

The Ministry of Civil Aviation (Height Restrictions for Safeguarding of Aircraft Operations) Rules, 2015

UNION OF INDIA

India

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Rule

THE-MINISTRY-OF-CIVIL-AVIATION-HEIGHT-RESTRICTIONS-FOR-SAFEGUARDING-OF-AIRCRAFT-OPERATIONS-RULES-2015

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The Ministry of Civil Aviation (Height Restrictions for Safeguarding of Aircraft Operations) Rules, 2015 Published vide Notification No. G.S.R. 751(E), dated 30th September, 2015 Ministry of Civil Aviation G.S.R. 751 (E). - The Central Government, being of opinion that it is necessary and expedient to do so for the safety of aircraft operations, proposes to make the following certain rules, in exercise of the powers conferred by sub-section (1) and clause (o) and clause (r) of sub-section (2) of section 5 read with section 9A of the Aircraft Act, 1934 (XXII of 1934) (hereinafter referred to as the said Act), and in supersession of the Ministry of Civil Aviation notification number S.O.84(E), dated the 14th January, 2010 published in the Gazette of India, Part II, section 3, sub-section (ii), except as respect things done or omitted to be done before such supersession. The objections or suggestions on the draft S.O. were called from the stakeholders and are considered by the Government to the extent admissible. In the public interest the rules are notified by seeking exemption from putting the rules again in the public domain.

1. Short title and commencement.

(1) These rules may be called the Ministry of Civil Aviation (Height Restrictions for Safeguarding of Aircraft Operations) Rules, 2015. (2) They shall come into force on the date of their publication in the Official Gazette.

2. Application .

- These rules shall apply to all civil and defence aerodromes listed in Schedule III to Schedule VII, as amended from time to time.

3. Definitions.

- In these rules, unless the context otherwise requires, -(i)"Act" means the Aircraft Act, 1934 (XXII of 1934);(ii)"aerodrome" includes civil and defence airports, airstrips, communication, navigation and surveillance facilities used for the aeronautical purposes in India;(iii)"aerodrome elevation" means the elevation of the highest point of the landing area as specified in Schedule III to Schedule VII;(iv)"Authorised officer" means the officer authorised by the defence authorities for the purposes of these rules;(v)"Airports Authority" means the Airports Authority of India constituted under section 3 of the Airports Authority of India Act, 1994 (55 of 1994);(vi)"Colour Coded Zoning Map" of an airport means the map, prepared and certified by the Airports Authority indicating the areas around the airport in different colour coded grids with the permissible heights above mean sea level for the purpose of aerodrome safeguarding and a model Colour Coded Zoning Map of Navi Mumbai International Airport is given at Schedule IX;(vii)"Designated officer" means the officer of Airports Authority of India responsible for processing and/or issuance of No Objection Certificate as specified in Appendix M of Schedule VIII;(viii)"No Objection Certificate" means the certificate issued under rule 5;(ix)"structure" includes building, mast, tower, chimney, poles, transmission lines, elevated roads or viaducts or bridges and elevated railway lines, wind farms and all other man-made structures;(x)Words and expressions used but not defined in these rules shall have the meanings respectively assigned to them in the Act.

4. Restrictions on constructions, erections, trees, etc.

(1)No structure shall be constructed or erected, or any tree planted or grown on any land within a radius not exceeding twenty kilometers from the Aerodrome Reference Point of the civil and defence aerodromes, as specified in Schedule III to Schedule VII, without obtaining a No Objection Certificate for the height clearance, except in cases specified in sub-rule (2) of rule 7.(2)No structure shall be constructed or erected, or any tree planted or grown on any land within the areas specified in Schedule I of the civil and defence aerodromes, as listed in Schedule III to Schedule VII, except for essential navigational aids and other installations required for aeronautical purposes.(3)No structure higher than the height specified in Schedule II, shall be constructed or erected and no tree, which is likely to grow or ordinarily grows higher than the height specified in the said Schedule shall be planted on any land within a radius of twenty kilometers from the Aerodrome Reference Point.(4)The level roads and level railway lines within one kilometer of the airport boundary wall shall also be subject to issuance of the No Objection Certificate.

5. Issuance of No Objection Certificate.

(1)The No Objection Certificate in respect of civil aerodromes shall be issued by the designated

officer on behalf of the Central Government in respect of civil aerodromes.(2)The No Objection Certificate in respect of defence aerodromes shall be issued by the authorised officer in accordance with Schedule I and Schedule II, subject to such other conditions as the said authorised officer may deem fit.(3)In case of State owned and private aerodromes, licensed by the Directorate General of Civil Aviation, the No Objection Certificate for the protection of obstacle limitation surfaces (OLS) at such airports shall be issued by the designated officer and the procedure in cases of State owned and private aerodromes, not licensed by the Directorate General of Civil Aviation, shall be regulated in the manner as specified in rule 13.(4)The application for issuance of No Objection Certificate in respect of civil aerodromes, shall be made by the applicant to the designated officer through the No Objection Certificate Application System (NOCAS), accessible on the website of the Airports Authority at www.aai.aero.

6. Issuance of Colour Coded Zoning Map.

- The Colour Coded Zoning Maps (CCZM) shall be issued by the Airports Authority based on the latitude & longitude of the area in respect of civil aerodromes which shall indicate through different colour coded grids, the permissible heights in the areas around the airport, falling within the radius not exceeding twenty kilometers from the Aerodrome Reference Point. The CCZM shall be available at AAI website www.aai.aero.

7. Approval for construction of buildings, structures, etc.

(1)After considering the No Objection Certificate issued by the designated officer or the authorised officer, the concerned Local, Municipal or Town Planning and Development Authorities shall approve the construction of buildings or structures not exceeding the Permissible Top Elevation. Local, Municipal or Town Planning and Development Authorities shall also consider the existing building regulations or bye-laws or any other law for the time being in force before approving the construction of buildings or structures.(2)In cases of aerodromes where the Colour Coded Zoning Maps has been issued, the Local, Municipal or Town Planning and Development authorities shall, in accordance with the height specifications provided in such Colour Coded Zoning Maps, approve the construction of the structures, as per the existing building regulations or bye laws or any other law for the time being in force:Provided that no such approval shall be given by the Local, Municipal or Town Planning and Development authorities for sites which lies in approach, take off and transitional areas of an airport or in any other area, marked in the Colour Coded Zoning Map for the compulsory obtaining of No Objection Certificate from the designated officer or authorised officer.(3)The Local, Municipal or Town Planning and Development authorities shall certify on the sanction plan that the Floor Space Index or Floor Area Ratio and the related height of the building or structure is within the permissible elevation as indicated in the Colour Coded Zoning Map for the given site.(4)The Local, Municipal or Town Planning and Development Authorities shall submit the details of structures approved under sub-rule (1) and sub-rule (2) to the concerned designated officer or the authorised officer within a period of thirty days from the date of such approval.

8. Clearances for siting towers of fixed wireless stations.

(1)The clearances in respect of siting towers of fixed wireless stations shall be issued by the Standing Advisory Committee on Radio Frequency Allocation (SACFA) of the Ministry of Communication & Information Technology, Government of India, taking into consideration the heights above mean sea level specified in the Colour Coded Zoning Map.(2)The Standing Advisory Committee on Radio Frequency Allocation (SACFA) of the Ministry of Communication, Government of India, shall submit the details of siting towers of fixed wireless stations approved under sub-rule (1) to the concerned designated officer or the authorised officer within a period of thirty days from the date of such approval.

9. Processing of No Objection Certificate cases.

(1)Processing of NOC cases in respect of civil aerodromes shall be carried out at nine Airports Authority offices one each at Delhi, Kolkata, Mumbai, Chennai, Guwahati Hyderabad, Bengaluru, Ahmedabad and Nagpur airports.(2)The designated officer available at the offices specified in sub-rule (1) shall be responsible for the processing of applications and issue of No Objection Certificate and/or issue authorization for issuance of NOC for height clearance by concerned designated officer with respect to the civil aerodromes.(3)A Panel of Chartered Engineers and Surveyors may be assigned by the Airports Authority to carry out physical verification of details of Site Elevation and Coordinates as submitted by the applicant. The expenses of the same shall be borne by the applicant.(4)The officer in-charge of the corporate office at the headquarters of the Airports Authority in New Delhi shall supervise the functioning of the regional and station level offices.

10. Duties of designated officer.

(1)The designated officers, specified in Appendix M of Schedule VIII, shall be responsible for issuance of No Objection Certificate in respect of civil aerodromes and shall coordinate with the respective Local, Municipal or Town Planning and Development authorities in granting approval for construction of buildings or structures.(2)The designated officer shall forward the copy of NOCs issued by him under sub-rule (1) above to the concerned airport operator and respective Local, Municipal or Town Planning & Development authorities.

11. Appellate Committee.

(1)There shall be an Appellate Committee consisting of the following, namely:-(a)Joint Secretary (Airports), Ministry of Civil Aviation, Government of India - Chairperson;(b)Joint Director General of Civil Aviation (Aerodrome), Directorate General of Civil Aviation - Member;(c)Member (Air Navigation Services), Airports Authority of India - Member; and(d)One technical expert having knowledge in the field of communication or air traffic management - Member.(2)If any person or Local, Municipal or Town Planning and Development authorities or any airport operator is aggrieved with the decision of the Designated officer, such person or entity may appeal to the

Appellate Committee for redressal of his/their grievances with respect to the height permissible under these rules.(3)The cases for reference to the Appellate Committee specified in sub-rule (2) shall be received and processed by the corporate office at the headquarters of the Airports Authority in New Delhi.

12. Responsibilities of local authorities and airport operators.

(1)For the effective verification, monitoring and controlling the obstructions around the airports, it shall be the responsibility of the Local, Municipal or Town Planning and Development authorities and the airport operator to ensure that the height of the structures and their locations are in accordance with the approved building plans and the No Objection Certificate issued by the concerned designated officer or the authorised officer.(2)For the purposes of sub-rule (1), the Local, Municipal or Town Planning and Development authorities and the airport operator shall develop appropriate mechanism with necessary trained manpower and equipment so as to verify the height of the structures, site elevations and site location or coordinates in World Geodetic System 1984 (WGS84).

13. Procedure to be followed in case of State owned and private airports not licensed by Directorate General of Civil Aviation.

(1)In case of State owned or private aerodromes not licensed by the Directorate General of Civil Aviation, the concerned State Government shall be responsible for the protection of obstacle limitation surfaces at such airports:Provided that the designated officer shall give guidance to the State Government on the protection of obstacle limitation surfaces, whenever such guidance is sought by the concerned State Government.

14. Development and up gradation of aerodromes.

(1)The approved master plan of the aerodromes shall be considered for drawing and protecting the various obstacle limitation surfaces to ensure its development and future expansion or up-gradation.(2)The designated officer or the authorised officer, before issuing the No Objection Certificate in respect of development or upgradation of any aerodrome (including its runway dimension), shall take into consideration the proposed communication, navigation and surveillance (CNS) facilities and the procedure for Air Navigation Service Operations (PANS-OPS) for height clearance at a given airport.(3)Necessary consultation with the concerned stakeholders shall be carried out by the airport developer, airport operator or by the Air Navigation Service provider, as the case may be, at the time of development of master plan of a Greenfield airport or planning of major airport expansion or the installation of new communication, navigation and surveillance facilities at the existing airports.(4)The aerodrome developer or operator and ANS provider, as the case may be, shall submit the approved master plan of the aerodrome and the proposed development or up gradation of any aerodrome (including its runway dimensions, communication, navigation and surveillance (CNS) facilities and the procedure for Air Navigation Service Operations (PANS-OPS) to the concerned designated officer).

15. Procedure in case of violations.

- The cases of violations where the height of any existing building, structure or tree on any land within the limits specified in rule 4 exceeds the height specified in Schedule I and Schedule II, or any other violation arising out of non-compliance of the provisions of these rules, shall be dealt in accordance with the provisions of the Aircraft (Demolition of Obstructions caused by Buildings and Trees etc.) Rules, 1994.

16. Savings.

- Nothing in these rules shall affect the height clearances assessed and duly issued under the notifications issued by the Government of India in the Ministry of Civil Aviation vide notification numbers S.O. 84(E) dated the 14th January, 2010, and S.O 1589(E) dated the 30th June, 2008, during their assessment validity period of eight years for the buildings and twelve years for the structures such as masts, chimney and towers etc., within which the applicants have to complete the structures and obtain the completion certificate from the concerned authorities: Provided that in cases where the construction work has not started during the initial validity period of five years for the buildings or within seven years for the structures such as mast, chimney, etc., revalidation shall not be considered and the height of such buildings or structures shall be reassessed in accordance with the provisions of these rules.

