Saya mengesahkan bahawa kerja-kerja telah dilaksanakan dengan sempurna.

Nor Halisa Mohamad Halil
Senior Manager
Delivery Management Office (DMO)
Malaysia Productivity Corporation (MPC)

INTRODUCTION

Understanding the IOW role during construction is very important.

If not, you will end up doing work for Client or the Contractor.

Remember , you are the :

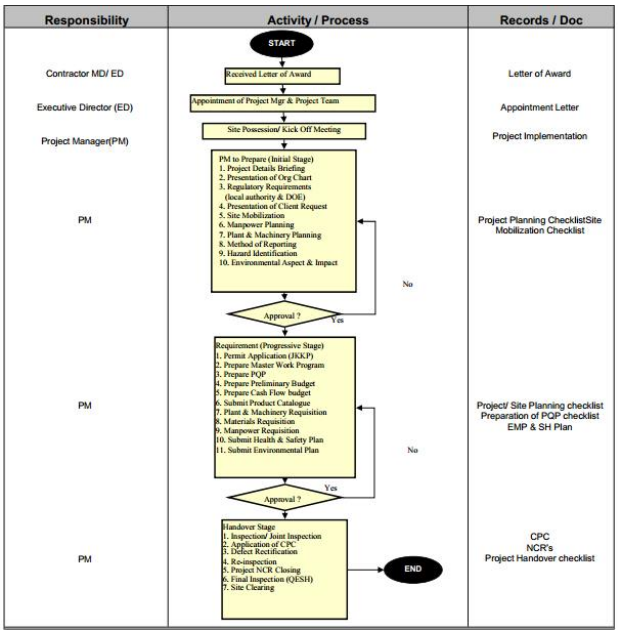
- Architect/ engineers eyes and ears at site.
- Architect / engineer provides Periodic supervision while RA/RE/IOW/COW provides standing supervision

UNDERSTANDING CONTRACTORS PROJECT PLANNING

UNDERSTANDING PROJECT THROUGH TIME

Managing a project through time and resources is very important in a Construction Project.

Therefore, it is important for the need for proper planning and scheduling of the project.



CONTRACTOR PROJECT PLANNING CHECKLIST

PROJECT/ SITE PLANNING CHECKLIST- Initial Stage

Project Title : _____

Doc No : _____

Site Operation Head : _____ Date : _____

Item	Description	Action By	Dateline	Follow Up
1.	Application of Permits (JKKP)			
2.	Preparation of PQP			
3.	Preparation of Master Work Program			
4.	Preparation of Construction Program			
5.	Preparation of Sub Program			
6.	Site Mobilization Planning			
7.	Manpower Requisition		2 months before construction date	
8.	Material Requisition		Upon approval of product catalogue by client	
9.	Plant & Machinery Requisition		Upon approval of schedule by mgt	
10.	Temporary Electricity, Water & Telephone		1 month before construction date	
11.	Project Budgeting		Upon approval of PQP	
12.	Material Planning & submission of product catalogue		Upon approval of PQP	
13.	Store Material Requisition			

CONTRACTOR PROJECT QUALITY PLAN CHECKLIST

PROJECT QUALITY PLAN CHECKLIST

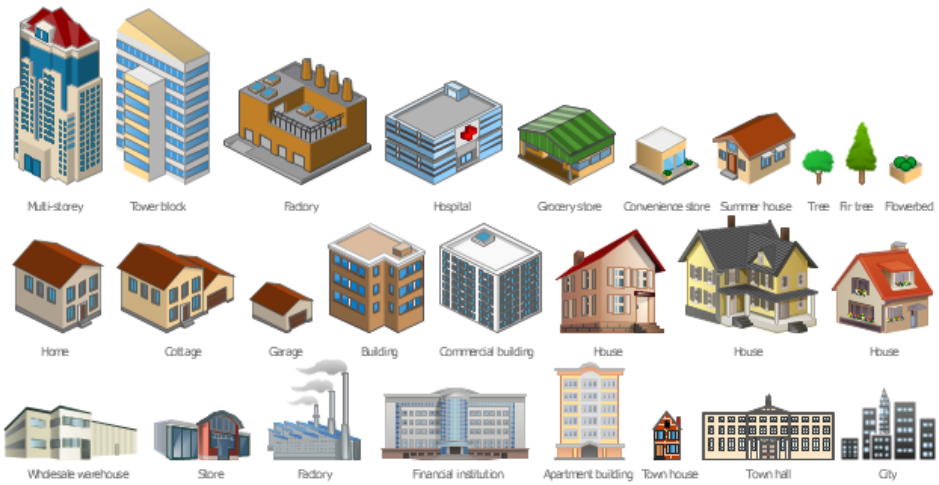
Project Title : _____
Project Manager : _____ Date : _____

Item	Description	Pls (√) if done	Follow Up date	Remark
1.	Project Code			
2.	Statement of implementation objective			
	i) Time control including the planned and target dates for completion			
	ii) Cost Control			
	iii) Quality Assurance			
3.	Description of the location of the site and site location plan			
4.	Brief description of the scope of the work including work covered by Price Cost and Provisional Sum			
5.	Particulars of the Contract including;			
	i) Title of Contract			
	ii) Contract Number			
	iii) Contract Sum			
	iv) a list of Prime Cost and Provisional Sums			
	v) Date of Possession / date of commencement			
	vi) Period for completion including requirements for sectional completion			
	vii) Date for completion including requirements for sectional completion			
	viii) names, addresses, telephone and fax numbers of the client, consultants and others involved in the contract			
6.	List of Construction drawings			
7.	Particulars of the resource requirement			
	i) List of site management, supervisory and administration staff and a site organization chart			
	ii) List of the site facilities, amenities and equipment to be provided and a site layout plan *Location of site office, workers' quarter, location of material and equipment store, Barbending yard, formwork fabrication area, stacking area for sand, aggregates, Location of plant & Machinery, Location of temporary Toilet, Location of project signboard and location of dumping ground			
	iii) Plant Requirement Schedule			
	iv) Sub Contract Award Schedule & Schedule of Subcontract			
	v) Material Requirements Schedule – Material and proposal for alternative materials			
8.	Test Plan			
9.	Construction Schedules			
10.	Bar Bending Schedules			
11.	Please specify any others requirement			

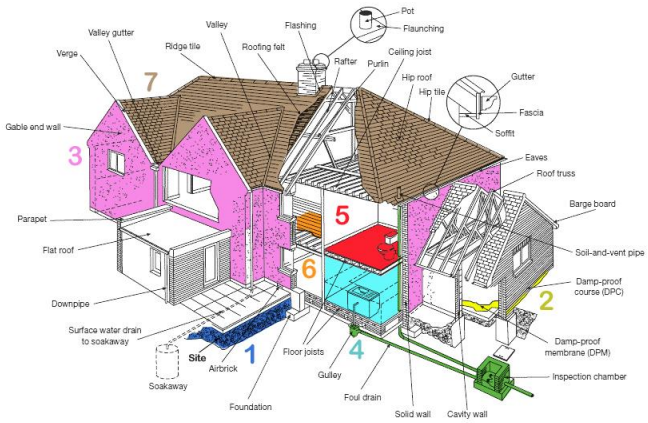
UNDERSTANDING THE CONSTRUCTION WORK SEQUENCE

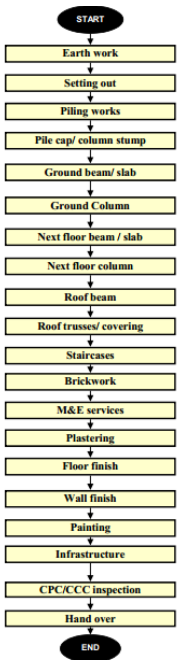
TYPES OF BUILDINGS

There are various types of buildings in the world. Each of the building has its own requirements and complexity.



UNDERSTANDING A SIMPLE CONSTRUCTION FLOW





WHY NEED WORK PROGRAM?

Why schedule the construction project is important?

Owner
- Owner requirement
- Communication of the construction plan
- Monitor and measure progress
- Manage change

Main Contractor/ Subcontractor/ Supervisors/ Worker in Field
- Establish production goals
- Manage change
- Communication of the construction plan

TIME IS OF THE ESSENCE

Success or Failure

- Time shall be strictly of the essence of the contract.

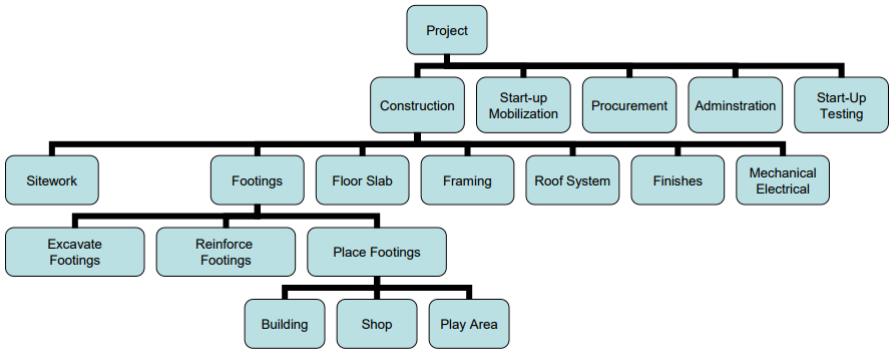
- The Contractor shall promptly begin the work under the contract and
- all portions of the project made the subject of the contract shall be begun and so prosecuted with necessary plant, equipment, procedures, and overtime that they shall be completed and ready for full use in the time stated in the contract.

Think in time and cost

• Time is cost and delay will be costly to all parties.

WORK PROGRAM STRUCTURE

The **Work Program Structure** is a hierarchical system that represents the construction project in increasing levels of detail to define, organize and display the project work in measurable and manageable components.



UNDERSTANDING THE CRITICAL PATH METHOD

Defining activities for a project, through their relationships we can identify the project duration.

The relationships of each activity
– When one activity can start
– The sequence of each activity
– The duration of each and when it can finish.

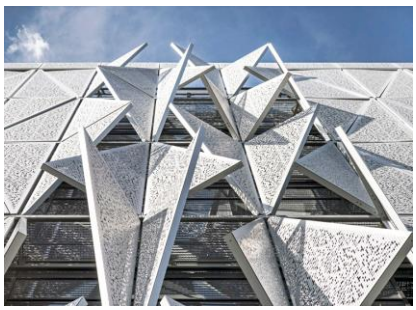
We will learn a new way of managing projects through the critical path method.

LEVEL OF DETAIL FOR CPM

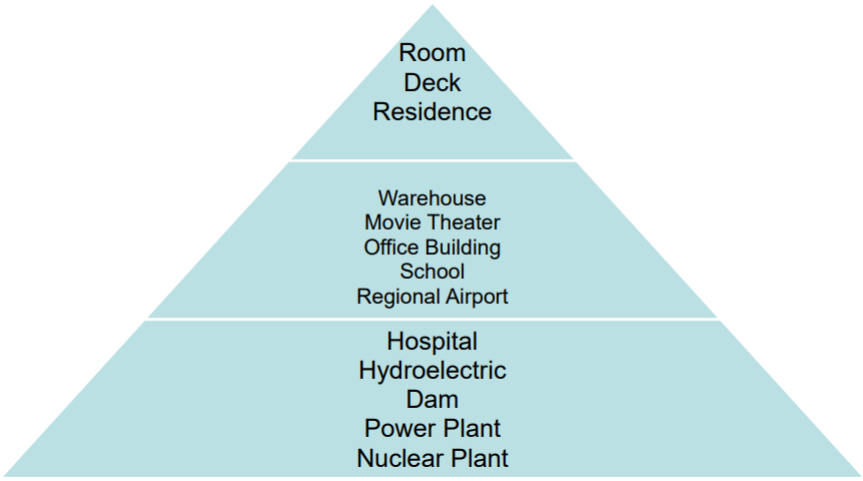
- Client/ Owner requirement
- As needed to manage the project
- Sequencing & Experience
- No more than five days
- Type of work – Hour to day duration
- Project Requirements

NATURE OF WORK

- Productivity should increase as experience is gained for repetitive tasks.
- Activities composed of repetitive tasks should benefit from the increased task productivity and have decreasing activity durations.
- Depending on the work, difficulty can increase if uncommon work tasks are grouped together in an activity.



DETAIL OF WORK PROGRAM VARIES THROUGH PROJECT



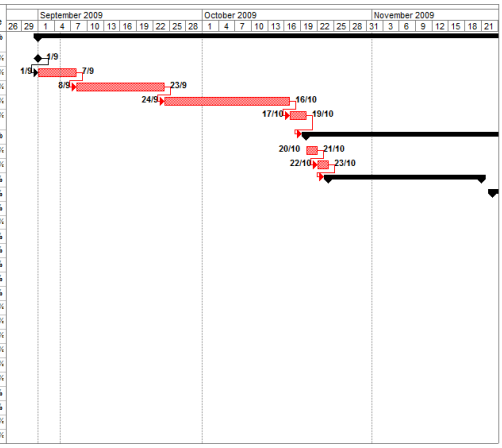
WHAT CAN WE GET FROM A WORK PROGRAM?

There Are many things that we can get from analyzing the work program.

1. Contractor Work Plan considering sequencing of work , time, manpower and etc.
2. When updated you can make comparison between Schedule Vs Actual to identify the delay
3. Looking at the program and S curve is very important to know whether the program is realistic of the work percentage is back loaded.
4. Front loading of work is not necessarily good as it can be unrealistic.
5. For Architects it is a good tool for assessing the entitlement of Extension of time.

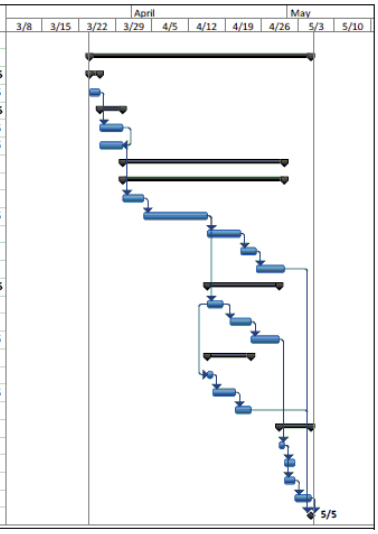
EXAMPLE 1 : SINGLE STOREY HOUSE WORK PROGRAM

ID	Task Name	Duration	Start	Finish	% Complete
1	**construction of one unit Single Storey Building**	**346 days**	**Tue 1/9/09**	**Fri 8/10/10**	0%
2	site possession	0 days	Tue 1/9/09	Tue 1/9/09	0%
3	site survey	6 days	Tue 1/9/09	Mon 7/9/09	0%
4	site clearing 16000m2 area	14 days	Tue 8/9/09	Wed 23/9/09	0%
5	EarthWork	20 days	Thu 24/9/09	Fri 16/10/09	0%
6	Inspection and approval of platform level	2 days	Sat 17/10/09	Mon 19/10/09	0%
7	**Building Work**	**290 days**	**Tue 20/10/09**	**Wed 22/9/10**	0%
8	Building Setting Out	2 days	Tue 20/10/09	Wed 21/10/09	0%
9	Inspection and approval of setting Out	2 days	Thu 22/10/09	Fri 23/10/09	0%
10	**Piling work**	**24 days**	**Sat 24/10/09**	**Fri 20/11/09**	**0%**
17	**Foundation Work**	**33 days**	**Mon 23/11/09**	**Wed 30/12/09**	**0%**
27	**Stump Work**	**24 days**	**Tue 15/12/09**	**Mon 11/1/10**	**0%**
33	Backfill to Platform Level	3 days	Tue 12/1/10	Thu 14/1/10	0%
34	**Ground beam Work**	**49 days**	**Fri 15/1/10**	**Fri 12/3/10**	**0%**
44	**Ground slab Work**	**35 days**	**Sat 13/3/10**	**Thu 22/4/10**	**0%**
52	**Column Work**	**16 days**	**Thu 15/4/10**	**Mon 3/5/10**	**0%**
59	**1St Floor Beam & Slab Work**	**44 days**	**Tue 4/5/10**	**Wed 23/6/10**	**0%**
68	**Roof work**	**38 days**	**Fri 18/6/10**	**Sat 31/7/10**	**0%**
74	Installation of Fascia Board	7 days	Mon 5/7/10	Mon 12/7/10	0%
75	Installation Of Gutter	7 days	Tue 13/7/10	Tue 20/7/10	0%
76	Installation of Door & Window Frame	7 days	Thu 24/6/10	Thu 1/7/10	0%
77	Brick Work	14 days	Fri 2/7/10	Sat 17/7/10	0%
78	Installation of Concealed M&E Conduit & P	14 days	Sat 10/7/10	Mon 26/7/10	0%
79	Plastering	7 days	Mon 19/7/10	Mon 26/7/10	0%
80	**painting**	**8 days**	**Tue 27/7/10**	**Wed 4/8/10**	**0%**
85	**Ceiling Work**	**31 days**	**Mon 2/8/10**	**Mon 6/9/10**	**0%**
90	Electrical wiring	7 days	Thu 26/8/10	Thu 2/9/10	0%
91	Testing for Wiring	3 days	Fri 3/9/10	Mon 6/9/10	0%

