Guidelines for Design of Power Back-up Systems

1. DG generator exhaust should only be at max. height of 11 mtrs from ground (not all way up the building).
2. DG tests should be tested for working at least once a quarter (preferably once a month).
3. DG Backup Capacity and Provisions:

Segment	Non-Fire Mode	Fire Mode
Office	If 100% backup is promised, 100% of the load of the building. If 100% backup is not promised, as per Retail-Boulevard.	• Fire lift • Staircase and lift-well pressurization fans • Basement ventilation fans • Fire pumps • One light on each lift lobby and one light on each landing and mid-landing of (all) escape staircases. • Security systems (access control and CCTV systems). • 25% lights in the exit corridors, as applicable • Refuge areas and all plantrooms
Retail - Experia	100% for cinema/multiplex + 100% for refrigeration/deep freezer load of hypermarket/other + As per Retail – boulevard.	
Retail – Boulevard	In order of priority (based on available capability with governing load being DG load): • Security systems (access control and CCTV systems). • Telephone, data infrastructure (FTTx) • Basement ventilation fans • 25% lights in the exit corridors, as applicable • Water supply & sump pumps • STP • All Lifts • All plantrooms • Common toilets • Retail area passage(s)	

Residential	In order of priority (based on available capability with governing load being DG load): • Security systems (access control and CCTV systems). • Clubhouse • Telephone and Data Infrastructure (FTTx) • Basement ventilation fans • 25% lights in the exit corridors, as applicable • Water supply & sump pumps • STP • All Plant rooms • All Lifts	

While sizing DG's for fire mode, take into account relevant guideline from '*Guidelines for Plumbing'* policy i.e. In multi-building projects, it can be assumed that only 1 of the wings fed from a common fire pumpset (catering to maximum 100 hydrants) shall be on fire at a time. (Note: In parking podium/basement, it can be assumed that only one of the zones per floor (as defined by fire compartmentalization) shall be on fire simultaneously).

4. Emergency lighting system in the habitable buildings with 25% of typ. Corridor, Entrance lobby and 100 % staircase lighting shall be provided through inverter with 15 minutes battery backup, in addition to DG backup. This does not apply to parking areas of any nature.
5. DG's should be sized (in kVA) to 110% of the maximum demand load that they are expected to support (see Electricity Load Calculation Norms for calculation of maximum demand load).
6. If DG's of different capacities are planned to supply power to a single line, necessary actions should be taken to synchronize their output during commissioning.
7. In locations which have real load shedding (e.g. Thane, Hyderabad as in 2015), the individual DG capacities should be on the lower side (not exceed 1000 KVA and preferably 630 KVA or less) and no DG should be sized such that it is more than 50% of the capacity for that given

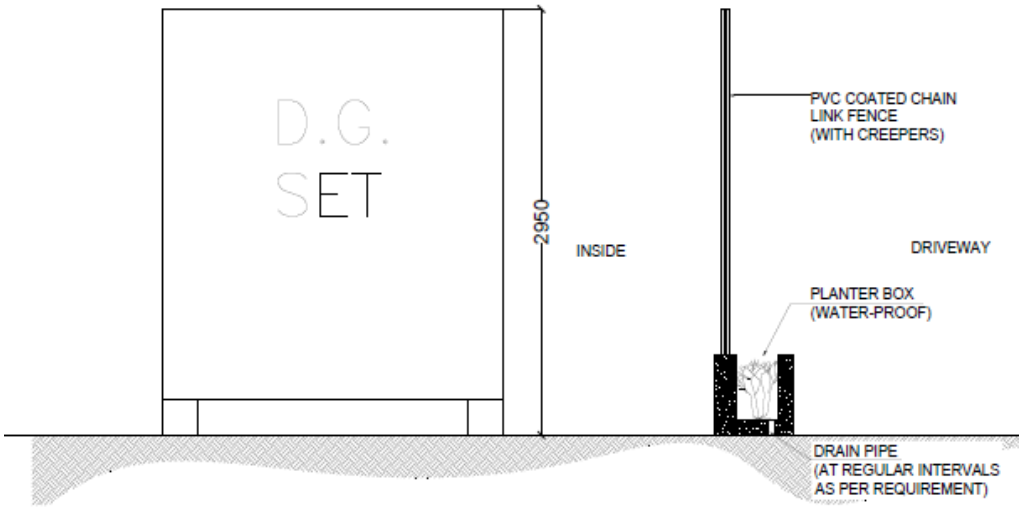
project viz. minimum 2 DG's. Such DG's shall be rated for prime or continuous running for upto 8 hours/day. In locations which are unlikely to have load shedding (e.g. Mumbai island city, Mumbai western suburbs, Palava as in 2015), capacity breakup of DG's is not important since they are unlikely to be used frequently – in such cases one should pursue the lowest cost option, subject to space limitations, if any.

