

Quantity Accounting with CMBs

Principles and Application

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Central Public Works Department

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Outline

1 Introduction

- Overview of public works
- Measurement Books

2 Computerised Measurement Books

- General guidelines for the preparation of CMBs
- Format of CMBs
- Preparation of Bills

3 Computerised measurements using CMB Automiser

- Workflow
- Program Interface

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Overview of public works

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- Every work has a schedule of quantities, specifications and plans.
- These forms the basis of execution and measurement.
- A detailed account of measurements forms the quantity account.
- Quantity accounts are maintained in the form of measurement books.

Measurement Book

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- Measurement books are important records of public works.
- Proper maintenance of this record is crucial.

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Comparison between manual MBs and CMBs

Manual Measurement Books

Computerised Measurement Books

Comparison between manual MBs and CMBs

Manual Measurement Books

- Measurements recorded by JE.

Computerised Measurement Books

- Contractor records and submits computerised measurements.

Comparison between manual MBs and CMBs

Manual Measurement Books

- Measurements recorded by JE.
- Contractor accepts the measurements.

Computerised Measurement Books

- Contractor records and submits computerised measurements.
- JE verifies the measurement.

Comparison between manual MBs and CMBs

Manual Measurement Books

- Measurements recorded by JE.
- Contractor accepts the measurements.
- Contractor prepares bill based on recorded measurements.

Computerised Measurement Books

- Contractor records and submits computerised measurements.
- JE verifies the measurement.
- Contractor submits computerised bill.

General guidelines for the preparation of CMBs

- Draft sheets prepared by contractor and checked by JE.

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- Maximum number of pages should be limited to 100.

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- Shall be in A4 size, Hard bound in Red colour and Machine numbered.
- Each page should be initialed by contractor and JE.
- Maximum number of pages should be limited to 100.
- CMB Number should be got allotted in advance.

Format of CMBs

- 1 Standard Facing Sheets.

Format of CMBs

- 1 Standard Facing Sheets.
- 2 Title block.

Format of CMBs

- 1 Standard Facing Sheets.
- 2 Title block.
- 3 Measurement Group.

Format of CMBs

- ① Standard Facing Sheets.
- ② Title block.
- ③ Measurement Group.
 - ① Measurement Items.

Format of CMBs

- ❶ Standard Facing Sheets.
- ❷ Title block.
- ❸ Measurement Group.
 - ❶ Measurement Items.
- ❹ Completion Certificate.

Format of CMBs

- ① Standard Facing Sheets.
- ② Title block.
- ③ Measurement Group.
 - ① Measurement Items.
- ④ Completion Certificate.
- ⑤ Abstract of measurements.

Title block

DETAILS OF MEASUREMENTS

Name of Work	:	< <i>name of work</i> >
Situation	:	< <i>situation</i> >
Agreement No.	:	< <i>agreement number</i> >
Agency	:	< <i>agency</i> >
Date of Start	:	< <i>actual date of start</i> >
As per agreement	:	< <i>date of start as per agreement</i> >

- Groups measurements by date

Date of Completion : *"work in progress"/ <completion date>*
Date of Measurement : *<date of measurement>*

Measurement Items

Standard Measurement Item

Item No.18

1

Earthing with G.I. earth pipe 4.5 metre long, including accessories, providing masonry enclosure with cover plate having locking arrangement, watering pipe etc. with (2) tonate powder, drilling with bore-well rig of 8 dia of suitable depth in hard laterite including setting the (2) refilling the soil and disposing the surplus earth etc complete as required.

(Remarks:)

3

Sl. No.	Description	Breakup	No	L	B	H	Total
1	Near openwell at site of ce	[2,,]	2	4			2
2	Near sump	[1,,]	1				1
	TOTAL						3
	Qty C/o MB.No. 26/CLTPED						Pg.No. 19

5

- Item number as per agreement schedule or extra/substituted item schedules.

Measurement Items

Standard Measurement Item

Item No.18

1

Earthing with G.I. earth pipe 4.5 metre long, including accessories, providing masonry enclosure with cover plate having locking arrangement, watering pipe etc. with (2) tonate powder, drilling with bore-well rig of 8 dia of suitable depth in hard laterate including setting the (2) refilling the soil and disposing the surplus earth etc complete as required.

(Remarks:)

3

Sl. No.	Description	Breakup	No	L	B	H	Total
1	Near openwell at site of ce	[2,,]	2	4			2
2	Near sump	[1,,]	1				1
	TOTAL						3
	Qty C/o MB.No. 26/CLTPED						Pg.No. 19

5

- 2 Description as per agreement schedule or extra/substituted item schedules

Measurement Items

Standard Measurement Item

Item No.18

1

Earthing with G.I. earth pipe 4.5 metre long, including accessories, providing masonry enclosure with cover plate having locking arrangement, watering pipe etc. with 50 kg of gunny powder, drilling with bore-well rig of 8 dia of suitable depth in hard laterite including setting the casing, refilling the soil and disposing the surplus earth etc complete as required.

2

(Remarks:)

3

Sl. No.	Description	Breakup	No	L	B	H	Total
1	Near openwell at site of ce	[2,,]	2	4			2
2	Near sump	[1,,]	1				1
	TOTAL						3
	Qty C/o MB.No. 26/CLTPED						Pg.No. 19

5

3 Any remarks about the item.

Measurement Items

Standard Measurement Item

Item No.18 **1**

Earthing with G.I. earth pipe 4.5 metre long, including accessories, providing masonry enclosure with cover plate having locking arrangement, watering pipe etc. with **2** tonate powder, drilling with bore-well rig of 8 dia of suitable depth in hard laterate including setting the **2** refilling the soil and disposing the surplus earth etc complete as required.

(Remarks:) **3**

Sl. No.	Description	Breakup	No	L	B	H	Total
1	Near openwell at site of ce	[2,,]	2	4			2
2	Near sump	[1,,]	1				1
	TOTAL						3
	Qty C/o MB.No. 5 26/CLTPED						Pg.No. 19

4 Tabulated list of measurements.

Measurement Items

Standard Measurement Item

Item No.18

1

Earthing with G.I. earth pipe 4.5 metre long, including accessories, providing masonry enclosure with cover plate having locking arrangement, watering pipe etc. with tonate powder, drilling with bore-well rig of 8 dia of suitable depth in hard laterate including setting the refilling the soil and disposing the surplus earth etc complete as required.

2

(Remarks:)

3

Sl. No.	Description	Breakup	No	L	B	H	Total
1	Near openwell at site of ce	[2,,]	2	4			2
2	Near sump	[1,,]	1				1
	TOTAL						3
	Qty C/o MB.No. 26/CLTPED						Pg.No. 19

5

5 Cross reference to the abstract of measurements.

Measurement Items

Standard Measurement Item

How to record measurements?

