THE FOLLOWING GENERAL STRUCTURAL NOTES APPLY TO ALL STRUCTURES

GENERAL :

1. REFER TO SPECIFICATION DOCUMENTS AND RELEVANT DRAWINGS FOR DETAILED STRUCTURAL REQUIREMENTS.

2. ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH RELEVANT ARCHITECTURAL AND SERVICES DRAWINGS. DISCREPANCIES, IF ANY, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER BEFORE EXECUTION OF WORK ON SITE.

3. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE NOTED. DIMENSIONS SHALL NOT BE SCALED OF THE DRAWINGS, WRITTEN DIMENSIONS SHALL BE FOLLOWED.

4. FOUNDATION FOR STRUCTURE SHALL BE DESIGNED BASED ON THE THE GEOTECHNICAL REPORT BEARING CAPACITY AS RECOMMENDED IN. UNEVEN SURFACE SHALL BE LEVELLED WITH BLINDING CONCRETE.

5. ALL TEMPORARY WORKS AND SECONDARY SUPPORT STRUCTURES SHALL BE DESIGNED BY THE CONTRACTOR. THE DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH THE SPECIFICATION.

6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A SAFE WORKING ENVIRONMENT AT ALL TIMES DURING THE ENTIRE CONSTRUCTION WORKS IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS. THIS INCLUDES TEMPORARY STABILITY OF THE BUILDING OR PARTS OF THE BUILDING.

7. THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS OF AS BUILT WORKS FOR THE ENGINEER'S APPROVAL.

8. DESIGN PARAMETERS AND DESIGN LOADS ADOPTED FOR STRUCTURAL DESIGN ARE AS GIVEN IN DESIGN BASIS REPORT.

9. ANY SETTING-OUT DIMENSION SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED ON SITE & WITH ARCHITECTURAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS.

10. WHERE EXCAVATION WORK IS TO BE CARRIED OUT ADJACENT TO EXISTING FOOTINGS, CONTRACTOR SHALL TAKE PRIOR APPROVAL.

11. WATER USED FOR CURING SHALL COMPLY WITH RELEVANT BIS CODES.

DEVELOPMENT AND ANCHORAGE LENGTHS

1. THE FOLLOWING DEVELOPMENT LENGTHS SHALL BE PROVIDED FOR REINFORCEMENT.

FOR 500N/mm2	Ld
M30	46d

EARTH WORK :

1. WHEN EXCAVATING TO FOUNDATION LEVEL CARE SHOULD BE TAKEN NOT TO DISTURB THE UNDERLYING MATERIAL. ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND ANY SOFT SPOTS REMOVED AND REPLACED WITH GRANULAR FILL, WHICH SHALL BE WELL COMPACTED BEFORE CONSTRUCTION PROCEEDS. EXCAVATION SHALL AT ALL TIMES BE CARRIED OUT IN DRY CONDITIONS. ALL FORMATION SURFACES SHALL BE PROOF-ROLLED PRIOR TO BEING COVERED OVER.

2. FOUNDING LEVEL FOR ALL TRENCHES AND PITS SHALL BE MAINTAINED AT ONE UNIFORM LEVEL IN A PARTICULAR BUILDING AS MINIMUM SPECIFIED DEPTH IN THE DRAWING UNLESS OTHERWISE NOTED.

3. ANTI-TERMITE TREATMENT TO FOUNDATIONS AND PLINTH FILLING SHALL CONFORM TO IS:6313 CODE OF PRACTICE AND TO TENDER SPECIFICATIONS AS APPROVED BY ENGINEER.

4. MATERIAL FOR PLINTH AND GRADE FILLING SHALL BE NON SWELLING / NON EXPANSIVE TYPE OF MURRUM OR STABILIZED MATERIAL APPROVED BY ENGINEER PRIOR TO PLINTH FILLING/GRADE FILLING. TOP SOIL UP TO NECESSARY DEPTH SHALL BE CLEARED OF ALL VEGETATION, AND WELL COMPACTED TO 98% PROCTOR DENSITY. PLINTH FILLING/GRADE FILLING SHALL BE DONE IN LAYERS OF 150MM THICKNESS.