8. It is preferable to locate the DG's close to the LT room (max. within 50 m, anything higher should only be with approval of HOC-MEP Design) that they are supplying power to – this reduces cabling cost and also ensures lower voltage drop.
9. In areas where load shedding is a concern (i.e. not applicable to Mumbai city and Western suburbs of Mumbai), clubhouses shall be provided 100% DG back up, as per following conditions:
    a. Society Clubhouse (e.g. Priva, Kolshet Plot A)
        i. shall be provided 100% DG back up from the excess fire capacity available in the DG which is for that society.
        ii. During fire condition (within or outside the clubhouse) only life safety loads of the clubhouse shall be considered in the DG sizing.
10. Federation Clubhouses (e.g. Palava, Kolshet Plot C)
        i. Shall be provided 100% DG back up from the excess fire capacity available in the DG which is planned for use for federation loads (eg. parking areas), if any. If no such federation loads are available, then additional DG shall be provided.
        ii. During fire condition (within or outside the clubhouse) only life safety loads of the clubhouse shall be considered in the DG sizing.
11. Sizing of the DGs for non-sale/lease buildings (e.g. School, club etc.) shall exclude the Air Conditioning Loads during power failure conditions.
12. Bulk HSD (High Speed Diesel) storage tanks shall only be provided for DGs in commercial projects falling in areas with real load shedding (Thane, Hyderabad, etc.). For areas where we do not have load shedding (Mumbai Island, Mumbai Suburbs) the DGs shall have self-contained 990litres of HSD storage, such projects shall have arrangements with the nearest Fuel Stations for refuelling when required (arrangement with the fuel station to be managed by FM teams).
13. **PVC coated chain link fence around D.G. Set:**

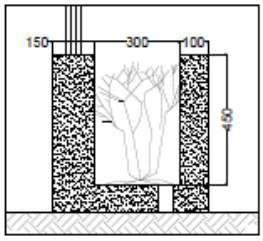
For better aesthetics and visual appeal, DG sets (and any other large service equipment) visible from areas which customers can easily see are to be camouflaged by PVC coated chain link fence. On the outside (driveway side), there will be a waterproof planter box (as shown in the diagram below) which will allow creepers to grow and also provide a visual barrier. There will be an entry gate (lockable) within the fence to help people and equipment move in and out during maintenance. A safe clear access of minimum 3 feet will be maintained around between the PVC fence and the DG. Appropriate water supply and drainage to be provided as per requirement.



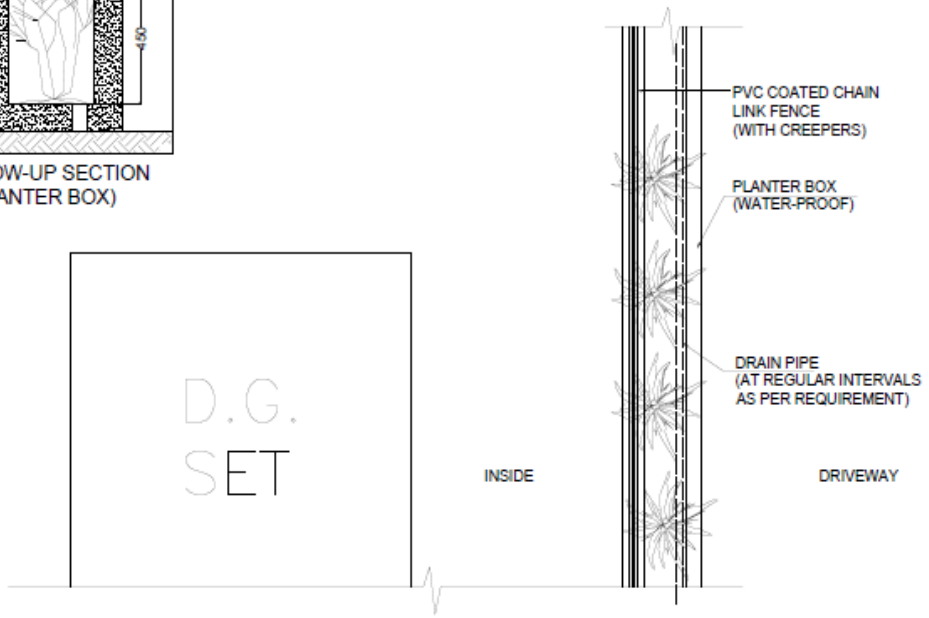
Reference picture of PVC chain link fence



SECTION



BLOW-UP SECTION
(PLANTER BOX)



PLAN