BIM Process Manual

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1. Introduction

This document describes various steps involved in the PMS Mobilizer® implementation with responsibilities. Major tasks involved in different departments also discussed with input requirements and output. PMS Mobilizer® needs training for different levels of users.

This document does not cover how to use the software, installation, etc. If you are new to PMS Mobilizer® read general brochure before going to the next session:
http://www.projectmonitoringsystems.com/mobilizer/downloads/PMS_Mobilizer_Brochure.pdf

For user's guide refer:
http://www.projectmonitoringsystems.com/mobilizer/downloads/PMS_Mobilizer_Users_Guide.pdf

2. Design review coordination

The following figure shows the strategy of PMS Mobilizer® design review coordination.

Contract Drawings: Contract drawings are the input to the system. The input drawings are the copies of contract drawings in AutoCAD format with minor modifications of layers and other attributes.

Review: The BIM model has to be reviewed based on the utility standards, clash analysis, site conditions, etc. Various drawings and reports will be generated to review the comments.

Modify: The solutions of the design review comments have to be incorporated after approval from the concerned authorities.

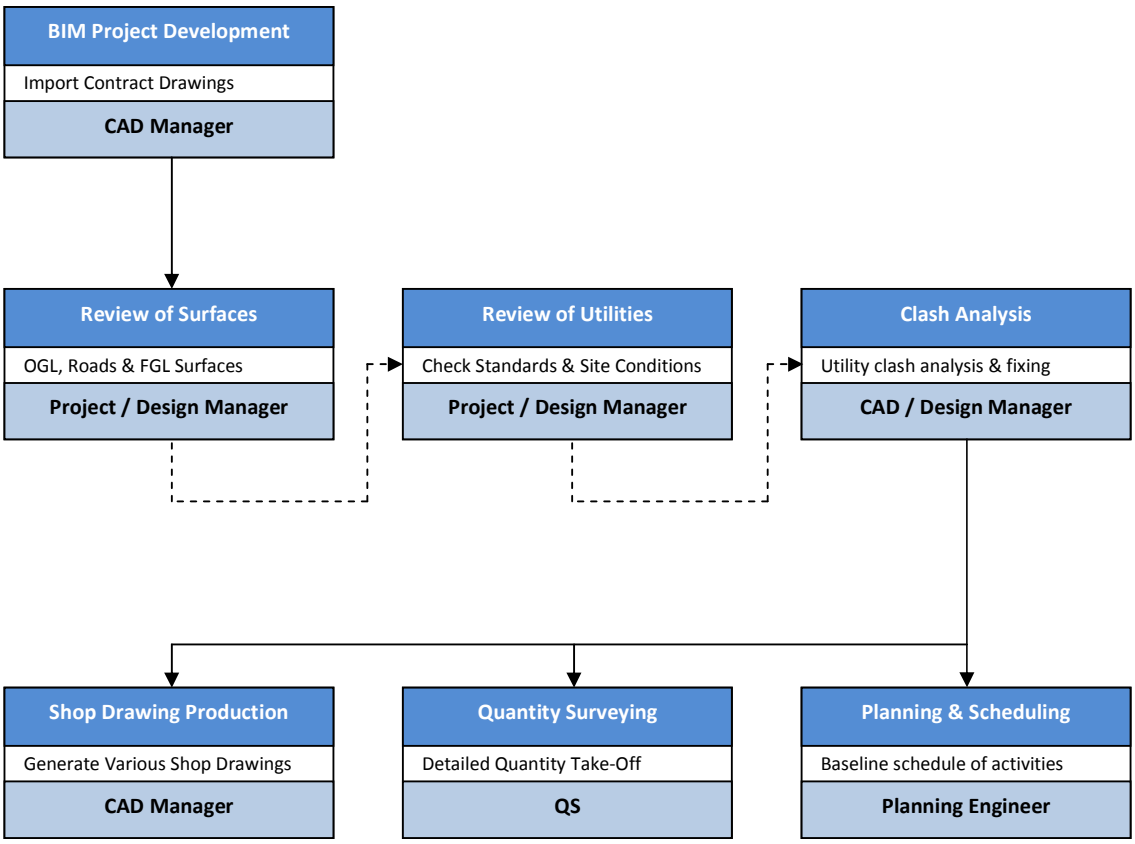
Shop Drawings: Generate various shop drawings.

