

Material management by using SAP in real estate construction sector

Ganesh Ashok Patare¹, Pravin Minde²

¹PG Scholar, TSSM'S Padmabhooshan Vasantdada Patil Institute of Technology, Bavdhan, Pune.

²Asst. Professor, Department of Civil Engg. TSSM'S Padmabhooshan Vasantdada Patil Institute of Technology, Bavdhan, Pune.

Abstract – Material management play an important role in construction industry. As far as real estate sector is consider construction material may constitute more than 60% cost of the total project cost. Material management is a scientific technique, concerned with planning, organizing and control of flow of materials, from their initial purchase to destination. System Application and Product (SAP) can help organization to reduce operating costs, generate more accurate forecasts of material, manage and maintain the inventories of material, accelerate procurement, and enhance the delivery-storage-consumption of material at right time. To implement an integrated system of materials management, there must be a central database wherein anyone in the company can find out all information about any material passing through the plant. SAP streamlines all the business functionalities and gives desired result in one click. An SAP system can help to improve the communication within an organization. SAP is user friendly i.e. information will be obtained as and when required. By using SAP (Materials Management-Module) for real estate construction industry, the product can be ordered and received within safety period. This Paper contains a detail study of Material Management module implemented by a Kalpataru Ltd. A real estate company from pune.

- Planning,
- Procurement,
- Logistic
- Inventory.

Material management (MM) module of SAP is the best solution for material management in construction industry. By using SAP a 100 % data related to material management is centrally stored/saved on the server. SAP streamlines all the business functionalities and gives desired result in a single click. An SAP system can help to improve the communication within an organization. SAP is user friendly i.e. information will be obtained as and when required.

1.1 Objectives of Material Management

- Efficient material planning.
- Buying or purchasing.
- Procuring and receiving.
- Storing and inventory control.
- Supply and distribution of material.
- Quality assurance.
- Good supplier and customer relationship.
- Improved departmental efficiency.

Key Words: Material Management (MM), Construction Material, SAP (System Application and Product)

1.2 Functions of Material Management

(A) Primary Functions

- Materials Requirements Planning.
- Purchasing.
- Inventory Planning and Control.
- Ascertaining and Maintaining the Flow and Supply of Materials.
- Quality Control of Materials.
- Departmental Efficiency.

(B) Secondary Functions.

- Standardization and Simplification.
- Make and Buy Decisions.
- Coding and Classification of Materials.
- Forecasting and Planning.

1. INTRODUCTION

Material management plays an important role in construction real estate industry. Material a only single component constitute a major cost of project. Material may constitute more the 60% cost of the total project cost. The control of materials is a very important and vital subject for every company and should be handled effectively for the successful completion of a project. Proper material management can also increase the overall profit of the company. Material management is a scientific technique, concerned with planning, organizing and control of flow of materials, from their initial purchase to destination. Material management contains mainly four processes i.e.

2. MATERIAL MANAGEMENT MODULE OF SAP

2.1 SAP - System Application & Products

(SAP) is basically designed to create a common centralized database for all the applications running in all the departments in an organization. The kind of application you can manage includes –

- Logistics & Material Management
- Finances
- Reporting, HR etc

The original name for SAP was Systeme, Anwendungen, Produkte (In German). The system comprises of a number of fully integrated modules, which covers virtually every aspect of the business management. It eliminates the duplication and redundancy in data. Increases productivity, efficiency and better management of resources. Improves Customer Service through better Customer Interaction.

2.2 Features of SAP MM

The features of a SAP MM system are as follows:-

- SAP MM is one of the modules of SAP that deals with material management and inventory management.
- Material Management as a process ensures no shortage of materials or any gaps in the supply chain process of the organization. SAP MM speeds up the procurement and material management activities, making the business run smoothly with complete time and cost efficiency.
- It deals with managing the materials (products and/or services) and resources of an organization with the aim of accelerating productivity and reducing costs. At the same time, SAP MM is quite versatile to accommodate changes that are frequent in any business environment.
- It deals with the Procurement Process, Master Data (Material & Vendor Master), Account Determination & Valuation of Material, Inventory Management, Invoice Verification, Material Requirement Planning, etc.

