Version 3 Dated: 10.04.2018

Design Delivery Approach and Timeline Policy

1. Objective

The main objectives of our design approach are:

a. High quality design and minimal rework – keep all iterative steps internal to Design

b. Support the Construction schedule without any delay or stoppages with special focus on enabling civil construction in for-sale buildings.

c. Taking cognizance that adequate time required for good design and hence, the said time will need to be provided post release of details related to civil construction.

This approach recognizes that the current design timelines lead to poor quality, significant internal pressure/coordination time and delayed projects. Hence, counter intuitively, the way to achieve better time and quality outcomes on projects is to 'delay' drawing releases outside Design.

In order to achieve these objectives, the design timelines have been updated while keeping in mind the business need of the organization. Thus, design lifecycle is redefined to prioritize civil packages allowing early start and rapid progress of civil construction while allowing more time for delivery of an integrated and value engineered design for other packages.

2. Key Changes

As optimizing all the three levers – time, cost and quality – in project execution is challenging, we need to prioritize 'time' and 'quality' while providing reasonable and considered flexibility in 'cost'.

In order to achieve the above objectives, there must be a change in our approach to the Design Process. These include:

a. Thorough definition of Concept Finalization with clear approvals for concept closure

b. Build tolerances where required in the Civil design (mainly in space planning and not in consumption metrics) to avoid time-consuming coordination and requirements for too many details in early stages between MEP and Façade with the Civil Package

c. All other packages to be provided to external parties (outside Design) after comprehensive completion of all packages and significant internal review to avoid repeated back and forth and ongoing 'pressure' for drawings, even when said drawings are incomplete / not relevant to site progress.

d. Review Internal team's and external consultants' staffing on the basis of revised Design Timelines such that the teams focus on the project is an exclusive manner during the 'design period' and have limited/reduced involvement post the 'design period'.

e. Define a robust framework for internal reviews from a time, cost and quality perspective so as to avoid revisions after external release.

3. Releases and Review Processes

In order to achieve the intended objectives from the revised approach, the design release are classified into two types as below:

i. External release – Release of any design package to user departments i.e. Procurement & Construction

ii. Internal release – Release within Design & Pre-Const cells and internal reviews

For all civil drawing packages, internal release will be same as the external release.

Certain review processes will be institutionalized as a part of internal design process in order to ensure the timeliness and expected output quality, these are:

i. Design optimization review

a. Peer review

b. Value Engineering (VE) Review

ii. Progress review

iii. Quality review

3.1 Design optimization review

Design optimization reviews are meant to enhance the overall quality of design and will become a part of the design approach. These reviews shall be conducted prior to the internal release of a given package. The key parameters that need to be optimized as a part of these reviews are:

- Space utilization (build what is valuable)
- FSI optimization (maximize saleable area based on FSI available)
- Cost
- Value added to consumer (special focus on finishes; see 'Perceived Value Matrix')
- Constructability
- Adherence to quality standards and policies

These reviews will be conducted in two modes:

- Peer reviews
- VE review

3.1.1 Peer review

- Peer group for a given project will comprise:
  - Members from Design cells (Level 2 & above) who have worked / are working on similar projects - To be determined by HOD Design and HOCs. These shall be one member from each of the specialist disciplines viz. Architecture, Structure, Mechanical, Electrical (HVAC and Vertical Transport may be covered by the M or E

associate or an additional specialist may be nominated), Façade, Landscape & Infra. The APR of the peer group members shall take into account their performance as peer group members.

- Two members from Construction Management team (Level 2 & above) – PD/ PMH will nominate these 2 members; in case of PD/ PMH not on board for a given project, COO will nominate these 2 members

- Peer group for a given will be chosen prior to the concept finalization
- Peer group shall be responsible for reviewing against all points under 3.1 and also to review the quality and content of the drawings presented.
- Peer review will be chaired by an associate of Level 1 or 2 from the Design team, who shall be decided by HOD-Design/HOCs.
- **For concept package:**
    - Shall be done as soon as Architectural layouts (unit and site level) are complete, but at least 4weeks prior to the finalization
    - First workshop shall be a presentation on the project and design philosophy by the project team to the peer group
    - Second workshop shall be a discussion on the comments/suggestions that the peer group may have given (done at least 2 weeks prior to concept sign-off). All such inputs will be collated and recorded for future reference and review.
- **For Structural VFC up to Ground:**
    - For Low & Mid rise towers, it shall be done 3 weeks prior to ***external*** release
    - For High & Super High rise towers, it shall be done 7 weeks prior to ***external*** release
    - Shall be conducted as 1 day workshop which covers briefing the peer group about the vital details of the project, esp. Civil and taking their inputs
- **For all tender packages except Civil (i.e. Facade, MEP, Finishing, others)**:
    - Shall be done during the 4 week period starting from ~10 weeks prior to ***internal*** release
    - First workshop shall be presentation on all the packages by project team to the peer group (done ~10 weeks prior to ***internal*** release)
    - Second workshop shall be discussion with peer group to incorporate their inputs/ suggestions (done ~6 weeks prior to ***internal*** release). This workshop can be combined or separate by discipline, as may be decided by the Chair.
    - The 4 week period is given to the peer group to study the packages and gather their feedback
- A well-documented report of all the inputs and comments from peer group to be submitted for VE review

3.1.2 VE review

For all tender packages except Civil (i.e. Facade, MEP, Finishing, others):

- There will be a separate VE Review for Façade tender and preferably a combined one for all others
- VE committee will comprise HOD – Design, HOC – concerned Design Cell(s), HOC – PCA, respective Procurement Package Heads+ any one member of Procurement Council and PD/PMH (if not available, COO)
- The VE Review will be done in two stages:
    - First workshop shall be presentation on the package(s) by project team to the VE group (done within one week after ***internal*** release)
    - Second workshop shall be discussion with VE group to incorporate their inputs/ suggestions (done 2 weeks after first workshop). This workshop can be combined or separate by discipline, as may be decided by the Chair.
- In the interim 2 weeks, the PCA & Procurement teams will prepare a report (in prescribed format) on all VE initiatives in the respective tender packages
- The procurement team shall also review the package from a "procurability" point of view (i.e. Aggregation of sub-packages, SITC vs. ITC, FML vs. FLO, material availability, etc.)
- VE will review the individual suggestions from both PCA and Procurement and give final sign-off in the meeting
- PCA will also use this process (may involve one additional meeting) for DD budget finalization (and thereafter, update marketing about any proposed increase after appropriate approval as required by policy).

