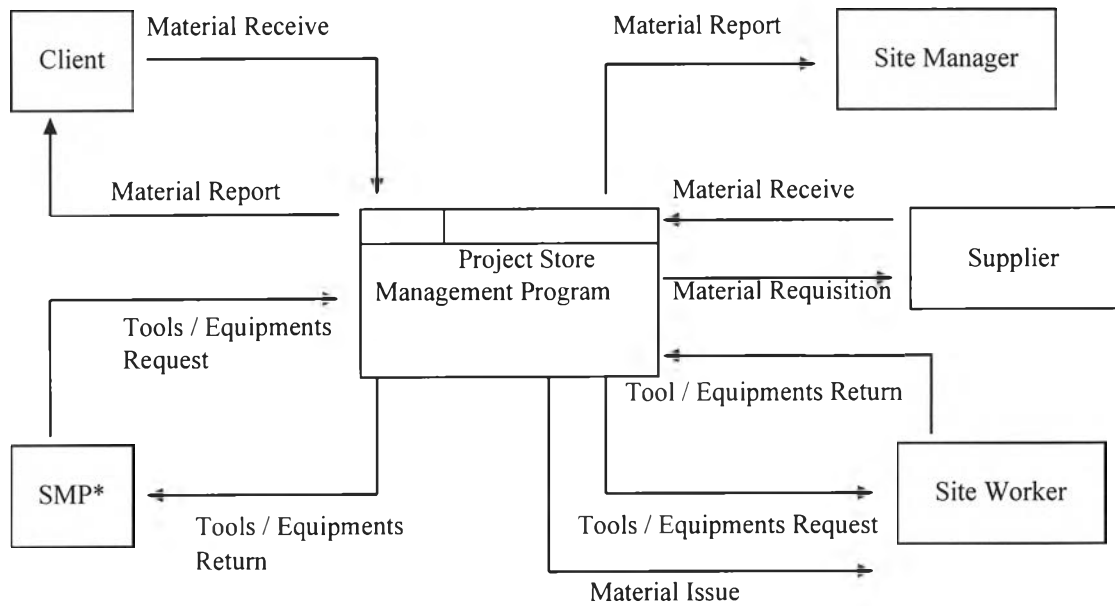## References

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APPENDIX A : PROGRAM MANUAL

➢ *Project Store Management Program*

Context diagram

Context diagram showing data flows between Client, Site Manager, Supplier, Site Worker, SMP* and the central Project Store Management Program. Flows include: Material Receive, Material Report, Material Receive, Material Requisition, Tools / Equipments Request, Tool / Equipments Return, Tools / Equipments Return, Tools / Equipments Request, Material Issue.
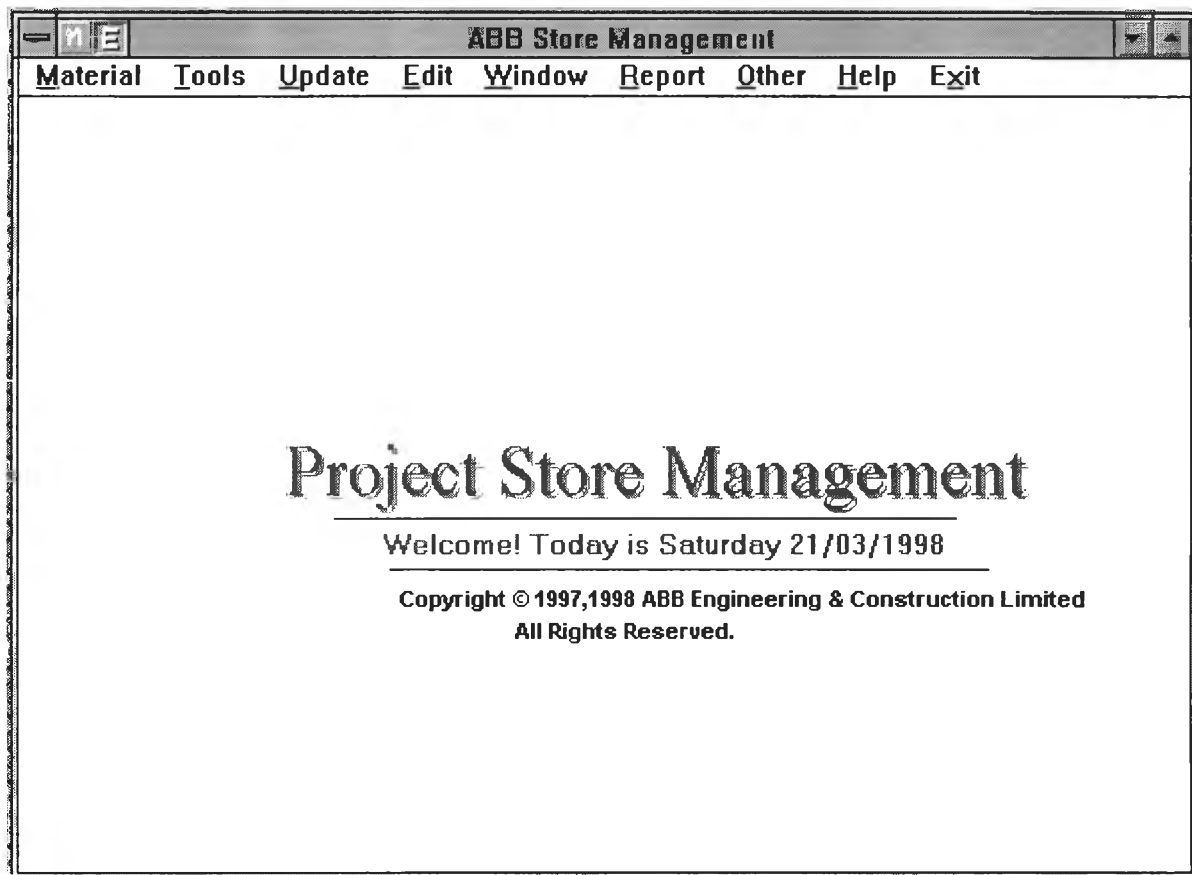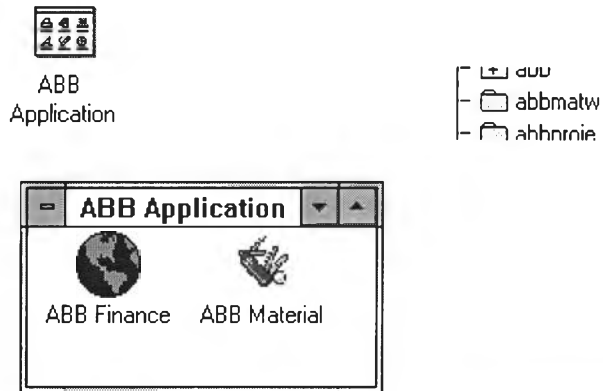
* SMP Supply Management & Procurement Division

> **Main Menu**

After program install, run this program by ICON *ABB Material Management* in *ABB Application* Group or File *ABBMATW.EXE* in *ABBMAT.W.*

ABB
Application

⌐ ⊥⌐ auu
├ 🗀 abbmatw
├ 🗀 abbproie

ABB Application

ABB Finance   ABB Material

ABB Store Management

| Material | Tools | Update | Edit | Window | Report | Other | Help | Exit |

Project Store Management

Welcome! Today is Saturday 21/03/1998

Copyright © 1997,1998 ABB Engineering & Construction Limited
All Rights Reserved.

➢ Material Menu

Materials Status	
Materials Group	
Materials Requisition	
Materials Receive	
Materials Issue	
Materials Reference	>
Materials Planning	
Monthly Materials	

➢ Tool Menu

Tools Status
Tools Group

➢ Update Menu

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information

➢ Report Menu

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

➢ **Material Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

➢ **Materials Status Menu**

Select *Materials Status* from *Main Menu (Material)*.

o *Material Code assigning*

Material Code shall be importantly assigned for program reference together with details as below:

- *Material name*

- *Stock location*

- *Material unit*

- *Price per unit*

- *Schedule quantity (estimate of total quantity use)*

- *Minimum stock (safety stock or reorder point)*

- *Purchase quantity for each order*

- *Remark*

Generally, Material Code comprises of 2 parts xx.xxxxxx. The first (2) positions is characteristic to define *material group* i.e. group of cable, conduit or cable lug etc. The latter (6) positions is numeric to define **running number**. However, list number of each item in BOQ is mostly applied to be material code.

o *Material Movement*

Material movement consists of receiving, issuing and balancing

- o *Receiving* identifies last material received, quantity and date, and total of material received.

- o *Issuing* identifies last material issued, quantity and date, and total of material issued.

- o *Balancing* identifies the material balance in stock.

Add Material Code

When we want to add the new Material Code ,click [Add] then input the details and saved by click [Save].
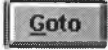
Revise the existing records of selected Material Code

The existing records of selected Material Code can be revised by click [Edit] then revise the details and saved by click [Save].

This program is not allowed to change Material Code that has already been assigned details.

Material Code Searching

When we call Material Status Menu, Program is automatically shown the first item (sequenced by Material Code). The searching Material Code may be done by click **Locate** that all items will be viewed, click at the selected item and *"Esc"*.

If we know the Material Code of required material, click **Goto** and input the required material code and *"Enter"*.

> **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

> **Materials Group Menu**

Select *Materials Group* from *Main Menu (Material)*.

Material Group shall be assigned together with *Description* for reference in grouping of materials that benefits for materials searching and report printing by material group classified.

Click **Locate** for viewing and selecting item.

Click **Add** for adding item.

Click **Edit** for revising item.

Click **Delete** for deleting item.

➢ **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference >
Materials Planning
Monthly Materials

➢ **Materials Requisition Menu**

Select *Materials Requisition* from *Main Menu (Material)*.

Reference no.of *Material Requisition* is to be already specified in MR voucher.We can directly key in or [Browse] to view the existing MR.

Materials Requisition Record will be used for reference in purchase order to supplier together with details as below :

> *- MR No.*
>
> *- MR date*
>
> *- Supplier Code*
>
> *- PO No.*
>
> *- PO date*

When we already input *MR No., MR Date, Supplier Code* and **Save** , Program will list the existing record and ready to add items and description lists in MR.

Materials Requisition						
MR No.: 2345	**PO No.:**			**Total:**		0.00
MR Date: 25/08/1998	**Supplier:**					

#	Mat No.	Description	MR Q'ty	Rec. Q'ty	Price	Total

[Print] [Add] [Edit] [Delete] [Exit]

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

Add item lists in Mterial Requisition (MR)

Edit item lists in Mterial Requisition (MR)

Item can be revised is only **For Area**.

➤ **Material Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

➤ **Material Receive Menu**

Select *Material Receive* from *Main Menu (Material)*.

Input Report No. (Material Receive)

Ok

Browse

Cancel

Program designs the sources of material receive from 2 ways: *Materials Received from Supplier* and *Materials Received from Client Supply*. We must assign Reference No. of all materials received.

1.) Reference No. of *Materials Received from Supplier* can be referred by Supplier Invoice No. or Delivery Note No. ,or Report No.

2.)Reference No. of *Materials Received from Client Supply* can be referred by Issue Voucher No.of Client ,or Report No.

o *Material Received from Supplier*

o Input **Reference No.** and **Report Date**

o Select **Material from Supplier**

o Input **Supplier Code** from Supplier List

It can be input by new editing directly.

o Click [Save] for data save or [Cancel] for data cancel

When we already input Reference No. and [Save], Program will list the existing record and ready to input details of material receive.

Materials Receive							
Report No.: 001			Material from Client		Total:		0.00
Report Date: 05/03/1998		Supplier:					
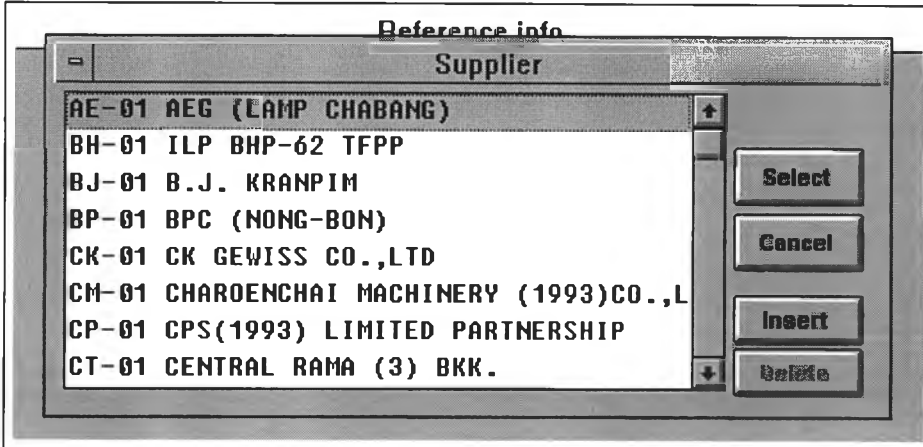
#	Mat No.	Description		Q'ty	Price	Discount	Total

Print   Add   Edit   Delete   Exit

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

If the *Supplier Code* of received materials is to input by new editing directly and no previous record ,click ⬛ for insert details.