2.3 SAP Structure in Materials Management

The Organizational Structure in MM is made up of following Organizational Levels:

1) Client:

Represents a grouping or combination of legal, organizational, business and or administrative units with a common purpose.

2) Company Code:

Company Code represents an independent accounting unit within a client. Each company code has its own balance sheet and its own profit and loss statement.

3) Plant:

Operational unit within a company code.

4) Storage Location:

This level contains the data specific to a storage location. Stock levels are an example of the data maintained for each storage location

5) Purchasing Organization:

An organizational unit responsible for procuring materials or services for one or more plants and for negotiating general conditions of purchase with vendors. The purchasing organization assumes legal responsibility for all external purchase transactions.

6) Purchasing Group:

The purchasing organization is further subdivided into purchasing groups (buyer groups), which are responsible for day-to-day buying activities. A purchasing group can also act for several purchasing organizations.

2.4 SAP MM CYCLE

- Purchase Requisition (PR)
- Purchase Order (PO)
- Goods Receipt (GRN)
- Store Stock
- Material Issue Slips (GI)
- Inventory Stock

2.5 LIST OF TRANSACTION CODE REQUIRED FOR MM IN SAP

- ME51N – Create Purchase Requisition
- ME5A – Purchase Requisition List Display
- ME23N - Display Purchase Order
- ME2N – Purchase order by PO no.
- MIGO – Goods Movement.
- MB1A – Goods Withdrawal
- MB25 – Reservation List
- CJ20N – Project Builder
- MB52 – List of Warehouse stock on Hand
- ZMM_INV – Inventory Report

2.6 MOVEMENT TYPES FOR MM

- 103 – Gate Entry
- 105 – Goods Receipt
- 106 – Goods Receipt Reverse
- 541 – Material Transferred to Contractors Stock
- 542 – Material Reverse From Contractors Stock
- 281 – Goods Withdrawal (Consumption)
- 282 – Consumption Reverse
- 301 – Stock Transfer from Plant to Plant

3 - DETAIL WORKING OF SAP

➤ SAP Login Screen

Log on to the SAP server. The SAP login screen will prompt you for the User ID and the Password. Provide a valid user ID and password and press enter. The user id and password are provided by the system administrator. The login screen appears as follows:

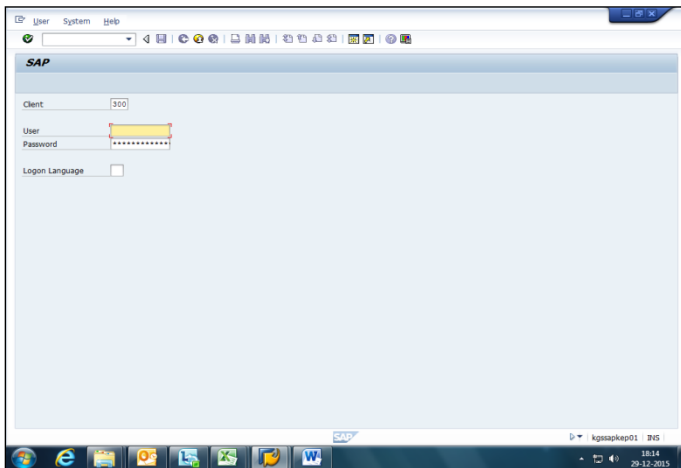


Figure 1 SAP Login Page

➤ SAP Home Screen

After Entering User Id & Password Home page as above gets open. Required Transactions are saved in the list of favorites. On the same window Icons as mentioned below are shown,

- Window to enter T- Code
- Save, Back, Exit, Stop, Find, Help
- Page Up & Down
- New Window

