

Analytical Study, Planning & Execution Aspect of Government Project for Better Performance

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Abstract—Rapid urbanization has placed remarkable strain on housing and services land. According to UN HABITAT by 2030, approximately 3 billion people, or about 40 per cent of the world's population, will need proper housing and access to basic infrastructure and services such as water and sanitation systems. India is witnessing a phase of rapid urbanization primarily fuelled by large scale population migration. This rapid pace of urbanization in turn translates into increased demand for housing facilities and related infrastructure. At present the urban centres are ill-equipped to meet the current & future housing demand. It is well documented that urban centres of the State contribute significantly to the Regional, State and even National economy thereby contributing to continued urbanization. However, the state of planning and preparedness of the urban centres to receive such growth is inadequate creating dysfunctionality (with wider ramifications on the health, safety, and well-being of the citizens). Symbols of this are the emergence of slums and squatters with near absence of basic infrastructure. Main objective of the study is analytical study planning & execution of Jabalpur city with aspect to BSUP (Basic Services for Urban Poor) under JNNURM. Also study the cost & delay cause for Government Project for Better Performance.

Keywords: Time Delay, Cost Overrun, BSUP, Dwellers unit

I. INTRODUCTION

India is the 2nd largest country in terms of population as per World bank record in 2015. India per capita land 0.1195 hectare. Due to increase in population growth rate there is shortage of homes and basic infrastructure facilitates in country. India is a developing country and for becoming a developed country there is a need to fulfil the basic needs of houses and shelters for homeless people along with basic infrastructure facilities to improve the living standard of people.

70% of the total population of the country is living in villages therefore government of India launches various schemes on Infrastructure Development and houses scheme for shelter less people of the country such as UIDSSMT, IDSMT, JNNURM for infrastructure development Indra Awas Yojana, Balmiki Awas yojana, BSUP under JNNURM, RAY, PMAY for housing. State govt also launches schemes for infrastructure development such as Chief Minister Infrastructure development scheme.

Implementing agency (local bodies) prepare a project report under the guidance of Central government guideline and submitted to state govt for scrutiny and necessary undertaking. The state govt then forwards the project to Central government for appraisal and sanction. After the sanctioning from the Central govt, the central government transfers funds to the state government. The state

govt transfers the fund to the implementing agency urban local bodies (ULB) for execution of work. Implementing agency (ULB) prepare detailed drawing, design, estimate of work and complete the tender process. After completion of the tender process a suitable agency is chosen for execution of work in a prescribed time and specified specification shown in tender document. Executive agency starts the work on time but does not complete the work in the prescribed time. Due to this the Govt is not able to achieve goals in the prescribed time which leads to the people of the country not getting benefitted by the various govt schemes.

II. CONSTRUCTION MANAGEMENT AND PLANNING

For timely completion of any project at optimum cost construction management. Management of labour manpower, Material management with proper Planning. Construction / site in charge having knowledge of basic economics along with management of manpower, labour and material is essential.

A. Need of Construction Management

- Construction management is required during construction for coordination between different agencies which is involved in construction work, project, development of manpower and machinery used in construction. work for better utilization in an economic way. Speedily completion of project with maintenance of quality control of material and workmanship.
- OMTT (money, material, manpower, skilled and unskilled, time affecting the construction management). Time management is important for project completed on a specified time limit. If the construction work is not completed in time limit construction expenses are increased, benefitted, or decreased. Within a time-limit how many working days are available (excluding holidays, seasonal festivals with availability of skilled and unskilled labour) machinery required are hired or purchased. Proper planning of availability of material at site in advance for starting the work should be done. For all these things contractor arranges money for purchasing of material, payment for labour, hiring / purchase of machinery for starting the project.
- Contractor having knowledge of mobilization advances, material advance is made available from department for construction work and knowledge of preparing the bill. The bill is submitted to the department for payment for smooth working and without any delay. When construction work is initiated it is essential to plan all activities in a systematic manner for fixing of target date of completion and to meet the target.
- Cantt Bar Chart, network technique, critical path method (CPM), programs evolution and review technique

(PERT) time grid diagram, milestone chart methods are useful for planning construction activities.