Reference info

Supplier	
AE-01 AEG (LAMP CHABANG)	
BH-01 ILP BHP-62 TFPP	**Select**
BJ-01 B.J. KRANPIM	
BP-01 BPC (NONG-BON)	**Cancel**
CK-01 CK GEWISS CO.,LTD	
CM-01 CHAROENCHAI MACHINERY (1993)CO.,L	**Insert**
CP-01 CPS(1993) LIMITED PARTNERSHIP	
CT-01 CENTRAL RAMA (3) BKK.	**Delete**
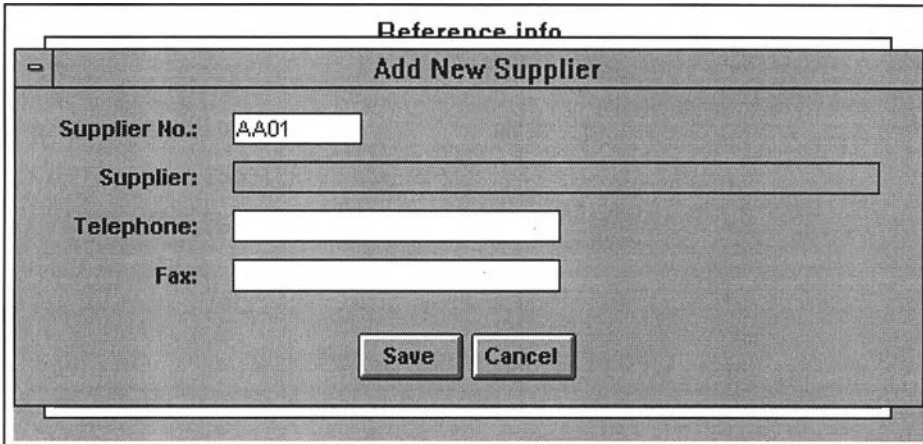
Click **Insert**

Reference info

Add New Supplier

Supplier No.: AA01

Supplier:

Telephone:

Fax:

Save   Cancel

Input *Supplier Code,Supplier Name*,and *Telephone/Fax.*

Add item for Material Received from Supplier

Item

Item No. series automatically. However, it can be changed as per request .

Material No.

Material No. can be input by new editing directly or selected by the existing record.

Quantity

Quantity is input as per amount of receiving (by delivery note etc.). It cannot be recorded if the received quantity is not more than 0.

Price

The existing Material No. will be showed unit price automatically. If the up-dating unit price is different, we can input as per the current unit price. The change of price reference is not effected to the unit-price of same materials purchased previously.

Discount

    Discount shall be recorded by amount, not percentage discount.

MR No.
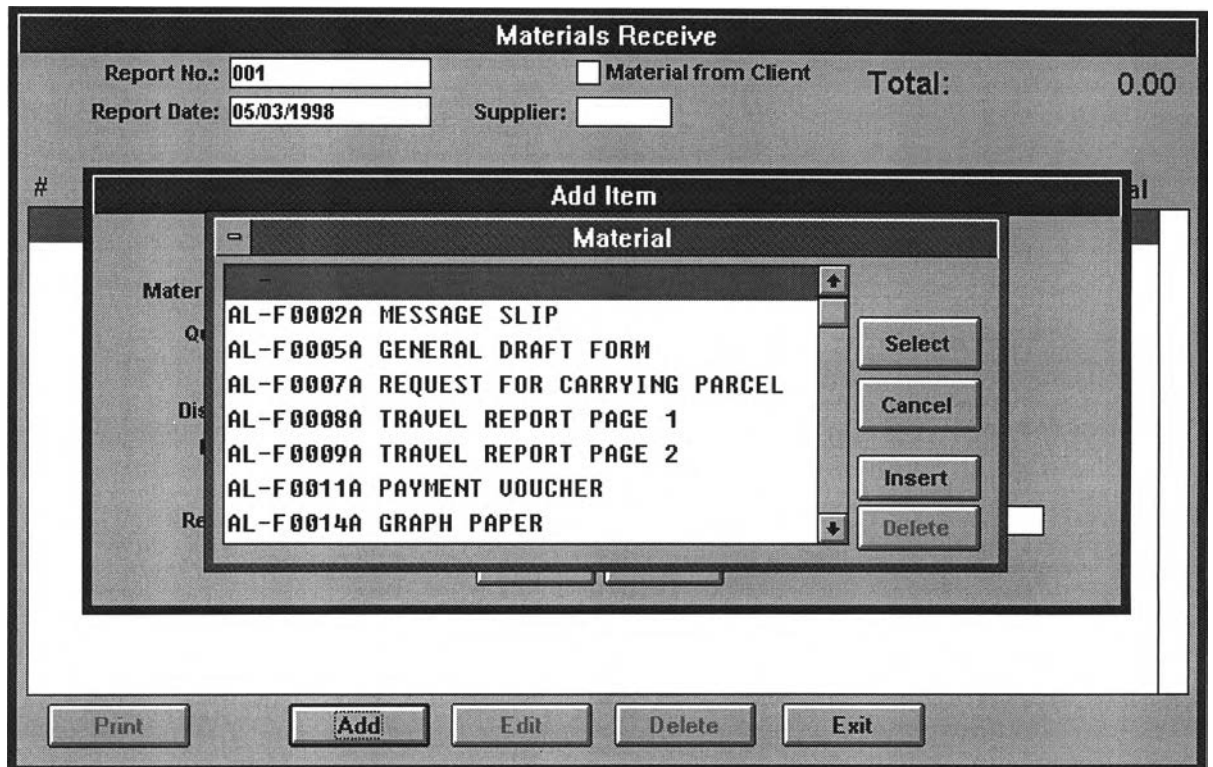
    MR. No. is to record Material Requisition (MR) No of purchased material.

    MR No. can be input by new editing directly or selected by the existing record.

Area Code

    Area Code is as the option to identity working area where this ordered material required to use.*Area Code* can be input by new editing directly or selected by the existing record.

If the *Material No.* of received material is to input by new editing directly and no previous record ,click ▦ for insert details.

Materials Receive

Report No.: 001   ☐ Material from Client   Total: 0.00
Report Date: 05/03/1998   Supplier:

Add Item
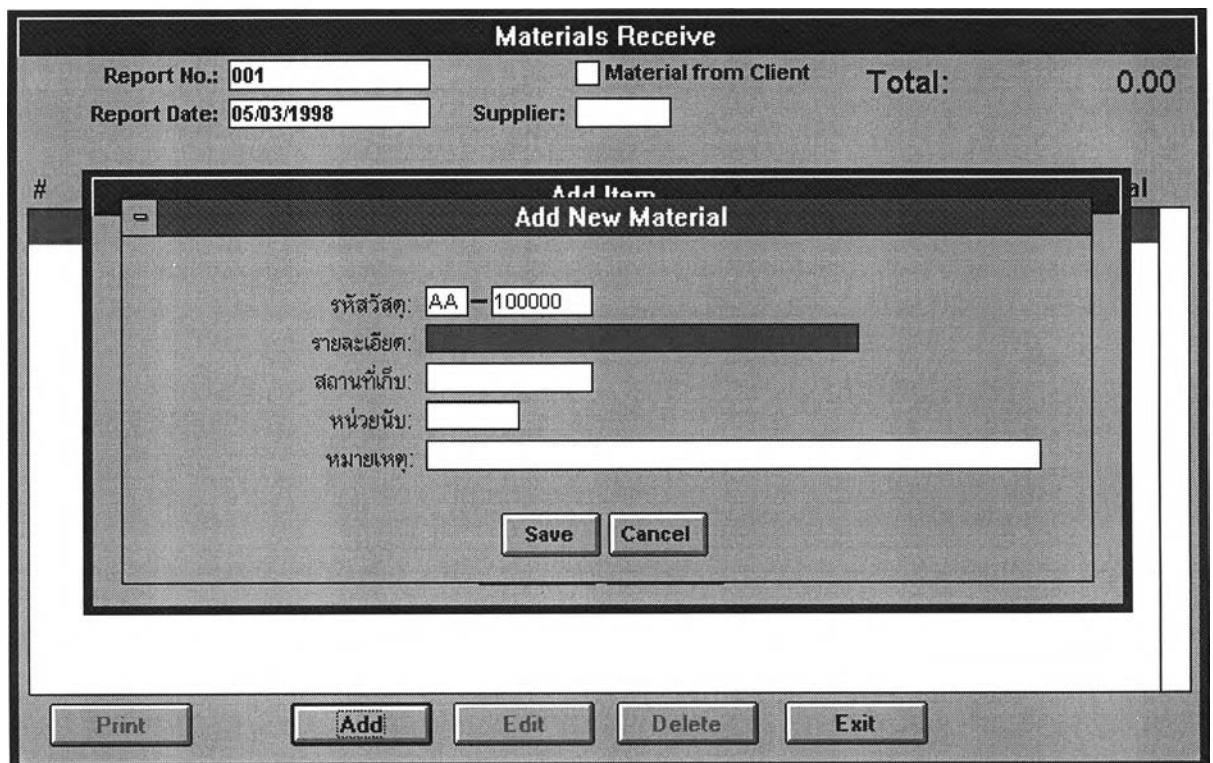
Material

AL-F0002A MESSAGE SLIP
AL-F0005A GENERAL DRAFT FORM
AL-F0007A REQUEST FOR CARRYING PARCEL
AL-F0008A TRAVEL REPORT PAGE 1
AL-F0009A TRAVEL REPORT PAGE 2
AL-F0011A PAYMENT VOUCHER
AL-F0014A GRAPH PAPER

Select
Cancel
Insert
Delete

Print   Add   Edit   Delete   Exit

Click **Insert**

Materials Receive

Report No.: 001   ☐ Material from Client   Total: 0.00
Report Date: 05/03/1998   Supplier:

Add Item

Add New Material

รหัสวัสดุ: AA — 100000
รายละเอียด:
สถานที่เก็บ:
หน่วยนับ:
หมายเหตุ:

Save   Cancel

Print   Add   Edit   Delete   Exit

Input *Material Code,Description,Stock Location,Unit* ,and *Remark*

If the *Material Requisition (MR) No.* of purchased material is to input by new editing directly and no previous record ,click [icon] for insert details.