I

Purpose: Schedule - 1 indicates the No Construction Zones (NCZ) i.e. the areas around the Aeronautical Ground Aids (AGA) and Communication Navigation & Surveillance (CNS) facilities which need to be kept free from all obstructions for the safety and regularity of aircraft operations.

1. Runway

1.1 Runway Strip: The Land area specified below shall be completely free from all obstacles as provided hereunder (Refer Appendix-1 of Schedule - I):

1.1.1. The land comprising within the Runway strip of uniform width of 150 meters on either side of centerline which extends to 60 meters beyond each extremity of Runway, along the extended centerline of a Runway of code 3 or code 4, equipped with Instrument Approach Procedure.

1.1.2. The land comprising within the Runway strip of uniform width of 75 meters on either side of centerline which extends to 60 meters beyond each extremity of Runway, along extended centerline of the Runway of code 1 or 2, equipped with Instrument Approach Procedure and for non-Instrument runway of code 3 or 4.

1.1.3. The land comprising within the Runway strip of uniform width of 40 meters on either side of centerline which extends to 60 meters beyond each extremity of Runway, along extended centerline of the non-Instrument Runway of code 2.

1.1.4. The land comprising within the Runway strip of uniform width of 30 meters on either side of centerline which extends to 30 meters beyond each extremity of Runway, along extended centerline of the non-instrument runway of code 1.

1.2 Installation of Extra High Tension, High Tension lines shall not be permitted within 1500 metres of the Inner edge of the

approach and take-off climb surface.

2. Frangibility Requirement:

2.1 Any equipment or installation required for air navigation purposes which must be located: (a) On that portion of the runway strip within: (i) 75 meters of the Runway centerline where the Runway code is 3 or 4 or (ii) 45 meters of the Runway centerline where Runway code is 1 or 2; or (b) on a runway end safety area, a taxiway strip or within the distances specified in Civil Aviation Requirements Section-4, Series 'B', Part I Aerodrome Design and Operations or (c) on a clearway and which would endanger an aircraft in the air, shall be frangible and mounted as low as possible.

2.2 Any equipment or installation required for air navigation purposes which must be located on or near a strip of precision approach Runway ILS category I, II or III and which: (a) is situated on that portion of the runway strip within 77.5 meters of the Runway centerline where the code number is 4 and code letter is F; or (b) is situated within 240 meters from the end of the runway strip and within: (i) 60 meters of the extended runway centerline where Runway code is 3 or 4 (ii) 45 meters of the extended Runway centerline where Runway code is 1 or 2; or (iii) penetrates the inner approach surface, the inner transitional surface or the balked landing surface, shall be frangible and mounted as low as possible.

3. Communication, Navigation and Surveillance (CNS) Facilities

3.1 Very High Frequency Omni Range (VOR)/collocated Distance measuring Equipment (DME) and Very High Frequency Direction Finder (VHF DF): A land area within the 300 meters radius of the facility.

3.2 Localizer or LLZ (a component of ILS, providing azimuth guidance): the land area bounded by the following namely (Refer diagram at Appendix-L of Schedule VIII):

- 3.2.1. A line 300 meters in the direction of approach or nearest end of the runway, whichever is greater from localizer antenna and perpendicular to the runway.
- 3.2.2. A line 60 meters from the centerline of localizer antenna on both side and parallel to the runway.
- 3.2.3. A line containing centre of localizer antennas and perpendicular to the runway; and
- 3.2.4. Area within circle of 75 meters radius with centre at middle of the antenna system;

3.3 Glide Path (a component of ILS providing vertical guidance): the area bounded by the following, namely (Refer diagram at Appendix-K of Schedule VIII):

- 3.3.1. A line 300 meters in the direction of approach from the glide path facility;
- 3.3.2. A line containing glide path antenna and perpendicular of runway;
- 3.3.3. Near edge of the runway from the glide path;
- 3.3.4. A line 30 meters in the directions away from the runway and parallel to it.

3.4 Locators or Markers Beacons: The land within a radius of 30 meters of the site of markers and locator beacons.

3.5 Airport Surveillance Radar (ASR): No structure will be permitted on the land above the level of 3 meters below the pedestal height up to the distance of 500 meters from Radar antenna.

3.6 Air Routes Surveillance Radar (ARSR): No structure will be permitted on the land above the level of 5 meters below the pedestal height up to the distance of 200 meters from Radar antenna.

3.7 Monopulse Secondary Surveillance Radar/ Secondary Surveillance Radar (MSSR/SSR): The distance and the height restriction shall be the same as in respect of the Airport Surveillance Radar or Air Routes Surveillance Radar, depending upon operational usage.

3.8 Microwave Link: On corridor of 30 meters on either side of the direct line of azimuth and 10 meters below from the direct line of sight in the vertical plane;

3.9 Ultra High Frequency (UHF) Link: On a corridor of 30 meters on either side

of the direct line of the azimuth and 10 meters below from the direct line of sight in the vertical plane.

3.10 En-route Beacons: Land within a radius of 30 meters around the antenna.

3.11 Remote Receiver: Land within a radius of 1525 meters of the site.

3.12 Stand-alone Distance Measuring Equipment / Automatic Dependence Surveillance - Broadcast (DME/ADS-B): No structure will be permitted on land above the level of 3 meters below the antenna base upto a distance of 150 meters from the antenna.

3.13 Airport Surface Detection Equipment (ASDE) or Surface Movement Radar (SMR): No structure will be permitted on the land above the level of 2 meters below the antenna base up to the distance of 200 meters from Radar antenna.

3.14 Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Reference Transmitter: No structure will be permitted on the land above the level of 5 meters below the antenna base up to the distance of 200 meters from Radar antenna.

3.15 A-SMGCS Multi-Lateration (MLAT): No structure will be permitted on the land above the level of 2 meters below the antenna base up to the distance of 200 meters from Radar antenna.

3.16 Ground Based Augmentation System (GBAS) Reference Receiver: No structure will be permitted on land up to the distance of 100 meters from antenna.

3.17 Ground Based Augmentation System VHF Data Broadcast (GBAS VDB) station: No structure will be permitted on the land up to the distance of 300 meters from antenna.

3.18 GBAS VDB monitoring station: No structure will be permitted on the land up to the distance of 300 meters from antenna.

3.19 Global Position System (GPS) Pseudolite Restriction: No GPS Pseudolite shall be used within the approach funnel of any runway or within the airport where GNSS/GBAS based operation has been planned/exist.

3.20 Global Navigation Satellite System (GNSS) repeater restriction: No GNSS repeater shall be installed/use in approach funnel and within the 500 meter from the basic strip where GNSS/GBAS based operation has been planned/exist.

4. Definitions and Explanation. - Some of the definitions of the terms used in the notifications have been provided below. For other terms, the Civil Aviation Requirements Section-4, Series 'B', Part I Aerodrome Design and Operations, ICAO annex 14, Annex 10 and Doc.8168 may be referred.

i) Runway: A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

ii) Runway end safety area (RESA). An area symmetrical about the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.

iii) "Runway Strip" A defined area including the runway and stopway, if provided, intended:

a) to reduce the risk of damage to aircraft running off a runway; and

b) to protect aircraft flying over it during take-off or landing operations.

iv) "Runway Code", means the Runway Code number specified in column (1), in relation to the Runway length specified in column (2), of the Table below:-

Runway	Instrument Runway	Non-Instrument Runway			
Runway Code	Aerodrome Reference Field Length (ARFL) in (Meter)	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stop	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stop

			way (Meter)		way (Meter)
(1)	(2)	(3)	(4)	(5)	(6)
1.	<800	75	60	30	30
2.	800<1200	75	60	40	60
3.	1200<1800	150	60	75	60
4.	1800 & above	150	60	75	60

v) "Approach funnel" in relation to (Refer Appendix-1 of Schedule-I):- (a) Instrument Runway Code 3 and 4, means the area in the shape of an isosceles trapezium having the longer parallel side 4800 meters long (2400 meters on either side of the extended centerline of the runway) and smaller parallel side 300 meters long (150 meters on either side of the extended centerline of the runway), where the smaller and longer parallel sides are placed at a distance of 60 meters and 15060 meters respectively, from the end of the runway and at right angles to the extended centerline; (b) Instrument Runway (Precision) Code 1 and 2, means the area in the shape of an isosceles trapezium having the longer parallel side 4650 meters long (2325 meters on either side of the extended centerline of the runway) and smaller parallel side 150 meters long (75 meters on either side of extended centreline of the runway) where the smaller and longer parallel sides are placed at a distance of 60 meters and 15060 meters respectively, from the end of the runway and at right angles to the extended centerline; (c) Instrument Runway (Non Precision) Code 1 and 2, means the area in the shape of an isosceles trapezium having the longer parallel side 900 meters long (450 meters on either side of the extended centerline of the runway) and smaller parallel side 150 meters long (75 meters on either side of the extended centerline of the runway), where the smaller and longer parallel sides are placed at a distance of 60 meters and 2560 meters respectively, from the end of the runway and at right angles to the extended centerline; (d) Non-Instrument Runway Code 3 and 4, means the area in the shape of an isosceles trapezium having the longer parallel side 750 meters long (375 meters on either side of the extended centerline of the runway) and smaller parallel side 150 meters long (75 meters on either side of the extended centerline of the runway), where the smaller and longer parallel sides are placed at a distance of 60 meters and 3060 meters respectively, from the end of the runway and at right angles to the extended centerline; (e) Non-Instrument Runway Code 2, means the area in the shape of an isosceles trapezium having the longer parallel side 580 meters long (290 meters on either side of the extended centerline of the runway) and smaller parallel side 80 meters (40 meters on either side of extended centreline of the runway) where the smaller and longer parallel sides are placed at a distance of 60 meters and 2560 meters respectively, from the end of the runway and at right angles to the extended centerline; (f) Non-Instrument Runway Code 1 means the area in the shape of an isosceles trapezium having longer parallel side of 380 meters long (190 meters on either side of the extended centreline of the runway) and smaller parallel side 60 meters (30 meters on either side of extended centreline of the runway) where the smaller and longer parallel sides are placed at a distance of 30 meters and 1630 meters respectively from the end of the runway and at right angles to the extended centreline. The diagrams of runway strip and approach funnel of instrument runway code 1,2,3 and 4 and non-instrument runway code 3 and 4 have been shown in the Appendix-1 of Schedule-I ;vi) "Instrument Runway" means a runway served by visual aids and non-visual aids providing directional guidance adequate for a straight in approach and intended for the operation of aircraft using instrument approach procedures;vii) Non-Precision Approach Runway - means an

instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach;viii) Precision approach runway, category I - An instrument runway served by Instrument Landing System and/or MLS and visual aids intended for operations with a decision height not lower than 60 meters and either a visibility not less than 800 meters or a runway visual range not less than 550 meters.ix) Precision Approach Runway, category II - An instrument runway served by Instrument Landing System and or MLS and visual aids intended for operations with a decision height not lower than 60 meters but not lower than 30 meters and a runway visual range not less than 350 meters.x) Precision Approach Runway, Category III - An instrument runway served by Instrument Landing System (ILS) and/or MLS to and along with surface of the runway and -(a)ILS CAT IIIA - intended for operations with a decision height lower than 30 meters, or no decision height and a runway visual range not less than 200 meters.(b)ILS CAT IIIB - intended for operations with a decision height lower than 15 meters, or no decision height and a runway visual range less than 200 meters but not less than 50 meters.(c)ILS CAT IIIC - intended for operations with no decision height and no runway visual range limitations.xi)

"Non-Instrument Runway" means a runway intended for operations of the aircraft using visual approach procedure.xii) "Very High Frequency Omni Range, Terminal Very High Frequency Omni Range, And Doppler Very High Frequency Omni Range" means the facilities operating in the Very High Frequency band of frequencies 112 to 118 MHz, radiate signals whereby an aircraft with the help of an instrument in its cockpit when tuned to the ground equipment frequency automatically gets its direction with respect to the facility and helps an aircraft to navigate on a predetermined course or home to an airport served by the facility.xiii) "Instrument Landing System (ILS)" means the facility which serves to help an aircraft to make a safe landing on the runway in conditions of poor visibility and comprises of the following component facilities, namely:-(a)Localizer facility which radiates Very High Frequency Signals which when picked up by an aircraft guide it onto the centerline of the runway in the horizontal plane and is normally situated about 305 meters from the runway end;(b)Glide Path facility radiates Ultra High Frequency signals and is normally situated about 275 meters to 305 meters from the runway threshold and offset about 122 meters to 137 meters from the centerline of the runway and provides the glide angle information to a landing aircraft with the help of an instrument in the cockpit which when tuned to the glide path frequency indicates whether the aircraft is flying up or down or along the correct glide angle;(c)Outer Marker or Outer Locator facility operating on 75 MHz in the Very High Frequency band is normally installed along the extended centerline of the runway at a distance between 3.5 and 6 nautical miles (1 nautical mile=1853 meters) and produces radiation pattern to indicate the landing aircraft, the pre-determined distance from the threshold along the Instrument Landing System glide path;xiv) "Radar" includes-(a)Airport Surveillance Radar (ASR) which is a radar facility serving an aerodrome to scan the air traffic within 50 to 60 nautical miles of the aerodrome;(b)Air Routes Surveillance Radar (ARSR) or Secondary Surveillance Radar is a high power long-range radar covering a distance of 200 nautical miles approximately and it scans air traffic to a larger distance than Airport Surveillance Radar;xv) Communication and Navigational facilities include-(a)Microwave Link which is a radio facility whereby mostly intelligence/data is carried to the Air Traffic Control Display site;(b)Ultra High Frequency Link which is a radio relay facility operating in Ultra High Frequency Band;(c)Beacons which are radio transmitters operating in the Medium Frequency band from 200 to 400 KHz radiating omni directionally in the horizontal plane and an aircraft equipped with a suitable cockpit instrument can get its location automatically with respect to this facility.(d)Remote

Receivers which are radio receiving stations (HF Band) installed at remote site away from factory or industrial areas to avoid interference link man-made static, etc. Note: Location of Navigational Aids shall be determined as per the provisions of Annex-10 of International Civil Aviation Organization. Appendix-1 to Schedule-I

II

Purpose: The height or permissible elevation for the structure, requiring grant of NOC, shall be calculated based upon the International Civil Aviation Organization (ICAO) Annex 14 Obstacle Restriction and Removal, Annex 10 the Radio Communication, Navigation and Surveillance (CNS) aids and Doc 8168, Vol II defining the operational requirements for minimum altitudes of various segments of published or proposed instrument approach procedures. This annexure-II defines various OLS surfaces, requirements w.r.t. CNS and PAN-OPS, procedure to be followed while applying and processing the NOC for height clearance.