5. WHEREVER THE FINISHED GROUND LEVELS (F.G.L.) ARE BELOW THE NATURAL GROUND LEVELS (N.G.L.) FOUNDING DEPTHS SHALL BE FROM THE FINISHED GRADE LEVELS.

6. ANY UNPRECEDENTED ISSUES UNSEEN STRUCTURES(OLD EXISTING RETAINING WALLS, EXISTING FOOTINGS) WITHIN THE SOIL ENCOUNTERED DURING EXCAVATION SHOULD BROUGHT TO NOTICE OF GEOTECHNICAL ENGINEER FOR PROPER SOIL ENGINEERING.

REINFORCED CONCRETE CONSTRUCTION :

CONCRETE :

1. GRADE OF CONCRETE	CONCRETE CLASS / MAX. SIZE AGGREG/ (N / mm^2 / mm) CUBE STRENGTH
NON POST-TENSIONED CONCRETE IN FOUNDATION UNLESS MENTIONED OTHERWISE.	30
RC COLUMNS / PEDESTAL	30
NON POST TENSIONED CONCRETE IN CONVENTIONAL RC BEAM UNLESS MENTIONED OTHERWISE.	30
NON POST TENSIONED CONCRETE IN RC SLAB UNLESS MENTIONED OTHERWISE.	30
UN-REINFORCED CONCRETE (INCLUDING BLINDING), UNLESS MENTIONED OTHERWISE.	10

2. SLABS ON GRADE TO BE CASTED IN PANELS OF NOT GREATER THAN 8.0m x 8.0m AND WITH EXPANSION JOINTS AT NOT MORE THAN 12.0m SPACING.

3. CONCRETE PROTECTION
ALL WATER PROOFING SHALL BE AS PER TECHNICAL SPECIFICATION APPROVED BY ENGINEER. THE SAME SHALL BE SUBMITTED FOR APPROVAL.

4. CURING OF CONCRETE

EXPOSED CONCRETE SURFACES SHOULD BE COVERED WITH DAMP ABSORBENT MATERIAL AFTER PLACING OF CONCRETE. CONCRETE SHALL BE KEPT CONTINUOUSLY WET BY FREQUENT SPRAYING OF WATER. CURING SHALL BE STARTED IMMEDIATELY AFTER REMOVAL OF FORM WORK. MINIMUM PERIODS OF CURING SHALL BE 7 DAYS.

5. EXPANSION & CONSTRUCTION JOINTS

ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE PLACED AS SHOWN ON THE DRAWINGS, AS PROVIDED IN THE SPECIFICATIONS AND AS DIRECTED BY AN ENGINEER. CONSTRUCTION JOINTS NOT SHOWN ON DRAWINGS SHALL BE LOCATED & FORMED BY CONTRACTOR AND SUBMITTED TO THE APPROVAL OF THE ENGINEER.

a. SEPARATE JOINTS IN INTERNAL BLOCK WORK : FIBRE BOARD JOINT FILLER TO SPECIFICATION. MAXIMUM JOINT SPACING TO BE 6.0m IN ALL MASONARY ELEMENTS, OR AS PER DRAWINGS.

c. JOINT SEALANTS : REFER TO SPECIFICATION FOR MATERIALS.

