

कार्यकारी अभियंता,
मध्यम प्रकल्प विभाग, गोंदिया,

**Executive Engineer,
Medium Project Division, Gondia**

सरळ सेवा भरतीने नियुक्ती दिलेल्या सहाय्यक कार्यकारी अभियंता/सहाय्यक अभियंता श्रेणी-१
अधिकाऱ्यांसाठी प्रतिष्ठापन प्रशिक्षण कार्यक्रम, (भाग १), जलसंपदा विभाग
Induction Training (Part I) for Direct Recruits (Assistant Executive Engineer and
Assistant Engineer (Grade 1)) of Water Resource Department.

कालावधी: १९-२१ नोव्हेंबर २००७
Duration: 19-21 November 2007

“क्षेत्रीय प्रशिक्षण अहवाल” “FIELD TRAINING REPORT”

सादरकर्ता-

Submitted by-

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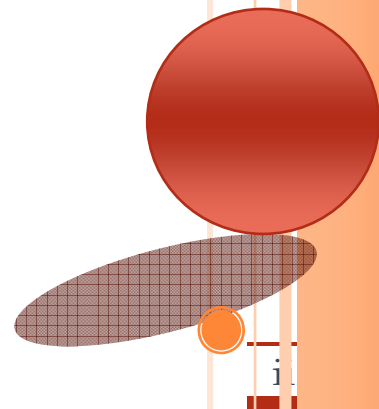
Vidarbha Irrigation Development Corporation, Nagpur

Executive Summary

Maharashtra Engineering Training Academy (META), Nashik organized training program for direct recruits - Assistant Executive Engineer of Water Resource Department (WRD), in accordance with Maharashtra Engineering Service Examination-2004. As per schedule of training program, group of Assistant Executive Engineer's was directed to undergo field training under the guidance of Superintending Engineer, Gosikhurd Lift Irrigation Circle, Aambadi, Bhandara to grasp knowledge about lift irrigation schemes.

Medium Project Division, Gondia is headed by Executive Engineer- Shri. Parvate saheb and it includes major project- Bawanthadi, Medium project- Umarzari Medium Project, Katangi Medium Project, Kalpathari Medium Project, Lower Chulband LIS and minor irrigation projects, viz., Asoli minor Irrigation project, Nawatola minor Irrigation project, Satbahini minor Irrigation project, Bhimalkaksha minor Irrigation project, Bandarchuha minor Irrigation project, Upasiya minor Irrigation project, Sundari minor Irrigation project, Murdoli minor Irrigation project, Pindakepar minor Irrigation project, Nimgaon minor Irrigation project, Palandur (Jamindari) minor Irrigation project etc. Among major projects, the Godnara Bawanthadi project is under this division and the work of Right Bank canal is under progress. Bawanthadi project is an inter-state project between Maharashtra and Madhya Pradesh. There are five subdivisions to cater the construction work activities

While studying about the projects, I realized the great technical and management skills involved during implementation of the project. It is biggest challenge to every engineer of the division, to convert all designs and drawings in to reality, without entertaining any mistake or fault. Definitely, their contribution in the success of the entire project is uncountable. I am sure that completion of the project will bring green revolution in Vidarbha region.



कार्य सारांश

महाराष्ट्र लोकसेवा आयोगामार्फत घेण्यात आलेल्या 'महाराष्ट्र अभियांत्रिकी सेवा परिक्षा-२००४' च्या निकालाच्या अनुसंधाने 'सहाय्यक कार्यकारी अभियंता' या पदावर नियुक्ती दिलेल्या अधिकाऱ्यांसाठी 'महाराष्ट्र अभियांत्रिकी प्रशिक्षण प्रबोधिनी', नाशिक या संस्थेद्वारे एका वर्षाच्या प्रशिक्षण कार्यक्रमाचे आयोजन करण्यात आले. या प्रशिक्षण कार्यक्रमांतर्गत, पहिल्या तुकडीतील सहाय्यक कार्यकारी अभियंत्यांचा पहिला गट क्षेत्रीय प्रशिक्षणासाठी अधीक्षक अभियंता, गोसीखुर्द उपसा सिंचन मंडळ, आंबाडी, भंडारा यांच्याकडे दि. ०५ नोव्हेंबर २००७ रोजी तीन आठवड्यांच्या प्रशिक्षणासाठी रुजू झाला.