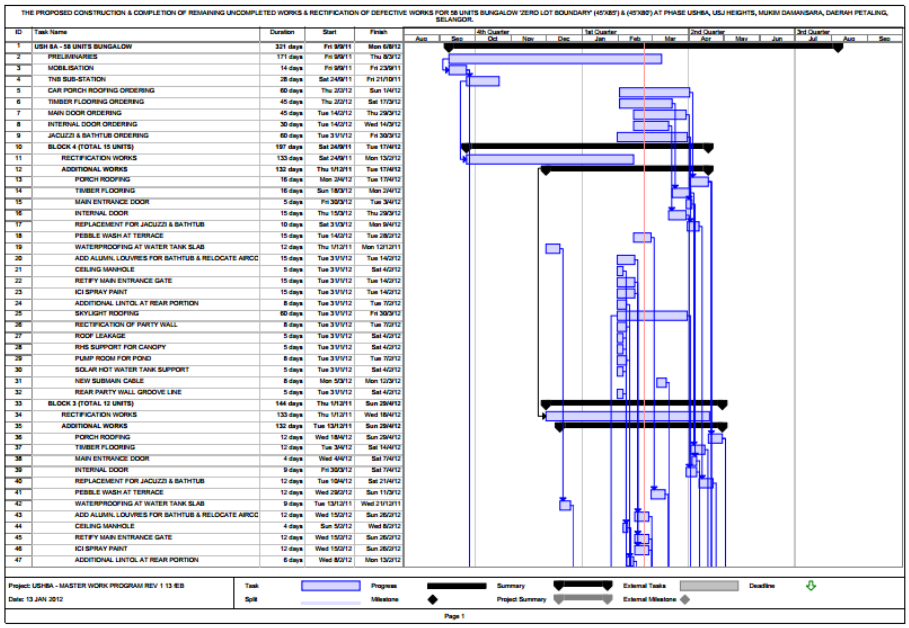


EXAMPLE 2 : LANDSCAPING WORK PROGRAM

ID	Task Mode	Task Name	Duration	Start	Finish
1					
2		**KES 1 Lanscape for Puan Norzawani's House**	**35 days**	**Tue 3/24/15**	**Tue 5/5/15**
3		**MOBILISATION**	**2 days**	**Tue 3/24/15**	**Wed 3/25/15**
4		Manpower & Equipment	2 days	Tue 3/24/15	Wed 3/25/15
5		**SITE CLEARANCE**	**3 days**	**Thu 3/26/15**	**Mon 3/30/15**
6		Clearance Debris	3 days	Thu 3/26/15	Mon 3/30/15
7		Clearance Ground Level	3 days	Thu 3/26/15	Mon 3/30/15
8		**HARDSCAPE CONSTRUCTION**	**26 days**	**Mon 3/30/15**	**Thu 4/30/15**
9		**FISH POND/POOL CONSTRUCTION**	**26 days**	**Mon 3/30/15**	**Thu 4/30/15**
10		Foundation	4 days	Mon 3/30/15	Fri 4/3/15
11		Pool Construction	10 days	Fri 4/3/15	Wed 4/15/15
12		Mechanical & Piping (Water Filter)	5 days	Wed 4/15/15	Tue 4/21/15
13		Electrical	3 days	Wed 4/22/15	Fri 4/24/15
14		Finishes	4 days	Sat 4/25/15	Thu 4/30/15
15		**GAZEBO CONSTRUCTION**	**11 days**	**Wed 4/15/15**	**Wed 4/29/15**
16		Foundation	3 days	Wed 4/15/15	Sat 4/18/15
17		Structure/Column	4 days	Mon 4/20/15	Thu 4/23/15
18		Roof Structure & Finishes	4 days	Fri 4/24/15	Wed 4/29/15
19		**BENCHES CONSTRUCTION**	**7 days**	**Wed 4/15/15**	**Thu 4/23/15**
20		Foundation	1 day	Wed 4/15/15	Thu 4/16/15
21		Benches Structure	3 days	Thu 4/16/15	Mon 4/20/15
22		Finishes (Pebbles)	3 days	Tue 4/21/15	Thu 4/23/15
23		**SOFTSCAPE**	**5 days**	**Wed 4/29/15**	**Tue 5/5/15**
24		Digging Hole (Big Tree)	1 day	Wed 4/29/15	Thu 4/30/15
25		Lay Top Soil	2 days	Thu 4/30/15	Sat 5/2/15
26		Big Tree Planting	2 days	Thu 4/30/15	Sat 5/2/15
27		Shurb Planting	2 days	Sat 5/2/15	Tue 5/5/15
28		**LANDSCAPE COMPLETION**	0 days	Tue 5/5/15	Tue 5/5/15



EXAMPLE 3 : RESCUE CONTRACT WORK PROGRAM



THE PROPOSED CONSTRUCTION & COMPLETION OF REMAINING UNCOMPLETED WORKS & RECTIFICATION OF DEFECTIVE WORKS FOR 58 UNITS BUNGALOW 'ZERO LOT BOUNDARY' (45'X80') & (45'X80') AT PHASE USH8A, USJ HEIGHTS, MUKIM DAMANSARA, DAERAH PETALING, SELANGOR.

ID	Task Name	Duration	Start	Finish
1	USH 8A - 58 UNITS BUNGALOW	331 days	Fri 9/9/11	Mon 6/8/12
2	PRELIMINARIES	171 days	Fri 9/9/11	Thu 8/3/12
3	MOBILISATION	14 days	Fri 9/9/11	Fri 23/9/11
4	TNB SUB-STATION	28 days	Sat 24/9/11	Fri 21/10/11
5	CAR PORCH ROOFING ORDERING	60 days	Thu 2/2/12	Sun 1/4/12
6	TIMBER FLOORING ORDERING	45 days	Thu 2/2/12	Sat 17/3/12
7	MAIN DOOR ORDERING	45 days	Tue 14/2/12	Thu 29/3/12
8	INTERNAL DOOR ORDERING	30 days	Tue 14/2/12	Wed 14/3/12
9	JACUZZI & BATHTUB ORDERING	60 days	Tue 31/1/12	Fri 30/3/12
10	BLOCK 4 (TOTAL 15 UNITS)	197 days	Sat 24/9/11	Tue 17/4/12
11	RECTIFICATION WORKS	133 days	Sat 24/9/11	Mon 13/2/12
12	ADDITIONAL WORKS	132 days	Thu 1/1/211	Tue 17/4/12
13	PORCH ROOFING	16 days	Mon 2/4/12	Tue 17/4/12
14	TIMBER FLOORING	16 days	Sun 18/3/12	Mon 2/4/12
15	MAIN ENTRANCE DOOR	5 days	Fri 30/3/12	Tue 3/4/12
16	INTERNAL DOOR	15 days	Thu 15/3/12	Thu 29/3/12
17	REPLACEMENT FOR JACUZZI & BATHTUB	10 days	Sat 3/3/12	Mon 9/4/12
18	PEBBLE WASH AT TERRACE	15 days	Tue 14/2/12	Tue 28/2/12
19	WATERPROOFING AT WATER TANK SLAB	12 days	Thu 1/1/211	Mon 12/1/211
20	ADD ALUMN. LOUVRES FOR BATHTUB & RELOCATE AIRCC	15 days	Tue 31/1/12	Tue 14/2/12
21	CEILING MANHOLE	5 days	Tue 31/1/12	Sat 4/2/12
22	RETIFY MAIN ENTRANCE GATE	15 days	Tue 31/1/12	Tue 14/2/12
23	ICI SPRAY PAINT	15 days	Tue 31/1/12	Tue 14/2/12
24	ADDITIONAL LINTOL AT REAR PORTION	6 days	Tue 31/1/12	Tue 7/2/12
25	SKYLIGHT ROOFING	60 days	Tue 31/1/12	Fri 30/3/12
26	RECTIFICATION OF PARTY WALL	8 days	Tue 31/1/12	Tue 7/2/12
27	ROOF LEAKAGE	5 days	Tue 31/1/12	Sat 4/2/12
28	RHS SUPPORT FOR CANOPY	5 days	Tue 31/1/12	Sat 4/2/12
29	PUMP ROOM FOR POND	8 days	Tue 31/1/12	Tue 7/2/12
30	SOLAR HOT WATER TANK SUPPORT	5 days	Tue 31/1/12	Sat 4/2/12
31	NEW SUBMAIN CABLE	8 days	Mon 5/3/12	Mon 12/3/12
32	REAR PARTY WALL GROOVE LINE	5 days	Tue 31/1/12	Sat 4/2/12
33	BLOCK 3 (TOTAL 12 UNITS)	144 days	Thu 1/1/211	Sun 29/4/12
34	RECTIFICATION WORKS	133 days	Thu 1/1/211	Wed 18/4/12
35	ADDITIONAL WORKS	132 days	Tue 13/12/11	Sun 29/4/12
36	PORCH ROOFING	12 days	Wed 18/4/12	Sun 29/4/12
37	TIMBER FLOORING	12 days	Tue 3/4/12	Sat 14/4/12
38	MAIN ENTRANCE DOOR	4 days	Wed 4/4/12	Sat 7/4/12
39	INTERNAL DOOR	9 days	Fri 30/3/12	Sat 7/4/12
40	REPLACEMENT FOR JACUZZI & BATHTUB	12 days	Tue 10/4/12	Sat 21/4/12
41	PEBBLE WASH AT TERRACE	12 days	Wed 29/2/12	Sun 11/3/12
42	WATERPROOFING AT WATER TANK SLAB	9 days	Tue 13/12/211	Wed 21/12/211
43	ADD ALUMN. LOUVRES FOR BATHTUB & RELOCATE AIRCC	12 days	Wed 15/2/12	Sun 26/2/12
44	CEILING MANHOLE	4 days	Sun 5/2/12	Wed 8/2/12
45	RETIFY MAIN ENTRANCE GATE	12 days	Wed 15/2/12	Sun 26/2/12
46	ICI SPRAY PAINT	12 days	Wed 15/2/12	Sun 26/2/12
47	ADDITIONAL LINTOL AT REAR PORTION	6 days	Wed 8/2/12	Mon 13/2/12

Project: USH8A - MASTER WORK PROGRAM REV 1 13 IEB
Date: 13 JAN 2012

Task, Split, Progress, Milestone, Summary, Project Summary, External Tasks, External Milestone, Deadline

Page 1

UNDERSTANDING S CURVE

What is the S-Curve and Bar Chart

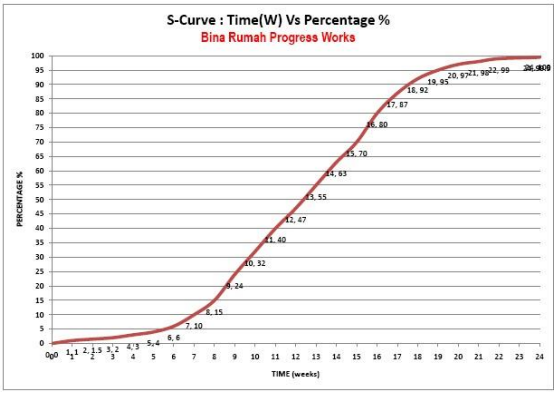
In a million-dollar construction project the preparation of work planning is very important.

The tables is based on an S-Curve in building and housing construction projects which have been constructed thoroughly by considering data on time, cost, work and manpower.

From the data collected from the commencement until the completion of the project, it is found that each of the construction projects that will run smoothly will fit the graph as the letter S.

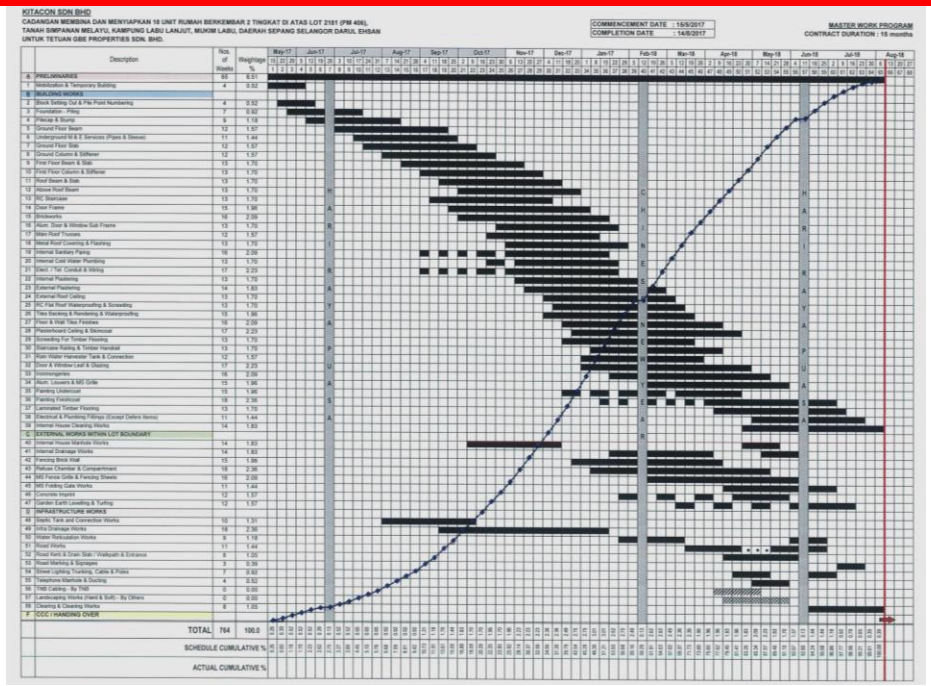
From this S-curve, you will be able to built a bar chart.

From the bar chart and S-curve you can predict whether your project is on time of delay.

