CNS Infrastructure Ltd
An ISO 9001 : 2015 Certified Company
Terrace Floor, Mangal Deep Complex, Nr. R.T.O Ring Road, Surat-395001. +91 97242 86200 +91 98250 07779
Email: cnsinfra@yahoo.com Visit Us: www.cnsinfra.com

General Criteria For Unbonded Post Tensioning Pre-stressed Concrete (PT) Work

- **Loadings:**

Self-Weight (SW):	Considered as per sectional properties specified in structural grid including Reinforced Cement Concrete (RCC) and PT Members. (IS 875 (Part 1)-1987)
Super Imposed Dead Load (SIDL):	As per IS 875 (Part 1)-1987 for Mandatory loading or as per specific requirement by structural consultant.
Live Load (LL):	As per IS 875 (Part 2)-1987 for Mandatory loading or as per specific requirement by structural consultant.

- **Materials:**

Concrete:	Machine mix concrete and having minimum grade of M35 if otherwise specified.
Steel:	For rebars in PT Members minimum grade of steel shall be Fe 415 for all main and secondary reinforcement if otherwise specified.
Pre-stressing Steel:	12.7 mm Diameter seven wire strand confirming to ASTM A416-2006, Low Relaxation Properties confirming to IS: 1343-2012, Ultimate Strength: 1860 N/mm^2, Yield Stress : 1700 N/mm^2, Modulus of Elasticity: 200 KN/mm^2.

- **PT Design:**

Load Cases (General):

A	Initial (1×SW + 1.15×PT)
B	Sustain (1×SW + 1×SDL + 0.3×LL + 1×PT)
C	Total (1×SW + 1×SDL + 1×LL + 1×PT)
D	Strength (1.5×SW + 1.5×SDL + 1.5×LL +1×HYP); HYP: Hyper-static load (Secondary load due to PT Cables)

Note: Additional Load cases are added as per requirement at the time of detailed Design for Specific structure.

Stresses: *Confirming to IS: 1343-2012 Clause 24*

A	Tensile Stress: Maximum tensile stress considered as per the Limiting criteria of Type 2 members. (Type 1 If only Specific constraint as per the structural geometry)
B	Compressive stress: Maximum Compressive stress considered as per the limiting criteria for ZONE II where the compressive stresses are likely to

increase in service.

C Bottom Stress Limits:
Permissible Tensile Stress (Total Load): 3.00 N/mm^2 (For M35)
Permissible Compressive Stress (Total Load): 11.55 N/mm^2 (For M35)
Permissible Tensile Stress (Sustained Load): 3.00 N/mm^2 (For M35)
Permissible Compressive Stress (Sustained Load): 14.00 N/mm^2 (For M35)

D Top Stress Limits:
Permissible Tensile Stress (Total Load): 3.00 N/mm^2 (For M35)
Permissible Compressive Stress (Total Load): 11.55 N/mm^2 (For M35)
Permissible Tensile Stress (Sustained Load): 3.00 N/mm^2 (For M35)
Permissible Compressive Stress (Sustained Load): 14.00 N/mm^2 (For M35)

Deflection: *Confirming to IS: 1343-2012*

A As per the limit state of serviceability Deflection Clause 20.3.1 IS: 1343-2012.

B Maximum Allowable Short Deflection: min. of L/250 or 20 mm
Maximum Allowable Long Term Deflection: L/250

Rebar:

A Minimum Reinforcement in PT Members as per IS: 1343-2012 and IS: 456-2000.

B Ductile detailing as per IS: 13920-1993 for PT Members.

Cover: Minimum clear cover for PT member

A PT Slab: 20 mm

B PT Beam: 25 mm

- **Additional Criterias:**

A Unbonded Post Tensioned Pre-stressed concrete (PT) Design shall be in accordance with relevant is codes for gravity loads only.

B Analysis for Single floor is considering as no column projected on designed floor at the time of stressing.

C Size of RCC members are considered as per structural grid received from structural consultant if otherwise specified in PT Layout drawing.

D Considering proper bond between different grades of concrete, the bond which perform as uniformly placed concrete, taken care by contractor.

E Concrete strength at the time of stressing (7 days) gaining minimum 70% of the design strength.

F 70% Strength of PT Cables is considered for PT Design than that of yield strength of PT Strands.

G 3D Model developed for Analysis of PT Members by FEM, also strip model generated for the same if required.

H Follow contour map of B.M and S.F for flat slab design in 3D FEM analysis.