RA Billing Management System
(Version 1.0)

Rev. No	Date	Purpose	Prepared by	Reviewed by	Approved by
0	04.05.2017	Issued for Implementation	Rajesh Gupta	Suresh Khalkho	Rakesh Chaudhary

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1. INTRODUCTION

A centralized web application for handling RA bills for the works executed by the contractor against each contract at EIL project site.

2. FEATURES

- Web based system
- The package is designed in a simple modular way.
- The modules are self-explanatory.
- The package is developed by using ORACLE Relational Database Management System (RDBMS). Relational database approach represents various data elements of the system in the form of normalized relations and conventional files are termed as tables with the key elements and its attributes forming contents of the tables.
- Database approach helps in the integrity consistency and security of the data and avoids redundancy.
- The package can handle large volume of data.
- One point data entry system is provided which is carried over in the relevant modules.

3. SYSTEM REQUIREMENT

This System is web based application. This can be accessed through a web browser with network connection in the client machine. However minimum system requirements of the client machine are as follows.

- HARDWARE :
  - ✓ Minimum Windows XP or higher Operating System.
  - ✓ Minimum 1 GB of Random Access Memory (RAM).
  - ✓ Minimum 50 GB of Hard Disk Capacity.
  - ✓ Laser Printer.
- SOFTWARE :
  - ✓ Google Chrome, Fire fox or Internet Explorer 9 or above
  - ✓ Acrobat Reader 5.0 and above.
- IP/VPN,Internet connectivity for Site users and intranet connectivity for HO users.

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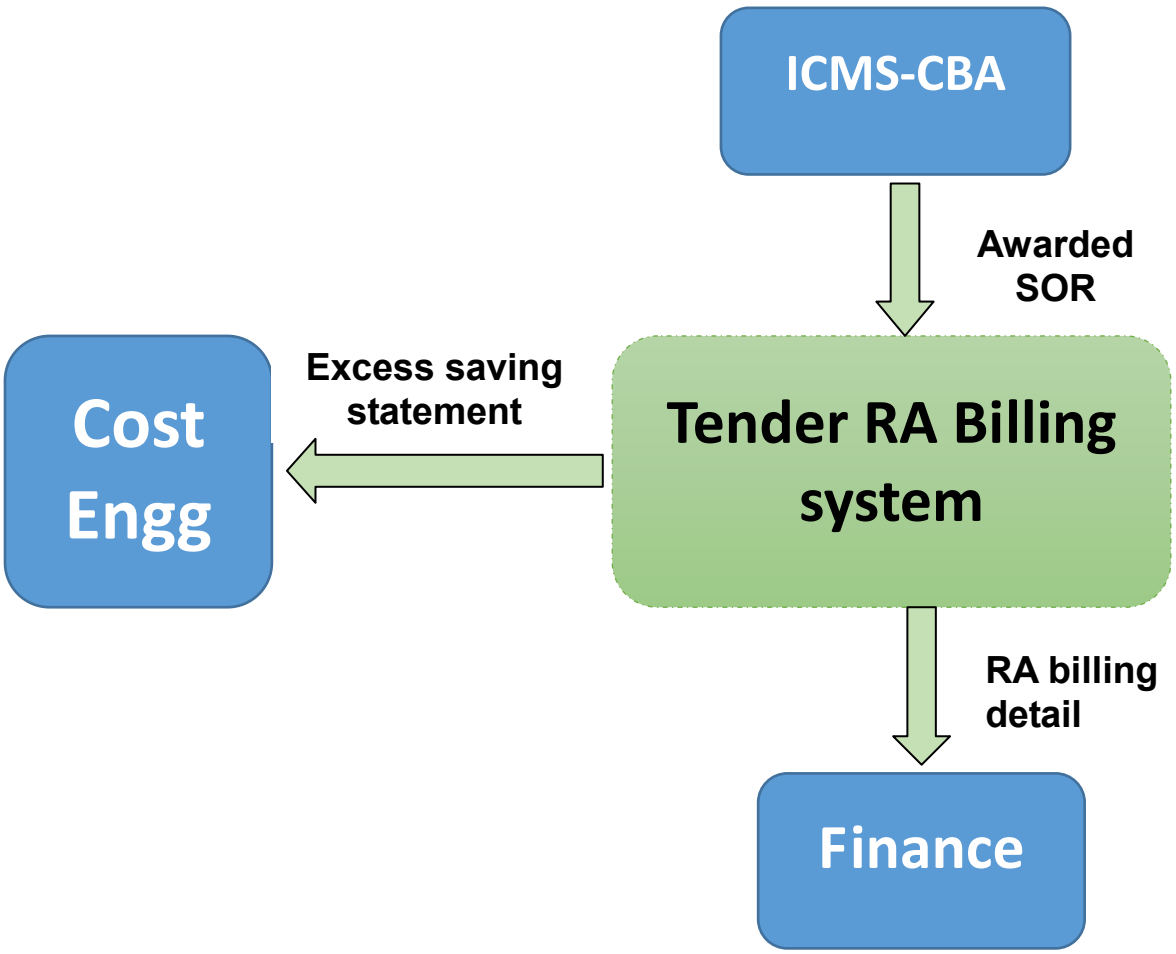
4. BRIEF SYSTEM DETAILS

RA Billing System caters to the construction sites for keeping the records of RA bills generated by contractor during the execution of the item rate contract. All activities such as importing tender SOR data from HO, Splitting SOR items based on activity and payments milestones, assigning billing engineer and area coordinator against each contract, adding extra item, uploading measurement sheet by contractor for RA billing and approval of bills by EIL engineers are taken care of in a modular way.

Web address in the web browser
http://www3.eil.co.in/rabilling/

Overall Block Diagram



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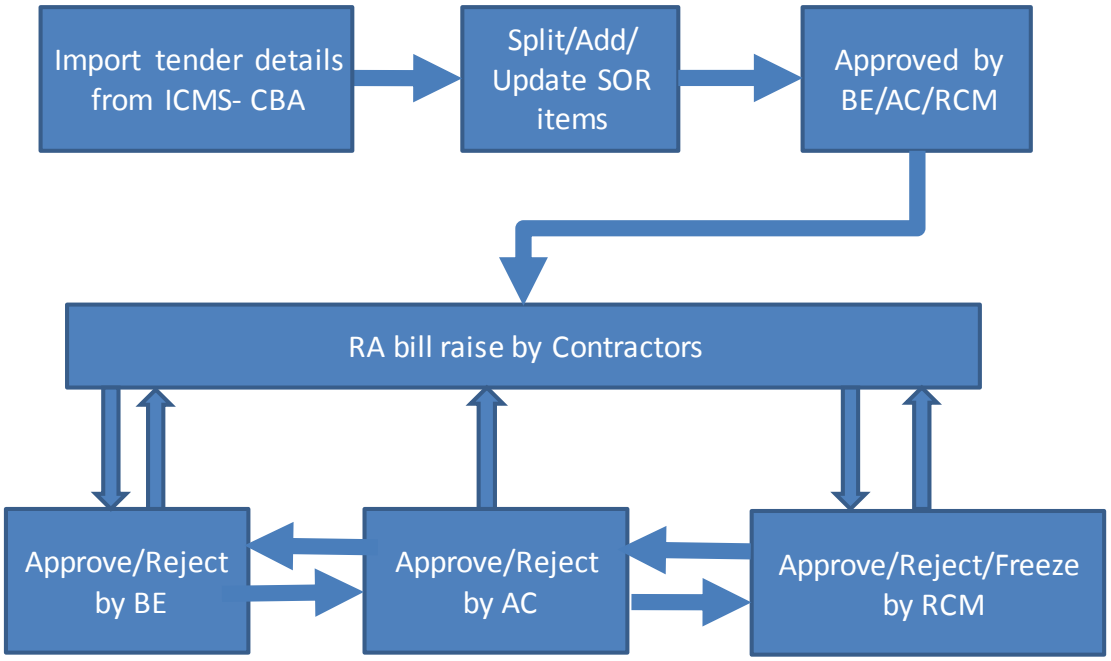

Reports:

Job No / Tender wise /Unit wise billing information (abstract)

Contractor wise billing information

Final Executed Quantities

Analysis Reports

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5. OPERATING DETAILS

To start the application user has to type the following web address in the web browser

http://www3.eil.co.in/rabilling/

Once user types the above address, a web page will appear as shown below.

Login Screen

This application supports following ROLES:

- RCM
- Area coordinators
- Billing Engineers
- Contractor

Role authorization, Username and password:

- RCM can authorizes Billing Engineer and Area Coordinator against each Tender.
- Authorized EIL User has to use his/her EIL **Employee No.** as user Id and **EILDC Domain Password** as Password.
- Contractor user has to use **EIL HSE** username and password.