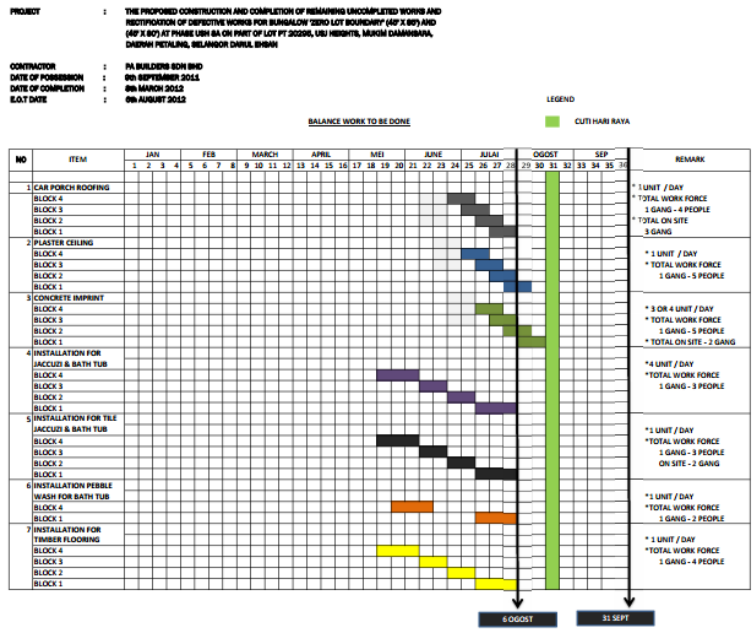


TIME (w)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PERCENTAGE %	1	1.5	2	3	4	6	10	15	24	32	40	47	55	63	70	80	87	92	95	97	98	99	99.5	100

EXAMPLE 4 : 18 UNIT SEMi-D WORK PROGRAM



EXAMPLE 5 : DELAY CATCH UP WORK PROGRAM



UNDERSTANDING THE CONTRACTOR CHALLANGES

CONSTRUCTION CONTRACT GENERAL CONDITIONS

- Contractor's warranties
- Defective drawings
- Approval of contractor's plans and equipment
- Approval of shop drawings other submittals
- Guarantee by the Contractor
- Conduct of the work
- Defective work
- Relations with other contractors and subcontractors
- Construction reports
- Authority Requirements
- Inspection of materials
- Inspection of field work
- Authority of the Arch/Eng'r.
- Duties of the inspector
- Permits and licenses
- Labor considerations
- Work done by the owner
- Order and discipline
- Performance
- Final inspection & acceptance

RISK ALLOCATIONS

- Force majeure
- Indemnification
- Liens
- Labor laws
- Differing site conditions
- Delays and extension of time
- Liquidated damages
- Consequential damage
- Occupational safety, and health of workers
- Permits, licenses, and regulations
- Termination for default by contractor
- Suspension of work
- Warranties and guarantees

KNOWING IOW RESPONSIBILITIES DURING CONSTRUCTION

BASIC SCOPE OF DUTIES OF A IOW

PRE CONSTRUCTION	CONSTRUCTION	POST CONSTRUCTION
• Inspecting of contractor preliminaries requirements • Liaising with contractor for submissions of work program, insurance and performance bond	**i. Reporting, Preparing & Maintaining Records** **ii. Coordination of Consultant/ contractor on site** **iii. Progress of work & progress report** **iv. Building Material** **v. Site Inspection and Testing** **vi. Contractor payment and Management of Variation Order** **vii. Completion and handover**	• Inspection for closure of defect rectification • Assisting consultant for Final Account preparation

(i) Reporting, Preparing & Maintaining Records

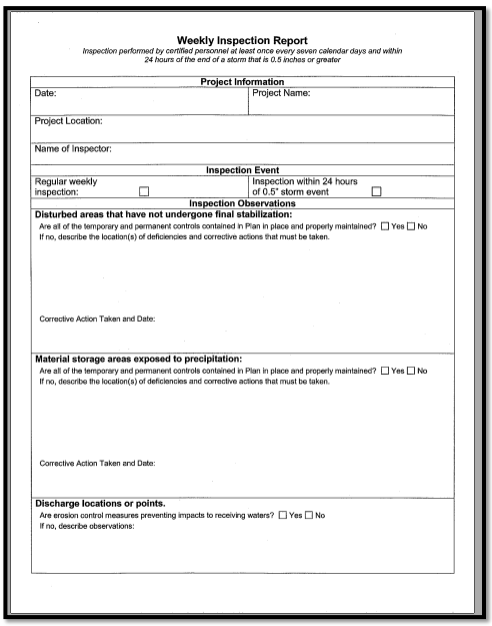
REPORTING, PREPARING & MAINTAINING RECORDS

(i) Reporting, Preparing & Maintaining Records

- Preparation of Monthly reports
- Preparation/ Maintain Site Dairy
- Filing, Maintain and inspect records at site
- Highlight any discrepancies in documents
- Study Drawings and Specification and highlight discrepancies if any
- Checking compliance to PQP, EMP & SHMP on site

PREPERATION OF WEEKLY/MONTHLY REPORTS

- It is advisable for IOW to prepare for weekly / Monthly report to be forwarded to the Contract Administrator/ Client
- Reports best to be incorporated with IOW observations and images of progress.



Weekly Inspection Report

Inspection performed by certified personnel at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater

Project Information	
Date:	Project Name:
Project Location:	
Name of Inspector:	
Inspection Event	
Regular weekly inspection: ☐	Inspection within 24 hours of 0.5" storm event ☐

Inspection Observations

Disturbed areas that have not undergone final stabilization:

Are all of the temporary and permanent controls contained in Plan in place and properly maintained? ☐ Yes ☐ No

If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

Material storage areas exposed to precipitation:

Are all of the temporary and permanent controls contained in Plan in place and properly maintained? ☐ Yes ☐ No

If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

Discharge locations or points.

Are erosion control measures preventing impacts to receiving waters? ☐ Yes ☐ No

If no, describe observations:

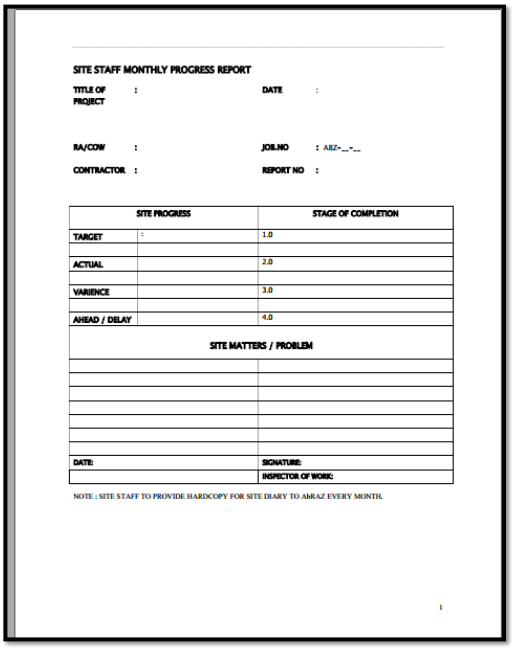
PREPERATION OF WEEKLY/MONTHLY REPORTS

Content

- Project Information
- Site Progress
- Stage of completion
- Site matter/ problem
- Sign by IOW with date

Why need the report

- Updating CA/Client on progress
- Highlight issues to overcome
- Take necessary measures for delay



SITE STAFF MONTHLY PROGRESS REPORT

TITLE OF PROJECT : DATE :

RA/COW : JOB.NO : ABZ-__-__

CONTRACTOR : REPORT NO :

SITE PROGRESS		STAGE OF COMPLETION
TARGET	:	1.0
ACTUAL		2.0
VARIENCE		3.0
AHEAD / DELAY		4.0

SITE MATTERS / PROBLEM	
DATE:	SIGNATURE:
	INSPECTOR OF WORK:

NOTE : SITE STAFF TO PROVIDE HARDCOPY FOR SITE DIARY TO ABRAZ EVERY MONTH.

MAINTAINING INSPECTION RECORD ON SITE

Records to be maintained at construction sites play important role in construction activities.

Purpose of the records

- prove construction activity has taken place at site for billing or any other claims.
- data of various construction activities carried out at site.
- Document proof for additional work
- For audits of construction projects at any point of time.
- to defend any claims such as liquidated damages or false claims or violations of any guidelines by authorities or clients.

Records on Site

- Various Correspondence
- Architectural / Engineers instruction, Variation order
- Minutes of meeting , Extension of time
- Weekly Claim, Arch Certificate
- Test Result
- Cube Test
- Trial Mix
- Contractor Monthly Progress Claim / Arch Cert
- Inspection Form
- Site Diary
- Defects List / Letter From Purchaser / Quality Assessment
- Quality, environment, safety and health records
- CCC, CPC, CNC, CMGD
- As Build Drawing
- Shop Drawing
- Request for information
- Consultant info & document
- Piling Record
- Site Memo
- Specialist / Sub Con. Files
- Sales & Purchase Plans and furniture layout
- Site Photo
- T&C. Record
- Non Compliance report

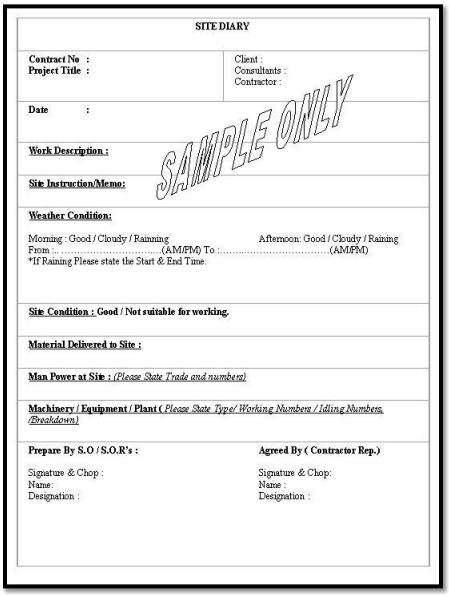
PREPERATION / MAINTENANCE OF SITE DIARY

Site diary of a construction project should indicate contract agreement number, name of work, amount of contract, date of commencement of work, date of completion and extension time granted.

All the relevant details need be entered daily in the works diary.

This diary serves as an authentic record. Following details need to be entered in this diary with due care:

1. Weather at site
2. Labors employed
3. Important materials brought to site with their approximate quantity
4. Types of transport working at site
5. Types of tools and plants being used at site
6. Important items of works completed and passed on the particular date
7. Visits of VIPs and their remarks if any.


SITE DIARY

Contract No :
Project Title :

Client :
Consultants :
Contractor :

Date :

Work Description :

Site Instruction/Memo:

SAMPLE ONLY

Weather Condition:

Morning : Good / Cloudy / Rainning Afternoon: Good / Cloudy / Raining
From :..... (AM/PM) To :..... (AM/PM)
*If Raining Please state the Start & End Time.

Site Condition : Good / Not suitable for working.

Material Delivered to Site :

Man Power at Site : *(Please State Trade and numbers)*

Machinery / Equipment / Plant (*Please State Type/ Working Numbers / Idling Numbers /Breakdown)*

Prepare By S.O / S.O.R's :

Signature & Chop :
Name:
Designation :

Agreed By (Contractor Rep.)

Signature & Chop:
Name :
Designation :

COMMON ISSUES IN SITE DIARY RECORDING

KEEP YOUR SITE DIARY CLEAN

- Writing must be readable and understandable.
- This particularly pertains to contemporaneous records where people often fail to foresee statements and/or scribbled notes may one day be before a judge in a crowded courtroom.

DON'T RELY ON OTHERS

- Your records management is your own responsibility and must be properly stored.
- Pointing the finger will not relieve you of your recordkeeping requirements.

DON'T COLLUDE

- Be Professional and impartial.
- creating certain documents after an event by colluding with another party can be illegal, especially where that collusion is used to distort the truth.

DO IT PROPERLY FOR DISPUTE PURPOSES

- Site Diary is an important evidence to be use in a dispute.
- Remember these documents include electronic records that may be stored in latent places and archived folders within your email accounts.
- You must produce all documents that are relevant to the subpoena and not privileged, not just those you feel like handing over or found in a quick search.

HIGHLIGHTING DESCREPENCIES IN DOCUMENTS

Should the IOW finds or be inform of a discrepancies in document, he must inform the Architect/ Engineer as soon as practicable.

What does it mean with discrepancy between documents?
Discrepancy between documents could be defined as mistakes or errors between Contract Documents.

Example of Discrepancy Between Documents
– Under measurement in the Bills of Quantities
– Architectural and structural drawings are not tally

HIGHLIGHTING DESCREPENCIES IN DOCUMENTS

WHAT HAPPEN WHEN CONTRACTOR DISCOVER DISCREPANCY IN CONTRACT DOCUMENTS?

- When contractor come across with discrepancy in Contract Documents, they should tell the architect or his representative in writing about the discrepancy.
- Remember - It is not a contractor's duty to check on the discrepancy., It is the consultants order to make certain and find any discrepancy.
- Architect/ IOW will check and confirm the discrepancy.
- If there is any discrepancy, architect will issue Architect's Instruction (AI) to correct the error and mistake.

HIGHLIGHTING DESCREPENCIES IN DOCUMENTS

WHAT IS THE ROLE OF A QUANTITY SURVEYOR WHEN THERE IS A DISCREPANCY?

Quantity surveyor will evaluate the discrepancy and advise on the cost implication either addition or omission.

- no cost implication- the AI will only be an AI to correct the mistake.
- If cost implication- QS advise if contractor entitle for claim because it is the contractor's obligation to construct and comply works in accordance to contract within time frame.

Example Scenario:

- a contractor completed a wall construction of 8 metre length but the correct length is 10 metre.
- length due to discrepancy between structural (wall 8 metre length) and architectural drawing (10 metre length).

IS THE CONTRACTOR ENTITLE FOR CLAIM?

In this situation the contractor is entitle to claim for any demolition, additional and omission works if the discrepancy is not detected at earlier stage of construction.

(ii) Coordination of Consultant/contractor on site

COORDINATION OF CONSULTANT/ CONTRACTOR ON SITE

(ii) Coordination of Consultant/contractor on site

- Coordination other Consultant dwgs – Architect & Engineers(C,S,M,E)
- Coordination other Consultant works (Ensuring that the works are coordinated)
- Coordination of Request for information.
- In the absence of Safety officer, monitoring the contractor for night works, work at height or confine space and report to CA for any non conformities.

COORDINATION OF CONSULTANT/ DRAWINGS

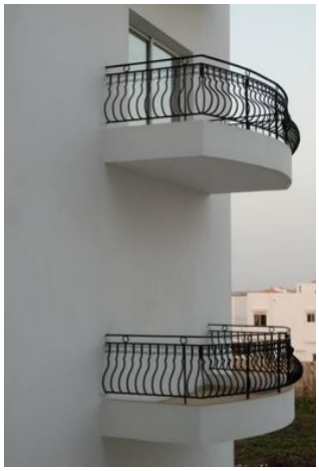
WHAT HAPPEN WHEN THERES COORDINATION BETWEEN THE DIFFERENT DISCIPLINES?

BUILDING FLEXIBILITY?

WHAT HAPPEN WHEN THE TRAIN COMES?

COORDINATION OF CONSULTANT/ DRAWINGS

WHAT HAPPEN WHEN THERES COORDINATION BETWEEN THE DIFFERENT DISCIPLINES?



AESTHETIC VS PRACTICAL?

COUPLES URINALS

COORDINATION OF CONSULTANT/ DRAWINGS

Professional liability insurance companies repeatedly report that *coordination* issues are a major cause of legal claims against design professionals.

Coordination review points

Consideration	Question to ask
Program Acceptance	Did we include all program requirements?
Concept Design	Does Concept meet program? Any site constraints? Are they met or can they be changed? Any municipal constraints?
Construction Documents	Architectural/Civil/Structural/Mechanical/Electrical Coordination? Does it all fit together?
Construction Procurement	**Trade Selection** • Trade specific products or alternatives? • Alternatives must be evaluated and accepted by Architect and Owner. • Incorporate any addenda resulting from tender process **Construction Schedule** • Responsibility of Construction Main Contractor • Schedule for Shop Drawing Submittals in order of when required to complete project

COORDINATION OF CONSULTANT/ DRAWINGS

WHAT HAPPEN WHEN THERES COORDINATION BETWEEN THE DIFFERENT DISCIPLINES?

FORGOT TO CONNECT

IS THIS FOR SAFETY?

COORDINATION OF CONSULTANT/ DRAWINGS

Coordination review points

Consideration	Question to ask
Consultant Activities during Construction	**Periodic General Review** • Ensure that construction is proceeding according to applicable by law and to drawings/specifications • Advise on any necessary adjustments or changes as work progresses • Provide reports for other stakeholders **Shop Drawing Review** • Review submittals by Main Contractor • Coordinate with other submittals
Closeout Activities	• Ensure that record drawings are updated • Review Building Operating Manuals • Building ready for CCC?

COORDINATION OF CONSULTANT/ DRAWINGS

WHAT HAPPEN WHEN THERES COORDINATION BETWEEN THE DIFFERENT DISCIPLINES?

WORKMANSHIP?

