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Review on Effect of Plumbing System in Construction

Ms. Vaishnavi Savarkar[1], Dr. Tushar G. Shende[2], Mr. Narendra Bobde[3]
[1]*PG Student,* [2]*Project Guide, Department of Civil Engineering, G H Raisoni Institute of Engineering and Technology, Nagpur, India*
[3]*Plumbing Consultant, PB Consultancy Services, Nagpur*

Abstract: ***Effect of Plumbing System in Construction plays an important role. Pipe damage and defects are part of pipe maintenance. There is no chance or short circuit during Plumbing maintenance. Plumbing and plumbing involves various components that should be examined, so there is a chance that one or the other component may break. These components can cause some temporary problems as well as long-term structural damage due to water seeping into walls and floors. To avoid such problems, it is important to fix plumbing problems as soon as they are discovered. The durability of the pipe system depends on the quality of its parts and the installation skills of the installers. No plumbing system, however well designed, can be expected to operate safely or hygienically unless the products or materials used are satisfactory. The opposite is also true if the best quality products or materials are used but incorrectly installed, the system will fail. Therefore, proper research and its operation will ensure optimal success and satisfactorily meet the expectations of Effect of Plumbing System in Construction. The efficiency and quality of plumbing depends on the expectations of the home owner, the condition of the pipe work performed and its plumbing activities.***

Keywords: Effect of Plumbing, Damage, Construction, Plumbing etc.

I. INTRODUCTION

Plumbing is an integral part of every house or building. Proper planning and design of the plumbing system is crucial because it takes care of the hygiene requirements of the users. It has been observed that around 12-15% of the construction costs are spent on plumbing works. A plumber's job consists of installing, repairing, maintaining and maintaining plumbing systems. In addition to in-depth knowledge of various work tasks, a plumber must have effective communication skills and be a results-oriented worker with a positive attitude.[1] No building, be it residential, commercial or industrial, can function properly without an efficient plumbing system. That is why it is important that the water supply is regular and sufficient, as well as the sewage system. Plumbing plays an important role in the smooth functioning of all types of buildings. An efficient pipeline that improves nature for future generations.[2] It is necessary to choose Effective of Plumbing to avoid physical interference with other systems such as plumbing, fire, electrical and structural or architectural features. This helps reduce water damage, construction costs and maintenance, and shortens planning and implementation time.[3].

II. PROBLEM DEFINITION

The Plumbing system makes water accessible to health, hygiene and well-being for the public. Plumbing enables us to enjoy, clean, convenient water, something we often take for granted. Improving plumbing efficiency is a necessary component of water sustainability.

It is necessary to consider plumbing while planning for a good construction.

A. Different Types of Plumbing System

1) Sunken Plumbing System.
2) Raised Toilet Flooring.
3) Underslung Plumbing System.

B. Sunken Plumbing System

It is the oldest system adopted for drainage of toilet. The use of having a sunken slab is to conceal all the pipes below the floor. The pipes that carry water are concealed below the floor, care has to be taken to avoid leakages. It is cast below normal floor level. A sunken slab is done basically to conceal/hide drainage line and floor traps of a bath unit. The depth of sunken slab is about 200 – 450 mm, it depends on sanitary fittings and drainage pipe line.

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Conventionally, the toilet floor are sunken to accommodate the floor traps and drainage pipes. In order to accommodate and approved type of floor 'p' trap, floor sunk must be 400-450mm. the partition wall is generally flush with the beam on room side, thus adding on offset in toilet. The ledge wall thickness will then be more so as to avoid chasing of beam.[2]

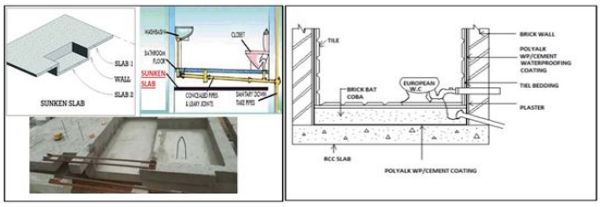


Fig 1 : Sunken Plumbing System

C. Raised Toilet Flooring

In this system toilet slab is created at the same level as the slabs adjacent to the toilet. The toilet floor level is raised above the slab to conceal all plumbing line and fittings. Usually, a step is created from adjacent slab to enter the toilet unit. Height of the raised floor may vary from 150mm to 400mm depending upon sanitary fitting and drainage pipeline.[3]

