



AISSMS

COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Approved by AICTE, New Delhi, Recognized by Government of Maharashtra
Affiliated to Savitribai Phule Pune University and recognized 2(f) and 12(B) by UGC
(Id.No. PU/PN/Engg./093 (1992))


Accredited by NAAC with "A+" Grade | NBA - 6 UG Programmes



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Dr.D. S. Bormane
Principal



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1. Award Received by NSS team



Dr.D. S. Bormane
Dr.D. S. Bormane
Principal



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CERTIFICATE

The largest distribution of saplings is 16,661, and was organised by National Service Scheme-Savitribai Phule Pune University (India) in Maharashtra, India, on 23 June 2019.

OFFICIALLY AMAZING



RECORD HOLDER



सावित्रीबाई फुले पुणे विद्यापीठ

राष्ट्रीय सेवा योजना

आयोजित

॥ स्वच्छ वारी-स्वस्थ वारी ॥ निर्मल वारी-हरित वारी ॥

गिनीज वर्ल्ड रेकॉर्ड व एनएसएस वारी महासंकल्प अभियान

उपक्रमामध्ये सहभागी झाल्याबद्दल

विशेष सन्मानपत्र

दि. २३ जून २०१९, स्थळ : सावित्रीबाई फुले पुणे विद्यापीठ, पुणे

श्री./कृ. डॉ. नाना एन शेजवळ, ए.आय.एस.एस.एम.एस.चे
अभियंत्रिकी महाविद्यालय, पुणे महाविद्यालय,

यांनी दि. २३ जून २०१९ रोजी सावित्रीबाई फुले पुणे विद्यापीठ, राष्ट्रीय सेवा योजना आयोजित गिनीज वर्ल्ड रेकॉर्ड व स्वच्छ वारी-स्वस्थ वारी-निर्मल वारी-हरित वारी-एनएसएस वारी महासंकल्प अभियान-२०१९ उपक्रमामध्ये सहभागी होऊन विशेष योगदान दिल्याबद्दल सदर विशेष सन्मानपत्र गौरवपूर्वक प्रदान करण्यात येत आहे.



डॉ. प्रभाकर देसाई
संचालक, रासेयो



डॉ. नितीन करमळकर
कुलगुरु



Dr.D. S. Bormane
Principal

2



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Certificate of Merit

is awarded to

Gauri Karpe

for his/her volunteering more than 50 hours in Tobacco Control activities under
National Service Scheme (NSS) at All India Shri Shivaji Memorial Society,
College of Engineering, Pune
during 2019-20

Sanjay Seth
Trustee
Sambandh Health Foundation



Dr. Atul Salunke
SEO & OSD (NSS)
Government of Maharashtra


Dr. D. S. Bormane
Principal



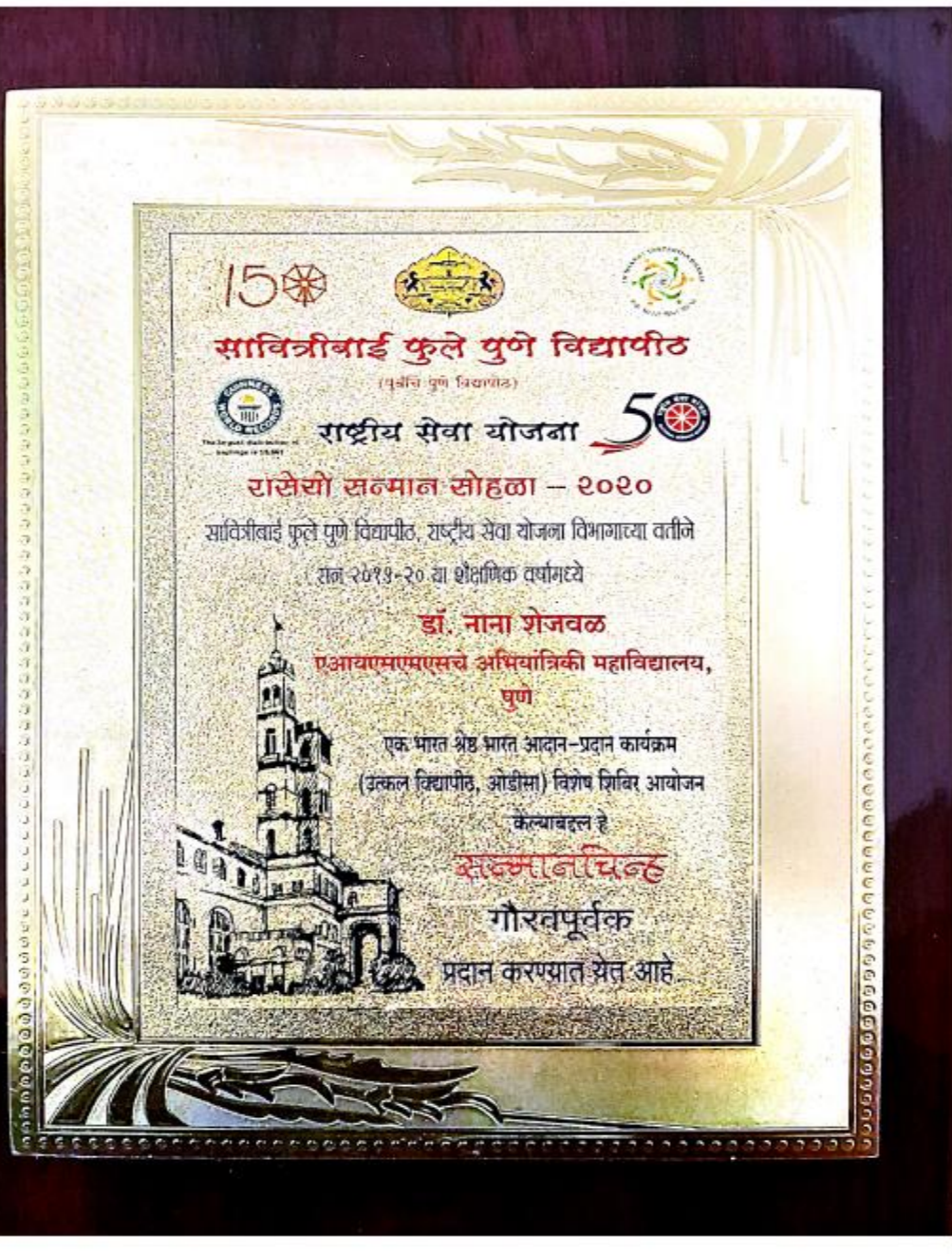
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Certificate of Merit

is awarded to

Swapnil Pawar

for his/her volunteering more than 50 hours in Tobacco Control activities under
National Service Scheme (NSS) at All India Shri Shivaji Memorial Society,
College of Engineering, Pune
during 2019-20

Sanjay Seth

Trustee
Sambandh Health Foundation



Dr. Atul Safunke
SLO & OSD (NSS)
Government of Maharashtra



Dr.D. S. Bormane
Principal



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सावित्रीबाई फुले पुणे विद्यापीठ, राष्ट्रीय सेवा योजना

मॉडर्न कला, विज्ञान व वाणिज्य महाविद्यालय (स्वायत्त), शिवाजीनगर, पुणे ०५.
आयोजित

राज्य/राष्ट्रीयस्तरीय प्रजासत्ताकदिन पूर्वसंचलन
पुणे जिल्हास्तरीय रासेयो स्वयंसेवक निवडचाचणी शिबिर
दि. १५ सप्टेंबर २०२३, स्थळ : मॉडर्न कला, विज्ञान व वाणिज्य महाविद्यालय (स्वायत्त), पुणे ०५.