6. FOR WATERSTOP REQUIREMENTS, SEE THE SPECIFICATIONS AND MANUFACTURER'S DETAILS.

7. SAMPLING AND TESTING OF CONCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH INDIAN STANDARDS.

DESIGN CRITERIA

1. STANDARDS AND LOADS
2. THE CONCRETE DESIGN IS BASED ON IS: 456-2000.
3. LIVE LOADS ARE BASED ON IS LOADINGS :875
   a) FLOOR FINISH + FLOOR SCREED : 1.80KN/Sqm
   b) PARTITIONS/ INTERIOR WALLS : 1.0KN/Sqm
   c) 100mm SUNKEN PORTIONS IN TOILETS : 2.40KN/Sqm
   d) AEROCON BLOCK WORK : 8.50KN/Sqm
   e) FILLING FOR SUNKEN PORTION : 10.0KN/Sqm WITH CINDER OR BRICK BAT (WHEREVER FILLING IS REQUIRED)
   f) OFFICE AREA : 4.0KN/Sqm
   g) TOILETS : 2.0KN/Sqm
   h) STAIRS,ENTRANCE LOBBY : 4.0KN/Sqm
4. LIVE LOADS CONSIDERED ON THE GRADE SLAB :
   a) UDL ON THE GRADE SLAB = 50KN/Sqm
   b) POINT LOAD ON THE GRADE SLAB = 90KN
5. WIND LOADS ARE BASED ON IS:875 PART III AND ARE AS FOLLOWS:
   BASIC WIND SPEED 47 M/SEC
6. SEISMIC LOAD AS PER IS 1893 - 2016
   a) ZONE - IV
   b) ZONE FACTOR : 0.24
   c) IMPORTANCE FACTOR : 1.0
   d) RESPONSE REDUCTION FACTOR : 4.0
   e) SOIL TYPE : II
7. THIS DRAWING SHALL BE READ IN CONJUCTION WITH THE LATEST PEB VENDOR DRAWING FOR ABOVE MENTIONED LOADINGS

LIST OF I.S CODES

1. I.S. 456-2000 CODE OF PRACTICE FOR PLAIN AND REINF. CONCRETE
2. I.S. 800-2007 CODE OF PRACTICE FOR STRUCTURAL STEEL
3. I.S 875 IMPOSED LOADS AND WIND LOADS
4. I.S 1893-2016 CODE OF PRACTICE FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES.
5. I.S 4326-2013 EARTHQUAKE RESISTANT DESIGN AND CONSTRUCTION OF BUILDING CODE OF PRACTICE.
6. I.S 1786-2008 SPECIFICATION FOR HIGH STRENGTH DEFORMED STEEL BARS AND WIRES FOR CONCRETE REINF.
7. I.S 1904-1986 CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOILS GENERAL REQUIREMENTS.
8. I.S 23414-1968 CODE OF PRACTICE FOR DESIGN AND INSTALLATION OF JOINTS IN BUILDINGS.
9. S.P 23-(1982) HAND BOOK ON CONCRETE MIXES

CONCRETE CLEAR COVER TO MAIN REINFORCEMENT

1. COVER TO REINFORCEMENT
MINIMUM CLEAR COVER TO MAIN REINFORCEMENT SHALL BE PROVIDED AS BELOW

FOUNDATION	---	50MM
GRADE SLAB	---	40MM (BOTTOM) { 25MM (TOP)
BEAMS	---	30MM
PEDESTAL	---	40MM
RETAINING WALLS	---	40MM

2. CONCRETE COVER BLOCKS OF APPROVED MAKE SHALL BE USED IN CONCRETE.

REINFORCEMENT :

1. HIGH TENSILE DEFORMED BARS CONFORMING TO IS:1786-2008 $F_Y = 500\ N / mm^2$.

2. REINFORCEMENT CALLOUTS SHALL BE READ AS FOLLOWS.

Y 10 @ 150 C/C
- SPACING OF BAR
- DIA OF BAR
- HYSD BARS

Y 10 - 10
- NOS
- DIA OF BAR
- HYSD BARS

3. SPLICES SHALL BE AVOIDED AT POINTS OF MAXIMUM STRESS AND SPLICED BARS SHALL BE STAGGERED.

4. DIMENSIONS AND SPACING OF BARS ARE TO THE CENTER LINES OF THE BARS UNLESS OTHERWISE NOTED.

5. THE CLEAR DISTANCE LIMITATION BETWEEN BARS SHALL ALSO APPLY TO THE CLEAR DISTANCE BETWEEN A CONTACT LAP SPLICE AND ADJACENT SPLICES OF BARS.

