Guidelines for design of Not-For-Sale (Govt. Handover) Residential Buildings:

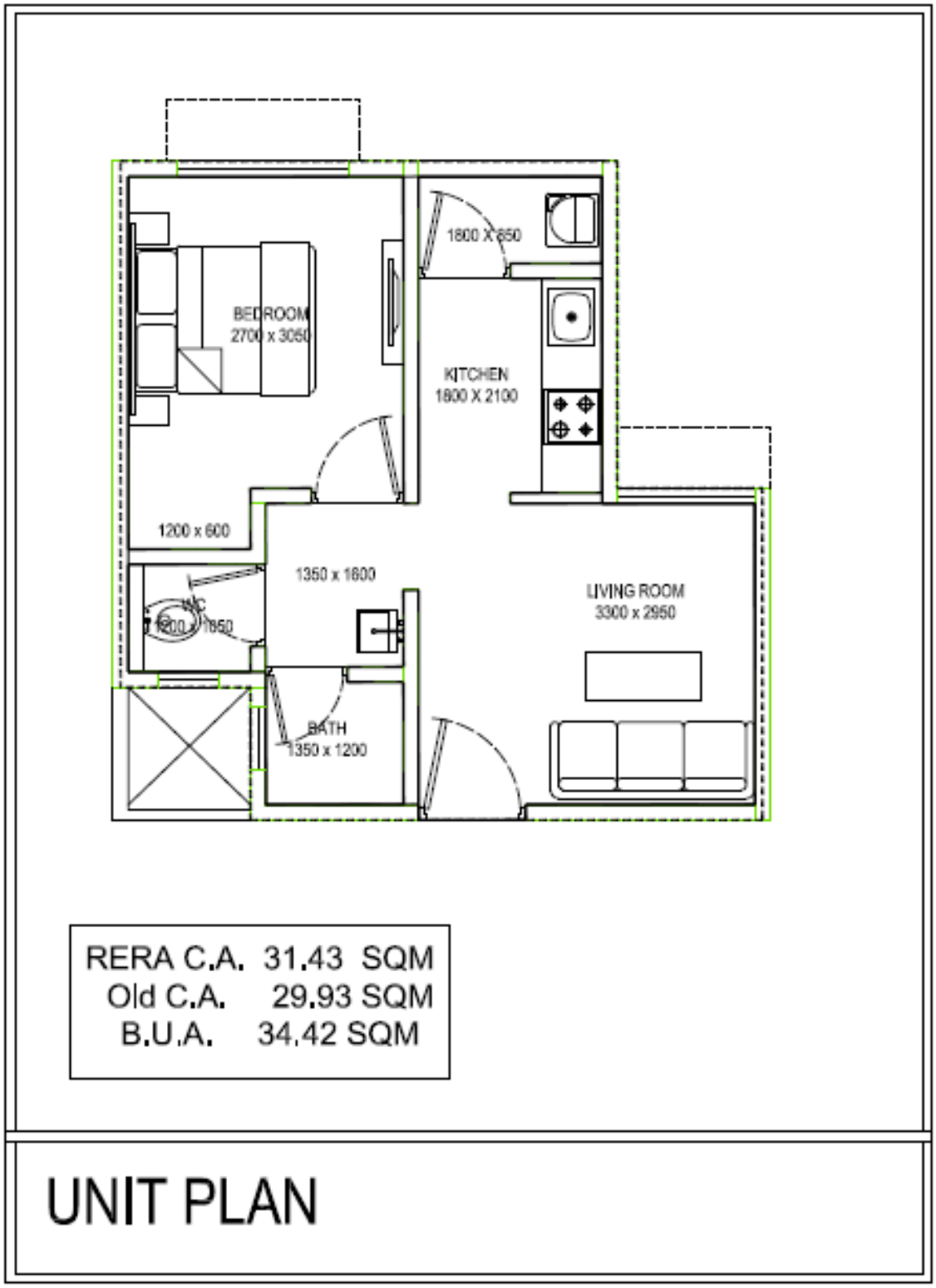
ARCHITECTURE/ CIVIL DESIGN GUIDELINES

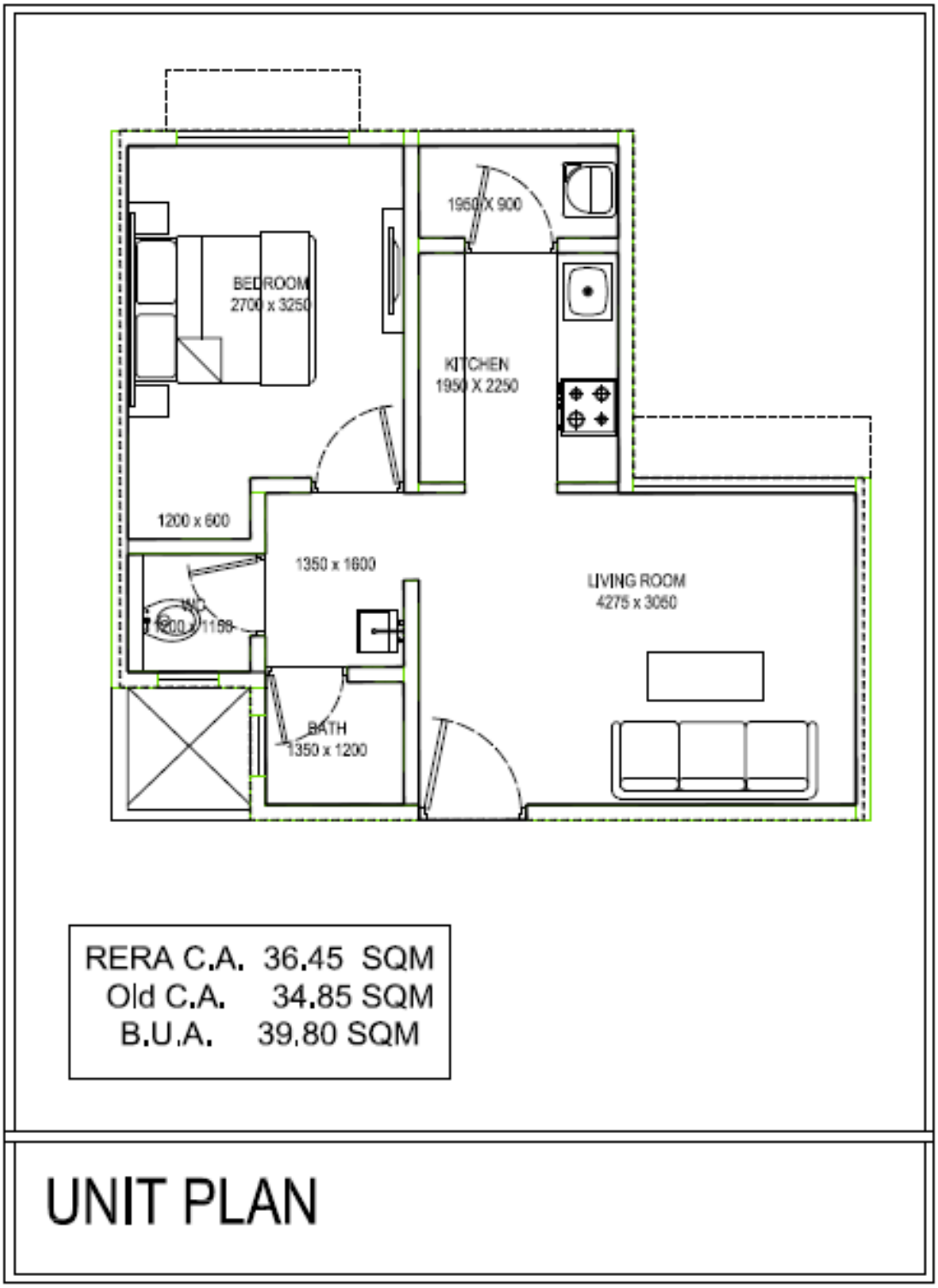
Economic Drivers

i. Maximize Unit BUA in relation to the unit's carpet area. Generally Unit Build Up / Unit Carpet >= 1.2.
ii. If areas outside the unit (lobbies, staircase block, etc.) are not counted in FSI, maximise the floor efficiency i.e. ratio of Unit BUA / Floor BUA >= 75%. If such areas are counted in FSI, we will seek to do exactly the reverse i.e. minimize the floor efficiency to the practical extent feasible.
iii. Minimize building height; ideally <= 45m. In select cases, it can be up to maximum 60m.

Architectural Space Planning Guidelines:

i. Clarify the following design requirements prior to design finalization (as per local approving authority):
    a. Minimum Unit size
    b. Staircase requirements
    c. Amenities (like Balwadi, children's play area etc.) and other mandatory requirements
    d. Minimum corridor width
    e. Provision / Allowance for shops, retail areas, etc.
ii. Bath & WC locations to be planned such that a common plumbing shaft can serve (2) adjoining units. Shaft shall be on external face of the building.
iii. Kitchens to be planned such that the plumbing shaft (for toilets) can serve the sink requirements and ventilation is possible using localised exhaust fan. (Non-ducted)
iv. All unit typologies for handover buildings should be planned with utility area. Size of the same should be min 3'6" wide and min. total carpet area should be 17.5 sft.
v. No BUA areas to be wasted, including in stilts. All BUA should be utilized for FSI consumption or other mandatory requirements e.g. Society office, welfare centre, shops/commercial use, etc. should not be used for things like Parking which should be planned in non BUA i.e. open to sky spaces.
vi. Sample Plans: Typical unit plans for old CA 29.93 sqm (EWS) and BUA 39.80 sqm (LIG, kept below 40 sm BUA to avoid requirement for 4-wheeler parking) are given below for reference. In case the unit area needs to be increased or decreased for any new requirement, following guidelines to be followed:
    - Minimum width of the bed room needs to be 2700mm
    - Utility width should not be less than 850mm
    - In BMC jurisdiction, wall frontage for bedroom and living room needs to be min. 2400mm and kitchen needs to be min. 1800mm.
    - In non –BMC area reduction should be done (if required) in living room width to reduce area since no min. frontage requirement.


