REPUBLIC OF THE UNION OF MYANMAR

COMMITTEE FOR QUALITY CONTROL OF HIGH-RISE BUILDING CONSTRUCTION PROJECTS

CQHP

GUIDELINES FOR HIGH-RISE BUILDING CONSTRUCTION PROJECTS (ARCHITECTURE)

23RD FEBRUARY, 2017

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I. PREAMBLE

As the functions of living become more complex and technological change accelerates, improvement in space requirements and building services becomes more and more sophisticated. In Yangon City area, building by-laws, rules and regulations have been issued time to time by the Yangon City Development Committee for effective control on the construction of public buildings especially in walk-up apartments, which involve functional problems, technical problems and social problems.

In this respect, functional obsolescence is the problem to be considered in today's Architectural planning, which depends on many factors, such as:

- Changes in life styles of the citizens;
- Changes in family size and structure;
- Technological changes;

These factors are based on the needs of public within the framework of time, space and technology. In Yangon City area, constructions of high-rise building projects have increased considerably during the past five years. Present day developers overlooked proficiency in maintenance, took less care about infrastructures like electrical power supply, solid waste disposal, and proper treatment of sewage disposed from such new high-rise apartment buildings. These deficiencies could be overcome in near future, with the integration of far-sighted developers, architects, and engineers. High rise buildings can also be regarded as a town under one roof. In this modern time terrorist attack, fire, earthquake and other unforeseen disaster should be considered in designing and construction stages.

The aim of this paper is to present Architectural guidelines issued by committee for quality control of high-rise building construction projects (CQHP), which was formed as one of the authorized body responsible for effective control of the construction of high-rise building projects in Yangon and other cities in Myanmar.

II. ARCHITECTURAL DESIGN

1. PRELIMINARY DESIGN (SCHEMATIC DESIGN)

1.1 Perspective Drawing

Proposed building of 3D view as if it will appear in the mass of the surrounding urban fabric.

1.2 Area Data Sheet

The following items must be shown in the area data sheet

- Site/ Plot Area
- Building Coverage Area
- Gross Floor Area
- Building Coverage Ratio
- Floor Area Ratio
- Car Parking Provision based on YCDC guideline
- Green Area Percentage
- Road Building Ratio

1.3 Location Map

1.3.1 North Point

A symbol indicating the North Point must be shown in location map and it should be pointing to the top of the drawing sheet.

1.3.2 Surrounding Roads and Nearest Junctions

Surrounding roads of the site area must be indicated in location map and the nearest junction from the nearby main road must be also included in the location map.

1.3.3 Surrounding Environment with Important Cultural & Heritage Elements

If important cultural and heritage elements are near the site location it must be indicated in location map.

1.4 Master Plan / Site Plan

1.4.1 Plot Boundary with Dimensions

Plot boundary with dimensions must be shown in the drawing.

1.4.2 Names & Widths of Surrounding Roads & Streets

Names & widths of surrounding roads and streets must be shown in the drawing.

1.4.3 Existing AMSL point & Topography if Needed

Above mean sea level (AMSL) of the site area must be indicated and if necessary contour lines and its AMSL of the site area must also be shown in the drawing.

1.4.4 Traffic Flow Directions

Traffic flow diagram for in and out direction to and from site area to surround roads must be indicated.

1.4.5 Building Heights & Road Building Ratio

Refer to YCDC regulations.

1.5 Building Layout Plan

1.5.1 Plot Boundary with Dimensions

The plot boundary with dimensions must be shown in the drawing.

1.5.2 Minimum Set Backs

Refer to YCDC regulations.

1.5.3 Line of Building Coverage & Building Coverage Ratio

Vertically projected line from the outer line of the building (including roof overhang, verandahs, cantilevers, sunshades, curtain walls) to the ground is calculated as line of building coverage. Inner courtyard area without any roof is not included in building area.

Building Coverage Ratio (BCR) = Building Coverage Area divided by Plot Area

*Refer to YCDC regulations.

1.5.4 Greening Area

(X) % of plot area suggested. (Will be enforced starting from 2018)

1.5.5 Permeable Area

(X) % of plot area suggested. (Will be enforced starting from 2018)

1.5.6 Car Parking Area on Ground (Provide Remarks if in the Building)

Perforated concrete blocks or similar ones are suggested for permeability.