प्रमाणपत्र/certificate

कुमर/कुमारी _____
Manali Gopal Jadhav

यांनी दि. १५ सप्टेंबर, २०२३ रोजी, सावित्रीबाई फुले पुणे विद्यापीठ, राष्ट्रीय सेवा योजना विभाग व मॉडर्न कला, विज्ञान व वाणिज्य महाविद्यालय (स्वायत्त), शिवाजीनगर, पुणे ०५. आयोजित 'राज्य/राष्ट्रीयस्तरीय प्रजासत्ताकदिन पूर्वसंचलन पुणे जिल्हास्तरीय निवडचाचणी शिबिरामध्ये' सक्रीय सहभाग घेतल्याबद्दल सदर प्रमाणपत्र प्रदान करण्यात येत आहे.

डॉ. प.भ्रमकर वराडे
जिल्हा समन्वयक, रासेयो
पुणे शहर

डॉ. राजेंद्र जुंजारराव
प्राचार्य
मॉडर्न महाविद्यालय

डॉ. सदानंद भोसले
संचालक (अतिरिक्त कार्यभार),
राष्ट्रीय सेवा योजना



Dr.D. S. Bormane
Principal



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॥ ज्ञानविद्यायाः देवः जगदस्य ॥

ग्रामपंचायत मळवंडी मोरे

ता. मावळ, जि. पुणे.

सी. राजेशभाई बाळू बोर
सहकारक

सी. सुरज सुखराव बोर
सहकारक

सी. अशोक सुखराव बोर
सहकारक

सी. अशोक सुखराव बोर
सहकारक

सी. अशोक सुखराव बोर
सहकारक

सी. अशोक सुखराव बोर
सहकारक

मा. शाळबाई अशिवराव,
पाठशाळा शिक्षिका,
ता. मावळ जि. पुणे

विभाग ३, ५२ वा विन्न आवांग निधी, ए. ए. ए. २०१९/२०२०
व दीर्घी कळव श्रेण्या निधी निधीपुन
२.१० लेबर कार्यालय अवांग, जि. पुणे

अर्जदार : व्यंजोरा । ग्रामपंचायत मळवंडी मोरे

महोदय,

इतिहास विभागास अनुभवानु कळविणेपूर्वी
आले करताना येतो की ग्रामपंचायत मळवंडी मोरे
येथे ३२ वा विन्न आवांग निधी मज २०१९/२०२० वॉलवॉन
टनर निधी (उपक्रम अंतर्गत वातावाणी २/१०
लेबर वसावठा ते कामामाठी कुठून आराधनांगण
करताना अलिखित आठ, मागाठी र. रु. १४५४००-
नी नरपूर आठ, पेंदपू गडदर २/१० लेबर
उपक्रमाळाठी गुळा अर्थ र. रु. ३,११,८००/- येतो
अमुने अतिरिक्त इतर म. रु. १,२३,८००/- ही
जेथी कळव देव्यास नवार आठ
नवी प्रवाण गडदर कामान्ति अंतर्गतपुनक
पु तीक्ष्ण मात्वन मिळवितामी किंती असे.
येवता -
१) मज ३२ वा विन्न नवकरत.
२) आवांग
३) जेथी कळव परतानडी पुन
४) वसावठा, पुणे

रंजना बा. बोर
दफतर



Dr.D. S. Bormane
Principal



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UNNAT BHARAT ABHIYAN

Ref No. AISSMS/COE/UBA/ /2020-21

Date: 19/01/2021

OFFICE ORDER

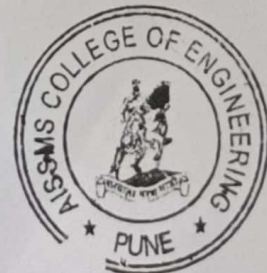
The All India Shri Shivaji Memorial Society's College of Engineering, Pune-01 is conducting water reservoir survey and redesign at adopted village Kalyan under Unnat Bharat Abhiyan on Thursday, January 21st, 2021 at 09:00 am. The following staff members are here by appointed to work as expert, coordination committee member for the above mentioned activity.

Sr.No.	Name of the Staff	Department	Designation	Contact Details
01	Dr. Nana N. Shejwal	UBA	Nodal Officer	9422309104
02	Dr. P.B. Nangare	Civil	Member	9423031807
03	Dr. R.D. Nalawade	Civil	Member	9422084987
04	Prof. V.S. Chavan	Civil	Member	7397937383
05	Prof. P.R. Modak	Civil	Member	9767449627
06	Shri. A.U. Karne	Civil	Member	

All the above staff members are requested to work according to the Government of Maharashtra & Savitribai Phule Pune University guidelines and Dr. N.N. Shejwal Coordinator for smooth functioning of the event.

Dr.D.S.Bormane
Principal

Copy to: 1) Concerned HOD's and staff members for information.
2) Admin Office





पुणे जिल्हा परिषद, पुणे
उप विभागीय जलसंधारण अधिकारी,
ल.पा.उपविभाग, हवेली जि.प. पुणे
पंचायत समिती हवेली, जुनी जिल्हा परिषद इमारत पुणे
Email : misdzp@rediffmail.com कार्यक्षेत्र : हवेली / मावळ / मुळशी

जाक्र ल.पा./वशा/ 317 /2021

दि. 11.10.2021

प्रति,


मा. वरिष्ठ भुवैज्ञानिक,

भुजल सर्वेक्षण व विकास यंत्रणा,

भुजल भवन, शिवाजीनगर, पुणे-05

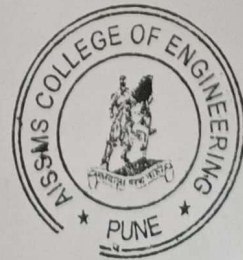
विषय - मौ कल्याण (मॅंगजाईदरा) ता.हवेली जि.पुणे येथिल पाझर तलावाच्या भुस्तर अहवालाबाबत.

उपरोक्त विषयान्वये मौ कल्याण (मॅंगजाईदरा) ता.हवेली जि.पुणे येथिल पाझर तलावाचे काम सन 2015.16 या वर्षात पूर्ण झालेले आहे. पावसाळा संपलेनंतर 1 ते 2 महिने पाणीसाठा राहता त्यामुळे सदर पाझर तलावाची दुरुस्ती करणेचे प्रस्तावित आहे. तरीही सदर पाझर तलावाची प्रत्यक्ष भुस्तर पाहणी करुन अहवाल मिळणेस विनंती आहे.