Materials Receive

Report No.: 001   ☐ Material from Client   Total: 0.0(

Report Date: 05/03/1998   Supplier: [   ]

al

Mater

Q

Select

Dis

Cancel

Re   Insert

Delete

Print   Add   Edit   Delete   Exit

Click [**Insert**]

Materials Receive

Report No.: 001   ☐ Material from Client   Total: 0.00

Report Date: 05/03/1998   Supplier: [   ]

al

Add Item

Material Requisition

Add New MR

Mater

Q   MR No.:   02345   elect

Dis   ncel

MR date: / /

sert

Re   lete

Save   Cancel

Print   Add   Edit   Delete   Exit
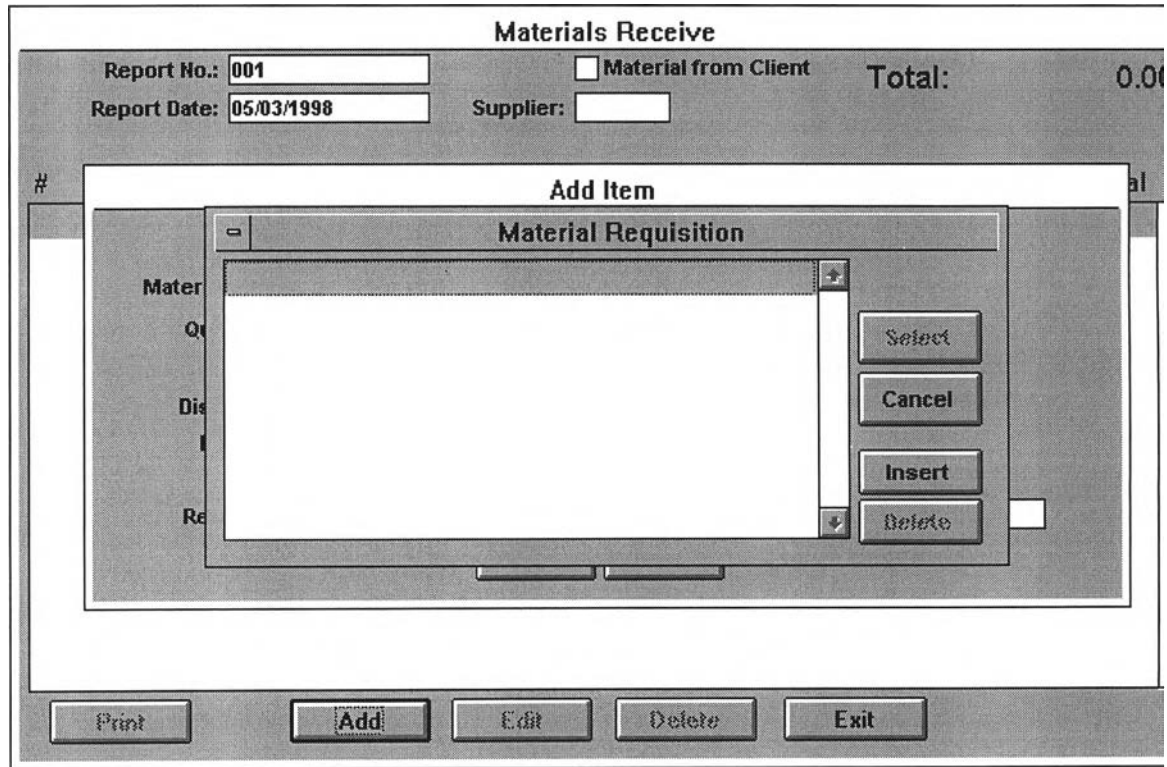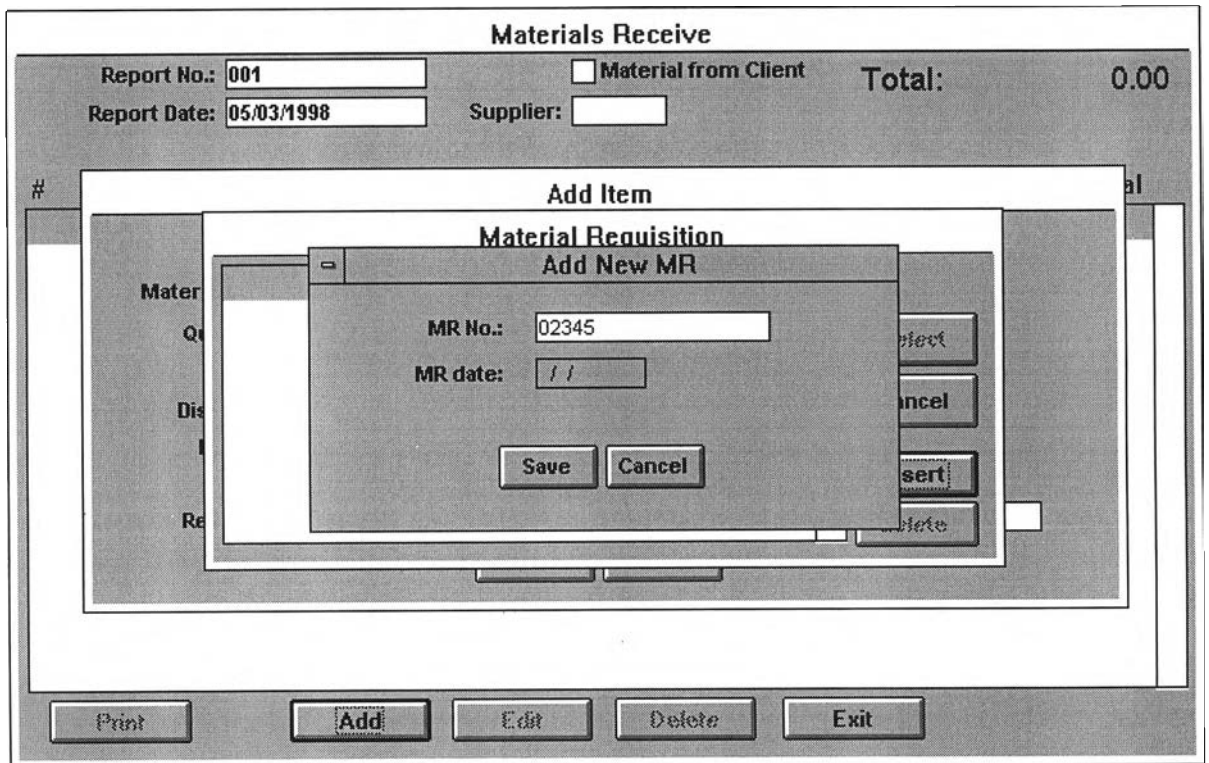
Input *MR No.* and *MR Date*.

If the *Area Code* of working area of ordered material use is to input by new editing directly and no previous record ,click [...] for insert details.

Click **Insert**

Input *Area Code* and *Description.*

o   *Material Received from Client Supply*

o   Input **Reference No** and **Report Date**

o   Select **Material from Client** (Disable to input **Supplier**)

o   Click [Save] for data save and [Cancel] for data cancel

When we already input reference No. and [Save], Program will list the existing record and ready to input details of material receive.

Click [Add] for adding item

Click [Edit] for revising item

Click [Delete] for deleting item

Add item for Material Received from Client Supply

Disable to input data in field of **Price, Discount** and **MR No.**

➢ **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

➢ **Material Issue Menu**

Select *Material Issue* from *Main Menu (Material)*.

Input Report No. [Material Issue]

Ok

Browse

Cancel

The ***material issuing for installation*** is recorded via this menu. Using of this menu is similar as *Material Receive Menu*. We must assign firstly *Reference No.* of all materials issued. Reference No. of material issuing for installation (site work) can be referred by No. of Issue Voucher or Report No.

When we already input *Reference No.*, Program will list the existing record and ready to input details of material issue.

Click [**Add**] for adding item

Click [**Edit**] for revising item

Click [**Delete**] for deleting item

Add item for Materials Issue

Item

> *Item No.* series automatically. However, it can be changed as per request.

Material No.

> *Material No.* can be input by new editing directly or selected by the existing record.

Quantity

> *Quantity* is input as per amount of issuing. It cannot be recorded if the issued quantity is more than the *material balance (or stock quantity).*

Area Code

> *Area Code* is to specify the working area where this issued material required to use. *Area Code* can be input by new editing directly or selected by the existing record.

Employee No.

> *Employee No.* is to record the employee code of authorized issuer. *Employee No.* can be input by new editing directly or selected by the existing record.

If the *Material No.* of issued material is to input by new editing directly and no previous record, click ▣ for insert details.

```
                          Materials Issue
      Report No.:  001
      Report Date: 05/03/1998

#  Mat No.    Description                 Q'ty     Area      Employee
        ┌──────────────────────────────────────────────────┐
        │  ▬            Material                            │
        │  ┌────────────────────────────────────┐ ↑        │
  Mate  │  AL-F0002A  MESSAGE SLIP               │    ┌──────────┐
        │  AL-F0005A  GENERAL DRAFT FORM         │    │  Select  │
        │  AL-F0007A  REQUEST FOR CARRYING PARCEL│    └──────────┘
        │  AL-F0008A  TRAVEL REPORT PAGE 1       │    ┌──────────┐
        │  AL-F0009A  TRAVEL REPORT PAGE 2       │    │  Cancel  │
  Emplo │  AL-F0011A  PAYMENT VOUCHER            │    └──────────┘
      R │  AL-F0014A  GRAPH PAPER                │    ┌──────────┐
        │  AL-F0015A  PRE/POST CALCULATION SHEET │ ↓  │  Insert  │
        │  └────────────────────────────────────┘    └──────────┘
        │                                             ┌──────────┐
        │                                             │  Delete  │
        └──────────────────────────────────────────  └──────────┘

            [ Add ]      [ Edit ]    [ Delete ]    [ Exit ]
```

Click ▣ Insert

```
                          Materials Issue
      Report No.:  001
      Report Date: 05/03/1998

#  Mat No.    Description                 Q'ty     Area      Employee
     ┌──────────────────────────────────────────────────────────┐
     │  ▬            Add New Material                            │
     │                                                          │
     │       รหัสวัสดุ:  [AA] ─ [0001]                            │
     │      รายละเอียด:  [                              ]         │
     │      สถานที่เก็บ:  [              ]                         │
     │        หน่วยนับ:  [       ]                                │
     │        หมายเหตุ:  [                              ]         │
     │                                                          │
     │                  [ Save ]  [ Cancel ]                    │
     │                                                          │
     └──────────────────────────────────────────────────────────┘

            [ Add ]      [ Edit ]    [ Delete ]    [ Exit ]
```

Input *Material Code, Description, Stock Location, Unit* ,and *Remark*

If the *Area Code* of working area for issued material use is to input by new editing directly and no previous record,click [...] for insert details.

Materials Issue

Report No.: 001
Report Date: 05/03/1998

#	Mat No.	Description	Q'ty	Area	Employee

Area

| BC-B 01 |
| BCA-01 |
| BDI-01 |
| BDSM |
| BHP-62 |
| FA-01 |
| HR-01 |
| IB-01 |

Select

Cancel

Insert

Delete

Add   Edit   Delete   Exit

Click [Insert]

Materials Issue

Report No.: 001
Report Date: 05/03/1998

#	Mat No.	Description	Q'ty	Area	Employee

Add New Area

Area: A01

Description:

Save   Cancel

Add   Edit   Delete   Exit

Input *Area Code* and *Description.*

If the *Employee Code* of issuer is to input by new editing directly and no previous record ,click [icon] for insert details.

Materials Issue

Report No.: 001
Report Date: 05/03/1998

#	Mat No.	Description	Q'ty	Area	Employee

Employee

209129 SONGWUTH MITTRARATH

Select

Cancel

Insert

Delete

Mate
Q
Emplo
R

Add   Edit   Delete   Exit

Click [Insert]

Materials Issue

Report No.: 001
Report Date: 05/03/1998

#	Mat No.	Description	Q'ty	Area	Employee

Add New Employee

Employee No.: 209130

Name:

Save   Cancel

Add   Edit   Delete   Exit

Input *Employee Code* and *Name.*

Excess Materials Returning from Installation Work

The ***excess material returning from installation work*** is also recorded at this menu. The record is same as the *material issuing for installation* but the ***Quantity is keyed in negative amount equivalent to amount of returning.***

> **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

> **Materials Reference Menu**

Select **Materials Reference** from **Main Menu (Material)**.

Materials Receive
Materials Issue

The *Materials Reference* overviews the summarized transaction of receiving and issuing.

-Select **Materials Receive**

Materials Receive
Materials Issue

Reference for Materials Receive

Ref. No:	
Ref. date:	/ /
Total_item:	0
	⦿ Material from Supplier
	◯ Material from Client
Supplier:	[ ] [...]

| Top | Prev | Next | End | Locate | Add | Save | Cancel | Print | Close |

Reference for Materials Receive comprised of

- Ref. No

- Ref.date

- Number of item

- Source of material received (from Supplier or Client)

- Supplier name

The reference for material receive transaction is able to addly record via this menu.
(but the detail items cannot be included.)

-Select *Materials Issue*

Materials Receive
Materials Issue

Reference for Materials Issue

Ref. No:

Ref. date: / /

Total_item: 0

| Top | Prev | Next | End | Locate | Add | Save | Cancel | Print | Close |

Reference for Materials Issue comprised of

- Ref. No

- Ref.date

- Number of item

The reference for material issue transaction is able to addly record via this menu. (but the detail items cannot be included.)

