STANDARD INDUSTRI PEMBINAAN

(CONSTRUCTION INDUSTRY STANDARD)

CIS 7:2021

QUALITY ASSESSMENT SYSTEM FOR BUILDING CONSTRUCTION WORKS

Descriptors: quality of workmanship, architectural, basic mechanical and electrical (M&E) fittings, external works, benchmark, site inspection, field testing, sampling

Construction Industry Development Board Malaysia

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CIS 7: 2021 Quality Assessment System for Building Construction Works

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COMMITTEE REPRESENTATION

The Construction Industry Standard (CIS) was developed and reviewed by the Construction Industry Development Board Malaysia with the assistance of the Technical Committee on Quality Assessment System for Building Construction Works which comprises representatives from the following organisations:

Association of Consulting Engineers Malaysia (ACEM)

Chartered Association of Building Engineers (CABE)

Construction Research Institute of Malaysia (CREAM)

International Islamic University Malaysia (IIUM)

Jabatan Kerja Raya Malaysia (JKR)

Jabatan Perumahan Negara (JPN)

Kementerian Perumahan dan Kerajaan Tempatan (KPKT)

Master Builders Association Malaysia (MBAM)

National House Buyers Association (HBA)

Pertubuhan Akitek Malaysia (PAM)

Real Estate & Housing Developers' Association Malaysia (REHDA)

PREFACE

Construction Industry Standard (CIS 7) or better known as QLASSIC, was first introduced in 2006. The first revision of this CIS 7 was done in 2014 and the subsequent revision was made in 2021 (second revision). This second revision maintained the assessment for architectural works, basic M & E fittings and external works but dropped the assessment for Structural and M&E Works. The assessment weightage for architectural works, basic M&E fittings and external works were adjusted/prorated accordingly.

The use of Construction Industry Standard CIS 7:2021 is solely for building workmanship rating purpose and is not intended to be used as specification or compliance's requirement unless parties to a construction contract agreed to do so and shall binding the parties only.

The revision of this CIS 7: 2021 was carried out by a Technical Committee established by CIDB Malaysia represented by construction industry stakeholders.

It should be noted that the use of this standard is voluntary and compliance with this Construction Industry Standard does not of itself confer immunity from legal obligations.

QUALITY ASSESSMENT SYSTEM FOR BUILDING CONSTRUCTION WORKS

SECTION 1: GENERAL

1.1 Introduction

Quality Assessment System for Building Construction Works is an independent method to assess and evaluate primarily on the quality of workmanship of building projects based on this standard.

1.2 Objectives of Quality Assessment System for Building Construction Works

Quality Assessment System for Building Construction Works was designed and developed to enable the user to achieve any, or a combination, of the following objectives:

a) To establish a standard assessment system for quality of workmanship of building projects

b) To assess quality of workmanship of building projects

c) To evaluate the performance of contractors on the quality of workmanship

d) to benchmark the level of quality of the construction industry in Malaysia

e) to compile data for statistical analysis

1.3 Scope of Quality Assessment System for Building Construction Works

This standard sets out the quality of workmanship for the various aspects of construction elements and marks are awarded for the works that are in compliance with the standard. These marks are then summed up to give a total quality score (%) for the building project.

The assessment consists of the following components and sub-components:

a) Architectural Works.
   i. Internal Finishes
   ii. External Finishes
   iii. Material and Functional Tests

Under the sub-component for Material & functional test, the scope covers on the following:

   a) Skim-coat/ prepacked-plaster
   b) Wet area water-tightness test

The assessment on the material and functional test help to safeguard the interest of building occupants in relation to safety, comfort and aesthetic defects which surface only after some time.

c) Basic M&E Fittings

d) External Works.
   i. Infrastructure
   ii. Facilities or amenities

Each sub - components are divided into elements, the elements are then further divided into defect groups for assessment purposes. This applies to all the above sub-components except material and functional tests.

The weightage score will be prorated accordingly if any of the component, sub – component and element are not applicable to the project.

1.4 Use of Quality Assessment System for Building Construction Works

Quality Assessment System for Building Construction Works is solely for building workmanship rating purpose. It is not intended to be used as specification or compliance's requirement unless parties to a construction contract agreed to do so and shall binding the parties only.

The qualified persons shall not use Quality Assessment System for Building Construction Works to decide if the building or parts of the building project are in accordance with the relevant by-laws.

It is still the responsibility of the qualified person to ensure that the quality of the construction works conforms to approved standards, practices, specifications and drawings, as specified in the contract.