1. Obstacle Limitation Surfaces (based on ICAO Annex 14 and DGCA India Civil Aviation Requirements (CARs) on Aerodrome Design and Operations) are as under:

1.1 Take-off climb surface - The dimensions of the take-off climb surface shall not be less than the dimensions specified in the table given below except that if a runway is meant for takeoff, a lesser length may be adopted for the takeoff climb surface where such lesser length would be consistent with procedural measures adopted to govern the outward flight of aeroplanes. Table 2.1 - Dimensions and Slopes of Obstacle Limitation Surfaces (Runways Meant for Take-Off)

Surface and dimension*	Code Number		
(1)	1	2	3 or 4
(2)	(3)	(4)	
Take Off Climb			
Length of inner edge	60 meters	80 meters	180 meters
Distance from runway end	30 meters	60 meters	60 meters
Divergence (each side)	10%	10%	12.5%
Final width	380 meters	580 meters	1200 meters 1800 meters**
Length	1600 meters	2500 meters	15000 meters
Slope	5%	4%	2%

* All dimensions are measured horizontally ** When the intended track includes changes of heading greater than 15 degree for operations conducted in IMC, VMC by night

1.2 Transitional Surface 1.2.1. The outer limit of the transitional surface is determined by its intersection with the plane containing inner horizontal surface and the slopes of transitional surfaces are as given below, namely:-

- (i) Precision Approach Runway 14.3% (1:7)
- (ii) Non Precision Runway 14.3% (1:7) for code 3 & 4 20% (1:5) for code 1 & 2
- (iii) Non-Instrument Runway 14.3% (1:7) for code 3 & 4 20% (1:5) for code 1 & 2;

The slope of the transitional surface shall be measured in a vertical plane at right angles to the centre line of the runway; 1.2.2 The elevation of a point on a lower edge shall be -(a) along the side of approach surface, equal to the elevation of approach surface at that point; and (b) along the strip, equal to the elevation of nearest point on the centre line of the Runway or its extension; 1.3 Approach Surface 1.3.1 The approach surface shall be established for each runway strip in the direction of intended landing of the aeroplanes and the limits and slopes are given table below: 1.3.1.1 Instrument Runway

Inner Edge of Approach Surface:

Length of Inner edge	- 150 meters for Code No. 1 and 2 - 300 meters for Code No. 3 and 4
Distance from runway threshold	- 60 meters
Divergence	- 15% on either side

Length & Slope of Approach Surface: as given in table 2.2 Table 2.2 - Approach Surface Slope of Instrument Runway

Code No.	Aerodrome Reference Field Length (meter)	Precision Runway Approach Runway	Non Precision Runway Approach Runway	First Section Length (Meter) & Slope	Second Section Length (Meter) & Slope	Horizontal Section (Meter)
		First Section Length & Slope	Second Section Length (Meter) & Slope			
1.	<800	3000 2.5%	12000 ** 3%	2500 3.33%	--	--
2.	800<1200	3000 2.5%	12000 ** 3.00%	2500 3.33%	--	--
3.	1200<1800	3000 2%	3600 2.5%	3000 2%	3600 2.5%	8400*
4.	1800 and Above	3000 2%	3600 2.5%	3000 2%	3600 2.5%	8400*

* Total length of approach surface for runway code number 3 and 4 with precision and non-precision shall be 15000 meters. ** Total length of approach surface for Precision approach

Runway Code number 1 and 2 shall be 15000 meters.1.3.1.2Non-Instrument runway

Inner Edge of

Approach Surface:

	Length of Inner edge	- 60 meters for Code No. 1- 80 meters for code No. 2- 150 meters for Code No. 3 and 4
Distance from runway threshold	- 30 meters for code 1- 60 meters for code No. 2, 3 and 4	
Divergence	- 10% on either side	

Length & Slope of Approach Surface : as given in table 2.3Table 2.3 - Approach Surface Slope of Non-Instrument Runway

Runway Length and slope of approach surface

Code No.	Aerodrome Reference Field Length (meter)	Length (Meter)	Section Slope
1.	<800	1600	5%
2.	800<1200	2500	4%
3.	1200<1800	3000	3.33%
4.	1800 & above	3000	2.5%

1.3.1.3Aerodrome where there are more than one runway with over-lapping approach areas and associated surface, most stringent of the two would be the applicable criteria.1.3.1.4For determining the approach, the physical extremities of the runway shall only be considered. In case of displaced threshold the permissible height shall be calculated based on approach surface and transitional surface with respect to the runway extremity or displaced threshold whichever is more restrictive.1.3.1.5At Aerodromes, where the proposals for runway extension exist, the requisite surface shall be determined from the proposed extension as well as from the existing runway strip/associated clearway, as applicable and the lower of the two elevations shall be permitted. The elevation of the associated runway extremity/displaced threshold/proposed extension of runway shall be the datum for approach surface.1.3.1.6The slope of the approach surface shall be measured in a vertical plane containing the centerline of the runway.1.4Inner Horizontal Surface (IHS)1.4.1Dimensions and permissible heights of Inner Horizontal Surface are given in the table below:Table 2.4 - Dimensions and Permissible Heights of Inner Horizontal Surface

Runway Instrument		Non-Instrument			
Code No.	Aerodrome Reference Field Length (meter)	Radius (Meter)	Height (Meter)	Radius (Meter)	Height above Aerodrome Elevation (Meter)
1.	<800	3500*	45	2000*	45
2.	800<1200	3500*	45	2000*	45
3.	1200<1800	4000**	45	4000**	45
4.	1800 and Above	4000**	45	4000**	45

*For runway code number 1 and 2, radius of IHS shall be measured from the Aerodrome Reference Point (ARP).** For runway code number 3 and 4, radius of IHS shall be measured from the runway extremity.1.4.1.1The reference datum for Inner-Horizontal Surface shall be the aerodrome elevation as defined in clause (g) of the Explanation to this notification.1.4.1.2For Runway code 3 and 4, the

Inner Horizontal Surface shall be a composite pattern, which consists of two circular areas centered at the two ends with a radius of 4000 meters. These areas shall be joined tangentially to form an elliptical shape as shown in Appendix-A of Schedule VIII.1.4.1.3Where it is required to protect two or more widely spaced long runways, a more complex pattern involving four or more circular areas are formed. These areas should be joined tangentially by straight lines and the Inner Horizontal Surface shall be defined by the external limits of the resulting pattern (Refer Appendix-A of Schedule VIII).1.4.1.4When two aerodromes are close to each other with overlapping circuits the Inner Horizontal Surface will be drawn as prescribed in para 1.4.1.3. The inner horizontal surface of these two aerodromes shall be joined tangentially to form one common Inner Horizontal Surface.1.4.1.5In case of common horizontal surface serving two aerodromes, the elevation of the Inner Horizontal Surface will be referenced to the lower of the two aerodromes.1.5Conical Surface1.5.1The conical surface shall be projected upwards and outwards from the periphery of the Inner Horizontal Surface. The slope 5% (1:20) of the conical surface shall be measured in a vertical plane perpendicular to the Inner Horizontal Surface. The reference datum for Conical Surface shall be the aerodrome elevations (Refer to Appendix-B of Schedule VIII for illustration of the various surfaces including the conical surface).Note: Where a part of Inner Horizontal Surface and conical surface lies below the approach/take-off climb surface, the permissible heights shall be the lowest of the applicable surfaces.1.6Outer Horizontal Surface (OHS)1.6.1The Outer Horizontal Surface shall extend to 15000 meters from the Aerodrome Reference Point for Aerodrome with runway code 3 and 4.1.6.2In case of Aerodrome with runway Code 2, the Outer Horizontal Surface shall extend to 14740 meters from Aerodrome Reference Point for Instrument runways and 13740 meters for Non-Instrument runways.1.6.3Where combined Outer Horizontal Surface is established for two Aerodromes, the Outer Horizontal Surface shall be centered on the Aerodrome Reference Point of the Aerodrome of higher category.1.6.4Outer Horizontal Surface for Aerodrome with runway code No.1 shall not be established.1.6.5The Outer Horizontal Surface, would be defined such that the Conical Surface may continue to be extended at 5% slope to a point wherein the permissible maximum height of *300 meters (above aerodrome elevation) is reached and thereafter this surface is maintained upto 15 kilometers from Aerodrome Reference Point. Construction(s) protruding above these surfaces shall normally not be permitted. Obstructions existing in the area should be marked or lighted.*Note: In case of Defence Aerodromes, the permissible maximum height in conical and OHS shall be 150 meters above aerodrome elevation.1.6.6In order to avoid abrupt vertical changes in surfaces, the surfaces beyond the conical surfaces will slope laterally at 1:7 from edges of the approach and take off surfaces between the permissible heights of 150 meters to 300 meters (For illustration refer to Appendix-B of Schedule VIII).1.6.7The datum for Outer Horizontal Surface shall be the aerodrome elevation.1.7The Inner Approach, Inner Transitional and Balked Landing Surfaces (collectively referred as Obstacle Free Zone or OFZ):1.7.1Obstacles Free Zone shall be established for a runway equipped with precision approach (ILS) category I, II and III operations. The zone shall be kept free from fixed objects other air navigation aids, which must be near the runway, to perform their function, mounted on light weight frangible fixtures.Note: Obstacles Free Zone for runway code No. 1 and 2 are not established.The dimensions and slopes of the Obstacles free zone (Code 3 and 4) are given below.1.7.1.1The inner approach surface

Width	120 meters
Distance from Threshold	

	60 meters
Length	900 meters
Slope	2%
1.7.1.2. The inner transitional surface	
Slope	33.3%
1.7.1.3. Balked Landing Surface	
Length of the Inner edge	120 meters
Distance from Threshold	1800 meters
Divergence	10%
Slope	3.33 %

2. Protection of Service volume of various Communication, Navigation and Surveillance Facilities (based on ICAO Annex 10 Navigational Aids)

2.1 Very High Frequency Omni Range (VOR), Terminal Very High Frequency Omni Range (TVOR), and collocated Very High Frequency Omni Range Distance Measuring Equipment (VOR DME) - No structure (located beyond the area of 300M radius as specified in Annexure I) shall subtend a vertical angle greater than 1.5 degree at the centre of the Very High Frequency Omni Range counterpoise from the horizontal plane passing through the counterpoise.

2.2 Stand-alone Distance Measuring Equipment (DME) - No steel towers, power lines, metal buildings (located beyond the area of 150M radius as specified in Annexure I) shall protrude elevation angle of 3 degree measured from the base of Distance Measuring Equipment antenna.

2.3 Localizer

2.3.1 Within ± 10 degrees azimuth in front of LLZ antenna, an object (located beyond the area specified in Annexure I) should not subtend an angle of elevation more than 0.75 degrees at the centre of antenna array.

2.3.2 Within ± 10 degrees to ± 35 degrees LLZ azimuth in front of antenna an object (located beyond the area specified in Annexure I) should not subtend an angle of elevation more than 1.1 degree.