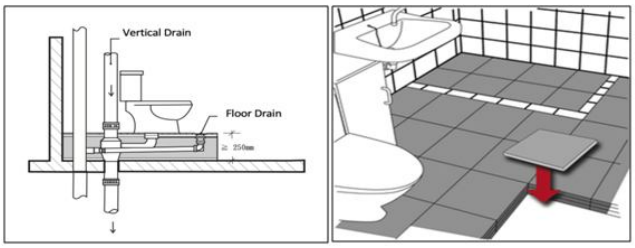


Fig 2 : Raised Floor Plumbing

D. Underslung Plumbing System.

In underslung Plumbing system the toilet slab is casted at the same level as the slabs adjacent to the toilet. Sleeves or Holes are punctured through the slab wherever plumbing pipes have to pass through, and the pipes is clamped to the bottom of the slab. The pipe get covered with a false ceiling of lower floor. In this any leaks will drip into the false ceiling and can be easily identified and repaired. If required, the entire plumbing can also be replaced without disturbing the structure. This system is economical and easy to maintained as compared to above two systems.[2]

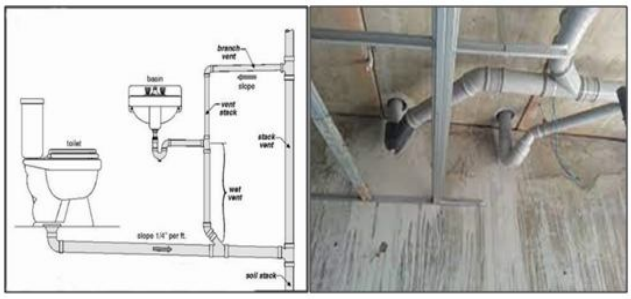


Fig 3 : Underslung Plumbing System

Following are the problems identified for project

1) Sunken plumbing system and raised toilet floor increase dead load.
2) Need special acoustic pipe insulation or acoustic fittings to reduce the noise while bathroom is in use. This increases the cost of underslung system.
3) Construction of slab, waterproofing and cuba takes more time and required skilled labor in Sunken Slab system.
4) Raised toilet floor Inappropriate for the elderly to use.
5) In underslung Plumbing system When you use a bathroom, you need special acoustic pipe insulation or acoustic connections to reduce noise. This increases the cost of the system.

III. PROPOSED SYSTEM

The pipe system provides access to water for human health, hygiene and well-being. Plumbing allows us to enjoy clean and convenient water that we often take for granted. Increasing the efficiency of water pipes is a necessary part of water conservation.
When you plan a good construction, you have to consider the plumbing. Plumbing is a very important part of construction or industry, but most people are not aware of plumbing. Pipework comprises a total of 12-15% of the construction project cost.
By choosing affective Plumbing, we can avoid physical interference between MEP systems and structural or architectural features. It helps us improve our structured life. It also reduces planning time and implementation costs. We can make the design cost effective by doing different load calculations considering different piping.

A. In Underslung Plumbing System

1) The toilet slab is built at the same level as the slabs adjacent to the toilet.
2) Sleeves & Cut-out are punctured through the slab wherever plumbing pipes have to pass through, and the pipes is clamped to the bottom of the slab.
3) It is hide above a false ceiling from bottom of slab.
4) In this any leaks will drip into the false ceiling and can be easily identified and repaired. If required, the entire plumbing can also be replaced without disturbing the structure.
5) It reduces dead load on structure.
6) It saves cost of brick bat cuba.

IV. OBJECTIVE

The objectives of the proposed work are as follows:
1) To study various types of plumbing systems.
2) To understand the effect of plumbing system in structural system.
3) To optimize the cost of construction.
4) To reduce the plumbing disaster.
5) To reduce the time for execution.

