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Ref. No. MCHI/PRES/23-25/172 Date: 29.12.2023

To, The Secretary, Ministry of Civil Aviation, Government of India, Rajiv Gandhi Bhavan, Safdarjung Airport, New Delhi 110003.

Sub:- <u>Revisiting the NOCAS calculation on account of the introduction of the buffer of 5</u> <u>Nautical miles applied around the sector of lower Minimum Sector Altitude by GSR</u> <u>770 (E)</u>

Respected Sir,

We the CREDAI-MCHI, or the Confederation of Real Estate Developers' Associations of India - Maharashtra Chamber of Housing Industry, is a prominent real estate industry association in India. It is a state-level chapter of CREDAI, which is a national apex body representing real estate developers in India, with reference to our letter dated November 16, 2022, under reference number MCHI/PRES/22-23/345, we are writing to you once again:

The primary objective of CREDAI-MCHI is to promote and foster the interests of real estate developers, builders, and industry professionals in the state of Maharashtra. Maharashtra Chamber of Housing Industry (MCHI) is specifically focused on the real estate market in the state of Maharashtra, which includes major cities like Mumbai and Pune.

Some of our key activities of CREDAI-MCHI include advocating for policies that benefit the real estate sector, providing a platform for networking among industry professionals, organizing exhibitions and events to showcase real estate projects, and addressing issues related to the real estate development and housing industry.

This letter intended to take up one of the issues of Mumbai as Mumbai, being a bustling metropolis, faces numerous challenges when it comes to city growth and land limitations. The city's rapid urbanization has led to a scarcity of available land, making it increasingly difficult to accommodate the ever-growing population and their needs. This issue is further compounded by the restrictions imposed by aviation laws. Mumbai is home to the Chhatrapati Shivaji Maharaj International Airport (CSMIA), which plays a pivotal role in the city's connectivity with the rest of the world. As per aviation regulations, there are strict building restrictions around the airport to ensure the safety and efficiency of air operations. These restrictions aim to prevent the construction of tall buildings or structures that could obstruct flight paths or interfere with communication, navigation, and surveillance systems, thereby safeguarding the overall aviation ecosystem.

The limitation imposed on cities by aviation legislation can often seem counterintuitive because it limits the potential growth and development of urban areas. Although these laws are intended to ensure the safety and efficiency of air transportation, they often result in various restrictions that prevent urban expansion.

Maharashtra Chamber of Housing Industry

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CREDAI-MCHI CHAPTERS: THANE | KALYAN-DOMBIVLI | MIRA BHAYANDAR | RAIGAD | NAVI MUMBAI | BHIWANDI | PALGHAR BOISAR | SHAHAPUR-MURBAD | URAN-DRONAGIRI | VASAI VIRAR | ALIBAG | KARJAT-KHALAPUR-KHOPOLI | YOUTH NMR



The Airports Authority of India, India's airspace controller, on behalf of the Ministry of Civil Aviation has issued height regulations through various SOs and GSRs from time to time. The current GSR is GSR 751 (E) and the subsequent amendment is GSR 770 (E). One point we would like to make is the interpretation and application of the 5 nautical mile protection in an Airport Surveillance Radar (ASR) application. After GSR 751 (E) and GSR 770 (E). An additional protection of five nautical miles (5 nautical miles) has been added to the above GSR for the lower sector as per note 3 on page 38. As quoted

"Note 3: In case of airports served with different Minimum Sector Altitude in different sectors, a buffer of 5 Nautical Miles shall be applicable around the sector of lower Minimum Sector Altitude" unquote

Our understanding of the above para means wherever there is more than one sector i.e. Mumbai Trivandrum, Jaipur Guwahati, etc. The buffer of five nautical miles should be given around the lower sector attitude. It means the lower sector would further be extended by 5 nautical miles towards the higher sector altitude. For the example of Mumbai airport where we have three MSA namely 2600 2800 and 3800. Three conditions of the MSA have been shown in the below table



It is seen above that at the time of the publication of GSR 751 (E) There were three sectors

- a. between 200 degrees to 3400 degrees the MSA was 2600 And
- b. in the sector of 340-200 deg up to 12 nautical miles from the VOR it was 2600 and beyond that it was 3700.

It is understood that after ICAO made a study in Mumbai the MSA of sector 340 to 200 was revised as a bit up to 12 nautical miles it was 2800 and beyond that it was 3800 feet AMSL.

After the publication of GSR770(E), the protection of five nautical miles in the lower sector has also been added which implies that the 5 nautical miles which was between 200 to 340 degrees has been pushed towards the higher sector altitude by 5 nautical miles and the 2800 sector has been pushed towards higher sector altitude. The 2800 Sector would therefore be applicable up to 17 nautical miles as per this criteria.