III. METHODOLOGY

The methodology used to analyse time delay. It further explains how the problem was investigated and describes the tools which were used to undertake the investigation. The time delay factors are identified through the extensive literature review, with the help of expert's opinion, interviews and questionnaires. These time delay factors are then ranked and assessed for their importance index. Proposed system of this work is investigation the reason which oversees postponement in project work which is execute under BSUP Originally project authorized in-situ improvement of slum area. A physical survey of the existing infrastructure in the listed slum areas of Jabalpur, was undertaken. The socio-economic survey was conducted to study the target groups in

these selected slums. The projections and proposals are derived from the basis of their social characters, economic standing and willingness for the Development. An analytical study and time delay analysis was conducted on four area of Jabalpur City under JNNURM (DSUP) namely,

- 1) Lal Kuan
- 2) Bagra Dafai,
- 3) Choudhary Mohalla, Basore Mohalla of Baldi kori ki dafai and
- 4) Chhui Khadan Madai

For Study of This Project the project is divided in:

- 1) 1 - Project cost upto 200 lakhs
- 2) 2- Project cost 200-500 lakhs
- 3) 3- Project cost more than 500 lakhs

Project by Govt of India in year 2006 by central govt. Share of Central Govt. is about 50%, Share of State Govt.30% and remaining 20% of housing is under Beneficiary contribution.

Project title	Construction of Houses with Basic InfrastructureFacilities in Jabalpur, (Lal Kuan)	Construction of Houses with Basic Infrastructure Facilities in Jabalpur. (Bagradafai)	Slum Rehabilitation of Basor Mohalla, Choudhary Mohalla, etc In Jabalpur City.	Rehabilitation and Resettlement of Chuni Khada Madia And Area Behind Burn Company Shyma Prashad, Jabalpur City.
Scheme	BSUP	BSUP	BSUP	BSUP
Sanctioned Project Cost (INR in Lakhs)	2472	2314	2543	1424
Project Duration (in Months)	24	24	24	24
Appraisal Agency	BMTPC (Building Materials and TechnologyPromotion Council)	BMTPC (Building Materials and Technology Promotion Council)	BMTPC (Building Materials and Technology Promotion Council)	BMTPC (BuildingMaterials and Technology Promotion Council)
SLNA	M.P	M.P	M.P	M.P
City	Jabalpur	Jabalpur	Jabalpur	Jabalpur
Approved Date	8/28/2006	8/28/2006	10-11-2006	10-11-2006
No. of DUs sanctioned	2136	2076	2144	1200
Govt. of India share	1236	1157	1268	708.5