प्रशिक्षणाच्या तिसऱ्या आठवड्यामध्ये आम्हांला 'मध्यम प्रकल्प विभाग, गोंदिया' या विभागाचे कार्यकारी अभियंता-श्री. पर्वते साहेब यांचे मार्गदर्शन लाभले. या विभागांतर्गत बावनथडी हा मोठा प्रकल्प, उमरझरी मध्यम प्रकल्प, कटंगी मध्यम प्रकल्प, कालपाथरी मध्यम प्रकल्प, निम्न चुलबंद उपसा सिंचन योजना आणि आसोली लघुपाटबंधारे प्रकल्प, नवाटोला लघुपाटबंधारे प्रकल्प, सातबहिनी लघुपाटबंधारे प्रकल्प, भिमलकझा लघुपाटबंधारे प्रकल्प, बंदरचुहा लघुपाटबंधारे प्रकल्प, उपासिया लघुपाटबंधारे प्रकल्प, सुंदरी लघुपाटबंधारे प्रकल्प, मुरदोली लघुपाटबंधारे प्रकल्प, पिंडकेपार लघुपाटबंधारे प्रकल्प, निमगांव लघुपाटबंधारे प्रकल्प, पालांदूर (जमिनदारी) लघुपाटबंधारे प्रकल्प इ. प्रकल्प आहेत.

सदर विभागाचे काम पाहून विविध प्रकल्पांसंबंधीच्या आव्हानात्मक कामाची मला जाणीव झाली. या विभागाचे कार्यकारी अभियंता - श्री. पर्वते साहेब यांच्या मार्गदर्शनाद्वारे सर्व अधिकाऱ्यांच्या व कर्मचाऱ्यांच्या संघटनात्मक, कार्यक्षम आणि सदैव मदतीसाठी तत्पर असण्याच्या स्वभावामध्येच या विभागातील यशाचे गमक सामावले आहे. या प्रकल्पाच्या यशामध्ये त्यांचा वाटा निश्चितच मोलाचा आहे व त्यातुनच या भागामध्ये हरितक्रान्ती होवून या भागाचा विकास होईल असे मला वाटते.

Acknowledgement

This report will be incomplete without a proper acknowledgment of the debt to many persons, who made it possible. It is my great pleasure to acknowledge those whose active help and support make this report possible in the present form. First of all I express my sincere gratitude to Shri. S.R. Suryavanshi- Chief Engineer for their guidance during field training.

It is the endless guidance and constant encouragement of Executive Engineer- **Shri. Parvate**, and I would like to express my heartfelt gratitude to him for providing us necessary drawings and technical information along with the stay arrangements.

I am deeply indebted to all technical and non-technical staff of circle office for insisting in me the drive to work hard and for inculcating in me the discipline to think clearly. Definitely the knowledge, I received during this training session was a lifetime experience and it will serve as a foundation for my career.

I am thankful to my colleagues who make the stay at Rest House enjoyable. Last, but not least, I wish to express my gratitude towards my parents- Shivaji and Rohini, my grandparents- Rangnath and Sitabai, my uncle Raosaheb and aunty Radhika who sacrificed a lot to give me a good education.

- Pravin Kolhe BE (Civil), MTech (IITK)
(Assistant Executive Engineer)

Chapter 1. Medium Project Division, Gondia

1.1 Introduction

The Gosikhurd Lift Irrigation Circle, headed by Superintending Engineer- Shri. Pohekar carrying out the construction work of Lift Irrigation Schemes, proposed under Gosikhurd Project. Fore foreshore LIS were suggested while preparing the project for Administrative Approval. This chapter includes the basic study of these LIS and other major projects coming under Gosikhurd Lift Irrigation Circle. Following major projects are ongoing under the supervision of this circle-

1. Ambhora Lift Irrigation Scheme
2. Mokhabardi Lift Irrigation Scheme
3. Nerala Lift Irrigation Scheme
4. Gosikhurd Left Bank Canal
5. Bawanthadi Project

Other 7 medium and 13 minor irrigation projects are also coming under this circle. To cater these vast volumes of work efficiently there are 5 divisions and 23 subdivisions, and during our training session, we planned to visit most of the projects, as per direction of Superintending Engineer- Shri. Pohekar Sir.