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Following are the modules for various ROLES:

RCM:

- Populates Job data
- Add/Update Users (Billing Engineers and Area Coordinators)
- Add New SOR Item
- Approval/Editing of RA Bill
- Approval of Splitted Items added by Contractors
- Final Checklist updation
- % Edit
- Generate Output
    - Abstract
    - RA Bill

Area Coordinator:

- Populates Job data
- Approval of RA Bill
- Final Checklist updation
- Generate Output
    - Abstract
    - RA Bill

Billing Engineer Module:

- Populates Job data
- Edit Site Quantity
- Approval of RA Bill
- Final Checklist updation
- Generate Output
    - Abstract
    - RA Bill

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Contractor Module:

- Split Activity
- RA Bill entry using Measurement Sheets
- Generate Output
    - Abstract
    - RA Bill

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Modules:

A. <u>Populates Job data</u>:

This module is used to import / update awarded Tender SOR data from HO (ICMS – CBA software).

Steps:

a. Select job number

b. Click on the **<u>Populate Job Data from ICMS CBA</u>** button.

This will update all awarded data with item details into RA billing system

B. **<u>Add/Update Billing Engineer and Area Coordinator Users</u>:** This module is used to assigning billing engineer and area coordinator against each contact.

<u>Only RCM can authorized the ROLE.</u>

Steps:

a. Select Job Number

b. Select Tender Number

c. Click on the link button “Add New Employee”, following screen will appear :

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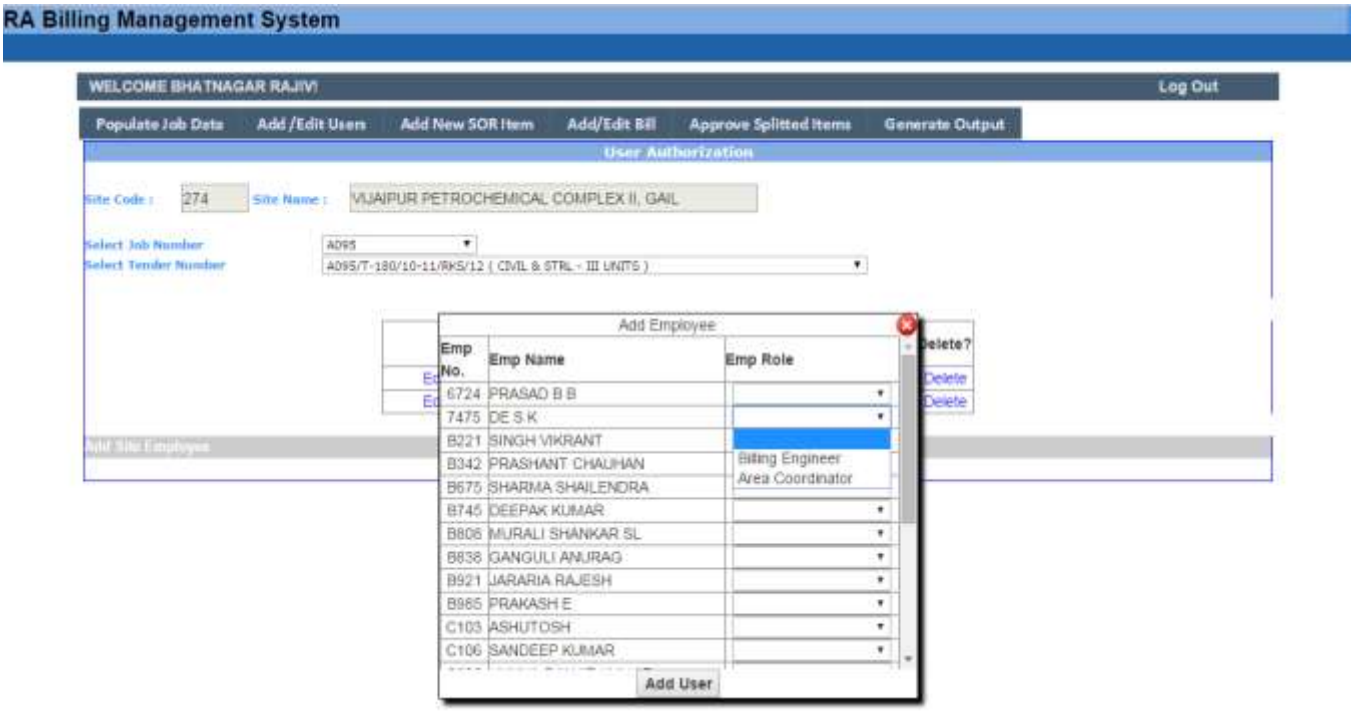


d. Assign the role against employee number (employee number and site code are linked with CMIS database which is maintained by HO construction)

e. Click button “Add User” to save record.

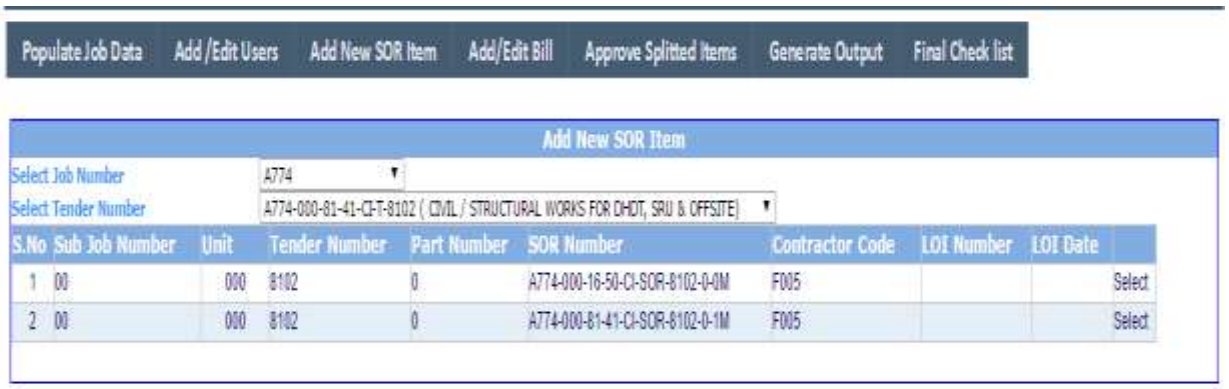
f. Editing or deleting facility of users is also available in this module.

C. **<u>Add New SOR Item</u>:** This module is used for adding new <u>standard or non- standard SOR item</u> against any SOR at the site. Contractor will add the items and RCM will approve / reject the same.

Steps:

a. Select Job Number

b. Select Tender Number, following screen will appear with SOR details:



c. Click on the button “Select ” to select the SOR against which user want to add new SOR item, all the SOR item will appear on the screen as show below:

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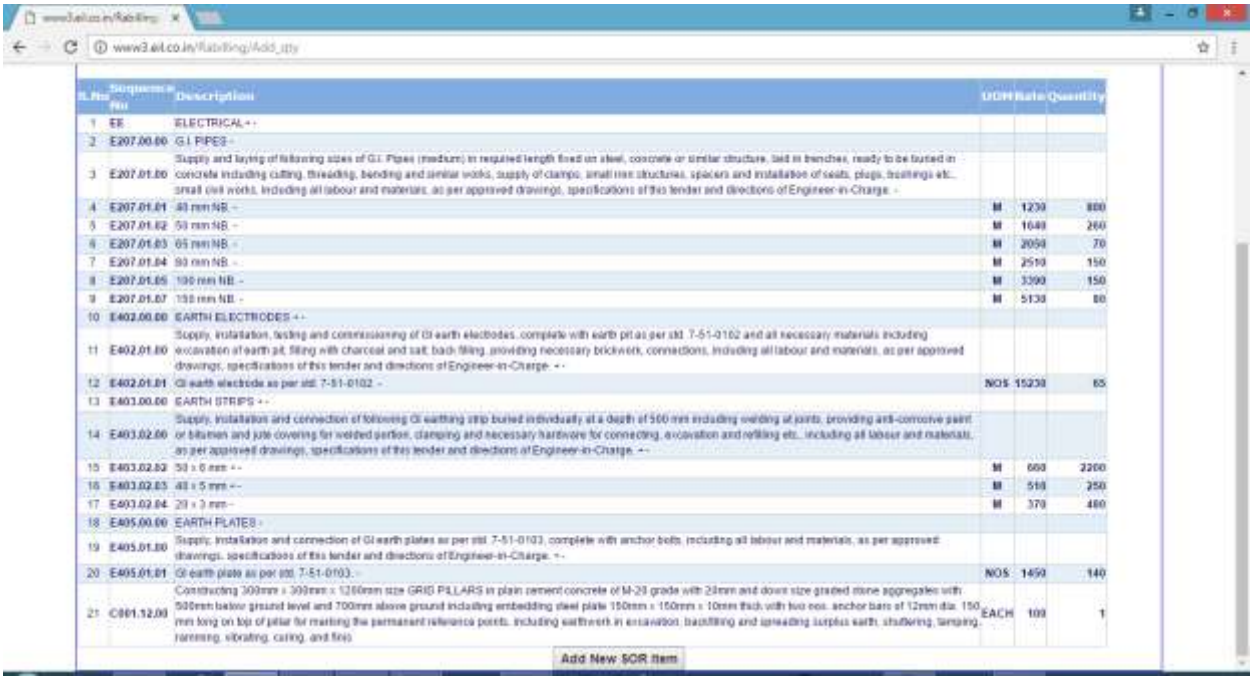
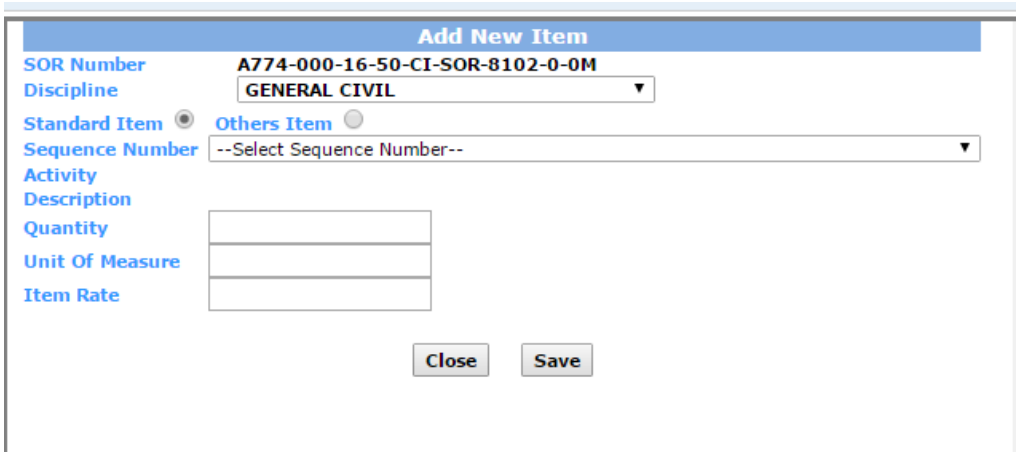