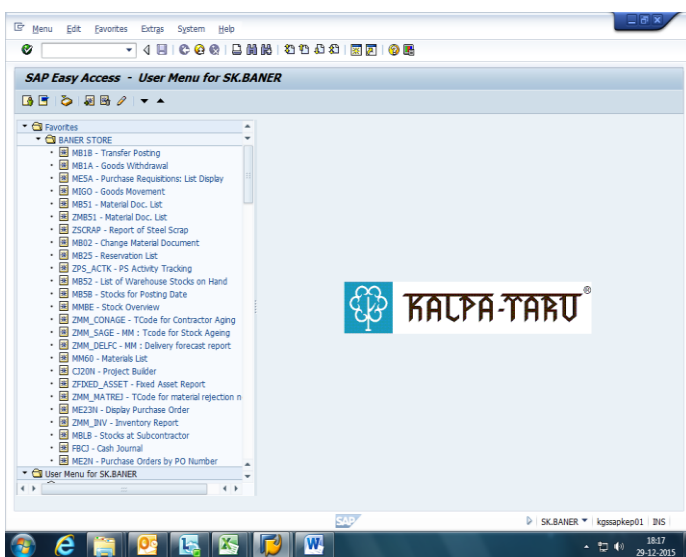


Figure 2 SAP HOME PAGE

➤ Log Off

It is a good practice to log off from the SAP system when you finish your work. There are several ways to log off from the system, but it can be done using the following instructions as shown in the screenshot below:

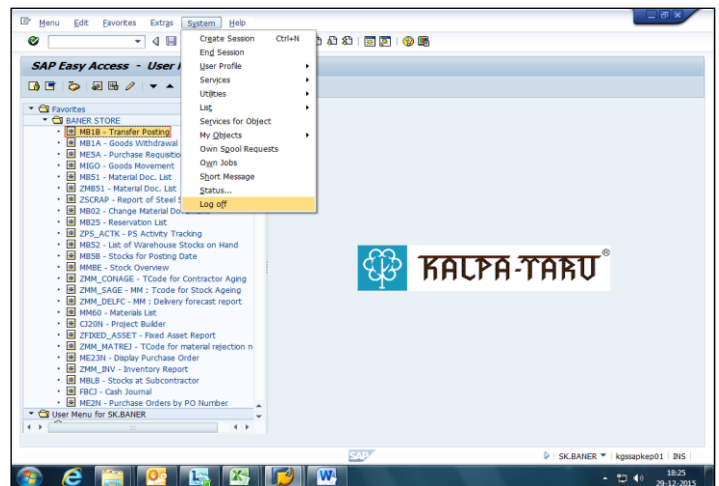


Figure 3 Log Off Screen

➤ PURCHASE REQUISITION (PR)

Procurement in every organization starts with gathering requirements. Once requirements are gathered, we need to inform the purchasing organization. A Purchase Requisition is a document that contains a list of requirements. The key points to note about a purchase requisition are as follows:

- A purchase requisition is a request that is made to the purchasing organization to procure a certain list of materials.
- It is an internal document and remains within the organization.
- Purchase requisition needs approval from the purchasing organization.
- If a purchase requisition has already been approved, then it can be modified only to a limited extent.
- Purchase requisition can be created for the following procurement types:
 - (i) Standard: Getting finished material from vendor.
 - (ii) Subcontracting: Providing raw material to vendor and getting finished material.
 - (iii) Consignment: Procuring material that is kept in company's premises and paying to vendor for that.
 - (iv) Stock transfer: Getting material from within the organization.
 - (v) External service: Getting services like maintenance from a third-party vendor.