1.5 Normative references

The following normative reference is indispensable for the application of this construction industry standard. The latest edition of the normative reference (including any amendments) shall apply.

a) CIS 7: 2014 (Quality Assessment System for Building Construction Works)

b) Lembaga Pembangunan Industri Pembinaan Malaysia Act 1994 (Act 520).

c) Uniform Building By-Laws 1984

1.6 Terms and Definitions

For the purpose of this standard, the following definitions apply:

1.6.1 Component

A component refers to the main component which can be found in a building construction project which are architectural works, basic mechanical and electrical (M&E) fittings and external works.

1.6.2 Delamination

Delayering of a laminated finish.

1.6.3 Elements

A subdivision of a component, for example floor finishing for architectural works, switches for basic M&E fittings, playground for external works and others.

1.6.4 Hollowness

No hollow/ drumming sound when swiped using a tapping rod specified by CIDB.

1.6.5 Leakage

Any appearance of uncontrolled water, other than condensation or water marks, on the indoor face of any part of the wall, window, ceiling and other similar element.

1.6.6 Lippage

Variation in the height of adjoining tiles when measured at the adjacent/ opposing edges of any adjoining tiles.

1.6.7 Patchiness

Existing or happening in small, isolated areas usually on surfaces.

1.6.8 Qualified Person (QP)

A Qualified Person means a Professional Architect, Professional Engineer or building draughtsman registered under any written law relating to the registration thereof.

1.6.9 Warpage

The extent or result of being bent or twisted out of shape.

1.7 Assessment approach

As it is impractical to assess all elements in a building project, the assessment is carried out through a sampling approach. The sampling, which is based on the gross floor area (GFA) for the building and 10 m length section or per location for the external works, is to ensure that the assessment adequately represents the entire building project.

In general, the samples to be assessed shall be determined and marked on the building floor plan and project layout plan prior to carry out the assessment. The selected samples shall be distributed as uniformly as possible throughout the project. All locations are to be prepared for the assessment.

The scoring will be done on the works that are inspected for the first time. Rectification and correction carried out after the assessment will not be rescored. The objective of this practice is to encourage contractors towards **"doing things right the first time and every time".**

When an assessed item does not comply with the corresponding quality standards, it is considered to have failed and an "X" will be noted in the assessment form. Likewise, a "✓" is given for an item meeting the standards. A "NA" will be given to indicate that the item is not applicable. The score is computed based on the number of "✓" over the total number of items assessed.

SECTION 2: QUALITY STANDARD

2.1 Components to be assessed

The quality standards for building construction work are divided into three main components: -

a) Architectural works

Architectural works deal mainly with finishes. This is where the quality and standard of workmanship are most visible.

Architectural works encompass floors, internal walls, ceilings, doors, windows, internal fixtures, roofs, external walls, aprons and perimeter drains and car park/ car porches

The quality standards for architectural works are given in **Annex A**.

b) Basic M&E fittings

The quality of M&E works is important in view of its increasingly high-cost proportion and its impact on the maintenance of a building. The assessment only covers basic fittings.

The quality standards for basic M&E fittings are given in **Annex B**.

c) External works

External works cover the general external work elements in building construction such as the link-way/ shelter, external drain, roadwork (including parking bay), footpath and turfing, fence and gate (at project main entrance and individual units), playground, court(sports) and swimming pool.

The quality standards for external works are given in **Annex C**.

SECTION 3: ASSESSMENT

The assessment for building construction work is carried out through a sampling and statistical approach.

3.1 Weightage

The weightages for architectural, basic M&E fittings and external work are allocated in accordance to four categories of buildings (see Table 1).

Table 1. Allocation of weightage for components of building construction works according to building category

Component	Residential Building		Non-Residential Building	
	Category A Landed housing (%)	**Category B** Stratified housing (%)	**Category C*** Public/ Commercial/ Industrial building (%)	**Category D** Public/ Commercial/ Industrial building (%)
Architectural works	85	83	82	80
Basic M&E fittings	2	3	4	5
External works	13	14	14	15
Total score	**100**	**100**	**100**	**100**

Note:
* Category C is without centralised cooling system (CCS), Category D is with centralised cooling system (CCS)

The weightage system is aimed at making the score quantitative and represent the quality of workmanship of a building project. It has taken into consideration the distribution between the cost proportions of the three components in the various buildings and their aesthetic considerations.