1.2 Medium Project Division, Gondia

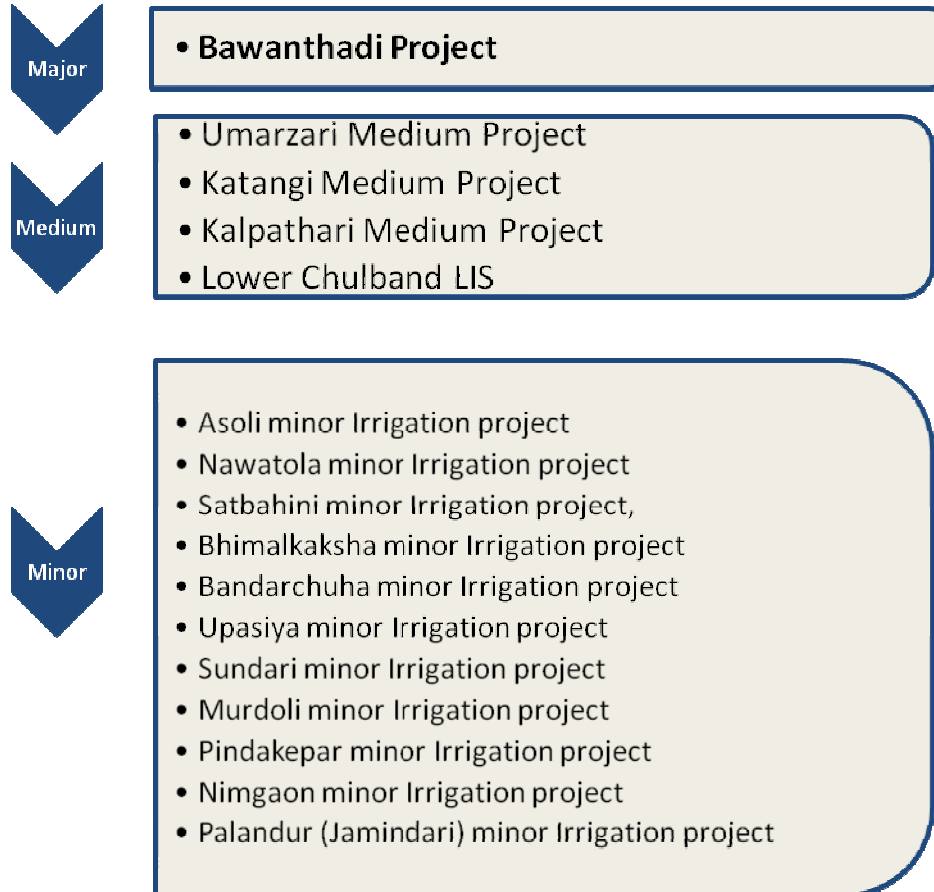
As per schedule, we visited 'Medium Project Division, Gondia' from 19-21 November 2007 to grasp knowledge about medium projects undertaken through this division. Shri. Parvate saheb is Executive Engineer of this division and there are following subdivisions-

1. Medium Project Subdivision Sakoli,
2. Minor Project Subdivision, Gondia,
3. Minor Project Subdivision, Devaree,
4. Bawanthadi Right Bank Canal Subdivision No. 3, Tumsar,
5. Bawanthadi Right Bank Canal Subdivision No. 5, Tumsar,

The work of Right Bank Canal of Bawanthadi project is under the supervision of this division, which is a inter-state project between Maharashtra and Madhya Pradesh state.

1.3 Projects under Medium Project Division

Following projects are under construction: -



Chapter 2. Katangi Medium Project

2.1 Katangi Medium Project

Katangi medium project is constructed on a nalla at Katangi village, Goregaon Tahsil of Gondia district. 2044 ha of 8 villages land will be irrigated from this project along with the drinking water supply scheme for 17 nearby villages. The constriction work is dam is completed and 80% work of main canal and 60% work of distributaries is completed.

The gorge filling of Katangi project was completed in 2001, which is a earthen dam. After gorge filling, it was observed that there are some problems like piping, which is going to cause danger to the dam. To tackle this problem, division officers requested to Superintending Engineer, (Earthen Dam), CDO¹. As per his suggestions, it was proposed to provide Loading Berm and Pressure Relief wells on down stream side of the dam. Thus the problem of piping was rectified with these measures and now there is no harm to the dam.