3.2 Progress review (Ongoing)

- Shall be done every quarter for all the projects
- Progress review will be led by HOD – Design and HOCs – Design Cells (when required)
- Key elements of Progress review will be:
    - Progress tracking (actual progress on Peer review, VE review and Design Deliverables v. schedule)
    - Resolution of any major coordination issues between cells or with external consultants
- HOD-Design's office will have a dedicated team to track these (using relevant MIS system) or work with PCA for the same.

3.3 Quality review (Post internal release and pre external release)

- The time period between internal and external release dates of a given package is provided to the team to reflect and ensure quality of any release to Procurement/ Construction
- Shall be conducted by HOC + concerned individual from CM team nominated by PD/PMH (COO if no PD/PMH) (in case of MEP and Finishing packages, by heads of CM-MEP and CM-Finishing). HOD-Design shall attend these reviews from time to time.

- Few guidelines for these random checks are:
    - To check against the discipline wise checklists on random basis and see if the project design teams have followed the same
    - Shall review the drawing sets that are most error prone (to be determined by HOC depending on complexity and nature of each project)
    - In case of any discrepancy being found, the team is asked to fix the issues and drawing package will require HOC's sign-off before release
    - Also, HOC will review all the drawing sets that can have any bearing due to this discrepancy
    - A package wise formal quality feedback shall be provided (format attached) separately by HOC and CM rep, which shall carry significant weightage in the APR of the associates working on the said project from the relevant packages.

4. Design Delivery Schedule

4.1 Definition of Concept Finalization

Concept finalization is the first milestone in design lifecycle as all the other delivery timelines are measured w.r.t completion of concept. The key elements of Finalized Concept Design (to be approved by Director Operations) are as follows:

Design Deliverables	Tower	Basements/Podium Car Park/Infra
Architectural Deliverables	1) Typical floor layouts including common area space planning w.r.t architecture, MEP, etc 2) Common area layouts with space planning for front off house and back off house w.r.t architecture, MEP, etc 3) Parking and podium space planning for area program including services 4) Facade lighting (if embedment) 5) Comprehensive area statement 6) Product mix 7) Amenity list	1) Common area layouts with space planning w.r.t architecture, MEP, etc 2) For Infra – master plan with space planning w.r.t Arch/MEP
Landscape Deliverables	1) Space planning: Water Bodies, MEP Plant room (if any) 2) Any embedment for landscape lighting in structure (if any)	1) Space planning: Water Bodies, MEP Plant room, etc 2) Landscape concept, master plan including rough soil depths and road levels 3) Any embedment for landscape lighting in structure
Structural Deliverables	1) Typical floor structural concept with column and beam location/size 2) Structural penetration rules	1) Podium and Car Park structural slab concept 2) Structural penetration rules

Design Deliverables	Tower	Basements/Podium Car Park/Infra
ID Deliverables	1) Lighting, CP/Sanitary fixtures and electrical layout/location for typical apartment and floor lobby 2) Plumbing Fixture Layout	
MEP Deliverables	1) Typical apartment MEP space planning 2) Front of house MEP space planning 3) For Electrical Points, follow policy for Normal Towers and consider 30% more for Designer Towers	1) Infra space planning for MEP 2) Parking and Podium MEP Space Planning 3) Infrastructure MEP Space Planning

4.2 Timelines for Concept Finalization

To determine the timelines for concept finalization, various projects are classified into small, medium, large and very large. The matrix below shows the definition of project types and the respective timeline for concept finalization (in no. of weeks from Start Date):

Project type	**Total construction area (sqft)**	**Timeline for Concept finalization (no. of weeks)**
Small	< 2L	10
Medium	2L – 8L	12
Large	8L – 25L	14
Very Large	25L +	18

Total construction area: For purposes of classification of the project under the 'project type', construction area of the "applicable phases" shall be considered. For the given phase, construction area shall include the entire phase including all towers, parking, etc.

Start date: Date on which land details/survey is available with Design team and design brief is shared

While due care has been taken in complying with construction timelines, there may be certain exceptions required in some cases. All such deviations to timelines shall be jointly approved by HOD Design and the PD for the said project.

4.3 Design Delivery Timelines for 'For Sale' Buildings

External Design Commitments (In weeks from finalization of Concept Design)

Indicative No. of floors	8	12	18	25	38	65
Building Height	<= 30 m	<= 30-50 m	50-70 m	70-100 m	100-150 m	150 m+
Excavation Tender & VFC (upto 1 m above final depth)	2	2	2	3	4	4
Civil Tender[1]	6	6	6	8	12	12
Shoring Tender & VFC + final (upto) m excavation	10	10	10	12*	12	12
Raft/Piling/Foundation VFC [2]	14	14	14	16	22	24

Indicative No. of floors	8	12	18	25	38	65
Building Height	<= 30 m	<= 30-50 m	50-70 m	70-100 m	100-150 m	150 m+
MEP VFC	16	16	16	20	26	28
Issue of Formwork GA set to vendor/contractor	NA	NA	16	18	24	26
Finalization of Formwork GA set by vendor/contractor	NA	NA	20	24	30	32
Structural VFC upto Ground[3]	18	18	18	24	30	32
MEP VFC	20	20	20	28	34	38
Structural VFC for first 5-10 floors above ground[4]	22	24	26	32	38	40
MEP VFC	24	26	28	36	42	46
Structural VFC for balance structure (100%)[5]	NA	28	32	48	54	64
MEP VFC	NA	30	34	52	58	68
Facade tender (including windows and external painting)	30	36	40	44	52	52
Facade mock-up / Testing (for high rise and super high rise only)	NA	NA	NA	74	82	82
MEP Tender	38	42	58	71	82	92
Fit outs Tender	38	42	58	71	82	92
Lifts Tender	38	42	58	71	82	92
BMS & Security System Tender	38	46	72	83	92	92
All other tenders related to the building	38	46	72	83	92	92
Fit outs VFC[6]	34	38	54	67	78	88
MEP VFC for Fit outs	36	40	56	69	80	90
VFC for all other tenders related to the building	46	50	60	68	80	88
100% MEP Shop Drawings (part interim approvals shall be done)	NA	NA	NA	88	102	116
Completion[6]	**95**	**101**	**122**	**135**	**162**	**206**

<u>Notes:</u>

[1]Civil Tender – In case of Civil Tenders for building <=50m height wherein the procurement strategy is to appoint FLO contractors, Civil Tender shall be released within 3 weeks from Concept finalization; Details in tender to include different floor layouts, multiple cross sections, and standard Lodha Specifications

[2] Timely issue of final Architectural GA & limited MEP details (Building: Plant location + size + height; identified areas for MEP loads; horizontal travel of MEP distribution systems; shaft sizing; raft - lightning protection and drainage; unit --> location of all embodiments (e.g. electric points; plumbing fitment locations)); allow 5% tolerance in all these (opening- sizes & Loads) in structural design

[3] Reduce 4 weeks from this and all subsequent stages if no basements; if > 2 basements, add 6 weeks to this stage and all subsequent stages.

