

# CONSTRUCTION ACTIVITIES & its ANALYSIS OF CROSS PASSAGE.

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## ABSTRACT

*A cross passage is a short tunnel that connects two parallel tunnels. These passages are an important safety feature that allow people (including emergency services) to move from one tunnel to the other in the event of an emergency. In this project we have two type of cross passage. Cross Passages are mainly constructed in between long parallel tunnels. Cross Passages at every 300m have been proposed as a mandatory connection. Mostly used in Underground Metro Projects and the Motor able Bored Tunnel. Details and Drawings are provided by the Technical personal allocated for the job. And constructed by the contractors. We have engaged with M/s. SPL E&C for the similar project as our reference to achieve the objectives.*

## 1. MOBILIZATION

Mobilization refers to the activities carried out after the client has appointed the contractors, but before the contractor commence work on site. It is a preparatory stage during which the majority of activities are managed by the engineers in charge. What we'll call "administrative" mobilization costs are things that take time and money, but might not be tied directly to the actual performance of work. These costs include things like licensing, obtaining payment bonds, and securing permits; which all have real costs and take up a lot of time. Even back office and project planning activities such as overhead costs, creating a project schedule, trade sequencing, and even finalizing plans or having them reviewed – they all require time and funds, too. All of the activities described above relate to the construction industry, but there are mobilization activities that more closely relate to the actual work that will be performed. Things like transportation, fuel, equipment rental, initial materials, tools – they aren't free, and they don't happen instantaneously. Also, some site prep activities, setting up site office trailers, etc. will take place before the first progress payment rolls in.

### 1.1 Man Power Mobilization

Mobilization as described, The Prime Key Personnel for the work are been engaged then according to the needs at every level a personnel is engaged at work. Does the Administrative is incomplete without it. And if the Man Mobilization is up to mark the work proceeds smoothly.

### 1.2 Machinery Mobilization

Mobilization as described, The Equipment, Resources, Setups as per requirement and finalized by the administrative has to be deployed and engaged at the work. As of in construction Machinery Mobilization is the most important step in Mobilization.

## 2. EXCAVATION

Excavation of the ground within the tunnel may be either semi continuous, as by handheld power tools or mining machine, or cyclic, as by drilling and blasting methods for harder rock. Here each cycle involves Breaking/ blasting, mucking of the strata. The broken rock is loaded into a hauling system of trucks/ tippers.

Excavation is the first activity for any construction. This activity engages machineries more than man power. This activity



**Fig -1** Excavation of the Tunnel

### 2.1 Excavation Timeline

Excavation Timeline, One of the major factor for Construction Economy. As the timeline increases the Construction Cost Increases. Thus the Timeline depends on two things i.e. Strata / Nature of the Ground & the Tool using for the Process. As this are the major components of Excavation. As the Strata / Nature of the Grounds gets Hard the excavation takes time.

### 2.2 Excavation Major Equipment

Major and commonly used Equipment for Excavation Activity.

- Excavator
- Tippers / Hauling Trucks
- Dozers
- Backhoe Loader
- Loader

- Mechanical / Hydraulic Breakers
- Hydraulic Rock Splitters

### 3. SHOTCRETE APPLICATION

The three main types of primary support systems are presently used in tunnels. They are rock bolts, steel sets, and Shotcrete. Shotcrete is a pneumatically applied large-aggregate concrete. Each of the three support systems can be used under a wide range of tunneling conditions, with some limitations in the poorer quality rock.



Chart -2: Shotcrete Activity

#### 3.1 Spraying Concrete Method

Shotcrete is a method of applying concrete projected at high velocity primarily on to a vertical or overhead surface. The impact created by the application consolidates the concrete. Although the hardened properties of Shotcrete are similar to those of conventional cast-in-place concrete, the nature of the placement process results in an excellent bond with most substrates, and rapid or instant capabilities, particularly on complex forms or shapes. The Shotcrete process requires less formwork and can be more economical than conventionally placed concrete.

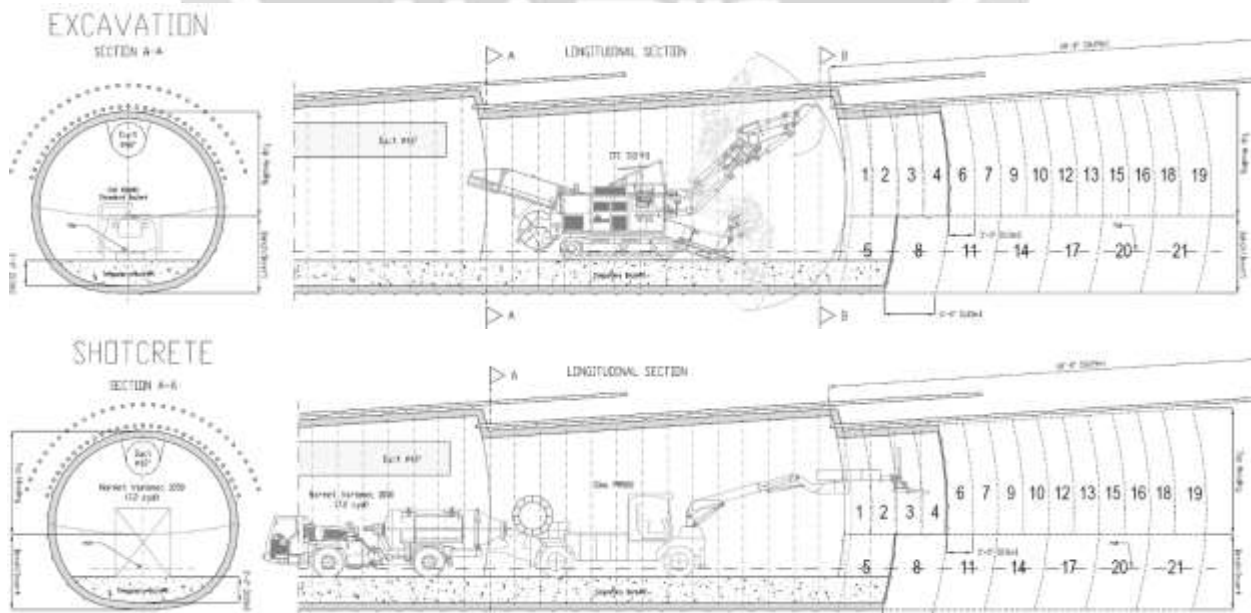


Fig -2: Excavation & Shotcrete Activity Timeline.

#### 4. COST ANALYSIS

Cost analysis in construction is even more important than in many other industries. The nature of construction projects and bidding for work makes understanding costs and margin critical to a sustainable business. The purpose of a cost analysis is to identify the parts of a project or parts of a business which are not getting good return on investment. While companies and workers can rely on their gut and instincts to partially inform management and others as to how well components of projects are being managed, you will want to quantify as much of the process as possible - and you will want to know and understand exactly what you are trying to analyze and figure out before you go ahead and do any analysis. The more efficient construction companies become through smart analysis and good decision making, the more everyone wins.

#### 5. CONCLUSION

Hereby, we conclude that the Strata of Ground, Deploying appropriate Equipment leads to manage the Timeline of Construction. And proper planning and dedication Cost can be controlled and Executed in said time. Also we concluded the Cost per Cubic Meter.

#### 6. REFERENCES

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