Table 1 Project Details for Jabalpur city under JnNrum

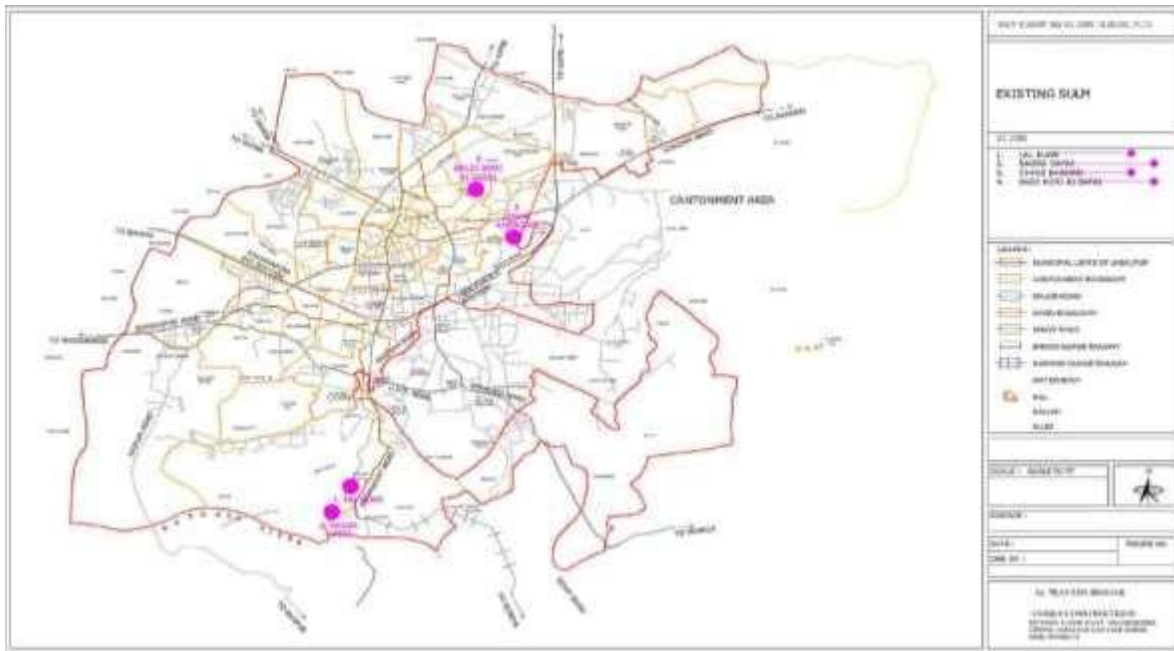


Fig. 1: Existing Slum details in Jabalpur

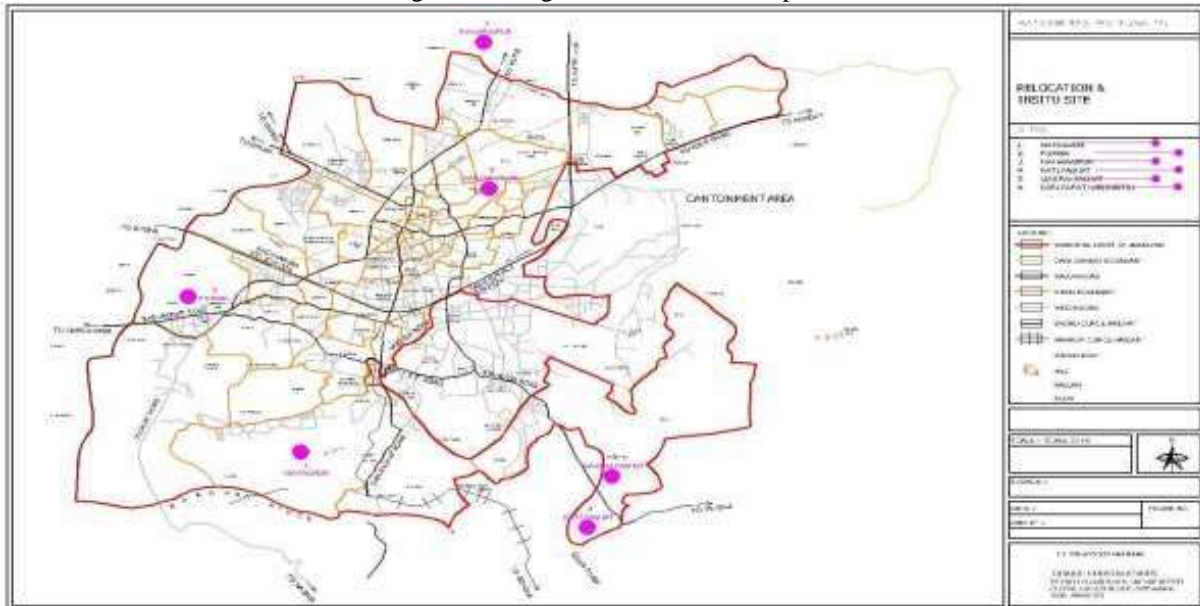


Fig. 2: Relocation area for slum



Fig. 3: Arrial view of Purwa gao



Fig. 4: Constructed Dwellers Unit under Jnnurm (Jablpur)

IV. RESULTS

A. Time Delay Analysis in Completion of Projects

S No.	Project (up to 200 Lakh)	Time Allotted as Per Work Order	Req. Time Period as Per Norms and Specification	Time Taken by The Contractor for Completion of Work
1	Bagra Dafai Project – 112 DU relocated at Purwa.	9 MONTHS	12 MONTHS	27 MONTHS
2	Lal Kuan Project - 112 DU relocated at Purwa.	9 MONTHS	12 MONTHS	27 MONTHS
3	Choudhary Mohalla/ Basor Maholla Project – 144 DU near karia pathar shamshan ghat	9 MONTHS	18 MONTHS	44 MONTHS