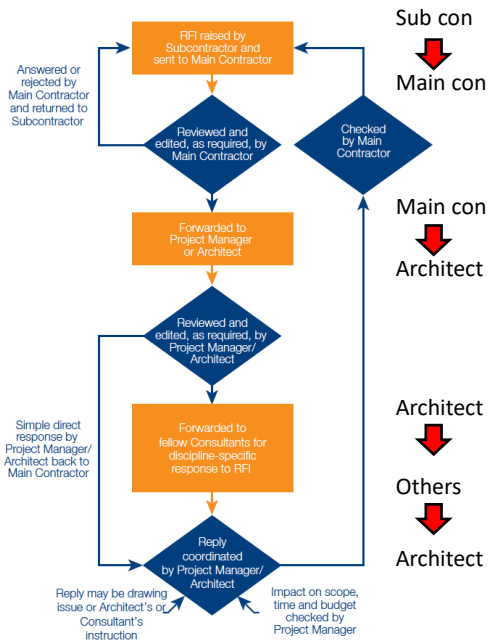
DESIGN FOR GIANT?

COORDINATION OF REQUEST FOR INFORMATION

Coordination of the RFI is very important in a project.

- There are many personnel involve in an RFI subject to the query involve.
- The RFI chain can go as low as:
- subcontractor -> MC-> Architect –> Engineer -> Architect

- It is the IOW role to sieve through query and discuss with Main contractor the information required before determining its necessity to be send to Architect/ Engineer



https://www.aconex.com/blogs/2014/01/ten-tips-on-managing-rfis-for-your-construction-projects.html

ELEMENTS OF AN REQUEST FOR INFORMATION PROFORMA

The date *of the initiation of the RFI*
Name of the architect / again as noted on the formal documents.
Name of the engineers / site, civil, electrical, mechanical and any other engineering firms that might be included on the projects documents.

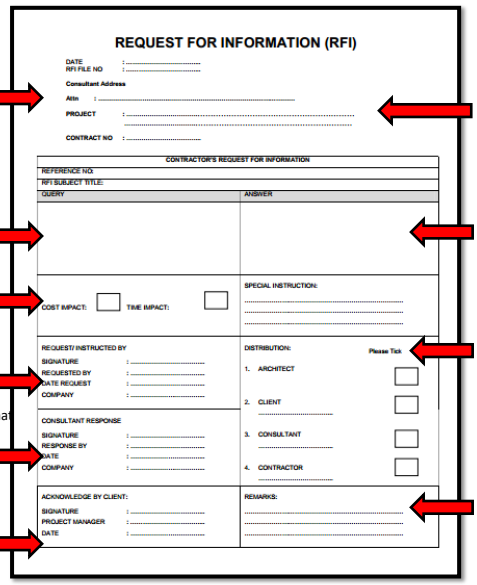
The question / this should be a concise and accurate description of the question being asked.

Cost Implication?

The date that the RFI was submitted to whoever the RFI addresses.

Identification of the responsible party that is addressed by the RFI. (who is going to answer the question?)
A date for the response
Signature line as well as a formal line identifying the author of the response.

Client Approval
if there is Cost implication



Project identification / this should include the address of the project and the formal name of the project that is referenced on all contracts, purchase orders and subcontracts.

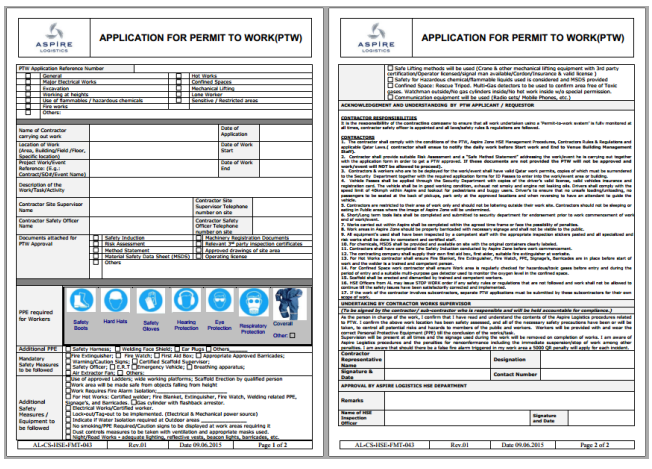
A space for the response. This would be pertinent if the RFI was created as a paper document or a template that is emailed out to the responsible party.

Copied parties / this is an important line of identification on the RFI. It is essential that the owner, architect, engineers and any other responsible party be copied on the RFI to ensure that they are formally notified of the RFI.

Other Comments

PERMIT TO WORK AT SITE

- In the absence of Safety officer for project below RM 20 Million, Main Contractor responsible for the safety of its workers.
- Main Con to provide copies of its permit to work form to IOW for records and inspection.



(iii) Progress of work & progress report

PROGRESS OF WORK & PROGRESS REPORT

(iii) Progress of work & progress report

- Checking compliance with Work Program
- Checking of progress report before meeting
- Reporting to SO for any delays and issues on site

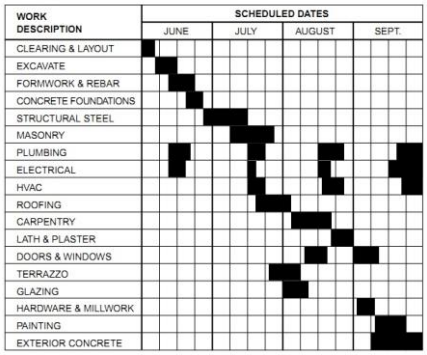
CHECKING COMPLIANCE TO WORK PROGRAM

Although it is not the role of IOW to prepare update the work program,
It would be helpful if the IOW can remind contractor to keep track of the program and highlight to the CA/ Architect /Engineer any irregularities or delays cause on site.

These information is crucial for the Contract Administrator to manage any shortcoming and find suitable solutions with the other stakeholders.

Things that IOW may highlight are:

1. Any delays on site by Client, Consultant, Contractor, Sub Contractor.
2. Report performance of contractor on site.
3. Any illogical work sequencing that the Contractor is performing.
4. Any alteration to the work Program without Consultant knowledge for higher payment.
5. Reminding consultant to tender for NSC.
6. Any misreporting of construction progress percentage during site meeting.



CHECKING OF PROGRESS REPORT BEFORE MEETING

Although it is not the task of the IOW to prepare the progress report , the IOW is expected to liaise with the Main Contractor site supervisor to check on the Progress report.

Common things to check:

1. All contents are properly arranged.
2. Remind contractor to update the content for the site meeting.
3. Assist MC for information by IOW that needs to be incorporated in Progress report such as RFI, NCR, AI, EI etc.
4. Sign of at the progress report for checking purposes only.

CONTENT FOR PROGRESS REPORT	
1	CONTRACT INFORMATION
2	SITE LAYOUT
3	ORGANISATION CHART
4	PROJECT TELEPHONE HOTLINE
5	SUMMARY OF WORK PROGRESS
6	WEIGHTAGE PROGRESS REPORT
7	TWO WEEKS FORCAST PROGRAMME
8	MASTER WORK PROGRAM ENDORSED
9	PHYSICAL S-CURVE
10	FINANCIAL S-CURVE
11	MANPOWER ON SITE
12	EQUIPMENT ON SITE
13	WEATHER CHART
14	MATERIAL APPROVAL
15	ARCHITECT INSTRUCTION/ ENGINEERS INSTRUCTION
16	SUMMARY LIST OF VARIATION ORDER
17	SUMMARY LIST OF REQUEST FOR INFORMATION
18	SUMMARY OF SITE MEMO AND REPLY
19	SUMMARY OF CONCRETE CUBE TEST RESULT
20	SUMMARY OF MATERIAL TEST RESULT
21	ENVIRONMENTAL AND SAFETY CHECKLIST
22	STATUS OF CLAIMS
23	PROGRESS PHOTOGRAPH

(iv) Building Material

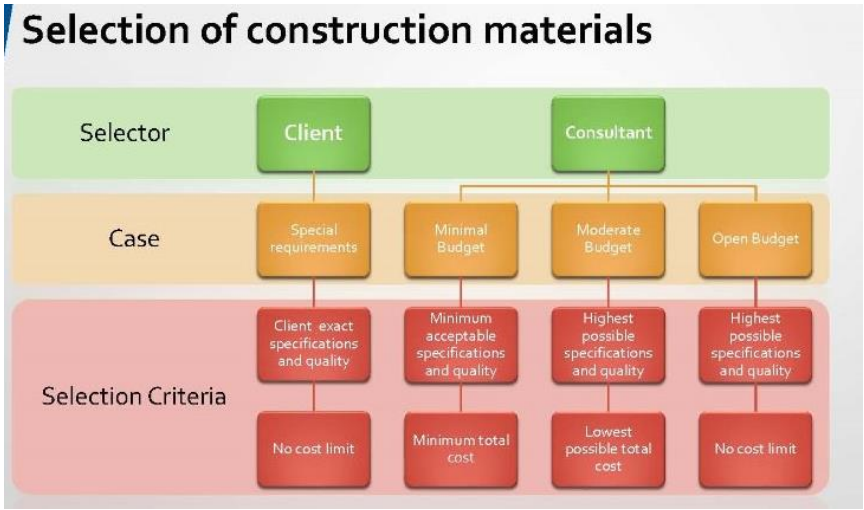
BUILDING MATERIAL

(v) Building Material

- Assisting consultant for the Approval of Building Materials
- Check and accept building materials delivered at site which complies to contract specification

SELECTION OF CONSTRUCTION MATERIALS

Material selection decisions are mainly initiated by the client through his "special requirements" or left in the hand of the consultant based on the "budget" set by the client.



https://www.linkedin.com/pulse/materials-selection-construction-mohieeldin-mba-cm-pe-b-eng-

CONSIDERATION ON MATERIAL SELECTION

Items required from vendor/supplier so that his material be approved by the consultant/contractor and can be purchased later when needed.

https://www.linkedin.com/pulse/materials-selection-construction-mohieeldin-mba-cm-pe-b-eng-

COMPLIANCE OF PRODUCT TO CIDB ACT SEC 33C

Rujukan Kami : LPPM : SO/BHB/01/01/4(6)
Tarikh : 27 November 2015

CIDB MALAYSIA

PEMAKLUMAN

LARANGAN BERURUSAN DENGAN BAHAN BINAAN YANG TIDAK DIPERAKUKAN

1. **TUJUAN**

Notis ini bertujuan untuk memaklumkan kepada semua orang yang berurusan dengan bahan binaan agar memperolehi Pemerakuan Pematuhan Standard (PPS) yang dikeluarkan oleh Lembaga bagi bahan binaan yang disenaraikan di dalam Jadual Keempat Akta 520 (Pindaan 2011).

2. **OBJEKTIF**

4.1 Memastikan setiap bahan binaan yang dikuatkuasakan mematuhi kehendak-kehendak standard yang ditetapkan bagi kegunaan dalam industri pembinaan.

4.2 Mempertingkatkan integriti struktur dan daya tahan hasil kerja-kerja pembinaan.

4.3 Melindungi hak pengguna daripada mendapat bahan binaan yang tidak berkualiti serta dapat menjamin keselamatan dan kesihatan orang awam.

3. **KAEDAH PENDAFTARAN PERAKUAN PEMATUHAN STANDARD (PPS)**

Orang yang berurusan boleh memperolehi PPS melalui persijilan produk yang dijalankan oleh badan-badan persijilan yang diperakukan oleh Lembaga dan menjalani verifikasi bahan binaan. Permohonan untuk PPS boleh dibuat di ccpm.cidb.gov.my. Carta alir prosidur Perakuan Pematuhan Standard adalah seperti di Lampiran A, A1 dan B *(Sila lihat lampiran)*.

4. **JENIS-JENIS BAHAN BINAAN**

Senarai bahan binaan yang dikuatkuasakan adalah seperti di Jadual Keempat Akta 520 di Lampiran C.

5. **PENGUATKUASAAN**

Sila ambil maklum bahawa larangan berurusan dengan bahan binaan yang tidak diperakukan adalah berkuatkuasa 1 Disember 2015. Kegagalan berbuat demikian adalah merupakan satu kesalahan di bawah Seksyen 33D dan boleh dihukum sekiranya disabitkan dengan denda tidak kurang RM 10,000.00 tetapi tidak melebihi RM 500,000.00.

" MEMBINA KEJAYAAN ANDA"

(MEGAT KAMIL AKIL MEGAT RUS KAMARANI)
Pengurus Besar Kanan
Lembaga Pembangunan Industri Pembinaan Malaysia (CIDB)
27 November 2015

Relevant Section

Section 33C(1) : 'The Lembaga shall, in the manner determined by the Lembaga, certify the construction materials used in the construction industry and specified in the Fourth Schedule in accordance with the standard specified in the Schedule.' –certification clause

Section 33D(2) : Any person who deal or undertake to deal with the construction materials specified in the Fourth Schedule without the certification of the Lembaga shall be guilty of an offence and shall, on conviction, be liable to a fine of not less than RM10,000 but not more than RM500,000.' – penalty clause

Product Reference

CIDB ACT - 4th SCHEDULE (2016)

- **13 Product Categories**
- 70 types

EXAMPLE PRODUCT REFERENCE

FOURTH SCHEDULE
[Subsection 33c(1)]
STANDARDS FOR CERTIFICATION OF CONSTRUCTION MATERIAL

No	Type Of Construction Material	Standard
1	**Sanitary wares (ceramic)**	
	a) Wash basin	MS 2578-pertukaran std
	b) Water closet pan without flushing cistern	MS 147 and MS 1522
	c) Water closet with flushing cisterns	MS 147, MS 1522 & MS 795 : Part 1 to 3
	d) Bidets and urinals pedestal	MS 147 AND MS1799
	e) Flushing cisterns equipped with mechanism	MS 147 AND MS 795 : Part 1 to 3
	f) Flushing cisterns not equipped with mechanism	MS 147
	g) Plastic flushing cisterns	MS 795 : Part 1 to 3
2	**Unglazed and Glazed Ceramic tiles**	MS ISO 13006
3	**Ceramic Pipes and Pipes Fittings**	MS 1061 : Part 1 to 3
4	**Cement**	
	4.1 Portland cement	
	a. White portland cements of all kinds	MS 888
	b. Others portland cement of all kinds	MS EN 197 : Part 1 & 2 – perubahan std
	4.2 Aluminous cement	BS 915, BS EN 14647
	4.3 Other hydraulic cement	MS EN 197 : Part 1 & 2
	4.4 Masonry cement	MS EN 413 : Part 1 & 2

EXAMPLE PRODUCT REFERENCE

FOURTH SCHEDULE
[Subsection 33c(1)]
STANDARDS FOR CERTIFICATION OF CONSTRUCTION MATERIAL

No	Type Of Construction Material	Standard
5	Prefabricated timber roof truss system	CIS 5
6	Precast concrete pile for foundation	MS 1314 : Part 1 to Part 7
7	Insulation materials	
	7.1 Slag wool,rock wool and similar mineral wool (including intermixtures thereof) in bulk, sheets or rolls	MS 1020 MS 1020-penambahan bahan
	7.2 Thin sheet (voiles), webs, mats, matress, board and similar non-woven fibre glass 7.3 Glass fibre (including wools)	MS 1020 – penambahan bahan
8	Float glass	
	8.1 Clear float glass, non-wired, non-coloured throughout the mass, other than square or rectangular shape (including those with one or two or three or four corner cut)	MS 1135- pertukaran std
	8.2 Tinted float glass, coloured throughout the mass (body tinted), opacified, flashed or merely surface ground, other than optical glass	MS 1135-pertukarab std
	8.3 Coated glass 8.4 Safety glass	MS 2397 - MS 1498 –

No	Type Of Construction Material	Standard
9	Fibre Cement Flat Sheet Not Containing Asbestos	MS 1296 – penambahan bahan
10	Radiant Barrier (Thermal Insulation Foil)	MS 2095 – penambahan bahan