2.3.3 Notwithstanding any thing in para 2.3.1 and 2.3.2, in all airports having/intended to have cat II and cat III ILS, all object in sector of ± 18 degree for medium aperture antenna localizer and ± 15 degree for wide aperture LLZ antenna, upto the distance of 1050M beyond threshold, to be analysed for their potential multipath effects on the performance of ILS.

2.4 Glide Path - Beyond areas specified in Annexure I and within ± 8 degrees azimuth in front of the glide path antenna (in the direction of approach), a building/structure should not subtend an angle of elevation of more than 1.1 degree at antenna base.

2.5 Airport Surveillance Radar (ASR);

2.5.1 Wherever airport is served or proposed to be served by a single ASR, following criteria shall be applicable:

2.5.1.1 Beyond 500 meters from particular Radar site, the height of the permissible structures may be increased at the rate of 0.05 per meter, upto 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 different distance in same sector whichever is closer to 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 Radar site) or any other designated MSA at different distance in same sector whichever is closer to horizon to the centre of antenna pedestal depending on the minimum Sector Altitude in that particular sector (For illustration refer to Appendix-C of Schedule VIII). Note: Large object means the structure/s in isolation or collectively subtending azimuth angle of 0.4 degree or above at Radar antenna. In case of cluster of buildings wherein the gap between the two adjacent buildings subtends an azimuth angle of less than 0.4 degree on the antenna pedestal, the entire cluster should be considered as one object.

2.5.2 Wherever airport is served or proposed to be served by Multiple Radars (more than one ASR), operational and integrated, following criteria shall be applicable:

2.5.2.1 In case only one ASR is installed and the proposed ASRs are yet to be operationalized and integrated, the existing ASR will be considered for height calculations as per the provisions of 2.5.1.

2.5.2.2 After multi radar system is operationalized and integrated, the maximum height permissible in the integrated system will be considered for calculation of height to the applicant. However, from the radar performance requirement point of view, the structures are to be examined, as follows, to ensure that there is no degradation of radar performance.

I. Within one kilometer of any ASR in the system, structures shall be examined from the respective radar as per para 2.5.1.

II. Between one and two kilometer, the metallic and large structures shall be examined from respective ASR as per para 2.5.1.

III. Structures which are Non-metallic and are not termed as large objects may be permitted to higher height as per IV below, subject to condition that other structure(s) in vicinity do not form cluster with the structure under examination.

IV. Objects beyond two kilometer from any one of the ASRs, highest permissible height among integrated & operational ASR sites shall be permitted as per para 2.5.1.

Note: Above criterion will not be applicable for wind farms, high tension lines and electromagnetic source of interference.

2.6 Air Route Surveillance Radar (ARSR) - Beyond 200 meters from particular Radar site the height of the permissible structures may be increased at the rate of 0.05 meter per meter, upto a point wherein the height of the permissible structure does not protrude above an angle of elevation of more than 0.5 degree at the antenna pedestal or an angle equal to antenna tilt angle set during last flight inspection whichever is higher. Beyond the above stated point no large object would be permitted to protrude above the line drawn at an angle of 0.5 degree from antenna pedestal or an angle equal to antenna tilt angle set during last flight inspection whichever is higher. Large object means the structure subtending azimuth angle of 0.4 degree or above at Radar antenna. In case of cluster of buildings wherein the gap between the two adjacent buildings subtends an azimuth angle of less than 0.4 degree on the antenna pedestal, the entire cluster should be considered as one object (For illustration refer to Appendix-D of Schedule VIII).

2.6.1 Monopulse Secondary Surveillance Radar / Secondary Surveillance Radar (MSSR/SSR) Same as Air Surveillance Radar/Air Route Surveillance Radar depending on operational usage.

2.7 Automatic Dependence Surveillance-Broadcast (ADS-B) - Beyond 150m from particular ADS-B site, the height of the permissible structures does not protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from ADS-B site) or any other designated MSA at different distance in same sector whichever is closer to horizon, to the centre of the antenna pedestal of ADS-B.

2.8 Advance Surface Movement Guidance and Control System (ASMGCS): - No structure should be built on the relevant area of the airport surface which blocks the line of sight between any of the sensors of the Advance Surface Movement Guidance and Control System and the relevant operational area. In case there is an operational or safety/security requirement to add a structure on the airport surface which may obstruct the line of sight between Surface Movement Radar (SMR) antenna/ sensors, AAI would

augment the system to meet the Advance Surface Movement Guidance and control system operational requirement.

2.8.1 Surface Movement Radar (SMR) - Beyond the distance of 200 M. from SMR antenna, no object should protrude the line of sight to nearest point of designated coverage volume of said SMR.

2.8.2 Beyond the distance of 200 M from A-SMGCS Ref TX no object should protrude the line of sight to nearest point of designated coverage volume of said ref TX and corridor between ref TX and MLAT of 5 Mx5 M.

2.8.3 Beyond the distance of 200 M from A-SMGCS MLAT no object should protrude the line of designated coverage volume of said ref TX and a corridor between ref TX and MLAT of 5 Mx5 M.

2.9 Indian Land Uplink Station (INLUS)/Indian National Reference Station (INRES) of GPS Aided Geo Augmented Navigation (GAGAN) System - No structure will be permitted to protrude above the plane inclined at elevation angle of 2 degree from the horizontal surface drawn at the level of antenna of Indian Land Uplink Station and Indian National Reference Station of GPS Aided Geo Augmented Navigation system which is a part of Global Navigation Satellite System (GNSS).

2.10 Very High Frequency (VHF)/ Remote Controlled Air to Ground communication (RCAG) - no structure shall be allowed to protrude above the lowest line of sight of coverage of designated service volume of facility without proper mitigation.

2.11 Wind Turbine Generators/ Wind Farms - No Wind Turbine Generator/s shall be installed upto a distance of 10 KM in line of sight of the Radar Antenna of all Static Air Defence Radars and upto 8 KM from VOR and Airport Surveillance Radar (ASR).

2.12 Electricity Power Transmission Lines

2.12.1 No High Tension (HT) or Low Tension (LT) line shall be permitted to pass through the sensitive area of Localizer and glide path.

2.12.2 All HT lines will not be permitted to the following area until and unless these are shielded by permanent structures:-

- a. Localizer, with in ± 18 degree, all HT lines will be permitted only up to an angle of elevation of 0.5 degree from the localizer. If these HT line are on the radial, these may be permitted to 0.75 degree elevation. In the sector between ± 18 degree to ± 35 degree line may be permitted up to the elevation angle of 0.75 degree.
- b. Glide Path, all HT lines will be permitted only up to an angle of elevation of 0.5 degree from the Glide Path. If the HT line is on the radial, it may be permitted to 0.75 degree elevation.
- c. VOR, HT lines shall be permitted below 0.5 degree at counterpoise and if these lines are on the radial, they may be permitted up to 1 degree.
- d. RADAR, power line above 11 KVA and up to 100 KVA may not be permitted up to 1 km and above 100 KVA up to 2 KM

3. Procedure for Air Navigation Services Operation (PANS-OPS) criteria (based on ICAO Document 8168, Volume II):

3.1 In order to achieve the lowest possible operating minima for aircraft operation, it is necessary to protect not only the Annex 14 OLS but also to safeguard the PANS-OPS [ICAO Document 8168] Surfaces. The limit of PANS-OPS surfaces extend up to 30NM from the facility i.e. VOR or NDB serving the aerodrome. Considerations need to be given to the objects which penetrate the PANSOPS surfaces, regardless whether or not they penetrate Annex 14 OLS. Such obstacle may result in an operational penalty like higher Obstacle Clearance Altitude/Height (OCA/H) and introduction of longer approach segment. Therefore, while examining the cases for issue of NOC from the considerations of Annex 14 and Annex 10 criteria as provided in para 1 and 2 above, the operational criteria needs to be considered based on the provisions of Documents 8168, Vol. - II. It needs to be ensured that the minimum altitudes of the following segments, published or the proposed, are not infringed:

- i. Minimum Sector Altitude (MSA)
- ii. Minimum Holding Altitude

(MHA)iii. Minimum Vectoring Altitude (MVA)iv. Minimum Altitude of Initial and Intermediate Segmentsv. OCA/H (Straight-in-and Circling) for all aircraft categoriesvi. STARs /SIDs procedure altitude.vii. Basic ILS Surface3.2Criterion specified in Doc 8168 Volume II (PANS-OPS) for designing instrument procedures shall not be used for creating new structures as PANS-OPS surfaces are not intended to replace Annex 14 OLS as planning surfaces for creating new structures.3.3For the obstacles located even outside the limits of Annex 14 OLS, it shall be ensured that PANSOPS surfaces of the published instrument approach procedures are not penetrated.Note 1: Instrument approach procedures of all the civil aerodromes in India have been published in the AIP India under the section "Aerodrome". In the published procedures, the minimum altitudes of the various segments of instrument approach procedures have been specified.Note 2: The minimum obstacle clearance criteria are applied as per the provisions of International Civil Aviation Organization (ICAO) Document 8168 Volume II. Normally for minimum sector altitudes (Applicable upto 30 NM from the facility on which procedure is designed), minimum vectoring altitudes, minimum holding altitudes and for the initial approach an obstacle clearance of 1000 feet is applied.Note 3: Final approach areas of Very High Frequency Omni Radio Range (VOR)/Non Directional Beacon (NDB) have been illustrated in Appendix-E of Schedule VIII).

4. Shielding criteria - The principle of shielding is applicable w.r.t. Natural Terrain, already penetrating one of the obstacle limitation surfaces of an airport and it is not likely to be removed. The shielding criteria as explained below is applicable w.r.t. AGA and CNS surfaces.

4.1The principle of shielding will not to be applied in:I. Transitional surface area,II. Approach surface areas, within 4000 meters of the inner edge of approach surface.III. Inner Horizontal Surface (IHS), within a distance of 2500 meters from the runway centre line. In case of multiple runways, area encompassed by 2500M from centerline of all runways.4.2The following criteria shall be followed for the purpose of applying shielding criteria for the proposed structure with respect to existing natural terrain.4.2.1Proposed (shielded) object located beyond a distance of 2500M from runway centerline:(i)Draw a line joining the centre point of the plot to the nearest runway end (runway code no. 3 & 4) or ARP (code 1 & 2) as the case may be. Shielding will be applicable w.r.t. applicable terrain within the area bounded by the two lines drawn parallel to the above line, at a distance of 600M on either side. A line, across the highest point of applicable reference (shielding) terrain, perpendicularly to the above parallel lines shall be drawn to delineate the areas for different type of shielding i.e. negative or equal to the horizontal plane passing through top of reference terrain (For the illustrations refer to Appendix-F and Appendix-G of Schedule VIII).(ii)If the proposed structure is lying between the aerodrome and the reference terrain, a negative shielding of 10% shall be applicable. The shielding benefit of a horizontal plane, equal to reference terrain height, shall be provided in the area located in the opposite side away from the aerodrome (For the illustrations refer to Appendix-F and Appendix-G of Schedule VIII).4.3Communication Navigation Surveillance (CNS) Parameters: - For CNS facilities, shielding benefit could be provided to the structures in cases wherein such structures (shielded) are in the shadow of the highest terrain of permanent nature. Shadow for this purpose is defined as an area falling below a line drawn from the top and both the extremities of the terrain of permanent nature, to the facility and extrapolation of

the same plane behind from the said obstacle.

5. Conduct of Aeronautical Study and CNS Simulation Study

5.1 The Aeronautical Study, as referred to in the Civil Aviation Requirements Section-4, Series 'B', Part I on Aerodrome Design and Operations and ICAO Annex 14, may be conducted to determine that the existing object or the proposed new object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes in pursuance of the ICAO provisions as given below: Note 1: New objects or extensions of existing objects should not be permitted above the conical surface and the inner horizontal surface except when, in the opinion of the appropriate authority, after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes. Note 2: Existing objects above an approach surface, a transitional surface, the conical surface and inner horizontal surface should as far as practicable be removed except when, in the opinion of the appropriate authority, after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes. 5.1.1 The request for aeronautical study shall be considered by the Member (Air Navigation Services), Airports Authority of India, on case to case basis. 5.1.2 Aeronautical Study shall not be carried out in Approach and Transition surfaces. 5.1.3 Aeronautical Study, as per the established guidelines, shall be carried out by AAI, ICAO or any other agency, approved for the purpose by Ministry of Civil Aviation. 5.1.4 Based on the Aeronautical Study report, including a revised height clearance if necessary, shall be communicated to the applicant by AAI. 5.1.5 Guidelines are available at NOCAS at www.aai.aero. 5.2 Communication Navigation Surveillance (CNS) Simulation study: In case any structure is required to be made within aerodrome premises (airside and city side) by the Aerodrome Operator which creates obstruction from CNS point of view, a simulation study could be carried out to study the impact of this structure on the performance of the relevant facility and in case the study confirms that the impact would not hamper the operability of the facility, such structure could be permitted within the aerodrome premises.