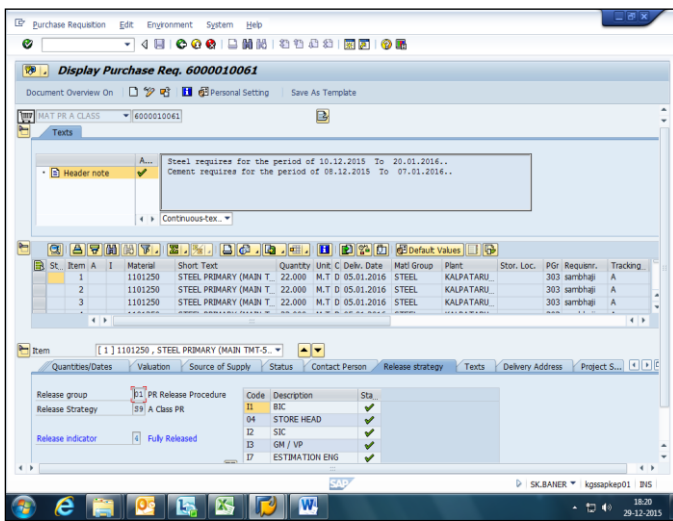


Figure 4 Purchase Requisition (PR)

PR is raised in system by execution team as per the requirement of material. Following fields are required to be entered while raising PR.

- Material Code
- Required Quantity
- Plant No for which material is required
- Requisitioner Name.
- Class of material.

➤ **PURCHASE ORDER (PO)**

When the PR gets released at all levels, the same is displayed to Purchase Department. Then the PO of required material is prepared & when it gets released at all level then the PO is honored to the respective supplier.

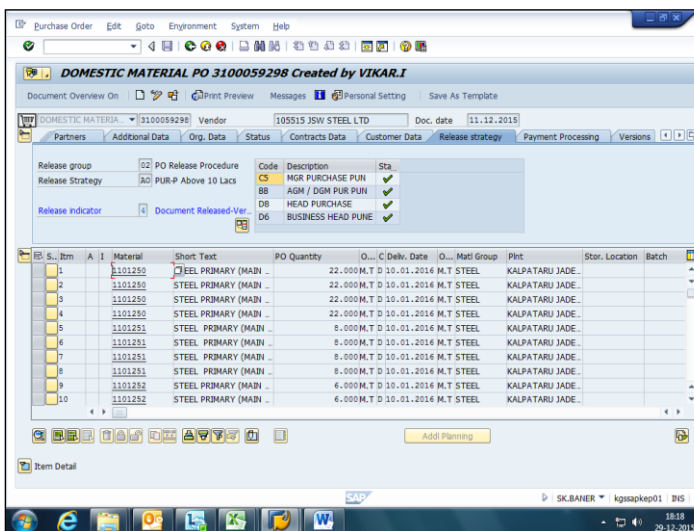


Figure 5 Purchase Order (PO)

➤ **GATE ENTRY**

After Issuing the PO, Suppliers is arranging to deliver the material. When the material reaches on Gate, a security Guard makes the entry of same in the Inward Register & gives the Gate Entry No. on Delivery Challan. Transaction Code used for Posting GRN is MIGO. Movement type used for Posting Gate Entry is 103.