S.No	Sequence No	Description	UOM	Rate	Quantity
1	EE	ELECTRICAL - -			
2	E207.00.00	G.I. PIPES -			
3	E207.01.00	Supply and laying of following sizes of G.I. Pipes (medium) in required length fixed on steel, concrete or similar structure, laid in trenches, ready to be buried in concrete including cutting, threading, bending and similar works, supply of clamps, small mm structures, spacers and installation of seats, plugs, bushings etc., small civil works, including all labour and materials, as per approved drawings, specifications of this tender and directions of Engineer-in-Charge. -			
4	E207.01.01	40 mm NB -	M	1230	800
5	E207.01.02	50 mm NB -	M	1640	260
6	E207.01.03	65 mm NB -	M	2050	70
7	E207.01.04	80 mm NB -	M	2510	150
8	E207.01.05	100 mm NB -	M	3390	150
9	E207.01.07	150 mm NB -	M	5130	80
10	E402.00.00	EARTH ELECTRODES - -			
11	E402.01.00	Supply, installation, testing and commissioning of GI earth electrodes, complete with earth pit as per std. 7-51-0102 and all necessary materials including excavation of earth pit, filling with charcoal and salt, back filling, providing necessary brickwork, connections, including all labour and materials, as per approved drawings, specifications of this tender and directions of Engineer-in-Charge. - -			
12	E402.01.01	GI earth electrode as per std. 7-51-0102 -	NOS	15230	65
13	E403.00.00	EARTH STRIPS - -			
14	E403.02.00	Supply, installation and connection of following GI earthing strip buried individually at a depth of 500 mm including welding at joints, providing anti-corrosive paint or bitumen and jute covering for welded portion, clamping and necessary hardware for connecting, excavation and refilling etc., including all labour and materials, as per approved drawings, specifications of this tender and directions of Engineer-in-Charge. - -			
15	E403.02.02	50 x 6 mm - -	M	660	2200
16	E403.02.03	40 x 5 mm - -	M	510	250
17	E403.02.04	20 x 3 mm -	M	370	480
18	E405.00.00	EARTH PLATES -			
19	E405.01.00	Supply, installation and connection of GI earth plates as per std. 7-51-0103, complete with anchor bolts, including all labour and materials, as per approved drawings, specifications of this tender and directions of Engineer-in-Charge. - -			
20	E405.01.01	GI earth plate as per std. 7-51-0103. -	NOS	1450	140
21	C001.12.00	Constructing 300mm x 300mm x 1200mm size GRID PILLARS in plain cement concrete of M-20 grade with 20mm and down size graded stone aggregates with 500mm below ground level and 700mm above ground including embedding steel plate 150mm x 150mm x 10mm thick with two nos. anchor bars of 12mm dia. 150 mm long on top of pillar for marking the permanent reference points, including earthwork in excavation, backfilling and spreading surplus earth, shuttering, tamping, ramming, vibrating, curing, and finis	EACH	100	1

Add New SOR Item

d. Click on the button “Add New SOR Item”, following screen will appear.



e. User can add standard SOR items as well as other miscellaneous items.

f. Enter all the mandatory details in above screen and press “Save” button to add.

D. **Splitting and Approval of SOR Items for activity / payments:** This module is used for splitting the SOR item as per activities and payment condition. Contractor will split the SOR items based on the activities and payments condition and RCM will approve the same.

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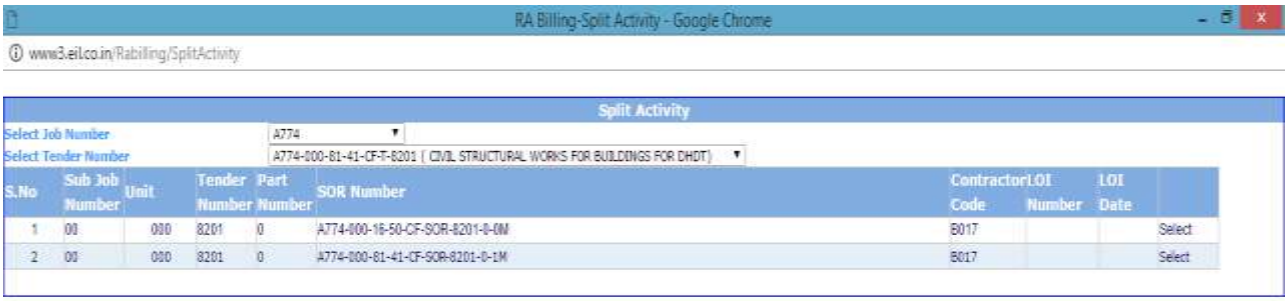
Steps:

a. Select Job Number

b. Select Tender Number, following screen will appear with SOR details:



c. Click on the “Select”, following screen will appear with SOR item details:

d. Clicking on Split Button, following screen will appear

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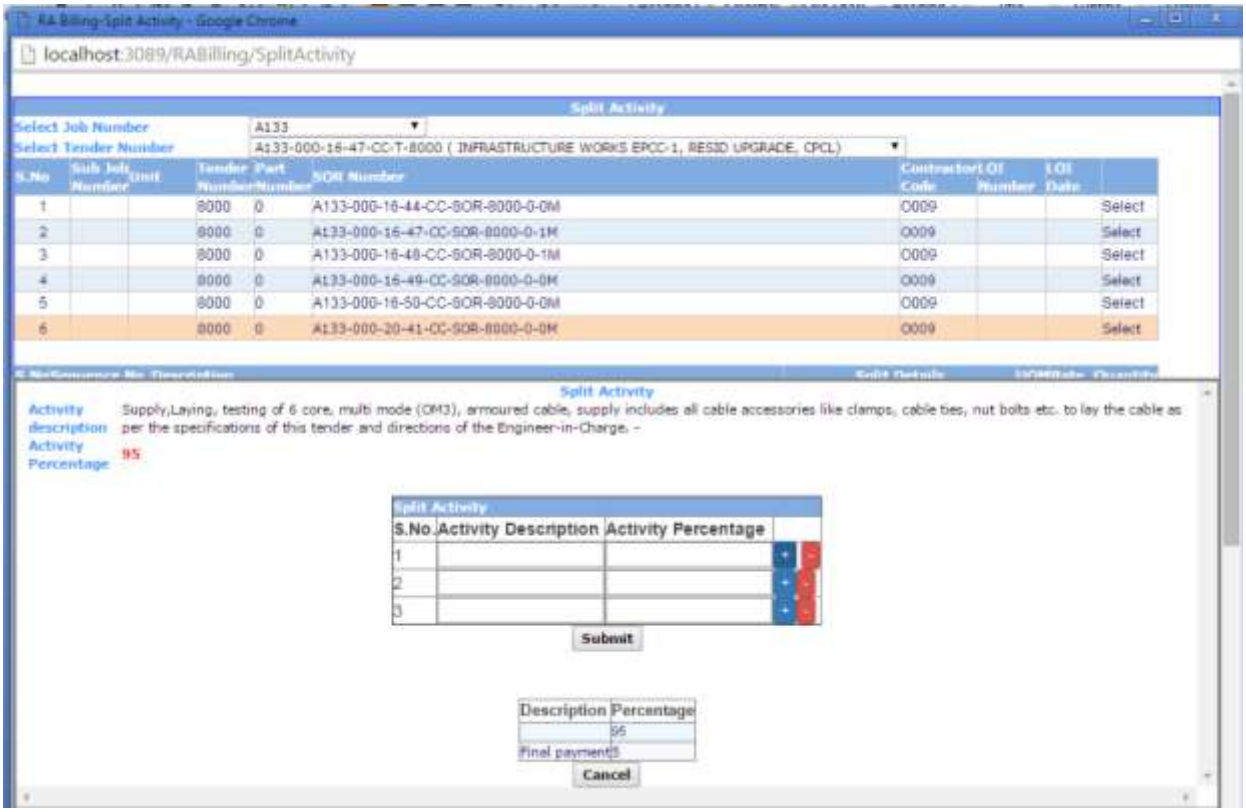

e. Enter the activities and percentage

f. Press button “Submit” to save records.