BEDROOM
2700 x 3050
1800 X 650
KITCHEN
1800 X 2100
1200 x 600
1350 x 1800
LIVING ROOM
3300 x 2950
WC
1200 x 1850
BATH
1350 x 1200
RERA C.A. 31.43 SQM
Old C.A. 29.93 SQM
B.U.A. 34.42 SQM
UNIT PLAN


BEDROOM
2700 x 3250
1950 X 900
KITCHEN
1950 X 2250
1200 x 600
1350 x 1600
LIVING ROOM
4275 x 3060
WC
1200 x 1150
BATH
1350 x 1200
RERA C.A. 36.45 SQM
Old C.A. 34.85 SQM
B.U.A. 39.80 SQM
UNIT PLAN

Structural Design Guidelines:

i. Decision whether to use under-slung piping or sunk slabs for bath & WC areas to be determined at the time of concept design finalization based on the type of contractor that is likely to do the work and whether they are facing any difficulties (material or labour) in doing sunk slabs (and waterproofing thereto). Preference is to do sunk slab, except if one forsee's significant cost or time (due to lack of labour or material availability)

ii. Similarly, the decision whether to use Aluminium or conventional shuttering to be determined based on labour availability for conventional shuttering at time of award of contract.

iii. Typical Floor to Floor Height shall be 2850mm.

iv. Building structure to be designed taking into account flooring thickness (above slab, including any bedding): Max. 50 mm (preferably 40 mm)

v. All external walls 150 mm thick RCC (in case on Al. Shuttering). Corridor walls / Unit partition walls shall be 150mm thick Light-weight block/RCC (as applicable) wall. All other internal walls shall be 100mm thick. Thicker walls may be considered if one wants to maximize ratio of Unit BUA / Unit Carpet.

vi. While IS code specifies use of M30 as minimum grade of concrete, use of M25 should be actively considered for those parts of the structure which do not form part of the structure's frame / do not provide strength to the structure e.g. horizontal slabs. In case of Aluminium shuttering, M30 grade shall be used, duly compensated by lesser usage of steel.

vii. Beam depth's along the internal side should not be more than as required for structural requirements (subject to requirement for min. door/window opening being available). In case of door/window openings on the internal side, precast lintel (along with blockwork above till beam bottom, if applicable) to be placed.

Note: Not for sale buildings should be procured as FML. Steel & concrete to be kept in Lodha's scope only if Procurement team feels there is substantial savings, in doing so.

Waterproofing: As per Lodha Policy for Water-proofing system (Struc06)

FINISHING DESIGN GUIDELINES

Unit Finishes							
	Multipurpose room & Bedroom	**Cooking Alcove**	**Bath**	**W.C.**	**Common Passage**	**Staircase**	**Service areas/room(eg. Substation,UGT pump room,LMR,etc)**
Flooring	300mm x300mm* Ceramic tiles	300mm x300mm* Ceramic tiles	200m x200mm+ Anti-skid ceramic tiles	200m x200mm+ Anti-skid ceramic tiles	300mm x300mm* Ceramic tiles	Cement tiles	IPS/Kota
	Basic rate: 32/ Sqft$	Basic rate: Rs. 32/ Sqft$	Basic rate: Rs. 33/Sqft$	Basic rate: Rs. 33/- Sqft$	Basic rate: Rs. 32/ Sqft$		
Skirting	100mm	100mm	N.A.	N.A.	100mm	100mm	NA
Wall Dado	N.A.	glazed tiles 2' above platform. Basic rate: Rs. 25/Sq. ft	Full Height	Upto 1m Ht	N.A.	N.A.	NA
Cooking Platform	N.A.	1.8mx0.6m Polished Cuddappa with SS sink & shelf below	N.A.	N.A.	N.A.	N.A.	NA
Wall Finish	Gypsum Plaster	Gypsum Plaster	N.A.	OBD above dado	Cement Plaster (1 coat)	Cement Plaster (1 coat)	Cement plaster (1 coat)
Ceiling	Birla white putty	Birla white putty	Birla white putty	Birla white putty	Birla white putty	Birla white putty	Birla white putty
Int. Paint (walls & ceiling) -	OBD	OBD	OBD	OBD	Synthetic Enamel upto 4': balance OBD	Walls & Ceiling- (3) Coats White wash	Cement paint(2) coats
Internal finish (Shaft)	Service ducts (internal)– (2) Coats White Wash Service ducts (external) – single coat cement plaster and Painted with 2 coats of Acrylic paints of approved colour over a branded primer coat. Lift shaft – 3 coats of white wash						

* 400mm x 400mm ceramic tiles may be used (same basic rate) if wastage can be minimised

+ 300mm x 300mm anti-skid ceramic tiles may be used (same basic rate) if wastage can be minimised

$ Basic rates mentioned are as on 1st April, 2014. Prevailing rates to be verified at the time of design.

DOOR SCHEDULE						
Sr No	**Module**	**Masonry Opening (in MM)**			**Door Shutter Size**	**Remarks**
		Width	**Height**	**Sill**		
1	Studio Apartment Main Door	1000	2250	-	900 x 2100	35 mm Flush door (Fire rated, if required by CFO NOC), Both Side Laminated with mortise lock of Magnum or equivalent, an eye hole with lens eye piece, 6” handle on both sides, one tower bolt of 10” on inner side and safety chain
2	Toilet Door	850	2250		750 x 2100	FRP Doors as per approved sample by Architect.
3	Shop Entrance Rolling Shutter	1500	2250	-	-	RS with 18 Gauge strips
4	Staircase Door	1200	2250	-	1100 x 2100	Fire Rated (only if required as per CFO NOC, min 2 hrs), 50 mm thick both side painted
5	Refuge Door	1200	2250	-	-	Fire Rated ((only if required as per CFO NOC, min 2 hrs)
6	Electrical Shaft Door	1025	2250	600	-	Access Door with 1-hr fire rating
7	Hose Reel Cabinet	1000	2250	600	-	MS Door with glass vision panel. Painted with approved enamel paint
8	Meter room door	1000	2250	-	900 x 2100	MS Door with louvers at top for ventilation & lockable arrangement or as approved by relevant authority Painted with approved enamel paint

Entrance Lobby Design Guidelines:

The entrance lobby design shall broadly follow Lodha Design Policy for Casa Projects. It should look and feel like a good quality development. Some of the key elements to focus on include:

i. Floor finish – Marbital; Basic rate: Rs. 100/sq. ft (100mm Skirting)
ii. Ceiling finish – Gypsum False-Ceiling
iii. Wall finish – Paint (Granite jambs at elevator Door Frame) – lustre on wall, plastic on ceilings, backdrop / feature wall can be accent paint/textured paint)
iv. Main Door – Double Swing Toughened Glass Door with floor spring
v. Furniture (can be limited quantity but good standard)
vi. Ventilation (Non-AC)
vii. PA System – (Only if required as per CFO NOC/ relevant authority)

FAÇADE DESIGN GUIDELINES

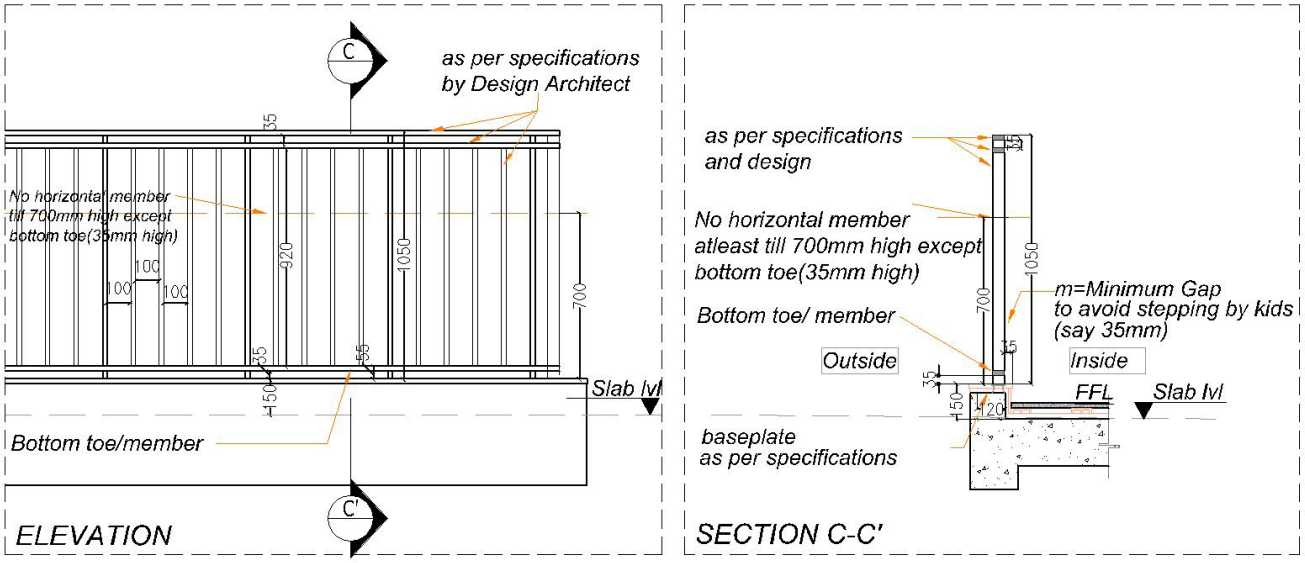
Exterior Walls:

Conventional Shuttering: Double coat cement plaster and painted with 2 coats of Acrylic paints of approved colour over a branded primer coat.

Al. Shuttering: Painted with 2 coats of Acrylic paints of approved colour over a branded primer coat.

Exterior Parapet walls:
To be light-weight block / RC (in case of Al. Shuttering) wall; 1050mm tall from finished level with 100mm thick RCC M25 coping.

In case of MS railing, follow sketch below.



Roof Parapet: 230mm thk brick masonry of minimum 1.20m height with minimum 100mm thick RCC M25 coping on top.

LMR (if applicable)**:** Single coat cement plaster and painted with 2 coats of cement paint.

Toilet shafts(external): Block work return walls to be provided on external periphery (to be restricted upto non- visibility of plumbing pipes), No jaali required outside toilet window/ventilator, 1200mm tall blockwork from FFL to be provide for fall protection.

WINDOW SCHEDULE									
Sr No	Module	Masonry Opening (in MM)			Type	Aluminium Series	Glass	Coating	Hardware
		Width	Height	Sill					
1	All windows (except bath and WC)	1200/1500/ 1800	1200	1050	3 Track, 3 Shutter	20 x 50mm Non-Jindal	4mm annealed glass(Saint Gobain/Asahi/ Modi/approve d equivalent	15 micron Silver Anodising	Lock: Starlock Bearing: NSK Wool pile: EPDM Gasket SS Screws
2	Bath and WC Windows	600	900	1350	Aluminium Box with Louvers	Rectangular Section 127 x 25.4 x 1.3mm	4mm annealed frosted glass(Saint Gobain/Asahi/ Modi/approve d equivalent	15 micron Colour Anodising as per approved shade	

MEP DESIGN GUIDELINES:

Common Services shall be planned for the project / cluster of buildings (as applicable). e.g., underground tanks, fire panels, pumps, STP, Sub-stations etc.