The total quality score of a building project is the sum of marks awarded to the three components in each category of a building.

Each category of a building comprises as following:

a) Residential Building

i) **Category A** (Landed housing) – Detached houses/ bungalows, semi-detached houses, terrace/ link houses, cluster houses, government quarters, or any landed building for residential purposes.

ii) **Category B** (Stratified housing) – Flats, apartments, condominiums, service apartments, small office home office (SOHO), town houses, stratified government quarters, or any stratified building for residential purposes.

b) Non-Residential Building

i) **Category C** (Public/commercial/industrial buildings without centralised cooling system) - Office buildings, schools, factories, warehouses, workshops, hotel, hostel, hangers, small office flexible office (SOFO), small office virtual office (SOVO), religious building, stadiums,

community halls, hospitals and clinics, airports, universities and colleges, police station and other public buildings without CCS.

ii) **Category D** (Public/commercial/industrial buildings with centralised cooling system) – Office buildings, schools, factories, warehouses, workshops, hotel, hostel, hangers, small office flexible office (SOFO), small office virtual office (SOVO), religious building, stadiums, community halls, hospitals and clinics, airports, universities and colleges, police station and other public buildings with CCS.

Note:
In a mix-development project (multi-building category), the respective project/ development shall be categorised according to the building category.

3.2 Assessor

An assessor shall be the person who possesses the following qualifications:

i) Attended Quality Assessment System's training for building construction works (based on Construction Industry Standard 7), and

ii) Successfully passed assessment associated with item (i) above, and

iii) Certified by CIDB

3.3 Architectural works assessment

Assessment of architectural works is carried out upon completion of the building project and before the handover of the project.

The weightages for architectural element are allocated as per Table 2.

Table 2. Weightage for architectural elements

Architectural elements		**Weightage (%)**	
		Breakdown	**Total**
Internal finishes			68
	Floor	18	
	Internal wall	18	
	Ceiling	8	
	Door	8	
	Window	8	
	Internal fixtures	8	
External finishes			26
	Roof	10	
	External wall	10	
	Apron and perimeter drain	3	
	Car park/Car porch	3	
Material and functional test			6
	Skim coat or prepacked plaster	3	
	Wet area water-tightness test	3	
Total		**100**	

The assessment is based on the sampling guidelines, as outlined in Table 3.

Table 3. Sampling guidelines for architectural works

No.	Sub-components/ elements		GFA per Sample	Min sample	Max sample	Remark
1a	**Internal finishes**		70 m²	30	700	Category A Landed Housing
1b					600	Category B Stratified Housing
1c			500 m²		150	Category C Public/ Commercial/ Industrial Building
1d					100	Category D Public/ Commercial/ Industrial Building
2	**External finishes**	Roof	-	50%	-	50% of the blocks/units (will be divided into minimum four (4) sections for the assessment)
3		External wall	-		-	
4		Apron and perimeter drain	-	2	-	10 m length section per sample
5		Car park/Car porch	-		-	10 m length section per car park floor
6	**Material and functional test**	Skim coat or prepacked plaster	-	-	-	Declaration with documentary evidence by QP
7		Wet area water-tightness test	-	-	-	Declaration with test report by QP
Note: This sampling guidelines is not applicable for mock-up unit/sample. It requires a full assessment to be carried out.						

A location for Internal Finishes assessment is a functional space of a building such as room, hall, toilet, kitchen, corridor or lobby. Locations are further categorised into three types:

a) Principal locations are major functional areas.
Example for principal locations are living, bedroom, dining, hall, maid room, study room, treatment room, waiting room, ward, guest room, discussion room, meeting room, games room, family area, and others

b) Service locations are utility areas.
Example for service locations are balcony, bathroom, kitchen, linen room, pantry, toilet, yard, and others.

c) Circulation locations are passages and human traffic areas.
Example for circulation locations are lobby, corridor, staircase, entrance, passageway, terrace, and others.

The total number of locations will be distributed according to “Principal”, “Service” and “Circulation” based on the percentage set out in the four categories of buildings in Table 4.

Table 4. Weightage for location of architectural works according to building category

Locations	**Category A** Landed Housing (%)	**Category B** Stratified Housing (%)	**Category C** Public/ Commercial/ Industrial building (%)	**Category D** Public/ Commercial/ Industrial building (%)
Principal	40	40	60	60
Service	40	40	15	15
Circulation	20	20	25	25
Note: For other types of building, the distribution of percentage shall be in accordance to Category C.				