1.5.7 Space Allocation for Water Supply & Sanitation Services

Space allocation must be shown for Water Supply & Sanitation in the drawing.

1.5.8 Space Allocation for M & E Services

Space allocation must be shown for M & E Services in the drawing.

1.5.9 Site Drainage System

Site drainage system must be shown in the drawing.

1.6 Architectural Plans

The following items must be shown in the plans:

- All functional uses
- Dimensions
- Levels (Datum)
- Door openings
- Windows
- Stairs, lifts, vertical shafts and ramps
- MEP Provisions
- Accessibility Provisions

***Note** : All Architectural plans must be incorporated with Structural and MEP design drawings.

1.7 Architectural Elevations

All elevations must be shown to portray the building design. The following items must be shown in the elevations:

- Ground Level(s) with AMSL
- Building Height with AMSL
- Set Backs

***Note** : All Architectural elevations must be incorporated with Structural and MEP design drawings.

1.8 Architectural Sections

All sections must be shown to portray the building design. The following items must be shown in the sections:

- Mass & Voids
- Stairs, ramps and lifts
- Floor to Floor height & AMSL
- Accessibility Provisions

***Note** : All Architectural sections must be incorporated with Structural and MEP design drawings.

1.9 General Material Specifications

General material specifications must be shown in tabular form.

1.10 Signature and Endorsement

(a) Architectural Design produced by Local Architect
- Signed and endorsed by Senior Licensed Architect (SLA)

(b) Architectural Design produced by Foreign Architect
- Signed and endorsed by both Registered Foreign Architect (RFA) & National Counterpart Architect (NCA)

***Note** : Registered Foreign Architect must register at Myanmar Architect Coucil as Registered Foreign Architect (RFA)

: National Counterpart Architect (NCA) must be Senior Licensed Architect (SLA)

1.11 Document Set

- Soft Copy of Drawings and Floor Area Calculation - 2 sets
- Hard Copy of Architectural Drawings - 4 sets (A2 or A3)
- Conceptual Design Statement – 4 sets (Optional)

2. FINAL SUBMISSION DESIGN

2.1 Perspective Drawing

Proposed building of 3D view as if it will appear in the mass of the surrounding urban fabric.

2.2 Area Data Sheet

The following items must be shown in the area data sheet

- Site/ Plot Area
- Building Coverage Area
- Gross Floor Area
- Building Coverage Ratio
- Floor Area Ratio
- Car Parking Provision based on YCDC guideline
- Green Area Percentage
- Road Building Ratio

2.3 LOCATION MAP

2.3.1 North Point

A symbol indicating the North Point must be shown in location map and it should be pointing to the top of the drawing sheet.

2.3.2 Surrounding Roads and Nearest Junctions

Surrounding roads of the site area must be indicated in location map and the nearest junction from the nearby main road must be also included in the location map.

2.3.3 Surrounding Environment with Important Cultural & Heritage Elements

If important cultural and heritage elements are near the site location it must be indicated in location map.

2.4 Master Plan / Site Plan

2.4.1 Plot Boundary with dimensions

Plot boundary with dimensions must be shown in the drawing.

2.4.2 Names & Widths of surrounding Roads & Streets

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Above mean sea level (AMSL) of the site area must be indicated and if necessary contour lines and its AMSL of the site area must also be shown in the drawing.

2.4.4 Traffic Flow Directions

Traffic flow diagram for in and out direction to and from site area to surround roads must be indicated.

2.4.5 Building Heights & Road Building Ratio

Refer to YCDC regulations.

2.5 Building Layout Plan

2.5.1 Plot Boundary with dimensions

The plot boundary with dimensions must be shown in the drawing.

2.5.2 Minimum Set Backs

Refer to YCDC regulations.

2.5.3 Line of Building Coverage & Building Coverage Ratio

Vertically projected line from the outer line of the building (including roof overhang, verandahs, cantilevers, sunshades, curtain walls) to the ground is calculated as line of building coverage. Inner courtyard area without any roof is not included in building area.

