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Project Planning for Installation and Commissioning of Odorization Unit for CGD Projects

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ABSTRACT: Oil and gas (O&G) industry contributes to the economic as one of the most important sectors by taking into advantages as being the most demanding, challenging and exciting engineering and technological advances which interests the engineers at large. As the O&G industry has become financially attractive yet risky to be implemented, it is important to investigate the effective way of managing the O&G projects. Hence, this project is emerged with the aim of reviewing the project management in O&G industry by determining the O&G execution phase as well as examining the O&G project management approach based on the typical O&G platform development stage. It is found that in the O&G project execution, a systematic for project management is developed with the aim to improve the decision making process and overall project execution, where typically, the systematic project management consist of five main phases, such as appraisal, selection and definition, which are both associated with planning phase, execution and first year operation which are associated with five control phase has been studied. Once project scope is determined and work breakdown structure (WBS) is created, the next step is to create delivery timeline. For each of the deliverable work item identified in the work breakdown structure (WBS), project planner needs to identify list of activities need to perform. The project schedule should reflect all the work associated with delivering the project on time. Without a full and complete schedule, the project manager will be unable to communicate the complete effort, in terms of cost and resources, necessary to deliver the project.

KEYWORDS: Project Planning, project management, odorization system, Work Breakdown Structure.

I. INTRODUCTION

A project is generally initiated by a perceived need in an organization. Being a one-off undertaking, it will have a start and an end, constraints of budgets, time and resources and involves a purpose-built team. Project teams are made up of many different team members, for example, end users/customers (of a product or service), a project leader, business analysts, trainers, the project sponsor, and other stakeholders.

Project management is the discipline of managing all the different resources and aspects of the project in such a way that the resources will deliver all the output that is required to complete the project within the defined scope, time, and cost constraints. These are agreed upon in the project initiation stage and by the time the project begins all stakeholders and team members will have a clear understanding and acceptance of the process, methodology and expected outcomes. A good project manager utilizes a formal process that can be audited and used as a blueprint for the project, and this is achieved by employing a project management methodology.

II. WORK BREAKDOWN STRUCTURE

Division of labor is a management approach based on the breaking up of a process into a series of small tasks so that each task can be assigned to a different worker. Division of labor narrows the scope of work each worker has to learn enabling workers to learn new jobs quickly and providing an environment where each worker can be equipped with special tools and techniques required to do his job.

Some advantages of division of labor and specialization are:



- The fast development of a high degree of skill (specialization)
- The saving of set-up time required to change from one type of work to another
- The use of special-purpose, usually very efficient, machines, tools, and techniques developed for specific tasks.

These benefits do not come for free. Division of labor requires integration of the outputs produced by the different workers into the final product. Thus, some of the efficiency gained by specialization is lost to the additional effort of integration management required.

A common way to achieve integration is by a proper organizational structure, a structure that defines roles and responsibilities of each person as well as the inputs required, and the tools and techniques used to produce that person's outputs.

III. WBS DEVELOPMENT

A project work breakdown structure (WBS) is a deliverable or product-oriented grouping of project work elements shown in graphical display to organize and subdivide the total work scope of a project. The WBS is a particularly important project tool. Considerable thought and planning should be given to its development and implementation so that subsequent changes are minimized. Major revisions to a WBS require both substantial effort and resources, due to its application to a wide array of project activities. Project WBSs, which are driven by the scope of a project, should not be confused with other uses of WBS-like systems.

A WBS is the cornerstone of effective project planning, execution, controlling, status using, and reporting. All the work contained within the WBS is to be identified, estimated, scheduled, and budgeted. The WBS is the structure and code that integrates and relates all project work (scope, schedule, and cost). Therefore, the WBS contains the project's scope baseline necessary to achieve the technical objectives of the work described. The WBS is used as a management tool throughout the life cycle of a project to identify, assign, and track its total work scope. When initial project funding is received, the Project Director (PD) develops a WBS that identifies necessary funds according to the schedule and needs of the tasks in the WBS elements. The WBS is generally a multi-level framework that organizes and graphically displays elements representing work to be accomplished in logical relationships. The PD is to structure the project work into WBS elements (work packages) that are:

Definable—can be described and easily understood by project participants. **Manageable**—a meaningful unit of work where specific responsibility and authority can be assigned to a responsible individual.