V. LITERATURE REVIEW

This project shows how piping systems affect construction and how the load on a structure varies with different piping systems and how to make a structure cost effective by choosing an efficient piping system. We can also reduce plumbing disaster by providing an efficient plumbing system. An extensive literature review was conducted through various sources. Below is a comprehensive literature review.
V. Shrinivas et al. to (2020) Traditionally, the toilet floor is recessed to accommodate floor hatches and drain pipes. The floor must be recessed by 00-50mm to accept the "p" floor hatch type.
In the pool pipe, the WC tile is built to the same level as the tiles next to the WC. Wherever the pipes are to pass, sleeves or holes are pierced through the plate and the pipes are attached to the bottom of the plate.
Shashikant Gopal Kamble and others. to (2015) Pipe maintenance plays an important role in the use of other pipes. Pipe damage and defects are part of pipe maintenance. There is no chance or short circuit during HVAC maintenance. Plumbing and plumbing work involves various components that should be examined to reduce the possibility of failure of one or the other component. These components can cause some temporary problems as well as long-term structural damage due to water seeping into walls and floors. To avoid such problems, it is important to fix plumbing problems as soon as they are discovered. The durability of the pipe system depends on the quality of its parts and the assembly skills of the installers. No plumbing system, no matter how well designed, can be expected to operate safely or hygienically if the products or materials used are of poor quality. The opposite is also true if the best quality products or materials are used but incorrectly installed, the system will fail.
Previous researchers have found that problems related to piping are very dangerous for the spirit of the building and also for the people living in the building, but the previous studies do not include a comparison of these three systems in terms of load calculations, economy. , maintenance, structural stability etc..

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VI. BLOCK DIAGRAM

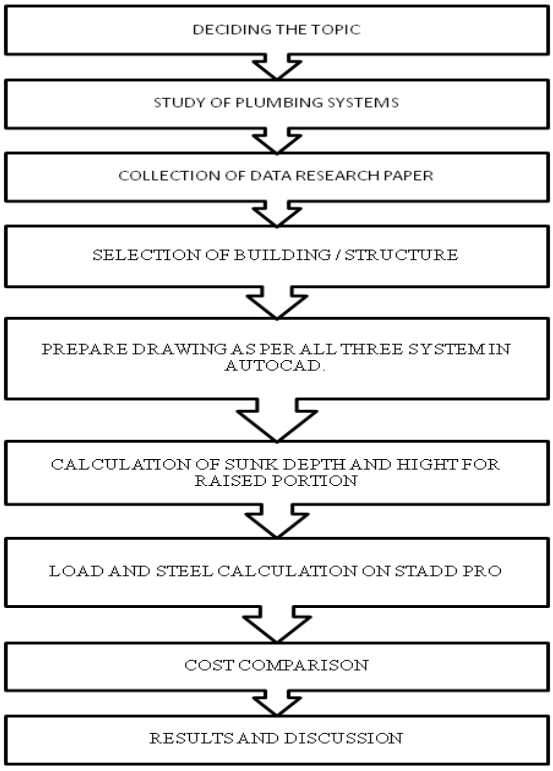


Fig.1. Working Methodology

VII. PROBLEMS CAUSED DUE TO PIPES

A. Pipes (Water Pipes)

Different types of pipes such as steel, cast iron, plastic etc. are available in the market. And the most common plumbing problems are leaks, low pressure, bursting, and pipe corrosion. These problems are related to two things: the material of the pipes and the way the worker installs the pipes. All plumbing problems are due to these two factors.

B. Leaky pipes

Leaky pipes are a big problem. This not only wastes water but also affects the daily routine of the residents. Constant leaks through pipes in the walls cause water to seep in, which can damage the structural elements of the building. Leaks can be costly if the problem goes unnoticed. For example, the continuous dripping of a faucet, if left unattended, can damage the exterior of walls, plaster, ceiling and paint surfaces. Repairing such damage can be expensive. Pipes can be damaged by external climatic conditions, which can cause fogging, melting, cracks and splits, or problems such as improper handling of pipes on site, poor installation, joints and joints not properly sealed.