Building Coverage Ratio (BCR) = Building Coverage Area divided by Plot Area

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2.5.7 Space Allocation for Water Supply & Sanitation Services

Space allocation must be shown for Water Supply & Sanitation in the drawing.

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- MEP Provisions
- Accessibility Provisions

***Note** : All Architectural plans must be incorporated with Structural and MEP design drawings.

2.7 Architectural Elevations

All elevations must be shown to portray the building design. The following items must be shown in the elevations:

- Ground Level(s) with AMSL
- Building Height with AMSL
- Set Backs

***Note** : All Architectural elevations must be incorporated with Structural and MEP design drawings.

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All sections must be shown to portray the building design. The following items must be shown in the sections:

- Mass & Voids
- Stairs, ramps and lifts
- Floor to Floor height & AMSL
- Accessibility Provisions

***Note** : All Architectural sections must be incorporated with Structural and MEP design drawings.

2.9 General Material Specifications

General material specifications must be shown in tabular form.

2.10 Stair and Ramp Details

The following items must be shown in the sections:

- Stair / Ramp width
- Stair risers and treads dimensions
- Ramp slope ratio
- Stair / Ramp landing
- Handrail details

2.11 Door and Window Details

The following items must be shown in the door and window details:

- Door / Window types and opening operations
- Glazing general specifications
- Safety measures (if applicable)

2.12 Façade Design Considerations

The following items must be shown in the façade design considerations:

- General specification of finishing materials
- Curtain wall system (if applicable)
- Green wall system (if applicable)

2.13 Barrier Free Design (Disable Accessibility)

Refer to MNBC 2016.

2.14 Green and Sustainable Design Considerations

(If applicable) Refer to MNBC 2016.

2.15 Fire Safety

Refer to guidelines and regulations set by Fire Department.

2.16 Signature and Endorsement

(a) Architectural Design produced by Local Architect

- Signed and endorsed by Senior Licensed Architect (SLA)

(b) Architectural Design produced by Foreign Architect

- Signed and endorsed by both Registered Foreign Architect (RFA) & National Counterpart Architect (NCA)

***Note** : Registered Foreign Architect must register at Myanmar Architect Coucil as Registered Foreign Architect (RFA)

: National Counterpart Architect (NCA) must be Senior Licensed Architect (SLA)

2.17 Document Set

- Soft Copy of Drawings and Floor Area Calculation - 2 sets
- Hard Copy of Architectural Drawings - 4 sets (A2 or A3)
- Conceptual Design Statement – 4 sets (Optional)

2.18 Submission Drawing List

- Cover
  (a) Project name
  (b) Developer name
  (c) Project Address
- General Perspective View (as required)
- Area Data Sheet
- Drawing no.(001) - Location Map
- Drawing no.(002) - Master Plan / Site Plan
- Drawing no.(003) - Building Layout Plan
- Drawing no.(101) - Architectural Plans

- Drawing no.(201) - Architectural Elevations
- Drawing no.(301) - Architectural Sections
- Drawing no.(401) - General Material Specifications
- Drawing no.(501) - Stair and Ramp Details
- Drawing no.(601) - Door and Window Details
- Drawing no.(701) - Façade Design Considerations
- Drawing no.(801) - Barrier Free Design Details
- Drawing no. (901) - Other Required Details

***Note : All drawings must be submitted in the formatted title block as attached.**

ANNEX. A

TITLE BLOCK (for local design)

	COMMITTEE FOR QUALITY CONTROL OF HIGH-RISE CONSTRUCTION PROJECTS (CQHP)
	PROJECT NAME
	LOT NO :
	BLOCK NO :
	LOCATION :
	OWNER
	DEVELOPER
	SLA
	P.E (Construction)
	SUBJECT
	SCALE :
	DRAWING NO. :
	SHEET NO. :

TITLE BLOCK (for foreign design)

	COMMITTEE FOR QUALITY CONTROL OF HIGH-RISE CONSTRUCTION PROJECTS (CQHP)
	PROJECT NAME
	LOT NO :
	BLOCK NO :
	LOCATION :
	OWNER
	DEVELOPER
	RFA
	SLA (National Counterpart)
	P.E (Construction)
	SUBJECT
	SCALE :
	DRAWING NO. :
	SHEET NO. :

ANNEX. B

RECOMMENDATIONS & SUGGESTIONS FOR SPACE EFFICIENCY

(I) Internal Areas

1. Place occupant services within protected floor space.
2. Disable access to critical areas.
3. Provide buffer/reception zones in executive areas.
4. Provide multiple paths of entry/exit for executives.
5. Consider disable facilities in public buildings.

