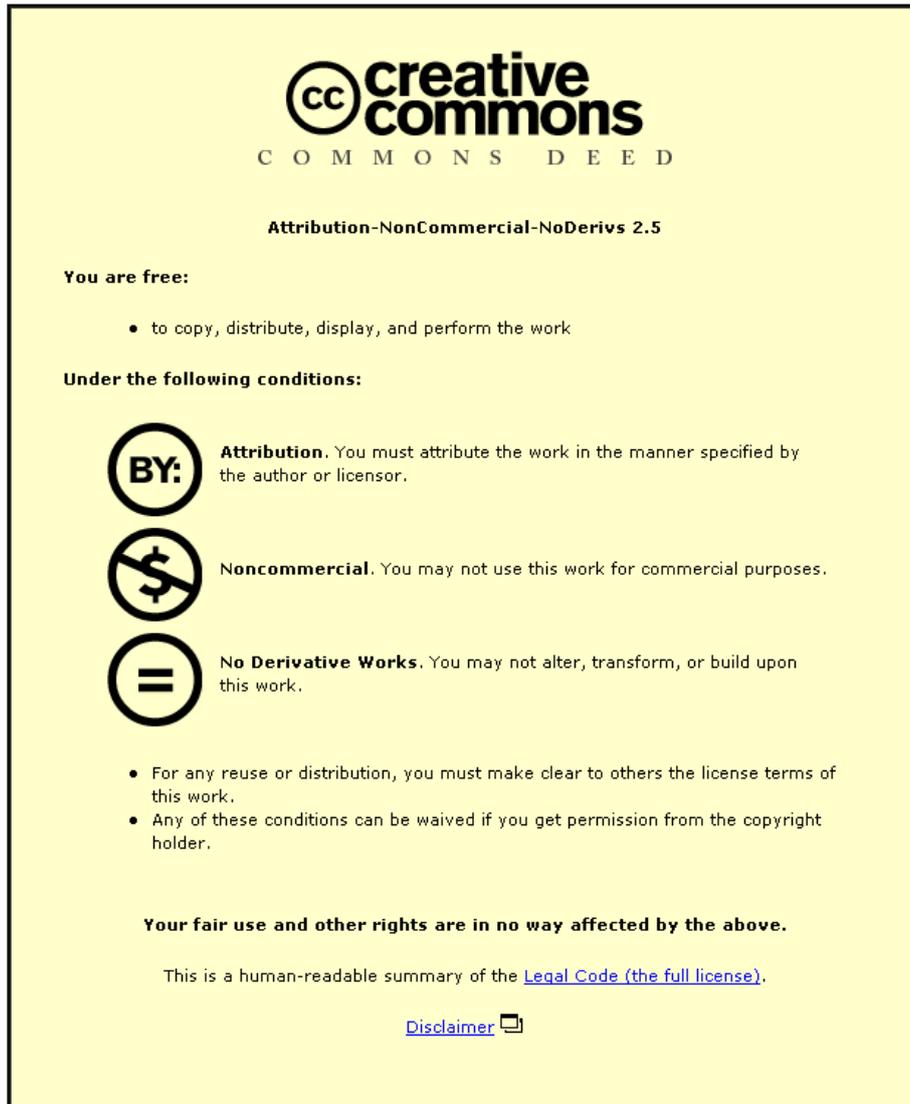


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# A Survey on Daylighting Potentiality in the Offices of Dhaka, Bangladesh

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## Abstract

*In the offices of Dhaka, artificial light is the main contributor to the visual environment, even though there is an abundance of daylight and the working hours in offices utilise much of the daylight hours. Electric lighting costs, peak demand charges, and work interruptions during power brownouts can be greatly reduced by using daylighting. Daylight should be encouraged in office spaces because, not only would it save on energy, but it also carries immense physiological and psychological benefits. So, strategies for more daylight inclusion is needed for office interiors in context of any city which has a growing demand on electricity, far in excess of its production. This work started with a physical survey on offices located in different places of Dhaka to explore the current lighting practice and to identify key design issues where daylight could broadly enhance the luminous environment for offices. A pilot survey on a total number of 50 offices, determined by random sampling, was conducted. The survey covered a broad area through a questionnaire. During survey, importance was given on the surrounding context and external and internal elements of the offices that directly affect daylight inclusion into the office interiors and the overall luminous environment. The findings of survey helped to identify some problems on window configuration, sill height, lintel height, false ceiling, internal partition, blind configurations etc. Survey shows that lighting design in general is a neglected aspect of the overall design of spaces. Most of the cases it was found that the popular practice is against the common strategies of daylight. Survey also indicate that there is a considerable potential for more daylight inclusion into offices by some simple modification of the existing spaces and awareness about daylighting issues during the design phase. Recommended guidelines are specific to general problems found during survey, at the same time for introduction of building elements that were not found in Dhaka offices, e.g. light shelves, skylights etc. The author tried to draw simple recommendation that can be applied easily in any time from design phase to even after occupancy. It is expected that these suggestions will improve the luminous environment of offices of Dhaka under daylight.*



## Keywords

Daylight Potentiality, physical survey, Office building, Dhaka city.

