**SUPPLIER NAME**  
Cosmopolitan Industries Pvt Ltd

**SUPPLIER ADDRESS**  
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**AUDIT DATE**  
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**AUDIT PERFORMED BY**  
Department of Civil Engineering, Bureau of Research, Testing and Consultation, Bangladesh University of Engineering and Technology (BUET)

**AUDIT TEAM**  
2 auditors  
1 engineer

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### GRAVITY LOADING EVALUATION

**GREEN**  
The building is fully safe.

### SEISMIC PERFORMANCE RATING

**POOR**  
Possible significant structural and nonstructural damage and/or result in falling hazards in a major seismic disturbance, representing appreciable life hazards.

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**BRIEF DESCRIPTION OF METHODOLOGY**

Visual inspection and ASCE 31-03 Tier-1 Analysis
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VISUAL INSPECTION AND CONCLUDING REMARKS

• The building may be rated as "GREEN" based on simple check of factor of safety of different types of column for gravity load only.
• It is strongly recommended to restrict storage of any kind of goods in the cantilevered Peripheral slabs.
• The few cracks observed in the wall are not supposed to impair the safety of the building, however they should be repaired as soon as possible. The building owner/users should be vigilant about the development of any new distress (dampness, cracks, spalling) particularly in main structural elements (column, beam, slab). If any crack appears, propagates and widens in primary structural elements, review of design may then be needed.
• Height of stored goods should be such that the applied maximum pressure does not exceed 100 psf in the loaded area and the average floor live load does not exceed 50 (fifty) psf.
• The existence of very heavy cooling tower units and water storage tanks on roof top, and existence of very heavy chiller units in 4th floor cause large mass irregularities. In addition there is major stiffness irregularity in the 4th floor due to presence of RCC roof, elevated RCC roof (above chiller locations), tin-shed roof and open space. There is a mezzanine floor in part of ground floor, The soft story effect in part of the building due to large height of ground floor need also to be investigated. The effects of all these mass and stiffness irregularities need to be checked for seismic safety by detail dynamic analysis.
• The use of the building in its present condition may continue with due regards to the observations made above.

SEISMIC PERFORMANCE EVALUATION

I.  BASIC STRUCTURAL CHECKLIST NON-COMPLIANCES

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<tr>
<th>Criteria</th>
<th>Description of Conditions</th>
<th>Comments</th>
<th>Unit</th>
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<tr>
<td>Soft Story</td>
<td>The stiffness of the lateral-force resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force</td>
<td>Ground floor (without mezzanine floor) is found as soft story based on measured story height and given column dimensions.</td>
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### Unreinforced Masonry Shear Walls

| Shear Stress Check | The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30 psi for clay units and 70 psi for concrete units for Life Safety and Immediate Occupancy. | Some unreinforced masonry shear walls at ground and 1st floor do not satisfy the mentioned requirement. However, it is to be noted that the columns alone are compliant in shear stress check. |

### II. GEOLOGICAL SITE HAZARDS AND FOUNDATIONS CHECKLIST NON-COMPLIANCES

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### III. BASIC NON-STRUCTURAL COMPONENT CHECKLIST NON-COMPLIANCES

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### DETAILED DESCRIPTION OF METHODOLOGY

1. The following criteria are used for the building integrity inspection:

   A. Permit review and verification.

   B. Visual assessment.

   C. Detailed assessment following ASCE-31 standards.
      i. Level of Investigation
      ii. Level of Performance
         Evaluation to Life Safety Performance Level (L.S.)
      iii. Level of Seismicity
         According to BNBC (1993) and based on geotechnical investigation report
         1. Zone coefficient
         2. Site Class (as per BNBC 1993)
         Design short period response acceleration $S_{OS}$
         Design spectral response acceleration at 1 sec. $S_{D1}$
      iv. Building Type
      v. Screening Phase (Tier 1)
      vi. Basic Structural Checklist
vii. Geological Site Hazards and Foundation Checklist
viii. Basic Non-structural Component Checklist

2. Gravity Loading Evaluation Definitions

GREEN  Factor of Safety (FS) of Column Strength is greater than 1.86 - the building is fully safe

YELLOW Factor of Safety (FS) of Column Strength is between 1.5 and 1.86 - the building is marginally safe

AMBER  Factor of Safety (FS) of Column Strength is between 1.25 and 1.5 - the building's safety is not fully ensured

RED    Factor of Safety (FS) of Column Strength is less than 1.25 - the building is unsafe

3. Seismic Performance Ratings
(http://www.berkeley.edu/administration/facilities/safer/findings.html#rating)

GOOD  Buildings and other structures whose performance during a major seismic disturbance is anticipated to result in structural and nonstructural damage and/or falling hazards that would not significantly jeopardize life. Buildings and other structures with a GOOD rating would represent an acceptable level of earthquake safety, such that funds need not be spent to improve their seismic resistance to gain greater life safety.

FAIR   Buildings and other structures whose performance during a major seismic disturbance is anticipated to result in structural and nonstructural damage and/or falling hazards that would represent low life hazards. Buildings and other structures with a FAIR seismic rating would be given a low priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD.

POOR  Buildings and other structures expected to sustain significant structural and nonstructural damage and/or result in falling hazards in a major seismic disturbance, representing appreciable life hazards. Such buildings or structures either would be given a high priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD, or would be considered for other abatement programs, such as reduction of occupancy.

VERY POOR Buildings and other structures whose performance during a major seismic disturbance is anticipated to result in extensive structural and nonstructural damage, potential structural collapse, and/or falling hazards that would represent high life hazards. Such buildings or structures either would be given the highest priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD, or would be considered for other abatement programs, such as reduction of occupancy.