Enforced 1 Dec 2016

15

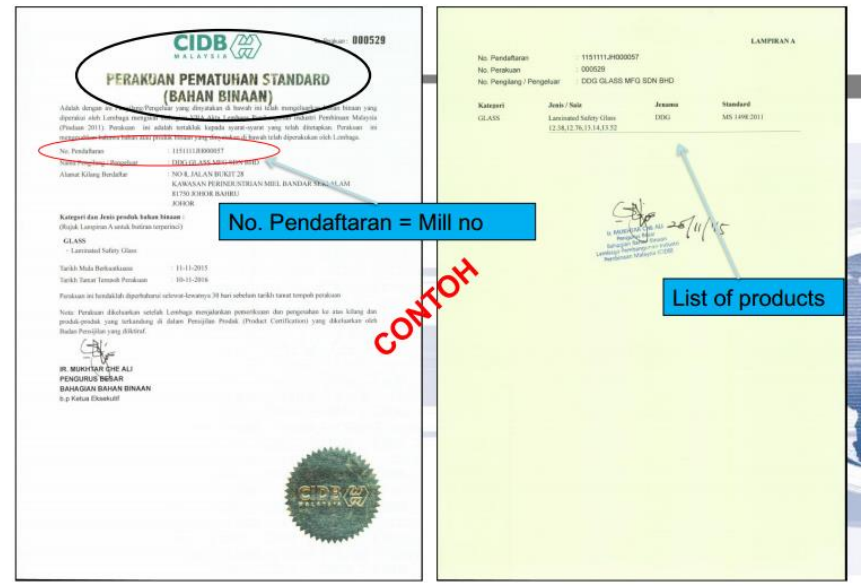
EXAMPLE PRODUCT REFERENCE

FOURTH SCHEDULE
[Subsection 33c(1)]
STANDARDS FOR CERTIFICATION OF CONSTRUCTION MATERIAL

No			Type Of Construction Material	Standard
11.	IRON STEEL PRODUCTS (Penambahbaikan keseluruhan dan penambahan bahan)			
	11.1		HOT-ROLLED CARBON STEEL SHEETS / PLATES	
		a.	Hot Rolled Steel Coil / Sheets / Plates	MS EN 10025 : Part 2 MS 1705 MS 1768
		b.	Hot Rolled Chequered coils / Sheets / plates	ASTM A786, MS EN 10025 : Part 2
	11.2		COATED STEEL – COILS / SHEETS	
		a.	Electrolytically plated or coated with zinc (Coils/sheets)	MS 2543
		b.	Hot-dip Zinc-Coated carbon steel coil/sheet. Otherwise plated or coated with zinc. * Only in sheets	*MS 2500 (Profile) MS 2384 MS 2385
		c.	Continuous hot-dip Aluminium- Zinc alloy-coated coil/sheet. Plated or coated with Aluminium-Zinc alloys. * Only in sheets	*MS 2500 (Profile) JIS G 3317 JIS G 3323 MS 1196 AS 1397
		d.	Painted, varnished or coated with plastics	MS 2383 JIS G 3318
		e.	Plated or Coated roofing tile	MS 2500

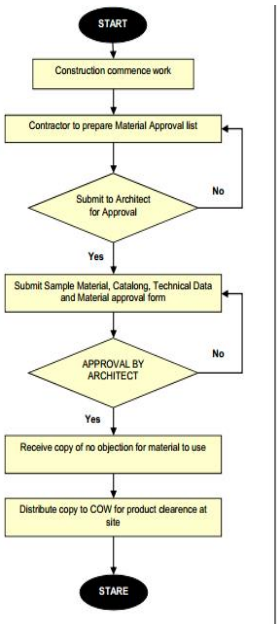
No			Type Of Construction Material	Standard
12.	ALUMINIUM			
	12.1		Aluminium plates, sheets and strip of a thickness exceeding 0.2 mm, whether or not alloyed	MS 2040
	12.2		Aluminium foils of a thickness not exceeding 0.2 mm, not backed :	MS 1848
		a.	Rolled but not furher	MS 1848
	12.3		i. Aluminium plates, sheets, and strips	MS 2040
	12.4		ii. Aluminium structures	MS 832 MS 1017
	12.5		Aluminium Composite Panel for exterior and interior wall	MS 2571
	12.6		Aluminium and aluminium alloy – coil coated sheet and strips for general applications	MS EN 1396
	12.7		Aluminium and aluminium alloy for extruded shape	MS 2289
13.	READY MIX CONCRETE			MS 523 : Part 1 to 3, CIS 21

WHAT CERTIFICATE TO LOOK FOR WHEN SELECTING MATERIAL



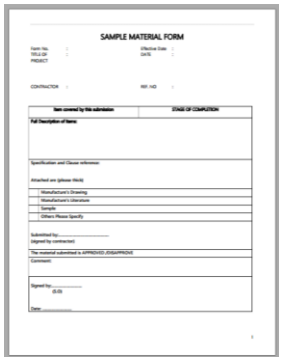
Perakuan Pematuhan Standard (PPS) CIDB

ASSISTING CONSULTANT FOR THE APPROVAL OF BUILDING MATERIALS



Material Approval List

Material Approval form



CHECKING OF BUILDING MATERIAL ARRIVAL ON SITE

Request the Contractor to have a site deliverables register at site for easy reference

DELIVERABLES REGISTER

Project Name:
Project Manager:
Quality Manager:

Summary				Quality Targets		Quality Assurance			Quality Control		
ID	Deliverable Name	Deliverable Description	Status	Criteria	Standards	Reviewer	Review Date	Review Outcome	Reviewer	Review Date	Review Outcome

INSPECTING MATERIAL STORAGE ON SITE

	Dos	Dont
Location	• Store materials within the confines of the building site and • in the conditions recommended for the type of material.	• Do not leave material scattered on the site especially outside of the construction site boundaries.
Storage	• stored in areas close to the work area • without interfering with the movement of vehicles, pedestrians and other traffic.	• Do not store building materials in front of doorways or emergency exits. • Storing materials in these areas creates trip hazards and can put lives at risk in the event of a fire or when people need to evacuate quickly
Stacking	should never be stacked on • roadways, • public verges, • footpaths, • next to fire hydrants, or • on access roads.	• Do not stack large quantities of bricks or timber on elevated work platforms such as scaffolding. • Scaffolding is only designed as a workstation; not a storage area. • The minimum amount of material to do the job at hand is all that should be stacked on the scaffold.

CHECKING OF MATERIAL TEST PLAN

Material Testing?

- To achieve certification by complying with current guidelines and building regulations
- To ensure products are fit for purpose
- To find out why products are failing in use or during manufacture
- To develop new materials and new products through certification
- To solve patent disputes or resolve legal disputes
- To benchmark against competitors' products.

Test Available

Tension: used to determine the tensile strength of various materials like metals and plastics.

Compression: to determine the strength of metals like concrete by applying a range of compression forces to the materials.

Flex: to determine the flexure of materials, e.g. plastics, by applying various bending forces.

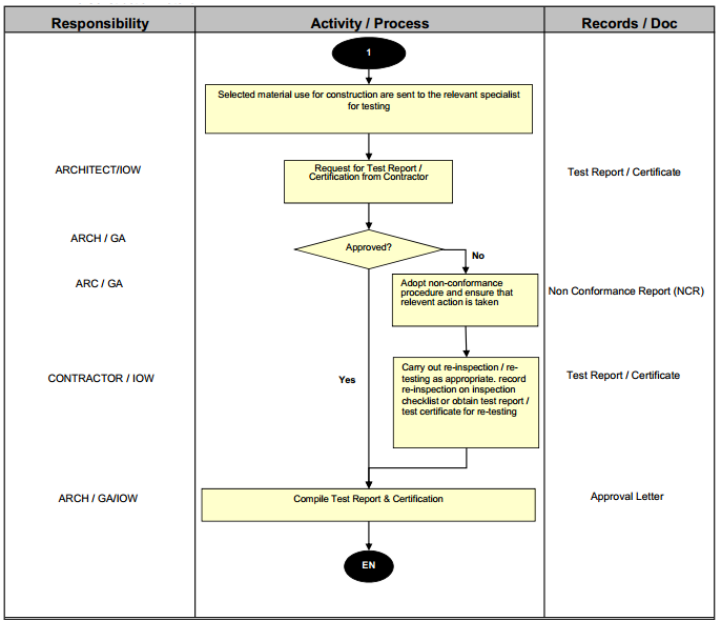
Impact: to determine the impact performance (heavy loads) of materials.

Torsion: to test materials for bending and twists in materials.

Chemical testing: used to test the properties of concrete, mortar, plaster and soil.

Structural: on-site testing for concrete floors, posts, bridges, steel columns for load and, surface slip and skid, etc.

CONSTRUCTION MATERIAL TESTING



SCHEDULE OF TESTING

Table 1 - all development
Bricks (Sand/cement, Clay, calcium silicate, hollow blocks)

Minimum sampling	Min samples Persampling	Min total samples
10	10	100

Table 2
Concrete cubes
Site mix/ Readymix

Min sample	Remarks
6	3 nos (7 days)
6	3 nos 28 days

Table 3
Slump test

Structure	Allowance slump (mm)
R.C Piles	100-150
Footing	75-100
Beam	100-125
Column	100-125
Slabs	75-100

Table 5
Timber Testing (recommendation for Min,Dry salt retention)

Use	Min dry salt retention (kg/m3
Interior and above ground	5.6
Exterior and above ground	8
Exterior in contact with ground	12
Foundation	16

Table 4 Steel bars - for all type development
Steel bars - for all type development

Sizes of steel Bars	Minimum sampling	Min samples Persampling	Min total samples
Concreting	1	1	1
Roadworks	1	1	1
Sand for concreting	1	1	1

Table 6
Timber Grade

Structure	Timber grade
1. Soor/ Window frame	SG3 & SG4
2. Decorative door	SG4, SG5,SG6
3. Ceiling beading	SG4, SG5,SG6
4. Roof trusses	SG1 to SG5
5. Fascia boards	SG3 & SG4
6.Handrail	SG3 & SG5
7. Balluster	SG3,SG4, SG5,SG6

Table 7
Steel bars - for all type development

Sizes of steel Bars	Minimum sampling	Min samples Persampling	Min total samples
6	1	2	1
10	1	2	1
12	1	2	1
16	1	2	1
20	1	2	1
25	1	2	1
30	1	2	1
32	1	2	1

Table 8
Water test (impurities, chlorine, sulphate and PH value)
For all type development

Source of water	Minimum sampling	Min samples Persampling	Min total samples
Underground	3	1	3

INSPECTION TEST PLAN LOG

Inspection test plan

Inspection/test plan for the process/procedure: <insert name>
Issued:
Date:
Client:

Responsibility	Sequence of activities	Specification/ reference	Acceptance criteria	Test method	Inspection		Test frequency	Comments	Records – documents
					Client	NBB			

Procedure checked and reviewed

Name Position Signature Date

Procedure approved

Name Position Signature Date

CONTRACTOR EQUIPMENT CALIBRATION

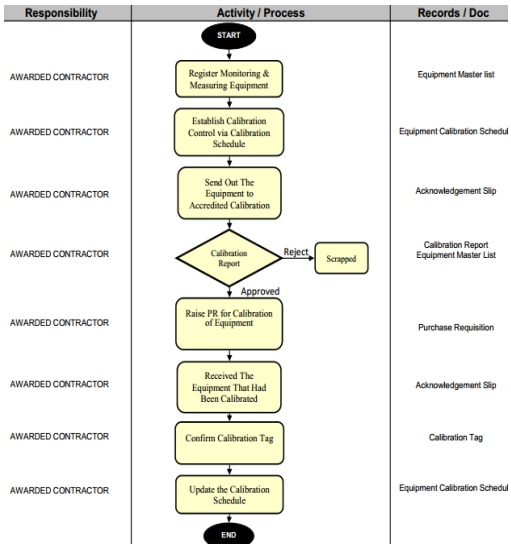
Ensuring the contractor has calibrated their measuring equipment's is very important at site.

REASON

- To ensure readings from an instrument are consistent with other measurements.
- To determine the accuracy of the instrument readings.
- To establish the reliability of the instrument i.e. that it can be trusted.

FORMS FOR USE

1. Equipment's master list
2. Equipment calibration schedule
3. Inspection, measuring & testing equipment register



BASIC SCOPE OF DUTIES OF A IOW

PRE CONSTRUCTION	CONSTRUCTION	POST CONSTRUCTION
• Inspecting of contractor preliminaries requirements • Liaising with contractor for submissions of work program, insurance and performance bond	**i. Reporting, Preparing & Maintaining Records** **ii. Coordination of Consultant/ contractor on site** **iii. Progress of work & progress report** **iv. Building Material** **v. Site Inspection and Testing** **vi. Contractor payment and Management of Variation Order** **vii. Completion and handover**	• Inspection for closure of defect rectification • Assisting consultant for Final Account preparation

(v) Site Inspection and Testing

(iv) Site Inspection and Testing

Checking Compliance

- Inspect works for compliance to contract
- Check compliance with legal, bye laws & standards
- Ensuring work compliance to method statement and shop drawings
- Inspection of material and equipment on site
- Review Water, Noise, Pollution report
- Inspection of schedule waste facility on site
- Sign off Inspection and Test records

Dealing with Non compliance

- Recording for non-compliance
- Instruction for non-compliance
- Proposal for solutions to non-compliance
- Sign off NCR

SITE INSPECTION

Regular inspection is a crucial part of ensuring that the works progress as intended, both in terms of quality and compliance.

Reason for Inspections :

- carried out for a number of different purposes throughout the duration of a project.
- The process is separate from the contractor's own supervision of the works.
- is carried out purely to give an independent view of the works either for the client or a third party.

PURPOSE OF INSPECTION DURING CONSTRUCTION

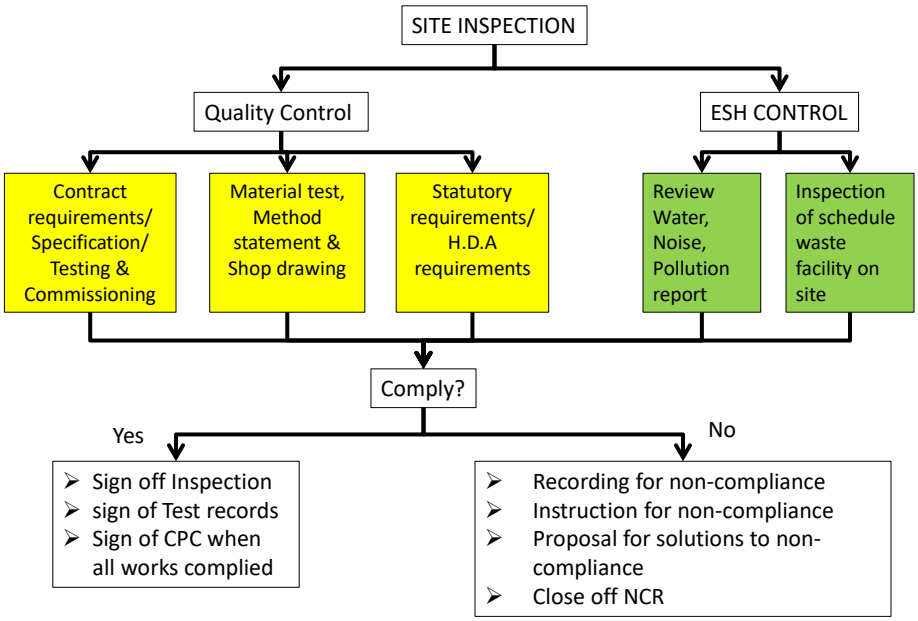
- Condition surveys of neighbouring stru ctures prior to commencement of the works.
- Setting out inspection

- Regular inspections to assess progress of the works in order to value interim payments.
- Inspecting mock ups and samples and witnessing tests.
- Random defect inspection
- Witnessing commissioning.
- Inspection prior to certification of practical completion.

- Inspection after handover of the site to the client on certification of practical completion.

- Inspection at the end of the defects liability period to prepare a schedule of defects.
- Inspection on completion of the rectification of defects set out on the schedule of defects.

WHAT ARE WE ACTUALLY CHECKING FOR?



WHY IOW NEED TO INSPECT THE SITE DURING CONSTRUCTION?

It is important for IOW to inspect the site during construction. Inspection can be done either random or schedule to check:

1. the progress of the works on site
2. the work is done properly as per approve plan
3. the construction is done properly as per contract specification, shop drawing and method statement.
4. if there is non-compliance or conformity of the construction.
5. To take action if there is non conformity through notices of site memo or NCR.