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## **Introduction**

A building may be intended for a particular use and may not necessarily be occupied continuously. An office is only in use during that part of the day known as 'office hours'. Though daylight is available for nearly the entire period of occupancy of office hours, artificial light is the main contributor to the luminous environment of offices in Dhaka (Figure 1) (Joarder, 2007). Therefore, by reducing reliance on artificial lighting, daylight can be an effective means of saving on lighting energy (Muneer et al., 2000). However, this reduction is also likely to affect other associated energy needs of spaces.

Of all the large cities in the country, Dhaka has the highest consumption of electricity (Sharma, 2002). Considering that finite resources of energy must be conserved in global terms (Philips, 2002), energy consciousness in the design of the luminous environment is essential. This will ideally lead to daylit office buildings, with controlled supplementary electric lighting (Bell & Burt, 2005).

Daylight is one of the most important natural forces available to architects in their quest to enhance the visual quality of interior spaces. It is an abundant resource in the tropics (like Dhaka, Bangladesh), indispensable both as a primary source of illumination as well as an ingredient of drama, excitement and dynamism in the architecture and aesthetics of spaces (Ahmed & Joarder, 2007).

Among the advantages of daylight are physiological as well as psychological benefits for users (Robbins, 1986). Not only does daylight allow one to save on electricity consumption, but studies show that people actually perform better when exposed to daylight (Boyce, 2003). Daylight is often used for ambient lighting but may be used for critical visual tasks as well, in each case supplemented with electric light as needed (AGS, 2000).



Figure 1: Example of some offices in Dhaka where, artificial light is the main contributor in interior lighting design restricting the potential use of daylight in interior.

The most obvious vehicle for energy savings in buildings is in exploiting the most abundant source of light available to us – daylight (Phillips, 2004). Environmentally conscious assessments of building design are recognizing that daylight (along with natural fresh air) is an important commodity and should be exploited to the full. But, in the interior lighting of Dhaka city's office buildings, all these benefits of daylight have been neglected. This article presents the results of a survey on offices located in different places of Dhaka to establish a picture of current lighting practice and identify key issues where daylight could broadly enhance the luminous environment for offices. The article ended with recommendations and design guidelines of simple modification of existing buildings by which inclusion of daylight in office interior can be increased and can be applied easily in context of Dhaka city.

### **Field Survey**

A survey on a limited number of offices, determined by random sampling, was conducted to explore the different features of offices in Dhaka with respect to daylight inclusion. The findings of the survey helped to identify some specific problems and potentials of using daylight in context of Dhaka city. The fourth year students of Survey Technique and Analytic Method of the Department of Architecture, BUET surveyed nearly fifty offices in different locations of Dhaka city in July, 2007 under the guidance of their course teacher Md. Ashikur Rahman Joarder. The survey covered a broad area through a questionnaire (Appendix 1) about the physical characteristics of the offices of Dhaka. A summary of the findings are presented in Appendix 2, so as to provide an overall picture of the city.

The items covered in the survey are:

- a) Office time duration/office hours.
- b) Details of windows (type, material, sill, lintel, shading, internal blinds)
- c) Heights of different objects in office interior (work plane, partition, ceiling height)

### **Findings of the Survey**

As Dhaka city possesses almost similar climatic, geographical, technological and other aspects in its different parts, the characteristic features are also quite similar for offices in different areas. Some variations in features were however identified during the survey. After random selection it was found that among 50 offices, seven were established during 1982 to 2000 (1982, 1988, 1991, 1995, 1997, 1998 & 2000), while the rest of the 43 offices were established more recently during 2001 to 2007. The survey cases therefore in general (86%) represent the most contemporary trend of offices in Dhaka. The working hours of surveyed offices vary between 8 to 12 hours including lunch and prayer break. Among the 50 offices 40% of the offices (20 offices) have 8 hour office duration, which is the largest portion of the cases. The offices start between 8.00am to 10.00 am and closes between 5.00pm to 9.00 pm. Among them 36 offices start at 9.00am and 25 offices close at 5.00pm. These findings reflect that the working hours coincide with daylight hours (9am-5pm) for most of the offices in Dhaka.

