

TECHNICAL INVESTIGATION MANAGEMENT FOR ACTIVE RUNWAY CONSTRUCTION

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ABSTRACT

This study is based upon Technical Investigation of Active Runway Construction Project. The execution relies on Site Management, Procurement, Design, Planning Scheduling, Site Execution, Quality & Safety. The Contractors face increasing demands for shorter schedules and faster project completion. The potential adverse effects can reflect on Quality issues. This, in turn, affects the overall profitability of all parties involved. There is need to study the major causes for identifying the responsible factor for poor quality work while ensuring on-time completion.

KEYWORDS: *Technical Investigation, Scheduling, Runway Construction, Airport Management*

I. INTRODUCTION

The International Runways is a multidisciplinary engineering project that will require many different technical and construction skills to complete. In addition to construction specialists from within India, some components of the project may require international expertise. The construction Planning process is stimulated through a study of Runway project documents. These documents include but are not limited to the available technical and commercial studies and investigations, designs and drawings, estimation of quantities, construction method statements, project planning data, contract documents, site conditions, market survey, local resources, project environment and the client's organization. The planning process takes in to account, the strengths and weakness of the organizations.

There are the several stage of Planning for construction & Investigation of Runway projects in HIAL, which are following

- a. Proper designing of each element of project.
- b. Proper selection of equipment and machinery in Runway project, the use of large capacity plants are found economical.
- c. Procurement of materials well in advance.
- d. Employment of trained and experienced staff on runway project.

Following are the important factors of this study.

- Site Survey & Soil Investigation.
- Environmental Survey
- Construction parameter of Active runway.
- Site Planning & Scheduling for construction of Active runway.
- Investigation of Specification & Design Analysis.
- Study of quality & Material Management.

Types of Airport Runway Project plans

There are ten ways to improve Project Material Management performances if enterprises in general and project teams in particular implement them:

1. Resource Management
2. Cause people to stretch, not break
3. Focus on the goal & Target on supply of desired material
4. Follow a standardized process
5. Learn from the past
6. Maintaining ongoing communications
7. Record the work being done / Maintain inventory analysis.
8. Maintain stock regularly
9. Seek buy-in from all involved
10. Seek simplicity, not complexity, in goal and path

Stage of Planning

- i. Development stage- nature of plan
- ii. Inception stage- project feasibility plan
- iii. Engineering stage- project preliminary plan
- iv. Implementation stage - project construction plan
- v. The program & Planning scheduling of each activity happen on site during construction of Active Runway & Utilities. Is show all Design & drawing with respect to contract documents. The runway site Execution works are perform by following aspects as per the completion of above construction procedure steps.

Table 1.1- Investigation of Runway Site Execution work Planning in Rajiv Gandhi International Airport

PROGRAMMING & PLANNING	DESIGN DEVELOPMENT	CONSTRUCTION DOCUMENT
<ul style="list-style-type: none"> • Site evaluation • Site Selection • Due diligence evaluation reports • Feasibility study • Zoning/re- zoning assistance and special use • Land planning / master planning • Public hearings & workshops • Funding & Grant applications • Scheduling 	<ul style="list-style-type: none"> • Agency consulting review / approval • Design Parameters • Schematic Design • Project development • Discipline coordination • Statement of 'Probable construction cost. • Detailed site utilization. <p>Site Planning & civil engineering Geotechnical investigations</p>	<ul style="list-style-type: none"> • Contract manual / Document • Site Plans & utilities • Structural Design / Documentation • Specialty Engineering trends • Material research • Contractors Prequalification • Bidding Documents • Master schedule • Engineer's estimate

- Full Site supervision of runway construction works by Technical Team.
- Labor deployment on site.
- Work should be executed by Proper Planning & given scheduling.
- Work should be perform by proper experience Construction team.
- Work should be finish as per given master Budget.
- Proper coordination with Client & Sub contractors
- Site execution work should be perform by as per Cost Control.

As per **Table-1.1** indicate the program & Planning scheduling of each activity happen on site during construction of Active Runway & Utilities. It shows all Design & drawing with respect to contract documents. And Table nos-1.2 shows basic data related to design runway site Execution works are performed by following aspects as per the completion of above construction procedure steps

TABLE-1.2-Basic design data related of Active Runway Construction at HIAL

DIRECTION	LENGTH IN FT	LENGTH IN M	SURFACE
09L / 27L	13,976	4,260	ASPHALT
09R/ 27R	12,467	3,800	ASPHALT-2

STUDY ENVIRONMENT MANAGEMENT



Flowchart-3.1- Analysis of Environmental Managements

These flow chart- 3.1- show that for environment management use of resources , to overcome environment and ecology crisis , economic need and value also reduce disasters and to decide the limitation between environments & development of Airport.

Environmental Technical investigation of Rajiv Gandhi International Airport construction are based upon

1. Noise ,Air quality
2. Waste disposal
3. Surface and groundwater
4. Sustainable design approach
5. Resources and energy
6. Surface and groundwater
7. Flora and fauna
8. Landscape
9. Hazards and risk

Technical Investigation with related to Construction Parameter for Runway.