Table 2: Time Delay for Project cost up to 200lakhs

S No.	Project(200-500lakhs)	Time Allotted as Per Work Order	Req. Time Period as Per Norms and Specification	Time Taken by The Contractor for Completion of Work
1	Bagradafai 256 Units at Naya Gaon	11 Months	18 Months	31 Months
2	Lal Kuan 256 Units at Naya Gaon	11 Months	18 Months	31 Months
3	272 Units at Chaudary Mahaula/Basor Mohalla	11 Months	18 Months	25 Months
4	Chui Khadan 224 Units at Naya Gaon	11 Months	18 Months	27 Months
5	Lal Kuan 144 Units at Khatiya Ghat	24 Months	18 Months	28 Months

Table 3: Time Delay for Project cost 200-500lakhs

S No.	Project (Above 500 Lakhs)	Time Allotted as Per Work Order	Req. Time Period as Per Norms and Specification	Time Taken by The Contractor for Completion of Work
1	Chui Khadan 272 Units at Guraiya Khat	15 Months	18 Months	46 Months
2	Lal Kuan 560 + Bagradafai 144 Units at Naya Gaon	18 Months	24 Months	66 Months
3	Lal Kuan 352 + Bagradafai 352 Units at Naya Gaon	18 Months	24 Months	86 Months
4	Basor Mahaula 736 + Lal Kuan 240 + 32 Chui Khadan At Maharajpur	24 Months	30 Months	72 Months

Table 4: Time Delay for Project cost above 500lakhs

B. Initial and Final Project Cost Analysis

LAL KUAN PROJECT						
S.N O	Site Location	Completed Du's	Project Cost(In Lakhs)	Total Sanction Du's	Total Sanction Amount (In Lakhs)	Increase in cost %
1.	Purwa	112	158.49	2136.0	2472.00	
2.	Nayagaon	1168	2003.46			
3.	Maharajpur	240	690.84			
4.	Katiyaghat	144	452.45			
	Total	1664	3305.24	2136	2472.00	
	Per Du's Cost After Completion: -		1.98632	Per Dus Sanction Cost	1.15730	171.63%

Table 5: Cost overrun details for lal kuan Project in Per Dwellers unit

2. BAGRA DAFAI PORJECT						
S.NO	Site Location	Completed Du's	Project Cost (In Lakhs)	Total Sanction Du's	Total Sanction Amount (In Lakhs)	Increase incost %
1.	Purwa	112	158.49	2076	2314.00	
2.	Nayagaon	752	2003.46			
	Total	864	2161.95	2076	2314.00	
	Per Du's Cost After Completion: -		2.50226	Per Dus Sanction Cost	1.11464	224.49%

Table 6: Cost overrun details for Bagra Dafai Project in Per Dwellers unit

3. CHOUDHARY MOHALLA BASOR MOHALLA PORJECT						
S.No	Site Location	Completed Du's	Project Cost (In Lakhs)	Total Sanction Du's	Total Sanction Amount (In Lakhs)	% IncreaseIn Cost
1.	KARIYA PATHER	144	196.08	2144	2543.00	
2.	NAYAGAON	272	629.78			
3.	MAHARAJPUR	736	2412.23			
	TOTAL	1152	3238.09	2144	2543.00	
	PER DU'S COST AFTER COMPLETION: -		2.81084	Per Dus Sanction Cost	1.18610	236.98 %

Table 7: Cost overrun details for Choudhary Mohalla Basor Mohalla Project in Per Dwellers unit

4. CHHUI KHADAN MADIYA PORJECT						
S.NO	Site Location	Completed Du's	Project Cost (In Lakhs)	Total Sanction Du's	Total Sanction Amount (In Lakhs)	% Increasein Cost
1.	Goraiya Ghat	272	605.68	1200	1424.00	
2.	Nayagaon	224	407.77			
3.	Maharajpur	32	94.88			
	Total	528	1108.33	1200	1424.00	
	Per Du's Cost After Completion: -		2.09911	Per Dus Sanction Cost	1.18667	176.89 %

Table 8: Cost overrun details for Chhui Khadan Madiya Project in Per Dwellers unit

V. CONCLUSIONS

In this project, the factors were identified and analyzed due to which major time delay & Cost overrun occurs in house construction projects in Jabalpur. The approach of JNNURM have begun from the center by giving fundamental administrations to poor urban people, with enhancing the environment of the city alongside upgrading the slum zone of Jabalpur city by presenting minimal effort low-cost housing projects, and such a thought to every one of the classes of urban poor in city prompts a general up-gradation and the change in personal satisfaction of individuals.