> **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

> **Materials Planning Menu**

Select *Materials Planning* from *Main Menu (Material)*.
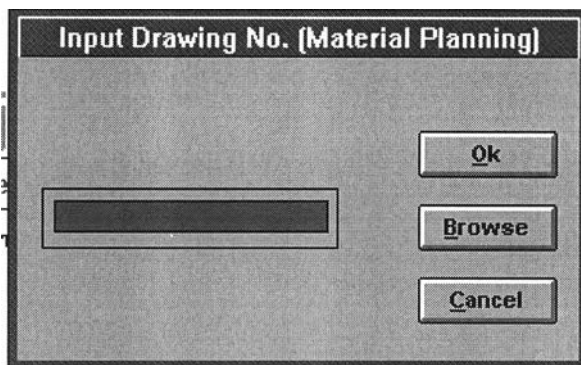
The *material planning for installation* is recorded via this menu. Task for material planning start from material taken off from drawing for construction. So,we will prior reference by the *drawing no*.

When we already input Drawing No., Program will list the existing record and ready to input details of material taken off.

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

Add item for Materials Taken Off

```
┌─────────────────────────────────────────────────────────────────────┐
│ ⊟                            Add Item                                 │
├─────────────────────────────────────────────────────────────────────┤
│                                                                       │
│        Item:     [ 1]                                                 │
│  Material No.:   [    ]─[        ]   [...]                            │
│      Quantity:   [          0.00]                                     │
│ Reference No.:   [            ]                                       │
│      For Area:   [            ]   [...]                               │
│        Remark:   [                                              ]     │
│                                                                       │
│                        [  Save  ]  [ Cancel ]                         │
└─────────────────────────────────────────────────────────────────────┘
```

Item

Item No. series automatically. However, it can be changed as per request.

Material No.

Material No. can be input by new editing directly or selected by the existing record.

Quantity

Quantity is input as per amount of taken-off.

Area Code

Area Code is to specify the working area where this material taken-off has been required to use. *Area Code* can be input by new editing directly or selected by the existing record.

➢ **Materials Menu**

Materials Status
Materials Group
Materials Requisition
Materials Receive
Materials Issue
Materials Reference   >
Materials Planning
Monthly   Materials

➢ **Monthly Materials Menu**

Select *Monthly Materials* from *Main Menu (Material)*.

Monthly Material

Monthly Material

Mat_gr:	AL — F0002A	MESSAGE SLIP
Period:	15/03/1997 — 15/03/1998	
Unit:	BOOK	
Total Plan:	1,000.00	

	Receive	Issue	In Store	Report Form
Previous:	667.00	190.00		⦿ Mat0056
This Period:	100.00	136.00		◯ Mat0057
Accumulate:	767.00	326.00	441.00	
Remain from plan:	233.00	674.00		

Top	Prev	Next	End	Locate	Add	Edit	Delete	Print	Close

The *Monthly Material* reports the movement of the selected materials in selected period and summarizes on current status. Details are included as following :

- *Material code/name*

- *Transaction period*

- *Material unit*

- *Total Plan (estimate of total quantity use)*

- *Received amount : Previous,Period,Accumulate,Remain from plan*

- *Issued amount   : Previous,Period,Accumulate,Remain from plan*

- *Balance amount*

➢ **Tools Menu**

Tools Status
Tools Group

➢ **Tools Status Menu**

Select *Tools Status* from *Main Menu (Tools).*

Tools Status

Code: [____] [_____]

Group: [_____] [...]

| Receive: | / / | Reference: | [____] | From: | [_____] |
| Return: | / / | Reference: | [____] | To: | [_____] |

Status: ○ Good   Procure: ⦿ Rent   Renting Price: [0.00]
          ○ Damage   ○ Buy   Buying Price: [0.00]
          ○ Repair
          ○ Lost   Expect return date: [/ /]

Remark: [_____]

Site Situation

[Issue] [Return]   Request by: [_____] [...]
                        date: [/ /]

                   Return by:
                        date: [/ /]

[Top] [Prev] [Next] [End] [Locate] [Add] [Save] [Cancel] [Print] [Close] [Help]

The *movement of tools status* is separated to 2 parts :

1. *Outside Movement*

    It is the tools transaction cross-transferring between Site and outside i.e. other project sites , SMP (branch office) etc.It has reference by **Way Bill**.

2. *Inside Movement (Site situation)*

    It is the tools transaction,issuing and returning, of site activity. It has reference by *Issue Voucher* and *Return Voucher*.

Record tools status of Outside Movement

```
┌─────────────────────────────────────────────────────────────────┐
│ ▭                          Tools Status                           │
├─────────────────────────────────────────────────────────────────┤
│      Code: 005        welding machine                             │
│     Group: WEL      [...]                                          │
│   Receive: 22/08/1998   Reference: 1234    From: BANCHANG         │
│    Return: / /          Reference:         To:                    │
│    Status: ◉ Good       Procure: ◉ Rent    Renting Price:  30.00  │
│            ○ Damage              ○ Buy      Buying Price:   0.00   │
│            ○ Repair                     Expect return date: 30/09/1998 │
│            ○ Lost                                                  │
│    Remark:                                                        │
│ ───────────────────────────────────────────────────────────────── │
│                         Site Situation                            │
│  [Issue][Return]  Request by:          [...]                      │
│                         date: / /                                 │
│                    Return by:                                     │
│                         date: / /                                 │
│ ───────────────────────────────────────────────────────────────── │
│ [Top][Prev][Next][End][Locate][Add][Edit][Delete][Print][Close][Help] │
└─────────────────────────────────────────────────────────────────┘
```

o   *Tools Code assigning*

   Tools Code shall be assigned for program reference together with details as below

   - *Tools name*

   - *Tools Group*

      It is to record for reference in grouping of tools.It can be input by new editing directly or selected by the existing record.

   - *Received Date*

   - *Received Reference*

      It is to record No. of Way Bill.

   - *From (location)*

      It is to record location of departure.

   - *Returned Date*

      It cannot be recorded if the item has not yet been returned by site activity.

   - *Returned Reference*

      It is to record No. of Way Bill. It also cannot be recorded if the item has not yet returned by site activity.

   - *To (location)*

      It is to record location of destination. It also cannot be recorded if the item has not yet returned by site activity.

- *Status*

It is to record current status or condition of tool that consists of *Good, Damage, Repair* and *Loss.*

- *Procure*

It is to record source of tool providing (renting or buying) and incurred cost.

- *Expected return date*
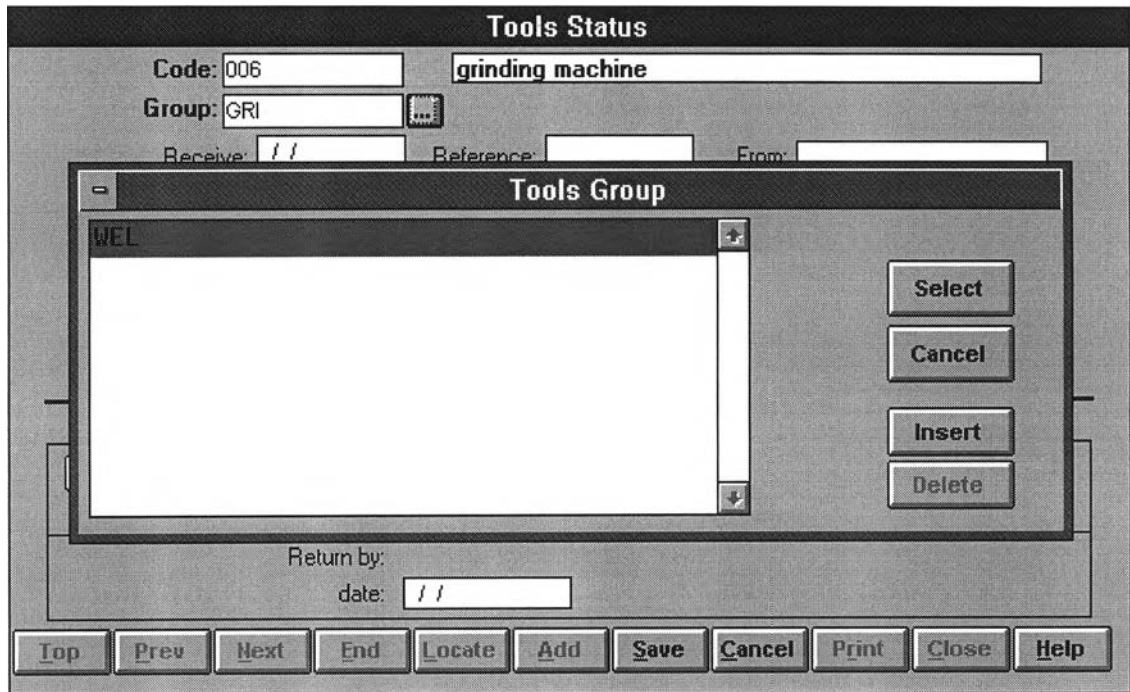
It is to record expected return date by site activity for reference.

- *Remark*

After record tools receive from outside, **Issue** is prompt key automatically for record *Inside Movement* (or ready to issue for field work).

If the *Tools Group* is to input by new editing directly and no previous record , click

for insert details.

Click

Record tools status of Inside Movement
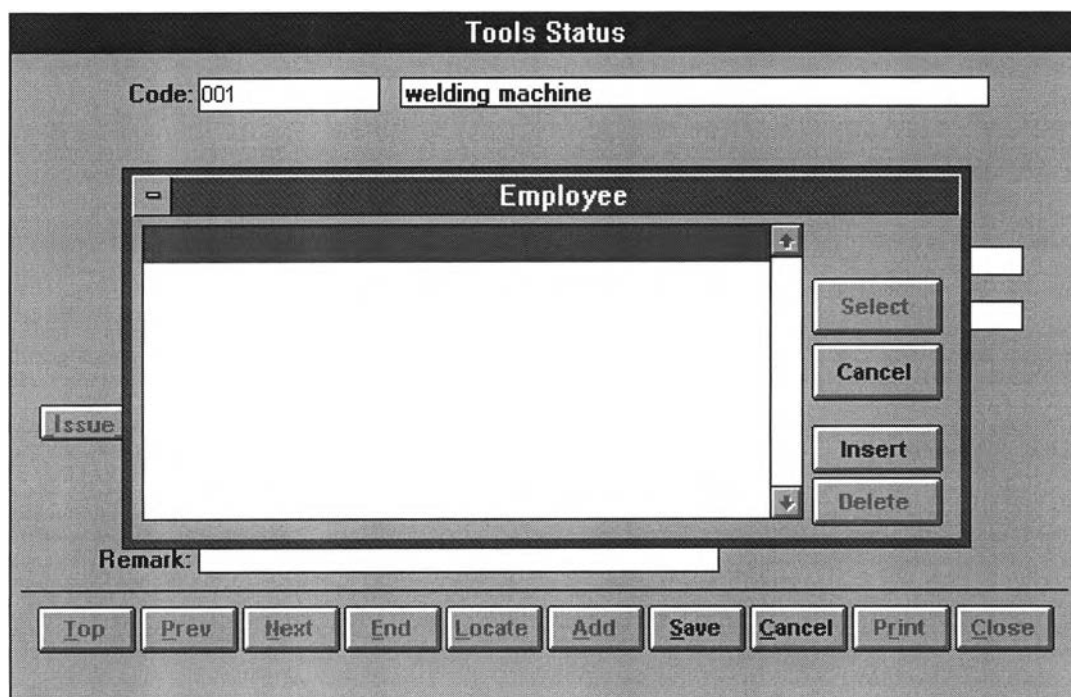
> *Request by*

>> *Request by* is to record the *Employee Code* of authorized issuer.It can be input by new editing directly or selected by the existing record.

> *Issued Date*

>> *Issued Date* is to record date of issuing.

If the *Employee Code* is to input by new editing directly and no previous record, click ![icon] for insert details.

Click ![Insert]

Input *Employee Code* and *Name*.

After record employee code of issuer *(Request by)* and issued date, **Return** is prompt key automatically for record the returning.

Returned by

Returned by is automatically recorded the employee code of issuer after **Return**

Returned Date

Returned Date is to record date of returning.

Tools Status

Code: 005   welding machine

Group: WEL   [...]

Receive: 22/08/1998   Reference: 001   From: **BANCHANG**

Return: / /   Reference: To:

Status: ◉ Good   Procure: ◉ Rent   Renting Price: 30.00
○ Damage   ○ Buy   Buying Price: 0.00
○ Repair   **Expect return date:** 30/09/1998
○ Lost

Remark:

Site Situation

[Issue] [Return]   Request by: [...]
date: / /

Return by: 209129   SONGWUTH MITTRARATH
date: 25/09/1998

[Top] [Prev] [Next] [End] [Locate] [Add] [Edit] [Delete] [Print] [Close] [Help]

[Issue] is prompt key automatically again after record tools return.