6. LAPS IN REINFORCEMENTS
   a. MINIMUM LAP SHALL BE AS PER INDIAN STANDARDS.
   b. IN BEAM, BOTTOM REINFORCEMENT SHALL BE LAPPED AT THE SUPPORT AND TOP REINFORCEMENT SHALL BE LAPPED NEAR THE MID SPAN.
   c. NO LAPS SHALL BE ALLOWED IN PEDESTAL FOOTINGS, TOP REINFORCEMENT AT CONTINUOUS SUPPORTS, BOTTOM REINFORCEMENT AT MID SPAN & TOP REINFORCEMENT OF CANTILEVERS.
   d. LOCATION OF LAPS SHALL BE CLEARLY INDICATED IN THE SHOP DRAWINGS AND SUBMITTED TO THE ENGINEERS FOR APPROVAL.
   e. LAPS SHALL BE AWAY FROM POINTS OF HIGH STRESS AND SHALL PREFERABLY BE STAGGERED.

7. DETAILED SHOP DRAWINGS AND BAR BENDING SCHEDULES SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE EXECUTION OF WORK. IN CASE OF DOUBT / DISCREPANCY THE ENGINEER SHALL BE CONTACTED TO OBTAIN THE NECESSARY DETAILS.

8. WELDING OF REINFORCING BARS WILL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

9. STANDARD HOOKS, DEVELOPMENT & SPLICE LENGTHS IN TENSION AND COMPRESSION FOR REINFORCING BARS IN PEDESTAL, BEAMS, COLUMNS, WALLS & FOUNDATIONS SHALL BE AS PER IS 13920-2016

10. REINFORCEMENT BARS SHOWN ON DRAWING SHALL NOT BE COUNTED AND WRITTEN SPACING IS TO BE FOLLOWED.

FORM WORK :

1. THE FORM WORK SHALL BE DESIGNED AND CONSTRUCTED TO BE ABLE TO CARRY THE DEAD LOAD OF STRUCTURAL MEMBERS, CONSTRUCTION LOAD AND LIVE LOAD. THE CONTRACTOR SHALL DESIGN THE FORM WORK AND SUBMIT IT TO THE ENGINEER FOR APPROVAL.
2. FORM WORK SHALL BE ERECTED TO THE TOLERANCES
3. FORM WORK FOR VARIOUS STRUCTURAL MEMBERS (EXCEPT PT FLAT SLAB) SHALL NOT BE REMOVED BEFORE THE EXPIRY OF FOLLOWING PERIODS AFTER CASTING.
   (a) WALLS,COLUMNS&VERTICAL FACES OF STRUCTURAL MEMBERS. :- 24 TO 48 HOURS
   (b) SLABS (PROPS LEFT UNDER) :- 7 DAYS
   (c) BEAM SOFFITS (PROPS LEFT UNDER) :- 7 DAYS
   (d) REMOVAL OF PROPS UNDER SLABS :-
      (i) SPANNING < 4.5M :- 7 DAYS
      (ii) SPANNING > 4.5M :- 14 DAYS
   (e) REMOVAL OF PROPS UNDER BEAMS & ARCHES :-
      (i) SPANNING < 6M :- 14 DAYS
      (ii) SPANNING > 6M :- 21 DAYS

   (PROPS UNDER THE CANTILEVER SLABS OR BEAMS (VIZ. CANOPIES, BALCONIES, SUNSHADE,ETC.) SHALL BE REMOVED ONLY AFTER THE NECESSARY COUNTER WEIGHT STRUCTURE AS SHOWN IN DRAWINGS, HAS BEEN ERECTED AND CURED.)
4. DRAWING SHALL BE READ IN CONJUCTION WITH THE LATEST PEB VENDOR DRAWING FOR ABOVE MENTIONED STRUCTURAL FRAMEWORKS

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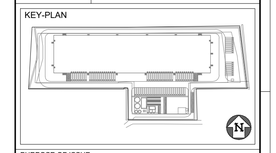
DRAWING REFERENCES

DRG. NO	TITLE

KEY-PLAN



PURPOSE OF ISSUE

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DATE	NO.	DESCRIPTION	DRN BY	CHK BY	APP BY
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REVISIONS

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HORIZON INDUSTRIAL PARKS,
TOWER -1, FLOOR 15
ONE WORLD CENTER,
LOWER PAREL
MUMBAI – 400013

PROJECT
INDUSTRIAL PARK FOR HORIZON
AT JINDPUR,DELHI.

TITLE
GENERAL NOTES

PROJECT ID	STAGE	DOC TYPE	DRAWING NUMBER	REVISION
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