Estimable—duration can be estimated in time required to complete, and cost can be estimated in resources required to complete.

Independent—minimum interface with or dependence on other ongoing elements (i.e., assignable to a single control account, and clearly distinguishable from other work packages).

Integratable—integrates with other project work elements and with higher level cost estimates and schedules to include the entire project.

Measurable—can be used to measure progress; has start and completion dates and measurable interim milestones.

Adaptable—sufficiently flexible so the addition/elimination of work scope can be readily accommodated in the WBS framework.

The following Table 1 is used for WBS preparation of the project plans:

Table 1: Work Breakdown Structure

| ID | TASK NAME |
|----|---|
| 1 | PRELIMINARIES |
| 2 | ISSUE OF LOI FROM CLIENT |
| 3 | PO TO ODORANT SYSTEM SUPPLIER |
| 4 | SITE SURVEY AND PLOT PLAN |
| 5 | DESIGN AND DRAWING |
| 6 | PREPARATION OF DESIGN AND DRAWINGS |
| 7 | SUBMISSION OF PROJECT DELIVERABLES CLIENT |
| 8 | RECEIPT OF APPROVALS FOR THE ABOVE |



| | |
|----|---|
| 9 | HAZOP STUDY AND ANALYSIS |
| 10 | PRE- FABRICATION & FABRICATION OF SYSTEM |
| 11 | MATERIAL PROCUREMENT |
| 12 | MATERIAL RECIEPT |
| 13 | FABRICATION OF SKID |
| 14 | FABRICATION OF SS TANK |
| 15 | FABRICATION OF SKID TUBING |
| 16 | FABRICATION TRAYS |
| 17 | NDT TEST |
| 18 | BLASTING AND PAINTING OF SKID |
| 19 | ASSY. OF TANK OF SKID |
| 20 | ASSY. OF PIPING ON SKID |
| 21 | FIXING OF VALVES AND PUMPS ON SKID |
| 22 | INSPECTION AND TESTING OF SKID SYSTEM (FAT) |
| 23 | PACKING OF SYSTEM |
| 24 | HANDOVER THE EQUIPMENT TO SHIPPING AGENCY |
| 25 | DELIVERY OF SYSTEM AT MUMBAI NAVASHEVA PORT |
| 26 | CUSTOM CLEARANCE, INSURANCE |
| 27 | RECIEPT/DEY. OF SYSTEM TO OUR SHOP |
| 28 | TRANSPORTATION OF FABRICATED MATERIAL |
| 29 | SKID AND OFF SKID MATERIAL SHIFTING TO SITE |
| 30 | INSTALLATION AND COMMISSIONING |
| 31 | SITE MOBILIZATION |
| 32 | SITE SURVEY AND MEETING |
| 33 | MARKING THE AREA FOR FOUNDATION |
| 34 | EXCAVATION OF ABOVE |
| 35 | STEEL WORK AND CASTING OF FOUNDATION BED |
| 36 | CURING OF FOUNDATION |
| 37 | PREASSEMBLY OF SKID WITH ITS COMPONENTS |
| 38 | MARKING/ROUTE OF OFF SKID TUBING |
| 39 | ERECTION /LAYING OF TUBING AND SUPPORTS |
| 40 | ERRECTION OF THE SKID SYSTEM ON FOUNDATION |
| 41 | LAYING OF INSTRUMENTS AND POWER CABLES |
| 42 | FIXING ALL ITEMS TO SYSTEM |
| 43 | PRE-COMMISSIONING |
| 44 | COMMISSIONING OF ODORIZATION SYSTEM |
| 45 | ODORANT FILLING |



| | |
|----|---------------------------------|
| 46 | TRAINING TO CLIENT |
| 47 | CLEANING THE AREA |
| 48 | HANDOVER TO CLIENT |
| 49 | SPARES LIST AND REQUIRED SPARES |