[4]Within this range, decision by Structural Design; for high rise and super high-rise buildings, cast in insert details for façade to be provided

[5] In case of high rise and super high rise buildings, interim release upto level 15 shall be done in 6 weeks after release up to 5-10 floors

[6]Add 12 weeks for designer towers (to Fit outs VFC and related packages)

**Shoring Tender & VFC + final (upto) 1 m excavation- 12 Weeks when Shoring is required and 8 Weeks when Shoring is not required*

Construction start date and major milestones to be mentioned in design delivery timelines.

Internal Design Commitments (In weeks from finalization of Concept Design)

Internal design commitments include design dependencies across Design cells in order to complete the deliverables as well as internal review processes required in order to achieve the desired objective of high quality design on time.

Following are the internal milestones for design team to follow in order to meet External Design Commitments *(Blue indicates external release deliverables)*:

Above design timelines cannot be changed except in case of 'major changes' (see Major Change policy)

Avg. number of floors	8	12	18	25	38	65
Building height	<= 30 m	<= 30-50 m	50-70 m	70-100 m	100-150 m	150 m+
Design Concept Finalization[1]	0	0	0	0	0	0
Civil Tender[1,2]	6	6	6	8	12	12
- *Civil Schematic*	3	3	3	4	6	8[11]
- *MEP Schematic[3]*	3	3	3	4	6	8
Raft/Piling/Foundation VFC	14	14	14	16	22	24
- *Coordinated GA[4] for Foundation*	10	10	10	12	16	20
- *Wind tunnel test report*	NA	NA	NA	NA	12	16[11]
Structural VFC upto Ground[1]	18	18	18	24	30	32
- *Coordinated GA[4] up to Ground*	10	10	13	15	22	22
- *Structural VFC(Internal)[5]*	14	14	14	20	26	26
- *MEP IFC[6]*	16	16	16	22	28	30
Structural VFC for first 5-10 floors above ground[1]	22	24	26	32	38	40
- *Facade Cast-in Details [7]*	16	18	20	26	30	34
- *Coordinated GA[4] for first 5-10 floors above ground*	16	18	20	26	32	36
- *Structural VFC(Internal)[5]*	18	20	22	28	34	38
- *ID Concept finalization[8,9]*	18	20	22	28	32	36
- *MEP IFC[6]*	20	22	24	30	36	40
Civil DD[10] for entire building	18	20	22	28	34	36
Structural VFC for balance structure (100%)[1]	NA	28	32	48	54	64
- *Coordinated GA[4] for balance structure (100%)*		22	26	40	46	54
- *Structural VFC(Internal)[5]*		24	28	42	48	56
- *MEP IFC[6]*		26	30	46	52	62
Facade tender (including windows and external painting)[1]	30	36	40	44	52	52
MEP, Fit-outs, HVAC, Lifts & all other tenders [1]	38	46	72	83	92	92

Notes:

[1] *Design Engineering Review for above packages shall follow the following timelines*

Package	*Peer Review*	*Value Engineering*
Design Concept Finalization	*4-6 Week Prior to External Delivery Date*	-
Structural VFC upto Ground	*4-6 Week Prior to External Delivery Date*	-
Structural VFC for balance structure (100%)	*4-6 Week Prior to External Delivery Date*	-
Facade tender (including windows and external painting)	-	*4-6 Week Prior to External Delivery Date*
MEP, Fit-outs, HVAC, Lifts & all other tenders	-	*4-6 Week Prior to External Delivery Date*

[2]*Civil Tender – In case of Civil Tenders for building <=50m height wherein the procurement strategy is to appoint FLO contractors, Civil Tender shall be released within 3 weeks from Concept finalization , details in tender to include different floor layouts, multiple cross sections and standard Lodha Specifications*

[3]*MEP Schematic includes DBR, system schematic & Final Space planning (with 95% accuracy)*

[4] ***Definition of Coordinated GA****: Please refer Annexure 1*

[5] *Definition of Structural VFC: Structural VFC consists of all drawings required for construction*

[6] *Definition of MEP IFC: MEP IFC is input for construction and shall include all drawings required for MEP embedments, etc including builders work*

[7] *Façade Cast in details to be provided by Façade Team*

[8]*Definition of ID Concept Finalization includes the following deliverables*

1. *Lighting, CP/Sanitary fixtures and electrical layout/location for typical apartment and floor lobby*
2. *Furniture layout and concept RCP*

[9] *For normal towers (non –designer towers), ID Concept to be finalized by Architecture Team. For Designer Towers ID Concept to be delivered by ID Team, subject to Consultant/Partner being "on-board" 18 weeks prior to ID Concept Delivery. For all such buildings <=70m height category, it is assumed that Consultant/Partner "on-board" is done prior to concept finalization*

[10]*Definition of Civil DD: Civil DD Civil DD acts as an internal milestone and covers detailed design package for the plant and includes Architectural, structural, furniture layout including ceiling and wall points, plumbing layouts*

[11] *Civil Tender timelines for 150+m structures are subject to finalization of Wind Tunnel Analysis*

4.4 Design Delivery Timelines for 'Not For Sale' Buildings

External Design Commitments: (In weeks from finalization of Concept Design)

For Parking buildings: Raft VFC timeline should be assumed to be 12 weeks post said date for surrounding buildings; parking shall be treated as 'not for sale' buildings for design timelines calculation.