1.1 Salient features of Katangi Medium Project

| | | |
|-----------------------------|-----|--------------------------------|
| 1. Original AA ² | : | Rs. 2.201 Cr (Dt. 15/01/1983) |
| 2. Revised AA | : | Rs. 9.66 Cr. (dt. 27/09/1994) |
| 3. Second Revised AA | : | Rs. 40.54 Cr. (Dt. 23/01/2006) |
| 4. Total water utilization | : | 14.80 Mm ³ |
| 5. Gross storage capacity | : | 11.12 Mm ³ |
| 6. Live storage capacity | : | 9.40 Mm ³ |
| 7. Dead storage | : | 1.72 Mm ³ |
| 8. Length of dam | : | 2310m |
| 9. Max. height | : | 13.65m |
| 10. Spillway Capacity | : | 847.50 m ³ /sec |
| 11. Canal length | : | |
| | RBS | : 6.39 km |
| | LBS | : 7.63km |

¹ Central Design Organization, Nashik

² Administrative Approval

Chapter 3. Bawanthadi Project

3.1 Bawanthadi Project

Bawanthadi project is an interstate project between Maharashtra and Madhya Pradesh and the construction work of dam is in progress on Bawanthadi river, at Sitekasa Village, Tumasar Tahsil of Bhandara district. As per interstate contract, the construction work of dam and left bank canal is carried out by Madhya Pradesh Government and the work is Right bank canal is carried out by Maharashtra Government.

3.2 Salient features of Bawanthadi Project

- 1) Name of project : Bawanthadi Project
- 2) Latitude : 20° 32' 30"
- 3) Longitude : 79° 32'30"
- 4) Toposheet : 50/0/10

| | Maharashtra | Madhya Pradesh |
|-----------------|-------------|----------------|
| Village | Sitekasa | Kudawa |
| Tahsil | Tumsar | Warasivani |
| District | Bhndara | Balaghat |

- 5) River Basin and sub-basin :
 - a. Godawari Basin
 - b. Wainganga Basin
- 6) Catchment area
 - a. Maharashtra : 601 km²
 - b. Madhya Pradesh : 764 km²
 - Total : 1365 km²**
- 7) Average Rainfall in catchment area : 1162.55mm
- 8) Average rainfall during monsoon season : 1071 mm
- 9) Water Availability
 - a. 75% dependable storage : 475.72 Mm³
 - b. Upstream reservation : 113.27 Mm³
 - c. Balance available storage : 362.45 Mm³
 - d. Refilling stream from u/s reservation : 11.33 Mm³
 - e. Planned available storage at Sitekasa dam : 373.78 Mm³

10) Water Utilization

| | Irrigation | Storage losses | Required dead storage |
|-----------------------|------------------------|-----------------------|------------------------|
| Maharashtra | 88.01 Mm ³ | 20.65 Mm ³ | 108.66 Mm ³ |
| Madhya Pradesh | 88.01 Mm ³ | 20.65 Mm ³ | 108.66 Mm ³ |
| Total | 176.02 Mm ³ | 41.30 Mm ³ | 217.32 Mm ³ |

- 11) Approximate storage (including silt pocket) : 280.241 Mm³
- 12) Important levels (in meters)
 - a. Top Dam Level : 348.65 m

- b. Highest level : 345.60m
 c. Maximum Water Level : 344.40m
 d. Crest level of spillway : 332.40m
 e. MDDL¹ : 336.75m
 f. RBL² : 317.60m
 g. Bed level of RBC : 333.50m
 h. Bed level of LBC : 333.50m
- 13) Spillway
 a. Discharge : 14200 m³/sec
 b. Maximum length : 148m
 c. Maximum height : 14.8m (from River bed)
 d. Radial Gates : 15x12m, (6 No's)
- 14) Earthen Dam
 a. Length : 6420m
 b. Maximum Height : 31.00m
- 15) Submergence area

| | Submerged area (ha) | Submerged villages | PAP ³ Population |
|-----------------------|---------------------|--------------------|-----------------------------|
| Maharashtra | 3476.83 | 10 | 3278 |
| Madhya Pradesh | 943.17 | 1 | 525 |
| Total | 4420.00 | 11 | 3803 |