An item under assessment will be considered to have failed if it does not meet the standards. In addition, any item found to be defective functionally such as evidence of water seepage in the window, slab, ceiling or roof, is considered to have failed the assessment. Likewise, for a particular defect that is found excessive in an item (for instance, excessive cracks on a wall).

3.4 Basic M&E Fittings assessment

The assessment of M&E works only covers basic fittings such as switches, sanitary fittings and others.

The weightages allocated in accordance with the four categories of buildings in Table 5.

Table 5. Weightage for Basic M&E fittings according to building category

Element	**Category A** Landed Housing (%)	**Category B** Stratified Housing (%)	**Category C** Public/ Commercial/ Industrial Building (%)	**Category D** Public/ Commercial/ Industrial Building (%)
Basic M&E fittings	2	3	4	5
Note: The sampling for basic M&E fittings will be based on internal finishes guideline for architectural works. Refer to Table 3 and Table 4.				

3.5 External works assessment

Assessment of external works is carried out upon completion of the building and before the handover of the project.

External works cover the general external work elements in functional buildings/ structure with floor area more than 300 m^2* each in project/ development separate from the main building and assessed as internal finishes. The quality standard stated shall be applied whichever is applicable.

Note:
*Based on the average size of Community Hall (source: Ministry of Housing and Local Government)

The assessment consists of the following locations:

Table 6. Sampling guidelines for external works

No.	Sub-component	Location	Sample
1	Infrastructure	Link-way/ Shelter	10m length section per sample and minimum 2 samples
		External drain	
		Roadwork (including parking bay)	
		Footpaths and turfing	
		Fence and Gate (at project main entrance and individual units)	10 m length section per sample and minimum 1 sample
2	Facilities or Amenities	Playground	1 location
		Court (sports)	1 location
		Swimming pool	10 m length section per sample and minimum 1 sample

ANNEX A
(Informative)

QUALITY STANDARD FOR ARCHITECTURAL WORKS

PART 1: INTERNAL FINISHES

FLOOR

No.	Defect Group	Requirements	Type of Finishes	Tolerance	Tool/ Method
1	Finishing	No construction stain marks	All	-	Visual
		Consistent tonality/ shading (only applies for manufactured product)	T/ ET/ CS/ C*	-	Visual
		Surface should not be unduly rough or patchy	CS*	-	Visual
		No permanent foreign material visually detected	All	-	Visual
		Finished texture to be consistent	O*	-	Visual
		Good paintwork (e.g. no signs of brush marks/ pin holes/ blistering/ peeling/ trowels marks and etc.)	O*		Visual
2	Alignment and Evenness	Evenness of surface	CS/ T/ ET/ V/ O*	≤ 3 mm per 1.2 m	Spirit level 1.2m and steel wedge
			C*	-	Visual
		Falls in wet areas should be in right direction	CS/ T/ V/ O*	-	Spirit level 1.2m
		For staircase, the variance in lengths of treads and risers must be within tolerance from dimensions specified in the approved drawings	CS/ T/ ET/ V /O*	≤ 5 mm	Spirit level 1.2m and steel wedges
		Joints are aligned with skirting tiles or wall tiles	T*	-	Visual
		Joints are aligned between tiles	T*	-	Visual
		Lippage between two tiles	T*	≤ 1 mm	L-square (200 mm x 300 mm) and steel wedge
		No protrusion/ potential of tripping over of panels	O*	-	Visual& Physical

3	Cracks and Damages	No visible damages/ defects (e.g. chipping, broken tiles, crack tiles, scratches, broken timber and etc.)	All	-	Visual
		No warpage or sagging	ET/ T*	-	Visual
		No loose floor panels or rocking	O*	-	Visual & Physical
4	Hollowness/ Delamination	No hollow/ drumming sound when swiped and then tapped	CS/ T/ O*	-	Tapping rod & Auditory (hearing)
		No sign of delamination	C/ ET/ O*	-	Visual & Physical
		Timber strips to rest firmly on joists or screeds	ET*	-	Visual & Physical
5	Jointing	Edge to be straight and aligned	All	-	Visual
		Consistent skirting thickness andheight	All	-	Visual
		Consistent and neat skirting joints	All	-	Visual
		Grout joints are of consistent colour, size and properly filled	T/ V/ CS*	-	Visual
		Edges of the floor are properly sealed and anchored	ET/ C*	-	Visual & Physical
		Joints should not be visible	C/ ET*	-	Visual