<i>Sl</i>	<i>Description</i>	<i>Breakup</i>	<i>N</i>	<i>L</i>	<i>B</i>	<i>H</i>	<i>T</i>
1	Inside room 1 of wing 2, 2nd floor	[1,,]	1				1
2	From SB7(Room1) to DB1(Room2)	[,1.5+15+1.5,,]		18			18
3	From P1(near school building) to road crossing	[,15+14,,]		29			29

Special Measurement Items

Multiple items

Item No.6.1

Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading, cutting etc as required.
40 mm dia Gate valve (Screwed type)

Item No.6.2

Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading, cutting etc as required.
40 mm dia horizontal check valve (Screwed type)
(Remarks:)

Sl. No.	Description	Item No. 6.1	Item No. 6.2						
		Gate Valve	Check Valve						
1	For motors inside sump near 24 quarters	2	2						
2	For motors inside openwell near CPWD site of ce	2	2						
	TOTAL	4	4						
	Qty C/o MB.No. 26/CLTPED	Pg.No. 15	Pg.No. 16						

Special Measurement Items

Table of points

Item No.1.1

Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.

Group C

(Remarks:)

Sl. No.	Description	Lights	Fans	Ex.Fans	Call Bells	Other	Total
1	Light points inside store	2					2
2	Wall fan points inside store		2				2
3	Bell point inside EE room				1		1
	TOTAL						5
	<i>Qty C/o MB.No. 5/CLTPED</i>						<i>Pg.No. 1</i>

Completion certificate

COMPLETION CERTIFICATE

Name of Work	:	<name of work>
Situation	:	<situation>
Agreement No.	:	<agreement number>
Agency	:	<agency>
Date of Start	:	<actual date of start>
As per agreement	:	<date of start as per agreement>
Date of Completion	:	<date of completion>

Certified that the work has been physically completed on <**date of completion**> and that no defects are apparent and contractor has removed from the premises on which the work was carried out all the debris scaffolding and surplus materials and cleared off all dirt from wood work, ceiling, walls, floors and all other parts of the building up on which or about which he has been in possession for the purpose of execution thereof.

This is however subject to measurement being recorded and quality being checked by the competent authority.

Abstract of measurements

ABSTRACT OF COST

Name of Work	:	<i>C/o Buildings for CUK, Periya SH. Additional electrification and associated works at CPWD site of ce at CUK.</i>
Situation	:	<i>Periya, Kasarugode</i>
Agreement No.	:	<i>W.O.03/EE/CLTPED/2015 dated 24/06/2015</i>
Agency	:	<i>Shri. M.V.Azeez</i>
Date of Start	:	<i>24/06/2015</i>
As per agreement	:	<i>24/06/2015</i>
Date of Completion	:	
Date of Abstract	:	<i>1/07/2015</i>

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Total
1.1	Wiring for points Group C					
	Qty B/F 5/CLTPED Pg.No. 1	5	Point			
	Qty B/F 5/CLTPED Pg.No. 1	5	Point			
	TOTAL	10	Point			
	Below deviation limit of 30%	6.3	Point	1235.0	1235.0	8027.5
	Above deviation limit of 30%	3.3	Point	1115.0	1115.0	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire					
	Qty B/F 5/CLTPED Pg.No. 1	9.45	Metre			
	TOTAL	9.45	Metre	200.0	200.0	1890.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire					
	Qty B/F 5/CLTPED Pg.No. 1	37.1	Metre			
	TOTAL	37.1	Metre	300.0	300.0	11130.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire					
	Qty B/F 5/CLTPED Pg.No. 1	3.4	Metre			
	TOTAL	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE AMOUNT						26242.0
LAST BILL AMOUNT						20487.0
SINCE PREVIOUS AMOUNT						5755.0

Abstract of measurements

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- Schedule/extra/substituted items appear in chronological order.

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Total
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	Qty B/F 5/CLTPED Pg.No. 1	5	Point			
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	TOTAL	9.45	Metre	200.0	200.0	1890.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire					
	Qty B/F 5/CLTPED Pg.No. 1	37.1	Metre			
	TOTAL	37.1	Metre	300.0	300.0	11130.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire					
	Qty B/F 5/CLTPED Pg.No. 1	3.4	Metre			
	TOTAL	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE AMOUNT						26242.0
LAST BILL AMOUNT						20487.0
SINCE PREVIOUS AMOUNT						5755.0

Abstract of measurements

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Name of Work	:	C/o Buildings for CUK, Periya SH. Additional electrification and associated works at CPWD site of ee at CUK.
Situation	:	Periya, Kasaragode
Agreement No.	:	W.O.03/EE/CLTPED/2015 dated 24/06/2015
Agency	:	Shri. M.V.Azeez
Date of Start	:	24/06/2015
As per agreement	:	24/06/2015
Date of Completion	:	
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	TOTAL	9.45	Metre	200.0	200.0	1890.0
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	TOTAL	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE AMOUNT						26242.0
LAST BILL AMOUNT						20487.0
SINCE PREVIOUS AMOUNT						5755.0

- Schedule/extra/substituted items appear in chronological order.
- Measurements from last bill abstract and this MB brought forward to obtain upto date quantity.

Abstract of measurements

ABSTRACT OF COST

Name of Work	: C/o Buildings for CUK, Perviya SH.Additional electrification and associated works at CPWD site of ce at CUK.
Situation	: Perviya, Kasargode
Agreement No.	: W.O.03/EE/CLTPED/2015 dated 24/06/2015
Agency	: Shri. M.V.Azooz
Date of Start	: 24/06/2015
As per agreement	: 24/06/2015
Date of Completion	:
Date of Abstract	: 1/07/2015

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Total
1.1	Wiring for points Group C					
	Qty B/F <i>5/CLTPED Pg.No. 1</i>		5 Point			
	Qty B/F <i>5/CLTPED Pg.No. 1</i>		5 Point			
	TOTAL		10 Point			
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5
2.1	Wiring for circuit/ submain <i>2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire</i>					
	Qty B/F <i>5/CLTPED Pg.No. 1</i>	9.45	Metre			
	TOTAL	9.45	Metre	200.0	200.0	1890.0
2.2	Wiring for circuits/ submain <i>2 X 4 sq. mm + 1 X 4 sq. mm earth wire</i>					
	Qty B/F <i>5/CLTPED Pg.No. 1</i>	37.1	Metre			
	TOTAL	37.1	Metre	300.0	300.0	11130.0
2.3	Wiring for circuit/ submain <i>2 X 6 sq. mm + 1 X 6 sq. mm earth wire</i>					
	Qty B/F <i>5/CLTPED Pg.No. 1</i>	3.4	Metre			
	TOTAL	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE AMOUNT						26242.0
LAST BILL AMOUNT						20487.0
SINCE PREVIOUS AMOUNT						5755.0

- Schedule/extra/substituted items appear in chronological order.
- Measurements from last bill abstract and this MB brought forward to obtain up-to-date quantity.
- Up-to-date Total = $\sum(P.R. \times Qty)$

Abstract of measurements

ABSTRACT OF COST

Name of Work	:	C/o Buildings for CUK, Periya SH. Additional electrification and associated works at CPWD site of ee at CUK.
Situation	:	Periya, Kasarugode
Agreement No.	:	W.O.03/EE/CLTPED/2015 dated 24/06/2015
Agency	:	Shri. M.V.Azeez
Date of Start	:	24/06/2015
As per agreement	:	24/06/2015
Date of Completion	:	
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	TOTAL	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE AMOUNT						26242.0
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SINCE PREVIOUS AMOUNT						5755.0

- Schedule/extra/substituted items appear in chronological order.
- Measuremnts from last bill abstract and this MB brought forward to obtain uptodate quantity.
- Up-to-date Total = $\sum(P.R. \times Qty)$
- Bill amount = Up-to-date Total - Last Bill Amount

Preparation of Bills

Bill forms

First and Final Bill

Running Account Bill

Preparation of Bills

Bill forms

First and Final Bill

- Prepared in CPWA-24

Running Account Bill

Preparation of Bills

Bill forms

First and Final Bill

- Prepared in CPWA-24
- Used when entire payment for work is made in a single bill.