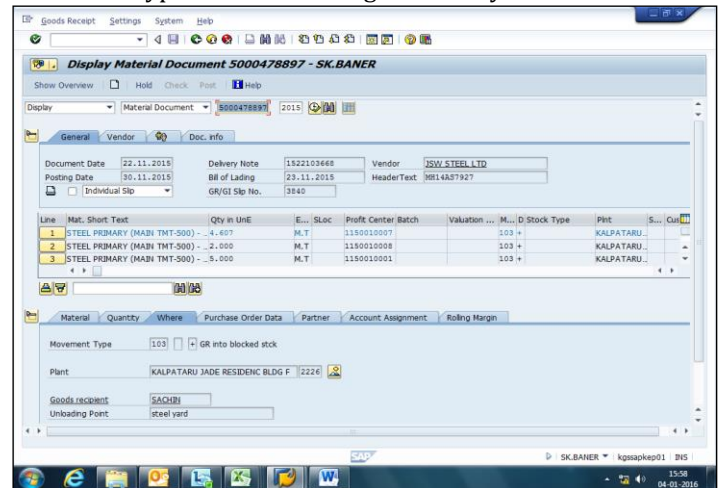


Figure 6 Gate Entry

➤ **GOODS RECEIPT NUMBER (GRN)**

Goods receipt is the phase where the material is received by the ordering party and its condition and quality are verified. Depending upon the movement type, stock is posted in inventory with the help of goods receipt. Goods receipt will show the increase in warehouse stock. When the material is delivered on site, referring the Delivery Challan & PO, GRN of the Material is posted in the System. Transaction Code used for Posting GRN is MIGO. Movement type used for Posting GRN is 105.

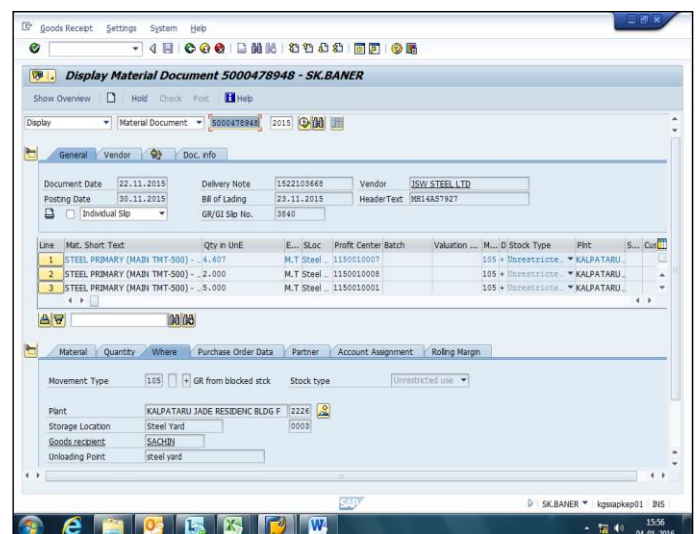


Figure 7 Goods Receipt Number (GRN)

➤ **MATERIAL ISSUED TO AND REVERSED FROM CONTRACTOR**

After Posting GRN in system, the material is issued to contractor & the same is transferred to Contractors Stock. After issuing material to contractor the responsibility of material belongs to contractor. Before Posting Final consumption material mentioned in Issue slip given by Engineer In charge is reversed & taken back from contractors stock to Kalpataru Stock.

Transaction Code Used for Posting Consumption is MIGO.

Movement type used for issuing and reversing material – 541-542

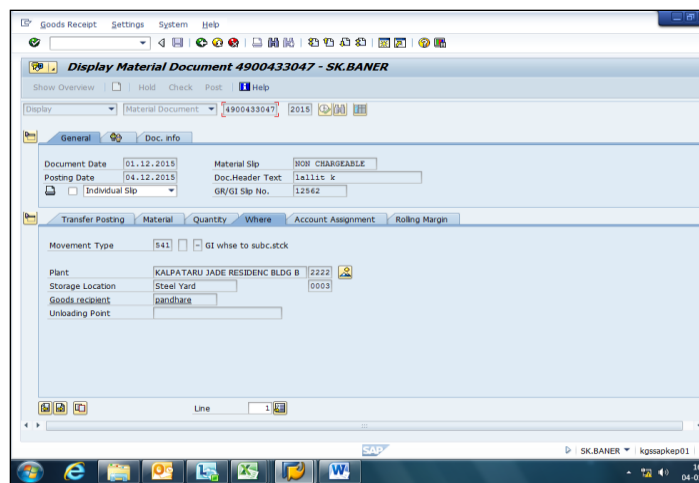


Figure 8 Material Issued to Contractor

➤ **MATERIAL ISSUE SLIP**

Issue slip of consumed material against respective activity is prepared & submitted by Engineer In charge of respective building to store in charge. Following details are mentioned on issue slip

- Issue slip No – i:e 281
- Project Code
- Network No.
- Plant No.
- Vendor Code
- Activity No.
- Activity Description
- Material No.
- Material Description
- Quantity of Required Material
- Unit
- Reservation No.