Note:
*The abbreviation used in the table define as follows:
a) C: Carpet
b) CS: Cement Sand Screed
c) ET: Engineered Timber/ Material
d) T: Tiles
e) V: Vinyl/ Linoleum
f) O: Others

INTERNAL WALL

No.	Defect Group	Requirements	Type of Finishes	Tolerance	Tool/ Method
1	Finishing	No construction stain marks	All	-	Visual
		Good paintwork (e.g. no signs of paint drips/ brush marks/ pin holes/ blistering/ peeling/ trowels marks and etc.)	PP/ P/ TP	-	Visual
		Consistent tonality/shading (only applies for manufactured product)	T/ CL / WT*	-	Visual
		No rough/patchy surface resulted from touch-up work	PP/ P*	-	Visual
		Finished texture to be consistent	FB/ O*	-	Visual
		Surface should be free from chalkiness	PP*	-	Visual & Physical
		Surface should be smoothly finished	WT*		
2	Alignment and Evenness	Evenness of surface	All	≤ 3 mm over 1.2 m	Spirit level 1.2m & steel wedge
		Verticality of wall	All	≤ 3 mm over 1.2 m	Spirit level 1.2m & steel wedge
		Walls meet at right angle	All	≤ 4mm over 300 mm	L-square (200 mm x 300 mm) & steel wedge
		Joints are aligned between tiles	T*	-	Visual
		Lippage between two tiles	T*	≤ 1 mm	L-square (200 mm x 300 mm) and steel wedge
		Surface of wallpaper should be even	WP*	-	Visual
		Glass blocks/panels should be properly aligned	GB*	-	Visual

3	Cracks and Damages	No visible damages/ defects (e.g. visual crack/dent/scratches/ corrosion and etc.)	All	-	Visual
		Warpage should not be detected	T/ WT*	-	Visual
4	Hollowness/ Delamination	No hollow/ drumming sound when swiped and then tapped	PP/ T/ P/ TP*	-	Tapping rod & Auditory (hearing)
		No sign of delamination	WP/ WT*	-	Visual & Physical
		Timber panels should rest firmly on joists screed	WT*	-	Visual & Physical
5	Jointing	Edges to be straight, aligned and consistent	All	-	Visual
		Joints should not be visible	WP/ WT*	-	Visual
		Proper anchoring at all edges	WP*	-	Visual
		Edges should be neatly laid and finished	WP*	-	Visual
		Consistent and neat marking	T/FB/ CL/GB*	-	Visual
		Grout joints are of consistent size and properly filled	T*	-	Visual
		Proper anchorage for panels	CL*	-	Visual
		Edges should be properly aligned and sealed	WT*	-	Visual
		Consistent spacing and within allowable tolerance	CL*	-	Visual

Note:
*The abbreviation used in the table define as follows:
a) PP: Plaster & Paint
b) T: Tiles
c) P: Painting
d) FB: Facing Brick
e) WP: Wallpaper
f) WT: Wood/ Timber panel
g) CL: Cladding/ Curtain wall
h) GB: Glass blocks/ Glass panels
i) TP: Textured Plaster
j) O: Other

CEILING

No.	Defect Group	Requirements	Type of Finishes	Tool/ Method
1	Finishing	No construction stain marks (e.g. leakages and excess paint/ plaster)	All	Visual
		Consistent colour tone	All	Visual
		Paintwork (e.g. good opacity, no signs of brush marks, pin holes, blistering, trowels marks and etc.)	All	Visual
2	Alignment and Evenness	Surface should be smooth, even, not wavy and not sagging	All	Visual
		Ceiling panels to be level with each other	FC*	Visual
		Ceiling edges should be straight and aligned	All	Visual
		Ceiling grid to be straight and aligned	FC*	Visual
		Ceiling panels should not warp and laid neatly into grids	FC*	Visual
3	Cracks and Damages	No damages (e.g. Concrete spalling, chipped ceiling panels and cracks,)	All	Visual
		No sign of corrosion (e.g. ceiling grids and metal ceiling or panels)	FC*	Visual
4	Roughness & Patchiness	Finished concrete should not show any signs of rough surface	SC*	Visual
		Any cold joints or formwork joints are grounded smooth	SC*	Visual
		Touch-up work should not show any signs of rough or patchy surface.	All	Visual
5	Jointing	Joints between ceiling and wall should be neat and consistent	All	Visual
		Joints between ceiling tee and panel should be neat and consistent	FC*	Visual
		Access opening joints should be neat and consistent width	FC*	Visual