**Window Height:** In the surveyed cases the vertical height of the window varies from 1.05m to 2.7m. Among them most of the windows (11 cases) have a vertical height of 1.20 m (Figure 2).

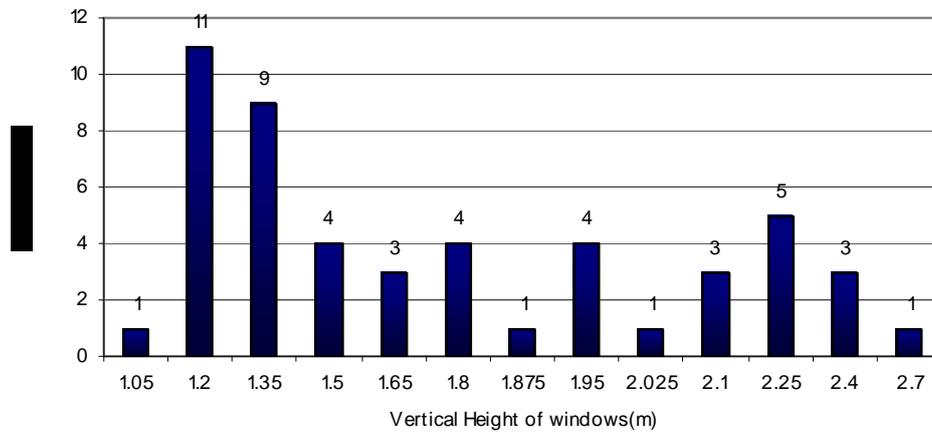


Figure 2: Graph showing different vertical heights of windows of surveyed offices

**Sill Height:** In the surveyed cases the sill height of the window varies from 0.00m to 1.5m. Among them most of the windows (10 cases) have a sill height of 0.75m and 0.90m, while 56% of the offices have windows with sills below 0.75m (Figure 3).

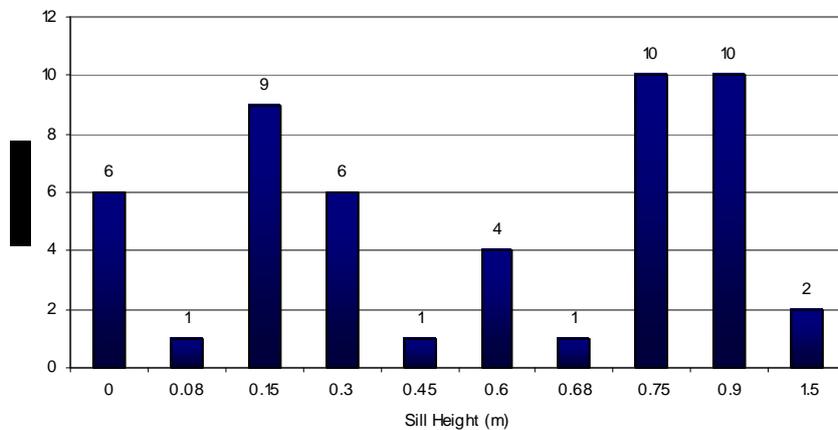


Figure 3: Graph showing varying sill heights of windows of surveyed offices.

**Lintel Height:** In the surveyed cases the height of lintels above windows varies between 1.8m to 3m. Among them the most common (56% of the total number) lintel height is 2.1m (Figure 4).

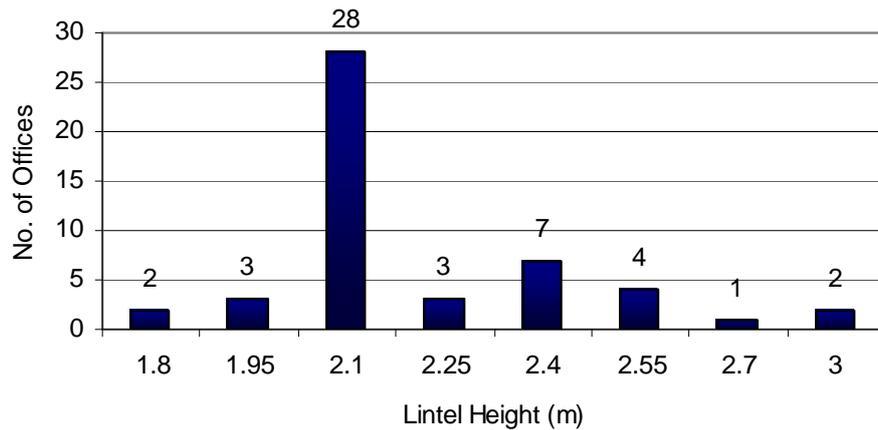


Figure 4: Graph showing varying lintel heights of windows of surveyed offices.

