

Work details of Shirahatti Lift (20 Tank Filling).

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|----|---------------------------------|---|
| 1 | Name of Work. | Shirahatti Lift (20 Tank Filling) |
| 2 | Name of Agency | M/s Ocean Constructions India Pvt Ltd., Mangalore. |
| 3 | Estimate Approval No. | CER NO: 406/2017-18 Dt 30.08.2017 |
| 4 | Sanctioned Estimated Amount | 14000.00 Lakhs |
| 5 | Amount put to tender | 13024.13 Lakhs |
| 6 | Contract Value | 13706.88 Lakhs |
| 7 | Stipulated Period of Completion | 24 Months |
| 8 | Agreement No & Date | 34/2017-18 Dated: 12.01.2018 |
| 9 | Due date of Completion | 11.01.2020 |
| 10 | Upto date expenditure | Rs. 3531.00 Lakhs (Balance is Rs.10175.88 Lakhs) |

Salient features of Shirahatti Lift (20 Tank Filling)

| | | |
|---|---|--|
| 1 | Total no of Tanks to be filled for Drinking and recharging ground water | 20 Tanks of Shirahatti Tq (Statement of Tank details is enclosed) |
| 2 | Source of Water | Tungabhadra River near Itagi village of Shirahatti Tq., |
| 3 | Water Allocation for the work | 0.226 TMC |
| 4 | Total Discharge | 29.134 Cusecs |
| 5 | Static Head | 143.50 m (226.00 m pump head) |
| 6 | Diameter of MS Pipes | Varies from 600 mm to 800 mm |
| 7 | Present Stage of the Work | Construction of Jackwell cum pumphouse and procurement of Pipes, Guniting, Inlining painting and laying of pipes are under progress. |

NAME OF WORK: Providing Lift irrigation scheme for water filling the percolation tanks From Tunga bhadra River near Itagi village, Shirahatti taluk, Gadag district

SALIENT FEATURES

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|--|---|
| 1. Name of the project Taluk / District. | : Shirahatti lift Irrigation scheme. : Shirahatti/ Gadag |
| 2. Estimate cost of the Project | : RS 140.00 crores |
| 3. Area proposed to fill | : 20 tanks. |
| 4. Purpose | : Drinking water supply : Recharging ground water |
| 5. . Utilisation | : 226.130 Mcft |
| 6. Lifting head i) For D.C (static) | : 143.500 Mtrs.(RL 501.500 -RL 645.000) |
| 7. Length of raising main i) From Jack well to J1 of 800mm dia MS Pipe | : 5712.00 Mtrs |
| ii) From J1 to J2 of 800mm dia MS Pipe | : 915.0 Mtrs |
| iii) From J2 to J3 of 800mm dia MS Pipe | : 7245.0 Mtrs |
| iv) From J3 to J4 of 775mm dia MS Pipe | : 7315.00 Mtrs |
| v) From J4 to DC-4 of 700mm dia MS Pipe | : 3296.0 Mtrs |
| vi) From J1 to DC-1 of 150mm dia MS Pipe | : 150.0 Mtrs |
| vii) From J2 to Tank-1 of 100mm dia MS Pipe | : 300.00 Mtrs |
| v) From J3 to DC-2 of 200mm dia MS Pipe | : 250.0 Mtrs |
| vi) From J4 to DC-3 of 200mm dia MS Pipe | : 250.0 Mtrs |
| 8. Total number of pumps Including the stand by | : 5 No's. : 835 HP Each. |
| 9. No. of villages benefited | : 20 No's |
| 10. District / Taluk benefited | : Shirahatti / Gadag |

12. Location

:

- i) Distance of site : Near Itagi Village
- ii) Nearest District : Gadag.
- iii) Nearest village : Itagi
- iv) Existing approach road : Existing Village Road of Itagi To Sasarvada

13. Source of water

- i) River : Tunga Bhadra river
- ii) Perennial /Non Perennial :River is Perennial but lifting only in
Rainy season from June to September
- iii) L.W.L / F.R.L :R.L. 501.500 Mtrs and R.L. 509.00 Mts
- iv) Suitability of water :Yes
- i) Requirement of water for
The scheme at site : 226.130 Mcft

NAME OF WORK: Providing Lift irrigation scheme for water filling the percolation tanks and providing drinking water From Tunga Bhadra River near Itagi village, Shirahatti taluk, Gadag district

REPORT

The rainfall is decreasing year by year leading to the scarcity of water for domestic use of various villagers in the regions of Gadag District, Shirahatti Taluk. This has also led to the fall of underground water table and failure of sunk wells / bore wells. Even if we find water in such depth there is always presence of dissolved or suspended minerals in it which is neither potable nor palatable. The villagers, local representatives and leaders of these areas are requesting to propose a tank filling scheme to feed water in to 20 tanks comes under Shirahatti taluk, Gadag District to recharge ground water and supply of Drinking water supply.

