Unit Air-conditioning Guidelines for Residential Projects:

1. Capacity:
    a. If FTF height is <= 3.45 m, 1 TR for every 200 sq. ft. of carpet area in the room.
        i. In living room, ~175 sq. ft. on account of leakage of cooled air into passage.
        ii. TR to be increased by 10-15% if room has direct exposure to east or west.
        iii. Further, TR to be increased by 10% if unit is on top floor (to adjust for heat gain from terrace)
    b. If FTF height is > 3.45 m, TR to be increased by further 15% on the basis calculation using Point No. a.
2. Nos: Multiple units are to be considered only if required capacity is > 2.5 TR.
3. AC units to be located in a practical manner such that:
    a. Piping length from Outdoor Unit (ODU) to Indoor Unit (IDU) in minimized. – ideally this should not exceed 4 m and in any circumstances should not exceed 8 m.
    b. Pipes from ODU to IDU are taken through sleeves, rather than below beam, avoiding costs of boxing etc.
    c. All drain pipes are given connected into a water drainage channel/not left open (concern for units used for key common areas where AC units are planned late and attention is not paid to drainage).
    d. Insulation requirement wrt the piping shall be reviewed and prescribed in the AC specifications.
    e. As far as possible, piping & cabling are laid on cable tray and not clipped to wall or ceiling.
    f. ODU for ACs must be easily accessible from inside the flat – a person should feel safe in that area and need not step over a wall more than 750 mm high to get to the ODU.
4. If hideaway type AC units are used:
    a. The internal duct/ceiling area within 1 m of the grill should be painted (not left grey behind false ceiling).
    b. Any lights within 1 m of the grill should have a dark colour (black) cap/cover on their internal side to avoid light being reflected and seen through grill.d
    c. Separate vents for air delivery and return air should be provided in each room.

d. Each IDU should have separate air delivery ducts. Only return air ducts can be shared between IDUs.
e. Flexible connection shall be provided between machine and ductwork.
f. The duct must be connected to the grill/ diffuser. The grills must be ordered with the collar for the duct termination.
g. The acoustic and thermal insulation serves different purpose and one doesn't supplement others. Wherever the acoustic insulation is provided inside the duct, thermal insulation must be provided on the outside of the duct.
h. Wherever fibre, mineral or glass wool based insulation is used for the insulation purpose, the edge of the insulation must be taped properly.

5. In case of hi-wall split ACs, the IDU should be chosen in discussion with the Project Architecture team to ensure aesthetic match.
6. The location of the IDU within a room should be placed centrally for uniform air distribution.
7. The IR remote control reception panel of the AC should be easily viewable from most parts of the room, so that the remote can function effectively. All AC's should have independent viz. cordless remotes (corded remotes are not acceptable)
8. In high-end and luxury projects, door (most likely sliding) is to be provided to kitchen if the living room is air-conditioned.
9. If a unit is stated to be air-conditioned, all areas except kitchen, bathrooms and service areas (e.g. Store, utility, staff bedroom) are expected to be air-conditioned. Rooms which are NOT air-conditioned should have some other ventilation provision eg. Window, fan provision, fresh-air flow. In rooms which are, any ancillary attached room should also be air-conditioned eg. Walk-in wardrobe attached to bedroom – if such ancillary room is > 60 sq. ft. in carpet area, the ancillary room should have a separate control for air-conditioning in that ancillary room.

Comment [SB1]: Rev.6

10. Minimum energy efficiency rating of AC unit should be 3 star (2014 standards).

Unit Ventilation Guidelines for Residential Projects:

11. Propeller type fans shall be direct driven ring mounted with rust proof ABS body and of the capacities as shown in table below or as indicated in the schedule of equipment.
12. Exhaust fans shall be provided with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and gravity type louvers for weather protection as required.

13. Fan drive shall be single phase motors for 220±6% volts 50 cycles AC supply or as indicated in the Schedule of Equipment and shall be complete with starter.

Comment [SB2]: Rev.6

Fans sizes / capacities shall be as follows:

Sr.No.	Area Served	Fan size	Airflow (cfm)	Frame Size**		Fixing Dimension (Opening)		Remarks
1	Toilet	150mm	100	200mm	200mm	150mm Dia		 Standard Type
2	Kitchen	150mm	200	235mm	235mm	190mm*	190mm*	For kitchen size upto 100 sq.ft with 2.5m Ceiling Ht. 
3	Kitchen	200mm	350	290mm	290mm	240mm*	240mm*	For kitchen sizes from 100-170 sq.ft with 2.5m Ceiling Ht 

Note:

1. * Round or square as per Fan Model selected by the Arch.
2. ** Thickness of frame shall be as per Fan Model selected by the Arch.

14. For non-naturally ventilated toilets:
    a. Centralised extract system to be designed with Extract fans @ terrace / service floors as applicable. Extract air quantity shall be calculated based on latest ASHARE 62.1 standard (i.e. 25 CFM per WC/Urinal) to be considered assuming 80% of the toilets are under use simultaneously at peak time.
    b. Fresh air for toilets shall be provided through door undercut with flow rate equal to 50% of the extract rate. In case this is deemed to be insufficient, tap off from nearest AC unit may be considered in Luxury residential.

15. For lobbies without natural ventilation, treated fresh air supply to be provided at rate of 0.6 CFM/Sqm of floor area based on ASHRAE 62.1. Temperature of such spaces should be maintained at 24-25 C. Further, for the units located off such lobbies, fresh air of 5 CFM/person + 0.6 CFM/sqm of habitable carpet area shall be provided through centralized system in living room/common corridor of such unit. Lobbies without natural ventilation should generally be avoided except in luxury/hi-end residential and offices.

Comment [SB3]: Rev.6