

## *DEA Guidelines*

### 1. AS-BUILT DRAWINGS:

As-built drawing should be generated in order to concisely record the general arrangement of the building and size and location of the structural elements.

As-built structural drawing set should include:

- a. Foundation layout.
- b. Ground floor layout.
- c. First floor layout.
- d. Additional floor layouts for each additional suspended floor or mezzanine including beam and column schedule and existing super- imposed dead loading.
- e. Roof layout.
- f. Building elevations.
- g. Building sections.
- h. CAD Softcopy of As-built should be submitted along with DEA.
- i. Scan Report of structural members with As built Structural Drawings.

### 2. ENGINEERING TESTS:

- a. Geotechnical investigation (If Required)

Sufficient on site opening up to be carried out to test or investigate the foundation system, bearing levels, bearing capacities and condition of the representative sample of elements below ground for size, corrosion and condition.

- b. Concrete.

Existing concrete strength should be determined using 100mm diameter concrete core to estimate strength capacity of all key structure elements. Areas where samples are to be taken from should be discussed with ACCORD and marked on the drawing. All samples are to be tested at BRTC, BUET or UGC approved Universities. Follow ACI 562 to evaluate concrete strength from core test results. Reliance on rebound hammer result will not be accepted.

The use of CAPO testing can be considered in conjunction with core testing with the use of the correlation testing of concrete with reference to the aggregate type.

- c. Reinforcement.

The strength and type of reinforcement used in RC element should be determined by lab test. Scanning of reinforced concrete element should be performed in order to determine the size/quantity/spacing of the reinforcement provided. All soft copies of the test result should be submitted along with DEA.

- d. Subsoil Investigation report.

The subsoil investigation report must be submitted. Existing foundation shall be verified and adequacy shall be checked.

### 3. LOADING:

The structural assessment of the building should be initially considered based on the existing loading on the structure as observed during the survey. The assessment should consider the self-weight of all structural and non-structural elements (dead load) and all observed super imposed dead loads including render, finished, floor build-ups, ceilings, equipment, water tanks etc.

Imposed loading on all floor (except roof) should be taken as a minimum of 2KN/m<sup>2</sup> as agreed by the Tripartite. However, if the imposed loads observed on site exceed this value (floor usage, storage etc.), the higher values should be used. Point loads due to heavy equipment should be considered where appropriate.

For load combination BNBC-2006 / ACCORD Building Standard Article: 8.12.1 should be followed.

### 4. LOAD PLANS:

Load Plans for every floor shall be prepared that reflect the actual use of the factory including actual material and work product loads as typically stored at maximum density. Load plans will clearly show

measured aisle widths and extent of loading areas. Load plans, duly approved by the Engineering Team shall be posted by the factory owner at each floor level. Storage areas shall be clearly marked to indicate maximum allowable stored height of typical stacked materials.

**5. ANALYSIS:**

A structural model of the building should be developed using an international recognized computer analysis package. A non-exhaustive list of suitable software is listed below:

- i. ETABS.
- ii. STAAD pro
- iii. Any other software used

The analysis based on as-built drawing should consider the vertical and lateral stability of the structure in accordance with BNBC 2006(Page -10584-1.9.1.1), as amended by the Tripartite Document.

Final analysis must show structural adequacy of all the members using concrete compressive strength/rebar strength of composite section (Old/new concrete/rebar)

All soft copies of the analysis should be submitted along with DEA.

**6. ADEQUACY OF THE MEMBER:**

Consultants have to provide detail analysis of structural adequacy for the members and if they are not adequate with current loading conditions, detail retrofitting drawings should be provided.

**LIST OF DOCUMENTS REQUIRED FOR DEA CONSULTANCY WORK**

Following documents are required to be submitted by consulting firms to qualify for doing DEA:

1. Trade licence (Firm should have minimum 5 years' experience in structural design work)
2. TIN certificate of the firm
3. Company profile.
4. List of projects completed
5. List of qualified personnel
6. Lead engineer CV (must have at least 10 years of experience in structural design work)

**LIST OF DOCUMENTS THAT SHOULD BE SUBMITTED ALONG WITH DEA**

1. Hard copy of DEA signed by responsible engineer meeting ACCORD standard, Scan report, core test and reinforce test report, soil test report and everything else that is required for DEA.
2. Retrofitting Drawings and calculations with proper reference.
3. Soft copy of the DEA report, analysis file, drawings, test reports, Scan report and everything else that is required for DEA.
4. CV of the engineer who signed on the DEA
5. Trade license of the consulting firm (starting year and current year)
6. Company profile of the consulting firm