उपविभागीय जलसंधारण अधिकारी,
जिल्हा उपविभाग (नया) हवेली / मावळ / मुळशी

प्रत.

- 1) मा. प्राचार्य, AISSMS College of Engineering, Pune यांना माहितीसाठी सादर.
- 2) मा.जिल्हा जलसंधारण अधिकारी, जिल्हा परिषद (लघु पाटबंधारे) विभाग, जि.प.पुणे यांना माहितीसाठी सादर.



पुणे जिल्हा परिषद पुणे
जिल्हा जलसंधारण अधिकारी

जिल्हा परिषद (लपा.) विभाग पुणे
चौधा मजला यशवंतराव चव्हाण , १ वेलस्ली रोड भवन
E-mail: eemidzppune@gmail.com

जाक्र.जिप/लपा/

/ प्रकल्प शाखा / ३४० /

/ २०२१

दिनांक : ०९/११/२०२१

प्रति,

जिल्हा जलसंधारण अधिकारी,

मृद व जलसंधारण विभाग, पुणे

विषय -- मा. मुख्यमंत्री जलसंवर्धन योजने अंतर्गत मौ कल्याण (मॅगजाईदरा) ता.हवेली जि.पुणे येथिल
पाझर तलावाच्या दुरुस्तीच्या कामास प्रशासकीय मान्यतेबाबत.

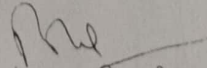
संदर्भ -- 1) मा. मुख्य अभियंता, मृद व जलसंधारण विभाग, महाराष्ट्र राज्य यांचेशी भ्रमनध्वणीद्वारे
दिलेल्या आदेशानुसार

2) उप विभागीय जलसंधारण अधिकारी, जि.प. (ल.पा.) उपविभाग, हवेली यांचेकडील पत्र जाक्र

लपा/उपवि/शाखा/329/21 दि. 01.11.2021

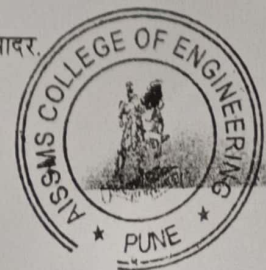
उपरोक्त विषयान्वये, मा. मुख्यमंत्री जलसंवर्धन योजने अंतर्गत मौ कल्याण (मॅगजाईदरा) ता.हवेली जि.पुणे
येथिल पाझर तलावाच्या दुरुस्तीच्या कामास निधी उपलब्ध करून देणेबाबत मा. मुख्य अभियंता, मृद व जलसंधारण
विभाग, महाराष्ट्र राज्य व मा.प्राचार्य, AISSMS College of Engineering, Pune यांची भ्रमनध्वणीद्वारे
दि.11.10.2021 अन्वये झालेल्या संवादानुसार, मा. मुख्य अभियंता, मृद व जलसंधारण विभाग, महाराष्ट्र राज्य
यांनी सादर पाझर तलाव दुरुस्तीचे काम मा. मुख्यमंत्री जलसंवर्धन योजने अंतर्गत प्रशासकीय मान्यतेसाठी सादर
करणेबाबत सुचित केलेले आहे. त्यानुसार सन 2020.21 चे प्रचलित दरसूचीनुसार पा.त.दुरुस्ती कामाचे अंदाजपत्रक
पुढील कार्यवाहीसाठी पाठविणेत येत आहे.

आपले माहितीसाठी व पुढील कार्यवाहीसाठी सस्नेह अप्रेषित.


जिल्हा जलसंधारण अधिकारी
जिल्हा परिषद (ल.पा.) विभाग
जिल्हा परिषद पुणे

प्रत,

1) मा. प्राचार्य, AISSMS College of Engineering, Pune यांना माहितीसाठी सादर.





पुणे जिल्हा परिषद, पुणे
उप विभागीय जलसंधारण अधिकारी,
ल.पा.उपविभाग . हवेली जि.प. पुणे
पंचायत समिती हवेली , जुनी जिल्हा परिषद इमारत पुणे
Email :misdzp@rediffmail.com कार्यक्षेत्र : हवेली / मावळ / मुळशी

जाक्र ल.पा./वशी/ 317 /2021

दि. 11.10.2021

प्रति,

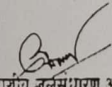
मा. वरिष्ठ भुवैज्ञानिक ,

भुजल सर्वेक्षण व विकास यंत्रणा,

भुजल भवन , शिवाजीनगर, पुणे-05

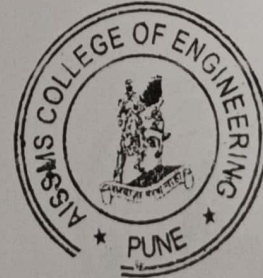
विषय – मौ कल्याण (मेंगजाईदरा) ता.हवेली जि.पुणे येथिल पाझर तलावाच्या भुस्तर अहवालाबाबत.

उपरोक्त विषयान्वये मौ कल्याण (मेंगजाईदरा) ता.हवेली जि.पुणे येथिल पाझर तलावाचे काम सन 2015.16 या वर्षात पूर्ण झालेले आहे. पावसाळा संपलेनंतर 1 ते 2 महिने पाणीसाठा राहतो त्यामुळे सदर पाझर तलावाची दुरुस्ती करणेचे प्रस्तावित आहे. तरीही सदर पाझर तलावाची प्रत्यक्ष भुस्तर पाहणी करुन अहवाल मिळणेस विनंती आहे.


उपविभागीय जलसंधारण अधिकारी,
जिल्हा परिषद उपविभाग (तला) हवेली/मावळ/मुळशी

प्रत,

- 1) मा. प्राचार्य, AISSMS College of Engineering , Pune यांना माहितीसाठी सादर.
- 2) मा.जिल्हा जलसंधारण अधिकारी, जिल्हा परिषद (लघु पाटबंधारे) विभाग, जि.प.पुणे यांना माहितीसाठी सादर.





पुणे जिल्हा परिषद, पुणे
उप विभागीय जलसंधारण अधिकारी,
ल.पा.उपविभाग . हवेली जि.प. पुणे
पंचायत समिती हवेली , जुनी जिल्हा परिषद इमारत पुणे
Email : misdzp@rediffmail.com कार्यक्षेत्र : हवेली / मावळ / मुळशी

जाक्र ल.पा./वशी/ 317 /2021

दि. 11.10.2021

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
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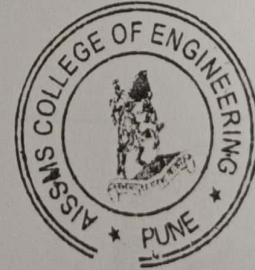
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उपविभागीय जलसंधारण अधिकारी,
जिल्हा परिषद-उपविभाग (सरा) हवेली/मावळ/मुळशी

प्रत,

- 1) मा. प्राचार्य, AISSMS College of Engineering , Pune यांना माहितीसाठी सादर.
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Percolation Tank Survey Report

Title of Project: Study and Modification in Percolation Tank at Kalyan Village

Problem Statement

To face the problem of groundwater depletion, the Indian Government relies on large projects of Managed Aquifer Recharge (MAR). Numerous recharge structures such as percolation tanks exist but the impact of these structures on groundwater resources remains poorly understood. Although the evaporation/ infiltration ratio of percolation tanks was indeterminate.