Running Account Bill

Preparation of Bills

Bill forms

First and Final Bill

- Prepared in CPWA-24
- Used when entire payment for work is made in a single bill.

Running Account Bill

- Prepared in CPWA-26

Preparation of Bills

Bill forms

First and Final Bill

- Prepared in CPWA-24
- Used when entire payment for work is made in a single bill.

Running Account Bill

- Prepared in CPWA-26
- Used when payments for work are made in multiple bills.

Preparation of Bills

Bill forms

First and Final Bill

- Prepared in CPWA-24
- Used when entire payment for work is made in a single bill.

Running Account Bill

- Prepared in CPWA-26
- Used when payments for work are made in multiple bills.
- Making secured advances to contractors.

Preperation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC Impld & Final Bill

Name of Work: C/o Buildings for CUK, Peripis SH-Additional electrification and associated works at CPWD site of cc at CUK.

Agunt.No.: W.O.03/EE/CLTPED/2015 dated 24/06/2015

Agency: Shri. M.V.Amra

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SINCE PREVIOUS AMOUNT						5755.0	5755.0

Preparation of Bills

Preparation of bill schedule

1 Quantity × Part Rate

SCHEDULE OF RATES FOR CC Road & Final Bill

Name of Work: C/o Buildings for CUK, Peripis SH-Additional electrification and associated works at CPWD site of cc at CUK.

Agmt.No.: W.O.03/EE/CLTPED/2015 dated 24/06/2015

Agency: Shri. M.V.Amre

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SINCE PREVIOUS AMOUNT						5755.0	5755.0

Preparation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC Head & Final Bill

Name of Work: C/o Buildings for CUK, Peripis SH-Additional electrification and associated works at CPWD site of ce at CUK.

Agmt.No.: W.O.03/EE/CLTPED/2015 dated 24/06/2015

Agency: Shri. M.V.Amre

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SINCE PREVIOUS AMOUNT						5755.0	5755.0

- 1 Quantity \times Part Rate
- 2 Column (1) of this bill - Column (1) of last bill

Preperation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC IIad & Final Bill

Name of Work: C/o Buildings for CUK, Peripis SH-Additional electrification and associated works at CPWD site of ce at CUK.

Agunt.No.: W.O.03/EE/CLTPED/2015 dated 24/06/2015

Agency: Shri. M.V.Amraz

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SINCE PREVIOUS AMOUNT						5755.0	5755.0

- 1 Quantity \times Part Rate
- 2 Column (1) of this bill - Column (1) of last bill
- 3 Sum of Column (1)

Preparation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC and Final Bill							
Name of Work:		C/o Buildings for CUK, Periya SH.Additional electrification and associated works at CPWD site of ce at CUK.					
Agmt.No.:		W.O.03/EE/CLTPED/2015 dated 24/06/2015		Agency: Shri. M.V.Amrao			
						1	2
Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE AMOUNT						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SCHEDULE PREVIOUS AMOUNT						5755.0	
						6	7

- ① Quantity \times Part Rate
- ② Column (1) of this bill -
Column (1) of last bill
- ③ Sum of Column (1)
- ④ Sum of Column (2)

Preparation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC Work & Final Bill						
Name of Work: <i>C/e Buildings for CUK, Peripe SH. Additional electrification and associated works at CPWD site of ee at CUK.</i>		Agency: Shri. M.V. Anand				
Agmt. No.: <i>W.O.03/EE/CLTPED/2015 dated 24/06/2015</i>						
Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate Since Prev
1.1	Wiring for points Group C <i>TOTAL</i> <i>Below deviation limit of 30%</i> <i>Above deviation limit of 30%</i>	10 6.5 3.5	Point Point Point	 1235.0 1115.0	 1235.0 1115.0	 8027.5 3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire <i>TOTAL</i>	9.45	Metre	200.0	200.0	1890.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire <i>TOTAL</i>	37.1	Metre	300.0	300.0	11130.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire <i>TOTAL</i>	3.4	Metre	380.0	380.0	1292.0
TOTAL UPTODATE						26242.0
LAST BILL AMOUNT						29487.0
SINCE PREVIOUS AMOUNT						5755.0

- ① Quantity \times Part Rate
- ② Column (1) of this bill -
Column (1) of last bill
- ③ Sum of Column (1)
- ④ Sum of Column (2)
- ⑤ Previous bill amount

Preparation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC IIad & Final Bill

Name of Work: C/o Buildings for CUK, Peripis SH-Additional electrification and associated works at CPWD site of cc at CUK.

Agmt.No.: W.O.03/EE/CLTPED/2015 dated 24/06/2015

Agency: Shri. M.V.Amra

Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C						
	TOTAL	10	Point				
	Below deviation limit of 30%	6.5	Point	1235.0	1235.0	8027.5	1852.5
	Above deviation limit of 30%	3.5	Point	1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire						
	TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire						
	TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire						
	TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
TOTAL UPTODATE						26242.0	5755.0
LAST BILL AMOUNT						20487.0	
SINCE PREVIOUS AMOUNT						5755.0	5755.0

- 1 Quantity \times Part Rate
- 2 Column (1) of this bill - Column (1) of last bill
- 3 Sum of Column (1)
- 4 Sum of Column (2)
- 5 Previous bill amount
- 6 (5) - (3)

Preparation of Bills

Preparation of bill schedule

SCHEDULE OF RATES FOR CC Road & Final Bill							
Name of Work:		C/o Buildings for CUK, Peripe SH. Additional electrification and associated works at CPWD site of ce at CUK.					
Agmt. No.:		W.O.63/EE/CLTPED/2015 dated 24/06/2015				Agency: Shri. M.V.A.2002	
Item No.	Description	Qty	Unit	Full Rate	Part Rate	Uptodate	Since Prev
1.1	Wiring for points Group C TOTAL Below deviation limit of 30% Above deviation limit of 30%		10 Point 6.5 Point 3.5 Point				
				1235.0	1235.0	8027.5	1852.5
				1115.0	1115.0	3902.5	3902.5
2.1	Wiring for circuit/ submain 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire TOTAL	9.45	Metre	200.0	200.0	1890.0	0.0
2.2	Wiring for circuit/ submain 2 X 4 sq. mm + 1 X 4 sq. mm earth wire TOTAL	37.1	Metre	300.0	300.0	11130.0	0.0
2.3	Wiring for circuit/ submain 2 X 6 sq. mm + 1 X 6 sq. mm earth wire TOTAL	3.4	Metre	380.0	380.0	1292.0	0.0
	TOTAL UPTODATE					26242.0	5755.0
	LAST BILL AMOUNT					20487.0	
	SINCE PREVIOUS AMOUNT					5755.0	5755.0