ELECTRICAL

Diversity Factors to be considered:

Diversity @ Each Apartment Maximum Demand:	0.80
Diversity @ Floor Maximum Demand:	1.00
Diversity of Load for Cable as Riser:	1.00
Common Area Lighting/Pumps etc:	0.50
Elevator Load:	0.80
Life Safety Equipment:	1.00

Electrical Load Details / Facilities Details

Demand Load: Min 1.3KW /unit (25 sq.m carpet – 1BHK)

i. Living Room:
   a. (1) tube light – 40 W.
   b. (1) fan
   c. (1) TV point
   d. (1) telephone point
   e. (1)Bell point
   f. (2) 6 Amp socket points
   g. (1) night lamp

ii. Kitchen:
   a. (1) Tube light – 40 W.
   b. (1) fan
   c. (1) exhaust fan
   d. (2) 6 Amp socket point
   e. (1) 15 Amp socket point

iii. Bedroom
   a. (1) tube light – 40 W
   b. (1) Fan
   c. (2) 6 Amp Socket points

iv. Bathroom and WC:
   a. (1) Suitable power plug for Geyser (20A)
   b. (1) Light point
   c. (1) Exhaust fan (separate - next to window)

*Fixtures to be provided as applicable. Additional light point/s may be necessary depending upon architectural layout.

Internal Corridors:

i. 1 tube light point at 2.40m ht. and located at the center of the corridor, by the main door openings (minimum 6m interval) in common passage, individual switches for bell to each flat.

Power Distribution

The Electrical power to the development shall be provided through 11KV/22KV HT network and 11KV/ 22 KV /415V distribution Transformers at suitable locations. Electrical distribution shall be designed as per relevant authority standards and regulations.

Single phase power supply shall be provided for the apartments through dedicated distribution boards per flat. Each building shall be provided with a dedicated electrical room at Ground floor and all the Electrical Energy meters and all other panels related to the building shall be accommodated inside the room.

Vertical power distribution shall be through Aluminium Armoured Cables.

Cabling / Wiring

The wiring for light and small power outlets shall be with PVC insulated FR copper conductor stranded single core wires. Complete wiring installation shall be in concealed PVC conduits.

Emergency Lighting

DG backup should only be sized for fire critical systems (fire lifts, staircase lighting, fire pumps). In non-fire mode, the DG's will also serve elevators, water pumps, etc. and 25% of the common lights including car park lighting.

For developments where 24x7 power supply through Express feeder is guaranteed & with no DG back up, emergency lighting system shall be provided in the habitable buildings with 25% of common area lighting (entrance lobby, typ. Corridor lighting), 100% staircase and service room lighting, through inverter with 60 min. battery backup. This does not apply to parking areas of any nature.

EXTRA LOW VOLTAGE SYSTEM

Telephone System and CATV System

PVC conduits from shaft to unit point shall be provided. Wiring shall be done by service provider.

Fire Alarm System

Conventional type fire alarm system shall be provided (without detectors) in common areas and Lift lobbies. Manual Call point and Hooter will be provided in every floor. (Follow Palava – Sector I system design) Telephone jack shall be provided on each floor. Additional requirements if specified in CFO NOC to be analyzed and decision made in discussion with Director – Operations.

* Refer Annexure I for list of approved makes

PLUMBING

Plumbing Requirements:

Units:

i. Kitchen
   a. Concealed UPVC –Schedule 40 pipe.
   b. Nahani trap with cover plate below sink
   c. Stainless steel sink of size 450 x 450
   d. Tap fitting – bib cock fitting
ii. Bathroom:
   a. Concealed UPVC –Schedule 40 pipe.
   b. Internal drainage, nahani traps, grill
   c. S/Installation of CP fittings.
iii. WC:
   a. Concealed UPVC –Schedule 40 pipe.
   b. Internal drainage, fixing of trap
   c. S/Installation of CP and sanitary fitting.

Water Supply

i. Basis for water calculations: 5 individuals / Tenement
ii. The distribution of water shall be by gravity system. Boosting shall not be required for flushing water down takes since cistern tanks are used
   a. Domestic water – Wash basin, Shower, Health faucet & Kitchen Tap
   b. Flushing water – WC
iii. Solar System Provision: Top five floors flat hot water supply considered from Solar system. The Solar panels are placed on respective block Terrace. (Only if required by MOEF)
iv. Domestic water tank capacity (total capacity on ground + terrace + any other levels) should be equal to 1 day storage for buildings
v. All the water pumps shall be with automatic control panel with water level indicator, as follows:
   a. Building height < 30m: Horizontal Monoblock pumps
   b. Building Height > 30m: Vertical Multi-stage pumps
vi. The pumps shall be so designed that overhead tank shall be filled within 2 hours and stop with automatic controller. Following piping system is to be used:
   a. Uptake Pipes: CPVC pipes

b. Down-take Pipes: UPVC/CPVC pipes. PRV to be used to moderate pressures so that design pressure ratings of water heaters and CP ware at any point is not exceeded and pipeline pressure is kept below <=2.5 bar.

vii. Design shall be such as to ensure equal and simultaneous flow (tolerance ± 15 min) for all tenements.

viii. Stop cock should be provided for the wash basin and flushing tank. In addition to this stop cock should also be provided at the entry of the water supply pipe into the tenement.

ix. Deep seal nahani trap with grating to be providing in bath area, and below kitchen sink with appropriate size as approved by EIC.

Sewerage

i. Double Stack piping system shall be used
ii. Piping System (Material of Construction): Follow Lodha Policy (MEP-08)
iii. CI pipe for ground floor up to first inspection chamber and for above PVC SWR System Soil, Waste, Rain Water & Vent to be considered.
iv. Single piece PVC pipe from WC up to flushing cistern to be provided.
v. No combined pipe for S.W. Drains and sewerage shall be permitted.
vi. All P & S trap shall be deep seal with seal not less than 80 mm.