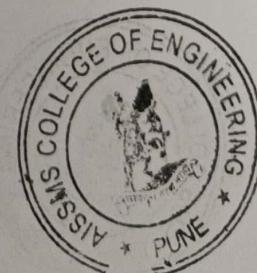
Percolation tank of Kalyan village is not performing well and water is not retaining as per the designs, because of improper design of filter layers (beds) and unsuitable available soil strata. Water table in nearby wells are not recharged hence water scarcity problem occurred at kalyan village.

Objectives

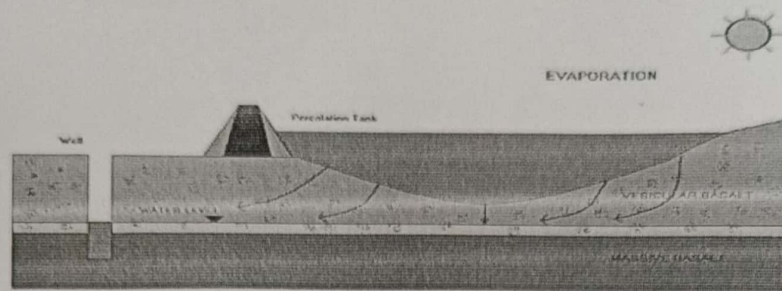
1. To study the existing percolation tank at kalyan village.
2. To identify the problem related to percolation tank.
3. Analysis of the percolation tank with phreatic line.
4. Modification and redesign of filter media, toe drain, waist weir.

Introduction

Percolation tank is an artificial reservoir which are constructed across stream, submerging a land area with adequate permeability to facilitate sufficient percolation to collect surface water run-off and allow it to percolate within the permeable land. This is one of the effective methods of refilling



groundwater table (also known as groundwater recharge). These are earthen dams having masonry structures for spillway only and are preferred to be constructed over second or third order stream.

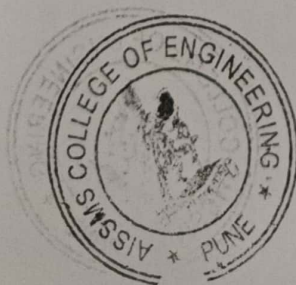


Guidelines:-

- Percolation tanks should normally be constructed in a terrain with highly fractured and weathered rock for speedy recharge.
- Too high permeability may result in the percolated water escaping in the downstream as regenerated surface flow, hence it will defeat the purpose of water conservation.
- The aquifer to be recharged should have sufficient thickness (about 3m) of permeable vadose zone to accommodate recharge.
- The benefitted area must have sufficient number of wells, hand pumps etc.
- It is advisable and benefitting to have the percolation tank in an area of good/ average catchment.
- A long-term evaluation of the pattern of rainfall for the benefitted area must be studied so that the percolation tank gets filled up fully during monsoon.
- To minimize the silting at the bottom of the tank, soils in the catchment area should preferably be of light sandy type.
- Except for outlets provided for surface irrigation and the depth of the cut-off trench, there is not much difference, in the construction between a percolation tank and a minor irrigation tank.

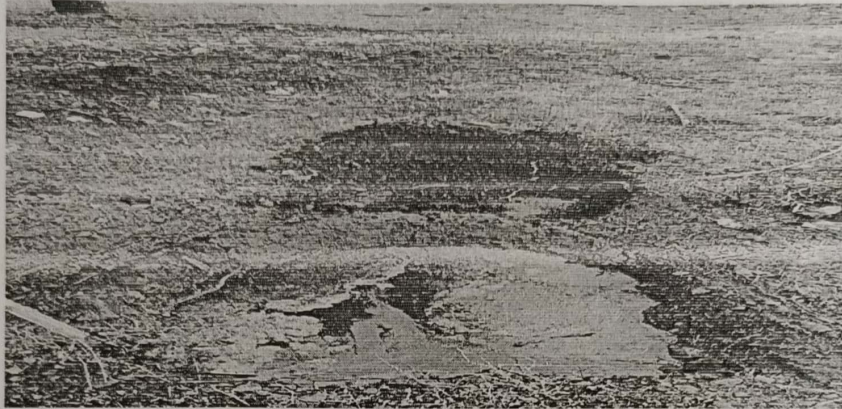
Methodology

The following materials are more suitable to prevent leakages as well as seepage losses in reservoir but depends on topographical condition.



Coconut shell Threads

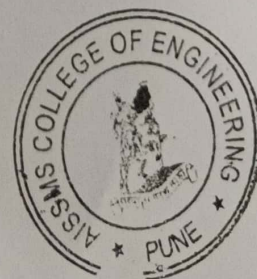
Using coconut shell threads is traditional but very cheap and useful method for use as a mixture for anything to increase its strength and some other properties like water holding capacity water tough water retain too. Mixture of soil, little amount of sand and coconut tenders with some amount of water is really good for retaining water in some amount.

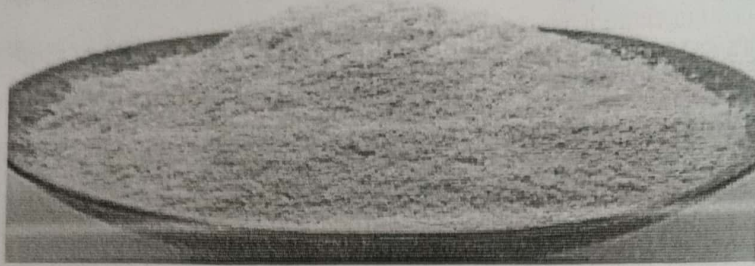


Bentonite Soil:-

Bentonite is the fine textured colloidal clay with as much as 90% of Montmorillonite. When exposed to water, dried bentonite absorbs several times its own weight of water at complete saturation, it swells as much as eight to twenty times of its own original dry volume. If retaining wall contains high percentage of coarse- grained particles and not enough clay, adding Bentonite to it us another method of reducing excessive seepage through it.

Natural Bentonite: Deposits exist in several places around the world, for example in the United States of America, Mexico, China and Western Europe. Before selecting this method to seal your pond, you should locate a satisfactory source of bentonite, as close as possible to your site to reduce cost. You should also ensure that the quality of the available bentonite is good: it should contain the highest percentage of montmorillonite possible (at least 70 percent). The water level of your pond should not fluctuate too much. Soil treated with bentonite will develop numerous cracks when it dries up. It is best if it always remains wet.