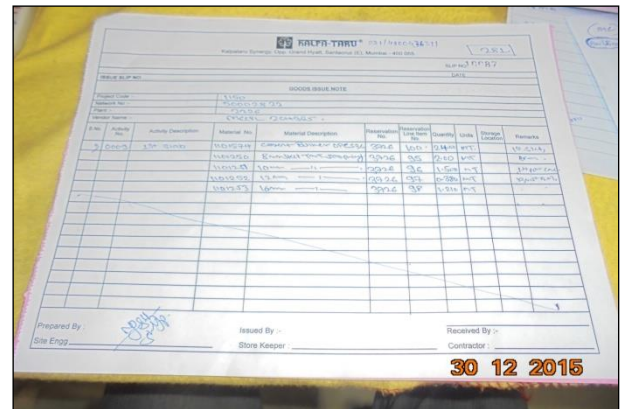


Figure 9 Material Issue Slip

➤ **MATERIAL WITHDRAWAL (Consumption)**

After receiving material issue slip from Engineer In charge, the consumption of material is posted in system by store in charge. Transaction code used for posting Consumption is MIGO. Movement type used for the material withdrawal (Consumption) - 281

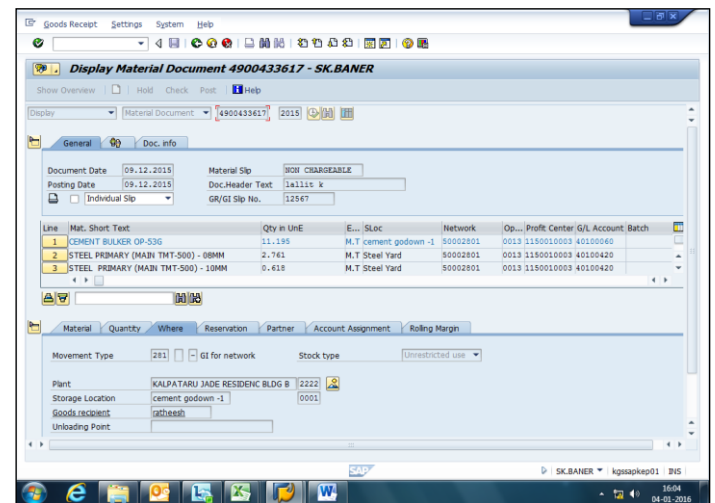


Figure 10 Material Withdrawal (Consumption)

4- ADVANTAGES AND DISADVANTAGES OF MATERIAL MANAGEMENT BY SAP

- **Advantages of material management by SAP**
 - Can easily find out exact consumption of materials
 - Can easily get stock of materials and locations of materials
 - Accuracy increases

- By only one click, one can easily get all details
- It can be useful in planning and procurement of materials
- Wastage of materials get reduced
- Work becomes easy
- Manual errors get reduced
- Time can be reduced for management of materials

➤ **Disadvantages of material management by SAP**

- High initial cost
- Need technically skilled workers
- Estimation department is to be required Strong
- Not affordable for small construction companies.

5 - CONCLUSION

- By using SAP technique, exact consumption of material, stocked material, and location of material can be obtained.
- The requirement of material on the specific site is verified and processed within 24 hours from the manual creation of purchase requisition.
- The consumption of material is exactly identified to keep control on wastage and prepare a Material Requirement Planning.
- By just a single click Data was made available till Higher Management Level.
- Paper work reduced due to system Implementation.
- Tracking of Order was easy.
- It reduces manual errors and it is easy to communicate.
- Reduces Manpower required in stores.
- Inventory record was easily available.

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