The Detailed estimate has been prepared by making use of Survey of India Topo sheets, Village maps and reconnaissance survey on proposed location. Project details are explained detail as below:

The details of the existing tanks that require Augmentation was studied in consultation with the local people and the representatives.

Based on the existing capacity, storage conditions in the previous years and requirement of water for domestic use of water through these tanks, it has been decided to augment these tanks to an extent of 100% of its capacity in Rainy Season i.e., when there will be continuous flown in the river without effecting the flow regime in the river..

The total No. of such tanks is shown below.

| SL. No | TANK NUMBER | TANK NAME | | | | | |
|----------------------|-------------|-------------------------|----------|---------------|--------------------------|-----------|--------|
| | | | TANK FRL | TANK CAPACITY | PROPOSE TO FILL THE TANK | DISCHARGE | |
| | | | (M) | (Mcft) | (Mcft) | Cusecs | Cumecs |
| DELIVERY CHAMBER - 1 | | | | | | | |
| 1 | Tank-1 | TANGOD KERE | 533.128 | 8.000 | 4.000 | 0.514 | 0.015 |
| 2 | Tank-2 | KARIKOPPA KERE | 537.409 | 8.000 | 4.000 | 0.514 | 0.015 |
| 3 | Tank-3 | VADVI KERE & KONCHIGERI | 569.795 | 13.180 | 6.590 | 0.847 | 0.024 |
| 4 | Tank-4 | BELAGATTI KERE | 569.223 | 8.000 | 4.000 | 0.514 | 0.015 |
| 5 | Tank-5 | TARIKOPAKERE | 577.267 | 2.500 | 1.250 | 0.161 | 0.005 |
| 6 | Tank-6 | TARIKOPAKERE | 551.085 | 4.500 | 2.250 | 0.289 | 0.008 |
| | | Sub Total | | 44.180 | 22.090 | 2.841 | 0.080 |
| DELIVERY CHAMBER - 2 | | | | | | | |
| 7 | Tank-7 | BELHATTI KERE | 576.165 | 10.000 | 5.000 | 0.643 | 0.018 |
| 8 | Tank-8 | BELHATTI KERE | 584.000 | 5.000 | 2.500 | 0.322 | 0.009 |

| SL. | TANK | TANK NAME | | | | | |
|-----|--|--------------------|---------|---------|---------|--------|-------|
| 9 | Tank-9 | BELHATTI KERE | 594.342 | 8.000 | 4.000 | 0.514 | 0.015 |
| 10 | Tank-10 | RANTURKERE | 577.131 | 2.500 | 1.250 | 0.161 | 0.005 |
| 11 | Tank-11 | DEVIHAL KERE | 588.783 | 20.000 | 10.000 | 1.286 | 0.036 |
| 12 | Tank-12 | CHABBI KERE | 600.288 | 8.000 | 4.000 | 0.514 | 0.015 |
| 13 | Tank-13 | MAJJUR KERE | 601.248 | 204.710 | 102.355 | 13.163 | 0.373 |
| 14 | Tank-14 | KUNDRAHALLI KERE | 598.495 | 11.200 | 5.600 | 0.720 | 0.020 |
| 15 | Tank-15 | SHETTIGERI KERE | 611.704 | 27.870 | 13.935 | 1.792 | 0.051 |
| | CHECK DAM ALONG THE DODDANALA | | | 53.550 | 26.775 | 3.443 | 0.098 |
| 16 | Tank-16 | ADERKATTI | 611.520 | 4.500 | 2.250 | 0.289 | 0.008 |
| 17 | Tank-17 | MAJALAPURA KERE | 611.704 | 15.000 | 7.500 | 0.965 | 0.027 |
| 18 | Tank-18 | LAKSHMESHWARA KERE | 617.129 | 11.050 | 5.525 | 0.711 | 0.020 |
| 19 | Tank-19 | LAKSHMESHWARA KERE | 618.293 | 3.000 | 1.500 | 0.193 | 0.005 |
| 20 | Tank-20 | MUTTIKERE | 624.638 | 4.000 | 2.000 | 0.257 | 0.007 |
| | CHECK DAM ALONG THE NATURALNALA 20Nos check dam filling | | | 19.700 | 9.850 | 1.267 | 0.036 |
| | | Sub Total | | 408.080 | 204.040 | 26.240 | 0.743 |
| | TOTAL = | | | 452.260 | 226.130 | 29.081 | 0.823 |