Sewage Treatment Plant (STP)

All the buildings Waste-water will be collected by gravity through sewage pipeline network & connected to Centralized Sewage Treatment Plant

* Refer Annexure II for list of approved makes

FIRE FIGHTING

i. Low-Rise (up to 30 m above ground): NA (subject to any CFO NOC requirements)
ii. Mid-Rise (30m to 70 m ground):
    a. Doors to meter room and electrical duct (if opening into a fire escape staircase or passage thereto) should have a 1-hour fire rating with smoke seal. (Only if required by CFO NOC)
    b. Fire hose reel with 30 m coverage to be provided – can be located at the end of the corridor and no FF shaft is required (only if there is no open location which is feasible, FF shaft is to be provided).. If FF shaft is provided, have no cut-out in slab – only sleeve with sufficient leeway (100 mm on dia eg. If 150 mm dia pipe, sleeve can be 250 mm). For high rise buildings, zone wise sizing of sleeves can be considered is size of the pipe is likely to reduce.
    c. Sprinkler in lift lobby (from unit up to staircase). Possibility of integrating sprinklers with the wet riser should be examined
    d. CO2 -type 5 kg Fire extinguisher adjacent to staircase gate on each floor.
iii. Piping shall be Painted MS pipes and MS fittings

iv. Plant/Service Rooms:
   a. Sprinkler (only building above 30m ht)
   b. Heat Detector
   c. Fire Extinguisher
   d. Fire extinguisher outside the plant room
v. Stilt Areas:
   a. Hydrants with 30 m coverage near each exit staircase and then additional hydrants at 30 m distance within the basement.

For any additional requirements as per CFO NOC, analysis to be done of whether such requirements are needed as per international standards and then decision to be made in discussion with Director-Design.

Fire fighting tanks should be sized (total capacity on ground + terrace + any other levels) to meet fire fighting needs for 60 minutes for building.

Pumps:

Common pumps shall be used for a cluster of buildings (max 3 to 4 buildings). Pumps and their back-ups to be provided as follows:

i. Fire pump (electrical): 2 working (1 for sprinkler + 1 for hydrant) + 1 common stand-by connected to common header. (Pump rooms to be oversized for temporary placing of one additional pump if CFO NOC calls for 2 working + 2 standby). Wet riser and sprinkler systems can be combined only when there are limited numbers of sprinklers in each floor.
ii. Fire pump (Jockey): 1 working + 1 standby (pump rooms to be oversized for temporary placing of 2 additional jockey pumps if CFO NOC calls for 2 jockey + 2 standby).
iii. Fire pump (booster): 1 working + 1 standby

In case of any conflict with CFO NOC in relation to the requirements of pumps or other CFO related elements, discussion should be done with HOD-Design / Director-Design as to what elements of CFO NOC can be ignored.

* Refer Annexure III for list of approved makes

HVAC

Provision of split AC to be considered for all bedrooms in govt. handover flats. Please note that AC is not to be provided (only provision).

LIFT PROVISION

i. Indian manufacturers to be considered. E.g.: Fujitec, Johnson, Schindler – telescopic door lifts
ii. MRL elevator with a minimum capacity of 6 persons
iii. Performance standards – As per Lodha standard's for Casa projects.
iv. All elevators shall be equipped with ARD
v. Maintenance for a period of 2 years after handing over of building to be considered.

vi. Finishes:
    a. Interior – Powder Coated MS
    b. Doors – SS on ground/main entry level and MS Powder Coated on all other levels
    c. Door Height – 2.1 m
    d. Cabin Height – 2.4 m

Lifts shall be supplied by Lodha.

INFRASTRUCTURE DESIGN GUIDELINES

i. Compound Wall shall be min. 1.5 m height with RCC pillars / beams 230 mm thick brick masonry wall with pillars as required and R.C.C coping on top (see Lodha Compound Wall policy)
ii. Entrance Gate shall be M.S Ornamental gate with good design of Min. size 4.0m wide x 1.5m height with M.S. frame & Grill with track on wheel, locking arrangement.
iii. Security Guard Cabin to be provided near entrance gate
iv. Common Toilet to be provided for security guard and other personnel at ground level complete with WC, washbasin, and bathing facility.
v. Plinth protection of 0.90m in PCC M20 all around building
vi. Well paved WMM roads with asphalt for vehicular access. Walkways, Footpaths shall be covered with concrete pavers. Softscape areas to be maximized

Parking

Parking for one (1) 2-wheeler per unit + 10% guest parking (subject to maximum of 100 nos) shall be considered

Street/Building Lighting

i. Illumination level – 8 LUX on up to 6 M. Wide road, 15 LUX on 10 X 15 M. Wide road.
ii. Separate underground armoured standard aluminium cables of XLPE to be used of 1.1 K.V. voltage grade.
iii. High pressure sodium vapour lamps of 70 W for building lighting and 150 W for street lighting.
iv. Provide controlling arrangement with automatic ON/OFF to be made with timer and energy saving device.
v. Supply of street light to be fed from controlling point by providing at the street light mini-pillar separate energy meter and protective devices.
vi. Street light G.I. octagonal poles of 7.5 m. Height above ground level shall be provided on suitable foundation as approved

Outdoor Children's Play Area

Some of the core design principles include:

i. Having a flooring material which makes it same to fall eg. White sand.
ii. Having equipment which serves age groups 1-8.
iii. Having adequate no. of equipment taking into account the population and space available.

