Design of Eco - Traffic Police Chowky at Lalbaug-Byculla Flyover Junction, Sem1 2010 - 2012

A. Design which can be repeated in Mumbai

In a general study, in all over South & Central Mumbai, where maximum traffic is flow during weekdays, especially during office hours like, a. Haji Ali Chowk b. Prabhu Marg c. Wellington Circle - C.S.T., d. CST e. Nana Chowk - Kennedy Rd & Grant Rd Junction, f. Ahilyabai Holkar Chowk - V. N Road & Jamshedji Tata Road. The following points are observed,
1. Most of the roads are meeting in different angles but not in perpendicular direction. 2. They create a triangular space in between which many times is not being used by traffic flow. 3. these pockets can be used for installing Traffic Police Chowkys designed with minimum foot - prints.

B. Triangle over Square

a. Covering Area
Square with the same length of sides covers more area than a Triangle. . .
Which result into WASTE OF EFFECTIVE SPACE . . .

b. Less no of sides
Any Square produces more perimeter than the Triangle of same lengths . . .
Which results into INCREASE IN SURFACE AREA . . .

c. Vision Angle
A Triangle gives more vision angle than in comparison with Square . . .
EFFECTIVE VISION AREA WITH MIN. OBSTRUCTION . . .

D. Location
1. The Chowkys located in such a direction so that the heavy traffic running South to North can be observed clearly.
2. Also the current location is on the way to Chinchpokali Railway Station, which is the most less traffic load, so no obstruction will occur.
3. With the current location & design of chowky the constable can still observe traffic during break time and also during less traffic timings.
4. The current location is comparatively away from Lalbaugh chowk so could be used as observation tower during festival seasons.

C. Development of Shape

1. Footprint over ground floor
2. No sharp / pointed angles give considering circulation of officers, public & vehicles movement around the structure
3. Projection of footprint into 3rd dimension
4. Reduction of footprint considering following points
   a. usable space around structure including parking for officers
   b. minimum vision obstruction for traffic passing by chowky
   c. overhangs working as shading device over structure below

E Orientation

1. The Chowkys oriented in such a direction so the duct side is always facing South side – heat gaining side, so no direct heat is passed inside structure
2. With the current orientation the constable can observe traffic coming from all the three directions, without sun glare on his face.
3. With a slope towards south side, the solar panels will be able to absorb max. solar energy.
4. The structural overhangs on the upper floor act as chajjas; so that opening on the floor below, resulting less heat gain through openings.

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Design can be altered as per site conditions

Section showing different levels

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A. Materials – The structure will be constructed with pre-cast ferro-concrete members constructed in factory and will be assembled on site. Other materials will include low e glasses for windows and MS rolling shutters made with recyclable materials, with lockable facility. The advantages of ferro-concrete structure are as follows:
1. Uses debris and recycled steel, reducing impact on landfills
2. Easier for erection, also takes less time on site
3. More in tensile & compressive strength; more durable in nature
4. Bad insulators of heat

A. 1. Total Panel Area: 96 sq. ft. | 9 sq. mt.
A. 2. Every 8 - 10 sq. mt. = 2 - 3 units
A. 3. 9 sq. mt. = 2.5 units
A. 4. 2.5 KW h per hr
A. 5. Effective Solar gain is for 3 - 4 hrs
A. 6. Total one day collection = 10 units

C. Solar Energy – The topmost roof is used for installing photovoltaic solar panels. This energy can be stored and used for various purposes.

- One 36 volts battery = 4 unit
- Size 20” x 16” = 0.9 sq. mt.
- Total batteries required = 5, considering two days backup

D. Green Structure – The external facades can be covered with creepers, so that heat gain by solar radiation through surface will be reduced. At the same time structure will look soothing for eyes, at the middle of heavy traffic and crowded roads.

E. Public Facilities – The structure can also be used for extended services to public, as follows, 1. Public announcement system,
2. Watch towers,
3. CCTV cameras,
4. First aid facility,
5. Oxygen provision facility, for accident cases.

F. Money Generation – External facades can be used for advertising hoardings & banners. This could be media to generate money and same can be used for maintenance purpose of these chowkies. During the festive seasons the public announcements & indicators can be put up on them.

The current rates for any advertising banner in crucial area, which can be seen easily is: 20,000/- per sq. ft. per month
the area created for branding = 3 nos = 7’6” long 3’ high = 67.5 sq. ft. = 13.5 lakh per month
the area created for branding = 3 nos = 18’3” long 2’6” high = 138.875 sq. ft. = 27.375 lakh per month
total money generated = 13.5 + 27.375 = 40.875 lakh per month

B. Rain water harvesting – With increase in area, a vast catchments is created to collect rain water. Some of the water can be collected directly into OHWT for regular use in toilet for flush and rest of water into UGWT, after passing through lime - stone container, with the help of drain pipe running into duct.
The rain water of first 10 days will not be collected but will be taken to Municipal storm water drains. The collection roof is divided into two parts;
1. direct collection in OHWT – in this collected water is passed through various natural filtration materials like pebbles, coal & sand to remove impurities and odor.
2. collection in UGWT – The UGWT will be cleaned every year before rains and will be given lime wash from inside. Also it will be air - tight for rest of the year to avoid formation of any bacteria or ugly formation.

| Terrace Area | 96 Sq.Ft. |
| Terrace | 272 Sq.Ft. |
| Rainfall per season | 2300 mm |
| Volume of Tank | 46.61301 Cu. Mt. |
| Tank Provided | 48 Cu. Mt. |

Environmental Features into Design

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