CONTRACTUAL QUALITY CONTROL INSPECTION

QUALITY CONTROL OF WORK THROUH EXAMPLE INSPECTION TEST PLAN (ITP)

NO.	TYPE OF WORK	APPROVAL	INSPECTION STAGE	INSPECTION REQUIRED	FREQUENCY	EVIDENCE	REMARKS
1	Site boundary	COW	Before commencing work	Confirm boundary stones	Once	Drawing endorse by license surveyor	
2	Setting out	Architect	Before excavation	Building setbacks, gridline, dimension	All	Inspection form	
3	Excavation of footing	COW	Before placing lean concrete	Depth and size of footing	All	Inspection form	
4	Piling	COW	After piling	Check for dynamic pile test	All	Material test result	
5	Reinforce and formwork to RC structure	COW	Before concreting	As per detail of engineers checklist,tensile strengh	All	Inspection form	
6	Antitermite treatment	COW	After pile cap	To check on antitermite use	All	Inspection form	
7	Concreting to RC structure	COW	During concreting	Workability and test cubes, load test	At every concretiing session	Cube test	
8	Brickwork/ Frame work	COW	Sample Brick	10 bricks per 1000 peices	All	compressive strength test	
			During laying	type of bonding, reinforcement	All	Inspection form	
9	Roof trusses	COW	Before roof covering	Check to size, verticality, bracing and fixing accessories	All	Inspection form	
10	Water proofing works	COW	After installation	Check on material and method of instalation	All	Inspection form , water ponding test	
11	Electrical wiring and conduit		After installation	Check on material and method of instalation	All	Inspection form	
12	Plumbing works	COW	After commencement	Pressure test	All	Inspection form	
13	Plastering works	COW	Before plastering	Check allignment, verticality and area coverage	All	Inspection form	
14	Finishing works- flooring, wall, ceiling	COW	After installation	Base on CIDB CIS 7 requirement	All	Inspection form	
15	Door and Window	COW	After installation	Base on CIDB CIS 7 requirement	All	Inspection form	
16	Sanitary fitting, Sanitary wares and iron mongeries	COW	After installation	Check model, type and defects	All	Inspection form	
17	Sewage works	COW	After completion	water tightness test	Once	Test result	
18	External drains	COW	After completion	Check on drain cover, apron, inspection chamber	Once	Inspection form	
19	Road works	COW	After completion	check on road surface, water ponding, kerb, road sign, lighting	Once	Inspection form	
20	Footh path and turfing	COW	After completion	Inspection as per drawing	Once	Inspection form	
21	Fencing	COW	After completion	Check verticality and finishing	Once	Inspection form	

Note: All record to be kept at site at all times

Prepared by,

Name :
Title :

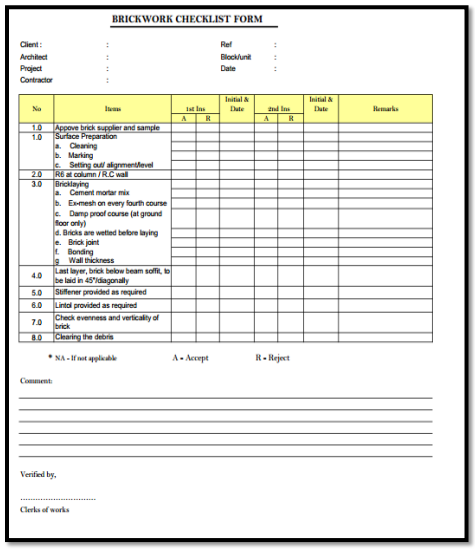
Reviewed by,

Name :
Title :

Approved by,

Name :
Title :

QUALITY CONTROL FORM
EXAMPLE CHECKLIST BRICK LAYERING AND PLASTERING



BRICKWORK CHECKLIST FORM

Client : Ref :
Architect : Block/unit :
Project : Date :
Contractor :

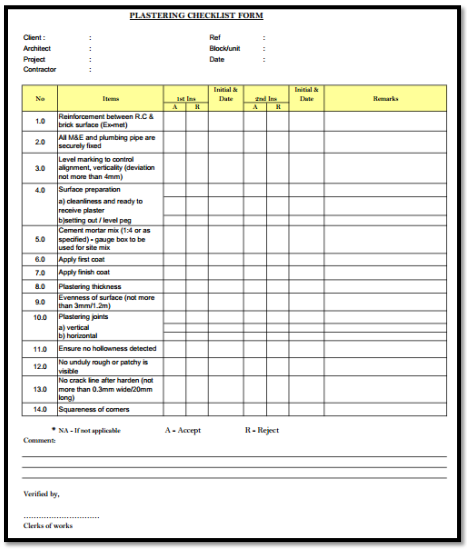
No	Items	1st Ins A	1st Ins R	Initial & Date	2nd Ins A	2nd Ins R	Initial & Date	Remarks
1.0	Appove brick supplier and sample							
1.0	Surface Preparation a. Cleaning b. Marking c. Setting out/ alignment/level							
2.0	R6 at column / R.C wall							
3.0	Bricklaying a. Cement mortar mix b. Ex-mesh on every fourth course c. Damp proof course (at ground floor only) d. Bricks are wetted before laying e. Brick joint f. Bonding g Wall thickness							
4.0	Last layer, brick below beam soffit, to be laid in 45°/diagonally							
5.0	Stiffener provided as required							
6.0	Lintol provided as required							
7.0	Check evenness and verticality of brick							
8.0	Clearing the debris							

* NA - If not applicable A - Accept R - Reject

Comment:

Verified by,

.....
Clerks of works



PLASTERING CHECKLIST FORM

Client : Ref :
Architect : Block/unit :
Project : Date :
Contractor :

No	Items	1st Ins A	1st Ins R	Initial & Date	2nd Ins A	2nd Ins R	Initial & Date	Remarks
1.0	Reinforcement between R.C & brick surface (Ex-met)							
2.0	All M&E and plumbing pipe are securely fixed							
3.0	Level marking to control alignment, verticality (deviation not more than 4mm)							
4.0	Surface preparation a) cleanliness and ready to receive plaster b)setting out / level peg							
5.0	Cement mortar mix (1:4 or as specified) - gauge box to be used for site mix							
6.0	Apply first coat							
7.0	Apply finish coat							
8.0	Plastering thickness							
9.0	Evenness of surface (not more than 3mm/1.2m)							
10.0	Plastering joints a) vertical b) horizontal							
11.0	Ensure no hollowness detected							
12.0	No unduly rough or patchy is visible							
13.0	No crack line after harden (not more than 0.3mm wide/20mm long)							
14.0	Squareness of corners							

* NA - If not applicable A - Accept R - Reject

Comment:

Verified by,

.....
Clerks of works

OTHER FORMS OF STANDARD FOR QUALITY CONTROL

Elements of assessment under Qlassic

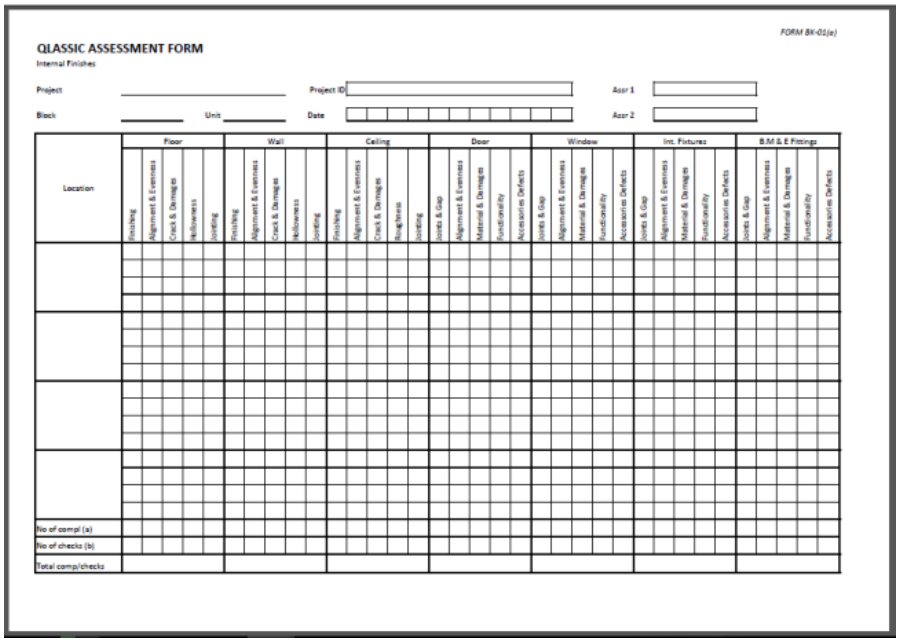
Elements of assessment	Finishing	Hollowness	Alignment & evenness	Crack & damage	Jointing	Roughness	Joint & gap	Functionality	Accessories defect	Material & damages
Architectural works										
Interior parts										
Floor	✓	✓	✓	✓	✓					
Wall	✓	✓	✓	✓	✓					
Ceiling	✓		✓	✓	✓	✓				
Door			✓				✓	✓	✓	✓
Window			✓				✓	✓	✓	✓
Fixtures			✓				✓	✓	✓	✓
External										
Roof	✓		✓	✓	✓			✓		
External wall	✓		✓	✓	✓					
Apron & perimeter drain	✓		✓	✓	✓			✓		
Carpark	✓		✓	✓			✓		✓	
M&E Fittings			✓				✓	✓	✓	✓
External works										
Linkway	✓		✓				✓	✓		✓
External drains	✓		✓	✓	✓			✓		
Footpath & turfing			✓						✓	
Fence & gate	✓		✓				✓	✓	✓	
And elements such as roadworks, ground floor carpark, playground, court, swimming pool, electrical substation, guardhouse and bin centre										

Source: CIDB

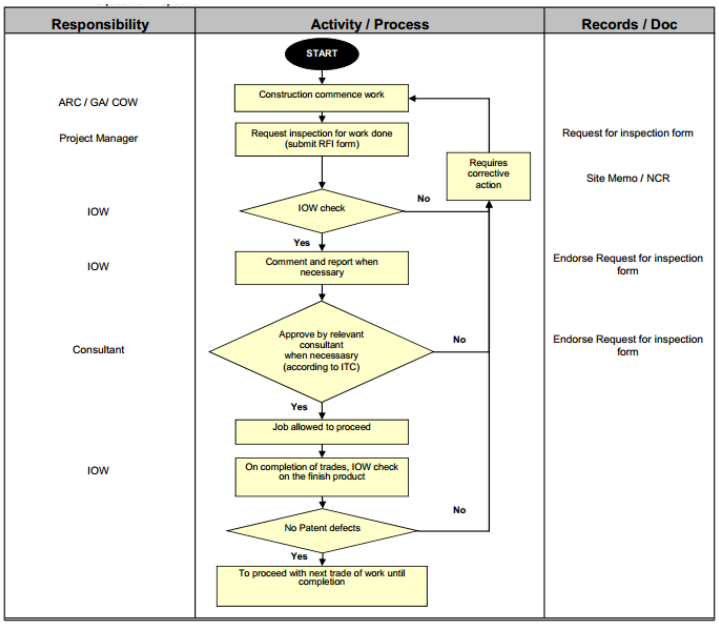
CIS 7:2014 Weightage Distribution According to Building Category

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)
Structural works	15%	20%	20%	20%
Architectural works	70%	60%	55%	50%
M&E works	5%	10%	15%	20%
External works	10%	10%	10%	10%
Total Score	100%	100%	100%	100%

QLASSIC SAMPLE ASSESMENT FORM



PROCEDURE FOR INSPECTION OF WORK



IDENTIFICATION OF DEFECTS DURING CONSTRUCTION

WHAT ARE DEFECTS?

In the construction industry, the term defects or defective usually referred to as

'defects, imperfections, shrinkages or any other faults in the construction works.'

- Defective works is about the works failing or being deficient in standard and quality of workmanship, materials and/or design as specified in the contract.
- Defects may also occur in failing to comply with the requirements of the drawings, bills of quantities, specifications, etc.

Classification of defect

Patent Defect and Latent Defect

OUTSTANDING NON COMPLIANCE WORK VS PATENT DEFECTS VS LATENT DEFECTS

	Outstanding & Non Compliance work	Patent Defects	Latent Defects
Definition	Outstanding and non-compliant works are essentially works that are part of the contract, which a contractor has undertaken to carry out and complete accordingly prior to certification of practical completion, but had failed to do so.	Patent defect is defined as "a defect which is discoverable by reasonable inspection" (Powell-Smith).	Latent defect is defined as "a defect which is not discoverable during the course of ordinary and reasonable examination but which manifest itself after a period of time" (Powell Smith).
Characteristic	Incomplete work or Work not in accordance to the contract.	Such defects are defective works which can be discovered through carrying out of normal inspection, observation, testing and/or examination in a simple manner or as specified in the contract.	such defects are defective works that cannot be seen or discovered by normal inspection, observation, testing and/or examination.
Example	• Incorrect floor tiles laid • Walls not flat-out of tolerance • Ceiling tiles not fully installed	• Cracked tiled floor • Paint peeling off from the painted plaster walls	• Water seeping through tiled floor due to no waterproofing. • Painting discolouration after handover

EXAMPLE

Building Element	Outstanding / Non-compliant works	Patent Defects	Latent Defects
Substructure	• Incomplete excavation for pad footings • Deviated piles installed • Incorrect reduced levels • Unsafe temporary works • Sand blinding not laid	• Slight pad footings misalignment • Honeycombing in cemcrete stumps • Uneven slab surfaces • Poor construction joints	• Sinking foundation • Broken installed piles • Poor hardcore compaction • Structural cracks on floor slabs, causing tiled floor to crack • Concrete spalling on beams concealed above suspended ceiling. • Blocked subsoil drainage due to building debris, etc
Structural & Walls	• Column sizes incorrect • Beam not casted • Uneven suspended slab • Several curtain wall glass panel not fixed • Broken facing bricks to external wall	• Concrete surface cracks • Honeycombing in columns & beams • Concrete bulging and uneven surfaces • Efflorescence in walls	• Concrete spalling caused by corroded steel bar due to insufficient concrete cover • Structural cracks in beams & columns • Lack of or improperly laid damp proof courses to walls causing dampness to rise above.
Finishes	• Insufficient screed thickness to concrete floor • Incorrect floor tiles laid • Plastering without base coat as specified. • Walls not flat-out of tolerance • Ceiling tiles not fully installed	• Uneven floor tiling • Cracked tiled floor • Uneven plastered surfaces • Plaster hairline cracks • Paint peeling off from the painted plaster walls • Uneven suspended ceiling level	• Water seeping through tiled floor due to no waterproofing. • Dampness in plastered wall surfaces • Painting discolouration after handover • Suspended ceiling partial collapse of the ceiling

EXAMPLE

Building Element	Outstanding / Non-compliant works	Patent Defects	Latent Defects
Roof	• Wrong type of timber trusses used • Wrong colour roof coverings used • Slope of roof pitch incorrect • Sisalation not installed	• Discoloured roof finish • Broken roof tiles • Dental metal decking installed • Flashing not installed properly • Roof trusses not connected and bolted in properly.	• Rainwater penetration thro roof • Roof tiles dislodged during high winds • Undersized roof trusses leading to roof sagging • Gutters do not drain, causing rainwater overflow • Rainwater downpipe not connected properly causing flooding
Window & Doors	• Aluminium window frame thickness not to specification • Window opening not to size • Incorrect window location • Aluminium windows should be bronze anodizes as specified not natural finish as installed • Incorrect sizes of timber doors • Substandard painting works to timber surfaces	• Broken glass panels to window • Warped timber door • Installed door cannot open • Too large gap at door edges • Loosen door hinges • Lockset not functioning	• Broken rubber seals around window causing rainwater entry • Window frame not properly fixed, causing the window to wobble • Warping of timber door panels • Delamination of powder coated paint surfaces to aluminium doors and windows • Paint on painted door peeling due to no undercoat applied.
Electrical & Plumbing	• MCB/ELCB incorrectly installed • Incomplete electrical wiring works • Wiring installed not as specified • Wrong type of switches installed • WC position installed wrongly • Fittings installed not to specification	• Faulty switches • Malfunctioned electrical fittings • ELCB not working • Waste and soil pipes blocked • Water leakages from water pipes Broken rubber seals in WC • Water pipes not clipped to walls	• Flickering of light from light fittings after switching on. • Frequent electrical short circuiting/tripping • Switches do not work (no power) • Concealed electrical wiring out of alignment • Breakage in underground sewerage pipes • Incorrect manhole invert levels • Incorrect sewer pipe gradient • Dampness and mould in toilet walls • Clogged and stagnant water in drains • Waste water leakage from kitchen sink into cabinet

RANDOM INSPECTION – DEFECT IDENTIFICATION FORM

Arkitek	Projects :	Form No. : ABZ/QESH/SOP/18/form/a1 Eff Date :

PATENT DEFECT INSPECTION

BIL	LOCATION / SPACE	DEFECTS	PICTURE	ACTION	STATUS	CONFIRMATION CONTRACTOR CONSULTANT
1	Family Hall	Crack wall		Contractor to rectify	Pending	Have been communicated in NCR previously

TIP: RECORDING PHOTO FOR INSPECTIONR RECORDS

Taking photograph for Inspection is very crucial. The photograph must be taken properly as some time it can be an admissible evidence in court. To settle dispute.