Following items are mandatory for a project level outdoor children's play area (multiple units can be considered):

i. Swing (min. two seats)
ii. Slide
iii. See Saw

Koochie or equivalent Indian brand

Signage

A Standard Signage Program shall include the following Sign Types & the basic signage guidelines.

i. Reception Building Sign: Name of the project as indicated by local/relevant authority (follow CASA policy for design)
ii. Building Directory: Not to be used – no building directory is required.
iii. Destination Signs: All the destination signs will either be represented in the form of pictograms or text consistently across all sign types
iv. Lift Numbering Sign: If there is more than one passenger elevator, the same shall be numbered starting with A. The numbering shall be marked inside the passenger elevator and only on the main entrance level.
v. Staircase sign: Fire exit staircases will have a sign which is Photo-luminescent
vi. Floor Indicator in Lift Lobby: We will not be having floor indicators in lift lobbies
vii. Floor Indicator in Staircase: Provide a floor indicator sign in staircase, in paint since staircase is a back of house area.
viii. Flat Number: To be Provided
ix. Name Plate : Shall not be provided
x. Duct Sign: Only fire fighting duct will have a sign.
xi. Car Slot No. Sign: Shall not be provided

Equipment Brands

Any of the brands stated herein can be changed with joint approval of any 2 of the following:

a. HOC – concerned Design Package
b. HOD – Design

c. COO
d. Director - Design

Financial Norms

All financial norms/limits stated herein are applicable as on 1.1.2015 and shall be increased upwards by 25% on 1st April of every leap year starting 2020 (10% for 2016).

ANNEXURE I – ELECTRICAL LIST OF APPROVED MAKES

Sr. No.	Details of Materials / Equipment	Approved Makes
A.	**HIGH VOLTAGE EQUIPMENT**	
1	Indoor/Outdoor Oil Filled Transformer : 6.6 KV to 33 KV (For building load, transformers should be MSEDCL/authority approved).	Telwane / EMCO
2	VCB : 11 KV (For building load, HT panel should be MSEDCL approved).	L & T / ABB
3	Compact HT Switchgear: 11 KV (For building load, HT panel should be MSEDCL approved).	L & T / ABB
4	HT Jointing Kit : 11 KV	Raychem / 3 M
5	HT Termination Kit : 11 KV	Raychem / 3 M
6	XLPE Cable : 11 KV	Avocab / KEI
7	Protection Relays	EMCO / L & T
	Numeric Type	EMCO / L & T
8	Potential Transformer	Pragati / Kappa
9	Current Transformer (Cast Resin Epoxy Coated)	Pragati / Kappa
10	Static Power Meter & Logger (Trivector Meters)	EMCO / L & T / Precision Controls
11	Electronic Digital Meter (A/V/PF/HZ/KWH) with LED Display.	Nippon / Precision Controls
12	HRC Fuse and Fuse Fitting	KEW / L & T
13	Battery Charger	Chabbi Electricals / Emerson
14	Sealed Maintenance Free Batteries	Rocket / Quanta /
B.	**MEDIUM VOLTAGE EQUIPMENT**	
1	Power Distribution Panel and Motor Control Centre & Air Insulated Bus ducts	Locally fabricated with CPRI Approved
	(For building load, LT panels should be MSEDCL approved).	
2	Final Distribution Board	Indo Asian / L & T / Seimens
3	Air Circuit Breaker (3/4 Pole)	EMCO / L & T
4	Molded Case Circuit Breaker (MCCB)	Indo Asian / L & T

5	Motor Protection Circuit Breaker(MPCB)	Indo Asian / L & T
6	Automatic Transfer Switch (ATS)	Indo Asian / SOCOMEC
7	Miniature Circuit Breakers (MCB)	Indo Asian / L & T
8	Residual Current Circuit Breaker (RCCB)	Indo Asian / L & T
9	Power/Aux. Contactor	Any local, Comet / Jainson
10	Change Over Switch	KEW / L & T
11	Control Transformer/Potential Transformers	Pragati / Kappa
Sr. No.	**Details of Materials / Equipment**	**Approved Makes**
12	Current Transformer (Epoxy Cast Resin)	Pragati / Kappa
13	Protection Relay	
	a. Numeric Type	LnT / EMCO
	b. Electromagnetic Type	LnT / EMCO
14	Indicating Lamps LED type and Push Button	Any Local
15	Overload relays with built in Single Phase preventer	LnT / EMCO
16	a. Electronic Digital Meters (A/V/PF/Hz/KW/KWH) with LED Display	L & T / Precision Controls
	b. Electro_Magnetic Meters	any local
17	Autoamtic Power Factor Correction Relay (Numeric Type)	Areva / Emco /
18	Thyristerised APFC Control Panel	Ducati / Meher (L&T)
19	PVC insulated XLPE aluminium/copper conductor armoured MV Cables upto 1100 V grade	Avocab / Rallison
20	LT Jointing Kit / Termination	Raychem / 3M /
21	Cable Glands Double Compression with earthing links	Jainson / Comet
22	Bimetallic Cable Lug	Jainson / Comet
23	Mettalic / GI Conduit (ISI approved)	Local
24	PVC Conduit & Accessories (ISI approved)	Local
25	Switch & Socket	North west / Beenee / Anchor or equivalent
26	Industrial Socket	
	a. Splash Proof	Jainson / L & T
	b. Metal Clad	Jainson / L & T
27	Lighting Fixture	
	a. Incandescent / Halogen / PL / Metal Halide) / Fluorescent	Fitting – Any Reputed make, Al. Choke, Lamp - Osram / Philips
	b. External Lighting Fixture	Any Reputed make & No Local Fabrication
28	Electronic Ballast for Fluorescent	Philips / Bajaj
	(To be selected as per fixtures' manufacturer)	
29	Selector Switch, Toggle switch	Beenee