**Ceiling Height:** In the surveyed cases 74% of the offices (37 offices) use false ceilings, thereby reducing the clear height of the working space and creating restrictions to window height. Most of the offices (22% of total number) have a clear height of 2.1m for office interior (Figure 5).

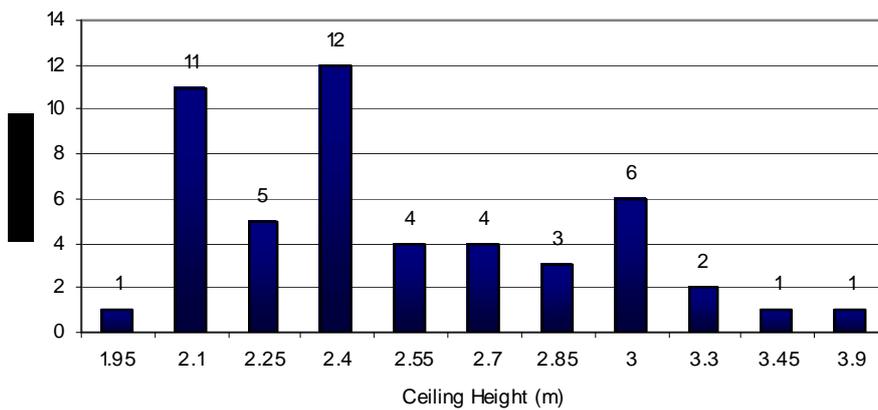


Figure 5: Graph showing varying ceiling height of surveyed offices.

**Partition Height:** In the surveyed cases 80% of the offices (40 offices) use low partitions to demarcate individual workstations. The remaining 10 offices have full height internal partitions or no partition. Most of the offices (50% of total number) have 1.2m high partitions around workstations (Figure 6).

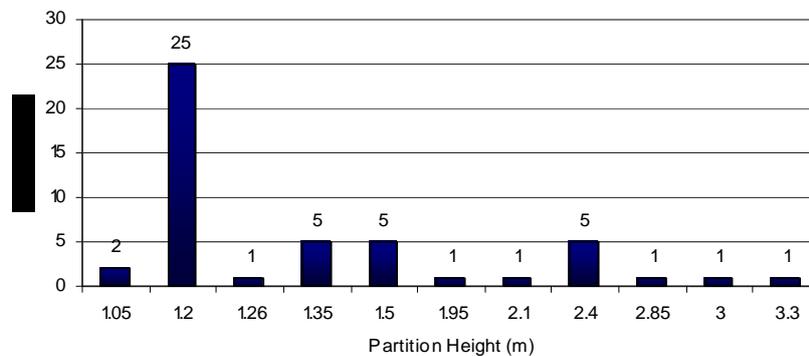


Figure 6: Chart showing Partition height of surveyed offices.

**Work plane Height:** The popular height of work plane in these offices is 0.75m above floor level. Work plane with a height of 0.9 m was found in only one case.

**Window: Floor Ratio:** In the surveyed cases the calculated window: floor ratio varies from 0.00 to 0.85. Among them the most of the offices (48% of the total number) have window: floor ratio below 0.05. In the context of Bangladesh, according to the Dhaka Metropolitan Building Construction Rule 2008 a minimum 0.15 ratio is suggested. Only 36% of the offices were able to exceed the minimum ratio (Figure 7).

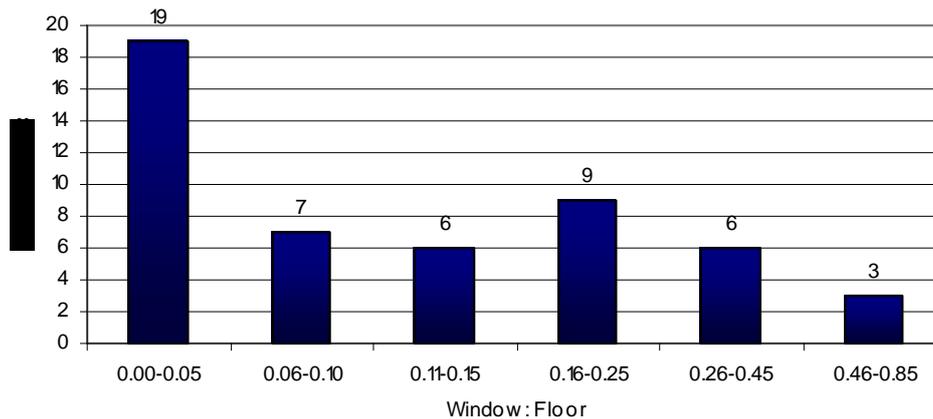


Figure 7: Graph showing Window: Floor ratio of surveyed offices

**External Shading:** In the surveyed cases 56% of the offices (28 offices) have no external shading. The rest of the offices (44%) have different types of shading and louvers like horizontal, vertical, egg-crate etc.