Note:
*The abbreviation used in the table define as follows:
SC: Skim coat/ Paint
FC: False/ Grid system/ Plaster

DOOR

No.	Defect Group	Requirements	Tolerance	Tool/ Method
1	Joints and Gaps	Consistent gap between bottom of door panel and finished floor	≤ 5 mm/ Project requirement	Steel wedge
		No visible gaps between door frame and wall	-	Visual
		Neat joints between door frame and wall internally and externally	-	Visual
		Consistent gap between door panel and frame	≤ 5 mm/ Project requirement	Steel gauge
		No visible gaps for joints at door panel and frame	-	Visual
2	Alignment and Evenness	Aligned and level with opening and wall beside it	-	Visual & spirit level 1.2m
		Double panel doors to flush with each other	-	Visual
		Doors frame and panel to flush	-	Visual
		Door panel and frame corners maintained at right angles	-	L-square (200 mm x 300 mm)
		No rattling sound when the door is closed	-	Physical & Auditory (hearing)
3	Materials and Damages	No stains marks and any visible damages	-	Visual
		Door panel not sagging and warp	-	Visual
		Door joints and nail holes filled up, properly sanded with good paintwork	-	Visual
		No additional timber strips added for site adjustment should be detected	-	Visual
		Glazing clean and evenly sealed with gasket	-	Visual
		No sign of corrosion	-	Visual
		Paintwork(e.g. good opacity, no signs of paint drips/ brush marks/ pin holes and blistering)including top and bottom of door panel	-	Visual & Angle Mirror

4	Functionality	Ease in opening, closing and locking	-	Physical
		No squeaky sound during opening and closing of the door	Test minimum 3 times continuously and pass 2 times	Physical & Auditory (hearing)
		Lockset should be functional	Test minimum 3 times continuously and pass 2 times	Physical
5	Accessories Defects (e.g. lock set, flush bolt, doorknob, hinges, door closer, door guard, door latch, alarm sensor and door stopper,)	Accessories with good fit and no construction stains/ corrosion	-	Visual
		No missing or defective accessories	-	Visual
		Screw not over tightened or fastened properly/ no defective screw head	-	Visual
Note: Panel door, decorative door, flush door, sliding door, glass door and others.				

WINDOWS

No.	Defect Group	Requirements	Tolerance	Tool/ Method
1	Joints and Gaps	No visible gaps between window frame and wall	-	Visual
		Neat joints between window frame and wall, internally and externally	-	Visual
		No visible gaps for joints at window panel and frame	-	Visual
		Consistent gap between window panel and frame	-	Visual
2	Alignment and Evenness	Aligned and level with openings and wall beside it	-	Visual
		Window panel and frame corner maintained at right angle	-	Visual
3	Materials and Damages	No stain marks and visible damages/ defects	-	Visual
		Louvered window with glass panels of correct length	-	Visual
		Glazing clean and evenly sealed with sealant or gasket for aluminium windows	-	Visual
		No sign of corrosion	-	Visual
		No patchy paintwork resulted from touch up work	-	Visual
4	Functionality	Ease opening, closing and locking	-	Physical
		No squeaky sound during opening and closing of the window	Test minimum 3 times continuously and pass 2 times	Physical & Auditory (hearing)
		No sign of leakage	-	Visual
5	Accessories Defects (e.g. hinges, screw, security bar for louvers window, alarm sensor and handle)	Lock sets with good fit and aligned	-	Visual
		Accessories with good fit and no construction stains/ corrosion	-	Visual
		No missing or defective accessories	-	Visual
		Screw not over tightened or fastened properly/ no defective screw head	-	Visual

Note:
Casement window, top hung window, sliding window, louvers window, adjustable window and others.

INTERNAL FIXTURES

No.	Defect Group	Requirements	Tool/ Method
1	Joints and Gaps	Consistent gaps and neat joint	Visual
		Welding joints grounded or flushed	Visual
2	Alignment and Evenness	Level and in alignment	Visual & Spirit Level 1.2m
3	Materials and Damages	No stain marks and visible damages/ defects	Visual
		Good paintwork	Visual
4	Functionality	Functional, secured and safe	Visual & Physical
5	Accessories Defects (e.g.: Screws, bottle trap, hose and piping for sanitary fittings/sink, handle and hinges for kitchen cabinet/ wardrobe/ shower screen and etc.)	No missing or defective accessories	Visual
		Accessories with good fit and no stains	Visual
		No sign of corrosion	Visual

Note:
Wash basin, toilet bowl/ water closet, sink, railing (e.g. at balcony/ staircase/ family area), bathtub, wardrobe, kitchen cabinet, shower screen, fixed mirror, vanity top, shower tray, framed or frameless tempered glass shower enclosure others

Any M&E fittings attached to the internal fixtures shall be assessed as accessories defects.