(II) Building Lobby

1. Position the control point between the entry and access to other floors.
2. Disable accessibility.
3. Place restrooms in public areas.
4. Make it possible to secure the lobby level.

(III) Common Stairwells, Emergency Stairways, Ramp, Lifts & Escalators

1. Designate stairways for emergency use only whenever possible.
2. Disable ramp / Lift.
3. Use internal stairwells for floor-to-floor transit if and when necessary
4. A minimum of one for service access elevator for building's more than 120 ft high if necessary.
5. Luminous marking showing the exit path in building more than 75 ft high to facilitate rapid escape and full building evacuation.
6. Fire escape stairs to allow more occupants to descend at once. Fire proofing specification and fire-fighting system should be considered.

ANNEX. C

HIGH-RISE BUILDING COMPONENTS / SYSTEM STANDARDS / HEIGHTS

- Parking : Provision of car parking and area must be required by YCDC Regulations and MNBC Code. Provision of disable car parking.

- Fencing : Architectural appearance, concrete masonry walls with integral color and matching color grout or other low maintenance and durable materials.

- Trash Enclosure : Architectural appearance, concrete masonry walls with integral color and matching color grout, opaque metal gates, concrete slab floor with continuous protection rails or curbs at the inside.

- Building Exterior : Provide landscaping, hard-scaping, and other elements to enhance functions and design excellence.

Consideration of Building Envelope System, Building Façade, etc.

MINIMUM STANDARDS OF ROOM HEIGHTS FOR HIGH-RISE BUILDING

Type of Occupancy	Room Heights	
	Floor to Floor Height of Room (mm) or (ft)	Head Room (mm) or (ft)
Residential	3048-3352 / 10-11ft	2743 / 9.0ft
Hotel	3200 / 10ft.6in	2438 / 8.0ft
Office, Commercial	3658 / 12 ft	2743 / 9.0ft
Hospital	3505 / 11ft.6in	2438 / 8.0ft
Schools	3048 / 10ft	2438 / 8.0ft
Public Recreational Place	3505 / 11ft.6in	2438 / 8.0ft
Car Parking	2743 / 9 ft	2286 / 7ft.6in
Bath room, Toilet/W.C	Based on occupancy	1981 / 6ft.6in
Service floors & Others	2743 / 9 ft	2133 / 7.0ft

ANNEX. D

(I) VENTILATION AND LIGHTING CONSIDERATIONS (Natural & Artificial Lighting, Emergency lighting, etc.)

It is advisable to use 10% LV for rooms (Lighting and Ventilation). Ventilation is from external space. Ventilation to utility room/WC/kitchen if via yard should be in close proximity to yard (not more than 2.5m) and yard has to be of open space. Size of opening at yard for LV should be 10% of the aggregate of all the rooms intending to ventilate through this opening. Therefore, always have windows directly to the external for kitchen, WC and utility, if possible.

(II) SAFETY REQUIREMENTS FOR HIGH-RISE

1. High voltage electrical installations and backup power generator.
2. Fire safety equipment including fire alarm system, fire exits, fire extinguishers and hydrants.
3. Must have elevators or escalators. Car parks must be provided with exit signs, speed bumps, ramps and iron railing where there are drop-offs.
4. Clean water installation and sewerage.

(III) EFFECTIVE PRINCIPLE IN THE CONTROL OF EXTERNAL ROAD TRAFFICS AND ENTERTAINMENT NOISE.

For effective control of Road traffic and air-craft noise, entertainment noise and rain noise, need to be considered and provided with where and if necessary:

- Curtain wall connection details.
- Floor impact isolation.

  -Wind buffeting building facades.