- ① Quantity \times Part Rate
- ② Column (1) of this bill
Column (1) of last bill
- ③ Sum of Column (1)
- ④ Sum of Column (2)
- ⑤ Previous bill amount
- ⑥ (5) - (3)
- ⑦ (4)

Outline

- 1 Introduction
 - Overview of public works
 - Measurement Books
- 2 Computerised Measurement Books
 - General guidelines for the preperation of CMBs
 - Format of CMBs
 - Preperation of Bills
- 3 Computerised measurements using CMB Automiser
 - Workflow
 - Program Interface

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.
- Generation of Bill schedule.

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.
- Generation of Bill schedule.
- Generation of deviation statement.

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.
- Generation of Bill schedule.
- Generation of deviation statement.
- Support for measurement entry in multiple formats.

Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.
- Generation of Bill schedule.
- Generation of deviation statement.
- Support for measurement entry in multiple formats.
- Fully cross referenced output.

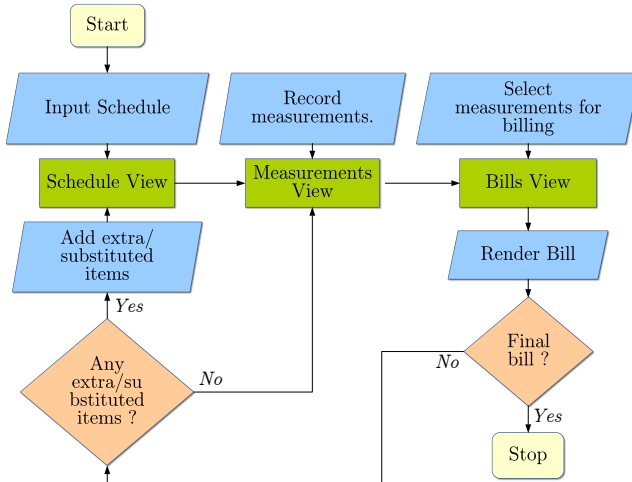
Computerised measurements using CMB Automiser

CMB Automiser is a computer program for preparing computerised measurement books and bills.

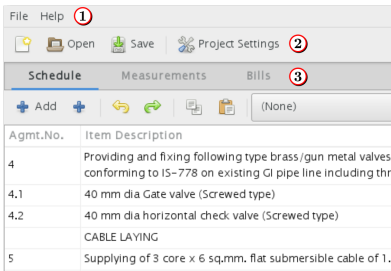
Features of *CMB Automiser*

- Generation of CMBs and abstract of cost.
- Generation of Bill schedule.
- Generation of deviation statement.
- Support for measurement entry in multiple formats.
- Fully cross referenced output.
- Start billing a work at the 1st or Nth bill.

Workflow

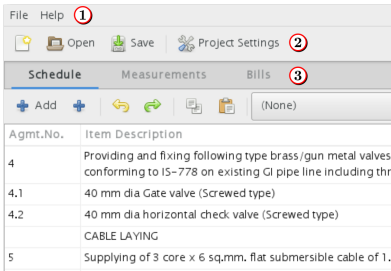


Program Interface



- Main interface is divided into three.

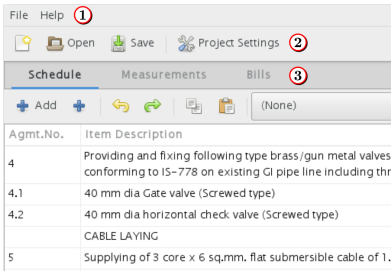
Program Interface



- Main interface is divided into three.

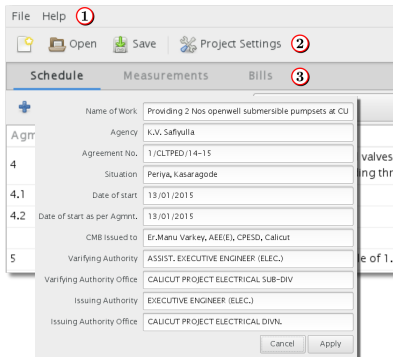
① Menu Bar

Program Interface



- Main interface is divided into three.
 - 1 Menu Bar
 - 2 Tool Bar

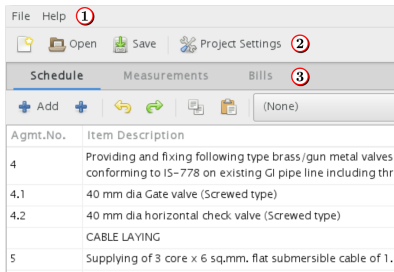
Program Interface



- Main interface is divided into three.

- 1 Menu Bar
- 2 Tool Bar

Program Interface



- Main interface is divided into three.
 - 1 Menu Bar
 - 2 Tool Bar
 - 3 Tabs/Views

Program Interface

Schedule View

File Help						
Open Save Project Settings						
<div> 1 Schedule 2 Measurements 3 Bills </div>						
<div> 4 Add 6 Import </div>						
(None)						
Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

Program Interface

Schedule View

File Help						
Open Save Project Settings						
Schedule Measurements Bills						
+ Add + (None) Import						
Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

1 Add row

Program Interface

Schedule View

File Help						
Open Save Project Settings						
Schedule Measurements Bills						
+ Add + (None) Import						
Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

- 1 Add row
- 2 Add multiple rows

Program Interface

Schedule View

Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

- 1 Add row
- 2 Add multiple rows
- 3 Select .xlsx file for import

Program Interface

Schedule View

Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

- ① Add row
- ② Add multiple rows
- ③ Select *.xlsx* file for import
- ④ Import from selected file

Program Interface

Schedule View

Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

- ① Add row
- ② Add multiple rows
- ③ Select *.xlsx* file for import
- ④ Import from selected file
- ⑤ Delete Row