g. After entering the activity details and percentage, flowing screen will appear:

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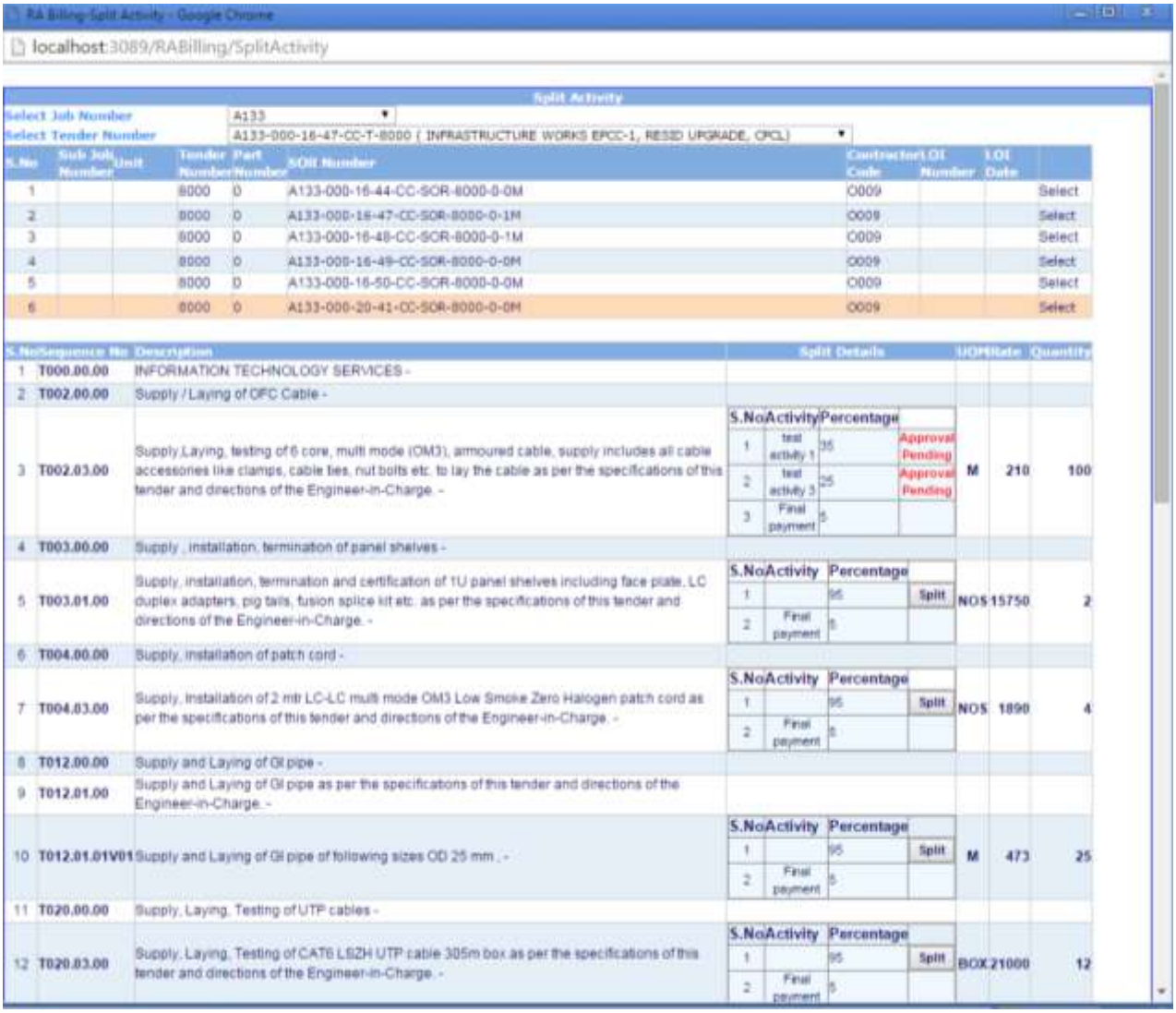
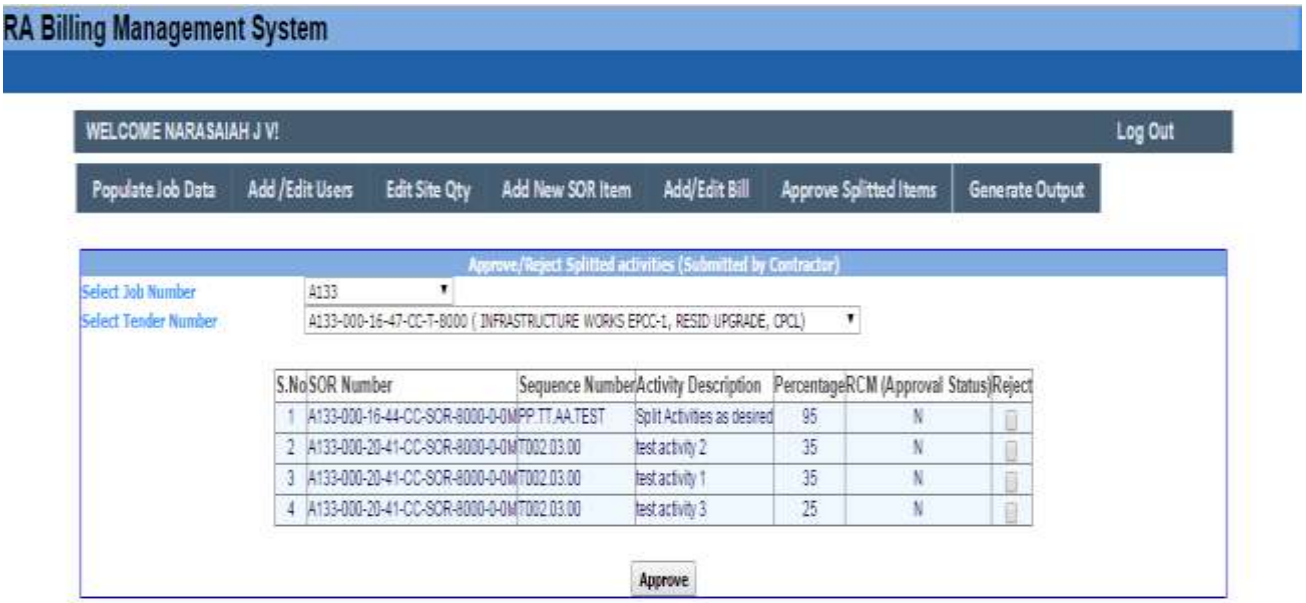


RCM's Activity approval/Rejection screen: RCM can approved or reject the splitted activities entered by contractor. Screen is show below.



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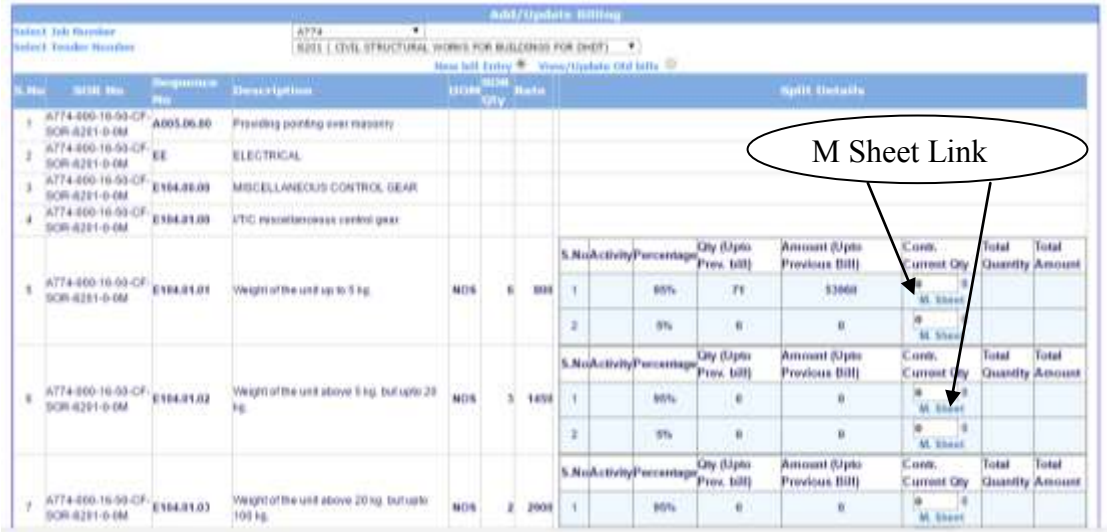
E. RA Bill Entry and approval cycle: After approval of splitting activity, contractor will start the processing of RA bill. Contractor will upload the measurement sheets and Billing engineer / area coordinator and RCM will approved / reject the bills sequentially.