Following are design packages to be issued to CM/Procurement teams:

Above design timelines cannot be changed except in case of 'major changes' *(see Major Change policy)*

Indicative No. of floors	3	8	12	18	25	38	65
	Club / Other KCA[7]	<= 30 m	30-50 m	50-70 m	70-100 m	100-150 m	150 m+
Excavation & Shoring Tender	2	2	6	6	8	22	22
Civil Tender[1]	4	8	12	14	20	28	28
Structural VFC upto first 5-10 floors above ground (includes excavation, shoring, formwork and civil details)[2,3,4]	12	16	20	22	28	40	40
Structural VFC for balance structure (100%)[5]		18	24	28	34	56	64
MEP VFC	14	20	26	30	38	60	70
Facade tender (including windows and external painting)	16	26	32	44	50	52	60
Facade mock-up / Testing (for high rise and super high rise only)	NA	NA	NA	NA	78	80	88
MEP Tender	37	37	40	53	65	76	92
Fit outs Tender	37	37	40	53	65	76	92
Lifts Tender	37	37	40	53	69	76	92
BMS & Security System Tender	37	39	42	55	75	88	92
All other tenders related to the building	37	39	42	55	75	88	92
Fitouts VFC	33	33	36	49	61	72	88
MEP VFC for Fit outs	35	35	38	51	63	74	90
VFC for all other tenders related to the building	33	35	38	51	71	80	88
100% MEP Shop Drawings (part interim approvals shall be done)	NA	NA	NA	NA	87	96	116
Completion[6]	**70**	**109**	**118**	**135**	**141**	**174**	**222**

Notes:

[1]Civil Tender – In case of Civil Tenders for building <=50m height wherein the procurement strategy is to appoint FLO contractors, Civil Tender shall be released within 3 weeks from Concept finalization , details in tender to include different floor layouts, multiple cross sections, and standard Lodha Specifications

[2] Timely issue of final Architectural GA & limited MEP details (Building: Plant location + size + height; identified areas for MEP Loads; horizontal travel of MEP distribution systems; shaft sizing; raft - lightning protection and drainage; unit --> location of all embodiments (e.g. electric points; plumbing fitment locations)); lower tolerances as compared to 'for sale' buildings

[3] Reduce 4 weeks from this and all subsequent stages if no basements; if > 2 basements, add 6 weeks to this stage and all subsequent stages

[4] Within this range, decision by Structural Design

[5] In case of high rise and super high rise, interim release upto level 15 shall be done in 6 weeks after release upto 5-10 floors

[6]Includes 12 weeks of design/procurement/const delays (6 weeks for clubhouse/other KCA).

[7] for clubhouses, raft VFC date needs to be calculated backwards from target completion date; clubhouses/other KCAs shall be treated as 'not for sale' building for design timelines calculation

Internal Design Commitments (In weeks from finalization of Concept Design)

Following are internal milestones for design team to follow in order to meet External Design Commitments *(Blue highlight indicates external release deliverables)*:

Above design timelines cannot be changed except in case of 'major changes' (see Major Change policy)

Avg. number of floors	3	8	12	18	25	38	65
Building height	Club / Other KCA[3]	<= 30 m	30-50 m	50-70 m	70-100 m	100-150 m	150 m+
Design Concept Finalization[1]	0	0	0	0	0	0	0
Civil Tender[1,2]	4	8	12	14	20	28	28
- *Civil Schematic*	2	4	8	10	14	22	22
- *MEP Schematic*	2	4	8	10	14	22	22
- *Coordinated GA[4] (Overall GA including Civil, Architectural)*	2	4	8	10	16	24	24
Structural VFC upto first 5-10 floors above ground (includes excavation, shoring, formwork and civil details)[1]	12	16	20	22	28	40	40
- *Facade Cast-in Details*	8	12	16	18	24	36	36
- *Coordinated GA[4]*	8	12	16	18	24	36	36
- *Structural VFC (internal)*	8	12	16	18	24	36	36
- *ID Concept Finalization*	8	10	14	16	22	30	30
- *MEP IFC*	10	14	18	20	26	38	38
Structural VFC for balance structure (100%)[1]	NA	18	24	28	34	56	64
- *Coordinated GA[4]*	NA	16	22	24	30	52	60
- *Structural VFC (Internal)*	NA	14	20	24	30	52	60
- *ID Concept[5,6]*	NA	14	20	20	24	38	38
- *MEP IFC*	NA	16	22	26	32	54	62
Civil *DD*[7] for balance structure (100%)	10	18	22	28	30	54	62
Facade tender (including windows and external painting)	16	26	32	44	50	52	60
MEP, Fit-outs, HVAC, Lifts and all other tenders related to the building[1]	37	39	42	55	75	88	92

Notes:

[1] Design Engineering Review for above packages shall follow the following timelines

Package	*Peer Review*	*Value Engineering*
Design Concept Finalization	*4-6 Week Prior to External Delivery Date*	-
Structural VFC upto Ground	*4-6 Week Prior to External Delivery Date*	-
Structural VFC for balance structure (100%)	*4-6 Week Prior to External Delivery Date*	-
Facade tender (including windows and external painting)	-	*4-6 Week Prior to External Delivery Date*
MEP, Fit-outs, HVAC, Lifts & all other tenders	-	*4-6 Week Prior to External Delivery Date*

[2]Civil Tender – In case of Civil Tenders for building <=50m height wherein the procurement strategy is to appoint contractors, Civil Tender shall be released within 3 weeks from Concept finalization , details in tender to include different floor layouts, multiple cross sections, and standard Lodha Specifications

[3]Internal Timelines for KCA shall be as per following table

Avg. number of floors	3
Description of Design Deliverables	Club / Other KCA
- KCA Initiation/Design Mobilization (KCA Concept : All Strategic/Alliance Partners + Consultants on Board)	8*
- KCA Approved Concept Design [A]	16
- KCA ID Schematic	20
- KCA MEP Schematic	22
- KCA ID DD[B]	24
- KCA MEP DD[C]	30
- KCA ID VFC	33
- KCA MEP VFC	37

[A] Definition of KCA Approved Concept Design: KCA Approved Concept Design to include

1. *Furniture Layout , concept RCP*
2. *Lighting, CP/Sanitary fixtures and electrical layout/location for KCA*

[B] Definition of ID DD: ID DD to include lighting layouts, looping, equipment schedule, location & rating of power outlets, RCP, and relevant drawings, basic elevations and material palette

[C] Definition of MEP DD: MEP DD is a set of coordinated drawings, individual services drawings and schedules, BOQ, specs, and scope of work

[4] Definition of Coordinated GA: Please refer in Annexure 1

[5]Definition of ID Concept includes the following deliverables

1. *Lighting, CP/Sanitary fixtures and electrical layout/location for typical apartment and floor lobby*
2. *Furniture layout and Concept RCP*

[6/]For normal towers (non –designer towers), ID Concept to be finalized by Architecture Team. For Designer Towers ID Concept to be delivered by ID Team, subject to Consultant/Partner being "on-board" 18 weeks prior to ID Concept Delivery. For all such buildings <=70m height category, it is assumed that Consultant/Partner "on-board" is done prior to concept finalization*

[7] Definition of Civil DD: Civil DD acts as an internal milestone and covers detailed design package for the building/KCA (respective DMS Plant) and includes Architectural, structural, furniture layout including ceiling and wall points and all MEP enabling inputs to complete the package.

