**COST FOR MOVING A MOUNTAIN**

**Submitted by: Alex Abraham**

**Introduction**

The project starts with 3 excavators loading a truck with 55ton we have 3 trucks per excavator making a total truck of 9 carrying a total of 495 ton with a total no of 7 trips per day making it 3465 ton per day that cover the approximate figure to reach 500,000 tons in 146 days the time taken for a truck time taken to fill 9 trucks is 198 minute total time taken to fill 9 trucks with 3 excavator is 66min.Total time taken to complete one day procedure is 3969min Work done per day is 12.13%.

Total number of trucks needed is 500,000 / 55.Total time taken by one truck to complete a dumping cycle is 22 + 63 min.Time taken by 9 trucks to complete the process is 772727 /9 min .Fuel consumed by one truck for one cycle 12 gallon.

Fuel consumed by 9 trucks is 108 gallon. Total cost of 9 trucks for one cycle is $432.Total cost for the trucks to complete the process is $436363.Total number of scoops needed to complete the process is 100000.Time taken for one scoop is 2 min .Total time to complete the process 33333 hours. Also to calculate remaining amount did the few calculations

Cost for the excavator complete the process is $66666.Hourly wage is $8 for all other workers except project manager. Total number of workers excluding project manager is 18.Total hour working per day is 8.Total days worked is 139. Total amount paid for man power excluding project manager is $160128.

Total amount paid for project manager is $22240.Total workers cost is $182368.

Total cost for the entire project is Total running cost of truck+ Total excavator running cost + Total workers cost Equals to $1285398 The total cost of trucks + total cost of excavator+ running and workers cost the maintenance and other expenses are also included

The total no of 18 workers are men in between the age of 30 and as the labor is locally available other costs including them are no being effected

An excavator takes 5 ton in 2 min that is 2.5 ton in a min so in 60 min it will remove 150 ton and this happens for 8 hours so 1200tons form one excavator and we have 3 such excavators so it removes around 3600 tons

**MIAN DATA PROCESS:**

The main project contains of following calculations:-

* Truck cost
  + Based on working hours.
  + Based on distance travelled.
  + Based on time taken for travel
* Escalator cost
  + Time waited
  + Total number of scoops produced
  + Time taken to fill scoops
  + Time taken for single scoop
* Men power
  + Total number of workers
  + Total number of working hours
  + Total amount spend on workers
  + Total working hours of manager
  + Total of manager cost and workers
* Total cost of vehicles
  + Cost for one truck
  + Cost for all trucks
  + Cost for one escalator
  + Total cost for all escalators

**Executive summary**

* **The 5 ton excavator takes 2 min to complete one scoop into the truck so in 1 min it takes 2.5ton**
* **The total time taken to complete one truck of 55 ton is 22min**
* **The total time taken to fill 9 trucks is 198 min.**
* **The total time taken to fill 9 trucks with 3 excavator is 66min.**
* **Total time taken to complete one day procedure is 3969min.**
* **Work done per day is 12.13%.**
* **Total number of trucks needed is 500,000 / 55.**
* **Total time taken by one truck to complete a dumping cycle is 22 + 63 min.**
* **Time taken by 9 trucks to complete the process is 7,72727 /9 min.**
* **Fuel consumed by one truck for one cycle 12 gallon.**
* **Fuel consumed by 9 trucks is 108 gallon.**
* **Total cost of 9 trucks for one cycle is $432.**
* **Total cost for the trucks to complete the process is $436363.**
* **Total number of scoops needed to complete the process is 100000.**
* **Time taken for one scoop is 2 min.**
* **Total time to complete the process 33333 hours.**
* **Cost for the excavator complete the process is $66666.**
* **Hourly wage is $8 for all other workers except project manager.**
* **Total number of workers excluding project manager is 18.**
* **Total hour working per day is 8.**
* **Total days worked is 139.**
* **Total amount paid for man power excluding project manager is $160128.**
* **Total amount paid for project manager is $22240.**
* **Total workers cost is $182368.**
* **Total cost for the entire project is**
  + **Total running cost of truck+ Total excavator running cost+ Total workers cost**
  + **Equals to $1285398**
  + **The total cost of trucks + total cost of excavator+ running and workers cost=**

**Analysis of the total project**

**Working pattern**

|  |  |  |  |
| --- | --- | --- | --- |
| **Months** | **No .days** | **Non-workdays** | **Days** |
| **November** | **30** | **9** | **21** |
| **December** | **31** | **4** | **27** |
| **January** | **31** | **4** | **27** |
| **February** | **29** | **4** | **25** |
| **March** | **31** | **5** | **26** |
| **April** | **30** | **10** | **20** |
| **Total** | **182** | **36** | **146** |

* **No of working days is 146**
  + **This value got from precious results**
  + **Validations are done manually**
  + **Data is registered to the tables**
* **Mining starts from day one**
* **Hours worked in a day is 8 hours**
* **500,000 tons to be moved in 146 days**
* **Which means 3424.65 ton in a day or 428 tons an hour**

**Machinery required**

* **Excavators**
* **Dump trucks**

**Excavator**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total excavator** | **3** |  |  |
| **Capacity of an excavator** | **5 ton** | **Millage of an excavator** | **2 gal/hr.** |
| **Time taken for a shovel** | **2 min** | **Cost per excavator(28days)** | **6,500$** |
| **Total ton removed by 3 excavator** | **3600 ton** | **Total cost for 146 days** | **$** |
| **Cost per gallon** | **4$** | **Total cost of 3 excavator** | **101678.57$** |
| **Total fuel cost** | **7,008$** |  |  |

* **Dump truck ( Komatsu HD 465-5)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total trucks** | **9** | **Total distance** | **551,880mils** |
| **Capacity of a truck** | **55ton** | **Millage of a truck** | **5 gal/mils** |
| **No of trips per truck** | **7** | **Cost per truck(28days)** | **3,600$** |
| **Fuel tank capacity** | **211.30gal** | **Total cost for 146 days** | **18,834$** |
| **Cost per gallon** | **4$** | **Total cost of 9 trucks** | **169,506$** |
| **Total fuel cost** | **441,504** | **Total ton removed** |  |

**Executive summary:-**

The project was done in mind of understanding and analyzing actual real world scenario. The data and values are taken from the web sites based on actual capacity and cost for the following.

* Trucks
* Workers salary
* Cost for hourly charge
* Speed of process
* Time given as break for workers
* Cost of excavators
* Speed of a vehicle
* Real world obstacles

By completing this project we came to understand the process behind any large scale project and the basic calculations behind the same. Also the understanding the management of time, resources as well as working ethnics. This project made me think of other scenarios that can be tackle with the same approach as well.