“As per the report of the Comptroller and audit general of India only 22 out of 1517 approved project were completed at the end of 31th March 2011 and 26% of approved dwelling unit had been completed and in urban infrastructure project only 18% of approved project were completed” Following conclusions are drawn from the case study:

A. PROJECT UP TO 200 LAKHS

- After sanctioning of the BSUP Project of Jabalpur city under JNNURM, Municipal corporation Jabalpur call tenders for execution of housing project and relative development work. Slum dwellers of Lal kuan and Bagradafai start agitations against rehabilitation. Government allotted land for BSUP Project in different locations of Jabalpur. Allotment of land was taking time.
- Original tender calls on the project report basis due to change in the location of the lal kuan and bargradafa project (relocated at purwa). Soil condition at purwa is

black cotton soil therefore foundation details of the building changes (pile with pile cap in state of column fitting)

- Changes in the foundation design, changes in the estimate and changes in the specification. The tender procedure is very lengthy.
- Contractor had a lack of knowledge in building construction and was dependent upon the consultant for construction work. Shortage of shuttering and another T&P was another drawback. Less number of skilled and unskilled Labour due to less quantity of T&P were available.
- In Jabalpur, local bricks of FPS system (22cm*10cm*7.5cm) are manufactured. Manufacture made bricks in MKS system (19cm*9cm*9cm) on special order with payment in advance. It took 2-3 months to manufacture bricks in MKS system.
- Parliament / Assembly election / Municipal election also affect the progress of construction work. Skilled and unskilled labours are not available throughout the year. During Rabi season (march – april), Tendupatta (May-June), Harif (Oct-Nov) skilled and unskilled labour are engaged in agriculture work.
- During marriage season, mostly labour is also engaged in marriage related work.
- Some electrical items of 1992 electrical S.O.R, MPPWD were not available in the market. The manufacturing of these items was taking time.
- Centering and shuttering play an important role in building construction work. Contractors had 10-15% of

the total shuttering of the project. 50% of the total work is RCC frame structure. Bricks are required only 30-40% (for brick masonry work) of the allotted time. As per analysis nearly 7000 bricks each for Bagradafai and Lal kuan project are required. MKS system bricks (14000-15000 bricks per day) were not easily available. Municipal technical staff was not competent to check the measurement book require 10-14 days. Audit section of the MCJ also takes 3-4 days for checking of bills. So, all these factor causes delay in payment of contractor. Due to delay in payment contractor also slower down the progress of work

- Technical staff of municipal corporation was not ready to take any final decision. Commissioner of the municipal corporation was IAS, so his decision was final.
- In Choudhary Moholla / Basor Moholla allotted land was very close to Kariyapathar Shamshan Ghat. Labour was not interested to work near shamshan ghat(cemetery). During excavation, some rocks were discovered. Dismantling of these rocks was done manually because blasting is prohibited in the area. This was time taking. LA of this area also interferes in the construction work.