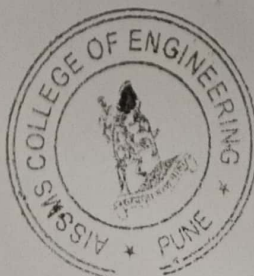
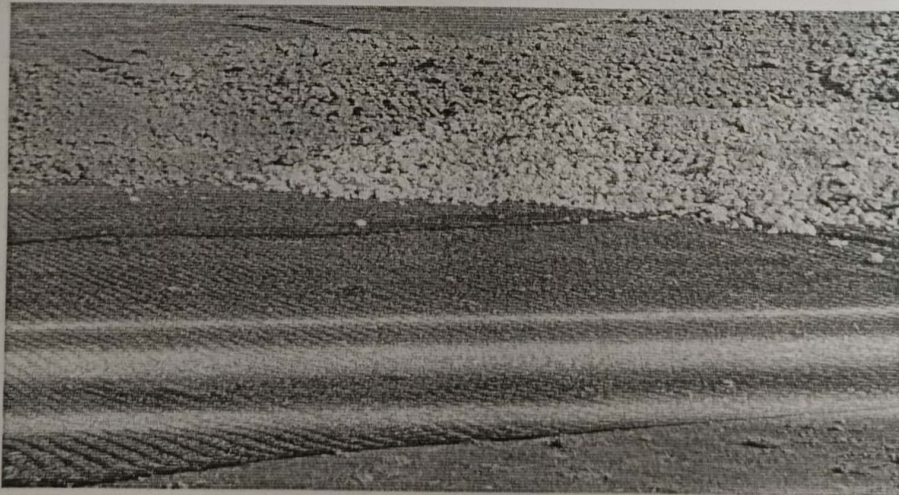




Geogrid:-

A geogrid is geosynthetic material used to reinforce soils and similar materials. Geogrids are commonly used to reinforce retaining walls, as well as subbases or subsoils below roads or structures. Soils pull apart under tension. Compared to soil, geogrids are strong in tension. This fact allows them to transfer forces to a larger area of soil than would otherwise be the case.

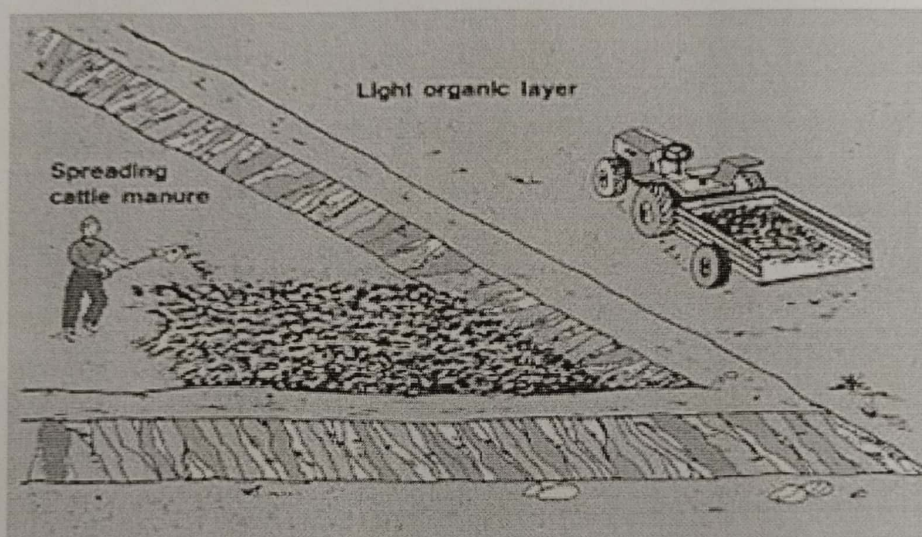
Geogrids are commonly made of polymer materials, such as polyester, polyvinyl alcohol, polyethylene or polypropylene. They may be woven or knitted from yarns, heat-welded from strips of material, or produced by punching a regular pattern of holes in sheets of material, then stretched into a grid.



Light Organic Material:-

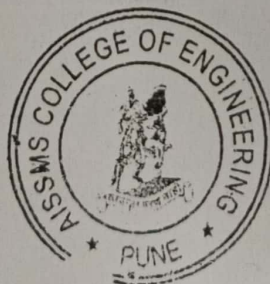
A simple method that greatly accelerates the sealing of a pond bottom is to spread enough cattle manure over it (at least $2 \text{ m}^3/100 \text{ m}^2$) before filling the pond with water. Repeat this procedure several times if necessary, at intervals of eight to 12 months, until seepage losses become acceptable. After draining these ponds, refill them with water as soon as possible to reduce the rate of decomposition of the organic matter that seals the bottom pores.

If the dikes of a pond have been compacted very well, it may not be necessary to seal them against seepage when you seal the pond bottom. However, if you are not sure that the dikes are sound, it is best to seal them as well.



High Density Polyethylene Sheet (HDPE):- Govt. Resolution- 2018

Govt. of Maharashtra has provided guidelines for percolation tank. The guidelines are published and given in following way.



भाग B) दुरुस्ती संदर्भात मार्गदर्शक सुचना :-

१) पाझर तलाव / गाव तलाव / माती नाला बांध.

i) सांडवा पूर्णपणे वाहून जाणे, सांडव्याच्या बारची तुटफूट होणे, पाझर तलावाचे भिंत व सांडव्याचा बार या दरम्यान असलेली फ्लॅक वॉल (एभी भिंत) यांनी तुटफूट, सांडव्याच्या आतील बाजुने होणारे मोठे पाझर, सांडव्याच्या अधो भागात (Down Stream) पाण्याच्या आघाताने झालेले खोल खड्डे यासह सांडवा दुरुस्तीचे काम करण्यात यावे व अशी दुरुस्ती करताना राफ्ट फाऊंडेशन सारख्या तंत्राचा वापर करावा. सांडवा बार क्षतीग्रस्त झालेला असल्यास सांडवा बारची डागकुजी प्रचलित पध्दतीने करण्यात यावी. पाझर तलाव व सांडवा बार यामधील उभी (फ्लॅक वॉल) ची तुटफूट झालेली असल्यास प्रचलित पध्दतीने तुटफूट झालेले दगड (Masonry Work) किंवा संघानकाने बांधणी करून फ्लॅक वॉल पुर्ववत करण्यात यावी.

ii) तलावाच्या आतील बाजुने जलरोधक खंदकातून (Cut Off Trench) मधून होणारे पाझर थांबविण्यासाठी (तलावमध्ये / लगत काळी माती उपलब्ध असल्यास) तलावाच्या आतील बाजुस (Up Stream) आवश्यक त्या खोलीचा खर घेऊन खरामध्ये पाझर तलावामध्ये उपलब्ध असलेली काळी माती भरण्यात यावी व त्यानंतर पाणी टाकून दबाई (Compaction) करण्यात यावीत. तलावालगत काळी माती उपलब्ध नसल्यास, अशा ठिकाणी काढण्यात आलेल्या खराच्या लांबी व ऊंची या आकारमानाची ५०० Micron जाडीची HDPE आयएसओ प्रमाणित Sheet टाकण्यात यावी व काढण्यात आलेली माती/ सॉफ्ट माती/ मुरुम/ (उपलब्ध असलेल्या) यांनी तो खर भरण्यात यावा. अशा प्रकारची HDPE Sheet टाकताना COE हा पूर्णतः जल अवरोध करण्याच्या अनुषंगाने HDPE Sheet ची ऊंची निश्चित करण्यात यावी.