4.5 Design Delivery Timelines for 'Infra' Plant

Infra is defined as a single plant for each 'marketing project'.

The guidelines for construction completion of infra are as follows:

- **Category A -**All infra elements that require any ***works below ground.*** All ***civil works below ground*** are to be completed before any surrounding buildings (within 20 m) cross 1/3rd of the height above ground*. List of L3 Infra elements that fall under this category are:
    a. Excavation and filling works
    b. Road – asphalt
    c. Road – concrete and pavers
    d. UGT/ Pump-room
    e. Irrigation systems
    f. External services & drainage – Civil works
    g. Water network
    h. HT/LT network (for trenching and other associated works)
    i. Sewage treatment plants
    j. Water treatment plants
    k. Rain water harvesting
    l. Fencing / walls – civil works
    m. Other Ancillary Structures
    n. Hardscape - civil

For all requirements of **civil works below ground, upto 5% tolerance (over optimal) in design parameters (including civil sizing, openings, structural loads, levels for tanks, trenches, SWD, compound wall, etc) will be allowed to prioritize the construction of these infrastructure elements.*

- **Category B -**All other infra works are to be completed prior to first possession of that marketing project. List of L3 infra packages included in this list are:
    a. Swimming Pool
    b. Temple
    c. Road Parking (Finishes)
    d. Hardscape – surface finishes
    e. Hardscape – specialized surfaces
    f. Softscape
    g. External landscape fixtures
    h. Water features
    i. External drainage – pipes and drains
    j. Road markings and accessories

k. Fencing/ walls – fabrication

l. Fencing/ walls – painting

m. External / street lighting systems

n. Solid waste management

o. Electrical network (Cables /Wires)

p. Other power sources

q. Building control & Emergency response systems

r. Data & communication systems (LV)

s. Security system outside building

Based on afore-mentioned guiding principles, the Design Delivery schedule for Infra will be determined as follows:

- **Category A:** Will follow the following rule

External Commitment (Category A) {in weeks from concept}

Package	(<25 Acres) Weeks	(>=25 Acres) Weeks
External Services Tender	24	28
Architecture +Landscape VFC	X	Y
External Services VFC	X+4	Y+6

Note:

"X" & "Y" shall be determined by HOD Design's office prior to completion of Concept Design and shall not exceed 24 weeks and 34 weeks respectively

Internal Commitment (Category A) {in weeks from concept}

Package	(<25 Acres) Weeks	(>=25 Acres) Weeks
Master Plan with Road Levels (Concept)	Provided at Concept	Provided at Concept
Landscape Concept	Provided at Concept	Provided at Concept
MEP External Services Schematic	8	14
Architecture + Landscape FDD	14	18
Services Package FDD	20	24

- **Category B:** Will follow the rule of being "Z" weeks after release of the last package for the building plant which is planned for first possession in the marketing project that defines the "Infra" plant, wherein,

"Z" shall be determined by HOD Design's office prior to completion of Concept Design based on the type of Infra element, size, expected time required to execute, level of complexity involved, etc. However as a rule, for projects spread over more than 25 acres, "Z" shall not be more than 16 weeks and for projects spread over <= 25 acres, "Z" shall not be more than 24 weeks.

Based on these guidelines, the Design Delivery Schedule for various packages in Infra will be finalized and entered into DMS before concept finalization.

5. Roll-out and Administration

As the new approach required significant changes in organization processes and mindset, the policy was rolled out in a phased manner as a pilot for select projects. The pilot phase is now complete. Going ahead this policy shall be applicable as stated below:

- For all projects which were included in pilot phase
- For all those projects which are commencing from 1st April 2015
- For all other projects, sections of the policy/timelines shall be implemented on a case by case basis based upon discussions with Design HoD

The office of Design HOD will assume the responsibility of this process.

Related policies to be updated:

A. Performance pays for design consultants (external and internal versions).
B. Design Project completion bonus (to incentivize focus on key customer attention areas / value creators)