IV. METHODOLOGY

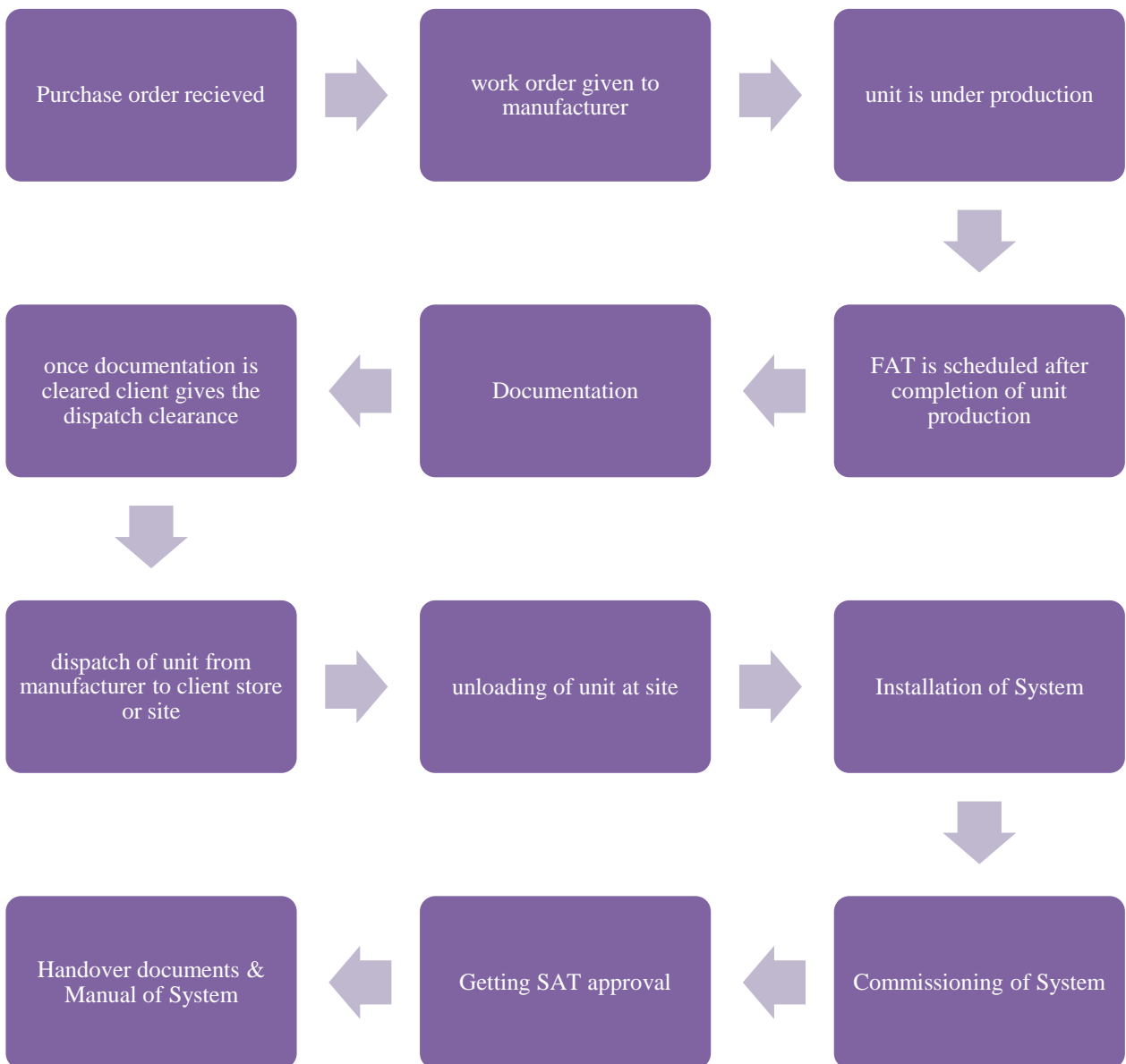


Fig 1: Methodology

V. PROJECT PLANNING

The Planning Process Group consists of those processes performed to establish the total scope of the effort, define and refine the objectives, and develop the course of action required to attain those objectives. The Planning processes develop the project management plan and the project documents that will be used to carry out the project. The complex nature of project management may require the use of repeated feedback loops for additional analysis. As more project information or characteristics are gathered and understood, additional planning will likely be required. Significant changes occurring throughout the project life cycle trigger a need to revisit one or more of the planning processes and possibly some of the initiating processes. This progressive detailing of the project management plan is called progressive elaboration, indicating that planning and documentation are iterative and ongoing activities. The key benefit of this Process Group is to delineate the strategy and tactics as well as the course of action or path to successfully complete the project or phase. When the Planning Process Group is well managed, it is much easier to get stakeholder buy-in and engagement. These processes express how this will be done, setting the route to the desired objective.