6. Procedure for determining the maximum permissible heights: - The following steps shall be taken for calculating the maximum permissible heights for cases where there is a requirement of NOC from AAI or from Defence Authorities.

6.1 ICAO Annex 14 Obstacle Limitation Surfaces Criteria: 6.1.1 The site of the proposed buildings/installations shall be marked on the zoning map of the aerodrome, prepared by the aerodrome operator, where Annex 14 surfaces have been drawn or plotted on the map generated by NOCAS based on the site co-ordinate(s) in WGS 84 system. 6.1.2 If the site location is within the approach/take off surface, the permissible applicable heights in the approach/take off climb surface, transitional surface, Inner Horizontal Surface/conical surface shall be calculated. 6.1.3 If the site is located outside the approach/take off climb surface, the height shall be determined as per the location applicable to the relevant surface (Transitional, Inner Horizontal Surface, Conical or Outer Horizontal Surface). 6.2 ICAO Annex 10 Communication, Navigation and Surveillance (CNS)

Criteria:6.2.1Determine the distance of the proposed site from the each communication, navigational and surveillance facility separately and calculate the applicable heights based on the provisions as contained in para 2 of Annexure II.6.3The permissible height from the above two criteria shall be the lowest as of 6.1 and 6.2 above.6.4Procedure for Air Navigation Service Operations (PAN-OPS) Criteria:6.4.1After having determined the combined applicable elevation, based on the OLS criteria and CNS criteria, it shall further be ensured that the PANS-OPS surfaces are not infringed and the minimum altitudes of the published/proposed segments of instrument approach procedures are fully protected. This has also been referred to at para 3 of this annexure.6.4.2The lowest elevation determined as above, based on the OLS, CNS and PANS-OPS criteria, shall be the permissible top elevation of the proposed structure for which No Objection Certificate may be issued by the designated officer of AAI or the Defence Authorities.6.5No Objection Certificate Application System (NOCAS) for applying for height clearance w.r.t. Civil Airports:6.5.1AAI has introduced "No Objection Certificate Application System (NOCAS)" accessible at the AAI website www.aai.aero for online submission of NOC application for height clearance. NOCAS carries out calculations w.r.t. OLS and CNS criteria based on site coordinates and elevation provided by the applicant. It is mandatory for the applicant to provide surveyed site coordinates in WGS 84 system and site elevation from a Govt. entity or a Govt. approved agency. The applicants are first required to register themselves online and only thereafter, they can submit their applications for NOC. On registering in NOCAS, a NOCAS ID is generated which can be used for future reference including status check of the application. Guidelines for online submission of NOC application for height clearance are available at NOCAS at www.aai.aero.6.5.2A table of permissible heights w.r.t. Annex 14 OLS criteria at different distances from the runway (Code 3 or 4 Instrument runway) at an airport are given at Appendix-L of Schedule VIII.6.6The permissible heights given therein are only indicative w.r.t. OLS criteria only; detailed calculations w.r.t. CNS and PANS-OPS criteria are needed to arrive at the actual height permissible, which may be lower than the indicated.

7. Definitions and Explanation - Description of Annex 14 Obstacle Limitation Surface for the purpose of the Schedule II shall be as given hereunder and the illustrations in respect thereof are given in Appendix-H, Appendix-I and Appendix-J of Schedule VIII.

(a)Conical Surface - A surface sloping upwards and outwards from the periphery of the inner horizontal surface.The limits of the conical surface shall comprise:(i)a lower edge coincident with the periphery of the inner horizontal surface; and(ii)an upper edge located at a specified height above the inner horizontal surface.The slope of the conical shall be measured in a vertical plane perpendicular to the periphery of the inner horizontal surface.(b)Inner Horizontal Surface - A surface located in a horizontal plane above an aerodrome and its environs. The radius of outer limits of the inner horizontal surface shall be measured form a reference point or points established for such purpose.(c)Inner Approach Surface - A rectangular portion of the approach surface immediately preceding the threshold. The limits of the inner approach surface shall comprise:(i)an inner edge coincident with the location of the inner edge of the approach surface but of its own specified length;(ii)two sides originating at the ends of the inner edge and extending parallel to the vertical plane containing the centerline of the runway; and(iii)an outer edge parallel to the inner

edge.(d)Inner Transitional Surface - A surface similar to the transitional surface but closer to the runway.The limits of an inner transitional surface shall comprise:(i)a lower edge beginning at the end of the inner approach surface and extending down the side of the inner approach surface to the inner edge of that surface, from there along the strip parallel to the runway centerline to the inner edge of the balked landing surface and from there up the side of the balked landing surface to the point where the side intersects the inner horizontal surface; and(ii)an upper edge located in the plane of the inner horizontal surface.(e)Balked Landing Surface - an inclined plane located at a specified distance after the threshold extending between the inner transitional surfaces. The limits of the balked landing surface shall comprise:(i)an inner edge horizontal and perpendicular to the centre line of the runway and located at a specified distance after the threshold;(ii)two sides originating at the ends of the inner edge and diverging uniformly at a specified rate from the vertical plane containing the centre line of the runway; and(iii)an outer edge parallel to the inner edge and located in the plane of the inner horizontal surface.(f)Take-Off Climb Surface (Annex 14) - The surface shall be established for a runway meant for take-off. The limits of the take-off climb surface shall comprise:(i)an inner edge horizontal and perpendicular to the centre line of the runway and located either at a specified distance beyond the end of the runway or at the end of the clear way when such is provided and its length exceeds the specified distance;(ii)two sides originating at the ends of the inner edge of and diverging uniformly at a specified rate from the take-off to specified final width and continuing thereafter at that width for the remainder of the length of the take-off climb surface; and(iii)an outer edge horizontal and perpendicular to the specified take-off track.(g)Aerodrome Elevation- The elevation of the highest point of the landing area.(h)Aerodrome Reference Point - The designated geographical location of an Aerodrome.(i)Threshold - The beginning of that portion of the runway usable for landing.(j)Displaced Threshold - A threshold-not located at the extremity of a runway.(k)Frangible Object - An object of low mast designed to break, distort or yield on impact so as to present the minimum hazard to aircraft.(l)Obstacle - All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for surface movement or aircraft or that extend above a defined surface (indicated in annexure IV) intended to protect aircraft in-flight.(m)Obstacle Free Zone (OFZ) - The airspace above the inner approach surface, inner transitional surfaces and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than low mast and frangible mounted one, required for air navigation purposes.(n)Runway - a defined rectangular area on a land aerodrome prepared for the landing and take off of the aircraft.(o)Runway End Safety Area (RESA) - An area symmetrical about the extended runway centre-line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.(p)Runway Strip - A defined area including the runway and stop-way, if provided, intended:-(i)To reduce the risk of damage to aircraft running off a runway; and(ii)To protect aircraft flying over it during take off or landing operations.(q)Clearway - A defined rectangular area on the ground or water under the control of the appropriate authority selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to specified height.(r)Stop-way - A defined rectangular area on the ground at the end of take off run available prepared as suitable area in which an aircraft can be stopped in case of an abandoned take-off.(s)Take-off Runway - a runway intended for take-off only.(t)Obstacle Clearance Altitude/Height (OCA/H) - The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable used in establishing compliance

with appropriate clearance criteria.(u)Declared Distances:-
 (i)Take Off Run Available (TORA) - The length of the runway declared available and suitable for the ground run of an aeroplane taking off.
 (ii)Take Off Distance Available (TODA) - The length of take-off run available plus the length of clearway, if provided.
 (iii)Accelerate Stop Distance Available (ASDA) - The length of take-off run available plus the length of stop-way, if provided.
 (iv)Landing Distance Available (LDA) - The length of the runway declared available and suitable for the ground run of an aeroplane landing.
 (v)Critical Area - Critical area is an area of defined dimensions about the localizer and glide path antenna where vehicles including aircrafts are excluded during Instrument Landing System (ILS) operations. The critical area is protected because the presence of vehicles and/or aircraft inside its boundary will cause unacceptable discrepancies to the Instrument Landing System (ILS) signal in space.

III

Aerodromes Operated By Airports Authority India And Joint Venture Companies

S. No.	Airport	State	Coordinates	Aerodrome Elevation in Meters	Runway
	(1)	(2)	(3)	(4)	(5)
1	Agartala	Tripura	235326N0911421E	14.63	18/36
2	Agatti	Lakshwadeep Islands (U.T.)	104926N0721037E	4	04/22
3	Ahmedabad (SVBPI Airport)	Gujarat	230416.28N0723735.15E	57.44	05/23
4	Aizawl (Turial)	Mizoram	234443N0924822E	334	01/19
5	Akola	Maharashtra	204152N0770332E	305	10/28
6	Amritsar (Raja Sansi)	Punjab	314217N0744807E	231	16/34
7	Asansol	West Bengal	2340N08701E	98	10/28
8	Aurangabad (Chikal Thana)	Maharashtra	195152N0752351E	582	09/27
9	Balurghat	West Bengal	251547N0884754E	24	09/27
10	Barapani Shillong	Meghalaya	254212N0915841E	887	04/22
11	Behala	West Bengal	223022N0881748E	3	18/36
12	Belgaum (Sambra)	Karnataka	155131N0743704E	759	08/26
13	Bengaluru International Airport (BIAL) Devanhalli	Karnataka	131155.92N0774219.70E	914.68	09/27
14	Bhavnagar	Gujarat	214515N0721126E	13	07/25
15	Bhopal (Raja Bhoj Airport)	Madhya Pradesh	231713N0772013E	521.82	12/30

16	Bhubneshwar (Biju Patnaik Airport)	Orissa	201448N0854907E	42.06	14/32
17	Bilaspur	Chattisgarh	220000N0820400E	274	06/2417/35
18	Chakulia	Jharkhand	222736N0864237E	129	17/35
19	Chennai	Tamil Nadu	125941.7N0801031.8E	15.85	07/2512/30
20	Cochin International Airport Ltd (Cial)	Kerala	100914N0762425E	9.14	09/27
21	Coimbatore (Peelamedu)	Tamil Nadu	110137N0770230E	404	05/23
22	Cooch Behar	West Bengal	261946.8N089281.6E	42	04/22
23	Cuddapah	Andhra Pradesh	1431N07847E	131	11/29
24	Deesa (Palanpur)	Gujarat	241604N0721218E	145	06/24
25	Dehradun (Jollygrant)	Uttarakhand	301126N0781056E	565	08/26
26	Delhi IGI Airport (Palam)	Delhi	283407.42N0770643.69E	236.83	10/2809/27
27	(Mohanbari)	Assam	272852N0950105E	110	05/23
28	Dimapur	Nagaland	255300N0934616E	148.43	12/30
29	Donakonda	Andhra Pradesh	1550N7930E	142	04/23
30	Gondia	Maharashtra	2131N08020E	311.16	05/23
31	Guwahati (LGBI Airport)	Assam	260618N0913508E	49.38	02/20
32	Gaya	Bihar	244453N0845633E	115.82	10/28
33	Hubli	Karnataka	152147N0750508E	661.72	08/26
34	Hyderabad (Begumpet)	Andhra Pradesh	172709N0782750E	531	09/27
35	Hyderabad International Airport(HIAL) Shamsabad	Andhra Pradesh	171426N0782544E	617	09/27
36	Imphal (Tulihal)	Manipur	244551N0935358E	774.2	04/22
37			224324N0754820E	563.88	07/25

	Indore Devi Ahilyabai Holkar Airport	Madhya Pradesh			
38	Jabalpur	Madhya Pradesh	231100N0800337E	495	06/24
39	Jalgaon	Maharashtra	205741.74N0753728.43E	256	09/27
40	Jaipur (Sanganer)	Rajasthan	264927N0754809E	385	09/27
41	Jhansi	Uttar Pradesh	2529N07834E	244	15/33
42	Jharsuguda	Orissa	215451N0840303E	228	06/24
43	Jogbani	Bihar	2618N8718E	59	09/27
44	Juhu (Mumbai)*	Maharashtra	190548N0725004E	2.74	08/2616/34
45	Kailashahar	Tripura	241828N920033E	24	03/21
46	Kamalpur	Tripura	240754N0914851E	39	01/19
47	Keshod	Gujarat	211852N701610E	51	05/23
48	Kandla	Gujarat	230642N0700605E	29	05/23
49	Khandwa	Madhya Pradesh	21 51N76 20E	329	10/28
50	Khowai	Tripura	240342N913627E	29	18/36
51	Gaggal (Kangra)	Himachal Pradesh	320955N0761543E	759.6	15/33
52	Kanpur (Civil)	Uttar Pradesh	262625N0802153E	125	10/28
53	Khajuraho	Madhya Pradesh	244912N0795506E	217.4	01/19
54	Kishangarh	Rajasthan	2636N07449E	440	05/23

*Proposed construction in the approach path of runway 26 at Juhu shall be governed by the recommendation of the report of the Joglekar Committee.