**Internal Blinds:** During the survey two major types of internal blinds were found; vertical and horizontal. The materials of internal blinds are fabric or metal fins. Most of the offices (78% of the total number) use vertical blinds. The findings of the survey is compiled and presented in Table.1.

Table 1: Types of Internal Blinds of Windows of surveyed offices

Internal Blinds	Vertical	Horizontal	None	Total
No. of Offices	39	5	6	50

### Observations from Survey

The findings of survey can be summarized as below:

Daylight penetration on work plane will be high if the windows start from work plane height and terminate to the ceiling (3m or above). Such consideration is not given to the design of windows. In the surveyed offices, most of the windows starts below work plane and terminates at 2.1m level.

- a) Introduction of false ceiling in most of the surveyed office interiors terminates the option of positioning windows high on the walls, allowing only low level windows for daylight penetration.
- b) Office buildings have a tendency to keep out external shadings or light shelves. Where shadings were used, considerations were given only to protect from sun and rain. The concept of glare control and ceiling illumination using reflections of a light shelf is not practiced consciously.
- c) Use of internal blinds restricts major part of penetrated daylight and most of the cases they were found as closed.
- d) No standards for window: floor ratios have been maintained in the surveyed offices. Most of the offices failed to reach the minimum window: floor ratio (0.15 recommended in Dhaka Metropolitan Building Construction Rule 2008).
- e) Highest value of window: floor ratio was found 0.85 due to the excessive use of exterior curtain glass wall. Such a high ratio should be treated with caution, as the incoming daylight is likely to have high heat content and may cause glare.
- f) Sky lighting is possible for the office spaces located on top floor with a roof available for such manipulation, however, this option was not found in any of the surveyed offices located on top floors.

Surveys show that lighting design in general is a neglected aspect of the overall design of spaces in Bangladesh. The author measured illumination levels at some typical offices and found that lighting levels are well below acceptable standards (300 Lux) (Joarder, 2007). This indicates that lighting, whether by natural or artificial sources, is not considered during design in an organised way, to fit the function or to satisfy any standards. And even rarer is any consideration given to including the available daylight to supplement the scheme. Decisions like window configuration, sill height, lintel height, false ceiling height, internal partition heights, blind configurations etc, are not guided by daylight consideration, and it is only the visual aesthetic sense of the designers that govern interior layouts. The potentials of skylights and light shelves have not been explored, nor have different combinations of these been tried.

### **Recommendations**

The following recommendations were drawn for office design in the context of urban Dhaka to improve the luminous environment of offices.

- a) Remove false ceilings from at least near windows to provide scope for high windows to welcome more daylight.

- b) Start window from work plane height as there is no impact of glazed area below work plane on contributing daylight on worktop. This will also keep the indoor temperature lower by cutting off radiation gains.
- c) Use rectangular/squarish windows rather than horizontal strip (narrow) windows of equal opening areas. Configure window shape and size with respect to the interior vertical column layout and other fixed objects, for equitable distribution of incoming daylight.
- d) For typical office spaces with 3m ceiling heights, install light shelves at 2.00m above floor level to improve distribution of daylight
- e) Use internal horizontal blinds for office interior rather than vertical blinds to achieve quality daylight distribution.
- f) Make upper part of workstations partitions transparent to admit more daylight on work tops from side windows.
- g) Locate tasks, demanding higher illumination in office interior at perimeter area near windows, as daylight is most prominent here.
- h) Provide small skylights spaced widely rather than a single large one, given the same area to admit improved daylight distribution.
- i) On the top floor, locate individual office rooms where high opaque partitions are needed, away from the perimeter, keeping the open-plan general offices nearer the perimeter. In such cases, make provision to provide light from above through skylight apertures to the more interior individual office rooms on this floor.

## **Conclusion**

The question of daylight inclusion in office buildings is extremely important, because being day-use buildings, a significant portion of the period of use of these buildings coincides with times when outdoor lighting is substantial. Using this light, dependence on artificial lighting sources can be minimised, resulting in energy efficiency.

The findings of the field survey helped to identify the general problems related to daylight inclusion of offices in Dhaka. These basic daylight strategies can easily be implemented in Bangladesh if designers are aware about the issues. Guidelines suggested in this article can be applied during construction of the office building (window configuration, sill height, lintel height, light shelf, skylight etc) as well as after construction during interior design (false ceiling, internal blinds, partition height, etc) or during general renovation works.