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Now we would like to draw your attention to the contiguous para of GSR for which the interpretation by the implementing authority ie the airport authority of India has changed its understanding.

a). The said reference of GSR(751E) para2.5.1.1 as quoted "Beyond 500 meters from a particular Radar site, the height of the permissible structures may be increased at the rate of 0.05 per meter, up to a point wherein the height of the permissible structure does not protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from Radar site) or any other designated MSA at a different distance in the same sector whichever is closer to the horizon, to the centre of antenna pedestal, considering the Minimum Sector Altitude (MSA) in that particular sector. Beyond the above-stated point, no large object would be permitted to protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from the Radar site) or any other designated MSA at a different distance in the same sector whichever is closer to the horizon. Beyond the above-stated point, no large object would be permitted to protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from the Radar site) or any other designated MSA at a different distance in the same sector whichever is closer to the horizon to the center of antenna pedestal depending on the minimum Sector Altitude in that particular sector (For illustration refer to Appendix -C of Schedule VIII)" The same has been depicted pictorially in attachment C page 56 of GSR 751(E) as below



Fig 1 Criteria for height restriction with respect to ASR

b). As far as we are aware, all calculations are carried out in accordance with the above-mentioned diagram for single sector or uniform sector attitude; there is no discrepancy in the calculation from radar location up to point A. Furthermore, beyond point A, the calculation is based on the slope between the antenna height and the Minimum sector altitude for the particular sector.

c). Beyond this point. (point A) For a multiple sector, the different sector altitudes are being considered for their farthest point as mentioned in GSR above. as quoted" Beyond the above-stated point, no large object would be permitted to protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from the Radar site) or any other designated MSA at a different distance in the same sector whichever is closer to the horizon to the center of antenna pedestal depending on the minimum Sector Altitude in that particular sector" Unquote

to our independent understanding of the interpretation of the above, in the case of multiple sectors

- A line is drawn from the radar pedestal to 25 NM containing the object under consideration to 10% below the height of the MSA. This means that the distance will be calculated as per their MSA (in the case of Mumbai)
 - **5NM** for sectors up to five nautical miles,
 - 17 nautical miles for sectors between 12 and 17 nautical miles, and
 - o 25 nautical miles for sectors between 17 and 25 nautical miles. And
 - This will be applicable for respective MSA in the same line passing through different sector
- The minimum angle arrived after all the above calculations, which means lower / near the horizon would be considered for the calculation.
- The above can be confirmed in the previous calculation sheet of Mumbai Airport

But now due to the implementation of 5-mile protection, the interpretation done by airport authority is different then it was previously done. Suppose a building is at two nautical miles in the direction of 45 degrees from the radar the airport authority is considering that the object is within five nautical miles and calculating the sector altitude of 2600 up to 25 NM but the interpretation does not say that. To our understanding after providing five nautical mile protection in the lower sector this sector configuration would become as below



To the technical understanding of the above figure, we assume that the formula of calculation would remain the same except instead of 2 MSA it would be a three MSA where the first MSA will terminate at 5 nautical miles, the second MSA would terminate at 17 nautical miles and the third sector would terminate at 25 nautical miles.



Earlier calculations were done as shown in the table below for a radar height of 19.5-meter AMSL

| SR no | Sector altitude | Bearing | Distance | Obtained angle |
|-------|-----------------|---------|-------------|----------------|
| | | | calculation | in degrees |
| 1 | 2600 | 200-340 | 25NM | 0.858 |
| 2 | 2600 | 340-200 | 12NM | 1.7879 |
| 3 | 3700 | 340-200 | 25NM | 1.2317 |

A building lying at 45 degrees from the radar would be calculated for an angle of 1.2317.

Similarly, the present scenario that is tabled would be as below for a radar pedestal of three 34.59 meter AMSL

| SR no | Sector altitude | Bearing | Distance | Obtained angle |
|-------|-----------------|---------|-------------|----------------|
| | | | calculation | in degrees |
| 1 | 2600 | 200-340 | 25NM | 0.839 |
| 2 | 2600 | 340-200 | 5 NM | 4.1922 |
| 3 | 2800 | 340-200 | 17NM | 1.33 |
| 4 | 3800 | 340-200 | 25NM | 1.2469 |

Now in the same case, a building lying at 45 degrees from the radar would face the three MSA's as shown in serial numbers 2,3 and 4 in the above table and to be calculated for an angle of 1.2469 or 1.247 degrees as per the spirit of GSR770(E)

We have been representing to airport authorities of India time and again but we find that things are not being understood correctly. It is, therefore, appropriate that the Ministry may advise the Appellate Committee or the appropriate authority to consider the above case by constituting a committee with the representation of the Ministry the expert of air navigation services, airport operators, and the City Builder Association. to look into the matter.

Thanking you,

Yours sincerely, For **CREDAI-MCHI**

Domnic Romell President

Dhaval Ajmera Hon. Secretary