➢ **Tools Menu**

Tools Status
Tools Group

➢ **Tools Group Menu**

Tools Group can be assigned via this *Tools Group Menu* or input instantly during record *Tools Status (Receive)* transaction.

Select *Tools Group* from *Main Menu (Tools)*

Tools Group

Tools Group

Tools Group.: [   ]

Description: [   ]

| Top | Prev | Next | End | Locate | Add | Edit | Delete | Print | Close |

Tools Group shall be assigned together with Description for reference in grouping of tools that benefits for tools sorting and report printing by tools group classified.

Click **Locate** for viewing and selecting item.

Click **Add** for adding item.

Click **Edit** for revising item.

Click **Delete** for deleting item.

➤ **Update**

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information

➤ **Supplier Menu**

Supplier Record can be recorded via this *Supplier Menu* or input instantly during record *Material Receive* transaction. Supplier Record will be used for reference of Supplier Invoice of materials receive by purchasing from supplier.

Select *Supplier* from *Main Menu (Update).*

Supplier

Supplier No.:	AE-01
Supplier:	AEG (LAMP CHABANG)
Contact:	MR.RANGSAN
Address:	LAMP CHABANG SIRACHA
	CHONBURI
	038-766479
Telephone:	
Fax:	

[Top] [Prev] [Next] [End] [Locate] [Add] [Edit] [Delete] [Print] [Close]

o *Supplier Code assigning*

Supplier Code shall be assigned for program reference together with details as below :

- *Supplier Name*
- *Contact Person*
- *Address*
- *Telephone/Fax No.*

Click **Locate** for viewing and selecting item.

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

➢ **Update**

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information

➢ **Employee Menu**

Employee Record can be recorded via this **Employee Menu** or input instantly during record *Material Issue* or *Tools Status* transaction. Employee Record will be used for reference in site activity.

Select *Employee* from *Main Menu (Update)*.

o *Employee Code assigning*

Employee Code shall be assigned for program reference together with *Employee Name*.

Click **Locate** for viewing and selecting item.

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

➤ **Update**

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information

➤ **Area Menu**

Area Record can be recorded via this **Area Menu** or input instantly during record *Material Receive or Material Issue* transaction. Area Record will be used for reference in site activity.

Select *Area* from *Main Menu (Update)*.

o *Area Code assigning*

Area Code shall be assigned for program reference together with *Area Description*.

Click **Locate** for viewing and selecting item.

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

➢ **Update**

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information

➢ **Drawing Menu**

Drawing Record can be recorded via this **Drawing Menu**. Drawing Record will be used for reference in site activity.

Select *Drawing* from *Main Menu (Update).*

o *Drawing No. assigning*

Drawing No. shall be assigned for program reference together with details as below :

- *Drawing Description*

- *Revised No.*

- *Revised date*

- *Void/Canceled Date*

- *Take-off Status*

   o None

   o Complete

   o Partial

   o Cancel

Click **Locate** for listing and selecting item.

Click **Add** for adding item

Click **Edit** for revising item

Click **Delete** for deleting item

> **Update**

```
┌─────────────────────────────────┐
│   Supplier                      │
│   Employee                      │
│   Area                          │
│   Drawing                       │
│   Materials Requisition         │
├─────────────────────────────────┤
│   Site Information              │
└─────────────────────────────────┘
```

> **Materials Requisition Menu**

Material Requisition(MR) Record can be updated via this **Materials Requisition Menu** or input instantly during record *Material Receive transaction*. However, we cannot update status of Material Requisition in *Material Receive Menu*.

Select *Material Requisition* from *Main Menu (Update)*.

Materials Requisition Update will be used for reference in status of purchase order to supplier together with details as below :
- *MR No.*
- *MR date (issued date)*
- *Supplier Code*
- *PO No.*
- *PO date*
- *Materials Requisition Status*

The Material Requisition Status -a code indicating whether partial shipments have been received, the total order has been received, the order has been cancelled, or the order has been closed. We can update status in :

- o *Not yet Receive*
- o *MR Cancelled*
- o *Partial Receive*
- o *Completed*
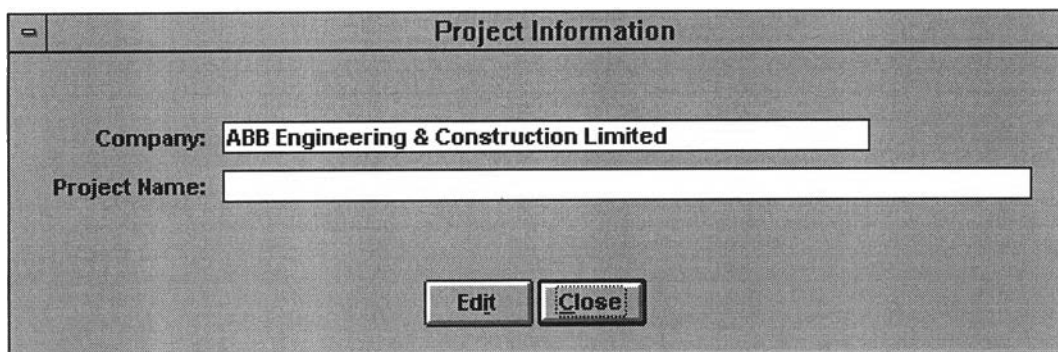
However, the <u>detail</u> of *Materials Requisition* must be recorded in *Materials Requisition Menu* from **Main Menu (Materials)** only, cannot via this menu.

➤ **Update**

Supplier
Employee
Area
Drawing
Materials Requisition
Site Information
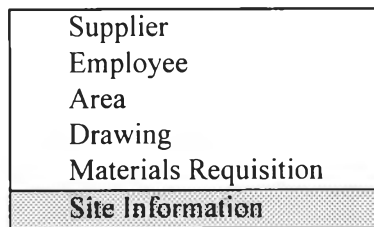
➤ **Site Information Menu**

Select *Site Information* from *Main Menu (Update)*.

Project Information

Company: ABB Engineering & Construction Limited

Project Name:

Edit   Close

Site Information is to record <u>project name</u> where Program is being used for.

Click **Edit** for recording.

➢ **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

➢ **Materials Status Report**

Select *Materials Status* from *Main Menu (Report)*

Type of Materials Status Report

The various types of *Materials Status Report* can be selected :

- ◆ Materials List (Form only)
- ◆ Materials Information
- ◆ Materials Balance
- ◆ Materials Shortage
- ◆ Materials Value
- ◆ Materials Price
- ◆ Materials Need Remaining
- ◆ Waiting Materials

Materials Status Report

Report type: Materials List (Form only)

> Materials List (Form only)
> Materials Information
> Materials Balance
> Materials Shortage
> Materials Value
> Materias Price
> Materials Need Remaining

Material code : ◉ All

☐ Summary

☐ Same Material Run

◉ Preview
◯ Printer
◯ File
◯ Print to File

Ok   Cancel

Range to Report

♦ All

♦ Selected Specific Code

♦ Selected Range (Code) (From- To)

Types of Report Print out

♦ Preview

♦ Printer

♦ File

♦ Print to File

◊   **Materials List (Form only)**

Select *Report type* : **Materials List (Form only)**

Report Format : **Materials List (Form)**

Materials Code	Description	Unit	Price	Quantity
....	....	....	....	....
....	....	....	....	....

The report is the blank form in price and quantity of materials list to fulfill by manually writing.

◊ **Materials Information**

Select *Report type* : **Materials Information**

Report Format : **Materials Information**

Materials Code	Description	Unit	Price	Schedule	Received	Min.Stock	PO Qty	Balance

The report lists all information of materials.

◊ **Materials Balance**

Select *Report type* : **Materials Balance**

Report Format : **Materials Balance**

Materials Code	Description	Unit	Schedule	Received	Issued	Balance

The report is the computing of materials balance in storage area by subtract issued amount from received amount.

◊ **Materials Shortage**

Select *Report type* : **Materials Shortage**

Report Format : **Materials Shortage**

Materials Code	Description	Unit	Schedule	Min. Stock	PO Qty	Balance	Last Update

The report lists the materials which the balance quantity is below minimum stock (or list of the shortage materials).

◊ **Materials Value**

Select *Report type* : **Materials Value**

Report Format : **Material Value**

Materials Code	Description	Unit	Price	Schedule		Received		Balance	
				Q'ty	Amount	Q'ty	Amount	Q'ty	Amount

The report is to summarize the value of schedule, received and balance materials.

◊ **Materials Price**

Select *Report type* : **Materials Price**

```
┌──────────────────────────────────────────────────┐
│ ▭            Materials Status Report               │
├──────────────────────────────────────────────────┤
│                                                    │
│   Report type: [Materias Price            ] [±]    │
│                                                    │
│ Material code : ◉ All    ○ Code  [   ] [...]       │
│                                                    │
│   ☐ Summary      From: [AL] — [F0002A]             │
│                    To: [ZT] — [G00001]             │
│                                                    │
│   ☐ Same Material Running No. only  [        ]     │
│                                                    │
│              ◉ Preview                             │
│              ○ Printer                             │
│              ○ File                                │
│              ○ Print to File                       │
│        ──────────────────────────────             │
│              [ Ok ]   [ Cancel ]                   │
│                                                    │
└──────────────────────────────────────────────────┘
```

Report Format : **Materials Price Information**

Materials Code	Description	Unit	Number of Received transaction	Unit Price	Min. Price	Max. Price	Avg. Price [1]	Avg. Price [2]

The unit price of received materials may be different of each transactions, so the materials price shall be record in minimum purchased price, maximum purchased price and average purchased price by simple average[1] of unit price (total unit price/number of transactions) and weighted average[2] of total purchased price/total quantity.

◊ **Materials Need Remaining**

Select *Report type* : **Materials Need Remaining**

Report Format : **Materials Need Remaining**

Materials Code	Description	Unit	Schedule	Received	Issued	Balance	Need Remaining

      The report is the computing of remaining material need by subtract received amount from schedule amount.

◊ **Waiting Materials**

Select *Report type* : **Waiting Materials**

Materials Status Report

Report type: Waiting Materials

Material code : ⦿ All ○ Code [ ] [...]

☐ Summary From: [AL] — [F0002A]
To: [ZT] — [G00001]

☐ Same Material Running No. only [ ]

⦿ Preview
○ Printer
○ File
○ Print to File

[Ok] [Cancel]

Report Format : **Materials to be received**

Materials Code	Description	Unit	Received	Need Remaining	Committed

The report is to show list of material in ordering (to be received).

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Materials Transaction Report**

Select *Materials Transaction* from *Main Menu (Report)*

Materials Transaction

Material code : ⦿ All   ○ Code [   ]—[   ] [...]

From: [/ /]   ⦿ Preview
To: [/ /]   ○ Printer
⦿ Receive and Issue   ○ File
○ Receive only from Supplier [   ] [...]   ○ Print to File
○ Receive only from Client
○ Receive only by MR [   ] [...]
○ Receive and Issue by Area [   ] [...]
○ Issue only by Employee [   ] [...]

[Ok] [Cancel]

The materials transaction report is to indicate the transaction of materials (i.e. receiving and issuing) during the selected report period.

Range to Report

- ◆ All

- ◆ Selected Specific Code

Period to Report

The period of transaction shall be assigned (Dated From-To) for reporting.

Types of Report Print out

- ◆ Preview

- ◆ Printer

- ◆ File

- ◆ Print to File

Type of Materials Transaction Report

The various types of *Materials Transaction Report* can be selected :

♦ Receive and Issue

Material Code/Description	Transaction Date	REF Transaction No.	Receive	Issue	Balance

♦ Receive only from Supplier

Select **Supplier**

Material Code/Description	Transaction Date	REF Transaction No.	Receive	Price	Discount	Total

♦ Receive only from Client

Material Code/Description	Transaction Date	REF Transaction No.	Receive

♦ Receive only by MR

Select **MR**

Material Code/Description	Transaction Date	REF Transaction No.	Receive	Price	Discount	Total

♦ Receive and Issue by Area

Select **Area**

Material Code/Description	Transaction Date	REF Transaction No.	Receive	Issue	Balance

♦ Issued only by Employee

Select **Employee**

Material Code/Description	Transaction Date	REF Transaction No.	Issue	Area

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Materials Summary**

Select *Materials Summary* from *Main Menu (Report)*

The materials summary report is to show *the summary of materials transaction (received, issued, and balance)* by selected report period.