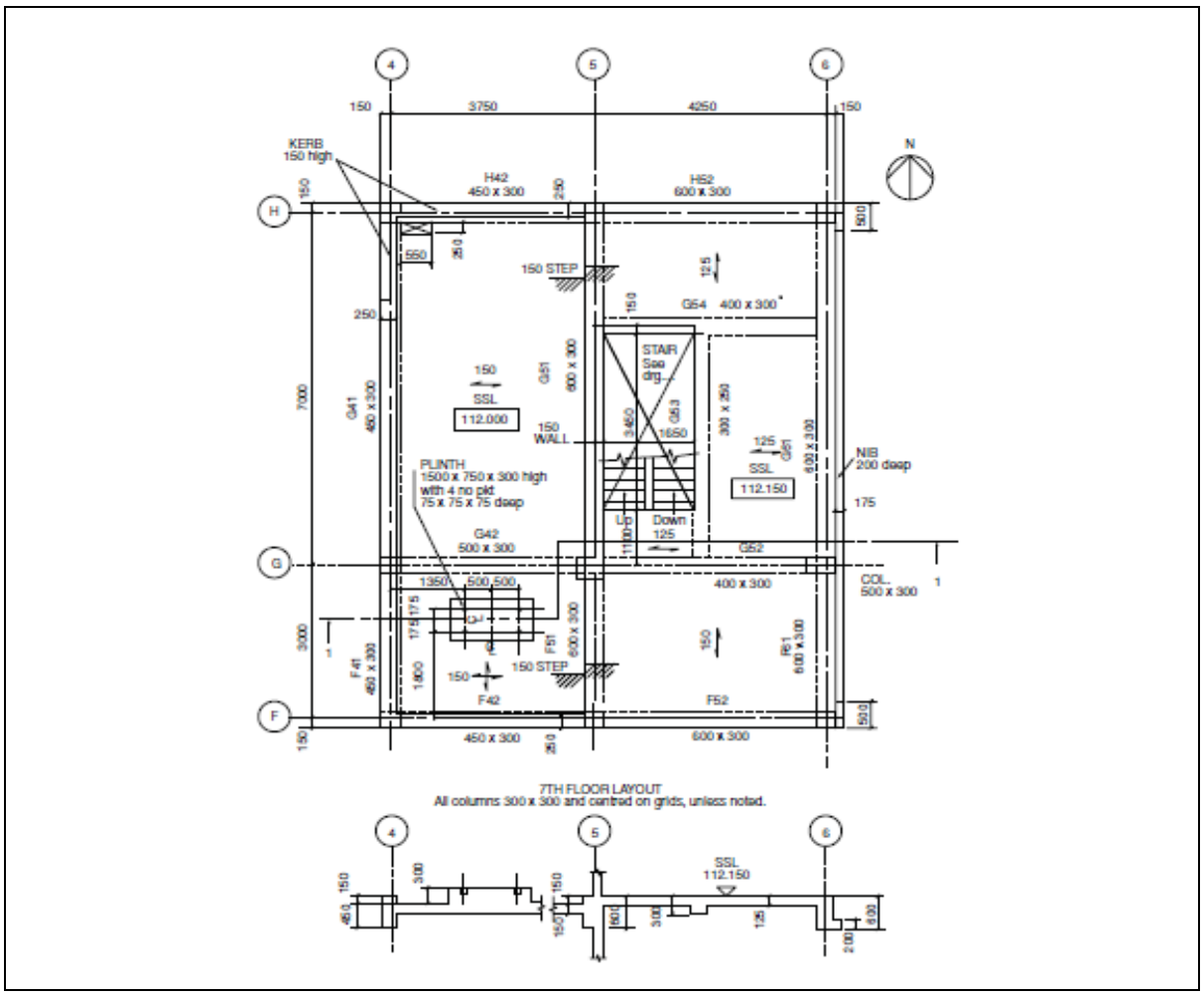
ANNEXURE 1

Definition of Coordinated GA

Coordinated General Arrangement (GA) drawings are to show dimensional information provided by the architect, structural engineer, services engineers and specialists. GA drawings are to be fully dimensioned, with sufficient sections and details, and should show or reference all necessary service holes (>150mm in size), pockets and recesses, slab steps, provisions for ducts and cast fittings. All setting-out dimensions, sizes of members, elevations with reference to a datum should be shown. Special requirements of the designer, e.g. details of cambers, chamfers, sequence of constsruction, position and type of joints, etc., should all be described. Reference to any special items concerned with construction details should be made on the GA drawings. A1 size drawings are generally used for General Arrangements with 1:100 scale.

Example of General Arrangement Drawing for Concrete Structure

Reference: IStructE – Standard Method of detailing structural concrete



Information shown on General Arrangement drawings for concrete structures

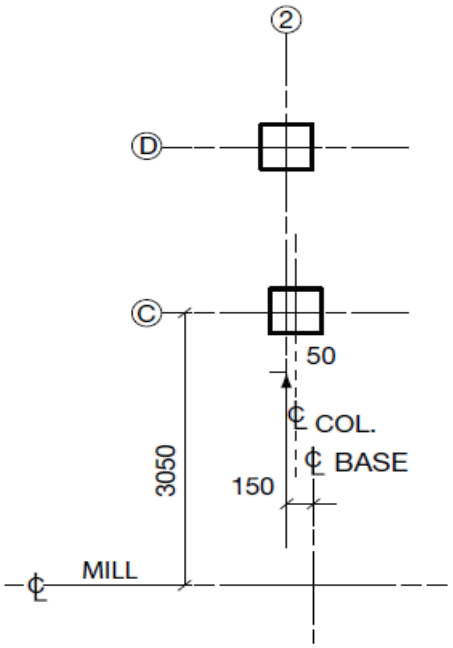
Reference: IStructE – Standard Method of detailing structural concrete

a) Gird lines

These form a network across the job and provide a convenient datum for dimensioning and referencing elements (see 3.19). Grids usually coincide with the centre-lines of columns; clarify if they do not.

b) Centre-lines

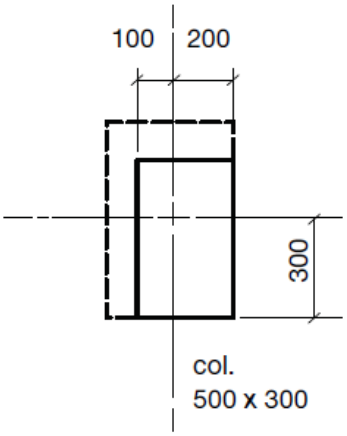
These often coincide with grid lines. Otherwise notate and locate by offset dimensions from nearest grid. It is useful to locate groups of holes, pockets, isolated bases, plinths, machinery, plant, etc.

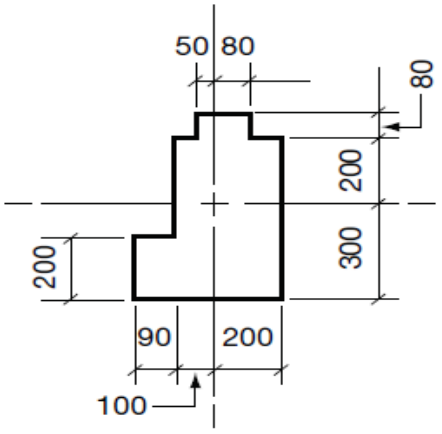
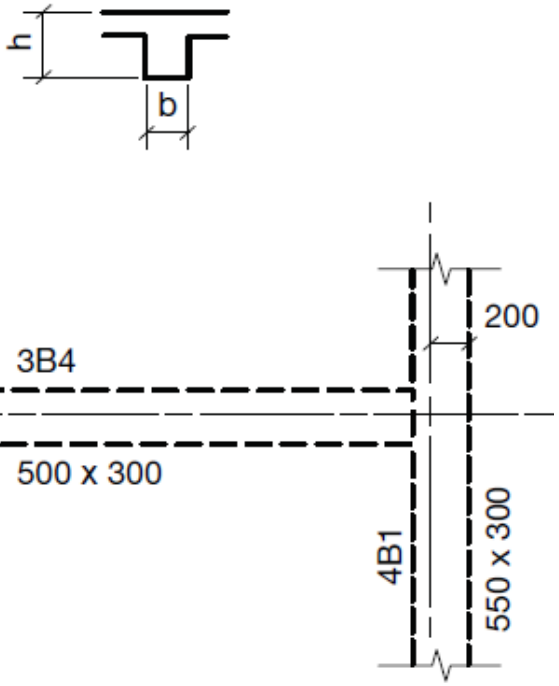
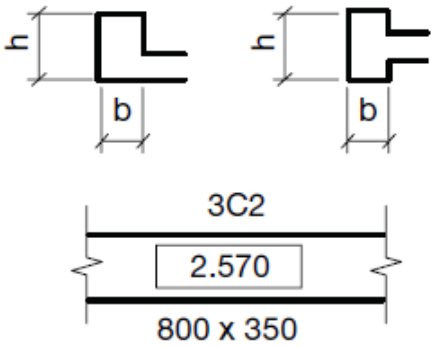