Steps by Contractor:

a. Select Job Number

b. Select Tender Number, following screen will appear:

c. Click on the radio button “New bill Entry” to enter a new bill. Next screen will appear with SOR details with breakup.



d. Click on the link “M.Sheet” as shown in above screen , next screen will appear .

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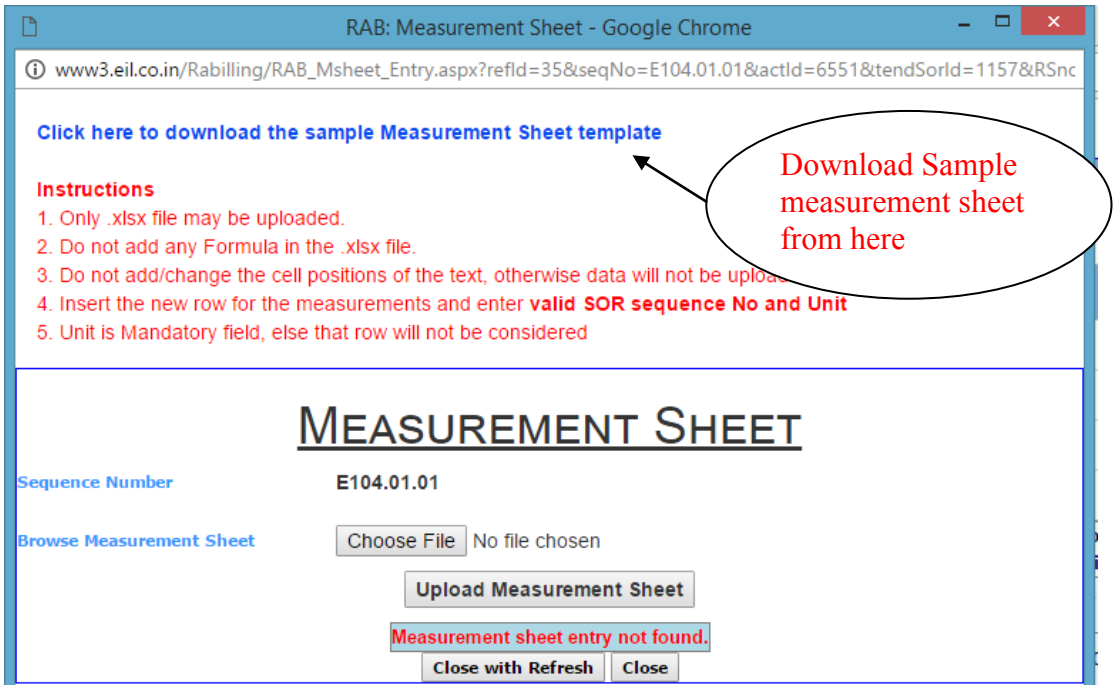

e. Click on the button “Choose File” to upload the measurement sheet in standard excel format (User can download the standard measurement sheet format by clicking the link “**Click here to download the sample Measurement Sheet template**” from the above screen).

f. Press button “Close” or “Close with Refresh “to go into the main screen to upload measurement sheet for another item. If user press “Close” button, it will save the data but it will not show the total quantity in the main screen. If user press “Close with Refresh” button, it will save the data and it will show the total quantity in the main screen but it will take extra time for refresh whole page. It is suggested that “Close with Refresh “button can be used for last record for fast data retrieval.

g. After uploading all the measurement sheet , enter the bill number and period of the measurement in the screen show below :

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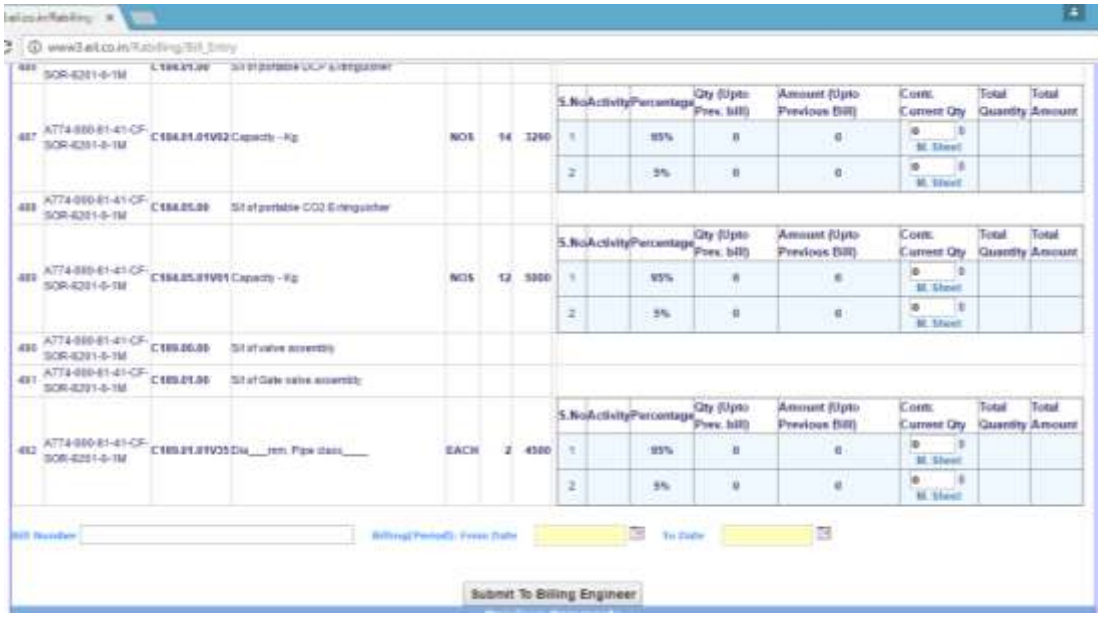

h. After entering all the Measurement Sheets and enter Bill number and billing period, click on the button “Submit to Billing Engineer” for approval of the bill.

F. Approval / rejection of RA Bill entered by Contractor:

a) Approval or rejection by Billing Engineer:

Steps:

a. Select Job Number

b. Select Tender Number, following screen will appear:

c. After clicking on Select link, following screen will appear:

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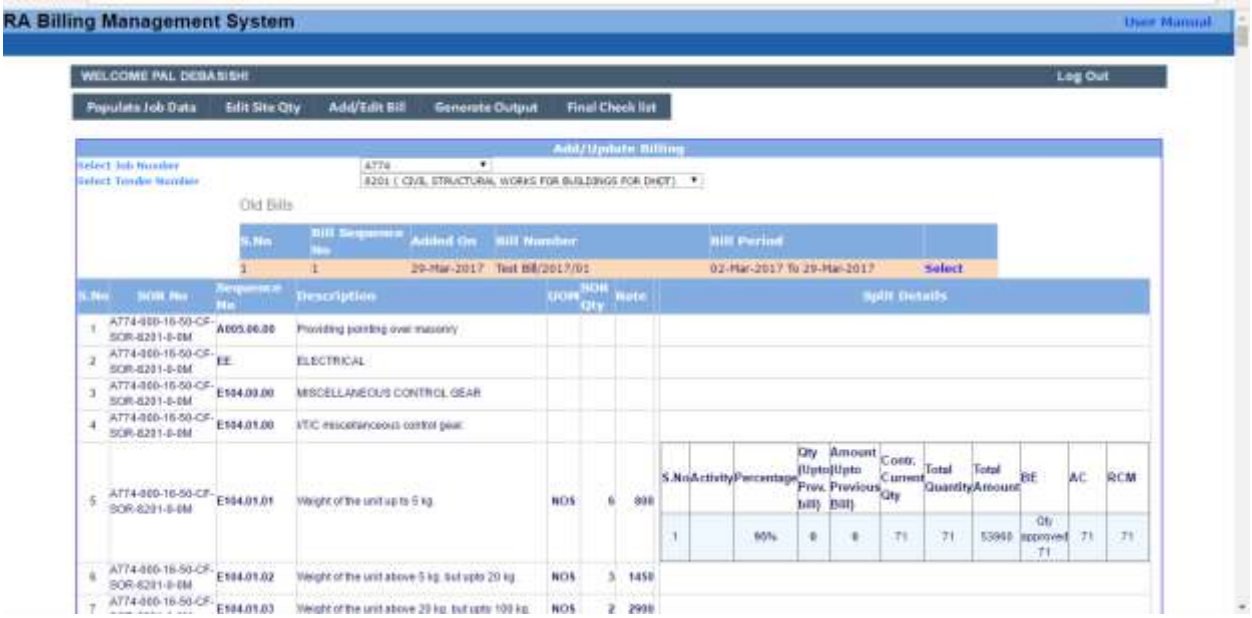
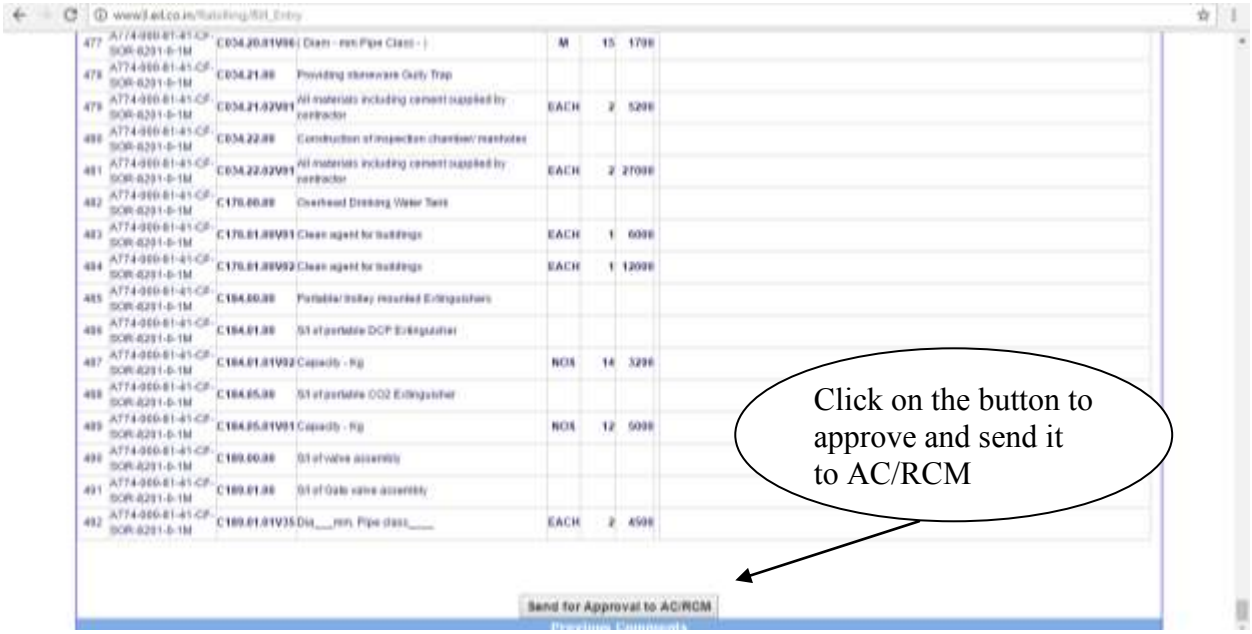


Scroll the screen for sending it for further approval:



b) Approval / Rejection by Area Coordinator :

Steps:

a. Select Job Number

b. Select Tender Number, following screen will appear:

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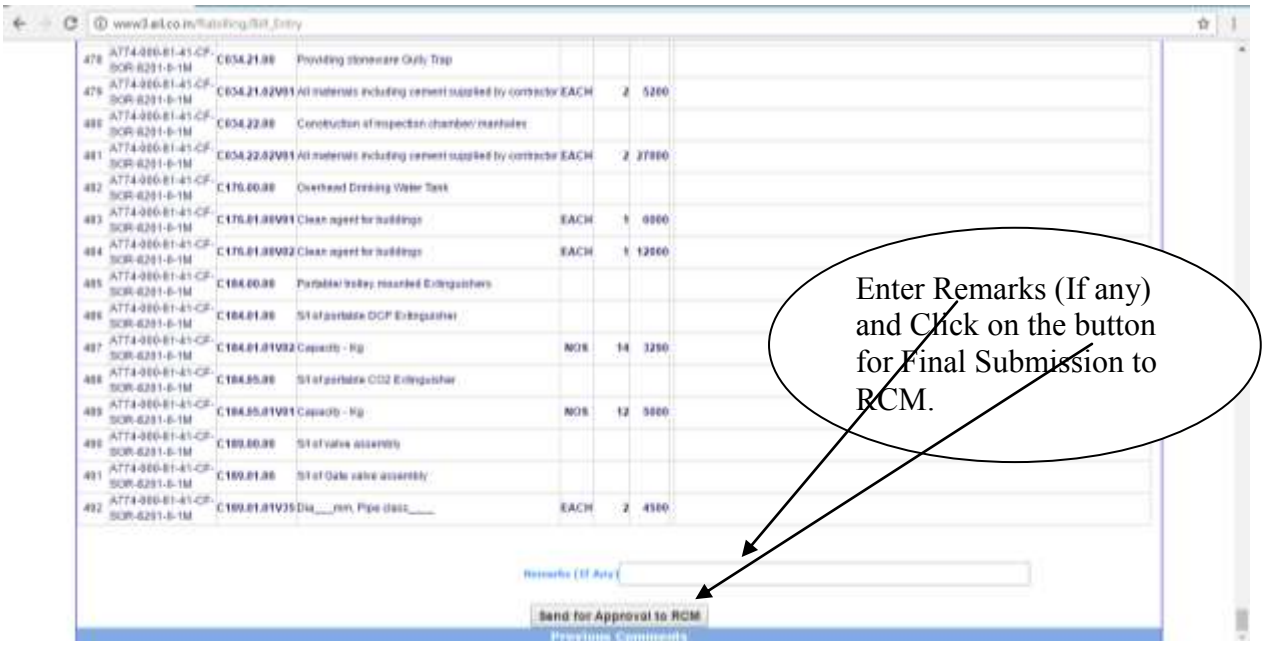
After clicking on Select link, following screen will appear:

Scroll to the end of the screen to submit it to RCM:



c) Approval / Rejection by RCM :

Steps:

a. Select Job Number

b. Select Tender Number, following screen will appear:

After clicking on the Select link, following screen will appear:

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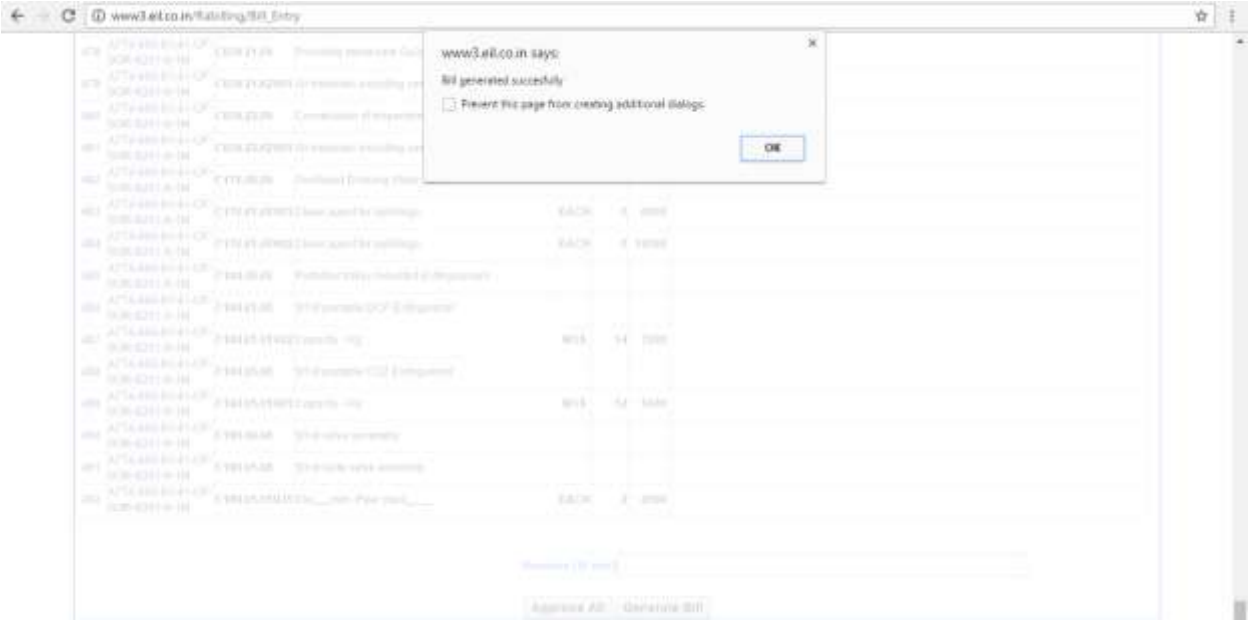
After Clicking on ***Approve All*** button, data entry by contractor will freeze and following success screen will appear:

Clicking on the ***Generate Bill*** button following success screen will appear:



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G. **Generate Output:** This module is used to **generate Measurement Sheet, RA bill abstract and Excess Saving Statement**.