B. Project from 200-500 Lakh

- Government allotted land at Nayagaon for relocation of Lal Kuan, Bagradafa, Choudhary Mohalla, Basor moholla and Chhuikhadaan Madhia project. Allotted land was undulated and high-tension line running over it.
- The above said land was not easily approachable, not leveled. To make the land useful for construction, leveling and making the land approachable was necessary which required 1-2 months. Revenue department was also taking time for the demarcation (simankan) of land.
- After allotment of land and demarcation of the land construction work was started by the contractor. After some time, court gave injunction on some part of the land. Contractor had skilled technical staff but poor management of labour and material.
- Due to this there was a delay in the progress of work. Shortage of shuttering and another T&P was another drawback.
- Less number of skilled and unskilled labour due to less quantity of T&P were available.
- In Jabalpur, local bricks of FPS system (22cm*10cm*7.5cm) are manufactured. Manufacture made bricks in MKS system (19cm*9cm*9cm) on special order with payment in advance. It took 2-3 months to manufacture bricks in MKS system.
- Parliament / Assembly election / Municipal election also affect the progress of construction work. Skilled and unskilled labours are not available throughout the year.
- During Rabi season (march – april), Tendupatta (May-June), Harif (Oct-Nov) skilled and unskilled labour are engaged in agriculture work.
- During marriage season, mostly labour is also engaged in marriage related work.
- Hume pipe culvert of approach road was damaged, reconstruction of this culvert took 2-3 months, and it was necessary as it was the only approachable road for

transportation of materials. Therefore, work was delayed by 2-3 months.

- A painter fell from the 3rd floor from Basor Moholla project site which led to his death. Workers started agitating and the work was stopped for around 6-7 days.
- Centering and shuttering play an important role in building construction work.
- Contractors had 10-15% of the total shuttering of the project. 50% of the total work is RCC frame structure. Bricks are required only 30-40% (for brick masonry work) of the allotted time. As per analysis nearly 10000-13000 bricks each for Bagradafai, Lal kuan, Chaudhary Mohalla/ basor mohalla and chhui khadan madia project are required.
- MKS system bricks (1 brick per day) were not easily available. Municipal technical staff was not competent to check the measurement book require 10-14 days. Audit section of the MCJ also takes 3-4 days for checking of bills. So, all these factor causes delay in payment of contractor.
- Due to delay in payment contractor also slower down the progress of work Technical staff of municipal corporation was not ready to take any final decision. Commissioner of the municipal corporation was IAS, so his decision was final.

C. Project Above 500 Lakh

1) NAYA GAON SITE:

- Government allotted land at Nayagaon for relocation of Lal Kuan, Bagradafa project. Allotted land was undulated and high-tension line running over it. The above said land was not easily approachable, not leveled.
- To make the land useful for construction, leveling and making the land approachable was necessary which required 1-2 months. Revenue department was also taking time for the demarcation (simankan) of land. After allotment of land and demarcation of the land construction work was started by the contractor.
- After some time, court gave injunction on some part of the land. Contractor had skilled technical staff but poor management of labour and material. Due to this there was a delay in the progress of work. Shortage of shuttering and another T&P was another drawback.
- Less number of skilled and unskilled labour due to less quantity of T&P were available.
- In Jabalpur, local bricks of FPS system (22cm*10cm*7.5cm) are manufactured. Manufacture made bricks in MKS system (19cm*9cm*9cm) on special order with payment in advance. It took 2-3 months to manufacture bricks in MKS system.
- Parliament / Assembly election / Municipal election also affect the progress of construction work. Skilled and unskilled labours are not available throughout the year.
- During Rabi season (march – april), Tendupatta (May-June), Harif (Oct-Nov) skilled and unskilled labour are engaged in agriculture work.
- During marriage season, mostly labour is also engaged in marriage related work.
- Hume pipe culvert of approach road was damaged, reconstruction of this culvert took 2-3 months, and it was

necessary as it was the only approachable road for transportation of materials. work was delayed by 2-3 months.

- A painter fell from the 3rd floor from Basor Moholla project site which led to his death. Workers started agitating and the work was stopped for around 6-7 days.
- Nearly 80 feet wide drain running in some part of the allotted land. The implementing agency excavated the site for construction of retaining wall.
- Retaining wall construction delayed the 2 blocks of 48 DU in 1 year.
- Centering and shuttering play an important role in building construction work. Contractors had 10-15% of the total shuttering of the project. 50% of the total work is RCC frame structure.
- Bricks are required only 30-40% (for brick masonry work) of the allotted time. As per analysis nearly 20000 bricks each for Bagradafai and Lal kuan project are required. MKS system bricks (18000-20000 bricks per day) were not easily available.
- Municipal technical staff was not competent to check the measurement book require 10-14 days. Audit section of the MCJ also takes 3-4 days for checking of bills. So, all these factor causes delay in payment of contractor. Due to delay in payment contractor also slower down the progress of work.