QUALITY STANDARD FOR ARCHITECTURAL WORKS

PART 2: EXTERNAL FINISHES

ROOF

No.	Defect Group	Requirements	Type of Finishes	Tool/ Method
1	Finishing	No construction stain marks or rust	All	Visual
		No rough surface	FR	Visual
		Good paintwork	All	Visual
		Consistent colour tone	All	Visual
2	Alignment and Evenness	Even and level, no sign of tripping	All	Visual
		Falls in right direction	All	Visual
		Roof tiles in alignment	PR	Visual
3	Cracks and Damages	No visible damages/ defects, (e.g. cracks, chippings, stripping, no sharp, protrusion etc.)	All	Visual
4	Construction	No sign of leakage	All	Visual
		Proper dressing for any protrusion	All	Visual
		No sign of clogging and ponding	All	Visual
		Openings to be sealed to prevent pest invasion	All	Visual
		RWDP inlet to be lower than the surrounding gutter invert level	All	Visual
		Gutter and RWDP inlet to be covered to prevent chockage, where practical	All	Visual
		Neat and secured installation of fixtures (such as solar cell roof)	All	Visual
5	Jointing	Consistent joint width and neat	All	Visual
		Good laps at joints and proper vertical abutment details	All	Visual

Note:
*The abbreviation used in the table define as follows:
Flat roof – FR, Pitched roof –PR

e.g. concrete flat roof and membrane roof, concrete and clay tiles, profile metal tiles, pressed metal tiles and solar cell roof, waterproofing, gutters and rainwater down pipes (RWDP)

EXTERNAL WALL

No.	Defect Group	Requirements	Type of Finishes	Tool/ Method
1	Finishing	No stain marks (e.g. mortar stain, paint stain, paint drips)	All	Visual
		Consistent colour tone, good paintwork, no efflorescence, no discolouration and fading	All	Visual
		No rough/ patchy surface	PP/ P*	Visual
		No sign of corrosion	CL*	Visual
		Surface should be free from peeling, blister and chalkiness	P*	Visual
		Finish texture to be consistent	AC*	Visual
2	Alignment and Evenness	Wall should be aligned and not wavy	All	Visual
		Edges to be straight and aligned	All	Visual
		Evenness of surface	All	Visual
3	Cracks and Damages	No visible damages/ defects /no dented or scratches	All	Visual
4	Construction	Weep holes are provided as specified	All	Visual
		Neat and secured installation of Fixtures (e.g. Aluminium strip, glass holder)	All	Visual
5	Jointing	Consistent and neat marking	All	Visual
		Joints are aligned between tiles, and consistent in size	T*	Visual
		Gaps around openings to be properly sealed	CL*	Visual
		Joints of regular width as specified	CL*	Visual
		Sealant material compatible with cladding	CL*	Visual

Note:
*The abbreviation used in the table define as follows:
a) PP: Plaster & Paint
b) T: Tiles
c) P: Painting
d) FB: Facing brickwork
e) CL: Cladding/Curtain wall (e.g. aluminium, pre-cast panel, glass panel, etc.)
f) AC: Architectural coating
g) O: Others

APRON AND PERIMETER DRAIN

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Apron/ Perimeter drain/ Drain cover	Finishing	No stain marks	-	Visual
			No rough/patchy surface	-	Visual
			No sign of corrosion	-	Visual
		Alignment and Evenness	Edge to be straight and even	-	Visual
		Cracks and Damages	No visible damages/defects	-	Visual
			Securely fixed, functional and safe		Visual
		Fall/Gradient	Free flowing and no water ponding	-	Visual
		Joints and Gaps	Consistent joints width and neat	-	Visual
Note: For the apron and perimeter drain, shall be carried out together with the drain cover and inspection chamber.					

CAR PARK/ CAR PORCH

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Carpark/ Car Porch (item to be assessed are Floor, Wall, Ceiling, Column, Fixtures & Basic M&E fittings)	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Falls in right direction	-	Spirit Level 1.2m
			Edge to be straight	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual
Note: Car park/ car porch is an area or building where cars or other vehicles may be left temporarily such as multi-level car park and car porch attached with the building.					