Range to Report

♦ All

♦ Selected Specific Code

Period to Report

The period of materials transaction summary shall be assigned (Dated From-To) for reporting.

Types of Report Print out

♦ Preview

♦ Printer

♦ File

♦ Print to File

Type of Materials Transaction Summary Report

    Two types of *Materials Transaction Summary Report* can be selected :

♦ *Receive and Issue*

Item	Materials Code	Description	Unit	Received	Issued	Balance

♦ *Receive only from Supplier*

Select **Supplier**

Item	Materials Code	Description	Unit	Budget Q'ty	Received Q'ty	Amount

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Monthly Materials**

Select *Monthly Materials* from *Main Menu (Report)*

The monthly materials report is to show *the monthly (or periodically) transaction progress* of materials by selected period.

Range to Report

◆ All

◆ Selected Specific Code

Period to Report (Monthly or Periodically)

The period of transaction progress shall be assigned (Dated From-To) for reporting.

Types of Report Print out

◆ Preview

◆ Printer

◆ File

◆ Print to File

Report Format : Mat 0056

| Materials Code | Description | Total Amount (A) | Unit | Previous | | This Period | | Accumulate | | Need Remaining Amount (H) = (A)-(F) | Remaining in Store (I) = (F)-(G) |
				Receive (B)	Issue (C)	Receive (D)	Issue (E)	Receive (F) = (B)+(D)	Issue (G) = (C)+(E)		
....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....

Report Format : Mat 0057

| Materials Code | Description | Total Amount (A) | Unit | Receive | | | Issue | | | Need Remaining Amount (H) = (A)-(D) | Remaining in Store (I) = (D)-(G) |
				Previous (B)	Period (C)	Accum (D) = (B)+(C)	Previous (E)	Period (F)	Accum (G)		
....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Materials Daily Report**

Select **Materials Daily Report** from **Main Menu (Report)**

The materials daily report is to show the daily material transaction in **selected date**.

Transaction Selecting

♦ Materials Receive

♦ Materials Issue

Supply Source Selecting

♦ from Supplier

♦ from Client

Types of Report Print out

♦ Preview

♦ Printer

♦ File

♦ Print to File

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Materials Planning**

Select *Materials Planning* from *Main Menu (Report)*

```
┌─────────────────────────────────────────────────┐
│ ▭           Materials Planning                   │
│                                                  │
│    Report type: │Summary From Take-Off    │ ±│   │
│                                                  │
│    Material code : ◉ All    ○ Code  │   │ │...│   │
│                                                  │
│  ◉ All                          ◉ Preview        │
│  ○ Drawing No.  │            │ │...│  ○ Printer   │
│                                 ○ File           │
│  ○ Area         │          │ │...│ ○ Print to File│
│  ○ Reference No.│          │                     │
│  ○ Month        │199808│ August 1998             │
│  ─────────────────────────────────────────────   │
│              │ Ok │   │ Cancel │                 │
└─────────────────────────────────────────────────┘
```

The material planning report is the summary report of materials taken-off which is able to select on

- *Materials Code*

- *Drawing No.*

- *Working Area*

- *Reference No.*

- *Referred Month*

.Types of Report Print out

◆ Preview

◆ Printer

◆ File

◆ Print to File

> **Report**

Materials Status
Materials Transaction
Materials Summary
Monthly Materials
Materials Daily Report
Materials Planning
Tools Status

> **Tools Status Report**

Select *Tools Status* from *Main Menu (Report)*

Types of Tools Status Report

The various types of Tools Status Report can be selected

♦ Tools Summary

Tools Code	Description	Quantity
....	....	....
....	....	....

♦ Tools List (Include Returned)

Select *range of Tools Code (From-To)* for reporting.

Tools Code	Description	Receive Date/Quantity	Return Date/Quantity	Remark
....	....	....	....	....
....	....	....	....	....

♦ Tools Request

Sort by Tools Code

Tools Code	Description	Requested by	Requested Date	Remark

Sort by Response (Requester)

Requested by	Tools Code	Description	Requested Date	Remark

APPENDIX B : PROCEDURE DEVELOPMENT

Appendix B-1 : Procedure of Materials/Equipments Purchasing

Definition

o **Material Requisition (MR)** is a document which defines technically a supply, with reference to the necessary technical specifications and quality requirement and integration some with the requirement of delivery and budget. It is issued by the requester and acted as the ordering document with the maximum value equal or less than THB 10,000 (excluding VAT).

o **Purchase Requisition (PR)** is a document which is converted from MR by Purchasers at Banchang Office after passing the purchasing processes at SMP. Its value still remains equal or less than THB 10,000 (excluding VAT).

o **Letter of Intent (LOI)** is a document which is issued by Purchasers at Banchang Office for emergency case in order to ensure the delivery time. Its value is greater than THB 10,000 (excluding VAT).

o **Purchase Order (PO)** is a document which is issued by Purchasers by means of the company computerized system, to replace the LOI. and/or the act as the formal ordering documentation. Its value is greater than THB 10,000 (excluding VAT).

o **Bid Evaluation** is a document issued by Purchasers containing the prices and conditions from each supplier. The purpose of this document is for price and condition comparison.

Responsibility

o Material Controller is responsible for issuing the MR and has it attested and approved by the **authorized people**, record the requisition, follow up the ordering and ordered material, and solve problems about the delivery by suppliers.

o Purchasers in Banchang Office are responsible to contact suppliers, ask for quotations, evaluate the prices, negotiate, and convert MR to PR or issue LOI and/or PO.

Procedure

1. After project award like receiving LOI. from clients/customers within 15 days, Project Manager submits documentation as per 1.2 to SMP. In case materials value is equal or greater than 1MTHB, Project Manager calls for a meeting to kick-off the project to SMP.

    1.1 Participants

        Project Manager

        Site Manager   Project

        Site Engineer
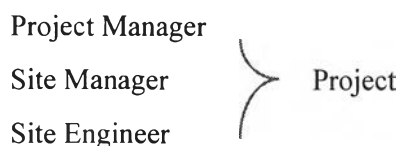
        SMP

    1.2 Documentation prepared by Project

        Bill of Quantity (BOQ) and Budget

        Schedule and break down material

        Price reference (quotation)

        Specification for some items

        Material list

    1.3 Actions in the kick-off meeting

Project explains roughly about the general idea of the project and emphasize some points which shall be focused like the specification approved by clients.

In case of materials ordered by SMP, SMP reserves the key persons who are responsible for the main commodity of material like mechanical, electrical etc. One week after kick-off meeting, SMP submit the procurement plan for Project approval.

2. Project Management plans the schedule of material before issuing the MR.

Material Controller plans and issues MR, completed with the information of material, required delivery time, budget etc. This MR is requested by Field Worker, attested by Material Controller and approved by Site Manager/Project Manager.

3. Material Requisition (MR) issued by Site :

Material Controller checks the availability of material at Central Warehouse (Rayong or Saraburi)

* 3.1 If the material is available, Material Controller will arrange the site transportation and pick up the material from Central Warehouse, together with MR by Site and Way Bill by Storekeeper at Central Warehouse for reference in record.

    3.1.1 Storekeeper of Central Warehouse records the withdrawal of material.

    3.1.2 Storekeeper prints report charging cost to each project for the withdrawn material.

3.2 If the material is out of stock at Central Warehouse, Material Controller considers the value of MR.

    3.2.1 If MR costs equal or less than THB 10,000 (excluding VAT), Material Controller can order by themselves.

    3.2.2 In case of MR costs higher than THB 10,000 (excluding VAT), the approved MR will be sent by fax to SMP at Banchang Office firstly and mailed later.

    3.2.3 One MR is for one supplier. In case the requester does not know that the required material shall be purchased from many suppliers, Purchaser will follow the instruction below :

        3.2.3.1 Issue new MR (One MR for one supplier) with reference of the previous MR.

        3.2.3.2 Delete the items for which the new MR is already issued in order to avoid misunderstanding or double orders.

4. Material Ordered by SMP

    SMP Secretary registers MR and gives it to Division Supply Manager in order to assign to PIM Manager and distribute to SMP Purchaser

    4.1 Materials provided by SMP consist of

      - Permanent Installation Material (PIM) i.e. cable, cable tray etc.

      - Specific Materials requested by Project : complicated order, high volume, high value, unavailable source, made by order etc.

    4.2 PIM Manager assigns MR to the concerning purchaser.

---

* Details on *Procedure of Material Handling at Central Warehouse*

4.3 If MR is not completed (budget, required delivery time, site location etc.). Purchaser will contact Material Controller for completing the MR.

4.4 If MR does not provide adequate information for purchasing (specification), Purchaser will contact Material Controller for verifying specification.

4.5 Material Controller is expected to verify the specification within 3-5 working days.

4.6 Purchaser contacts Supplier and asks for quotation ; then prepares the *Bid Evaluation* before discussing with PIM Manager for negotiation strategies.

4.7 Purchaser checks negotiated prices against the budget.

    4.7.1 If the negotiation prices is over the budget, Purchaser shall contact PM for over-budget approval.

    4.7.2 If PM cannot approve the over-budget, Project Manager and Division Supply Manager will arrange the meeting.

    4.7.3 In some cases, Project might have a better price than the negotiated price due to the earlier agreement during tendering period. It is possible that Purchaser accepts this price with project reference (and supplier's quotation reference).

    4.7.4 If the negotiated prices are in the budget, Purchaser follows next step, as per 6.

5. Material ordered by Project **

6. If the order value is equal or less than THB 10,000 (excluding VAT), MR will be converted to be PR. SMP will give PR number. This PR will approved at authorized PR No. by Division Supply Manager.

** Detail on *Procedure of Materials Ordered by Project*

6.1 In case of the Division Supply Manager is not available for approving the PR, it is allowed to have one(1) Department Manager and one(1) Project Manager approve the PR.

7. In case that the order value is greater than THB 10,000 (excluding VAT), Purchaser issues PO which will be checked by PIM Manager, attested by Division Supply Manager and approved by MD.

7.1 All POs for fixed assets must be approved by MD. In case of orders for computer and mobile telephone must be attested by Division Manager or FA and approved by MD and CM.

7.2 In case of imported material, Purchaser provides the copy of PO, specification, catalogue, site map, and other necessary to Shipping Manager in order to assign the forwarder to take responsibility for overseas delivery, customs clearing and inland transport to site.

8. When the supplier delivers material to Central Warehouse together bring with invoice, delivery note and copy of MR or PO to Central Warehouse.

8.1 Storekeeper checks the appearance of material and signs on the Original Invoice and Delivery Note as the receiving acceptance.

8.2 Storekeeper puts Receiving No. on the copy of invoice and puts the record of the receipt as follow

Item	Description	Unit	Amount	Supplier Name	Invoice No.	MR No.	Received Date	Job No.	Received by

8.3 Storekeeper contacts Site to pick up the material from Central Warehouse or arranges transportation to site, and transmit all documents (copy invoice, delivery note etc.) to site for invoice supplier clearing.

9. In case that supplier delivers materials directly on site for the purpose of saving transportation cost for Permanent Installation Material of Project.

> 9.1 Supplier delivers materials on site together with invoice, delivery note and copy MR.

> 9.2 Material Controller checks the appearance of material, receives material and signs on the Original Invoice as the receiving acceptance.

> 9.3 Material Controller stamps ABB Approval Box at the back of copy invoice and let it sign in column.

<table>
<tr><td>
Received from Supplier
by...
Date...
Location
  -- Office
  -- Workshop
  -- Customer site
  -- Supplier shop
<hr>
Item No. ....
Received for Job/Order
by..
Date...
Job No./Order No....................
Location
  -- Workshop
  -- Customer site
  -- Other.....................
Attested (Supv./Dept.Mgr.)
By ....
</td></tr>
</table>

Agreed vs PO/Contract by	Attested by
1	2
Check by	Payment approved by
3	4
Order No.	Due payment date :
5	6

> 9.4 Material Controller mails the original tax invoice, attested copy invoice and copy MR/PO with *Standard Cover Sheet* to the Administrator of each Division for checking.
>> o   Company name and address
>>
>> o   Price against invoice
>>
>> o   MR/PO/Contract No._____
>>
>> o   Attested/Approved by Site Manager and Project Manager
>
> (and record in Financial Management Program (Cost Program)).

