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MUNICIPAL CORPORATION OF GREATER MUMBAI

No/ Dy. Ch.E / 578 / Traffic dtd.

15 JAN 2019

Sub:- Design of curvature at road intersections in Mumbai

- Ref:-**
- i) AC/RN/SR/1642/AEM DTD 06/11/2017
 - ii) AC/RN/SR/2705/AEM DTD 25/01/2018
 - iii) Dy.Ch.E/B.P./WS-II/8251/P&R dtd 25/01/18
 - iv) Dy. Ch.E /11708 / Traffic dtd. 16.02.2018
 - v) Email dtd 19/04/2018 received from M/s LEA Associates
 - vi) Email dtd 23/04/2018 received from M/s BIGRS
 - vii) MGC/F/5762 Dtd. 14/08/2018

Reference is requested to this office detailed note vide at page N-9 to N-13 for the method to adopt for the design of the curvature and Hon'ble M.C.'s approval may please be seen vide at pg N-15.

Present Sanction:-

In this case, as this office is regularly receiving proposals from ward/A.E.(Survey)/Architect offices for the design of curvatures and as there was no prescribed method available previously, this office has proposed to adopt a method as prescribed in IRC SP:41 1994 (Guidelines for the Design of the At-Grade Intersection in Rural and Urban Areas)/ IRC 38:1998 (Guidelines for Design of Horizontal curves for Highways)/IRC 103:2012(Guidelines for Pedestrian Facilities) for designing of the curvature at the road intersection, for which Hon'ble M.C.'s sanction was obtained vide no. MGC/F/5762 Dtd. 14/08/2018. In the said proposal this office has designed some of the intersection as per table I-4.3 of IRC SP 41:1994; Three centred compound curve. However while designing the curvature for some of the proposals received in this office through Ward / Architect, following points are observed:-

1. The Curves designed at road intersection using three centred compound curve, are smooth, and may led to over speeding hence tighter radius needs to be provided.
2. Sight Distance needs to be considered as per site condition.
3. Radius of Curvature needs to be designed as per design speed and turning radius of vehicle, existing road/Non existing (D.P.) Road/ sanctioned R.L. road, considering proposed widening of the road.
4. Encroached/Gaathan roads having very less traffic volume and High Pedestrian count.

5. Vehicular and pedestrian counts at different roads / junctions and also other parameters.

As Mumbai is a vibrant City having area about 458.28 sq. Km. and road network of 1941 km. The road network is classified as Major Roads (width > 9.15m) are 1169.27 km and Minor Roads (width < 9.15m) are 771.74 km.

The urban roads are categorised as Arterial roads, Sub arterial roads, Collector street and Local streets as per IRC. However most of the roads are fall below the category of sub arterial roads or Collector Street in Mumbai jurisdiction, further characteristics of these roads and its intersection changes according to local areas / condition.

It is to mention here that there are no. of proposal of designing of curvatures are being received by Traffic dept. from Wards/D.P. dept. /Architect/ A.E. Survey Dept. where in different type of intersection are noticed like major and Minor road intersection, Minor road and Non developed road intersection and some are very odd situations like existing road and non developed road encroached with slums and missing links etc. such type of intersection and designing of curves does not serve the purpose as per site condition by considering present sanction taken by this dept. and required to be considered various parameters/factors prescribed in IRC SP41/1994 and IRC 38 as the case may be individually.

Some of the design Parameters are listed below as mentioned in IRC SP:41:1994, which are required to be considered while designing the curvature in addition to earlier sanction such as:-

| Clause No. | Description |
|------------|---|
| 1.3 | Factors covering Design:- A. Human Factors B. Traffic Considerations C. Road and Environmental Consideration D. Economic Factors |
| 4.1 | Design has to be specified for each site with due regard to physical conditions of the site, the amount and cost of land, cost, cost of construction and the effect of proposal on the neighbourhood. |
| 4.2 | Design Speed:-In urban areas a lower or higher value of design speed can be adopted depending on the pressure of physical controls, road side developments & other related factors |

| | |
|-------|--|
| 4.3 | Design Traffic Volumes |
| 4.4.1 | Radius of curves at Intersection:- The design of curve depending on turning characteristics of design vehicle, their nos and speed, selection of curve, projected traffic data, no and frequency of larger units involved in turning movement. |
| 4.5 | Design Vehicle |
| 4.6 | Radii of curve in Urban Situations:- Restriction on right of way widths, Abutting developments, Pedestrian crossings, parked vehicles, High cost of land govern the minimum Radii at intersections. |
| 4.9 | Super Elevation and Cross Slope |
| 4.10 | Visibility at Intersection |

(Note:- All the factors mentioned in the IRC SP41:1994 or relevant IRC for curvature design other than mentioned in above table are also important and required to be followed while designing the curvature at the intersection/junction).