iii) तलावाच्या भिंतीतून / बांधातून होणारे पाझर थांबविण्यासाठी तलावामध्ये / लगत काळी माती उपलब्ध असल्यास / भिंतीवर बांधावर ६० सें.मी. जाडीचा काळ्या मातीचा खर व ३० सें.मी. मुरुमाचा खर देण्यात यावा व त्यानंतर योग्य ती दबाई करण्यात यावी. तदनंतर उपलब्ध असलेल्या दगडाचा वापर करून, तसेच आवश्यक असल्यास अतिरिक्त दगड उपलब्ध करून त्यावर शुष्क अरमपटल (Dry Stone Pitching) करण्यात यावे. तसेच तलावामध्ये / लगत काळी माती उपलब्ध नसल्यास COE मध्ये टाकण्यात आलेल्या अशा प्रकारची HDPE Sheet भिंतीच्या वरील भागात सुद्धा टाकण्यात यावी. भिंतीवर/बांधावर ६० सें.मी. जाडीचा मुरुमाचा खर देण्यात यावा. तदनंतर उपलब्ध असलेल्या दगडाचा वापर करून तसेच आवश्यक असल्यास अतिरिक्त दगड उपलब्ध करून त्यावर शुष्क अरमपटल (Dry Stone Pitching) करण्यात यावे. अशाप्रकारे HDPE Sheet ची ऊंची ही तलावापासून ३ मीटरच्या मर्यादेत ठेवण्यात यावी तसेच धरणाच्या उर्वर भागाच्या भिंतीस योग्य तो उतार ठेवावा व शुष्क अरमपटल त्यावर स्थिर राहिल याची दखता घ्यावी.

पृ. ६ मध्ये २

iv) वरील (i) ते (iii) व्यतिरीक्त आवश्यक असलेल्या स्थापत्य दुरुस्ती स्थानिक परिस्थितीनुसार घेण्यात याव्यात.

२) सिमेंट नाला बांध / साठवण बंधारे स्थापत्य दुरुस्ती:-

i) सिमेंट बंधारा गळती प्रतिबंधक उपाययोजना करण्याकरीता सिमेंट बंधाराच्या आतील बाजुस (Up Stream) २० सें.मी. जाडीच्या सिमेंटची पडकी घेण्यात यावी, यामध्ये ८ ते १२ एम.एम. जाडीचे स्टील वापरण्यात यावे. या पडकीचा पाया कठिण खडकांमध्ये ३० सें.मी. खोलीपर्यंत गुंतावा मधून करण्यात यावे. अशा प्रकारची पडकी ही सिमेंट बंधाराच्या भिंतीचा खरचा भाग (बार) पर्यंत घेण्यात यावी. सिमेंट



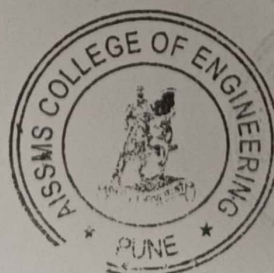
Case Study: - Percolation Tank at Kalytan Village (Mengjai dara), Tal - Haveli, Dist – Pune



Fig.1. Satellite image of Kalyan Dam

Kalyan is located in the Sinhagad fort on the west side of Pune city. Kalyan village is at the foot of Sinhagad fort and is located in hilly and remote areas. As there is no large and medium scale project in this area, most villages in this area are deprived of irrigation facilities. In this area, even though it has received 93.12 inches of rain, the village experiences severe shortage of drinking water for 4 to 5 months after the rains. Drinking water suppliers have to be supplied. Apart from this, the cattle business here has been adversely affected due to lack of water. There is no irrigation system for the rabi season due to irrigation. Therefore, MLA Bhimarao Tapakir Sao, MLA of Haveli taluka & the group gram panchayat Kalyan informed the Executive Engineer, Small Irrigation Department, Z. P. Pune about the survey of the pond in this area, and informed the Executive Engineer, Small Irrigation Department, ZP, Pune and Budget is prepared by surveying the work.

The percolation tank of these above features was constructed in Kalyan village December 2015. The tanks outcomes for whole year are best but during summer season it is not able to fulfill the water requirement of villagers. Water shortage is one of the main problems faced by these people from village so our main objective of project is to retain the water percolation tank and also increase ground water level for wells which are present in village.



Location of Site

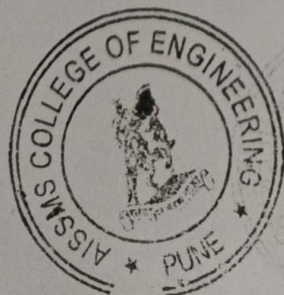
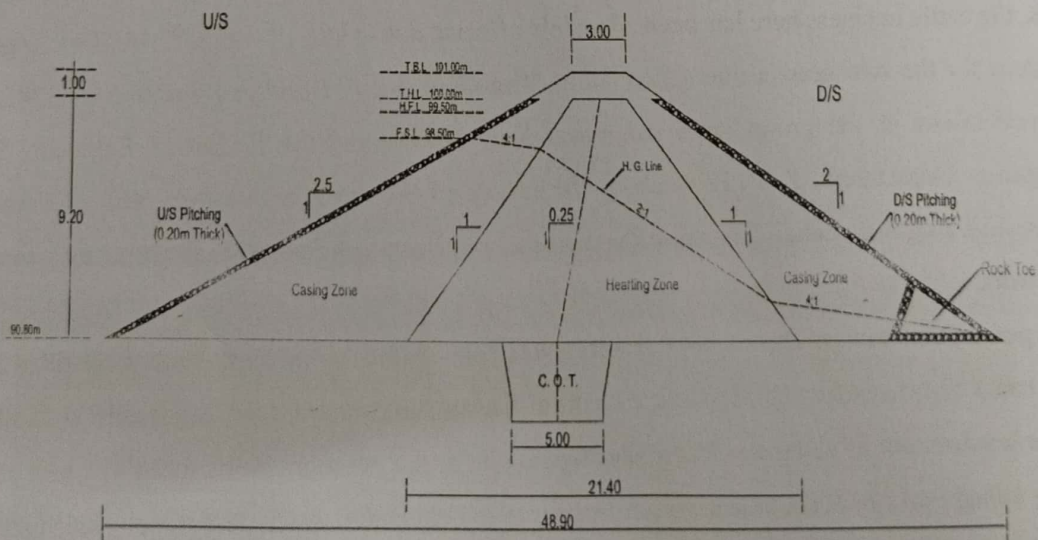
The project is located in Kalyan, Tal Haveli and 20 km west of Shivapur village and 35 km from Pune city.

