

## H. Civil Requirements:

CIVIL WORKS		
1	Design and Standards	<p>The layout, design, and drawings for buildings, structures, foundation systems, pathways, roadwork, drainage, cable gallery/cable trench, etc, shall be approved by NTPC before the start of works. The design of RCC (Reinforced Cement Concrete) and Steel structures shall be in accordance with IS 456 and IS 800, respectively. The structural design shall be vetted by a certified structural engineer before submission to NTPC for approval. At the stage of detailed engineering, contractor shall provide drawings for approval of NTPC, alongside necessary calculations. All the reference drawings shall be good for construction category prior to preparation of civil/ structural works. Review by owner shall not relieve the contractor of his responsibility for correct design and execution of the work.</p> <ol style="list-style-type: none"> <li>1. RCC Design: RCC structures as per IS: 456 2000. Reinforcement as per IS: 5525 and SP:34. IS13920.</li> <li>2. No foundation shall be allowed on back filled soil and in that case the depth of foundations shall reach up to NGL. Final Level will be approved in detail engineering.</li> <li>3. Steel Structure Design: The design of steel structures shall be done by Limit state method. Design and fabrication shall be as per provisions of IS: 800 and other relevant IS standards.</li> <li>4. Architectural Design: As per National Building Code and Local building by-laws as applicable including provisions of the Factories Act of the State concerned.</li> <li>5. Earthquake Resistant Design: All structures and equipment shall be designed for seismic forces in accordance with IS: 1893 (Part 1 to Part 4). The damping factor (as a percentage of critical damping) to be adopted shall not be more than following: (i) Steel structures-2%, (ii) Reinforced Concrete structures-5%.</li> <li>6. Wind Resistant Design: All structures shall be designed for wind forces in accordance with IS:875 (Part-3). The damping factor (as a percentage of critical damping) to be adopted shall not be more than following: (i) Welded Steel structures-1%, (i) Bolted Steel structures-2%, (iii) Reinforced Concrete structures-1.6%. The basic wind speed shall be considered as 50 m/s.</li> <li>7. Earthing &amp; Lightning protection of Buildings as per relevant IS codes.</li> <li>8. Level References: The grade level shall be fixed with due reference to the highest high flood level of the receiving body of water. The laying of Hume pipes shall conform to IS: 783 standards.</li> </ol>