Program Interface

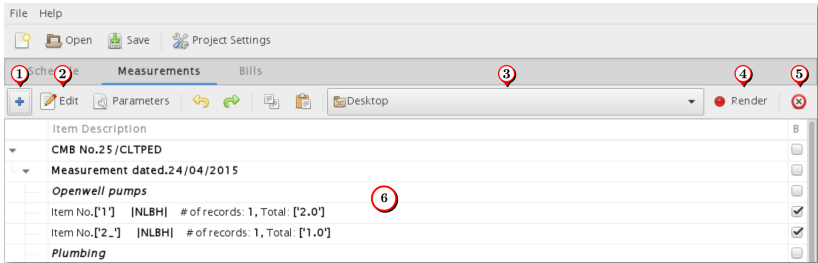
Schedule View

Agmt.No.	Item Description	Unit	Rate	Qty	Reference	Excess %
4	Providing and fixing following type brass/gun metal valves conforming to IS-778 on existing GI pipe line including threading,					
4.1	40 mm dia Gate valve (Screwed type)	each	3500.0	2.0		30.0
4.2	40 mm dia horizontal check valve (Screwed type)	each	3250.0	2.0		30.0
	CABLE LAYING					
5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 kV	m	200.0	40.0		30.0

- ① Add row
- ② Add multiple rows
- ③ Select *.xlsx* file for import
- ④ Import from selected file
- ⑤ Delete Row
- ⑥ Schedule items

