**GOVERNMENT OF ANDHRA PRADESH**
**Office of the Engineer-in-Chief RWS&S, Gollapudi, Vijayawada**

**Circular Memo.No. AEE (Designs)/DEE-(T)/Type designs-RWS/2018-19, 25/03/2019**

Sub:- RWS&S - **TYPE DESIGNS** - All structures related to RWS&S department - Approved - Communicated - Reg.

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The attention of the Superintending Engineers, RWS&S in the State are invited to the subject cited. The **TYPE DESIGNS & DRAWINGS** for the following structures have been prepared by the Designs section of this office for ready reference and the same are approved by the Chief Engineer-II, RWS&S. The approved copies of the designs and drawings are here with communicated to all the Superintending Engineers, RWS&S in the state for execution and taking further necessary action.

A. **CAPACITIES AND SIZES:**

1. Infiltration wells : 4.00 m to 8.00 m Dia
2. Intake well cum pump house : 3.00 m to 8.00 m Dia
3. Slow Sand Filter : 1) 7.50 to 15.00 m dia
   2) All sizes of rectangular shape
4. Sump : 20 KL to 1000 KL for normal and uplift condition.
5. OHSRs : 10 KL to 250 KL
6. GLSRs : 5 KL to 30 KL
7. OHBRs-shaft type-30m staging : 40 KL to 250 KL
8. Pump Houses : 3.00x4.00m, 4.00mx6.00m, 8.00mx6.00m, 12.00mx6.00m and RCC Raft type pump house suitable for Zero Suction head
9. Watchman Quarters : 6.00mx6.50m and 9.00mx6.00m

B. **CONDITIONS AND SPECIFICATION**

- The stability of all sumps are verified for SBC >= 5.0 KN/m2, as in case of all capacities of sumps, maximum down word bearing pressure will be <= 5.00 KN/m2.
- The sumps are designed for Normal condition and also for uplift condition by assuming average water table depth is 1.00m below GL.
- The stability of all OHSRs is verified for SBC>= 5.0 t/m2 and >=10 t/m2, with wind speeds of 150 KMPH and 200KMPH and also for seismic forces.
- The stability of all Infiltration wells, Intake wells, Pump Houses and Watchman Quarters is verified for SBC >= 5.0 t/m2 and >=10 t/m2.
- The stability of all OHBRs - 30m with shaft type is verified for SBC >= 5.0 t/m2

and >=10 t/m2, with wind speeds of 150 KMPH and 200KMPH.

- The above verified parameters for all the structures would be satisfied for most of the cases. If any variation is found in the soil strata/water table levels the designs shall be verified and shall be approved by the competent authority before grounding the work.
- Use M30 concrete mix confirming to IS 456-2000 and the grade of steel–Fe-415, concrete laid in the form work shall be vibrated to obtain max density and compaction.
- Provisions made in IS:456-2000, IS:3370-2009, SP-34, SP-16 and other relevant codes should be followed during execution.
- Laps shall be staggered and lap length should be Ld-50D (Diameter of the bar). Not more than 50% of reinforcement shall be lapped at a particular location (cross section).
- Clear covers - footing - 50mm, column - 40mm, beam - 25mm, slab - 20mm.
- Extra bars at top for beam shall be extended up to 0.25 L on either side from the face of the support and curtail bottom bars at 0.1L from the discontinuous edge and 0.15L from continuous edge measured from center of support, where 'L' is c/c of support.
- Slab bars are to be cranked at 0.25L from center of support near continuous edge and 0.15L from center of support near discontinuous edges.
- In slab extra bars over continuous support should be taken up to 0.30L from the face of beam. Crank bars at continuous support should not be terminated on beam and should be extended up to 0.3L from face of support into the adjacent span.
- In beams and slabs overlapping shall not be provided over supports for top bars and at mid span for bottom bars.
- Not to scale of all drawings follow figured dimensions only. All the dimensions are in MM only.
- Curing should be done at least for 21 days.
- Where ever reinforcement is provided in two layers in beams spacer bars shall be provided to maintain 25mm gap or maximum diameter of main bar, whichever is more, between two layers.
- Provide epoxy painting where the site is nearer to the sea (<= 20 km) and ensure proper construction using potable water and also maintain regular registers for recording cube strength and other tests results.
- After placing the concrete in every lift of side wall of water retaining structure provide continuous circular groove at the top of the concrete so as to avoid leakages.
- Provide 4"X4"x4" groove at top of the each lift of the column so as to improve the effective bonding in between lifts.
- The structure of OHSRs & OHBRs is designed for seismic forces.
- Any discrepancy from the drawings shall be brought to the notice of the approving authority.
- Make necessary provisions for providing Lightening Arrester inside of the spiral stair case column.

The above designs are prepared based on the above assumptions. All the Superintending Engineers/ Executive Engineers in the state are requested to verify the stability of structures before grounding the work once again as per site conditions and satisfy.

**File No.PRR06-14/41/2019-DEE III-NRDWP-ECRWSS**

**NARAYANA BHARATH GUPTA**

Engineer-in-Chief, RWS&S,

Gollapudi, Vijayawada.

To
All the Superintending Engineer, RWS&S in the State.
Copy to the Chief Engineer-II and Chief Engineer-III for taking necessary action.

Signature Not Verified

Digitally signed by NARAYANA BHARATH GUPTA
Date: 2019.03.25 10:14:00 IST
Reason: Approved