Construction steps for Active Runway Project in Rajiv Gandhi International Airport

As we observe that for construction steps of Active runway Projects in Rajiv Gandhi International Airport, as per observation we found that there is few steps (1 to 8) for execution of project.

1. Preparation of cut formation.
2. Embankment construction.
3. Granular Sub Base Construction [GSB Construction]
4. Wet Mix macadam Construction [WMM Construction]
5. Concreting.
6. Pavement Joint.
7. Dense Bitumen Macadam Construction
8. Bituminous Concrete Construction.

TABLE-1.3- Basic data related of Active Runway Construction at HIAL

Sr. No	Type of Work	Maximum laboratory dry unit weight when tested as per IS: 2720 (Part VIII)	TEST REPORT OF HIAL
1	Embankment upto 3 mts. height, not subjected to extensive flooding	Not less than 16.0 kN/cu.m	16.20kN/cu.m
2	Embankment exceeding 3 mts. height or embankment of any height subject to long periods of inundations	Not less than 17.00kN/cu.m	18.40kN/cu.m
3	Sub grade and earthen shoulders /verges /backfill	Not less than 17.5 kN/cu.m	18.60kN/cu.m

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As per Table no- 1.3- shown that Basic data embankment of active runway construction

The Fig-1.1 shown actual compaction work with 80-100KN/m with Vibro compactor Roller doing compaction work for WMM layer of 350mm depth in progress.



Fig-1.1- Actual Compaction work active runway construction work for WMM layer

The Fig-1.2 shown actual work photograph how to place & Pour the concrete in active runway with the help of Concrete Paver. And second Photograph show final & finishing layer of concrete come out for Paver



Fig-1.2-Concrete Finishing Layer of concrete with Concrete Paver in HIAL runway

The finished layer shall be checked for compaction as per **Fig-1.3** The compaction shall be checked by taking cores for every 250sq.m area and the % compaction shall not be less than 98% of lab Marshall density. The top shall be checked for level control and the levels shall be within ± 6 mm of designed level.



Fig-1.3A-Airport Constructions Bitumen Laying work

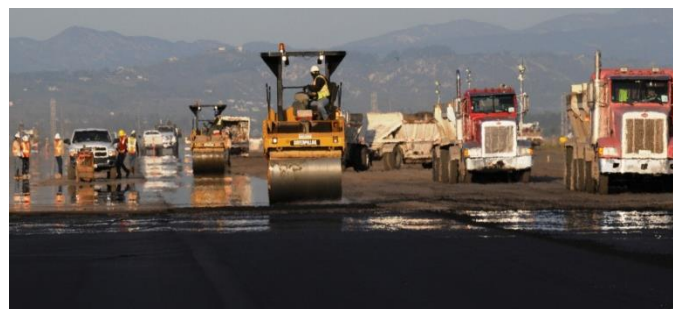


Fig-1.3B-Pouring & Placing of BM Construction



Fig-1.4-Final working Photo of Active Runway

II. RESULT AND FINDINGS

Planning involves the creation and maintenance of a plan. As such, planning is a fundamental property of intelligent behaviour. The degree and type of expediting will vary, depending on project requirements.

Planning for site materials management includes consideration for receiving, storage, control, and distribution of materials at the construction site.

- a. defining the scope of work to be performed
- b. preparing the logic or network diagram to establish a relationship among activities and integrating these diagrams to develop the network model
- c. analysing the project network or models to determine project duration, and identifying critical and non-critical activities
- d. Exploring trade-off between time to cost to arrive at optimal time and costs for completing the project.

III. DISCUSSION OF THE RESULT

In addition to assigning dates to project activities, project scheduling is intended to match the resources of equipment, materials and labor with project work tasks over time. Good scheduling can eliminate problems due to production bottlenecks, facilitate the timely procurement of necessary materials, and otherwise insure the completion of a project as soon as possible. In contrast, poor scheduling can result in considerable waste as laborers and equipment wait for the availability of needed resources or the completion of preceding tasks.

IV. CONCLUSION

This cross sectional Investigation / study for Technical Investigation management of Active Runway Construction my aimed to determine the success factors with respect to Local Survey, Soil Investigation , Planning / scheduling & designing, Project Management, quality & Material Management for a construction in Aviation industry. Data was collected by visiting the Rajiv Gandhi International Airport Hyderabad HIAL construction sites & structuring the interviews. Data was analyzed in terms of factors which are responsible for achieving project success and on the basis of this study the conclusion was elaborated as below

- Good planning and execution of construction work including material delivery, mix production, hauling of mixes, preparation of existing layers and properly organized paving operation will result in a smooth construction operation.
- Conclusion as per **Airport Planning Consideration & Project Management** we find result The process of Planning airport passenger terminal facilities needs to take into account a multitude of safety, operational, commercial, financial, and environmental considerations, as well as have regard to local government and airline industry interests and aspirations.

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