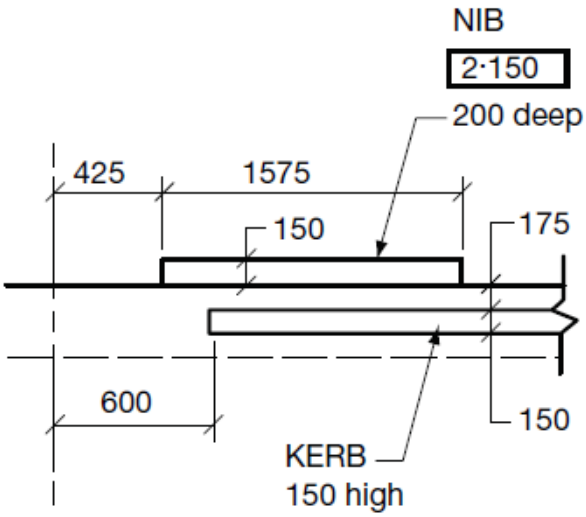
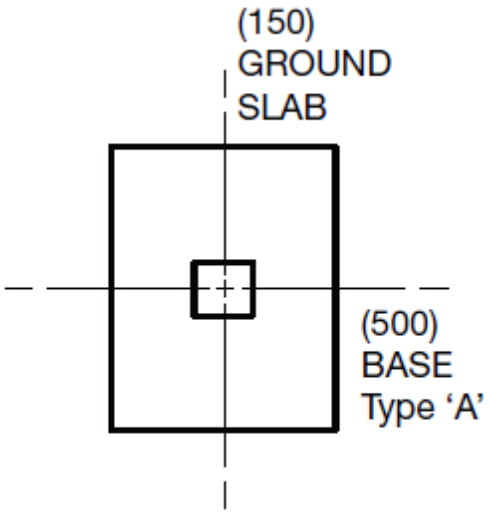
c) Columns

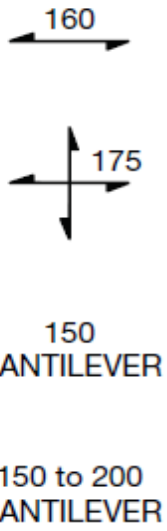
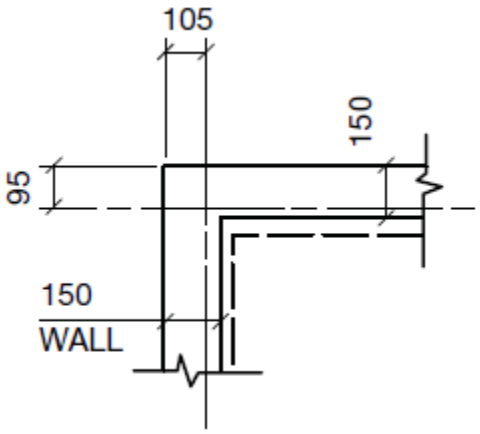
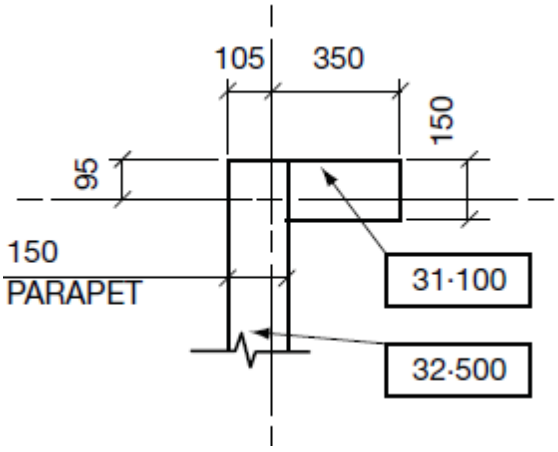
State overall concrete size (with clear indication of orientation) and locate relative to the nearest grid lines. If the size of the column is greater below floor, show the lower profile dotted; its size will be indicated on the lower floor plan.

Where repetition occurs it may be convenient to add an explanatory note, e.g. all columns 300 × 300 and centred on grid lines unless noted.



d) Nibs on columns Dimension on plan. Where the profile becomes more complex it may be necessary to refer to an enlarged detail for dimensions. Elevations will be required if the vertical extent of the nibs is not obvious from the plan.	
e) Down stand beams State beam reference (see 3.19) and overall concrete size (h × b), both preferably at the centre of span. The dotted line plots the profile of the lowest beam soffit. Where repetition occurs it may be convenient to add an explanatory note, e.g. all internal beams 600 × 300 unless noted.	
f) Upstand beams State beam reference and overall concrete size (h × b). Add level to top of beam and/or draw section to clarify.	

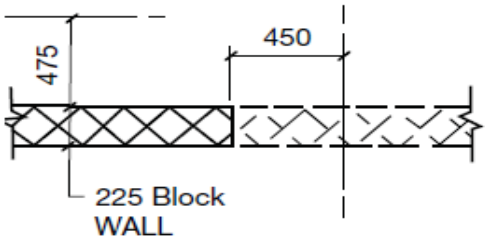
g) Nibs and kerbs on beams Locate extent of projection on plan and notate, indicating depth. Clarify with section and/or add levels to top.	
h) Bases and ground slabs Notate and indicate thickness.	

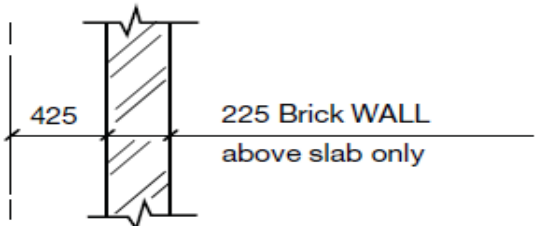
j) Suspended slabs Show direction of span and indicate thickness of slab, preferably near the centre of the panel. one-way spanning two-way spanning cantilever Tapered cantilever (add section and indicate direction of taper).	
k) Walls State wall thickness and its location relative to the nearest datum. If the wall size under is different then show its profile dotted; its thickness will be indicated on the lower floor plan.	
l) Dwarf walls and parapets These walls are viewed just above their top and notated. Sections and/or levels are added for clarity.	

m) Load bearing walls

- Indicate wall material and thickness and its location relative to the nearest datum. Supporting walls under to be shown dotted and notated on the lower floor plan.
- Locate and identify walls above floors that are not continuously supported by walls below.