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- 8. Land area:
- 9. Built-up area:
- 10. Number of floors:
- 11. Obstructions:

	North	East	South	West
Type				
Height				
Distance				
Color / Shade				
Overlapped area				
Remarks				

- 12. Name of the Office:
- 13. Client:
- 14. Typology:
- 15. Date of Establishment:
- 16. Office time Duration:                      From    A.M    to    P.M,    Total    Hour/Day
- 17. Number of Staff:
- 18. Number of Visitors per Day:
- 19. Location of the office in the Building:
- 20. Total floor area:

21. Dimensions of Activity Spaces in Surveyed Offices

	Lobby	Corridor	Individual office Room	Large open office space	Conference Room
Space dim					
window					

22. Envelop of the office Interior:

	Floor	Ceiling	Partition Wall	Furniture	Wall	Openings
Area						
Material						
Color / Shade						
Finishes						
Remarks						

23. Character of Windows in office Building:

Height	Orientation	Type	Material	External	Internal Shading	Remarks

<b>Sill</b>	<b>Lintel</b>	<b>Opening</b>				<b>Shading</b>		

- 24. Ceiling height:
- 25. Average height of work plane:
- 26. Average height of Interior partition walls:
- 27. Electricity Supplied from :
- 28. Is there any provision of own power generation system? Capacity
- 29. Average monthly expenses due to own power generation:
- 30. Number of A.C: Capacity:
- 31. Number of Computers:
- 32. Other Electronic Equipments:
- 33. Average electricity bill per month:
- 34. Is there any provision of Emergency Lighting?
- 35. Probable area that may be covered by day light:
- 36. Major shade / Colour of light:
- 37. Frequency of activities recorded in each zone of the office:

<b>Activity</b>	<b>Movement</b>	<b>Conversation</b>	<b>Visual task</b>	<b>Paper work</b>	<b>Computer task</b>	<b>Display</b>
<b>Lobby</b>						
<b>Corridor</b>						
<b>Open office space</b>						
<b>Individual office Room</b>						
<b>Conference Room</b>						

- 38. Light Control Devices :
- 39. Remarks:

**CHECK LIST:**

1. site plan
2. floor plans
3. elevations
4. details
5. Interior layout
6. Electrical layout
7. Photocopy of Electricity bill:
8. Sketch of Window Section:
9. Photographs
  - a. Front
  - b. Building Surroundings ( Preferably from roof)
  - c. All Lighting Fixtures.
  - d. All Spaces

Lobby	Corridor	Individual office Room	Large open office space	Conference Room
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Signature of the interviewer

Signature of the respondent

Date and Time of investigation \_\_\_\_\_ :

**APPENDIX 2: Compilation of Survey Data**

sl no	Name of the Office	Location	Date of Est.	Office time Duration (Hour)	Area (Sqm)	Window:Floor	Sill Height (M)	work plane Height (M)	partition Height (M)	Lintel Height(M)	Opening Area (Sqm)	Ceiling Height (M)
1	<b>Salta Capital limited</b>	Madhumita Tower, Kamalapur road, Motijheel.	2006	8.50	77	0.87	0.75	0.75	1.20	1.95	1.20	2.25
2	<b>Dhaka Realty</b>	Kakrail VIP road	2002	10.00	82	0.03	1.50	0.75	2.85	2.55	1.05	2.85
3	<b>Arc. Architectural Consultants</b>	Tiger Dale, 5/9, Dhanmondi -8A	1995	10.00	84	0.04	0.75	0.75	3.00	2.10	1.35	3.00
4	<b>Oriental Architects</b>	Nahar Plaza, 152/2 - N, West Panthapath, Dhanmondi	1997	10.00	84	0.11	0.90	0.75	1.50	2.10	1.20	2.40
5	<b>Maple Leaf</b>	Ahsania Mission Library, Sobahanbag	2005	9.00	106	0.00	0.90	0.75	1.26	2.10	1.20	2.40
6	<b>Techvalley Computers Ltd</b>	Red Crescent Concord Tower, 17th, floor of Red Crescent Concord Tower, Mohakhali	2005	8.50	146	0.46	0.15	0.75	1.20	2.40	2.25	2.40
7	<b>Sunmoon Engineering</b>	Standard Centre, 27/A, New Eskaton Road	2004	9.00	160	0.00	0.90	0.75	1.20	2.10	1.20	2.40
8	<b>Jardine Shipping Services Bangladesh Ltd.</b>	UTC Tower, Panthapath, Karwan Bazar	2004	8.00	173	0.29	0.15	0.75	1.20	2.40	2.25	2.40
9	<b>BCFCC Office</b>	Bangladesh China Friendship Conference Center (BCFCC), Agargaon, Sher-E-Bangla Nagar	2002	9.00	177	0.02	0.60	0.75	1.50	2.10	1.50	2.10
10	<b>Murcury Ltd</b>	Murcury Ltd, H-87, new air port road,	2004	9.00	186	0.05	0.00	0.75	1.20	2.25	2.25	2.25