*Sites lying in

IHS of Juhu may
be considered
upto IHS of Santa
Cruz in
accordance with
report of the
study of
Juhu IHS.

55	Kota	Rajasthan	250935N0755056E	273	08/26
56	Kozhikode (Calicut)	Kerala	110816N0755702E	98.76	10/28
57	Kolhapur	Maharashtra	163955N0741729E	606.5	07/25
58	Kolkata (NSCBI Airport)	West Bengal	2239114N0882648E	7	01R/19L01L
59	Kullu-Manali (Bhuntar)	Himachal Pradesh	315237N0770919E	1088.8	16/34
60	Lalitpur	Uttar Pradesh	244258N0782503E	367	10/28
61	North Lakhimpur (Lilabari)	Assam	271726N0940549E	100	04/22
62	Lucknow (Amousi)	Uttar Pradesh	264543N0805300E	123.14	09/27
63	Ludhiana	Punjab	305120N0755706E	254	12/30
64	Madurai	Tamil Nadu	095007N0780518E	140	09/27
65	Malda	West Bengal	250040N880750E	24	11/29
66	Mangalore (BAJPE)	Karnataka	125743N0745323E	102.6	06/24
67	Mumbai (CSI Airport)	Maharashtra	190530N0725158E	11.9	09/2714/32
68	Muzzafarpur	Bihar	260701N0851854E	53	11/29
69	Mysore	Karnataka	121345N0763930E	716	05/2309/27
70	Nadirgul	Andhra Pradesh	171617.8N0783236.2E	552	14/32
71	Nagpur (Sonegaon) (Mihan)	Maharashtra	210531N0790254E	314.85	14/32
72	Panna		243915N801540E	424	17/35

		Madhya Pradesh			
73	Pantnagar	Uttarakhand	290156N0792821E	233	10/28
74	Passighat	Arunachal Pradesh	2806N9523E	157	17/35
75	Patna	Bihar	253537N0850531E	51.18	07/25
76	Pondicherry	Pondicherry	115759N0794843E	43	07/25
77	Porbandar	Gujarat	213901N0693931E	7	09/27
78	Raipur (MANA)	Chattisgarh	211052N0814419E	317.30	06/24
79	Rajahmundry	Andhra Pradesh	170631N0814918E	45	05/23
80	Rajkot	Gujarat	221834N0704646E	134.4	05/23
81	Ranchi (Birsa Munda Airport)	Jharkhand	231851N0851916E	654.71	13/31
82	Raxaul	Bihar	26 59 48N84 49 14E	79	10/28
83	Rupsi	Assam	2608N8945E	40	05/23
84	Safdarjung Airport	Delhi	283500N0771229E	212	12/30
85	Salem	Tamil Nadu	114647N0780355E	300	04/22
86	Satna	Madhya Pradesh	2434N08051E	315	11/29
87	Shimla (Jubbarhatti)	Himachal Pradesh	310454N0770407E	1540	14/32
88	Sholapur	Maharashtra	173735N0755606E	481	15/33
89	Surat	Gujarat	210647N0724435E	6	04/22
90	Tirupathi	Andhra Pradesh	133759N0793231E	106.75	08/26
91	Tiruchirapalli (Trichy)	Tamil Nadu	104556N0784254E	87.78	09/27
92	Thiruvananthapuram	Kerala	082847N0765511E	4	14/32
93	Tezu	Arunchal Pradesh	27 54N,96 04E	220	04/22
94	Tuticorin	Tamil Nadu	084317N780141E	26	10/28
95	Udaipur (Maharana Pratap Airport)	Rajasthan	243703N0735340E	513.28	08/26
96	Vadodara	Gujarat	221948N0731308E	39.32	04/22
97	Varanasi (Babatpur)	U.P.	252705N0825131E	81	09/27
98	Vellore	Tamil Nadu	125424N0790406E	233	07/25
99	Vijayawada	Andhra Pradesh	163102N0804812E	25	08/26

100 Warangal Andhra Pradesh 175452N0793608E 284 09/27

IV

Part-1 Aerodromes Operated By The State Governments & Private Owners(Controlled Or Public Use Aerodromes)

S.No.	Airport	State	Coordinates	Aerodrome Elevation in Meters	Runway	Dimension in Meters	Owner/ Operator
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1	Aizawl (Lengpui)	Mizoram	235016.88N0923736.38E	418	17/35	2500x45	SG
2	Diu	Union Territory	204247N0705514E	4.9	05/2313/31	1845 x 451069 x 25	U.T.
3	Durgapur	West Bengal	233727.7N0871432.5E	85	16/34	3315x45	BAPL
4	Puttaparthi	Andhra Pradesh	140853N0774726E	478.23	09/27	2224x45	PVT
5	Vijaynagar	Karnataka	151019N0763837E	502	13/31	1600 x 30	PVT
6	Mundra	Gujarat	225003N0694552E	5.18	05/23	1700X30	PVT
7	Jamshedpur	Jharkhand	22 48 46.71N86 10 10.76E	141.7	08/26	1220X45	PVT
8	Baramati	Maharashtra	181335.84N743522.91E	605	11/29	1172X30	PVT
9	Beas	Punjab	313332N0752000E	233	16/34	2552X45	PVT
10	Latur	Maharashtra	182437.9N0762752.9E	651	05/23	1700X30	PVT
11	Nanded	Maharashtra	191051.73N0771921.17E	379	10/28	2300X45	PVT
12	Osmanabad	Maharashtra	181643.55N0760317.16E	689	04/22	1190X30	PVT
13	Yavatmal	Maharashtra	202344.27N0781226.32E	429	08/26	1218X30	PVT

IV

Part-2 Aerodromes Operated By The State Governments & Private Owners(Uncontrolled Or Private Use Aerodromes)

S. No.	Airport	State	Coordinates	Aerodrome Elevation in Meters	Runway	Dimension in Meters	Owner/ Operator
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1.	Abu Road	Rajasthan	242940N0724652E	255	09/27	1219 X 23	S.G.
2.	Akbarpur	U.P.	2627N08234E	101	11/29	1829 X 45	S.G.

3.	Aligarh	U.P.	275140N0780847E	NA	11/29	1097 X 23	S.G.
4.	Ambari	West Bengal	26 34 30N88 32 30E	107	18/36	1219 X 24	PVT
5.	Ambikapur (Darima)	Chattisgarh	2259N08312E	579	16/34	1372 X 15	S.G.
6.	Amla	M.P.	2156N78078E	746	08/26	1067 X 30	S.G.
7.	Amravati	Maharashtra	20 48 48N0774303E	341	08/26	1372 X 30	S.G.
8.	Amreli	Gujarat	2137N07113E	137	13/31	914 X 45	S.G.
9.	Baldota Koppal	Karnataka	152137N0761253E	522	10/28	1600 X 45	PVT
10.	Banasthali	Rajasthan	26 24 26N0755209E	308	09/27	1357 X 60	PVT
11.	Bangalore (IIS)	Karnataka	13 01 25N77 34 13E	933	09/27	655 X 30	PVT.
12.	Banswara (Tilwara)	Rajasthan	23 35 22N0741841E	180	10/28	1250 X 15	S.G.
13.	Basant Nagar	Andhra Pradesh	1842N07924E	204	09/27	1529 X 45	PVT.
14.	Betul	M.P.	2152N7758E	549	08/26	914 X 45	S.G.
15.	Bhagalpur	Bihar	2515N08701E	45	09/27	1067 X 30	S.G.
16.	Bhilai (Nandani)	Chattisgarh	2118N08123E	302	05/23	1524 X 30	PVT.
17.	Bhiwani	Haryana	2850N07611E	217	12/30	1088 X 23	S.G.
18.	B.H.U. Flying Club	U.P.	251513.5N82 5926.3E	83M	08/26	695 X 45	BHU
19.	Birlagram (Nagda)	M.P.	2327N07525E	469	05/23	1463 X 30	PVT.
20.	Birpur	Bihar	263034N0870104E	74	09/27	1097 X 90	S.G.
21.	Birwa	M.P.	22 05N80 35E	552	14/32	1400 X 24	S.G.
22.	Bokaro	Jharkhand	233827N0860853N	216	13/31	1400 X 45	PVT.
23.	Borengajuli	Assam	2645N09149E	122	02/20	1020 X 90	PVT.
24.	Burhar (Shahdol)	M.P.	231400N813000E	480	14/32	1224 X 15	PVT.
25.	Burnpur	West Bengal	233751N0865830N	94	E/W	914 X 90	PVT.
26.	Begusarai	Bihar	2525N08605E	41	09/27	762 X 90	S.G.
27.	Berhampur (Korapalli)	Orrisa	191753N845237E	37	18/36	750 X 15	S.G.
28.	Chandrapur	Maharashtra	19 59 42N079 13 18E	244	08/26	1000 X 30	S.G.
29.	Chhindwara	M.P.	2200N07855E	665	11/29	1486 X 30	S.G.
30.	Chillari	Kerala	1107N07553E	770	10/28	1045 X 15	PVT.
31.	Chinyali Saur	Uttarakhand		854	16/34	1000 X 23	S.G.

			30 34 59.90N078 19 22.47E				
32.	Cuttack (Charbatia)	Orissa	2033N08554E	41	04/2203/31	2286 X 451465 X 45	ARC
33.	Chetnad	Tamil Nadu	1010N07848E	107	06/2414/32	1829 X 451463 X 45	S.G.
34.	Chhapra	Bihar	2547N08446E	53	L/A	914 X 45	S.G.
35.	Daltonganj	Jharkhand	24 01 13N084 05 46E	335	09/27	914 X 45	S.G.
36.	Damoh	M.P.	2402N07925E	348	06/24	1524 X 76	PVT.
37.	Deoghar	Jharkhand	24 26 47N086 42 26E	110	L/A	731 X 45	SG
38.	Dhanbad	Jharkhand	2350N08626E	260	09/27	1128 X 23	SG
39.	Dhana	M.P.	234507.3N785142.3E	529	18/36	823 X 41	S.G.
40.	Dhulia	Maharashtra	2055N07444E	289	05/2309/27	1828 X 451372 X 30	S.G.
41.	Dumka	Jharkhand	24 13 52N87 16 12E	137	09/27	640 X 90	S.G.
42.	Durgapur Steel Plant	West Bengal	23 34 58N87 20 25E	88M	12/30	1200 X 23	NA
43.	Etawah (SAIFAI)	U.P.	2636 01N79 03 35E	NA	15/33	1704 X 23	S.G.
44.	Faizabad	U.P.	26 45 00N082 09 17E	314	11/2905/23	1815 X 451429 X 45	S.G.
45.	Fursatgan	U.P.	2615N08123E	108	09/27	1722 X 45	IGRUA
46.	Gaucher	Uttarakhand	301729N790850E	740	12/30	1200 X 23	S.G.
47.	Ghazipur	U.P.	2537N08334E	68.5	07/25	1807 X 45	S.G.
48.	Guna	M.P.	2439N07721E	495	14/32	914 X 23	S.G.
49.	Hamirgarh	Rajasthan	2508N07437E	419	18/36	1274 X 30	S.G.
50.	Hadapsar (Gliderome)	Maharashtra	18 29 32N073 56 26E	579	E/W	1052 X 121	SG
51.	Hosur	Karnataka	12 39 44N77 46 12E	930	09/27	1219 X 30	PVT.
52.	Hirakund	Orissa	2135N08400E	208	15/33	1097 X 45	S.G.
53.	Hisar	Haryana	2911N07546E	214	12/30	1219 X 45	S.G.
54.	Jagdarpur	Chhattisgarh	1904N08202E	547	06/24	1125 X 30	S.G.
55.	Jakkur	Karnataka	130432N0773546E	919	08/26	854 X 21	S.G.
56.	Jashpurna Gar	Chhattisgarh	225558N0841341E	457	09/27	1067 X 23	S.G.

