

# Onus Garments Ltd. Extension Building

**Citadel Apparels Ltd.  
Onus Garments Ltd.  
Odyssey Dresses Ltd.  
Onus Design Ltd.**

Joy Bangala Road, Kunia, Barabari, Gazipur  
(23.936593, 90.387549)  
22<sup>nd</sup> July 2019





# Observations



**Factor of Safety of several pile foundations are below the allowable limit**

**Observations**

| POINT | Foundation Type | No. of Pile | Ultimate Capacity per Pile (Kip) | Ultimate Capacity of Pile Group (Kip) | Dead Load (kip) | Live Load (kip) | Reaction (kip) | Factor of Safety (FOS) | Remarks (Min FOS=1.5) |
|-------|-----------------|-------------|----------------------------------|---------------------------------------|-----------------|-----------------|----------------|------------------------|-----------------------|
| 1     | PC4             | 4           | 450                              | 1800                                  | 685.76          | 107.35          | 793.1          | 2.27                   | OK                    |
| 4     | PC5             | 5           | 450                              | 2250                                  | 869.30          | 124.10          | 993.4          | 2.26                   | OK                    |
| 21    | PC5             | 5           | 450                              | 2250                                  | 628.20          | 115.75          | 743.9          | 3.02                   | OK                    |
| 22    | PC5             | 5           | 450                              | 2250                                  | 644.46          | 245.46          | 889.9          | 2.53                   | OK                    |
| 23    | PC5             | 5           | 450                              | 2250                                  | 650.04          | 325.93          | 976.0          | 2.31                   | OK                    |
| 24    | PC5             | 5           | 450                              | 2250                                  | 759.60          | 304.42          | 1064.0         | 2.11                   | OK                    |
| 25    | PC4             | 4           | 450                              | 1800                                  | 562.71          | 307.00          | 869.7          | 2.07                   | OK                    |
| 19    | PC5             | 5           | 450                              | 2250                                  | 884.53          | 306.07          | 1190.6         | 1.89                   | OK                    |
| 31    | PC4             | 4           | 450                              | 1800                                  | 260.39          | 282.70          | 543.1          | 3.31                   | OK                    |
| 16    | PC8             | 8           | 450                              | 3600                                  | 942.86          | 277.92          | 1220.8         | 2.95                   | OK                    |
| 5     | PC7             | 7           | 450                              | 3150                                  | 872.54          | 232.20          | 1104.7         | 2.85                   | OK                    |
| 6     | PC7             | 7           | 450                              | 3150                                  | 1147.72         | 194.82          | 1342.5         | 2.35                   | OK                    |
| 7     | PC7             | 7           | 450                              | 3150                                  | 1083.22         | 191.73          | 1275.0         | 2.47                   | OK                    |
| 18    | PC7             | 7           | 450                              | 3150                                  | 1393.93         | 199.02          | 1592.9         | 1.98                   | OK                    |
| 26    | PC4             | 4           | 450                              | 1800                                  | 606.00          | 239.98          | 846.0          | 2.13                   | OK                    |
| 20    | PC5             | 5           | 450                              | 2250                                  | 1108.89         | 287.27          | 1396.2         | 1.61                   | OK                    |
| 17    | PC7             | 7           | 450                              | 3150                                  | 1140.48         | 338.34          | 1478.8         | 2.13                   | OK                    |
| 8     | PC7             | 7           | 450                              | 3150                                  | 835.40          | 342.95          | 1178.3         | 2.67                   | OK                    |
| 9     | PC7             | 7           | 450                              | 3150                                  | 1016.00         | 151.24          | 1167.2         | 2.70                   | OK                    |
| 10    | PC7             | 7           | 450                              | 3150                                  | 958.91          | 209.00          | 1167.9         | 2.70                   | OK                    |
| 11    | PC6             | 6           | 450                              | 2700                                  | 950.69          | 214.94          | 1165.6         | 2.32                   | OK                    |
| 2     | PC3             | 3           | 450                              | 1350                                  | 595.22          | 222.97          | 818.2          | 1.65                   | OK                    |
| 163   | PC2             | 2           | 450                              | 900                                   | 254.02          | 222.19          | 476.2          | 1.89                   | OK                    |
| 164   | PC2             | 2           | 450                              | 900                                   | 317.25          | 230.15          | 547.4          | 1.64                   | OK                    |
| 3     | PC4             | 4           | 450                              | 1800                                  | 882.12          | 147.84          | 1030.0         | 1.75                   | OK                    |
| 15    | PC5             | 5           | 450                              | 2250                                  | 961.88          | 129.10          | 1091.0         | 2.06                   | OK                    |
| 14    | PC5             | 5           | 450                              | 2250                                  | 673.64          | 71.98           | 745.6          | 3.02                   | OK                    |
| 13    | PC5             | 5           | 450                              | 2250                                  | 640.43          | 34.39           | 674.8          | 3.33                   | OK                    |
| 12    | PC6             | 6           | 450                              | 2700                                  | 665.41          | 27.66           | 693.1          | 3.90                   | OK                    |
| 166   | PC4             | 4           | 450                              | 1800                                  | 260.39          | 82.43           | 342.8          | 5.25                   | OK                    |
| 165   | PC3             | 3           | 450                              | 1350                                  | 446.89          | 177.02          | 623.9          | 2.16                   | OK                    |

As per the provided engineering assessment report, factor of safety (FoS) of some pile foundations was below the BNBC allowable limit. Factory engineer to revise the floor load plan and provide necessary remedial actions for the foundations having FoS less than 2.50 (BNBC-06,Sec-3.11.1.11). Factory engineer to check the adequacy of pile foundations.



# Problems Observed

1. Factor of Safety of several pile foundations are below the allowable limit.



| Item No. | Observation                                                                | Recommended Action Plan                                                                     | Recommended Timeline |
|----------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------|
| 1        | Factor of Safety of several pile foundations are below the allowable limit | Factory engineer is required to check the adequacy of pile foundations which meet the BNBC. | 6-weeks              |
| 2        | Factor of Safety of several pile foundations are below the allowable limit | Carry out remedial works if arise from the Engineering Assessment.                          | 6-months             |