30	Timer	L & T / EMCO
31	Cable Trays (Factory Fabricated) / Raceways	Indiana / Reliance electricals
32	Tube lights (Only in Common Areas)	HPL / Crompton/ Phillps
34	Lighting Poles	K-lite / HomeDec

ANNEXURE II – PLUMBING LIST OF APPROVED MAKES

S.No.	Details of Materials / Equipment	Manufacturer's Name
1	a. Vitreous China Sanitaryware	Hindware / Parryware / Cera
	b. WC Connectors	Kisan / Finnolex
2	Stainless Steel Sink	Nirali / Prayag / Jayna / Nilkanth
3	Cistern	Commander / Patel
4	CP Brass Fittings	Sieko / ESS-ESS
5	Flow Control Devices	Dembla / Aira
6	Floor Drain Fixture, Rain Water Outlets & Channel Gratings	Prayag / Jayna
7	C.P. Grating for Floor Trap	Prayag / Jayna
8	Cast Iron Pipes & Fittings Manhole covers and frames a. As per IS:3989 (Pipes & Fittings)	Neco/ Kapilansh
	b. As per IS:1729 (Manhole covers and frames)	Neco/ Kapilansh
	c. D.I. Manhole Covers & Frames	Neco / Kapilansh
	d. CILA fittings	Kapilansh / Kesoram
	e. Suspended Manhole and Gully Trap	Patel Pattern
9	Drip Seal	Vinod Cement Co.
10	GI / M.S Pipes (IS : 1239 and IS : 3589)	Jindal / Bhushan
11	GI pipes fittings	R brand / ISI Mark
12	GI pipe sealent	ISI Make
13	Pipe clamp & supports	Fabricated
14	D. I. Pipes	Kapilansh / Neco
15	UPVC Pipe	Ajay / Supreme
16	HDPE Pipe	Sangir / Kisan
17	RCC Pipe	Pranali Pipe / Alcock
18	GM / Forged Brass Valves	Zoloto / RB
19	Sluice Valves	Oskar / Prime

20	Butterfly Valve	Oskar / C&R
21	Check Valve – WaferType	Oskar / C&R
22	Check Valve – Dual Plate	Oskar / C&R
23	Pressure Reducing Valve	Zoloto/ Varie
S.No.	**Details of Materials / Equipment**	**Manufacturer's Name**
24	Air Release Valve	Zoloto /Varie
25	Ball Float Valve	Zoloto /Prayag
26	NRV – Ball type – Sewage application	Zoloto / VB
27	Sewage Handling Pumps	Xylam/ Willo
28	Transfer Pumps	BE/ Kirloskar / Laxmi
29	Self-Priming Pumps	Willo/ Xylam
30	Borewell Pump	CRI / AROMA
31	Mechanical Seal	Burgman / ISI Equivalent
32	Couplings	ISI Equivalent / Lovjay
33	Anti Vibration Mounting & Flexible Connections	Resistoflex / Kanwal
34	Pressure Gauge	H Guru / Fiebig
35	Water Meter (Mechanical Type)	Kranti / Kaysee
36	Level Controller & Indicator (Water)	Auto Pump / Techtrol
37	Paints	Shalimar / Asian
38	MH / Water Tank Plastic Steps	Prince / Kisan
39	Solar Heating	Mamta Energy / Jain Solar System
40	Grease Trap	Constructed in brick work
41	Welding Rods	Esab / Mangalam / Advani Oerlikon
42	Fastner	Arrow / Fishers
43	Fire Sealant	Birla/ 3 M / Hilti
44	Patel patent chamber box-PPCB	S.B. Ajmera / Patel Engg.

ANNEXURE III – FIRE FIGHTING LIST OF APPROVED MAKES

S.No.	Details of Materials / Equipment	Manufacturer's Name
1	Fire / Sprinkler Main Pump / Jockey	HBD / KSB /Armstrong
2	Diesel Engine	KOEL / Greaves
3	G.I. / M.S. Pipes (IS : 1239 / IS : 3589)	Surya Prakash / Jindal / Tata
4	Standard M.S. Fittings	R brand ISI Mark
5	DI / CI / Forged Steel Fittings	Kapilansh / Neco
6	RCC Pipe	Pranali Pipe / Alcock
7	MH Cover & Frame	Kapilansh / Neco
8	Paints	Asian/ Shalimar
9	Double / Single Headed Landing Valve	Padmini / Priyanka
10	Fire Hose	PAdmini / Vaishali
11	Gun Metal Brach Pipe	Padmini / Priyanka
12	Fireman Ax	Padmini / Priyanka
13	Installation Control Valve	Senje / Viking
14	Sprinkler Heads	Senje / Newage (CD) / Viking
15	Fire Extinguishers	Nazz Fire / Cease Fire
16	Water Flow Switch / Tamper Switch	System Sensor / Switzer
18	Pressure Switch	H Guru / Fiebig
19	Pipe Protection Wrapping	Hassen Cloth / Tarfelt / Pypkote
20	Pipe clamp & supports	VB / RB
21	Sluice Valves	Oskar / Prime
22	Butterfly Valve	Oskar / C&R
23	Check Valve – Wafer Type	Oskar / C&R
24	Check Valve – Dual Plate	Oskar / C&R
25	Pressure Reducing Valve (Listed)	Zoloto / Varie

26	Air Release Valve	Zoloto / Varie