57.	Jaypore	Orissa	1853N08233E	595	16/34	916 X 30	S.G.
58.	Jhabua (Ranpet)	M.P.	22 46N74 33E	435	09/27	792 X 30	S.G.
59.	Jhingura	U.P.	2508N08239E	91	09/27	1220 X 45	S.G.
60.	Jhunjhunu	Rajasthan	280620N752240E	335	10/28	1014 X 15	S.G.
61.	Kanpur (Kalyanpur)	U.P.	263113N801357E	131	09/27	884 X 23	PVT.
62.	Kankroli	Rajasthan	250114N735359E	532.46	12/30	1100 X 23	PVT.
63.	Karad	Maharashtra	1717N07409E	576	09/27	1280 X 30	S.G.
64.	Kargil	J & K	343133N0760924E	2920	02/20	1829 X 30	SG
65.	Karnal	Haryana	2942N07702E	246	13/31	1170 X 30	S.G.
66.	Kasia (Kushinagar)	U.P.	264612N835429E	76	11/29	1722 X 23	S.G.
67.	Kayattar	Tamil Nadu	08 58 12.85N77 49 12.57E	91	09/2706/24	1463 X 451829 X 30	S.G.
68.	Kolapni	Assam	26 48 07N93 12 45E	90	04/22	914 X 90	PVT.
69.	Khargone	M.P	2148N07533E	276	09/27	1000 X 24	S.G.
70.	Kishanganj	Bihar	260433N875623E	148	09/27	1006 X 90	S.G.
71.	Lonavala (Amby Valley)	Maharashtra	183634N732242E	689	14/32	1199 X 30	PVT.
72.	Lalgarh	Rajasthan	295100N740100E	176	L/A	1005 X 174	S.G.
73.	Mandla	M.P	22 30N80 20E	489	09/27	1800 X 36	S.G
74.	Madhaiganj	West Bengal	23 38 30N87 20 37E	NA	15/3305/23	1800 X 501400 X 50	NA
75.	Mandvi	Gujarat	22 50 22N69 18 17E	5	08/26	1400 X 30	S.G.
76.	Mackebpur	Assam	2651N09446E	67	14/32	1005 X 91	PVT.
77.	Meerut	U.P.	2854N07741E	NA	11/29	1829 X 23	S.G.
78.	Mithapur (Dwarka)	Gujarat	222440N685934E	3.6	07/25	1372 X 45914 X 45	PVT.
79.	Muirpur (Korba)	U.P.	240729N830217E	405	09/27	823 X 60	PVT.
80.	Madhubani	Bihar	261945N860338E	47	18/36	914 X 45	S.G.
81.	Mantalai	J & K	33 00 13N75 21 21E	3389	15/33	488 X 30	PVT.
82.	Mathania	Rajasthan	26 26N073 06E	251	05/23	1737 X 45	S.G.

83.	Mehsana	Gujarat	233612N0722230E	85	05/23	914 X 45	S.G.
84.	Munger	Bihar	25 20 47N86 28 59E	41	L/A	732 X 91	S.G.
85.	Nagaur	Rajasthan	2712N07343E	281	05/23	1170 X 30	S.G.
86.	Nagda (Birlagram)	M.P.	2327N7524E	366	13/31	1463 X 30	PVT.
87.	Naini/ Saini Pithoragarh	Uttarakhand	293539N801425E	1463	14/32	1330 X 20	S.G.
88.	Narnaul	Haryana	2805N07612E	295	09/27	914 X 23	S.G.
89.	Neemuch	M.P.	2425N07452E	497	14/32	1700 X 30	CRPF
90.	New Lands	West Bengal	2639N08948E	122	11/29	1076 X 90	PVT.
91.	Neyveli	Tamil Nadu	1137N07932E	53	05/23	914 X 30	PVT.
92.	Nagarjuna Sagar	Andhra Pradesh	1632N07919E	259	NA	1654 X 30	S.G.
93.	Naria See Saharsa	Bihar	25 53 32N86 35 00E	40	L/A	457 X 91	S.G.
94.	Nawapara	Orissa	2052N08230E	322	05/23	1002 X 18	S.G.
95.	Ondal Airport	West Bengal	23 37 19N83 14 35E	82	14/3204/22	1829 X 451463 X 45	S.G.
96.	Pachmarhi	M.P.	2227N07824E	1085	04/22	1200 X 61	S.G.
97.	Panneri	Assam	2643N09154E	91	18/36	1060 X 90	PVT.
98.	Patiala	Punjab	3019N07622E	250	15/33	1097 X 45	S.G.
99.	Pilani	Rajasthan	282100N753500E	335	05/23	914 X 45	PVT.
100.	Pinjore	Haryana	304926N765258E	500	16/34	914 X 45	S.G.
101.	Pirthiganj	U.P.	2552N08201E	94	12/30	1829 X 45	S.G.
102.	Pithoragarh	Uttarakhand	2940N08013E	1463	14/32	1300 X 23	S.G.
103.	Padampur Raigarh	Orissa	2102N08303E	198	18/36	914 X 54	S.G.
104.	(Jindal Airstrip)	Chattisgarh	215613N832044E	242	10/28	2000 X 30	PVT.
105.	Raipur (Baikunth)	Chattisgarh	21 29 54N81 47 37E	307	06/24	1353 X 24	PVT.
106.	Rajhara (Dhalli)	Chattisgarh	20 31 40N81 04 57E	361	05/23	914 X 45	PVT.
107.	Rewa	M.P.	2430N08113E	305	06/24	1200 X 30	S.G.
108.	Rourkela	Orissa	2216N08449E	210	09/27	1615 X 30	PVT.
109.	Ratlam	M.P.	2322N7501E	517	08/26	1200 X 23	S.G.
110.	Sagar	M.P.	23 45N78 51E	574	18/36	995 X 23	S.G.
111.	Sedam	Karnataka	171000N771800E	427	05/23	488 X 30	PVT.

112.	Seoni	M.P	21 56N79 30E	633	10/28	1800 X 30	S.G
113.	Shahdol	M.P.	2314N08130E	480	14/32	1224 X 15	S.G.
114.	Shivpuri (Burhar)	M.P.	2524N07740E	396	09/27	913 X 23	BSF
115.	Shravasti	U.P.	27 30N82 02E	NA	12/30	1829 X 23	S.G.
116.	Sidhi	M.P.	2424N08149E	366	06/24	1006 X 15	S.G.
117.	Sirohi	Rajasthan	24 53 32N72 51 0.9E	297.5	13/31	1830 X 18	S.G.
118.	Sitamau	M.P.	24 01 10N75 20 17E	479	L/A	823 X 45	S.G.
119.	Sultanpur (Amhai)	U.P.	2615N08202E	91	11/29	1829 X 45	S.G.
120.	Saharsa	Bihar	255334N863510E	45	09/27	914 X 45	S.G.
121.	Sawai Madhopur	Rajasthan	260200N762100E	266	18/36	914 X 45	S.G.
122.	Tekanpur	M.P.	2600N07816E	213	08/26	1311 X 46	BSF
123.	Tura	Meghalaya	253942N902041E	534	16/34	1005 X 30	SG
124.	Tushra	Orissa	203043N832653E	168	06/24	1214 X 45	S.G.
125.	Ujjain	M.P.	2306N07553E	543	06/24	1219 X 22	S.G.
126.	Umaria	M.P	23 32N80 48E	451	17/35	1500 X 25	S.G
127.	Utkela	Orissa	2006N08311E	229	04/22	914 X 45	S.G.
128.	Uttarkashi	Uttarakhand	7819N08035	853	16/34	NA	S.G.
129.	Yinghiong	Arunachal Pradesh	28 38 20N95 01 10E	500	NA	975 X 18	S.G.
130.	Ziro	Arunachal Pradesh	27 35 17N93 49 42E	1524	18/36	1219 X 30	SG

V

Defence Aerodrome

S.No.	Airport	State	Coordinates	Aerodrome Elevation in Meters	Runway	Dimension in Meters	Owner Operator
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1.	Adampur	Punjab	312616N754526E	247	13/31	2746 X 45	IAF
2.	Agra	Uttar Pradesh	270932N775730E	167.7	05/23	2744 X 45	IAF
3.	Allahabad	Uttar Pradesh	252626N814409E	97.2	12/30	2477 X 45	IAF
4.	Ambala	Haryana	302219N764850E	275	12/30	2815.7 X 46	IAF

5.	Arrakonam	Tamil Nadu	130358.73N794059.98E	85	06/24	4095 X 46	Indian Navy
6.	Awantipur	Jammu & Kashmir	335239N745836E	1647	12/30	3200 X 45	IAF
7.	Bagdogra (Siliguri)	West Bengal	264108N0881948E	126	18/36	2744 X 45	IAF
8.	Bakshi-Katalab	Uttar Pradesh	265914N805336E	124	09/27	2743 X 46	IAF
9.	Bareilly	Uttar Pradesh	282519N792705E	173	11/29	2743 X 46	IAF
10.	Bareilly	Uttar Pradesh	282000N792705E	168	12/30	900 X 45	Army
11.	Barrackpore	West Bengal	224656N882146E	06	02/20	1866 X 45	IAF
12.	Bengaluru (HAL)	Karnataka	125703N0773957E	888	09/27	3306 X 45	HAL
13.	Bhatinda	Punjab	301611N744523E	203	13/31	2805 X 46	IAF
14.	Bhatinda	Punjab	301358.1N750255.8E	----	09/2713/31	650 X 151200 X 50	Army
15.	Bhuj (Rudramata)	Gujarat	231713N0694015E	78	05/23	2515 X 45	IAF
16.	Bidar	Karnataka	175429N772900E	664	08/26	2700 X 45	IAF
17.	Bihta	Bihar	253524N845306E	54	10/28	2210 X 46	IAF
18.	Bikram Park	Jammu & Kashmir	325400750600E	621	03/21	1148 X 85	Army
19.	Campbell Bay	Andaman & Nicobar Islands	070046.75N0935524.50E	1	05/23	1050 X 30	Indian Navy
20.	Car Nicobar	Andaman Islands	090915N924913E	10.8	02/20	2713 X 46	IAF
21.	Chabua	Assam	272742N950714E	110	05/23	2746 X 46	IAF
22.	Chandigarh	Union Territory	3040N07647E	314	11/29	2744 X 45	IAF
23.	Charbatia	Orissa	2033N08554E	41	04/2203/31	2286 X 451465 X 45	ARC
24.	Daman	Union Territory	202559.18N0725035.22E	12.8	03/2110/28	1801 X 451001 X 25	I.C.G
25.	Darbhanga	Bihar	261137N855503E	47	10/28	2743 X 46	IAF

26.	Dinjan	Assam	273243.1N941419.7E	120	07/25	575 X 35	Army
27.	Dundigal	Andhra Pradesh	173740N782411E	613	10/28	2513 X 46	IAF
28.	Goa (Dabolim)	Goa	152247.41N0734940.05E	46	08/26	3430 X 45	Navy
29.	Gorakhpur	Uttar Pradesh	264429N0832709E	78	11/29	2744 X 45	IAF
30.	Gwalior	Madhya Pradesh	261730N0781341E	188	06/24	2744 X 45	IAF
31.	Hakimpet	Andhra Pradesh	173308N783133E	613	09/27	2110 X 46	IAF
32.	Halwara	Punjab	304457N753751E	239	13/31	2743 X 46	IAF
33.	Haldwani	Uttarakhand	291452N793239E	478	01/19	150 X 50	Army
34.	Hasimara	West Bengal	264150N892217E	109	11/29	2744 X 46	IAF
35.	Hindon	Uttar Pradesh	284223N772138E	214	09/27	2743 X 46	IAF
36.	Jaisalmer	Rajasthan	265323N0705200E	236	04/22	2744 X 45	IAF
37.	Jalandhar	Punjab	311750N753651E	234	14/32	600 X 45	Army
38.	Jammu	Jammu & Kashmir	324119N745017E	291	18/36	2042 X 45	IAF/C
39.	Jamnagar	Gujarat	222800N700100E	15	06/24	2514 X 46	IAF
40.	Jhansi	U.P.	252935.4N783366.9E	---	15/33	1070 X 20	Army
41.	Jodhpur	Rajasthan	261508N730300E	217	05/23	2743 X 45	IAF
42.	Jorhat	Assam	2644N09411E	91	04/22	2652 X 45	IAF
43.	Kalaikunda	West Bengal	222012N871307E	61	17/35	2742 X 46	IAF
44.	Kanpur (Chakeri)	Uttar Pradesh	2624N08025E	124	09/27	2744 X 45	IAF
45.	Khalsi	Jammu & Kashmir	341900N765400E	3005	29/11	245.2 X 27.8	Army
46.	Kochi	Kerala	095638.25N0761623.89E	2	17/3513/31	1830 X 461416 X 46	Indian Navy
47.	LEH	Jammu & Kashmir	3408N07733E	3256	07/25	2922 X 45	IAF
48.	LEH	Jammu & Kashmir	3407N07733E	3256	06/24	400 X 26	Army
49.	Leimakhong	Manipur	245672N935113E	841.55	01/19	350 X 50	Army
50.	Mamun Cantt	Punjab	321700N754300E	397	18/36	3234 X 83	Army
51.	Manasbal	Jammu & Kashmir	341456N743855E	1594	17/35	1100 X 50	Army