ANNEX B
(Informative)

QUALITY STANDARD FOR BASIC M&E FITTINGS

No.	Defect Group	Requirements	Tool/ Method
1	Joints and Gaps	Consistent gaps and neat joint	Visual
2	Alignment and Evenness	Aligned, levelled and straight	Visual & Spirit level
3	Materials and Damages	No stain marks and visible damages/ defects	Visual
4	Functionality and Safety	Functional, secured and safe	Visual & Physical
5	Accessories Defects Screw at power point/switches/floor trap, screw cap, floor trap filter)	No missing or defective accessories	Visual
		Accessories with good fit and no stains	Visual

Note:
The basic M&E fittings including switches, power point, gully trap, floor trap, plumbing fittings, sanitary fittings, pipes, water tap, hand bidet, shower rose, stopcock, SMATV point, lightings and others.

ANNEX C
(Informative)

QUALITY STANDARDS FOR EXTERNAL WORKS

LINK-WAY/ SHELTER

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Floor, Column, Ceiling, Roof Covering Fixtures and Basic M&E fittings	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

EXTERNAL DRAIN

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Drain	Finishing	No stain marks	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Finishes must be even, level, aligned and consistent	-	Visual
		Material and Damages	No visible cracks and damages	-	Visual
		Functionality	Free flowing and no water ponding, no siltation	-	Visual
			Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
2	Drain cover/ Inspection Chamber	Finishing	No stain marks	-	Visual
			No patchiness & brush marks	-	Visual
			No sign of corrosion on the drain grating	-	Visual
			Drain grating properly painted	-	Visual
		Alignment and Evenness	Finishes must be even, level, aligned and consistent	-	Visual
			Level and do not wrap or rock	-	Visual & Physical
			Cover to be level with frame	-	Visual
		Material and Damages	No visible cracks and damages	-	Visual
			Fixtures installed must be safe, secured and functional	-	Visual & Physical
		Functionality	Free flowing and no water ponding	-	Visual
			Drain grating to be safely and securely fixed and functional	-	Visual
		Joints and Gaps	Consistent joints width and neat	-	Visual
			Gap between drain covers	5-10 mm wide	Steel measuring tape
			Gap between sides of drain	5-10 mm wide	Steel measuring tape
			Inspection chambers are level with surroundings without depression and with tolerance of 20mm for protrusion	-	Visual & Steel measuring tape

ROADWORK (INCLUDING PARKING BAY)

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Road surface, Road Marking, Kerbs, Road Sign and Road Lighting	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
			No water ponding	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

FOOTPATH AND TURFING

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Footpath, Turfing (close, sport and others), Lighting, Fixtures (e.g. fixed benches, signage, railing, etc.)	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
			No depression or bald patches	-	Visual
			Turfing done evenly, no dead grass or weeds	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

FENCE AND GATE (AT PROJECT MAIN ENTRANCE AND INDIVIDUAL UNITS)

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Fence, Gate, Basic M&E fittings, and Fixtures	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
			Piers and gate to be vertical, perpendicular and straight. Gate to be parallel and aligned	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

PLAYGROUND

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Floor finish, Playground Equipment, Lighting, Side Drain and Fixtures	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
			Free flowing of water	-	Visual
			No water ponding with no siltation	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

COURT (SPORTS)

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Floor 1 (Inside court), Floor 2 (Outside court), Signage, Basic M&E Fittings and Fixtures (e.g. net post, fencing, fixed bench, etc.)	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
			No water ponding	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of corrosion	-	Visual
		Functionality	Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

SWIMMING POOL

No.	Sub-elements	Defect Group	Requirements	Tolerance	Tool/ Method
1	Overflow drain, Pool deck, Ladder and Railing, Basic M&E fittings and fixtures	Finishing	No stain marks	-	Visual
			Consistent colour and good paintwork	-	Visual
			No rough/patchy surface	-	Visual
		Alignment and Evenness	Evenness of surface	-	Visual
			Edge to be straight	-	Visual
		Materials and Damages	No visible damages/ defects	-	Visual
			No missing or defective accessories	-	Visual
			No sign of delamination	-	Visual & Physical
			No sign of corrosion	-	Visual
		Functionality	No chockage	-	Visual
			Securely fixed, functional and safe	-	Visual & Physical
		Joints and Gaps	Consistent joints width and neat	-	Visual
			No visible gaps for M&E fittings	-	Visual

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