		bonani.										
11	<b>Ventura Properties</b>	Prime View, Suite no -502, 7 Gulshan South Avenue, Gulshan 1	2006	8.00	195	0.21	0.75	0.75	1.20	2.10	1.35	3.00
12	<b>Aesthets</b>	House no -11A, Road no 13, Apartment C1, Dhanmondi R/A	2002	10.00	204	0.14	0.15	0.75	0.00	1.80	1.65	2.10
13	<b>Kamal Management Group Ltd.</b>	167/1 , Magbazar Outer Circular Road	2004	9.00	208	0.13	0.90	0.75	0.00	2.10	1.20	3.00
14	<b>Thai Airways International Public Company Limited</b>	Dhaka Sheraton hotel, 1, Minto Road	2006	8.00	210	0.05	0.08	0.75	1.35	2.10	2.03	2.10
15	<b>Axis-Dimension Consortium LTD.</b>	Evergreen Citadel, House no 16/3, Road no -8/a, Gulshan-1	2006	9.00	224	0.08	0.75	0.90	1.20	2.10	1.35	2.55
16	<b>Robintex Bangladesh Ltd</b>	TK Bhaban, 13,Karwan Bazar	2004	8.00	232	0.36	0.15	0.75	1.20	2.40	2.25	2.40
17	<b>Borak realstate ltd</b>	Unique oval 45, kamal ataturk avenue, Gulshan	2006	8.50	238	0.74	0.15	0.75	1.20	2.10	1.95	2.10
18	<b>Sicia Investment Bank Ltd.</b>	Bosundhara City, Panthapath	2004	10.00	242	0.06	0.15	0.75	1.20	2.55	2.40	2.55
19	<b>Unique Group pvt ltd.</b>	Unique oval 45, kamal ataturk avenue, Gulshan	2006	8.50	259	0.35	0.15	0.75	1.20	2.10	1.95	2.10
20	<b>SS Builders And Developers and Developers LMD</b>	North Tower, 107,Dhaka Mymensingh Road, Sector 07, Uttara	2000	10.00	270	0.04	0.60	0.75	1.35	2.25	1.65	2.25
21	<b>A.K.Khan Telecom</b>	Uday Tower, 52 / A , Gulshan- 2	2005	9.00	279	0.02	0.75	0.75	1.05	2.10	1.35	2.40

22	<b>Uniwave Broadcasting Company Ltd.</b>	Saimon Centre , 22/B,Road no.-4, Gulshan-1	2006	8.00	279	0.02	0.60	0.75	1.20	2.10	1.50	2.25
23	<b>Siddique &amp; Company Limited</b>	BGIC Tower, 34, Topkhana Road	2004	9.00	285	0.27	0.90	0.75	1.35	2.10	1.20	3.45
24	<b>Sheltech pvt ltd. (design section)</b>	Sheltech Tower, West panthopath	1988	8.50	331	0.07	0.75	0.75	2.10	2.10	1.35	2.40
25	<b>One Bank Limited(6th floor)</b>	One Bank Limited, Kaoran Bazar	2001	8.00	343	0.09	0.30	0.75	2.40	2.10	1.80	2.40
26	<b>One Bank Limited(1st floor)</b>	One Bank Limited, Kaoran Bazar	2001	8.00	343	0.13	0.30	0.75	2.40	2.10	1.80	2.40
27	<b>Parvin Properties &amp; Technologies Ltd.</b>	Road no-6, Block- D, Lalmatia	2004	8.50	377	0.15	0.90	0.75	1.20	2.10	1.20	2.10
28	<b>Aktel</b>	Silver Tower, Gulshan - 1	2003	8.00	455	0.00	0.00	0.75	1.50	2.10	2.10	2.85
29	<b>Nitol - Tata showroom.</b>	Nitol Centre, Mohakhali	2002	10.00	514	0.03	0.75	0.75	1.20	2.10	1.35	2.85
30	<b>Borak realstate (pvt)ltd</b>	Unique Trade Centre, Level - 5, 8 Panthapath, Kawranbazar	1991	8.00	534	0.03	0.45	0.75	2.40	1.80	1.35	3.30
31	<b>BDC office of Islam Group</b>	Islam Chamber, Motijheel C/A	2006	8.00	543	0.12	0.75	0.75	1.20	1.95	1.20	2.55
32	<b>Anwar Group Head Office</b>	Baitul Hossain Building , 27, Dilkusha	2001	9.00	585	0.22	0.90	0.75	1.20	2.10	1.20	2.10
33	<b>Aktel communication center</b>	BRAC Center, Mohakhali- Gulshan Road	2005	8.50	595	0.16	0.60	0.75	1.95	1.95	1.35	1.95
34	<b>Glaxosmithkine</b>	Crystal Home, Gulshan -01	2002	8.00	604	0.07	0.15	0.75	1.20	2.55	2.40	2.70
35	<b>Delta Brac Housing Finance Corporation Ltd.</b>	Landmark, 12-14, Gulshan North C/A	2005	9.00	674	0.16	0.90	0.75	1.20	2.10	1.20	2.10