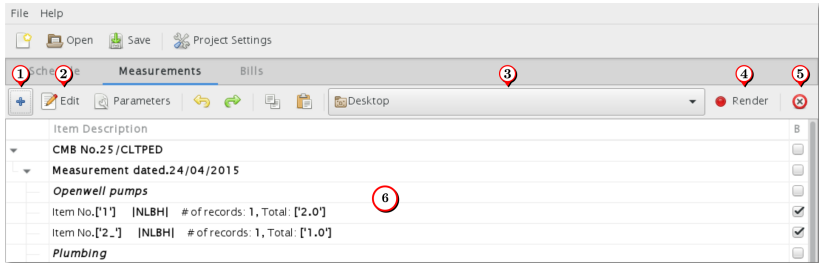
Program Interface

Measurements View



Program Interface

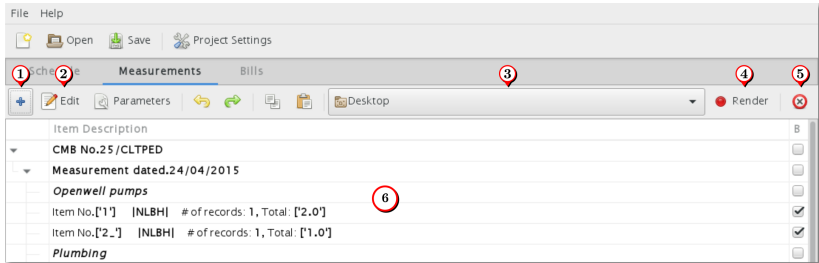
Measurements View



1 Add measurement item

Program Interface

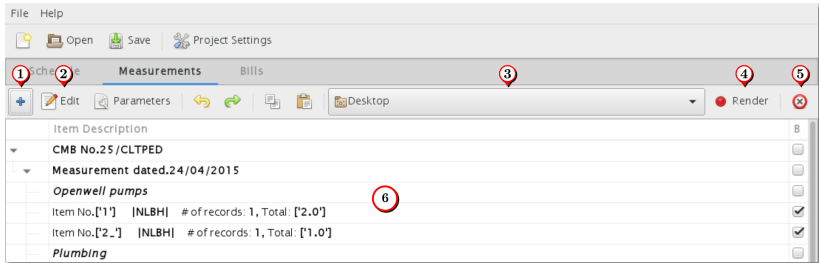
Measurements View



2 Edit measurement item

Program Interface

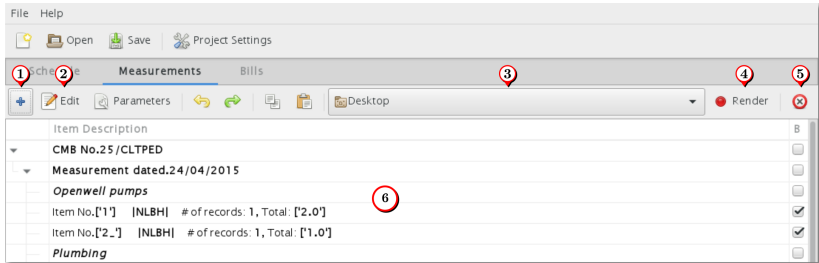
Measurements View



8 Select output folder

Program Interface

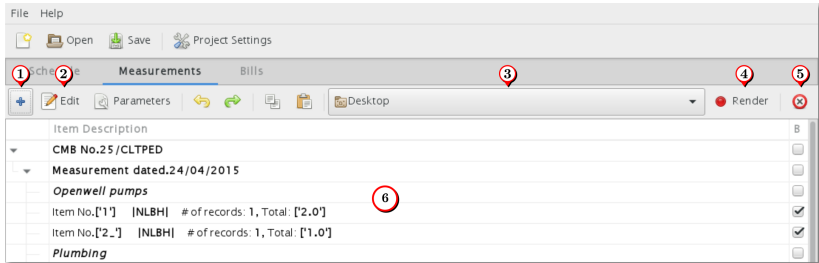
Measurements View



1 Generate CMB

Program Interface

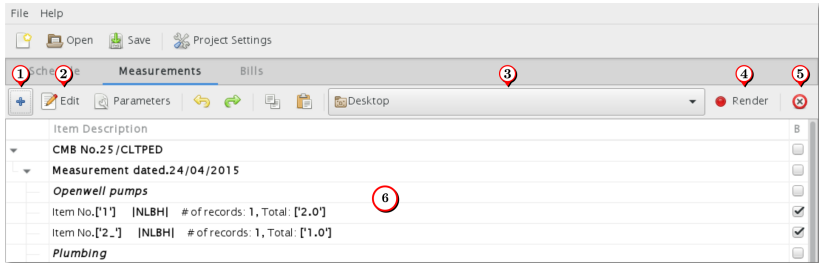
Measurements View



5 Delete measurement item

Program Interface

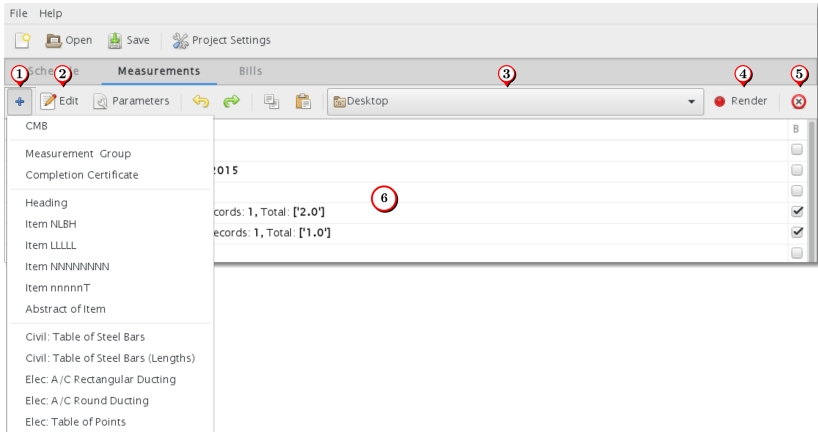
Measurements View



6 Measurement items

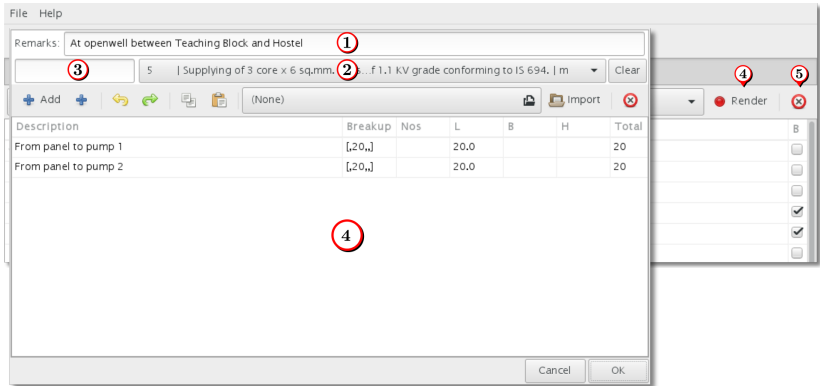
Program Interface

Measurements View



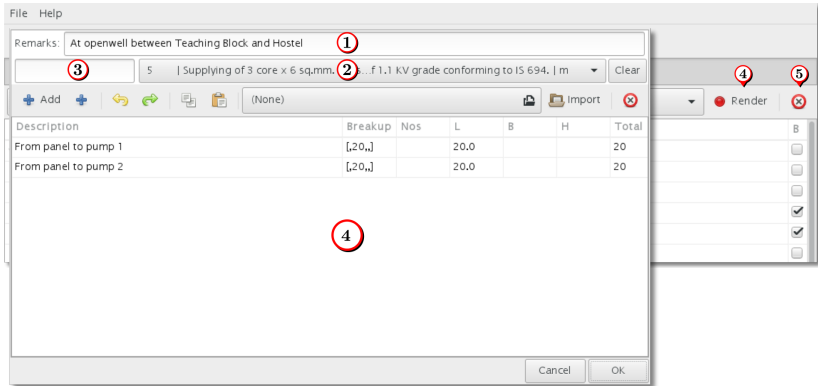
Program Interface

Measurements View



Program Interface

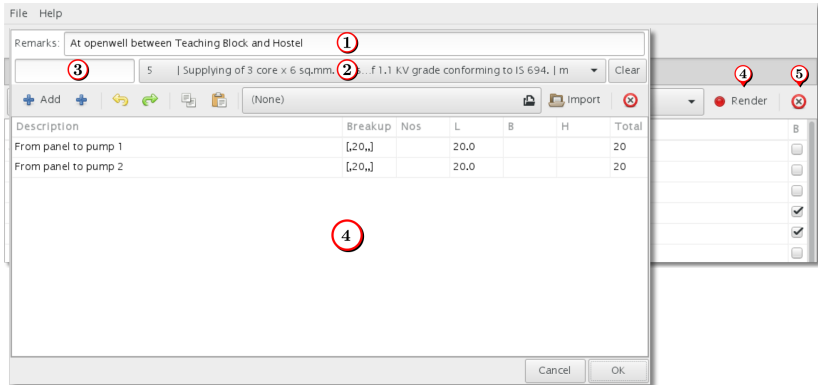
Measurements View



- ① Any remarks about the measurements.

Program Interface

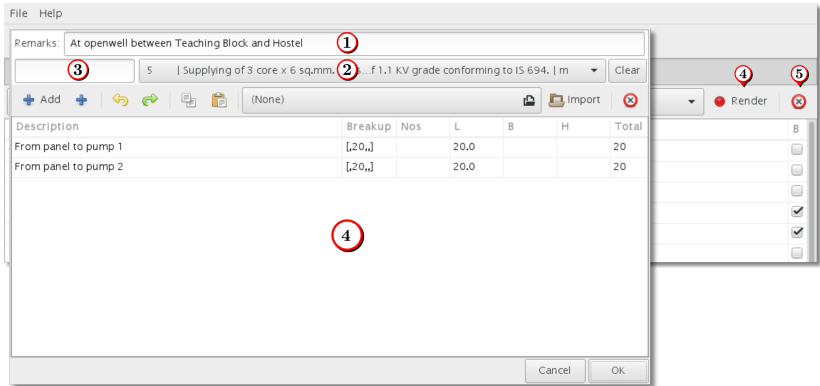
Measurements View



2 Schedule item to be measured.

Program Interface

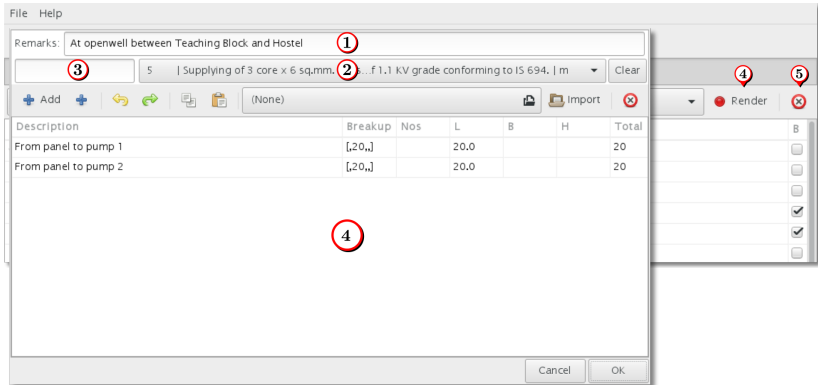
Measurements View



8 Breif description of the item being measured.

Program Interface

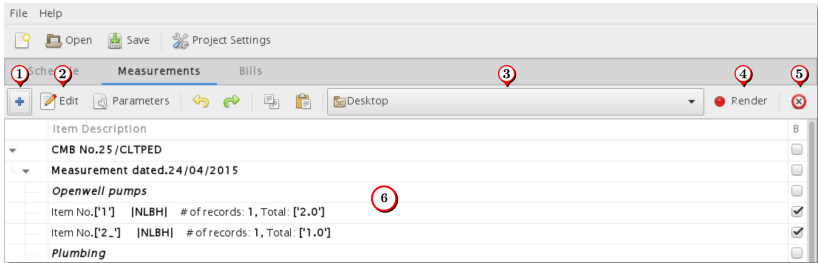
Measurements View



1 Measurement Schedule

Program Interface

Measurements View



Program Interface

Measurements View

File Help

Remarks: Cable layed from motor panel to Teaching block feeder pillar

In pipe	10.1 Upto 35 sq. mm	Metre ▾	Clear
In open duct	11.1 Upto 35 sq. mm	Metre ▾	Clear
On wall surface	12.1 Upto 35 sq. mm (clamped with 1mm thick saddle)	Metre ▾	Clear
In ground	EI.1.1 Upto 35sq.mm	m ▾	Clear
		▾	Clear