2) GURAIYA GHAT SITE:

- Government allotted land at Guraiya Ghat for relocation of Chhui khadan project.
- The above said land was not easily approachable. To make the land useful for construction approachable was necessary which required 1-2 months. Revenue department was also taking time for the demarcation (simankan) of land.
- After allotment of land and demarcation of the land construction work was started by the contractor. After some time, court gave injunction on some part of the land.
- Allotted govt land was in green belt as per Jabalpur development plan. Change of use of land procedure and publication in govt gazette was taking 2 -3 months.
- Contractor had skilled technical staff but poor management of labour and material. Due to this there was a delay in the progress of work. Shortage of shuttering and another T&P was another drawback.
- Less number of skilled and unskilled labour due to less quantity of T&P were available.
- In Jabalpur, local bricks of FPS system (22cm*10cm*7.5cm) are manufactured.
- Manufacture made bricks in MKS system (19cm*9cm*9cm) on special order with payment in advance. It took 2-3 months to manufacture bricks in MKS system.
- Parliament / Assembly election / Municipal election also affect the progress of construction work. Skilled and unskilled labours are not available throughout the year.
- During Rabi season (march – april), Tendupatta (May-June), Harif (Oct-Nov) skilled and unskilled labour are engaged in agriculture work.

- During marriage season, mostly labour is also engaged in marriage related work.
- Contractors had 10-15% of the total shuttering of the project. 50% of the total work is RCC frame structure. Bricks are required only 30-40% (for brick masonry work) of the allotted time.
- As per analysis nearly 11500 bricks each for the project are required. MKS system bricks (10000-11000 bricks per day) were not easily available. Municipal technical staff was not competent to check the measurement book require 10-14 days.
- Audit section of the MCJ also takes 3-4 days for checking of bills. So, all these factor causes delay in payment of contractor. Due to delay in payment contractor also slower down the progress of work.

3) MAHARAJPUR SITE:

- Government allotted land at Maharajpur for relocation of Chhui khadan, Lal Kuan and chaudhary mohalla/basor mohalla project. Alloted land is the agriculture land in which wheat was planted. The above construction work was not started. So, the govt. allotted another land near panni mohalla in 2 different location. It was low lying area 1 area is very near to 60 feet wide storm water drain.
- Revenue department was also taking time for the demarcation (simankan) of land. After allotment of land and demarcation of the land construction work was started by the contractor.
- Contractor had skilled technical staff but poor management of labour and material. Due to this there was a delay in the progress of work. Shortage of shuttering and another T&P was another drawback.
- Less number of skilled and unskilled labour due to less quantity of T&P were available.
- In Jabalpur, local bricks of FPS system (22cm*10cm*7.5cm) are manufactured, Manufacture made bricks in MKS system (19cm*9cm*9cm) on special order with payment in advance. It took 2-3 months to manufacture bricks in MKS system.
- Parliament / Assembly election / Municipal election also affect the progress of construction work. Skilled and unskilled labours are not available throughout the year.
- During Rabi season (march – april), Tendupatta (May-June), Harif (Oct-Nov) skilled and unskilled labour are engaged in agriculture work.
- During marriage season, mostly labour is also engaged in marriage related work.
- Contractors had 10-15% of the total shuttering of the project. 50% of the total work is RCC frame structure. Bricks are required only 30-40% (for brick masonry work) of the allotted time. As per analysis nearly 20000 bricks each for the project are required. MKS system bricks (18000-20000 bricks per day) were not easily available.
- Municipal technical staff was not competent to check the measurement book require 10-14 days. Audit section of the MCJ also takes 3-4 days for checking of bills. Room size of each DU was very small. Technically we cannot exceed the brickwork height in one wall more than 1 meter therefore minimum 3 days were required for completion of each DU.

- Similar delay in the plastering work by small room size. Contractor were not using latest technology for plastering and flooring work. So, all these factor causes delay in payment of contractor. Due to delay in payment contractor also slower down the progress of work.
- Technical staff of Municipal Corporation was not ready to take any final decision. Commissioner of the municipal corporation was IAS, so his decision was final.

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