- Map No.47, F11 & 47 f 15
- Longitude- 73°40'15"
- Latitude- 18°21'5"

Salient Features

Catchment area	1.050 sq.km (0.59 Km ²)
Capacity	4.96 million cubic feet
Available yield	31.90 million cubic feet
Length of dam	88 m
Maximum height of dam	10.20 m
Lowest Nalla Bed (NBD)	928.55 m
F.S.L. RL (FTL)	936.75 m
H.F.L. RL (HFL)	937.75 m
T.B.L. RL	938.75 m
Irrigable area	31 hectares
Length of waste weir	20 m
Width of waste weir	120 m

Typical C/S of Percolation Tank



Rainfall Data (2000-2019)

Total Annual Rainfall data is taken into account at Velhe observatory, located at 10 Km away from kalyan village. Catchment number (CAT) - 307, Latitude in degree (LA) N - 18, Longitude in degree (LO) - 73,

YEAR	ARF (mm)	NOB
2000	1330.0	366
2001	1931.0	364
2003	1420.0	365
2004	2054.4	366
2005	6320.6	365
2006	3997.0	365
2007	3263.0	364
2008	2409.0	366
2009	1405.0	365
2010	2043.0	365
2011	2695.1	365
2012	2070.4	366
2013	2069.6	365
2014	1812.4	365
2015	1662.6	365
2016	1832.2	366
2017	2587.0	174
2018	1674.8	365
2019	3970.3	164

Rainfall data (years) = 2000-2019

Average yearly rainfall in inch = 98

50% Dependable monsoon rainfall = 2449.86 mm

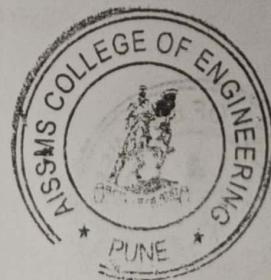
Storage Calculations

Catchment Area - 0.59 Km², Rainfall Station - Velhe, Average Mansoon Rainfall - 98 inch

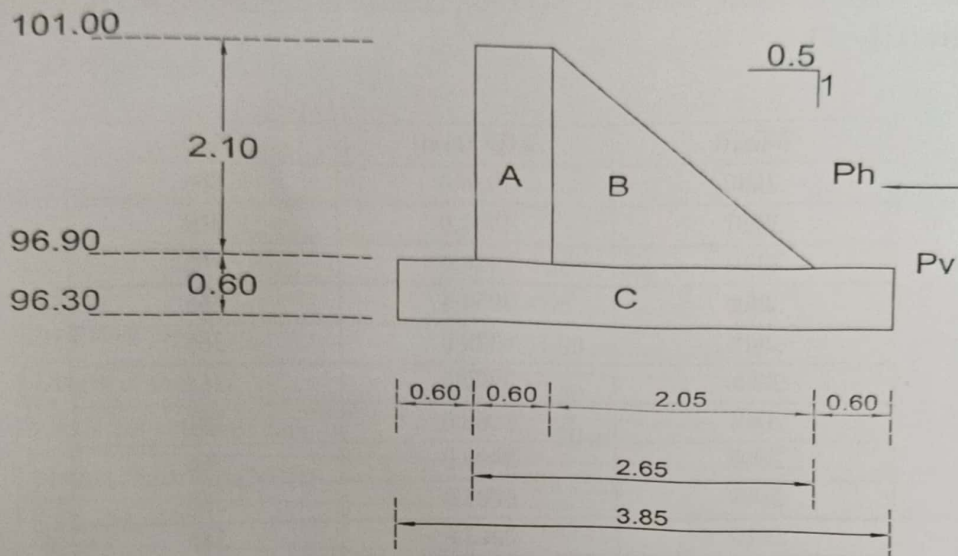
Assuming Silt Rate - 6HM/100 SQ, KM /Year = 37.80 TCM.

Yield Calculations - 40.74 MCFT = 1153.96 TCM = 4, 07, 40,000 litres.

Discharge as per Inglis Formula - 29.40 m³/s.



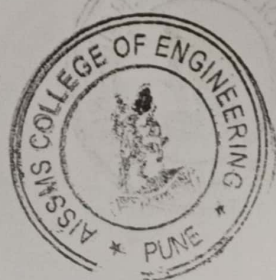
Flank Wall of Waste Weir



DAM SURVEY

All India Shree Shivaji Memorial Society's College of Engineering, Pune conducted Dam Survey, in association with Civil Engineering Department, National Service Scheme & Unnat Bharat Abhiyan at Kalyan village, Tal. Haveli, Dist. Pune on Friday 15th Jan. 2021 under Presence of Sarpanch Shri. Rajesh Dimble, other former members of Gram panchayat, Medical Officers, Principal Dr. D. S. Bormane Sir, Dr. N. S. Shejwal- Program Officer NSS, Dr. P B Nangare, Prof. V S Chavhan & UBA Volunteers of AISSMS College of Engineering . The main purpose of dam survey was to solve the problems of villagers about consumption of rainwater. Principal Dr. D. S. Bormane, Dr. P. B. Nangare & Dr. N. S. Shejwal motivated to villagers to give contribution as per their strength.

We had visited Kalyan gaon, Pune on 21st Jan 2021. Topographical survey have been carried out as per the guidelines given by Dr. P. B. Nangare. We also have discussed how to increase catchment area by identifying the selection site criteria. Tentative depth of the dam had been analysed. Dr. P. B. Nangare has suggested idea of vertical cutoff and provision of HDPE



Sheet, the secondary dam on downstream site. Civil Engineering Faculty had taken efforts to solve seepage problems with optimum solution.

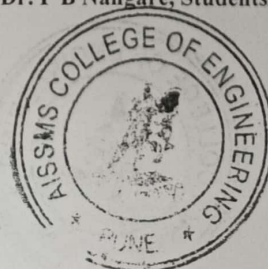
Conventional survey of the dam carried with the use of surveying instruments like total station, Auto level, ranging rod, reflecting mirror and levelling staff etc. Volunteers was been divided in to certain groups to carry out different stages of survey. First group was measuring the distance at interval of 10 m and correspondingly 5 m each to left and right side of 10 m distance marked. Second group of students was taking the levels with the help of Auto level. Reduced levels of all the points located on upstream side of dam is taken it and prepared contour map. Based on contour map find out reservoir capacity, yield of reservoir as per availability of rainfall data at nearby observatory located at Velhe.

Soil testing and waste weir level had been analyzed, considering the necessary points from the villagers like history of the dam, demand of water for drinking, washing purposes. NSS volunteers under the guidance of Dr. P. B. Nangare has now taken up survey and executed dam survey by focusing following points.