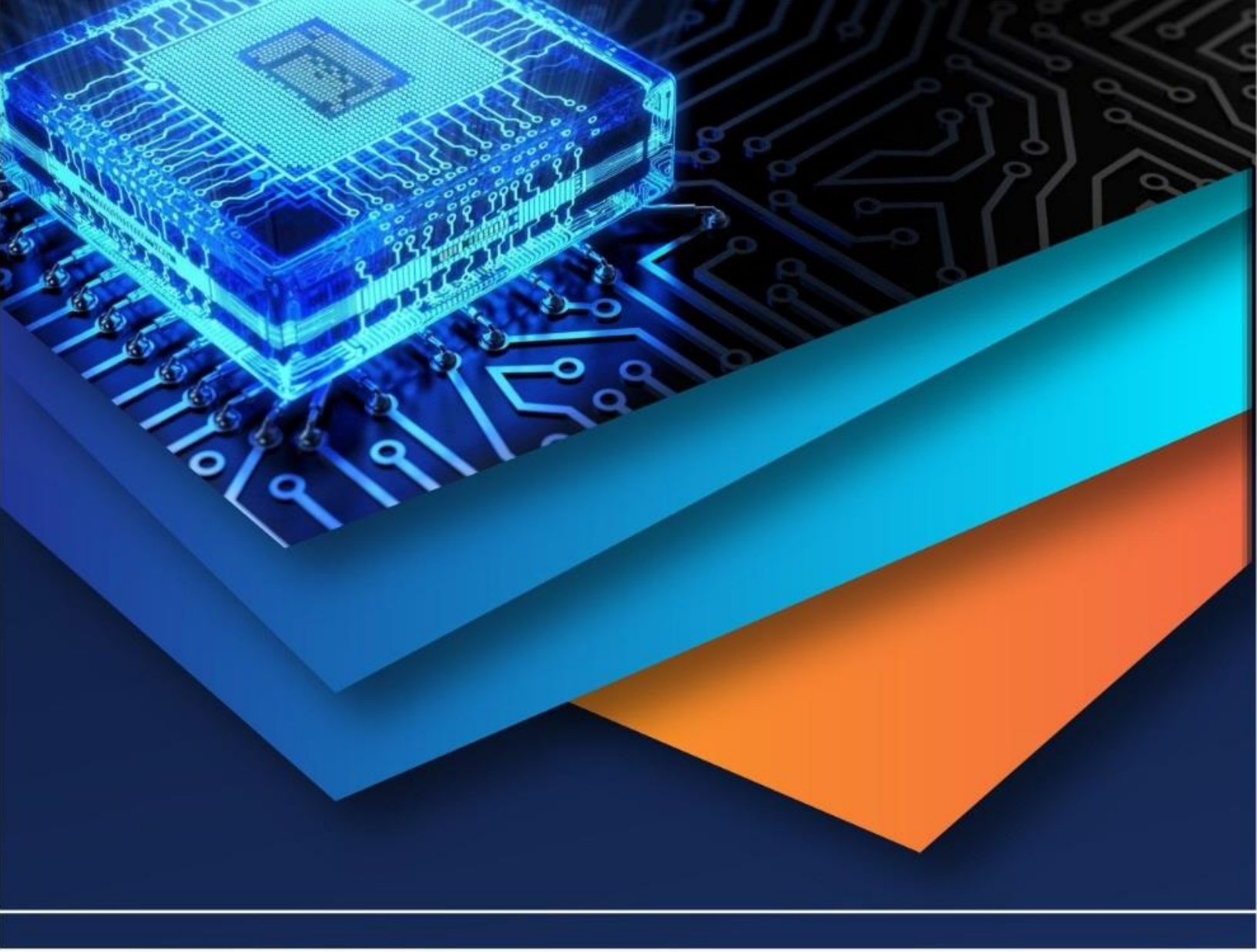
VIII. CONCLUSION

Separator leaks can be caused by poor installation, traps in the trap or poor quality of material and can be saved by using good quality materials and its effective installation. The inspection room must be maintained by taking care of its maintenance. Although valves are pipes, they regulate the flow of matter by opening, closing or partially blocking various channels. Continuous use of valves can lead to leaks, overflow and backflow, etc. The biggest problem with plumbing and drainage is in the toilet, because the toilet has several fittings, so one of them will have a problem during the use phase. Is the toilet clogged; water faucets, leaking toilet, bad smell and lack of basic service that we have to do every day. From the above studies, it can be concluded that problems related to pipelines are very dangerous for building life and also for the residents living in the building. The problem has arisen due to various reasons which are being investigated and that the problem should be minimized by its proper investigation and proper operation. The problem of water pipes can be minimized by using high quality materials and their correct installation.

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