Quantity Surveying: Generate detailed quantity take-off.

Planning: Generate baseline schedule of activities with quantities and resources loaded on different planning zones.

3. Process flow diagram

The follow figure shows the major steps involved in the entire process. The responsible personnel or department is shown at the bottom of the steps. The review and clash fixing are subjected to the approval of concerned authorities.



The name of the department or head of department can be changed according to the present project organization structure.

4. Tasks & Responsibilities

The following table gives an overview of required tasks to execute a project in PMS Mobilizer®. Each process step is assigned to a responsible stakeholder to ensure the delivery and quality of project data.

No	Task	By*	Description	Input	Email Notification	Output
1	**General**					
1.1	Software Installation	PMS	Installation of the enterprise version of PMS Mobilizer software			
1.2	Create Project	SA/PRM	Create Project in PMS Mobilizer.	(Key input) Project name, Project code, Scheduled start, Schedule finish…		
1.3	Assign users	SA/PRM	Assign users to this project (CAD,QS,Planner,etc)	Key input	Email to users.	
2	**Project Preliminaries**					
2.1	Setup Project Layout	CAD	Attach project general layout.	CAD file.		
2.2	Create Original Ground	CAD	Attach survey data file.	CAD or data file		
2.3	Contour Surface (Optional)	CAD	Contour surface creation.	Contour interval		
2.4	Map Overlay(Optional)	CAD	Attach map file.	Image file		
2.5	Approval	PRM	Approval by PRM to publish.	Click	Project layout notification	
3	**Roads**					
3.1	Road Alignment	CAD	Setup horizontal & vertical alignments	CAD files		
3.2	Road Surface Strings	CAD	Generate finished surface.	CAD file		
3.3	Road Sections	CAD	Define road sections	Key in		
3.4	Road Section Assignments	CAD	Assign road sections to roads			
3.4	Utility corridor	CAD	Define utility corridors	Key in		
3.5	Utility corridor assignment	CAD	Assign utility corridors on roads	Key in		
3.6	Approval	PRM	Approval by PRM to publish.	Click	Roads & FGL notification	
4	**Utilities: Gravity Lines**	This procedures to be repeated to all gravity utilities (drainage & sewerage)				
4.1	Define Network	CAD	Define gravity networks(Eg: Drainage-New Design)	Key in		
4.2	Generate utility layout	CAD	Import utility layout to create pipes, manholes, gullies, chambers, etc.	CAD file		
4.3	Generate utility corridor report	CAD	Check utility elements(pipes, manholes, etc are in the proper corridor or not)			Report & Drawings.
4.4	Assign utilities to the proper corridor	CAD	Assign utilities to the proper corridor based on the above report.	Auto		
4.5	Configure gravity standards	CAD	Set pipeline standards like minimum and maximum slopes, etc.	Key in		
4.6	Configure element standards	CAD	Eg: Set different types of manholes and its properties, Backdrop conditions, etc.	Key in		
4.7	Assign actual cover levels	CAD	Automatically assign cover levels	Auto		
4.8	Check standards	CAD	Check the utility network			Report