The project management plan and project documents developed as outputs from the Planning Process Group will explore all aspects of the scope, time, cost, quality, communications, human resources, risks, procurements, and stakeholder engagement.

Updates arising from approved changes during the project (generally during Monitoring and Controlling processes and specifically during the Direct and Manage Project Work Process) may significantly impact parts of the project management plan and the project documents. Updates to these documents provide greater precision with respect to schedule, costs, and resource requirements to meet the defined project scope.

The project team seeks input and encourages involvement from all stakeholders when planning the project and developing the project management plan and project documents. While the act of collecting feedback and refining the documents cannot continue indefinitely, procedures set by the organization dictate when the initial planning ends. These procedures will be affected by the nature of the project, the established project boundaries, appropriate monitoring and controlling activities, as well as the environment in which the project will be performed.

Other interactions among the processes within the Planning Process Group are dependent upon the nature of the project. For example, for some projects there will be little or no identifiable risks until after a significant amount of planning has been done. At that time, the team might recognize that the cost and schedule targets are overly aggressive, thus involving considerably more risk than previously understood. The results of the iterations are documented as updates to the project management plan or to various project documents.

The project planning is commonly perceived as creating 'Gantt Chart' alone, which is incorrect. Gantt chart is merely visual representation of project schedule. In fact, project plan is quite broader concept. A project plan expresses the objectives & requirements of the project in terms of

- Project Scope
- Project Schedule
- Resource Requirement
- project cost estimation
- Project Quality and
- Project Risk Management

A project planning enables project manager to translate project requirement into Work breakdown structure (WBS), tasks list, Gantt charts, resource assignment and risk register, etc.

Once project charter is approved, the project is formally initiated. Project planning activity can begin based on the project charter document, project requirement document.

The Schedule for supplying odorization unit as supplier is as follows:

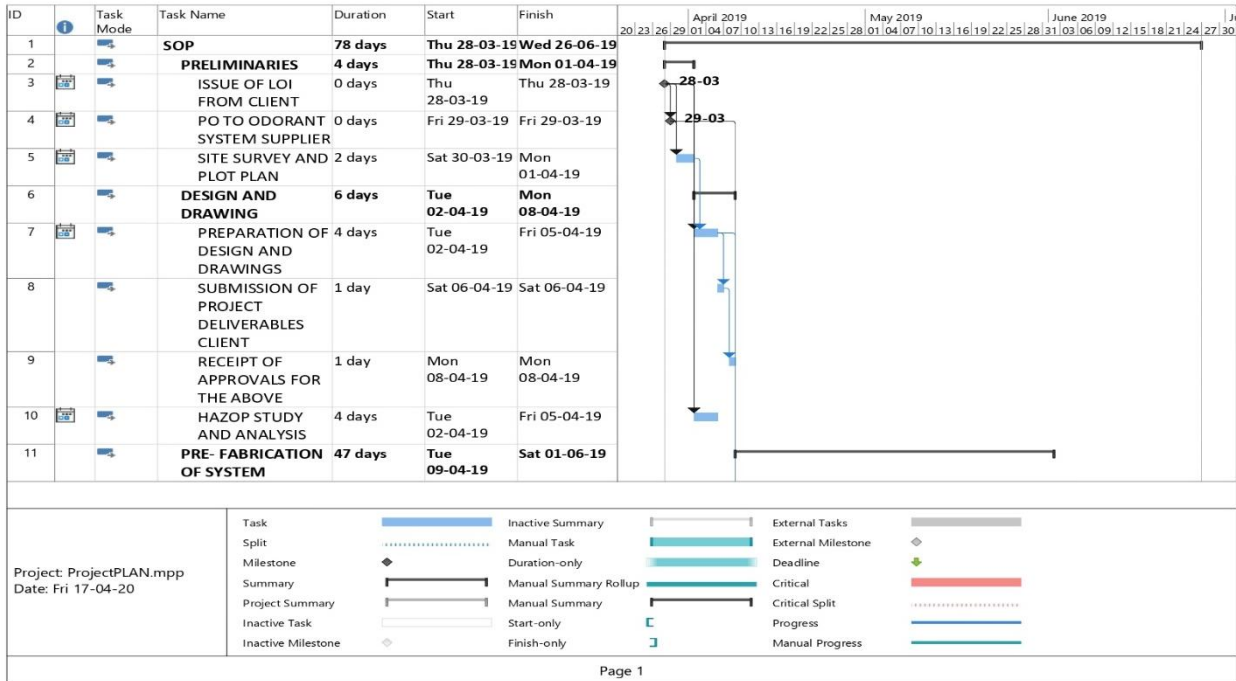


Fig 2: Project Schedule- page 1

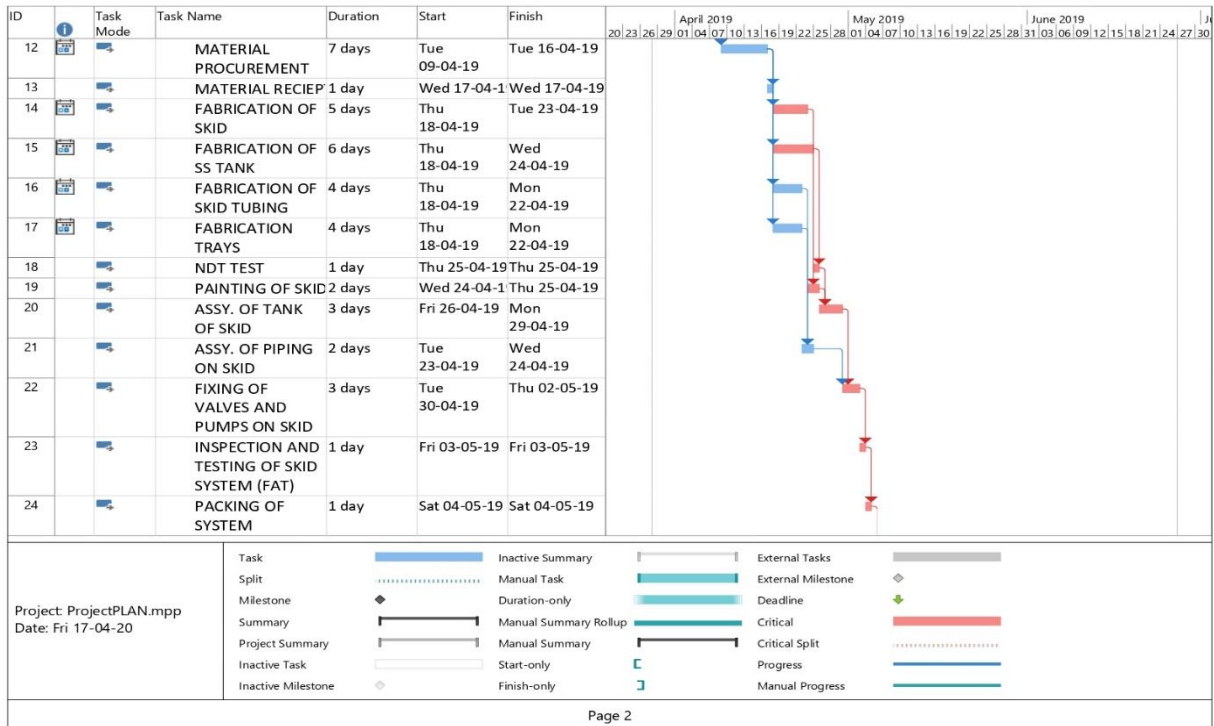


Fig 3: Project Schedule- page 2

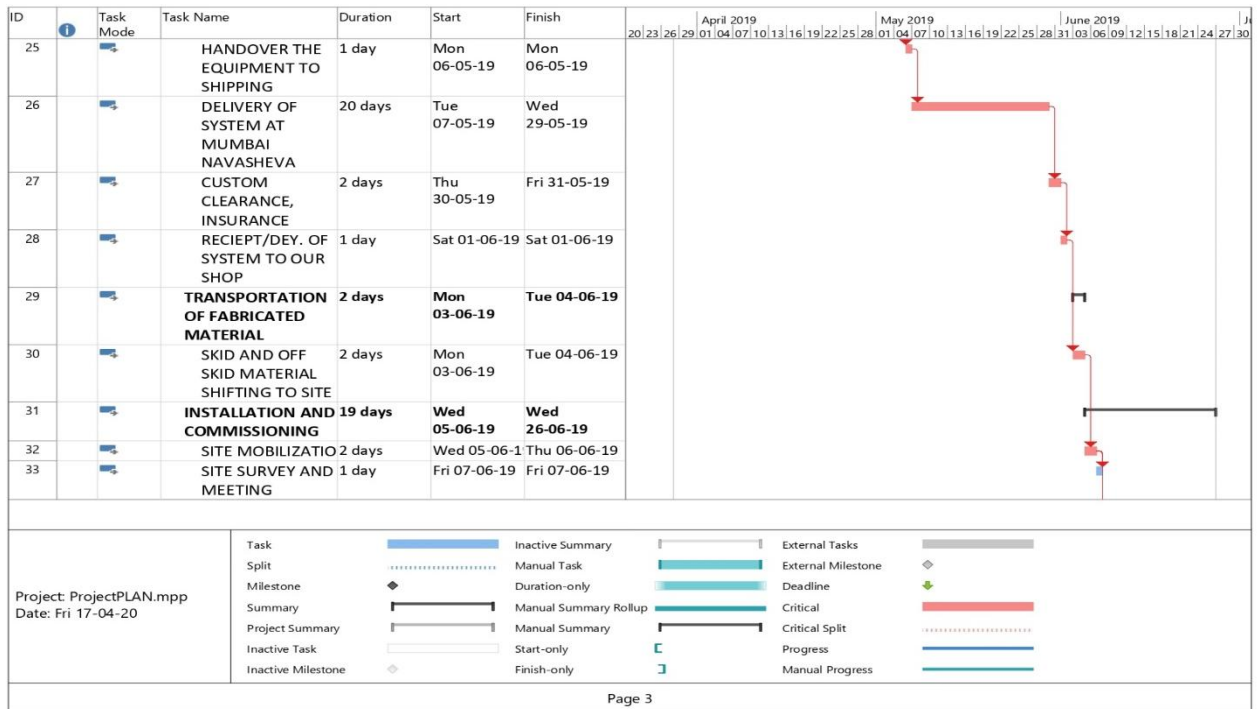


Fig 4: Project Schedule- page 3

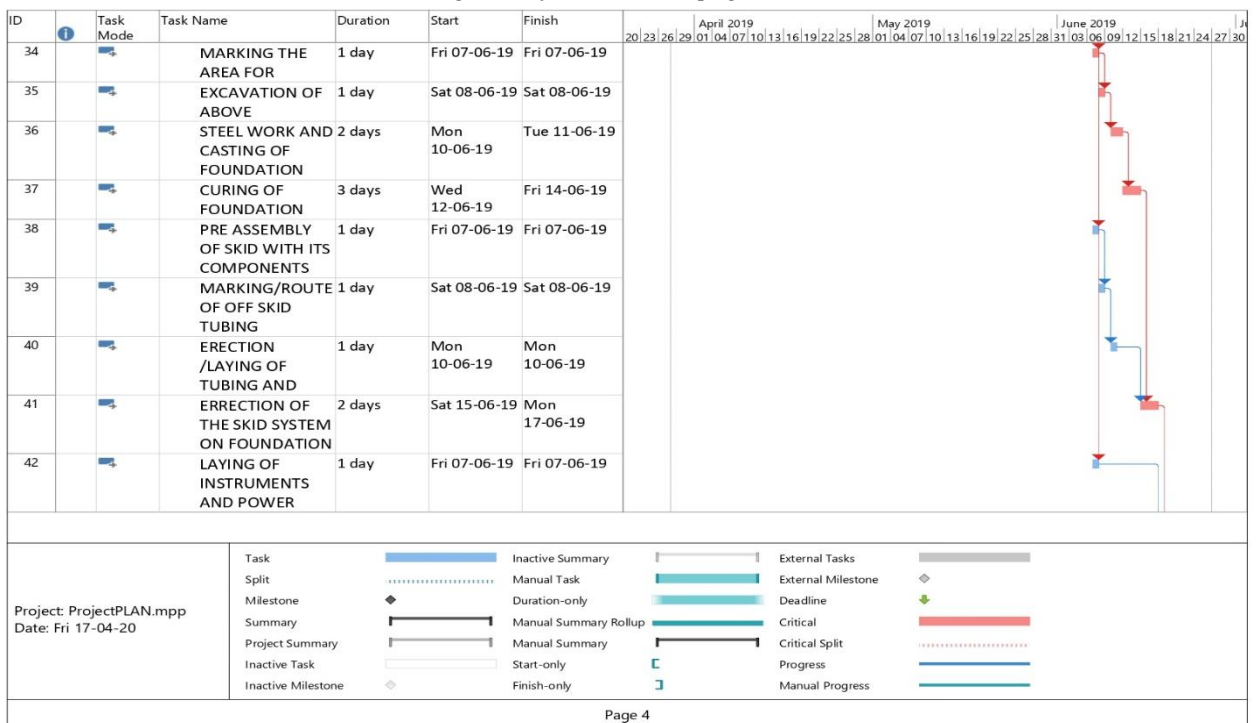


Fig 5: Project Schedule- page 4

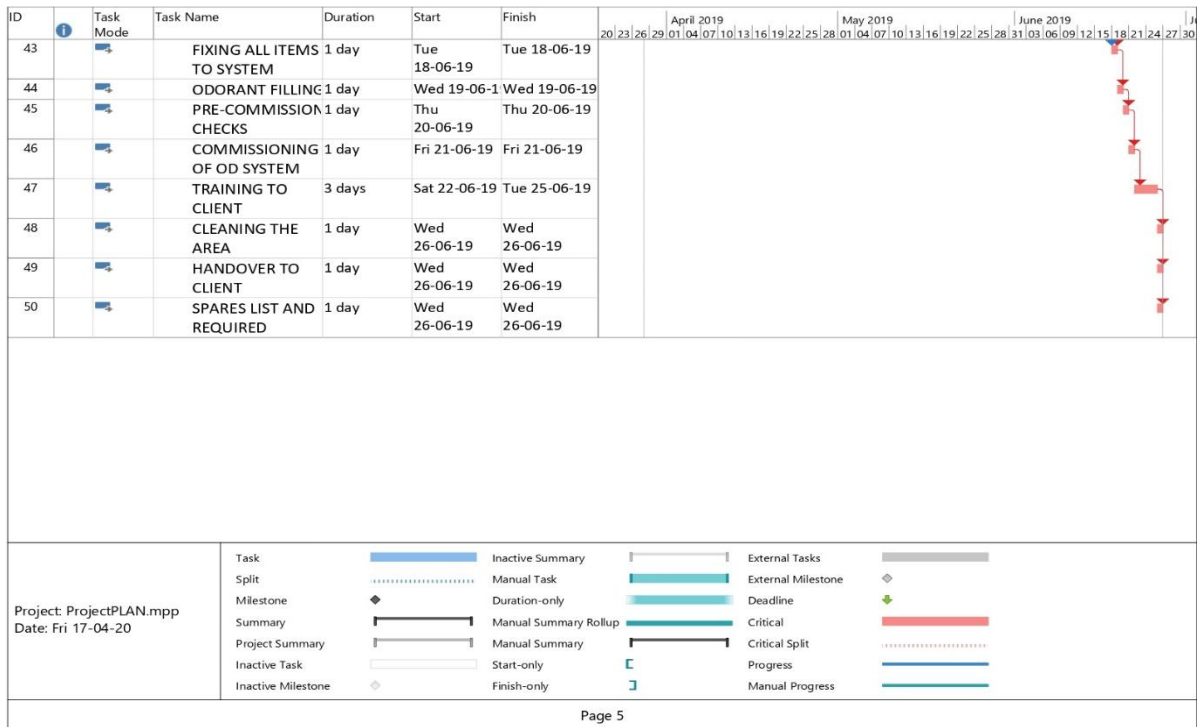


Fig 6: Project Schedule- page 5

V. CONCLUSION

The project schedule is the tool that communicates what work needs to be performed, which resources of the organization will perform the work and the timeframes in which that work needs to be performed. The project schedule should reflect all the work associated with delivering the project on time. Without a full and complete schedule, the project manager will be unable to communicate the complete effort, in terms of cost and resources, necessary to deliver the project.

Once project scope is determined and work breakdown structure (WBS) is created, the next step is to create delivery timeline. For each of the deliverable work item identified in the work breakdown structure (WBS), project planner needs to identify list of activities need to perform.

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