Steps:

a. Select Job Number

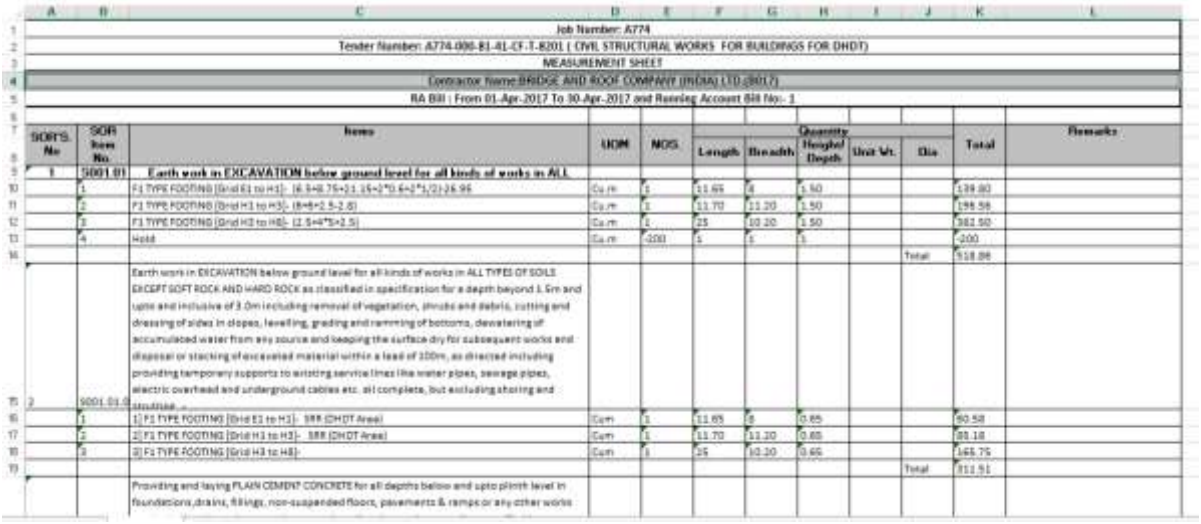
b. Select Tender Number, following screen will appear with RA bill details:

c. Click on the link button "Measurement Sheet" to generate complete measurement sheet for selected RA bill

d. Click on the link button "Abstract" to generate RA bill abstract for selected RA bill

e. Click on the button "Generate Excess Saving Statement" for tender abstract. Sample files are shown below:

<u>Measurement Sheet Output in Excel</u>:



Job Number: A774

Tender Number: A774-000-B1-41-CF-T-8201 (CIVIL STRUCTURAL WORKS FOR BUILDINGS FOR DHDT)

MEASUREMENT SHEET

Contractor Name:BRIDGE AND ROOF COMPANY (INDIA) LTD.(B012)

RA Bill : From 01-Apr-2017 To 30-Apr-2017 and Running Account Bill No:- 1

SOR'S No	SOR Item No.	Items	UOM	NOS	Quantity: Length	Breadth	Height/ Depth	Unit Wt.	Dia	Total	Remarks
1	S001.01	Earth work in EXCAVATION below ground level for all kinds of works in ALL									
	1	F1 TYPE FOOTING (Grid E1 to H1)- (8.5+8.75+11.25+1)*0.6+1*1/2)-26.95	Cu.m	1	11.65	8	1.50			139.80	
	2	F1 TYPE FOOTING (Grid H1 to H3)- (8+8+2.5-2.8)	Cu.m	1	11.70	11.20	1.50			198.58	
	3	F1 TYPE FOOTING (Grid H3 to H8)- (2.5+4*5+2.5)	Cu.m	1	25	10.20	1.50			382.50	
	4	Hold	Cu.m	-200	1	1	1			-200	
									Total	518.88	
2	S001.01.0	Earth work in EXCAVATION below ground level for all kinds of works in ALL TYPES OF SOILS EXCEPT SOFT ROCK AND HARD ROCK as classified in specification for a depth beyond 1.5m and upto and inclusive of 3.0m including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, levelling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material within a lead of 100m, as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and sheeting									
	1	1) F1 TYPE FOOTING (Grid E1 to H1)- SRB (DHDT Area)	Cum	1	11.65	8	0.65			60.58	
	2	2) F1 TYPE FOOTING (Grid H1 to H3)- SRB (DHDT Area)	Cum	1	11.70	11.20	0.65			85.18	
	3	3) F1 TYPE FOOTING (Grid H3 to H8)-	Cum	1	25	10.20	0.65			165.75	
									Total	311.51	
		Providing and laying PLAIN CEMENT CONCRETE for all depths below and upto plinth level in foundations,drains, fillings, non-suspended floors, pavements & ramps or any other works									

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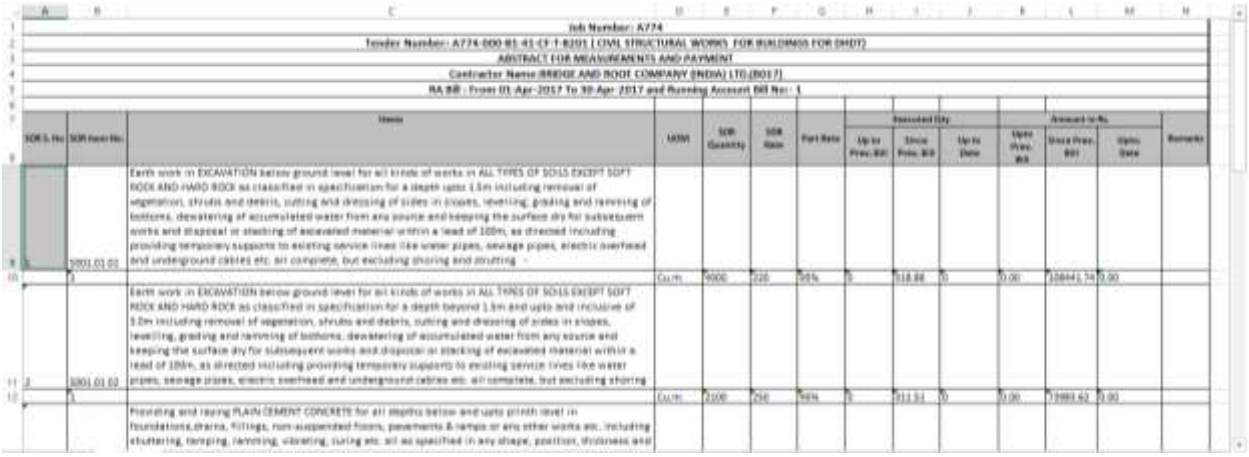
RA billing Abstract Output in Excel:



Tender Abstract Output in Excel:

Job Number: A774

Tender Number: A774-000-81-41-CF-T-8201 (CIVIL STRUCTURAL WORKS FOR BUILDINGS FOR DHDT)

ABSTRACT FOR MEASUREMENTS AND PAYMENT

Contractor Name:BRIDGE AND ROOF COMPANY (INDIA) LTD.(B017)

SOR S. No	SOR Item No.	Items	UOM	SOR Quantity	SOR Rate	Part Rate	Executed Qty			Amount in Rs.			Remarks
							Up to Prev. Bill	Since Prev. Bill	Up to Date	Upto Prev. Bill	Since Prev. Bill	Upto. Date	
1	A000.00.00	ARCHITECTURE -											
2	A002.00.00	FLOOR FINISHING -											
3	A002.01.00	Providing and laying average											
4	A002.01.01	CEMENT SUPPLIED BY THE	Sq.M.	150	370	100%							
5	A002.03.00	Providing and laying average											
6	A002.03.01	CEMENT SUPPLIED BY THE	Sq.M.	1052	780	100%							
7	A002.04.00	Providing and laying 125mm high											
		18mm thick. CEMENT SUPPLIED											

H. % Edit: This module is used by RCM to define the percentage increase or decrease on total work applicable on all **standard** items of SOR. RCM will define percentage value before processing of any RA bill and calculation for same will reflect on the outputs of Abstract and Excess Saving Statement.