52.	Missamari	Assam	264901N923551.5E	95	05/23	1521 X 45.72	Army
53.	Nagrota	Jammu & Kashmir	324700N7543855E	347	02/20	132 X 15	Army
54.	Nagtalao	Rajasthan	2625N7307E	240	02/20	1400	Army
55.	Nal (Bikaner)	Rajasthan	280418N731225E	215	05/23	2746 X 45	IAF
56.	Naliya	Gujarat	231321N685329E	42	06/24	2743 X 46	IAF
57.	Nasik	Maharashtra	195744.32N734831.74E	599	09/27	1373 X 46	Army
58.	NDA	Maharashtra	182822N734646E	610	09/27	900 X 15	NDA
59.	Ozar (Nasik)	Maharashtra	2007N07355E	598	09/27	3000 X 45	HAL
60.	Partapur	Jammu & Kashmir	3456N7726E	3081	13/31	75 X 25	Army
61.	Pathankot	Punjab	321402N0753802E	312	01/19	2744 X 45	IAF
62.	Panagarh	West Bengal	232824N87 25 46E	73	15/33	2544 X 46	IAF
63.	Phalodi	Rajasthan	270618N721257E	244	05/23	3050	IAF
64.	Patiala	Punjab	301855N762154E	250	15/33	1170	Army
65.	Port Blair (Veer Savarkar Airport)	Andaman Islands	113854N924406E	5	04/22	3414 X 45	Indian Navy
66.	Pune (Lohegaon)	Maharashtra	183458N0735513E	592	10/28	2535 X 45	IAF
67.	Purnea	Bihar	254543N872442E	37	09/27	2743 X 46	IAF
68.	Ramnd	Tamil Nadu	091910.30N0785823.40E	4	01/19	3017 X 30	Indian Navy
69.	Ranchi	Jharkhand	231851.3N851915.8E	-	14/32	263 X 63	Army
70.	Rangapahar	Nagaland	255118N934220E	182	06/24	238 X 25	Army
71.	Ratnagiri	Maharashtra	170048N0731944E	92.8	05/23	1800 X 45	I.C.G
72.	Sarsawa (Saharanpur)	Uttar Pradesh	295942N772532E	271	09/27	2744 X 46	IAF
73.	Sevoke Road	West Bengal	264700N882700E	144	16/34	883 X 45	Army
74.	Shibpur	Andaman & Nicobar Islands	131408.70N0930259.00E	3	18/36	1000 X 30	Indian Navy
75.	Sharifabad	Jammu & Kashmir	340500N744300E	1583	09/27	430	Army
76.	Silchar (Khumbigram)	Assam	245448N0925851E	103	06/24	1785 X 45	IAF
77.	Sisa	Haryana	293335N750027E	199	05/23	2743 X 46	IAF
78.	Srinagar		3359N07447E	1656.5	13/31	3658 X 45	IAF

		Jammu & Kashmir					
79.	Sulur	Tamil Nadu	110047N770945E	381	05/23	2520 X 46	IAF
80.	Suratgarh	Rajasthan	292317N735415E	173	05/23	2743 X 46	IAF
						1514 X	
81.	Tambaram	Tamil Nadu	125419N800719E	27	05/2312/30	461815 X 46	IAF
82.	Tezpur	Assam	2643N09247E	70	05/23	2744 X 45	IAF
83.	Thanjavur	Tamil Nadu	104311N790610E	76	07/2514/32	1833 X 451465	IAF
84.	Thoise	Jammu & Kashmir	343914N772237E	3065	11/29	3050 X 46	IAF
85.	Udhampur	Jammu & Kashmir	325411N750920E	634	18/36	2754 X 46	IAF
86.	Uttarlai	Rajasthan	254841N712859E	154	02/20	2743 X 46	IAF
87.	Yelahanka	Karnataka	130806N773636E	928.6	09/27	2440 X 45	IAF
						1829 X	
88.	Vishakapatnam	Andhra Pradesh	174316N0831329E	3	05/2310/28	453048 X 45	Navy

VI

Communication, Navigation and Surveillance (CNS) Facilities Located away from the Airports

Sl. No.	Station	Name of the facility	Coordinates in WGS 84	Facility Reduced Level (Meter)	Airport responsible to Safeguard the facility	
North East						
1	Aligarh	CVOR/ DME(HP)	27° 49' 45.5"	78° 10' 42"	205	Delhi IGI
2	Behrampur	MSSR	19° 20' 3.4"	84° 52' 0.2"	37.8	Bhubaneshwar
3	Bellary	MSSR	15° 09' 59.36"	76° 53' 2.01"	489	Bangalore (AAI)
4	Bellary	DVOR/ DME(HP)	15° 9' 54.4"	76° 52' 50"	461	Bangalore (AAI)
5	Bikaner-Lunka 1	LUN DVOR/ DME(HP)	28° 33' 09.84"	73° 47' 15.61"	201.77	Jaipur
6	Bikaner-Lunka 2	LKA DVOR/ DME(HP)	28° 11' 20.42"	74° 06' 41.267"	255.42	Jaipur
7	Chillarki		28° 20' 51.2"	76° 39' 57.7"	228.6	Delhi IGI

		CVOR/ DME(HP)				
8	Daman 'DMN'	DVOR/ DME	20 26' 32.52"	72 51' 15.95"	12.8	Daman (coastguard)
9	Daman 'DM'	NDB	20 27' 11.23"	72 51' 09.24"	12.8	Daman (coastguard)
10	Gulbarga	DVOR/ DME(HP)	17° 18' 48.8"	76° 48' 11"	454	Bangalore (AAI)
11	Jalalabad	CVOR/ DME(HP)	27° 41' 39.6"	79° 39' 44.7"	55.5	Delhi IGI
12	Jharsuguda	NDB	21° 53' 47.6"	84° 02' 19.5"	237	Jharsuguda
13	Jharsuguda	MSSR	21° 54' 31.60"	84° 03' 50.40"	262	Jharsuguda
14	Kanchipuram	DVOR/ DME(HP)	12° 47' 5.8"	79° 42' 47.2"	82.89	Chennai
15	Katihar	DVOR/ DME	25° 36' 52.65"	87° 33' 19.20"	31	Kolkata
16	Katihar	MSSR	25° 34' 23.01"	87° 33' 20.19"	59	Kolkata
17	Khammampet	NDB	17° 15' 45"	80° 08' 15"	116.5	Hyderabad
18	Pratapgarh	DVOR/ DME(HP)	24° 02' 13.65"	74° 44' 38.16"	500	Jaipur
19	Rajamundri	NDB	17° 06' 31"	81° 49' 18"	42.6	Rajahmundry
20	Sakras	CVOR/ DME(HP)	27° 50' 54.4"	77° 00' 29.6"	116.2	Delhi IGI
21	Sampla	CVOR/ DME(HP)	28° 49' 11.1"	76° 49' 9.6"	235.9	Delhi IGI
22	Sikandrabad	CVOR/ DME(HP)	28° 23' 36.2"	77° 42' 29.2"	203.25	Delhi IGI
23	Songarh	NDB	21° 10' 2.5"	73° 33' 57.4"	121.9	Ahmedabad
24	Tuticorin	NDB	08° 43' 32.2"	78° 01' 32.5"	25.9	Chennai
25	Vikarabad	NDB	17° 20' 3.8"	77° 53' 55.5"	651.5	Hyderabad
26	Cochin-II	DVOR "CIB"	10° 07' 05.7"	76° 40' 42.7"	41.3	Cochin
27	Portblair	DVOR "PPB"	11° 38' 58"	92° 44' 50"	154.43	Port Blair
28	Vizag	DVOR "VVZ"	17° 40' 08.6"	83° 15' 11.8"	337.23	Vizag
29	Vizag (Arada Hill)	MSSR	17° 40' 20.0"	83° 15' 37.8"	322	Vizag
30	Chennai (PURUR)	MSSR	13° 01' 46.42"	80° 09' 20.12"	41	Chennai

31	Kolkata (BADU)	MSSR	22° 41' 22.76"	88° 29' 06.05"	27	Kolkata
32	Porbander	MSSR	21° 38' 28"	69° 39' 45.00"	32	Porbandar

VII

Greenfield Airports For Which Government Of India Has Given "In-Principle" Approval

No.	Airport(1)	State(2)	Coordinates(3)	Aerodrome Elevation In Meters(4)	Runway(5)	Dimension In Meters(6)
1.	Dabra	Madhya Pradesh	254942.8N078191.7E	240	09/27	3000 x 45
2.	Navi Mumbai International Airport	Maharashtra	18 59 39.78N073 30 12.95E	8.00	08L/26R08R/26L	3700 x 603700 x 60
3.	Pakyong	Sikkim	271358.269N0883518.7927E	1321.27	02/20	1700 x 30
4.	Mopa	GOA	Master Plan of the airport is Yet to be finalized	State Government		
5.	Kannur	Kerala	11° 54' 56.633"N75° 32' 44.604"E	105	07/25	3400 x 45
6.	Sindhudurg	Maharashtra	16° 00' 12.17"N73° 31' 57.9"E	64	09/27	3045 x 60
7.	Bijapur	Karnataka	Master Plan of the airport is Yet to be finalized	State Government		
8.	Hassan	Karnataka	Master Plan of the airport is Yet to be finalized	State Government		
9.	Gulbarga	Karnataka	Master Plan of the airport is Yet to be finalized	State Government		
10.	Simoga	Karnataka	Master Plan of the airport is Yet to be finalized	State Government		
11.	Kushinagar International Airport	Uttar Pradesh	Master Plan of the airport is Yet to be finalized	State Government		
12.	Karaikal Airport	Puduchery	Master Plan of the airport is Yet to be finalized	State Government		
13.	Shirdi	Maharashtra	19° 41' 27.332"N74° 22' 18.35"E	581.75	09/27	2500x45

VIII

Appendix - A Inner Horizontal Surface for runway code 3 & 4

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Appendix - B

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Appendix - C

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Appendix - D

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Appendix - E

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Appendix - F

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Appendix - G

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Appendix - H ICAO Annex 14 Obstacle Limitation Surfaces (OLS)

VIII

Appendix - I Inner approach, inner transitional and balked landing obstacle limitation surfaces

VIII

Appendix - J

VIII

Appendix - K

VIII

Appendix - L Maximum Permissible Heights (in Meters) of Building/ Mast/ Chimney, etc. Based on Annex 14 Criteria (For Code 3 or 4 Instrument Runway Airports only) Maximum permissible height may be further restricted due to Annex 10 criteria (owing to various CNS facilities) and also due to DOC 8168 criteria for the protection of PANS-OPS surfaces for different procedures. Site elevation

of the site will be subtracted from the permissible top elevation to arrive at maximum permissible height of the building/Mast/Chimneys, etc. Following height table is indicative only and in no way assures the height permissible at a given site. Table: Maximum Permissible Heights (in Meters)

ICAO Annex 14 Surface (Height in meters)	Distance from Runway Strip (in meters)	1000	1500	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000
Approach Surface*	10	20	30	40	45	45	45	48	73	98	120	140	150	150	150
Take-off climb Surface*	10	20	30	40	45	45	45	48	73	98	120	140	150	150	150
Inner Horizontal Surface (IHS)**	45	45	45	45	45	45	45	45	-	-	-	-	-	-	-
Conical Surface**	-	-	-	-	-	-	-	-	70	95	145	195	245	295	300

* Runway end elevation should be added to the permissible heights to arrive at the permissible top elevation, AMSL. ** Aerodrome elevation should be added to the permissible heights to arrive at the permissible top elevation, AMSL.

VIII

Appendix - M List of Designated Officers of Airports Authority of India (AAI) Airports Authority of India has set up nine NOC processing offices one each at Delhi, Kolkata, Mumbai, Chennai, Guwahati Hyderabad, Bengaluru, Ahmedabad and Nagpur airports these offices are headed by Designated Officers. NOC offices work as per the provisions of this notification and as per the direction of ATMC 2 of 2013, as amended from time to time by AAI. The list of Designated Officers are as follows:

- 1. Regional Executive Director, AAI, Northern Region, Delhi Airport, Delhi**
- 2. Regional Executive Director, AAI, Eastern Region, Kolkata Airport, Kolkata**
- 3. Regional Executive Director, AAI, Western Region, Mumbai Airport, Mumbai**

4. Regional Executive Director, AAI, Southern Region, Chennai Airport, Chennai

5. Regional Executive Director, AAI, North Eastern Region, Guwahati Airport, Guwahati

6. GM-Coordination In charge, AAI, Hyderabad Airport

7. GM-Coordination In charge, AAI, Bengaluru Airport

8. Airport Director, AAI, Ahmedabad Airport

9. Airport Director, AAI, Nagpur Airport.

IX