Some tips:

1. Use a camera not an I phone
2. Set the date option to be identified on photograph.
3. Set Acceptable resolution

Tips to document photograph

1. Make sure the photograph show what your intention to communicate.
2. Mark , label , add diagram etc
3. Properly arrange to tell a story

RANDOM INSPECTION – DEFECT IDENTIFICATION REPORT

RECTIFY TIMBER FLOORING

40

No	Item	Reason	Solution	Mitigation
40	Reinstallation of timber flooring at staircase from ground to first floor due to termite attack.	**Failure of anti termite application system causing Termite attack less than 5 years of completion** Timber flooring to staircase and part of family affected by termite attack	Architect has instructed to reinstall the timber flooring work due to termite attack	

Termite attack at staircase

WITHOUT PREJUDICE

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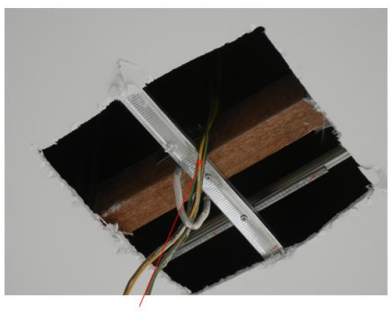
RANDOM INSPECTION – DEFECT IDENTIFICATION REPORT

REINSTALLATION FAN HOOK

36

No	Item	Reason	Solution	Mitigation
36	Fan hook installation error	**Contractor did not construct as per Structure engineer drawing.** Contractor inproper installation of fan hook on plaster ceiling frame that is a potential hazard to the safety of the occupant.	During the rectification of toilet and below ceiling, COW had inform project team that the fan hook installation was not done according to the structure engineer drawings. Structure engineer has instructed new contractor to install fan hook bolted to floor slab	



Type	Nos Fan Hook	Nos unit	Total
A	9	22	198
A1	9	3	27
A2	10	3	30
A3	10	23	230
B	8	1	8
B	9	1	9
C	12	1	12
C1	12	1	12
C2	9	1	9
C3	10	1	10
	Grand Total		545

Proper fan hook connect to slab

Improper fan hook installation using ceiling frame

WITHOUT PREJUDICE

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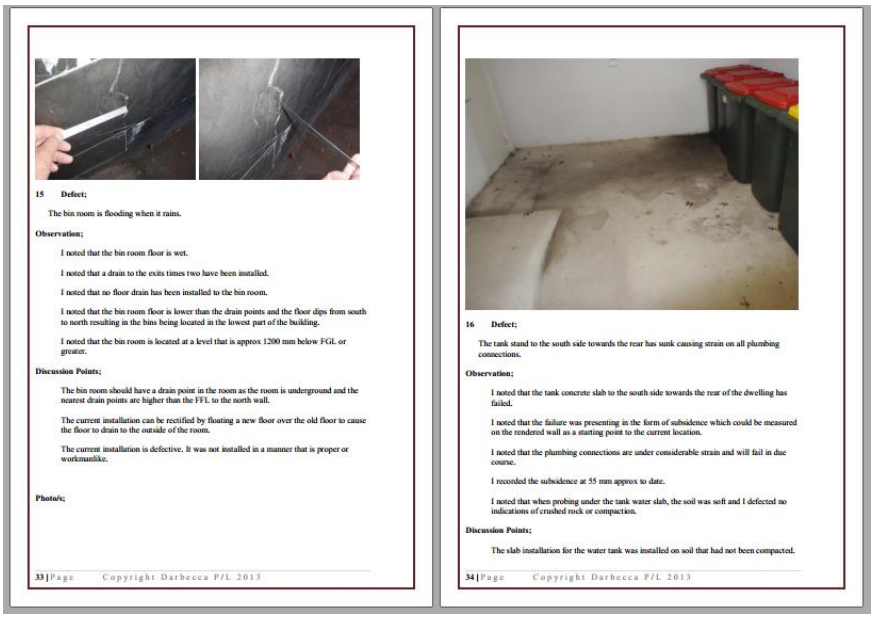
RANDOM INSPECTION – DEFECT IDENTIFICATION REPORT



15 **Defect;**

The bin room is flooding when it rains.

Observation;

I noted that the bin room floor is wet.

I noted that a drain to the exits times two have been installed.

I noted that no floor drain has been installed to the bin room.

I noted that the bin room floor is lower than the drain points and the floor dips from south to north resulting in the bins being located in the lowest part of the building.

I noted that the bin room is located at a level that is approx 1200 mm below FGL or greater.

Discussion Points;

The bin room should have a drain point in the room as the room is underground and the nearest drain points are higher than the FFL to the north wall.

The current installation can be rectified by floating a new floor over the old floor to cause the floor to drain to the outside of the room.

The current installation is defective. It was not installed in a manner that is proper or workmanlike.

Photo/s;

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16 **Defect;**

The tank stand to the south side towards the rear has sunk causing strain on all plumbing connections.

Observation;

I noted that the tank concrete slab to the south side towards the rear of the dwelling has failed.

I noted that the failure was presenting in the form of subsidence which could be measured on the rendered wall as a starting point to the current location.

I noted that the plumbing connections are under considerable strain and will fail in due course.

I recorded the subsidence at 55 mm approx to date.

I noted that when probing under the tank water slab, the soil was soft and I defected no indications of crushed rock or compaction.

Discussion Points;

The slab installation for the water tank was installed on soil that had not been compacted.

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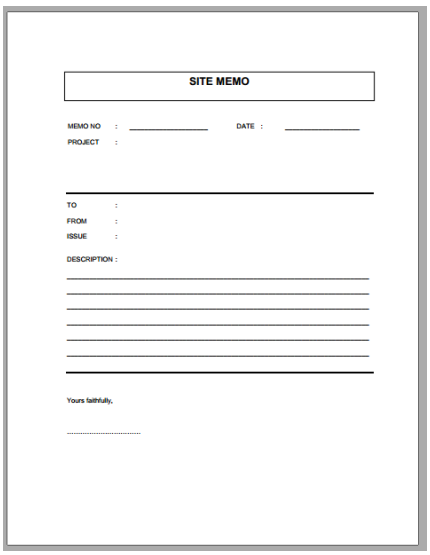
NOTICE TO CONTRACTOR FOR NON COMPLIANCE

Site Memo



SITE MEMO

MEMO NO : _____ DATE : _____

PROJECT :

TO :

FROM :

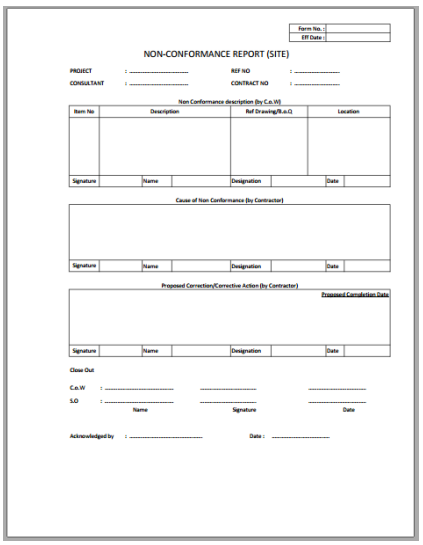
ISSUE :

DESCRIPTION :

Yours faithfully,

.....

NCR



Form No. :
Eff Date :

NON-CONFORMANCE REPORT (SITE)

PROJECT : ..... REF NO : .....

CONSULTANT : ..... CONTRACT NO : .....

Non Conformance description (by C.o.W)

Item No	Description	Ref Drawing/B.o.Q	Location

Signature | Name | Designation | Date

Cause of Non Conformance (by Contractor)

Signature | Name | Designation | Date

Proposed Correction/Corrective Action (by Contractor)

Proposed Completion Date

Signature | Name | Designation | Date

Close Out

C.o.W : ....

S.O : ....

Name Signature Date

Acknowledged by : ..... Date : .....

STATUTORY REQUIREMENTS INSPECTION

INSPECTION OF WORKS TO COMPLY TO STATUTORY REQUIREMENTS

There are various Acts involve to be complied during Construction . Among others are:

Compliance to

1. Temporary works (UBBL)
2. Felling of trees for site clearing (TCPA)
3. Approve Planning (TCPA) & Approve Building Plan (UBBL)
4. Provision of Electricity (Electricity Supply Act)
5. Provision of Sewerage (Sewerage Act)
6. Provision if Water (Water Supply Act)
7. Housing Developers Act & Strata Title Act relating position of lot and size
8. Completion and Compliance of Building (SDBA & UBBL)

LEGAL COMPLIANCE REQUIREMENT

STATUTORY APPROVAL AND LOCAL AUTHORITY CHECKLIST

PROJECT TITLE :

Before mobilize and start work, contractor must get some approval from the local authority. The listed below is the activity needed for statutory approval. Approval can be obtain from relevant local or federal statutory bodies.

NO	DESCRIPTION OF JOB/AREA	LOCAL AUTHORITES APPROVAL/ RESPONSIBILITIES	REMARKS	
1	Site layout plan including temporary accomodation	Local authorities		TCPA/SDBA/UBBL
2	Registration for construction work for JKKP	JKKP	the registration number must show at main entrance of site	OSHA
3	Registration for CIDB & green card	CIDB	the original copy shall display at site office	CIDB ACT
4	Material storage sucj as bagged cement, enforcement bars required a permit from Kementerian Dalam Negeri	KEMENTERIAN PERDAGANGAN DALAM NEGERI (MITI)	The copy of this cert must keep at site office	MITI Req / EQA
5	Storage of skid tank needs a permit from Jabatan Bomba	Jabatan Bomba		BOMBA REQ.
6	Equipment such as crane requires PMA from JKKP	JKKP		OSHA
7	Machinery use for construction	JKKP		OSHA
8	Other local authority	TELEKOM, TNB, IWK, SYABAS	Telekom cable, Gen power supply	Water, Electricity, Sewerage Act

INSPECTING FOR COMPLIANCE TO UBBL

TEMPORARY BUILDING– PART II

1. UBBL 19 : Temporary Permit
   - Bangunan sementara haruslah mendapat kelulusan PBT sebelum pembinaan.

2. UBBL 20 : Advertising permit
   - Pembinaan hoarding dan signboard perlu mendapat kelulusan PBT.

3. UBBL 21 : Material not to be deposited in street without permission
   - Bahan binaan tidak boleh di letakan di atas jalan raya tanpa kebenaran bertulis.

BUILDING DESIGN– PART III

1. UBBL 30 : Open space to be provided
   - Keperluan kawasan lapang haruslah mengikut keperluan perancang iaitu 10% dari kawasan tanah.

2. UBBL 31 : Open space not to be altered and roofed
   - Kawasan Lapang tidak boleh dibumbung tanpa izin PBT.

3. UBBL 39 : Natural lighting and ventilation
   - Pencahayaan dan ventilasi haruslah sentiasa cukup dalam bangunan.
   - 10% pencahayaan dimana 5% adalah boleh dibuka untuk ventilasi.

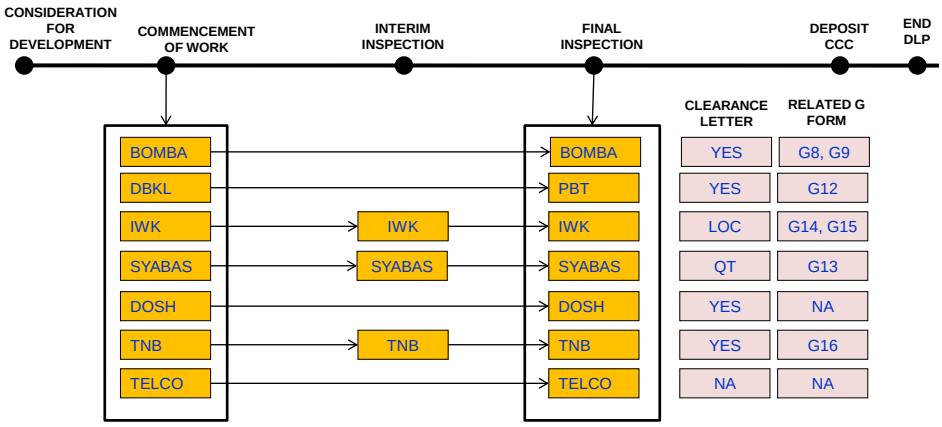
DURING CONSTRUCTION – PART IV

1. UBBL 48 : Commencement of building operation
   - Maklumat pelanggan, konsultan, kontraktor, kelulusan binaan dll haruslah dipaparkan dan telah mendapat kelulusan PBT.

2. UBBL 49 : Responsibility person granted permit
   - Memastikan longkang tiada kekotoran.
   - Memastikan kabel, paip dan services lain di ubahsuai mengikut kelulusan PBT.
   - Cat putih pada setiap hujung hoarding dan lampu merah pada waktu malam.
   - Memastikan railing keselamatan disediakan untuk pembinaan
   - Tiada sekatan keatas hydrant dan utiliti persekitaran
   - Menyediakan pintu hoarding yang selamat untuk keluar masuk.

4. UBBL 51 : Vehicular access to site
   - Penggunaan kenderaan haruslah dipantau mengikut jam bekerja bagi mengelakkan trafik kepada jalan awam. Jika perlu boleh mendapatkan kelulusan PBT

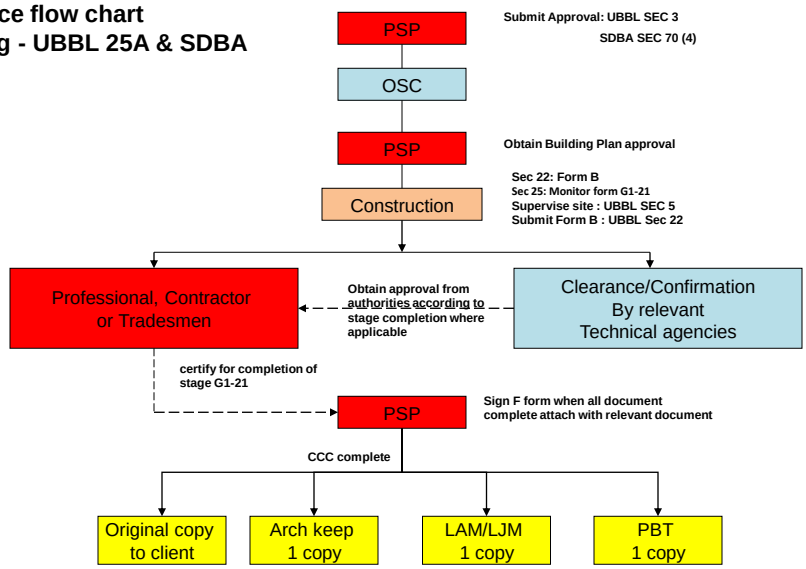
JOINT INSPECTION WITH LOCAL AUTHORITY DURING CONSTRUCTION



LOC- Letter of Clearance
QT- Quality Test

COMPLIANCE TO CCC REQUIREMENT

Certificate Completion and Compliance flow chart Complying - UBBL 25A & SDBA 70 (20-27)



HOUSING DEVELOPMENT STAGE INSPECTION

LEMBAGA ARKITEK MALAYSIA

Tingkat 17, Ibu Pejabat JKR, Jalan Sultan Salahuddin, 50582 Kuala Lumpur
Peti Surat 12695, 50786 Kuala Lumpur, Tel: 03-26982878 / 26967087 Fax: 03-26936883
E-Mel: info@lam.gov.my, web: www.lam.gov.my

GENERAL CIRCULAR NO. 3/2008

GUIDELINES ON THE THIRD SCHEDULE [CLAUSE 4(1)] OF THE STANDARD SALE AND PURCHASE AGREEMENT FOR LAND AND BUILDING
[Schedule G of the Housing Development (Control and Licensing) Regulations 1989]

GUIDELINES ON THE THIRD SCHEDULE [CLAUSE 4(1)] OF THE STANDARD SALE AND PURCHASE AGREEMENT FOR SUB-DIVIDED BUILDING
[Schedule H of the Housing Development (Control and Licensing) Regulations 1989]

The Ministry of Housing and Local Government had, on 17 June 2008, gazetted the Housing Development (Control and Licensing) (Amendment) Regulations 2008 which shall be deemed to have come into operation on 1 December 2007. The recent Regulation was gazetted to rectify the error in the previous Housing Development (Control and Licensing) (Amendment) Regulations 2007.