The No. of villages benefitted are as follows:

- 1) VADVI KERE, 2) BELAGATTI KERE, 3) TANGOD KERE, 4) BALEHOSUR KERE, 5)KARIKOPPA KERE, 6) BELHATTI KERE, 7) DEVIHAL, 8) MAJJUR, 9) KODKOL, 10)CHABBI, 11) VARVI, 12) SHETTIGERI, 13) KUNDRAHALLI, 14) LAKSHMESHWARA, 15) SIGLI, 16)DODDUR, 17) SURANGI,

Water Availability:

The lifting period is 90days in the months July to September. The water required is 0.823cumecs or 29.134cusecs and there will be sufficient flow in the river in this period as per local enquiry. The gauge data details are obtained from CWC authorities to confirm the availability of yield at this point of Tungabhadra river same has been enclosed to the DPR.

Details of the scheme:

The total quantum of water required is 226Mcft or 0.226TMC and this is proposed to be lifted from Tungabhadra River near Itagi Village which is the suitable and nearest point as per the investigation done.

The total requirement of 0.226TMC of water required for filling total 20 tanks comes under Shirahatti Taluk. The water is proposed to be lifted from Tungabhadra River near Itagi Village.24 hours pumping for continues 90 days by using 4(working) + 1 (standby) VT Pumps of capacities 835HP is proposed to lift water of 0.823 cumecs.

Details of Scheme:

a) **Lifting arrangements** of lifting 0.226TMC of water from left Bank of Tungabhadra River near Itagi Village of Shirahatti Tq. Gadag Dt. with intake arrangements located at an Latitude: 14°57'4.28"N and

Longitude: 75°43'27.26"E. The intake canal is 80m length and the Jack well/ Pump house is located about 500m from Itagi Village by the side of Itagi To Sasarvada road.

b) **Intake canal:** The bed level of Tungabhadra River near intake point is RL 500.169m and the FRL of the river is RL 509.000m. The GL of left flank is 504.450m at off-take point and rising to an RL of 510.546m at a distance of 80m where the Pump house is located. In order to have defined intake, embankment with protective measures is proposed to the required section in the river portion. The entire length is proposed to be lined with paver concreting to a thickness of 0.075m with 1m berm at FSD+ FB level. The discharge considered is 2.0 times the required discharge of 0.823 cumecs i.e., 1.646cumecs with Bed fall of 1 in 2000. The details are as follows:

| No | Particulars | Details |
|----|---------------------------------|--|
| 1 | Required discharge | 0.823 Cumecs+100% Extra = 1.646Cumecs |
| 2 | Designed discharge (2 times Qr) | 1.646Cumecs |
| 3 | Bed gradient | 1 in 2000 |
| 4 | Bed Width | 1.50 m |
| 5 | Full Supply Depth | 0.90 m |
| 6 | Free Board | 0.30 m |
| 7 | Side slope | 1:1 |
| 8 | Bed level at off take | RL 500.300 m |
| 9 | Length | 80.0 m |
| 11 | Type of lining and thickness | CC Lining with 75mm Thick |

c) **Fore-Bay:** The length of the fore-bay including transition is 30m and it is designed suitably to accommodate 5 vents of 3.50 m c/c. The RL at junction of transition and Sump is 499.000m i.e., sump Floor level. The MDDL level is 501.500 and the delivery level is 645.00 m resulting in Static Head is 143.500m. The side walls and the floor is suitably designed with RCC and the height of side walls are kept at Ground level.