			satisfies the standards or not.			
4.9	Change utility parameters	CAD	Change necessary parameters to meet all standards	Auto		
4.10	Approval	PRM	Approval by PRM to publish.	Click	Utility notification	
5	**Utilities: Non-Gravity Lines**	This procedures to be repeated to all non-gravity utilities(water, irrigation, cables, etc…)				
5.1	Define Network	CAD	Define non-gravity networks(Eg: Water-New Design)	Key in		
5.2	Generate utility layout	CAD	Import utility layout to create pipes, chambers, valves, etc.	CAD file		
5.3	Generate utility corridor report	CAD	Check utility elements(pipes, chambers, valves, etc are in the proper corridor or not)			Report & Drawings.
5.4	Assign utilities to the proper corridor	CAD	Assign utilities to the proper corridor based on the above report.	Auto		
5.5	Configure non-gravity standards	CAD	Eg: Set default depth, etc,	Key in		
5.6	Assign actual cover levels	CAD	Automatically assign cover levels	Auto		
5.7	Check standards	CAD	Check the utility network satisfies the standards or not.			Report
5.8	Change utility parameters	CAD	Change necessary parameters to meet all standards	Auto		
5.9	Approval	PRM	Approval by PRM to publish.	Click	Utility notification	
6	**Clash Analysis**					
6.1	Do clash analysis	CAD	Find all clashes and generate clash review drawings.	Auto	Clash alert	Report & Drawings
6.2	Fix gravity-gravity clash	CAD	Assign changes on gravity lines to avoid gravity-gravity clash.	Key in		
6.3	Fix non-gravity clash	CAD	Assign changes on non-gravity lines to avoid gravity-gravity clash.	Key in		
6.4	Approval	PRM	Approval by PRM to publish.	Click	Utility notification	
7	**Quantity Surveying**					
7.1	Define road layers	QS/CAD	Different layers with thickness and other properties.	Key in		
7.2	Road assignment	QS/CAD	Assign layer templates on roads	Key in		
7.4	Value distribution	QS	Assign value distribution among major items	Key in		
7.5	Approval	PRM	Approval by PRM to publish.	Click		
7.6	Quantity survey report	ALL	Generate detailed quantity take-off			MS Excel
8	**Shop Drawing**					
8.1	Define custom utility lines	CAD	Define custom lines to generate profiles.			
8.2	Utility profiles	CAD	Generate utility profile drawings with crossing utilities.	Auto		CAD
8.3	Road cross-sections	CAD	Road cross-section drawings with OGL, utilities, etc.	Auto		CAD
8.4	Earthwork drawings	CAD	Cut/Fill drawings with quantities	Auto		CAD
8.5	Profiles	CAD	PGL offset profiles	Auto		CAD
8.5	Toe drawings	CAD	Toe drawings with quantities	Auto		CAD
8.6	Setting up coordinates	CAD	Offset coordinates, etc.	Auto		MS Excel
8.7	Manhole Schedule	CAD	Schedule of individual manholes	Auto		CAD
9	**Planning & Scheduling**					
9.1	Create planning boundary file	PLN/CAD	Drawing to show different planning zones.	CAD		
9.2	Assign planning	PLN/CAD	Assign planning boundary file to	Auto		

	boundary		the project.			
9.3	Configure production rates	PLN	Setup production rates of different activities with resources.	Key in		
9.4	Generate Primavera Schedule	PLN	Generate Primavera compatible file.			XML/XLS