16) Canals

| | Length (km) | Discharge (m ³ /sec) |
|-----------------------------|-------------|---------------------------------|
| RBC (Maharashtra) | 26.61 | 25.65 |
| LBC (Madhya Pradesh) | 80.52 | 22.275 |

17) Irrigation potential: (ha)

| | Gross Command area | Irrigable Command area | Culturable Command area |
|-----------------------|--------------------|------------------------|-------------------------|
| Maharashtra | 39459 | 17537 | 25062 |
| Madhya Pradesh | 37410 | 18615 | 23786 |
| Total | 73839 | 36152 | 48848 |

18) Cost of project

- a. Original AA : Rs. 23.47 Cr (1975)
 b. Revised AA : Rs. 161.57 Cr.(1989)
 c. Second Revised AA : Rs. 374 Cr. (1999-2000)

19) State wise share

| | 1989 (Rs in Cr) | 2001-02 (Rs in Cr) |
|-----------------------|-----------------|--------------------|
| Maharashtra | 71.79 | 182 |
| Madhya Pradesh | 89.78 | 195 |

20) Villages under submergence

¹ Minimum Draw Down Level

² River Bed Level

³ Project Affected People

| Maharashtra | Bhandara District | Nagpur District |
|-----------------------|--------------------------|-------------------------------|
| | Sitekasa | Pusada and Birtola |
| | Susurdoh | Murzad and Birtola |
| | Kamasur | Chikanapur and Jogitola |
| | | Karajghat |
| | | Pidakepar |
| | | Sitepartola (Partly affected) |
| | | Tangala (Partly affected) |
| Madhya Pradesh | Balaghat District | |
| | Khairlangi | |

21) Villages benefited from this project (Maharashtra):

| | | | | |
|--------------|-------------|--------------|--------------|-----------------|
| Kurmuda | Chikhali | Devnara | Lobhi | Aashti |
| Chandmara | Pathara | Rajapur | Chikhala | Kavalewada |
| Karali | Aasalpani | Chicholi | Aambagagh | Garha |
| Hardoli | Hingana | Hasara | Khapa | Navargaon |
| Ghutera | Bori | Tumsar | Koshti | Bramhani |
| Devhadi | Magadi | Chargaon | Sukali | Dhorwada |
| Mandhal | Panjara | Parsawada | Tudaka | Tamasawadi |
| Mangali | Rampur | Bapera | Sivani Khurd | Hirapur hamesha |
| Davezari | Dongari Bu. | Nakadongari | Kharabi | Jogiwada |
| Garawabhonga | Takala | Katebramhani | Salaie Bu. | Vihirgaon |
| Saalai | Usari | Paldongari | Bhikarkheda | Tanga |
| Sihari | Rohana | Ghatkuroda | Betala | Aklara |
| Kushari | Vadegaon | Dharmapuri | Aandhalgaon | Dongargaon |
| Mohadi | Mahalgaon | Kalamana | Kanhalgaon | Roha |
| Nerala | Akola | Khairi | Kothurna | Laveshwar |
| Takali | Indurakha | | | |

Conclusion

During our training session, we studied most of the important reports/documents related to Bawanthadi project and other projects under Medium Project Division, Gondia. It was great experience for me, since I could realize the design of structures and various components which are associated with medium irrigation project.

The Bawanthadi project is one of the ambitious projects and since it is spread over thousands of hectare of land, and being an interstate project, it will benefit the people from both-Maharashtra and Madhya Pradesh states. Bawanthadi project is an interstate project between Maharashtra and Madhya Pradesh and the construction work of dam is in progress on Bawanthadi river, at Sitekasa Village, Tumasar Tahsil of Bhandara district. As per interstate contract, the construction work of dam and left bank canal is carried out by Madhya Pradesh Government and the work is Right bank canal is carried out by Maharashtra Government.

There are several other challenging projects undertaken through this division and I feel myself fortunate to be witness of the projects which will bring green revolution in Vidarbha Region. I tried my best to gather maximum knowledge through observation and discussion with the officers and staff, and it will be helpful throughout my career.

We are thankful to Executive Engineer-Shri. Parvate saheb and all the officers and staff of division and subdivision office for their guidance and co-operation during this training session.

-Pravin Kolhe
(Assistant Executive Engineer)