Generally non-load bearing partitions are not shown on structural drawings.

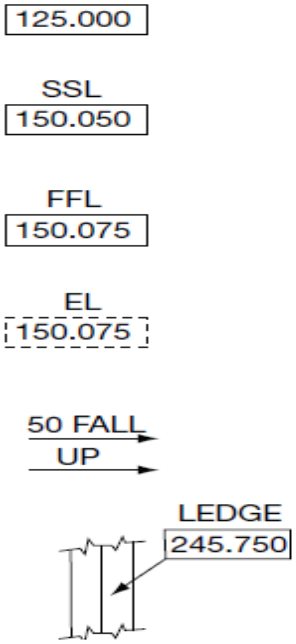




n) Levels

These provide a vertical datum and should be displayed prominently at each level as appropriate, thus:

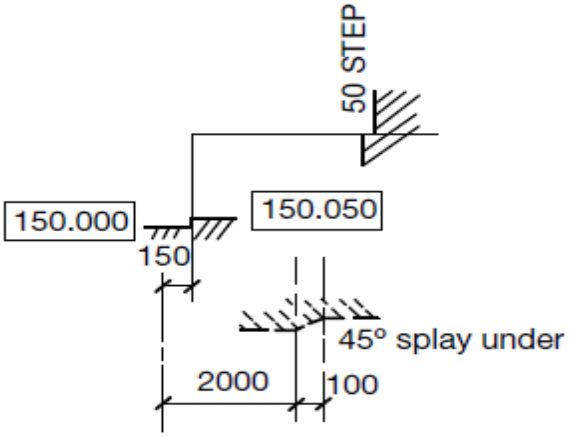
- top level of concrete, e.g. foundation base
- top of structural slab level
- top of finished floor level
- top of existing level
- arrow indicates direction of down slopes and falls and up slopes
- Arrow indicates level to top surface as noted.



p) Steps in level

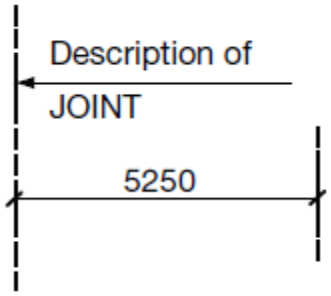
Lines at a change in level can be quickly identified by adding sectional hatching to the plan as follows:

- step on top surface
- splay on slab soffit shown dotted
- Locate steps to nearest datum appropriate.



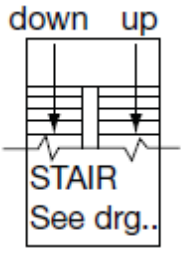
q) Joints

Any special joint required by the Designer should be located and
Notated on plan with a bold chain-dotted line and supported by a section if required for clarification.



r) Stairwells

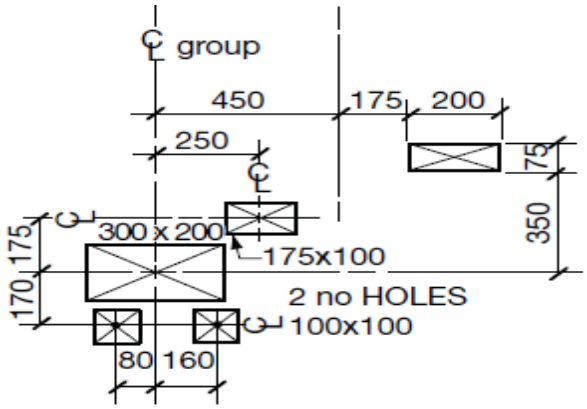
On floor plans, complicated areas such as stairwells are often referred to an enlarged layout drawing. The direction of stair flights should be indicated as though standing on the subject floor



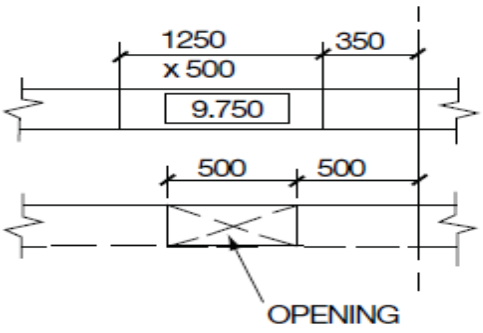
s) Holes

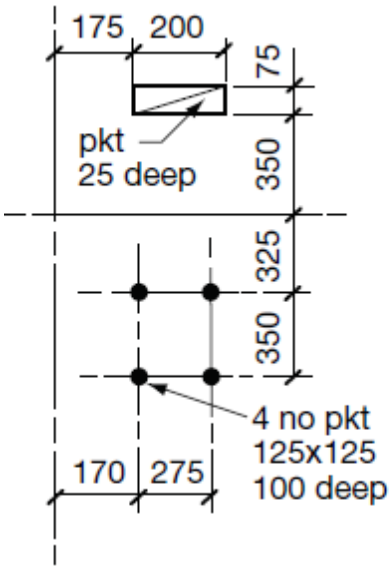
All should be drawn to scale, sized and located to the nearest datum (holes G 150mm × 150mm will not always be shown):

- Hole through slab.
- Groups of holes.
  Identify holes with a cross.



- Holes through beams or walls.
  Indicate level to bottom of hole, e.g. window sill. Show cross dotted if below the section, e.g. down stand beam. An elevation will be required if holes are too complicated to show on plan.



t) Pockets and recesses • Similar to holes but identify area with diagonal only and notate. • Small pockets such as those used for anchor bolts are usually identified by a large dot and notated.	

On Section

Sections are drawn to clarify the plan and provide mainly vertical information.

a) General cross-sections These provide a general impression of the entire vertical structure. Major dimensions and levels shown. Complicated profiles etc. may remain undimensioned; these are shown by local section prepared with the floor layouts. The elevation of background walls and columns are often included to increase impression. b) *Local* sections Show all vertical dimensions and levels. Some horizontal dimensions added will help to tie in with the plan. Local sections are preferably placed alongside the plan.	