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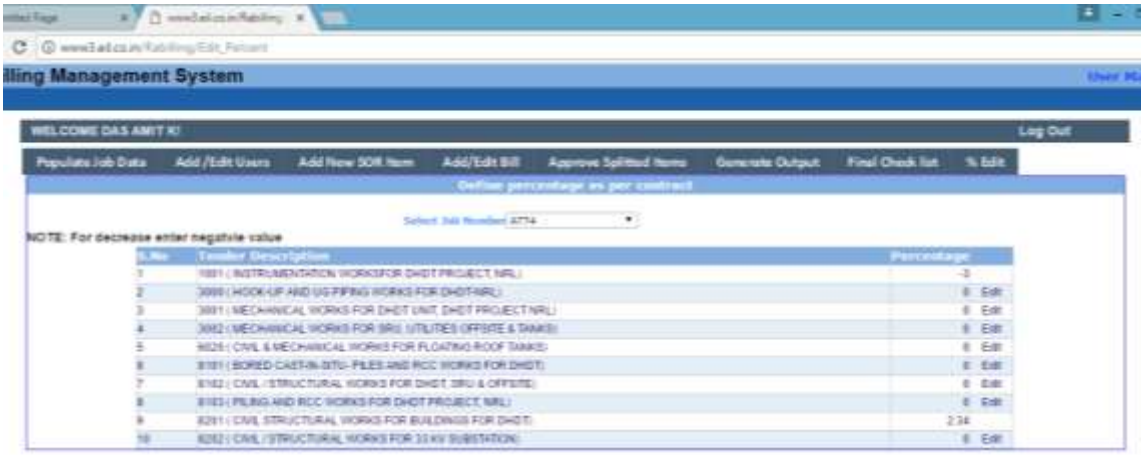
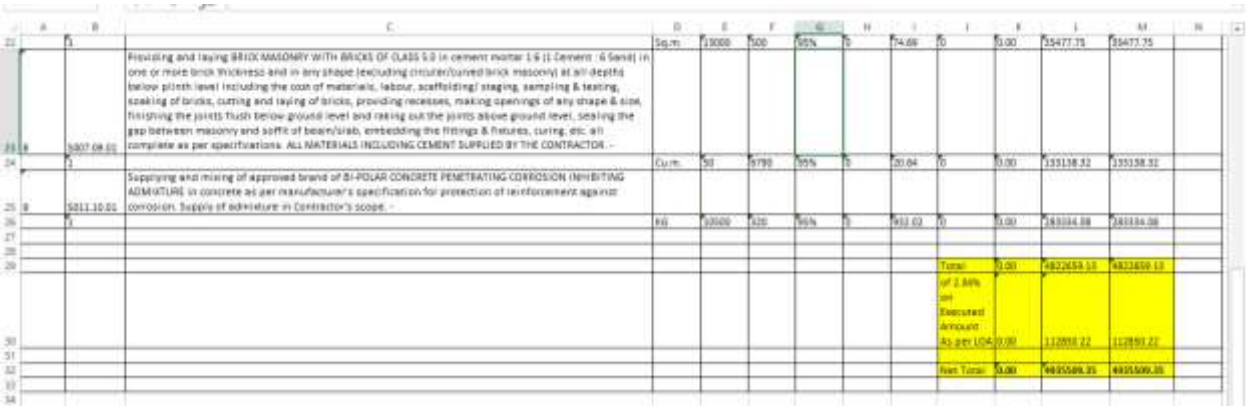
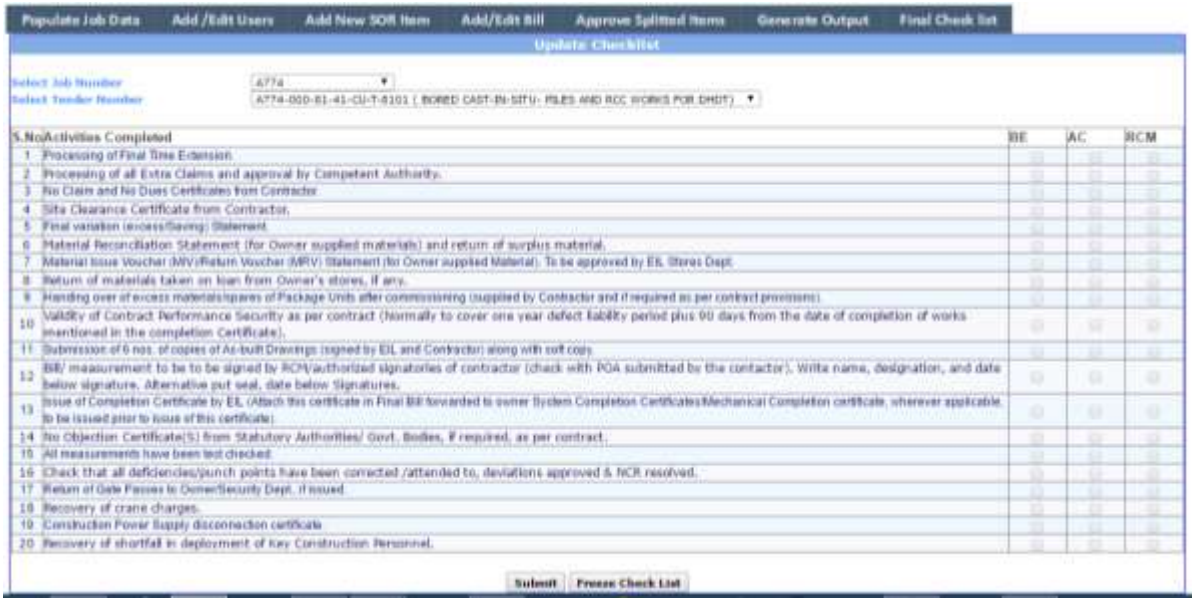


Calculation on Outputs (Abstract and Excess Saving Statement) :



I. Final Checklist :



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6. ERROR MESSAGES

Error messages will be displayed while input parameters are wrongly filled or some validation fails.

Login failed:

If Valid Employee number and Password in not mentioned, following screen will appear:

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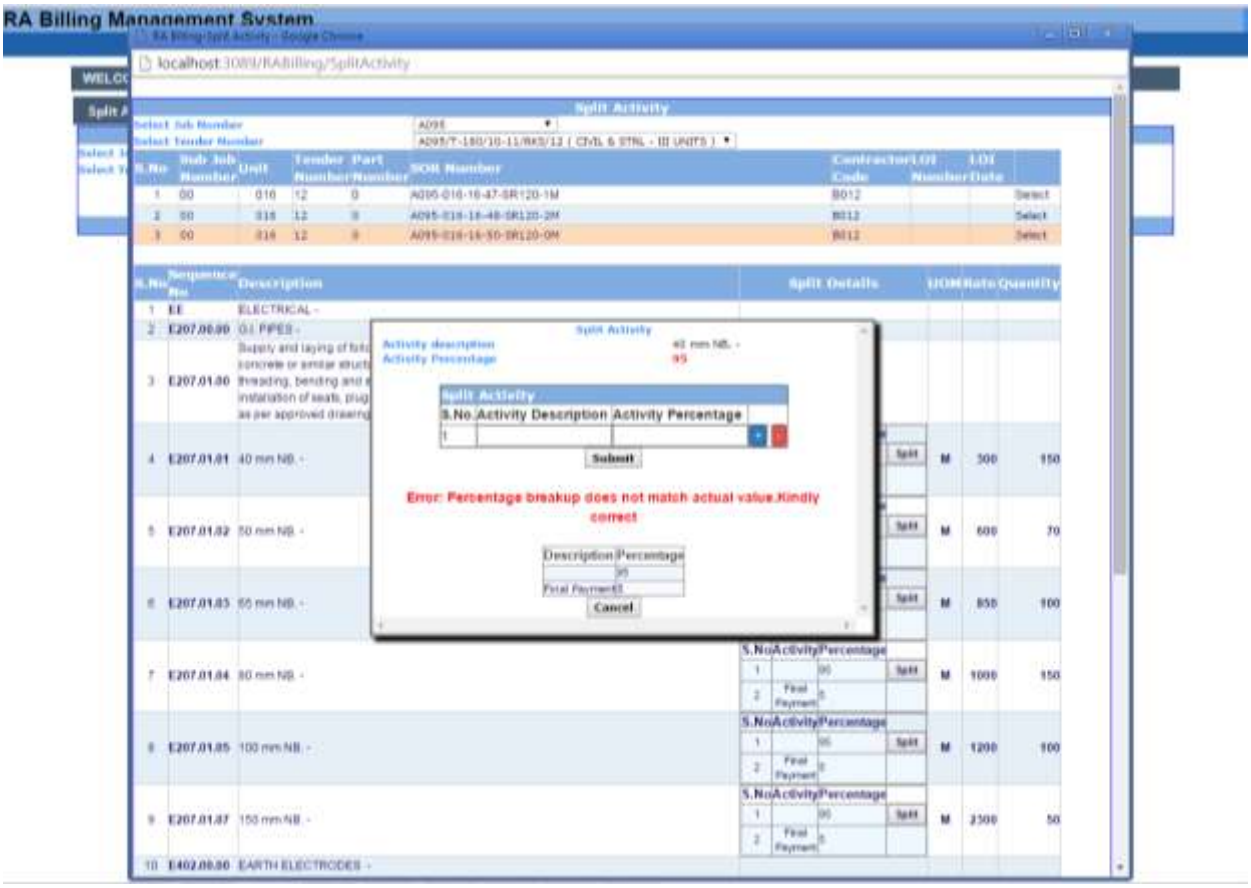
Invalid Split error message:



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