  - Duct generated noise (sufficient acoustic isolation)

Effective principle:

1. Acoustic double glazing systems should be considered when necessary
2. Locate noisy machinery away from residential buildings, penthouse suites or executive offices.

3. Need natural and mechanical ventilation system. Good sitting is essential to avoid weather damage.
4. Trees located around the premises for noise control should be protected.

IV. INTERNAL DRIVEWAYS AND PARKING SPACES

(A) MINIMUM WIDTHS OF PARKING AISLES

Parking Angle	One -way traffic flow		Two -way traffic flow
	Stalls on 1 side	Stalls on 2 sides	Stalls on 1 or 2 sides
Parallel	12'	12'	18'
30	12'	14'	18'
45	14'	16'	18'
60	16'	16'	20'
90	18'	18'	20'

(B) TYPE OF RAMPS AND ACCESS WAYS AND WIDTHS

Type of Ramps and Access ways	Minimum Width
Straight clearway ramp and access way	11 ft. for single-lane 10 ft. (per lane) for multi- lane
Innermost lane of curved clearway ramp and access way	12 ft. for single-lane 11 ft. per lane for multi- lane
Outside lane of curved clearway ramp and access way	12 ft. for single-lane 10 ft. (per lane) for multi- lane
Inside radius of curved clearway ramp	15 ft.

Maximum and preferred gradient of clearway ramps and access ways for vehicles	1: 6.25 (16%) for light vehicles less than 2 tons 1: 7.2 (14%) for medium vehicles less than 5 tons Preferred gradient 1:8.3 (12%)

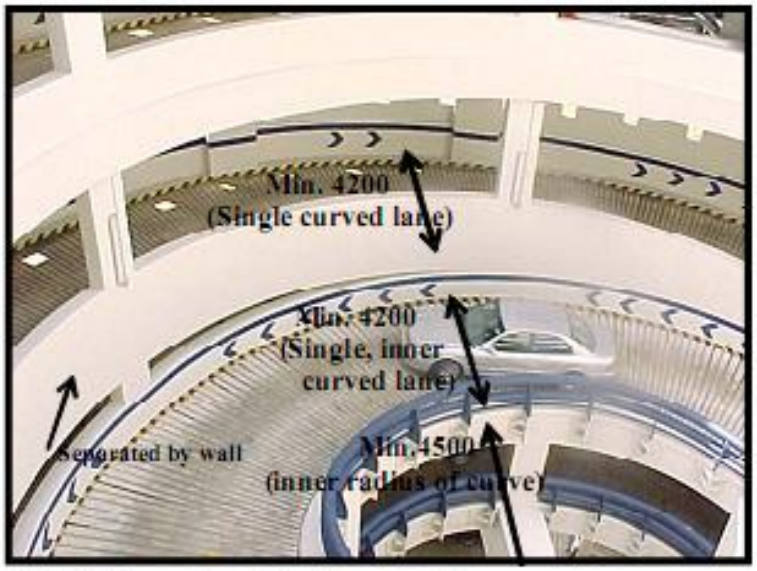
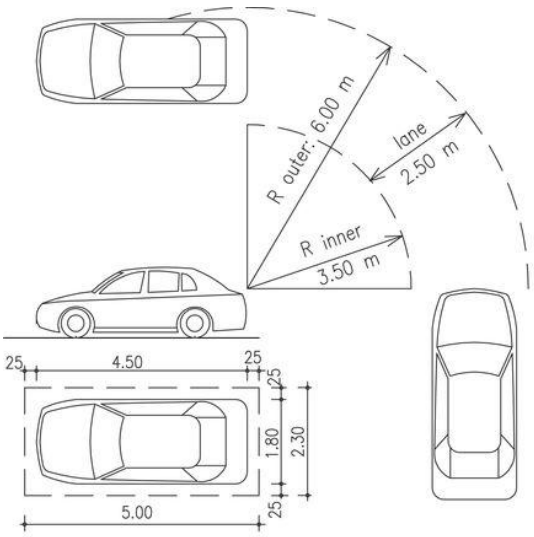


Fig 2.22 Example of single curved lanes

Example figure: Single curved drive lanes for minimum inner radius, width of lanes



STANDARD MOTOR CAR SIZES AND TURNING CIRCLE

Turning Radius