36	<b>Grameen cyber net ltd.</b>	R M centre, 101, Gulshan avenue, Gulshan	2004	8.50	704	0.23	0.15	0.75	1.20	2.10	1.95	2.10
37	<b>Globeq Bangladesh LTD</b>	IDB Bisew Rokeya Shoroni	2006	8.00	708	0.03	0.30	0.75	1.35	2.10	1.80	2.10
38	<b>Trust Bank LTD.</b>	Trust Bank, 12/B, Sector-4, Uttara.	2007	8.00	717	0.08	0.90	0.75	1.20	2.40	1.50	3.90
39	<b>Mascot Group</b>	Mascot Plaza, Plot-107/A , Sector-7 , Uttara C/A	2003	9.00	805	0.04	0.00	0.75	2.40	2.40	2.40	2.40
40	<b>One-Bank Head-Quarter (2nd,3rd &amp; 4th floor)</b>	One Bank - Head Quarter, Kaoran Bazar	2001	8.00	906	0.21	0.30	0.75	1.20	2.10	1.80	2.70
41	<b>DEKKO group</b>	Suvastu Zenim Plaza,Plot-37,Road-16(new) 27(old),Dhanmondi R/A	2001	8.00	958	0.03	0.30	0.75	1.20	2.40	2.10	2.70
42	<b>PAXAR</b>	Uday Tower, 52 / A , Gulshan- 2 Avenue	2005	10.00	1022	0.02	0.68	0.75	1.05	2.55	1.88	2.55
43	<b>Asa (NGO)</b>	Asa Tower, 23/3 Block – B, Khilji Road, Mohammadpur	2006	8.00	1161	0.19	1.50	0.75	1.50	3.00	1.50	3.00
44	<b>Palli Karma Sahayak Foundation (PKSF)</b>	PKSF Bhaban, Plot no.:E-4/B, Agargaon administrative area, Sher-e-Bangla Nagar Road	2002	8.00	1301	0.36	0.75	0.75	1.50	2.10	1.35	2.70
45	<b>Cairn Energy , Bangladesh</b>	IDB Bhaban,Agargaon	1998	9.00	1356	0.08	0.90	0.75	1.20	2.10	1.20	3.00
46	<b>Bangladesh Steel And Engineering Corporation</b>	BSEC Bhaban 102, Kazi Nazrul Islam Avenue, Karwan Bazaar	1982	8.00	1438	0.25	0.75	0.75	3.30	2.70	1.95	3.30
47	<b>United Group</b>	United House, House no - 10, Gulshan - 1	2002	8.00	2648	0.19	0.30	0.75	1.35	3.00	2.70	3.00

48	<b>Banglalink(1st - 6th Floor)</b>	FM center , Gulshan-1	2005	12.00	3164	0.03	0.00	0.75	1.20	2.25	2.25	2.25
49	<b>Opsonin Pharma Limited(Ground-8th floor)</b>	Opsonin Building, 30 New Eskaton Road	2003	9.00	5751	0.36	0.00	0.75	1.20	2.10	2.10	2.10
50	<b>Bangladesh Sugar &amp; Food Industry Corporation(4th - 8th Floor)</b>	Bangladesh Sugar & Food Industry Corporation,115-120 Motizil Commercial Area	2006	8.00	6168	0.02	0.75	0.75	2.40	2.40	1.65	2.40

\* Period of survey: July, 2007

\* Selected pictures are taken from the survey conducted by Hossain Shahriar Taimur, Tonima Ferdous, Saiqa Iqbal, Saima Sonali, Bhuiyan A. R. M. Tareque and Md. Golam Samdani.