d) **Jack well cum Pump House:** The floor level of the pump house is kept at RL 511.000m i.e., 2.00 above the HFL of RL 509.000m. The side walls of sump well are designed as retaining walls and the pump house walls are constructed with brick walls and framed structure. The pump house size is 14.72m x 27.50 to accommodate 5Nos. of pumps, control room, service bay. The details of electromechanical details adopted are as follows.

| Sl.No | Particulars | Details of 1st lift |
|-------|---------------------------|--------------------------------------|
| 1 | Type of Pump | V T Pumps |
| 2 | Efficiency of Pump | 82% |
| 3 | Efficiency of Motor | 90% |
| 4 | Minimum draw down level | 501.500 m |
| 5 | Delivery Level | 645.000m |
| 6 | Static Head | 143.500 m |
| 7 | Losses (Friction + other) | 82.500 m |
| 8 | Total Pump Head | 226.000m |
| 9 | Peak Discharge | 0.823cumecs |
| 10 | Number of Pumps | 4 working + 1 Standby |
| 11 | Discharge for each Pump | 0.205Cumecs |
| 12 | Capacity of each Pump | 835HP (623 KW) |
| 13 | Total Installed Capacity | 3340HP (2492KW) |
| 14 | Electrical Sub-station | 2x3200 KVA 110KV/6.6 KV Sub |
| 15 | Suction pipe | 500 mm diameter 10 mm thick MS pipes |
| 16 | Delivery pipe | 450 mm diameter 10 mm thick MS pipes |
| 17 | Manifold system | 1000 mm diameter 16 mm thick MS pipe |

The RL at different levels of pump house are as follows:

| No | Particulars | Details of 1 st Lift |
|----|-----------------------------------|---------------------------------|
| 1 | Type of structure | RCC Rectangular structure |
| 2 | Minimum water level/ Intake level | 501.500 m |
| 3 | Ground level | 510.546 m |
| 4 | Sump bottom level | 499.000 m |
| 5 | MWL | 509.000 m |
| 6 | Pump floor level | 511.000 m |

| No | Particulars | Details of 1 st Lift |
|----|-------------------|---------------------------------|
| 7 | Motor floor level | 514.500 m |
| 8 | Gantry level | 523.500 m |
| 9 | Roof level | 526.500 m |

e) **Rising main:** The total discharge drawn from 4 working pumps and connected to manifold and non-return valve and on to rising main. 800mm dia MS pipes of thickness 7.90 mm thick running to a length of 5.712 km i.e., up to 1st junction (leading to DC-1), 6.10mm thick with 800mm dia from Junction-1 to junction-2 running to a length of 0.915km, 6.10 mm thick with 800mm dia from Junction-2 to junction-3 running to a length of 7.245 km, 6.10mm thick with 775mm dia from Junction-3 to junction-4 running to a length of 7.315 km, 6.0 mm thick with 700mm dia from Junction-4 to Delivery chamber - 4 running to a length of 3.296 km. The total length of trunk rising main is 24.483 km.

| No. | Particulars | Details of 1 st Lift |
|-----|---------------------------------|---------------------------------|
| 1 | Length of the Rising Main (m) | 24.483 Km (Trunk line length) |
| 2 | Design Discharge (Cumecs) | 0.823cumecs |
| 3 | Number of Rows (No) | 1 |
| 4 | Discharge for each Row (Cumecs) | 0.823cumecs |
| 5 | Velocity considered (m/s) | Between 1.5 m/s to 2.0 m/s |

f) **Delivery chambers:** Four delivery chambers along Main Trunk line of Raising main i.e., one @ Junction-1 at ch.5.712km, 2nd one @ 13.872 KM, 3rd at 21.187KM and 4th at end at ch:24.483 km with delivering capacity of 1.311cum, 4.617 cum, 3.769 cum and 63.103cum respectively. They are designed with retention time of 90 seconds.

The power requirement for different lifts is as follows;

The total power requirement is 3200 KVA for lifting total quantity of water required for the project at Itagi and 110 KVA. The power requirement is calculated taking into account of No. of working pumps and auxiliary power supply.

The voltage level at which power is required is 6.6 KV. It is proposed draw 110KV line from the source which is stepped down to 6.6 KV at feeding point. Construction of 110 KV sub-station is proposed at pump house.