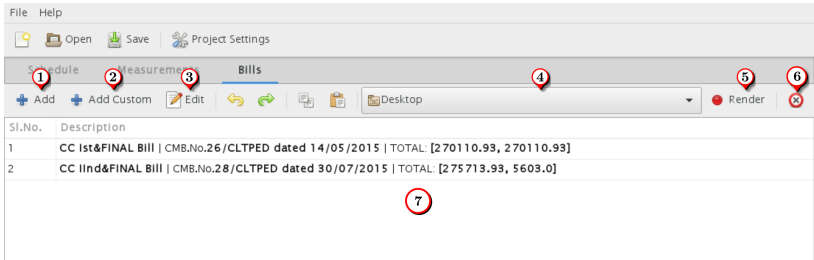
+ Add + (None) Import

Description	Breakup	L1	L2	L3	L4	L5
Motor panel inside loop	[,0.6,,]		0.6			
Motor panel outside loop	[,3,,]		3.0			
To compound wall	[,0.3,,12.5,]		0.3		12.5	
Protection in metal pipe	[1.5,,,]	1.5				
On wall to cable joint	[,,15*4+2,,]			62.0		
Joint to teaching block end	[,,14,,]			14.0		

Cancel OK

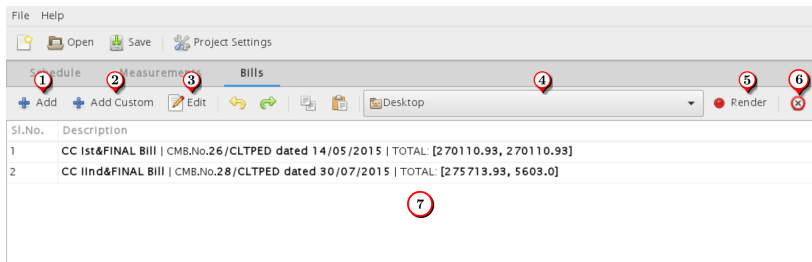
Program Interface

Bills View



Program Interface

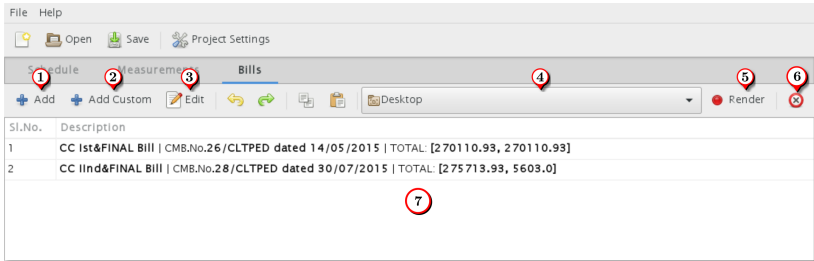
Bills View



1 Add Bill

Program Interface

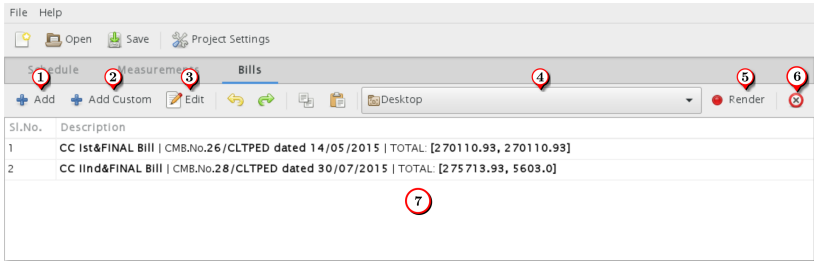
Bills View



2 Add custom Bill

Program Interface

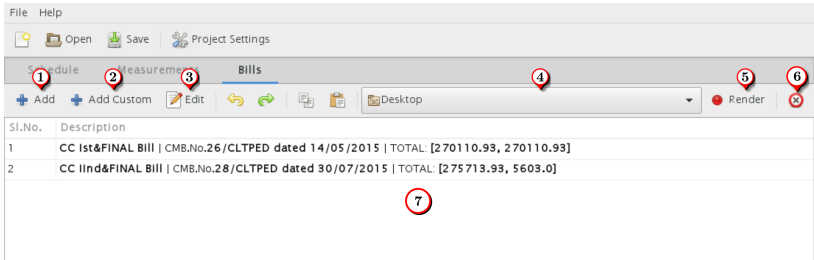
Bills View



8 Edit Bill

Program Interface

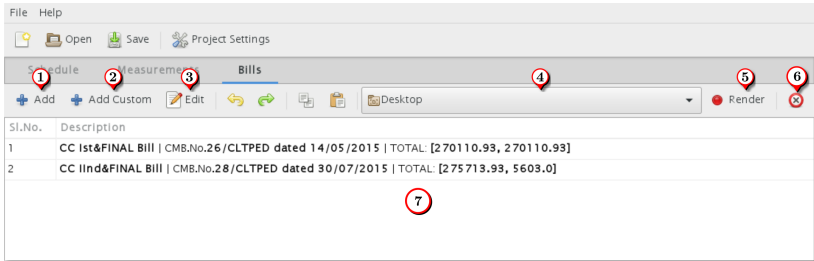
Bills View



1 Select output folder

Program Interface

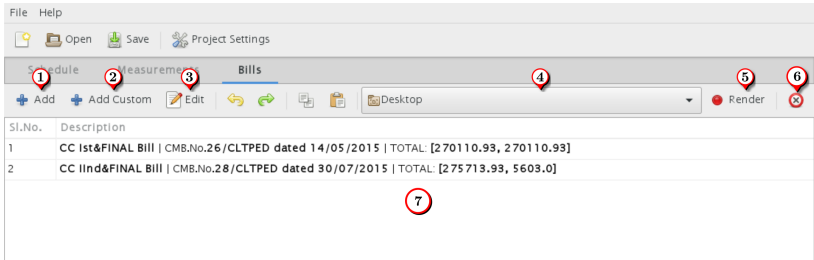
Bills View



5 Generate Bill & CMBs

Program Interface

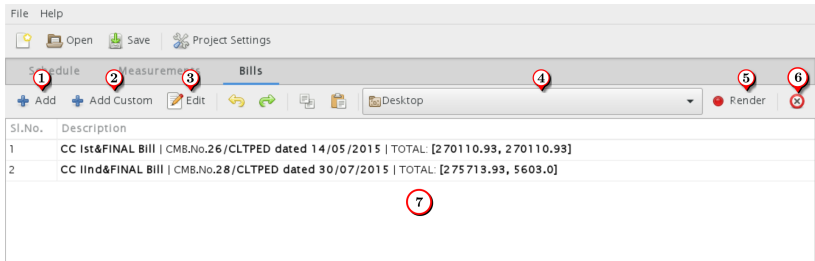
Bills View



6 Delete Bill

Program Interface

Bills View



Bill List

Program Interface

Bills View

File
Help

Bill Title
CC IInd&FINAL BILL

CMB Name
28/CLTPED
Bill Date
30/07/2015
Starting Page
1
Properties

Previous Bill
CC Ist&FINAL BILL | CMB.No.26/CLTPED dated 14/05/2015 | TOTAL: [270110.93, 270110.93]