9.5 Division Admin. mails all document to SMP Bangkok Office (by Weekly) before 20th of the month (or giving SMP at Bangkok Office at least 5 working days before the submission date to FA 27th of the month).

9.6 SMP Bangkok matches the copy PO mailed by Banchang Office, together with document from Division, has the copy invoice approved by MD and submits all document to FA before 27th of the month.

If the invoice is incorrect (wrong company name and address, unknown authorized person attesting and approving on the invoice etc.) it will be rejected and mailed back to site immediately.

10. Supplier places Dept. Note and Invoice for invoicing at FA on 1st-5th of the month at 10:00 am - 16:00 PM.

10.1 Supplier invoices at FA with the following document :
- o Original Invoice with PO/PR No. and Job No.
- o and/or Original Delivery Note with PO/PR No. and Job No.
- o and Copy of Tax invoice with PO/PR No. and Job No.
- o and Original or Copy of PO/PR and Job No.
- o and/or Debt Note (summary invoice).

11. FA matches the documentation from SMP Bangkok and invoice from supplier and arranges the payment on 25th of the month to suppliers at 13:00 PM - 17:00 PM. (depends on credit term).

11.1 FA will pay against the original MR and/or PO and original invoice only.

11.2 In case of more than one deliveries from suppliers, site or Purchaser has to record in the original MR/PR/PO or the copy of MR/PR/PO for the next deliveries.

Partial No.	Invoice No.	Partial Amount (excl. VAT)	Balance Amount (excl.VAT)
Partial 1	Inv # xxxx	THB 3,000	THB 2.000
Partial 2	Inv # xxxx	THB 2,000	THB 0 : completed

12. In case of payment out of due, the person who agrees with this non-standard payment shall issue the memo approved by PM and sent to FA (Finance and Controller) in order to arrange the payment as per requested.

Appendix B-2 : Procedure of Material Ordered by Project
procedure

1. ***Engineering Team (Project Engineer)*** takes off quantities and clarifies specification of materials/equipments requirement, then requests Material Controller to process purchase order.

> 1.1 Project Engineer rechecks scope of supply and installation, compares with Bill of Quantity (BOQ) in contract agreement, then comments on materials/equipments supply, price, quantity and specification requirement.

2. ***Field Worker (Site Supervisor)*** clarifies details of erection work by as specify in contract and/or co-operate with concerned parties (i.e. Sales & Marketing, Engineering, Client/Consultant etc.) matching with their experience in order to plan the materials/equipments and tools use in erection work as per period, than requests Material Controller to process purchase order.

3. ***Material Controller*** arranges meeting with Engineering Team and Field Worker to combine the materials/equipments requisition and matching with ***Project Schedule plan***.

> 3.1 Material Controller prepares ***Material Plan***
> - o Materials/Equipments list
> - o Forecasted Quantity
> - o Budget
> - o Received Schedule plan

> 3.2 Material Controller finds out and selects the approved supplier and clarifies (or negotiate) on
> - o technical specification
> - o delivery time/place
> - o price
> - o purchased amount
> - o service option

4. Material Controller prepares MR with details of

- MR No.

- Supplier name/address

- Job No./Project

- Required Delivery Date

- Site Location

- Description, Quantity, Unit Price and Discount

    etc.

and completed with sign of   - Requested by _____(Field Worker)

- Attested by _____ (Material Controller)

- Approved by _____ (Site Manager/Project Manager)

4.1 In case of site needs to purchase directly with supplier, Material Controller issues MR to the selected supplier and follows up the materials/equipments delivery.

4.2 In case of site needs to request SMP to purchase, Material Controller copies MR to SMP with note on requirement and present progress status.

4.3 All MR must be filed together for reference in materials/equipments purchase ordering, receiving and invoice supplier clearing.

5. When materials/equipments are received at site by supplier delivers directly or pass from SMP, together with invoice, delivery note and copy MR :

5.1 Material Controller checks the received materials/equipments appearance, specification, quantity etc., then receives materials/ equipments and signs on the Original Invoice and/or Delivery Note as the receiving acceptance.

5.2 *Site Storekeeper* keeps materials/equipments in stock and updates stock record.

5.3 Material Controller processes on invoice supplier clearing.

Appendix B-3 : Procedure of Material Handling at Central Warehouse

Definition

- **Material Requisition (MR)** is a document which defines technically a supply, with reference to the necessary technical specifications and quality requirement and integrating some with the requirement of delivery and budget.

- **Way Bill (WB)** is a document which defines the departure and destination points with description of withdrawn material and quantity, and the forwarding agency reference for material security.

Responsibility

- Storekeeper at Central Warehouse is responsible for arranging the stock of surplus material from site or ordered material, and the stock withdrawal, keeping report the inventory level and cost.

- Store Administration is responsible for handling Way Bill

- Supply Manager authorized the withdrawal of materials from stock, and ensure the procedure is to be followed.

Procedure

1. There are 3 main categories of material delivered to Central Warehouse

    1.1 *Used Stock*

    These are the surplus materials after the site already closed and return to central warehouse, which can be again withdrawn to site against MR.

    1.2 *Fresh Stock*

    These are the frequently moving consumable materials i.e. welding rod, cutting blade, grinding blade etc. which purchase to be used in the site/office/workshop. These are kept in stock at the controlled min./max. inventory level. These are also withdrawn by the central warehouse against MR.

    1.3 *Material ordered case by case*

    These are the rarely moving materials or not the standard material, then these is purchased case by case as per site requisition.

2. Site Material Controller issues MR and submits to SMP (Central Warehouse).

3. Storekeeper of Central Warehouse checks stock of materials according to the Material Requisition (MR) by site.

    3.1 If there is not enough stock, Material Requisition will be proceeded on the purchasing process.

    3.2 If there is enough stock, Store Keeper arranges the material withdrawal from stock.

4. Store Admin. issues *Way Bill*, completed with all necessary information about the Project Name, Job No., Requester Name, Details of Withdrawn Materials, and Quantity etc.

5. The cost charge to Project (Job. site) for withdrawn materials :

    5.1 When site returns materials to central warehouse, it becomes Used Stock. This is debit to 25% if new purchased value for the project.

    5.2 When site withdraws the Used Stock from central warehouse, it charges 50% of the purchasing cost to project.

    5.3 When site withdraws the Fresh Stock from central warehouse, it charges 100% of the purchasing cost to project.

6. Site representative arranges the site transportation to pick up the materials from central warehouse, receives the materials and signs the Way Bill as the receiving acceptance.

    6.1 The Way Bill has to be signed by Site Manager or the appointed person duly authorized by Site Manager for receipt.

    6.2 The copy of Way Bill is to be sent to SMP.

7. The withdrawn materials shall be inspected by Storekeeper before delivering and by Site Manager (or site representative) before signs for receipt.

    7.1 In case the materials (or equipments) are wrong or damaged, Storekeeper and/or Site Manager notes on the Way Bill and sends one copy to SMP and the other to FA for insurance claim.

    7.2 In case the materials (or equipments) are delivered by the third party, and if Site Manager (or site representatives) is not able to check the materials/equipments carefully when receiving, it should be written on the Way Bill that *This material/equipment will be verified later.*

8. All transaction is to be recorded in the computer for both withdrawal and returning of material in appropriate program *Project Store Management.*

    8.1 The Way Bill and Material Requisition and other necessary documentation to be filed together and sorted by No. of Way Bill.

9. At the end of the month (25th of the month), Storekeeper at Central Warehouse submits the reports to Supply Manager and copies to FA or the concerns.

The reports are

- the withdrawal and returning report that shows how much cost charges and debits to project.
- the inventory level and inventory cost report.

Appendix B-4 : Tools/Equipments Handling and Renting System

Definition

- **Material Requisition (MR)** is a document which defines technically a supply, with reference to the necessary technical specifications and quality requirement and integrating some with the requirement of delivery and budget.

- **Way Bill (WB)** is a document which defines the departure and destination points with description of withdrawn materials/tools/equipments and quantity, and the forwarding agency reference for materials/tools/equipments security.

- **Tools/Equipments Plan** is a document which is issued by Site (Tools Controller) containing with the used tools/equipments list, quantity, budget, schedule for using and source of arrangement. The purpose of this document is for providing tools/equipments on time requirement.

Responsibility

- Tools Controller is the site representative responsible for tools/equipments arrangement on site, to coordinate with SMP for the renting system.

Site Operation Procedure

1. ***Engineering Team*** and ***Field Worker*** plan the tools/equipments use in erection work as per period, then request Tools Controller for arrangement.

2. ***Tools Controller*** arranges meeting with Engineering Team and Field Worker to combine the tools/equipments requisition and matching with ***Project Schedule plan.***

    2.1 Tools Controller prepares ***Tools/Equipments Plan***, comprises of
- Tools/Equipments list
- Quantity
- Budget
- Received and Returned Schedule plan (using period)
- Source of arrangement

3. Tools/Equipments are to be arranged on site by 3 ways :
- *Tools/Equipments from site purchasing*
- *Tools/Equipments transferred by others sites*
- *Tools/Equipments request from SMP in the renting system*

♦ *Tools/Equipments from site purchasing*

    4. Tools Controller finds out and selects the approved supplier and clarifies (or negotiates) on

- specification
- delivery time/place
- price/discount
- purchased quantity
- service option

    5. Tools Controller prepares MR with details of

- MR No.
- Supplier name/address
- Job No./Project name
- Required Delivery Date
- Site Location
- Description, Quantity, Unit Price and Discount

etc.

and completed with sign of - Requested by _____ (Field Worker)

           - Attested by _____ (Tools Controller)

           - Approved by _____ (Site Manager/Project Manager)

    5.1 In case of site needs to purchase directly with supplier, Tools Controller issues MR to the selected supplier and follows up the tools/equipments delivery. The copied MR is also to be sent to SMP for purchasing process.

    5.2 In case of site needs to request SMP to purchase, Tools Controller copies MR to SMP with note on requirement and present the progress dealing status.

    5.3 If the order value is equal or less than THB 10,000 (excluding VAT), the purchasing can be directly from site

        If the order value is greater than THB 10,000 (excluding VAT), the purchasing must be through SMP and required approval by MD.

5.4 All MR must be filed together for reference in tools/equipments purchase ordering, receiving and invoice supplier clearing.

6. When tools/equipments are to be received at site by supplier delivers directly or through SMP, together with invoice, delivery note and copy MR :

6.1 Tools Controller checks the received tools/equipments : appearance, specification, quantity etc., then handovers the tools/equipments and signs on the Original Invoice and/or Delivery Note as the receiving acceptance.

6.2 Site Storekeeper keeps tools/equipments in store and updates store record in *Project Store Management Program* and/or manually record

Item	Description	Code	Unit	Quantity	Supplier Name	Invoice No.	MR No.	Received Date	Received by

6.3 Tools Controller processes on invoice supplier clearing.

♦ _Tools/Equipments transferred by other sites_

7. Storekeeper of _site-departure_ prepares **Way Bill**, completed with all necessary information about the Project Name and Job No. (both of site departure and destination), Details of Transferred Tools/Equipments, and Quantity etc.

     7.1 The transferred tools/equipments condition shall be checked by Storekeeper or Tools Controller of site-departure before transferring, and notes on the Way Bill if it has any comments.

     7.2 The tools/equipments will be transferred to site-destination, together with the Way Bill.

     7.3 Storekeeper at site-departure updates store record of the transferred tools/equipments in **Project Store Management Program** and/or manually record ;

Item	Description	Code	Unit	Quantity	Way bill No.	Site-Departure	Transferred by/date	Site-Destination	Received by/date	Condition	Remark

8. Storekeeper of _site-destination_ receives the transferred tools/equipments, signs on the Way Bill, keeps tools/equipments in store and updates store record.

     8.1 The Way Bill has to be signed by Site Manager or the appointed person duly authorized by Site Manager as the transferring and receiving acceptance.

     8.2 Storekeeper and/or Tools Controller of site-destination checks and recorded the received tools/equipments condition, appearance, function operating, quantity etc. before signs for receipt and updates store record of the received tools/equipments in **Project Store Management Program** and/or manually record ;

Item	Description	Code	Unit	Quantity	Way bill No.	Site-Departure	Transferred by/date	Site-Destination	Received by/date	Condition	Remark
......	....	......	......	....	....	....	....	....	....	....	....
......	....	......	......	....	....	....	....	....	....	....	....

8.3 The copy of Way Bill after signs for receipt is to be sent back to site-departure and SMP.

9. The Way Bill is to be filed together at site-departure, site-destination and SMP for reference in tools/equipments transferring.