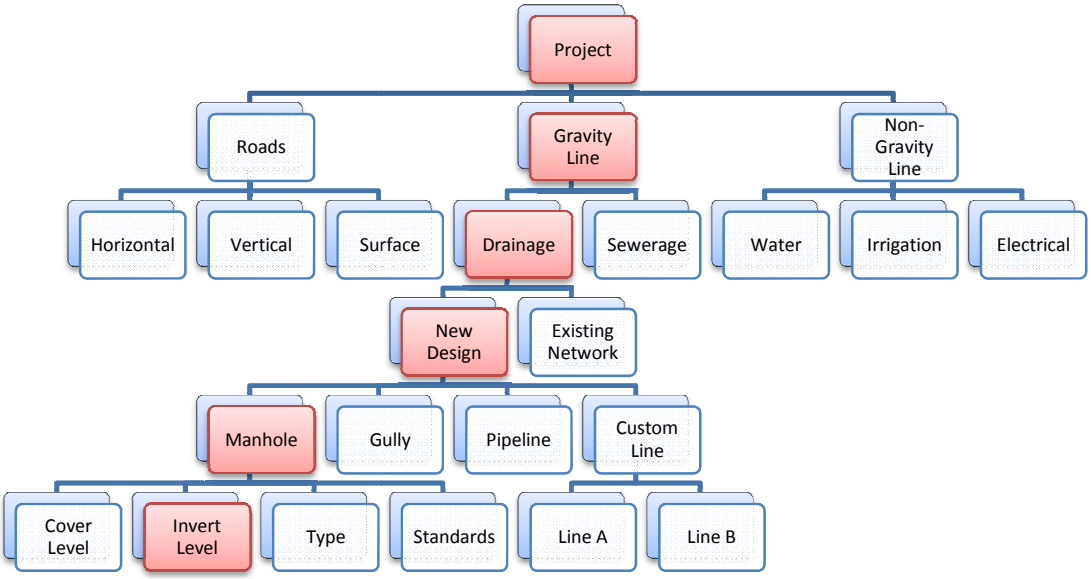
* By (Task to be performed by)

a. PRM Project Manager
b. SA System Administrator(IT)
c. CAD CAD Manager or Senior Draughtsman
d. QS Quantity Surveyor
e. PLN Planner
f. USR General users to see output
g. PMS PMS service personnel

5. PIBS (Project Information Breakdown Structure)

Project Information Breakdown Structure (PIBS) is a systematic breakdown of project design information to guide the project team members to dig down from project macro level to the micro level of information. This structure will be automatically populated on PMS Mobilizer® project explorer.

Example: Following figure is a part of a PIBS where the hierarchy of invert level of a manhole is demonstrated through the highlighted titles.



Though most of the PIBS nodes are standard, project specific nodes such as sub networks of utilities, custom lines, etc are to be defined properly. Predefined PIBS will give a clear insight to the project team how the information is to be referred across the project area.

6. Training

PMS offers the possibility for project specific training to the project team with different training sessions are offered for draughtsmen, quantity surveyors, planning engineers and other engineers & managers. Following table shows the training sessions and contents.

No	Title	Who should attend	Contents	Hours
1	**CAD Module**	CAD Managers Design Engineers Draughtsmen	BIM project development, conversion of design drawings to the required format, OGL surface development, generate road alignments, FGL surface, ROW, utility corridor, utility network development, utility standards configuration, clash analysis, shop drawing production, etc.	3 x 8
2	**QS Module**	Quantity Surveyors	PMS Mobilizer fundamentals, value distribution, road layer management, material specifications, quantity take-off, etc.	1 x 8
3	**Planning Module**	Planning Engineers	PMS Mobilizer fundamentals, assign planning zones, production rate configuration, resources, export to Primavera, etc.	1 x8
4	**Project Manager Module**	Project Manager System Administrator	PMS Mobilizer fundamentals, software architecture, users and profiles, approval rules, view & generate reports and drawings, etc.	1x8
5	**General Module**	Engineers	PMS Mobilizer fundamentals, view & generate reports, etc.	1x8

After a successful education PMS will issue a certificate to the attendees.

7. PMSM management team

Project manager has the right to assign users with different roles for CAD, QS, Planning and General profiles. He has to send the list of members with roles to the PMS Mobilizer® system administrator to set users on the enterprise network. Following is the recommended format of user information.

No	Name	Designation	Email	Mobile	User Profile					
1					CAD	QS	Planning	PRM	SA	General
2					√					
3						√				
4							√			
5								√		
6									√	
7										√
8										√
9										√
10										√
11										√
12										√
13										√
14										√
15										√
16										√

PMS strongly recommend to restrict one user for CAD, QS, Planning, PRM and SA. Since no input is permitted in *General* profile, no restriction for number of users.