Flood Controlling System by Using Super Levees & Sub Grade Drainage System

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Abstract **- The Low - lying geography, meteorological and hydrological state of the Sangli makes it defenseless against floods and tempest water. Different measure has been directed for alleviation if flood and immersion harms, however the seepage issue is as yet one of the significant undertakings. As of late Sangli endured significant floods that happened in 2019. The flooding caused genuine harms in the course of the most recent year; these floods have become both more broad and more serious as experienced in late tempests. So as to address the issue, distinctive designing works are used to give flood insurance and diminish flood damages. One elective flood control measure is to arrangement of super levees in the bank of waterway with the end goal of significant visually impaired dividers between a stream and the metropolitan zone. Overhauling such waterway banks to super levees will open up to the view and improve admittance to the waterfront making another riparian space that gives the satisfactions in water any Greenery. The second one elective flood control measure is to arrangement of sub grade seepage framework in an open zone of the Sangali closer to waterway. With the end goal of pinnacle release of flood in river. In light of the hydrological, geographical, and flooding information aggregated from government and private foundations.**

Index Terms **- Flood control, super levees, flood sub grade drainage.**

I.INTRODUCTION

Flooding is one of the most serious problem in the India today. According to the Indian, Atmospheric, Geophysical and Astronomical Services Administration flooding is characterized as an "abnormal progressive" rise in the water level of stream. That may bring about the flooding by the water of the typical bounds of the stream with the ensuing immersion of territory which are not regularly lowered.

Flood are categorized according to its natural and artificial causes. In the city of Sangali, the regular reasons for flooding incorporates the flooding of the Krishna waterway because of high stream level combined with elevated tides during the wet season from May to October; Inadequate in land waste office to deal with the overabundance nearby surface run-off especially in the low-lying Central aspect of the city; Sangali on the bank of stream Krishna western Maharashtra confronted a noteworthy flood 2 August (2019). Almost one lakh individuals were uprooted and more than 30 lost their lives in this area alone.

1.1 CHANDOLI DAM

Chandoli dam is known by its name as 'Vasantsagar Water Reservior' ecological studies generally involve analysis of physic – chemical and biological parameters and reflects on status of the environment in connection with both the biotic and abiotic factors. This is turn help in utilizing the resources in right manner in order to cure the pollution, to boost the productivity and to conserve the prosperity of biodiversity.

Ever observed the spread of natural mindfulness everywhere on over the world, checking of water assets through normal investigation has become significantly significant component. Water is significant a biotic segment of condition.

1.2 SALIENT FEATURES OF CHANDOLI DAM

Name of dam: Chandoli River name: Warna		
1	Type of dam	Earthen
2	Full reservoir level(m)	34.4tmc
3	Gross storage capacity(tmc)	45.29tmc
4	Dead storage	6.88tmc
5	Type of spillway gates	4radial gates
6	Length of spillway	57m

While the effect of flood on the rural and rustic texture of Sangali, Sangali city with a populace of in excess of 22 lakhs, to endured tremendous misfortunes.

Sangali - Miraj-Kupwad Municipal Corporation is on the bank of Krishna - warna conjunction in western Maharashtra. Both streams arrived at noteworthy high flood levels in the 2019 floods. Warna, in Samdoli town, Sangali area recorded a HFL of 546.9 meters on 9 August 2019 breaking every past record. Irwin Bridge a noteworthy scaffold work in 1929 in sangali city, recorded a waterway stage that the extension had never experienced. Sangali and the close by district are isn't new to floods and has Witnessed destroying floods in 1853, 1856, 1914, 2005, 2006 and most recent 2019.

Same is the story downstream. Particularly in the journey Center of Narsoba Wade close kurundwad town of Kolhapur region: arranged at the intersection of Krishna and Punchganga, floods are not new the Narsobawadi. In realities there are detailed flood ceremonies, in which the everyday is moved to upper areas after each flood occasion. Be that as it may, here too 2019 evidence broke every past record, including the 1914 HFL.

Floods in India have been a typical yearly event. In 1954, National Floods Control Program (NFCP) was received a few measures to limit their annihilation. Yet, Floods proceeded with its yearly appearance with differing degrees of influencing power. Now and then, Embankment, a significant basic measure for floods may make negative condition for flood and water logging condition for any floodplain. The current paper has been set up as a flood hazard appraisal concentrate for the conversion zone of the Kunur River and the Ajay River, identified with the present and nonappearance of dike along the Ajay River bank, which expanding bowl run-off and channel release, adjusting channel width, assists with spreading over stream water in the floodplains.

II. LITERATURE REVIEW

Nurul Ashikin Binti Mabahwi1, Hitoshi Nakamura2 (2006) The target of the investigation is to Re-assess the conceptualisation of super levees by concentrating on the accessibility of open space as clearing territory along the Arakawa River. The future investigation needs to utilization of open space for the utilization of elevated structure and the street to conquering scant of departure region for super levees advancement.

T. Tingsanchali2 (2012), this paper portrays thoughts, procedure, plan, and movement on consolidated metropolitan flood catastrophe and peril the board. In most creating nations, flood fiasco the executive's exercises are dealt with by government. Flood fiasco the chiefs in making countries is generally responsive response to winning disaster situation (emergency response and recovery). Open response should be change to proactive response to extend sufficiency of the board and lessening adversities of life and properties.

