SE can keep a track of all the requested materials. The figure 2.6 shows the list of various materials that are approved by the other concerned teams, so that the delivery of those materials will take place soon. Once the material is delivered, the SE has to make a note of the delivered material, so that any

comparison can be made with the requested material in near future.

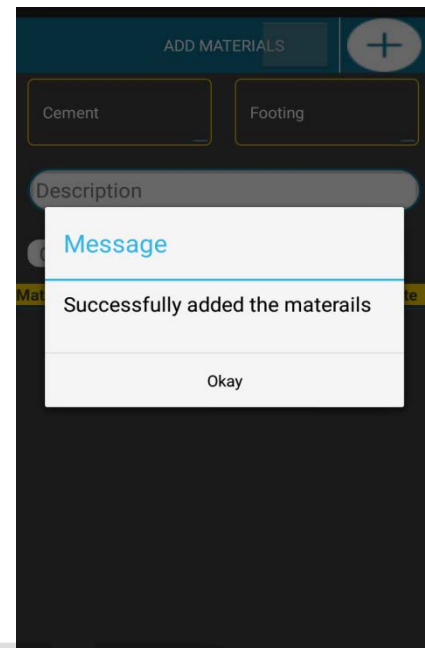


Figure 2.5: Various Statuses of the materials

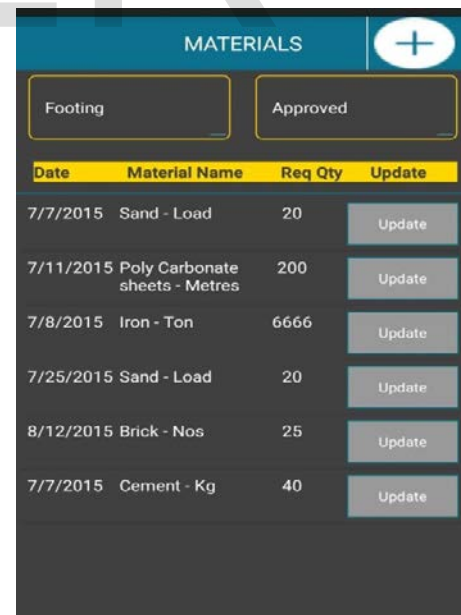


Figure 2.6: List of materials Approved

In order to note the delivered material details, the SE has to click on

the Update button present next to the description of the approved material. Once he clicks on the Update button, he is directed to the screen which is shown in figure 2.7.

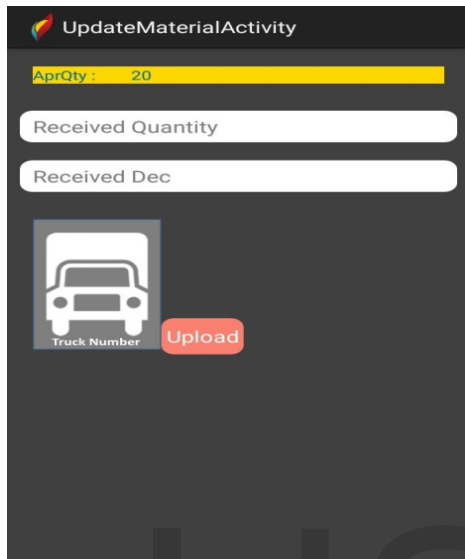


Figure 2.7: Upload details of delivered materials

Here the SE has to enter the quantity of the delivered material, with the description of the delivered material. He has to then upload an image of the delivered material by clicking on the Upload button, which will open the camera enabling the SE to take the picture of the material which is getting delivered at the site location. The picture taken by the SE of the delivered material is then displayed in the Image View area shown in the figure. The details submitted by the SE are saved in the database.

3. Labour Details Module

The Labour Details Module is used by the Site Engineer in order to update the details about labourers performing the tasks on the site location. Once the SE clicks on the Labour button

on the dashboard screen, he is directed to the screen shown in below figure 3.1.

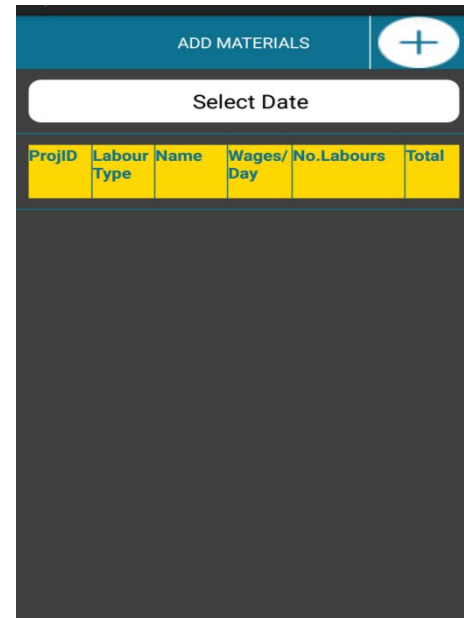


Figure 3.1:Update Labour Details

Here the SE selects the current date, and clicks on the plus icon present on the top-most right corner of the screen. Once the SE clicks on this icon he is directed to the screen where he can update the details. This screen is shown in the figure 3.2. Here the SE updates the type of the labour, for example the labour is for carpentering, painting, plumbing etc. The milestone for which the labour has to be used is to be selected from the spinner displaying the milestones Footing and Column. The labour name(s), number of labourers, and the per day wage is to be entered by the SE.

When the SE enters the required details including the per day wages and the number of labourers, the calculator multiplies the daily wage with the number of labourers to display the total amount to be payed at the end of the day. This is shown with in the figure 3.3 displaying Rs.360.0 on the screen. Now in order to update this details, the SE has to take a picture of the location on which the specified task has to be performed by the labourers.

UPDATE LABOUR DETAILS

ProjectID:1

Capture Image

Select Labour Type

Select Milestone

Enter Labour name

Enter wages per Day

Enter no of Labours

Figure 3.2: Details to be entered

UPDATE LABOUR DETAILS

Capture Image

Painting

Column

Group

120

3

Total:360.0

Update Details

Figure 3.3: Details to be entered (contd.)

When the SE clicks on the image displayed on the screen of figure 3.3, the pop up appears on the screen asking for the SE to select the option using which he intends to display the image of the location. He has an option to capture the image, or can choose one from the gallery. The pop up is called the Alert Dialog, which also has the option of Cancel with the buttons Camera and Gallery

UPDATE LABOUR DETAILS

ProjectID:1

Add Photo!

Camera

Gallery

Cancel

Column

Group

120

3

Figure 3.4: Camera Options

Once the SE clicks on the Gallery option, he is directed to the gallery of his mobile phone. If the SE clicks on the Camera option, he is directed to the camera of his mobile phone. Whereas once the SE clicks on the Cancel option, he is directed to the previous screen. Once the SE clicks on the Update Details button the details entered by him are successfully saved.

4. Conclusion

This application can help a construction company to perform its internal communication and perform their other tasks which require inter-dependency in a more transparent and easy way.

The SE can just login into the app and make a request for the materials, also he will get to know whether his request is accepted by the concerned managers or not. He can also keep a track of all the materials requested by him for that location till now and the status of his request can be known. After the delivery of the material he has to upload the details of the delivered items for the concerned manager's reference.

References

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