Sl. No	Item Description	Bill
1	Item No.['6.1'] [NLBH] # of records: 1, Total: ['138.0']	<input checked="" type="checkbox"/>
2	Item No.['7.1', '8.1', '9', None, None] [LLLLL] # of records: 2, Total: ['4.1', '9.4', '16.4', '0.0', '0.0']	<input checked="" type="checkbox"/>
	Item No.['10.1', '11.1', '12.1', 'E1.1.1', None] [LLLLL] # of records: 10, Total: ['2.8', '19.6', '76.0', '39.5', '0.0']	<input checked="" type="checkbox"/>
	Earthing	<input type="checkbox"/>
	Item No.['13'] [NLBH] # of records: 1, Total: ['2.0']	<input checked="" type="checkbox"/>
	Item No.['14', '15', '16', None, None] [LLLLL] # of records: 11, Total: ['16.7', '15.4', '4.0', '0.0', '0.0']	<input checked="" type="checkbox"/>
CMB No.27/CLTPED		<input type="checkbox"/>
Measurement dated.27/07/2015		<input type="checkbox"/>
Extra Items		<input type="checkbox"/>
	Item No.['E1.2.1'] [NLBH] # of records: 2, Total: ['2.0']	<input checked="" type="checkbox"/>
	Item No.['E1.3.1'] [NLBH] # of records: 1, Total: ['1.0']	<input type="checkbox"/>
	Item No.['E1.4'] [NLBH] # of records: 1, Total: ['1.0']	<input type="checkbox"/>
Completion recorded on 27/05/2015		<input type="checkbox"/>

Render

Cancel
OK

Program Interface

Bills View

File Help

Bill Title: CC IInd&FINAL BILL

Remarks:

+ Add + (None) Import

Sl.No	Item	Agmnt.No.	Description	Unit	Rate	Excess Rate	P.R.(%)	Excess P.R.(%)	Excess ?
1			CABLE LAYING			0.0	100.0	100.0	
2		5	Supplying of 3 core x 6 sq.mm. flat submersible cable of 1.1 KV grade conforming to IS 694.	m	200.0	0.0	100.0	100.0	
		6	Supplying of XLPE insulated, PVC sheathed power cable of 1.1 KV grade of following size conforming to IS 7098-1 .			0.0	100.0	100.0	
	CM	6.1	3 1/2 x 35 sq.mm	m	275.0	343.0	100.0	100.0	EXCEEDED
			Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface /			0.0	100.0	100.0	

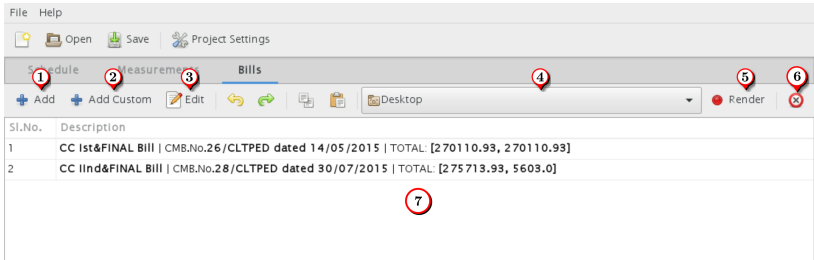
Cancel OK

Cancel OK

5 Render 6

Program Interface

Bills View - Adding a custom bill



Program Interface

Bills View - Adding a custom bill

File
Help

Bill Title
CC IGRA BILL

CMB Name
1/CLTPED
Bill Date
21/04/2015
Starting Page
1
Properties

Previous Bill
None

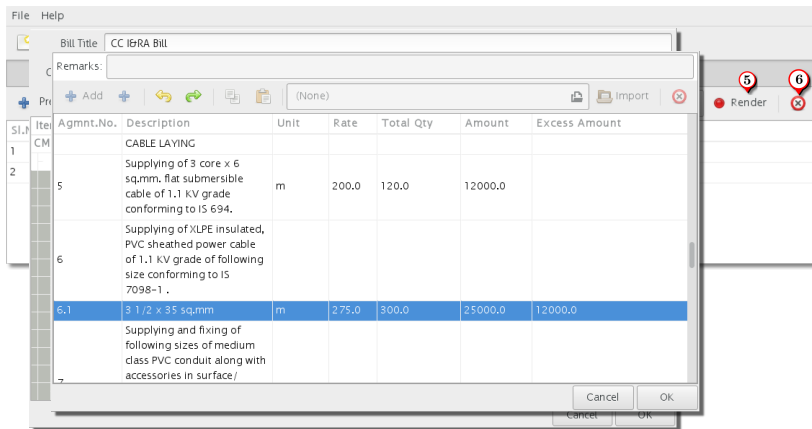
Sl. No	Item Description	Bill
1	CMB No.26/CLTPED	<input type="checkbox"/>
2	Measurement dated.30/06/2015	<input type="checkbox"/>
	— Pumps and panels	<input type="checkbox"/>
	— Item No['2_'] [NLBH] # of records: 1, Total: ['1.0']	<input checked="" type="checkbox"/>
	— Item No['1.1'] [NLBH] # of records: 1, Total: ['2.0']	<input checked="" type="checkbox"/>
	— Item No['4_'] [NLBH] # of records: 1, Total: ['1.0']	<input checked="" type="checkbox"/>
	— Item No['1.2'] [NLBH] # of records: 1, Total: ['2.0']	<input checked="" type="checkbox"/>
	— Item No['3_'] [NLBH] # of records: 1, Total: ['1.0']	<input checked="" type="checkbox"/>
	— Plumbing	<input type="checkbox"/>
	— Item No['5.1'] [NLBH] # of records: 8, Total: ['35.9']	<input checked="" type="checkbox"/>
	— Item No['6.1', '6.2', None, None, None, None, None] [NNNNNNNN] # of records: 2, Total: ['4.0', '4.0', '0.0']	<input checked="" type="checkbox"/>
	— Cable laying	<input type="checkbox"/>
	— Item No['8.1', '9.1', '14.1', '15.1', '16.1'] [LLLLL] # of records: 23, Total: ['570.0', '55.1', '122.5', '66.4', '381.0']	<input checked="" type="checkbox"/>
	— Item No['8.2', '9.1', '14.1', '15.1', '16.1'] [LLLLL] # of records: 10, Total: ['330.0', '96.8', '145.1', '184.9', '0.0']	<input checked="" type="checkbox"/>
	— Item No['12.1', '12.2', None, None, None, None, None] [NNNNNNNN] # of records: 6, Total: ['5.0', '2.0', '0.0']	<input checked="" type="checkbox"/>

Cancel
OK

5
6
Render

Program Interface

Bills View - Adding a custom bill



Outline

- 1 Introduction
 - Overview of public works
 - Measurement Books
- 2 Computerised Measurement Books
 - General guidelines for the preparation of CMBs
 - Format of CMBs
 - Preparation of Bills
- 3 Computerised measurements using CMB Automiser
 - Workflow
 - Program Interface

Conclution

THANK YOU
ANY QUESTIONS ?