♦ *Tools/Equipments request from SMP in the renting system*

10. ***Tools/Equipments Plan*** of project should be submitted by Site to SMP at prior stage for preparing and comment.

11. Tools Controller prepares ***MR*** and issues as the tools/equipments requisition to SMP with detail of

- MR No.

- Job No./Project name

- Required Delivery Date

- Description, Quantity

and completed sign.

12. SMP (Storekeeper of Central Warehouse) checks the available tools according to the MR requested by site.

12.1 If there is not available stock, SMP informs back to Site to request for postponing schedule or process on ***replenished purchasing***. The additional purchasing depends on the necessary of use, reasons by Site and approval by Top Management.

12.2 If there is available stock (at warehouse or other site), SMP performs on the tools/equipments transferring.

13. SMP issues ***Way Bill***, completed with all necessary information about the Project Name and Job No, Details of Transferred Tools/Equipments, and Quantity etc.

13.1 The transferred tools/equipments condition shall be inspected by SMP before transferring and notes on the Way Bill if it has any comments.

13.2 The tools/Equipments will be transferred to the requested site together with the Way Bill.

13.3 SMP (Storekeeper at Central Warehouse) updates record of the transferred tools/equipments in *Project Store Management Program* and/or manually record ;

Item	Description	Code	Unit	Quantity	Way bill No.	Departure	Transferred by/date	Destination	Received by/date	Condition	Remark

14. Storekeeper at site receives the tools/equipments, signs on the Way Bill, keeps tools/equipments in store and updates store record.

14.1 The Way Bill has to be signed by Site Manager or the appointed person duly authorized by Site Manager for receiving acceptance.

14.2 The transferred tools/equipments condition shall be inspected by Site representative (Tools Controller) before signs for receipt.

14.2.1 In case of the tools are wrong, damage, malfunction or not completion, Tools Controller notes on the Way Bill and sends one copy to SMP and the other to FA for insurance claim.

14.2.2 In case of the tools/equipments are delivered by the third party, and if Tools Controller is not able to check the transferred tools carefully when receiving, it should be written on the Way Bill that *This tool will be verified later.*

14.3 *Site* updates store record of the received tools/equipments in *Project Store Management Program* and/or manually record ;

Item	Description	Code	Unit	Quantity	Way bill No.	Departure	Transferred by/date	Destination	Received by/date	Condition	Remark

14.4 The copy of Way Bill after signs for receipt is to be sent back to SMP.

15. The Way Bill is to be filed together for reference in tools transferring.

16. The *returning* tools/equipments to SMP shall be processed similarly as the transferring process. The record of all transaction shall be reference with *Way Bill* and the inspection before transferring or receiving acceptance is necessary.

17. At the end of the month (25th of the month), SMP submits the reports of cost charges for the tools/equipments transferring and returning in renting system to *Site* for rechecking and approval, then passes to FA to debit cost to project.

17.1 Any comments by the re-checking of *Site* on SMP cost charges report must be immediately informed SMP to correct further action.

♦ *Case of Tools/Equipments Loss*

18. When the loss of tools/equipments is occurred, the immediate action as below must be required :

> 18.1 The loss is immediately notified to *police officer* for official evidence issue.

> 18.2 Site reports to SMP together with official evidence to update record loss status of these tools/equipments and delete these items from rental charge.

> 18.3 Site updates record of tools/equipments loss status and verifies cause

Tools/Equipments Loss Status

Item	Description	Code	Unit	Quantity	Issuer	Lossed Date	Caused by	Comments
....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....

and/or records the lossed tools/equipments in *Project Store Management Program*.

> 18.4 *Net value* of the lossed tools/equipments will debit to project after verified by Site and SMP with concerns on
> - cause of loss
> - condition or using life of the lossed tools/equipments
> - old purchased price and the rest of account value (current book value)
> - re-purchased price
>   etc.

> 18.5 The *punishment* will be after verified by Site, SMP and Top Management level with concerns on items same as 18.4.

>   For instance of punishment, if the issuers do not return tools/ equipments to store, the current book value of these tools/equipments will be deducted from their salary/wage.

18.6 SMP coordinates with FA in concerning on fixed asset accounting and cost debits to project.

18.7 Site carries out process of *insurance claim* for the loss of tools/equipments.

18.8 The *resignation* (or transferring) of issuers is denied if they have not yet finished on tools/equipments returning.

Appendix B-5 : Procedure of Materials/Equipments Receiving, Issuing, Returning, Balancing, and Reporting

Receiving

1. Storekeeper receives materials/equipments at site by separate records and storage area of

   - materials/equipments purchased from supplier, and
   - materials/equipments supplied by client

   1.1 Record of materials/equipments purchased from supplier

Item	Description	Code	Unit	Quantity	Supplier Name	Supplier Invoice No.	MR No.	Price/Unit	Received Date	Received by

   1.2 Record of materials/equipments supplied by client

Item	Description	Code	Unit	Quantity	Issue Voucher No.	Received Date	Received by

   1.3 Issue voucher of materials/equipments supplied by client (issued from client) must be filed together for reference in materials/equipments balancing (reconciliation) when the job handovered by client.

Issuing

2. Field Worker issues the materials/equipments for installation from Site Store.

    2.1 Field Worker prepares **Issue Voucher**.

	Issue Voucher	Ref No. _____
		Date _____

Project Name _____ Job No. _____

Item	Description	Code	Unit	Requested Quantity	Actual Issued Quantity	Working Area	Remark

Issued/Requested by _____   Store _____

Acknowledged by _____   Receiver _____

Approved by _____

    2.2 Storekeeper arranges the issued materials/equipments according to the Issue Voucher and records as

Item	Description	Code	Unit	Quantity	Working Area	Issued Voucher No.	Issued Date	Issued by

    2.3 Issue Voucher by field worker must be filed together for reference in materials/equipments issuing. (and balancing).

Returning

3. Field Worker returns the excess materials/equipments from installation to Site Store

    3.1 Field Worker prepares **Return Voucher**.

	Return Voucher	Ref No. _____
		Date _____
Project Name _____		Job No. _____

Item	Description	Code	Unit	Returned Quantity	Working Area	Condition	Remark

Returned by _____   Store _____

    3.2 Storekeeper receives the returned materials/equipments and records as

Item	Description	Code	Unit	Quantity	Working Area	Return Voucher No.	Returned Date	Condition	Returned by

    3.3 Return Voucher by field worker must be filed together for reference in materials/equipments returning (and balancing).

    3.4 The return of materials/equipments supplied by client (issued from client) is to be recorded separately in order to prepare Return Voucher to return the excess materials/equipments from installation back to the client and this Return Voucher must be filed together for reference in balancing (reconciliation) when the job handovered by client.

Item	Description	Code	Unit	Quantity	Return Voucher No.	Returned Date	Returned by

Balancing

4. Format of materials/equipments balancing is required as below

    4.1 Stock Card : the summarized transaction of each materials/equipments

Stock Card

Material/Equipment Name _____   Project Name _____

Material/Equipment Code _____   Job No _____

Unit _____

Item	Reference No.	Date	Received Quantity	Issued Quantity	Returned Quantity	Requester	Balance	Available Stock	Remark

    4.2 Balance Summary : the weekly record of materials/equipments balance at stores

Balance Summary

Period _____   Project Name _____

Job No. _____

Item	Description	Unit	Received Quantity			Issued Quantity			Returned Quantity			Balance	Available Stock	Different +/-	Percent Different	Remark
			Previous	Period	Accumulate (A)	Previous	Period	Accumulate (B)	Previous	Period	Accumulate (C)	(D) = (A)-(B)+(C)	Stock (E)	(F) = (E)-(D)	% (G) = (F)/(A)	

    4.3. Materials/Equipments Handling for Installation : the weekly record of materials/equipments balance from installation

Materials/Equipments Handling for Installation

Period _____   Project Name _____

Job No. _____

Item	Description	Unit	Issued Quantity			Returned Quantity			Balance	Installation Report	Different +/-	Percent Different	Remark
			Previous	Period	Accumulate (A)	Previous	Period	Accumulate (B)	(C) = (A)-(B)	(D)	(E) = (D)-(E)	% (F) = (E)/(D)	

Reporting

5. Format of materials/equipments handling reporting is required as below

    5.1 Report for Efficiency of Materials/Equipments Handled by Store and for Installation

Item	Description	Unit	Received Quantity (A)	Available Stock (B)	Installation Report (C)	Total of Available Stock and Installation Report (D) = (B) + (C)	Different +/- (E) = (D) - (A)	Percent Diff. % (F) = (E) / (A)	Remark

    5.2 Report for Efficiency of Materials/Equipments Handled by Stores

Item	Description	Unit	Received Quantity (A)	Issued Quantity (B)	Returned Quantity (C)	Balance (D) =(A) - (B) + (C)	Available Stock (E)	Different +/- (F) = (E) - (D)	Percent Diff. % (G) = (F) / (A)	Remark

    5.3 Report for Efficiency of Materials/Equipments Handled for Installation (Report for Materials/Equipments Reconciliation)

Item	Description	Unit	Issued Quantity (A)	Returned Quantity (B)	Balance (C) = (A) - (B)	Installation Report (D)	Different + / - (E) = (D) - (C)	Percent Diff. % (F) = (E) / (D)	Remark

APPENDIX C : SAMPLE FORM

Materials/Equipments Handling for Installation

Period _____

Project Name _____

Job No. _____

Item	Description	Unit	BOQ Q'ty	Issued Quantity			Returned Quantity			Balance (C) = (A)-(B)	Installation Report (D)	Different +/- (E) = (D)-(E)	Percent Different % (F) = (E)/(D)	Remark
				Previous	Period	Accumulate (A)	Previous	Period	Accumulate (B)					

Balance Summary

Period _____

Project Name _____

Job No. _____

Item	Description	Unit	BOQ Q'ty	Received Quantity			Issued Quantity			Returned Quantity			Balance	Available Stock	Different +/-	Percent Different	Remark
				Previous	Period	Accumulat (A)	Previous	Period	Accumulat (B)	Previous	Period	Accumulate (C)	(D) = (A)-(B)+(C)	(E)	(F) = (E)-(D)	% (G) = (F)/(A)	

Returning Report

Project Name _____
Job No. _____

Item	Description	Unit	Quantity	Working Are	Return Voucher No	Returned Date	Condition	Returned by	Remark

Issuing Report

Project Name _____
Job No. _____

Item	Description	Unit	Quantity	Working Area	Issue Voucher No	Issued Date	Issued by	Remark

Receiving Report

Project Name _____
Job No. _____

Item	Description	Unit	Quantity	Supplier Name	Invoice No.	MR No.	Received Date	Received by	Remark

Stock Card

Material/Equipment Name _____   Project Name _____
Material/Equipment Code _____   Job No.   _____
Unit   _____

Item	Reference No.	Date	Received Quantity	Issued Quantity	Returned Quantity	Requester	Balance	Available Stock	Remark

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| Return Voucher | | | | REF No. _____ | | | |
| | | | | Date _____ | | | |

Project Name _____ Job No. _____

Item	Description	Code	Unit	Returned Quantity	Working Area	Condition	Remark

Returned by _____   Store _____

| Issue Voucher | | | | | REF No. _____ | | |
| | | | | | Date _____ | | |

Project Name _____ Job No. _____

Item	Description	Code	Unit	Requested Quantity	Actual Issued Quantity	Working Area	Remark

Issued/Requested by _____   Store   _____

Acknowledged by   _____   Receiver _____

Approved by   _____

| | Purchase Order Requisition | | | REF No. _____ |
| | | | | Date _____ |

Project Name _____ Job No. _____

Item	Description	Code	Unit	Requested Quantity	Remark

Requested by _____   Reviewed by _____

Biography

Songwuth Mittrarath was born on December 19, 1967 in Phuket, Thailand. He earned Bachelor Degree in Electrical Engineering from Prince of Songkla University in 1989 and Master Degree of Business and Administration (MBA), Major Marketing from National Institute of Development and Administration (NIDA) in 1994. He had worked for Sharp Appliance Thailand Limited as Microwave Design Engineer from 1989-1991 and worked for ABB Engineering and Construction Limited as Site Manager since 1991 to present. In 1996 he registered as part-time student in Engineering Management Program of Regional Centre for Manufacturing Systems Engineering, Chulalongkorn University.