John Harold S. Castro3, Glenda Aiselyn T. Badenas3 (2015) In this study, the tempest water the board model (SWMM) was used for spillover computation. The detainment bowl is one of the compelling technique or overflow model utilizing precipitation information. The methodology to assess the impact of confinement stockpiling utilized in the examination incorporates contributing the geological and physical information, the impact of the flood control in the investigation territory was dictated by looking at hydrograph of existing seepage framework without capacity tank with hydrograph of waste framework with capacity tank part.

Saravanan J4, Naveen Chander K2 (2019) In this examination, Chennai is one of the rapidly creating metros is likely affected by the nonappearance of drainage basically on account of uncontrolled progressions of strong spaces, encroachment of huge waste channel, shrinkage of marshlands, etc.,. In this paper we gain proficiency with the acidic variables of Chennai floods and urbanflood the executives' systems which have been actualized in different created nations.

Chandrakant Naehari Kale5 Vol.8 No. 2 pp.287-295 (2019)On the off chance that investigation of the Krishna bowl the flood circumstance has gotten appalling during the year 2005 and 2006 in later piece of July and early August in upper Krishna bowl. The

assortment of information, measurement and the data have been gathered through close to home visits and records accessible at Tehsil base camp of Sangli (Since 1995).

III.METHODOLOY

A passage development is an underground entry gave underneath earth surface or water. In a large portion of the cases burrow development is costly however its spare time and gives comfort. Huge uncovering of soil or rock and so on is fundamental for burrow development. With the accessibility of present-day gear, unearthing and refilling has gotten simpler. Passages can be utilized for streets, railroads, and streams. In numerous urban community's underground metro rail networks work inside a passage. Here we are building the passage to convey water.

3.1METHODS OF TUNNEL CONSTRUCTION

There are different sorts of development procedures develops for development of passages which are examined underneath:

a. Pile Method
b. Bored tunnel Method
c. Shaft Method
d. Linear Plate Method

Here we are using Linear plate method for construction of tunnel.

3.1.1LINEAR PLATE METHOD

In present day emotionally supportive network utilizes steel liner plate segments set against the dirt and darted into a strong sheeted total hover and in bigger passages fortified inside by roundabout steel ribs. Individual direct plates are light in weight and are effectively raised by machine. Direct plate method has been effective in bigger passages.

As the ribs and direct plate offer just a light help, they are stiffened by establishment of cement lining. While direct plate burrows are more practical than other burrowing techniques.

3.1.2 TUNNEL SOIL INVESTIGATION SUBMITTALS AND TUNNEL GEOTECHNICAL REPORT

a. Passage soil examination is required for all proposed burrows. A very much arranged and itemized burrow soil examination is vital to the effective plan and development of a passage.
b. Preliminary tunnel submittals to contain a natural scale profile of proposed tunnels.

3.1.3 Tunnel geotechnical report

a. as a rule, when a proposed burrow is more prominent than 72inch width or a passage venture has all the earmarks of being unpredictable, for example, burrowing in delicate mud or free sand and residue under the water table, a passage geotechnical report might be mentioned to enhance the passage soil examination submittals.
b. The need of passage geotechnical report for a specific undertaking will be chosen by WSSC after the underlying audit of the starter submittals.

3.1.4 TUNNEL DESIGN CRITERIA

a. General.

1. This part presents delicate ground burrow plan standards as it were. The models for rock burrows are to be resolved on a task explicit premise, subject to WSSC endorsement.
2. The essential targets of passage configuration must fulfill the accompanying necessities: dependability of passage openings, insurance of nearby or overlying structures and capacity of the passage to perform over the proposed life.
3. The models introduced in this part are commonly material to delicate ground burrow plan. In the event that conditions are experienced which are not canvassed in this part, the significant plan models are to be built up related to WSSC.
4. The expression "burrow" as utilized in this segment, miniature burrowing and bore, open cut packaging
5. establishment and jack packaging establishments.

b. Tunnel Use.

1. Whenever conceivable and concurred by the influenced land proprietor, the essential decision of WSSC for building water as well as sewer pipelines is the cut and spread strategy. At the point when the conditions expressed in "Conditions and Requirements for Tunnels", under Part Three, Section
2. Also, check with the influenced landowner as well as fitting jurisdictional authority as to regardless of whether a passage crossing is required.

3.1.5CALULATIONS

The full reservoir capacity = 34.4 tmc
The volume of filled water in reservoir = 27.522 tmc

Sr. No.	Dia. of tunnel	Ht. of Tunnel	Thickness of tunnel	Volume of Each tunnel	Total runoff	No. of Tunnel
1	6m	26m	0.6m	141.58 m^3	735.13*10 $^6m^3$	7 nos.
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IV. CONCLUSION

The most sounding contribution of subgrade drainage system is to reduction of the peak flow using available volume of river storm decreasing the potential number of flood and magnitude.
High standard super levees are a new type of embankment that can withstand floods and earthquakes. Super levees are extremely wide and capable of withstanding flood waters.
Regardless of whether the stream flood during huge flooding, the rising water spills out over delicate inclines, limiting the dam age to close by metropolitan territory and giving sufficient chance to clear.

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