It is to submit here that as there is no Traffic & transportation engineer/ Urban Planner available in MCGM unlike other Govt. Organisations. Therefore in the absence of such expertise it is difficult to design the curvature by taking in to consideration various aspects of IRC SP41:1998/IRC 38 1998, which depends on the site conditions and expertise in this field for application of mind.

Therefore, it is essential on case to case basis to design the curvature / intersection depending upon site condition. It needs to be pointed out that there is no empanelled Traffic Consultant available with Traffic Dept. Now days there are various software's available to design and simulate traffic by using actual site data. Therefore it is suggested that the design of the curvature may be obtained by appointing the traffic consultant by inviting tender or spot quotation by the user dept. or traffic study report obtained from private party.

Under the above circumstances Ch.E.(Rds & Tr.)/Dir.(ES&P)/AMC(ES) /Hon. M.C.'s approval is requested to:-

- 1) Curvature design of Intersection/junction shall be carried out by considering various parameters mentioned for design of curvature in IRC SP41:1998/ IRC 38:1998/IRC 103:2012 OR as per remarks

obtained from the traffic consultant as explained in the sidelined para 'A', However in addition to earlier sanction vide no. MGC/F/5762 dtd. 14/08/2018 regarding the curvature design will remain in force.

- 2) Design of curvature of Intersection/Junction having sanctioned R.L. of Traffic Dept. shall be designed either by Traffic Dept. OR as per study report obtained from the Traffic Consultant appointed by MCGM / Private party after scrutinising the same, the proposal will be submitted to Ch.E.(Roads & Tr.) for approval.
- 3) Design of curvature of Intersection/Junction having sanctioned R.L. of Survey Dept./D.P. Road/Existing Road shall be designed either by A.E.(Survey) OR as per study report obtained from Traffic Consultant appointed by MCGM / Private party, however same shall be scrutinised by A.E.(Survey) and proposal to that effect shall be submitted to Ch.E.(Roads & Tr.) for approval.
- 4) To appoint the Traffic Consultant for design of curvature, wherever necessary by inviting tender or spot quotation by user department like, Traffic/Survey/Ward.

On receipt of the approval the all the concern departments will be informed accordingly.

Submitted please.

ALL
11/1/19
Dy.Ch.E.(Traffic)

Ch.E.(Roads & Tr.)

Dir.(ES & P)

A.M.C.(ES)

Hon'ble M.C.

Sir, A.M.C. (ES)

*In view of above report and facts
Dir (ES&P)/AMC(ES)/Hon'ble M.C's
above approval is requested to 'B'
at page M/13 of H/20
Submitted please*

*Submitted please
15/1/19*

CH.E.(Roads & Tr.)

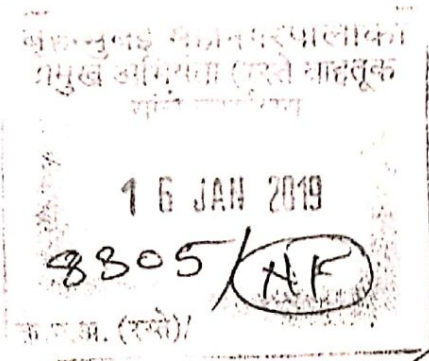
Submitted please

*Vinod B. Chikore
Director (E.S.&P.)*

*No further
Ajnelt
14/1/19*

Municipal Commissioner

*Amc B/917
06/02/2019*



16 JAN 2019

व. व. प. कार्यालय
 (व्यवस्थापक कार्यालय, पोस्टा व प्रकल्प)
 (N) यांचे कार्यालय
 दि. 10 JAN 2019
 क्र. पोस्टा/कार्यालय/5206, 15

04/2/2019

बुध्नुंबई महानगरपालिका
 अधिकारियत कार्यालय (पु.प्र.प.)
 यांचे कार्यालय
 04 FEB 2019
 क्र. पो. प्र. प्र. 917

06/02/19

बुध्नुंबई महानगरपालिका
 आयुक्तांचे कार्यालय
 06 FEB 2019
 समब १३, १३, १३, १४
 १५, १६, १७, १८
 क्रमांक MGF/8392

(Nash)

12/02/2019

बुध्नुंबई महानगरपालिका
 आयुक्तांचे कार्यालय (पु.प्र.प.)
 13 FEB 2019
 11785

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 14/2/19
 Dy Ch E. (Traffic)

AE (TRC) WS/ES
 AE (TRP) C-I / C-II
 for use & circulate
 among concerned dept
 14/2/19
 EE (T) 3