1. Topographical features
2. Site Selection Criteria and catchment area
3. Waste weir level checking, Soil Testing
4. Seepage Analysis
5. Suggestion about secondary dam at downstream site
6. Investigation on water retain
7. Villagers opinions and demands



Fig 2. Principal Dr. D S Bormane, Sarpanch Shri. Rajesh Dimble, Dr. P B Nangare, Students and Villagers



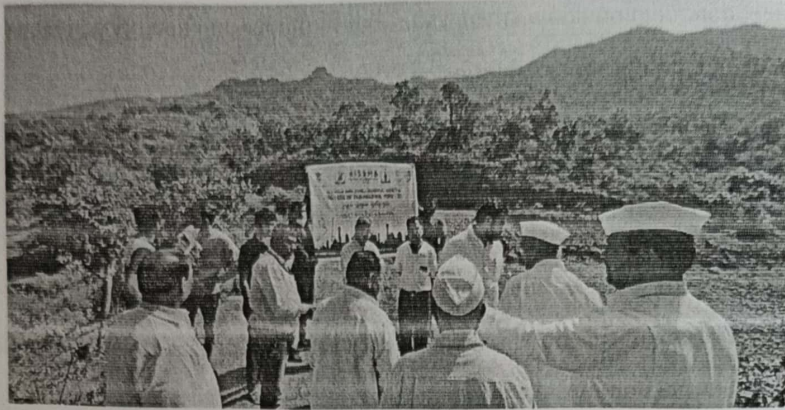
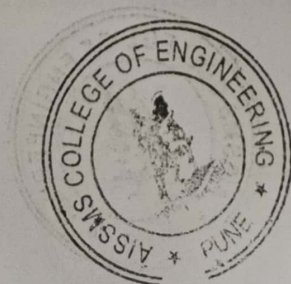


Fig. 3. Dam Survey and Investigation carried by team of AISSMS COE Pune

Lidar Survey

It has been found that some corrections and error occurred in Contour Map and decided to carry out this work with Advance Instrument to rectify errors in conventional surveying. Further Survey is carried out by All India Shri Shivaji Memorial Society's College of Engineering, Pune-01, Unnat Bharat Abhiyan unit at Kalyan, Tal. Haveli, Dist. Pune on Monday 8th Feb. 2021 under presence of Sarpanch Shri. Rajesh Dimble, NSS programme Officer Dr. N. S. Shejwal, HOD of Civil Engineering Dr. U. R. Awari, Prof. P. R. Modak Sir, Prof. V.S, Chavhan. The main objective of survey is to solve the problems of villagers about consumption of rainwater.

Topographical survey have been carried out as per the guidelines given by consulting team of Trident Engineers, Shri. B.S. Holkar. We also have discussed how to increase catchment area by identifying the selection site criteria. Advance survey is carried with Trimble GPS R10, to collect more accurate data faster and easier – no matter what the job or the environment, with the Trimble® R10 GNSS System. Built with powerful technologies integrated into a sleek design, this system provides surveyors with a powerful way to increase data collection productivity in every job, every day. The Trimble R10 GNSS receiver LEDs enable you to monitor satellite tracking, radio reception, data logging status, Wi-Fi status, and power. Bluetooth wireless technology provides cable-free communications between the receiver and controller. With the help of this apparatus we are able to measure the height, length, width and depth of the dam basin accurately. The receiver that calculates all the data is fitted onto a specific bag, which the person surveying wears on his back and has to walk and cover the required area to be surveyed. While the second



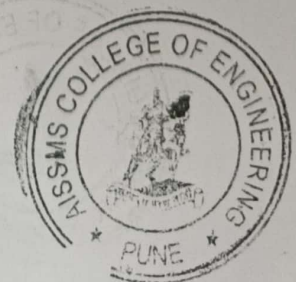
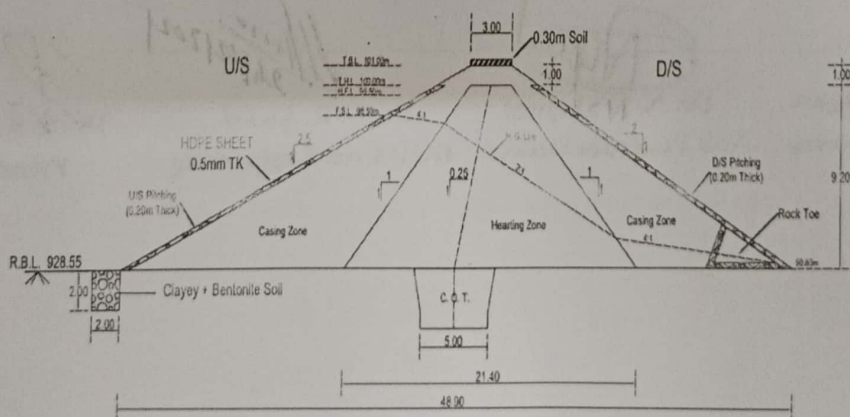
receiver is set at a stationary point which sends the information from the first receiver to the satellite for accurate readings.



Fig. 5. Survey Expert Mr. B.S. Holkar, Dr. U R Awari , Dr. N S Shejwal, Prof. V S Chavhan & Prof. P R Modak

Provision as per Guidelines provided by Govt. of Maharashtra

As per guidelines provided by Govt. of Maharashtra, in this dam suggested that vertical cutoff is provided on upstream side by excavating trenches of 2 m width and depth is 2 m or extended upto hard strata. Vertical cut off is filled by mixture of clayey soil and bentonite soil with provision of 500 micron (0.5 mm) HDPE sheet. HDPE Sheet is provided on upstream side of dam and then covered on top of dam and extended by 1m on its downstream side. At top of dam available soil is filled and compacted to 0.30 m depth. Upstream side of dam is suggested to filled and compacted with bentonite soil.

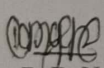


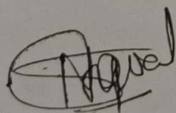
Expected Storage calculations

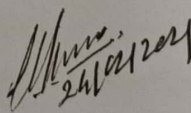
- Measured Catchment area as per Lidar survey – 0.59 Km²
- Available water capacity as per present Scenario – 1,78,43,000 litres
- Expected availability of water after removal of silt load – 3, 45, 63,000 litres.
- Yield of water as per average yearly annual rainfall – 4, 07, 40,000 litres.
- Reservoir capacity of dam to hold water – 8, 43, 00000 litres.
- Demand of water as per present population – 9, 49, 00000 litres.

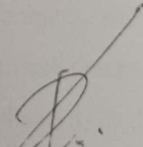
Cost Analysis

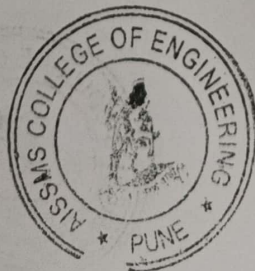
Sr. No.	Description of items	Area/Volume	Unit	Rate	Amount (Rs.)
1	HDPE Sheet of 0.5 mm thick	1737.12	m ²	140	2,43,196.80
2	Excavation	27705.48	m ³	80	22,16438.00
3	Bentonite + clayey Soil	352	m ³	lumsun	25000.00
Total Cost					24,84,634.00


Dr. P. B. Nangare
Civil Engineering


Dr. N. S. Shejwal
NSS Program Officer


Dr. U. R. Awari
HOD Civil Engineering


Dr. D. S. Bormane
Principal



CONTOUR MAP OF KALYAN DAM - PERCOLATION TANK