Amongst the corrections made by the Ministry of Housing and Local Government were the substitution of the word "Building" with the word "Parcel" under item 2(b) in the Third Schedule of the Sale and Purchase Agreement under SCHEDULE H.

Following the aforesaid rectification, the Board have amended its Guidelines on the Third Schedule[Clause 4(1)] of the Standard Sale and Purchase Agreement for Sub-divided Building (SCHEDULE H).

In order to avoid confusion among members, the whole Guidelines are reissued for ease of reference.

For any Sale and Purchase Agreement signed prior to 1 December 2007, General Circular No. 4/2003 (Revised 2005) is still applicable.

All Professional Architects are advised to be familiar with and abide strictly to these Guidelines before certifying works in respect of housing projects undertaken in West Malaysia. In respect of housing projects in Sabah and Sarawak, works should be undertaken in accordance with the relevant laws. In the absence of any specific guidelines in respect of works in Sabah and Sarawak with regard to details of works that must be completed, Professional Architects should refer to the attached Schedules.

This General Circular replaces the current General Circular No. 2/2008 pertaining to the above Guidelines.

Thank you.

By Order of the Board of Architects Malaysia,

(Ar. ZURAINA LEILY AWALLUDIN)
Registrar

27 November 2008

Year 2005 - Cir. 4/2003 (Revised 2005)

1st Dec 2007 – Cir. 2/2008

rectify error

17 June 2008– Cir. 3/2008

SCHEDULE G & H ELABORATION

LEMBAGA ARKITEK MALAYSIA

Tingkat 17, Ibu Pejabat JKR, Jalan Sultan Salahuddin, 50582 Kuala Lumpur
Peti Surat 12695, 50786 Kuala Lumpur, Tel: 03-26982878 / 26967087 Fax: 03-26936881\
E-Mel: info@lam.gov.my, web: www.lam.gov.my

GENERAL CIRCULAR NO. 3/2008

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Thank you.

By Order of the Board of Architects Malaysia,

(Ar. ZURAINA LEILY AWALLUDIN)
Registrar

27 November 2008

SCHEDULE G- landed

SCHEDULE H - Strata

INSPECTING FOR COMPLIANCE TO HOUSING DEVELOPER ACT

SCHEDULE G

THIRD SCHEDULE

(Clause 5)

SCHEDULE OF PAYMENT OF PURCHASE PRICE

	Instalments Payable	%	Amount
1.	Immediately upon the signing of this Agreement	10	RM
2.	Within thirty (30) days after the receipt by the Purchaser of the Developer's written notice of the completion of-		
	(a) the foundation of the said Building	10	RM
	(b) the structural framework of the said Building	15	RM
	(c) the walls of the said Building with door and window frames placed in position	10	RM
	(d) the roofing, electrical wiring, plumbing (without fittings), gas piping (if any) and internal telecommunication trunking and cabling to the said Building	10	RM
	(e) the internal and external finishes of the said Building including the wall finishes	10	RM
	(f) the sewerage works serving the said Building	5	RM
	(g) the drains serving the said Building	2.5	RM
	(h) the roads serving the said Building	2.5	RM
3.	On the date the Purchaser takes vacant possession of the said Property with water and electricity supply ready for connection	17.5	RM
4.	On the date the Purchaser takes vacant possession of the said Property as in item 3 where the Developer has delivered to the Purchaser or the Purchaser's Solicitor the original issue document of title to the said Building Lot registered in the name of the Purchaser	2.5	RM
5	On the date the Purchaser takes vacant possession of the said Property as in item 3 and to be held by the Developer's solicitor as stakeholder for payment to the Developer as follows:	5	RM
	(a) two point five per centum (2.5%) at the expiry of the period of eight (8) months after the date the Purchaser takes vacant possession of the said Property; and		
	(b) two point five per centum (2.5%) at the expiry of the period of twenty-four (24) months after the date the Purchaser takes vacant possession of the said Property		
	TOTAL	100	RM

SCHEDULE H

THIRD SCHEDULE

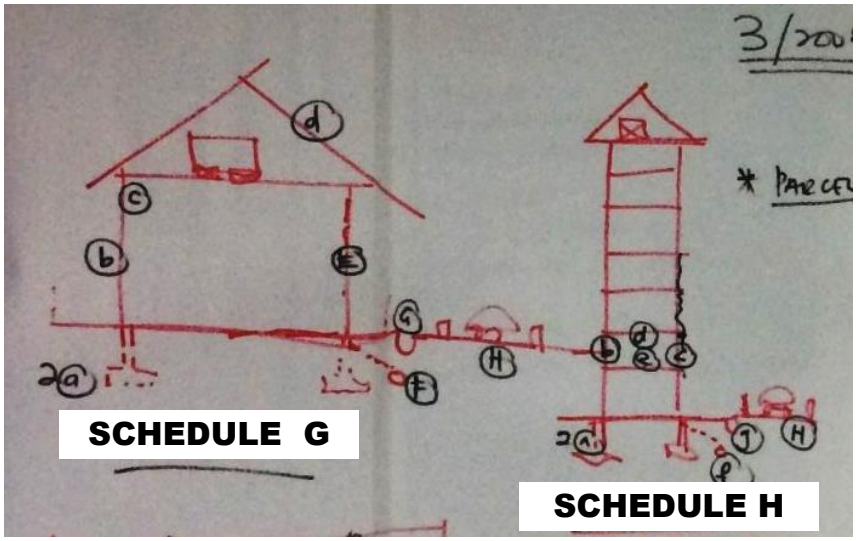
(Clause 5)

SCHEDULE OF PAYMENT OF PURCHASE PRICE

	Instalments Payable	%	Amount
1.	Immediately upon the signing of this Agreement	10	RM
2.	Within thirty (30) days after the receipt by the Purchaser of the Developer's written notice of the completion of-		
	(a) the work below ground level of the said Building comprising the said Parcel including foundation of the said Building	10	RM
	(b) the structural framework of the said Parcel	15	RM
	(c) the walls of the said Parcel with door and window frames placed in position	10	RM
	(d) the roofing/ceiling, electrical wiring, plumbing (without fittings), gas piping (if any) and internal telecommunication trunking and cabling to the said Parcel	10	RM
	(e) the internal and external finishes of the said Parcel including the wall finishes	10	RM
	(f) the sewerage works serving the said Building	5	RM
	(g) the drains serving the said Building	2.5	RM
	(h) the roads serving the said Building	2.5	RM
3.	On the date the Purchaser takes vacant possession of the said Parcel, with water and electricity supply ready for connection	17.5	RM
4.	On the date the Purchaser takes vacant possession of the said Parcel as in item 3 where the Developer has executed and delivered to the Purchaser or the Purchaser's solicitor the instrument of transfer in favour of the Purchaser together with the original issue document of strata title to the said Parcel	2.5	RM
5	On the date the Purchaser takes vacant possession of the said Parcel as in item 3 and to be held by the Developer's solicitor as stakeholder for payment to the Developer as follows:	5	RM
	(a) two point five per centum (2.5%) at the expiry of the period of eight (8) months after the date the Purchaser takes vacant possession of the said Parcel; and		
	(b) two point five per centum (2.5%) at the expiry of the period of twenty-four (24) months after the date the Purchaser takes vacant possession of the said Parcel		
	TOTAL	100	RM

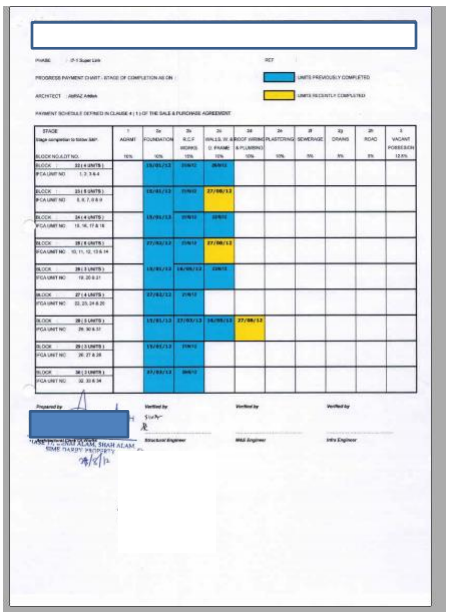
INSPECTING WORK IN ACCORDANCE TO STAGE OF HOUSING DEVELOPERS ACT

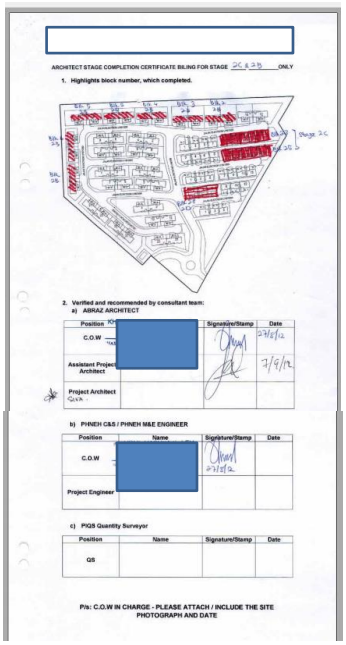
REFER TO LAM CIRCULAR 3/2008



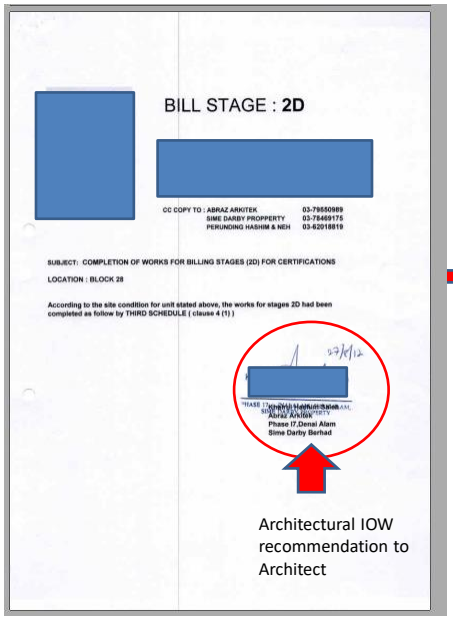
INSPECTION BY IOW AND VERIFICATION BY CONSULTANT FOR STAGE BILLING

Sample Unit List monitoring





SAMPLE RECOMMENDATION BY IOW TO ARCHITECT FOR UNIT TO BE CERTIFIED



BILL STAGE : **2D**

[redacted]

CC COPY TO : ABRAZ ARKITEK 03-79550989
SIME DARBY PROPPERTY 03-78469175
PERUNDING HASHIM & NEH 03-62018819

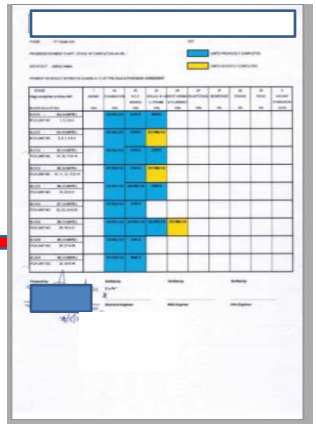
SUBJECT: COMPLETION OF WORKS FOR BILLING STAGES (2D) FOR CERTIFICATIONS

LOCATION : BLOCK 28

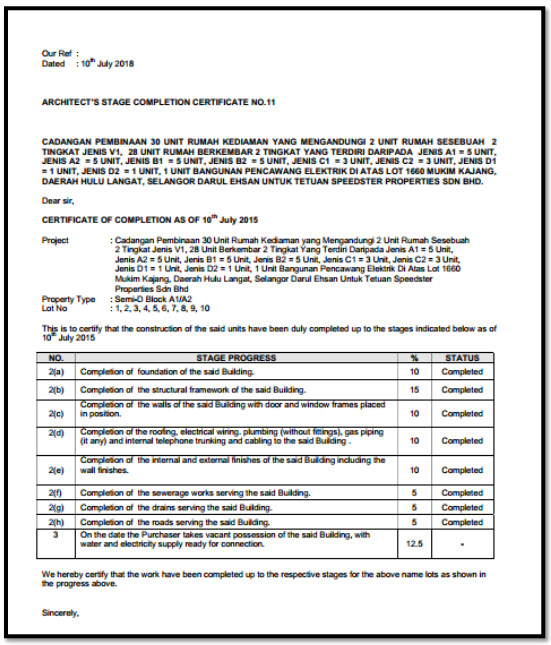
According to the site condition for unit stated above, the works for stages 2D had been completed as follow by THIRD SCHEDULE (clause 4 (1))

[redacted]
Abraz Arkitek
Phase I7,Denai Alam
Sime Darby Berhad

Architectural IOW recommendation to Architect



SAMPLE STAGE CERTIFICATION BY CONSULTANT FOR SCHEDULE H SEMI-D HOUSE



Our Ref :
Dated : 10th July 2018

ARCHITECT'S STAGE COMPLETION CERTIFICATE NO.11

CADANGAN PEMBINAAN 30 UNIT RUMAH KEDIAMAN YANG MENGANDUNGI 2 UNIT RUMAH SESEBUAH 2 TINGKAT JENIS V1, 28 UNIT RUMAH BERKEMBAR 2 TINGKAT YANG TERDIRI DARIPADA JENIS A1 = 5 UNIT, JENIS A2 = 5 UNIT, JENIS B1 = 5 UNIT, JENIS B2 = 5 UNIT, JENIS C1 = 3 UNIT, JENIS C2 = 3 UNIT, JENIS D1 = 1 UNIT, JENIS D2 = 1 UNIT, 1 UNIT BANGUNAN PENCAWANG ELEKTRIK DI ATAS LOT 1660 MUKIM KAJANG, DAERAH HULU LANGAT, SELANGOR DARUL EHSAN UNTUK TETUAN SPEEDSTER PROPERTIES SDN BHD.

Dear sir,

CERTIFICATE OF COMPLETION AS OF 10th July 2015

Project : Cadangan Pembinaan 30 Unit Rumah Kediaman yang Mengandungi 2 Unit Rumah Sesebuah 2 Tingkat Jenis V1, 28 Unit Berkembar 2 Tingkat Yang Terdiri Daripada Jenis A1 = 5 Unit, Jenis A2 = 5 Unit, Jenis B1 = 5 Unit, Jenis B2 = 5 Unit, Jenis C1 = 3 Unit, Jenis C2 = 3 Unit, Jenis D1 = 1 Unit, Jenis D2 = 1 Unit, 1 Unit Bangunan Pencawang Elektrik Di Atas Lot 1660 Mukim Kajang, Daerah Hulu Langat, Selangor Darul Ehsan Untuk Tetuan Speedster Properties Sdn Bhd
Property Type : Semi-D Block A1/A2
Lot No : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

This is to certify that the construction of the said units have been duly completed up to the stages indicated below as of 10th July 2015

NO.	STAGE PROGRESS	%	STATUS
2(a)	Completion of foundation of the said Building.	10	Completed
2(b)	Completion of the structural framework of the said Building.	15	Completed
2(c)	Completion of the walls of the said Building with door and window frames placed in position.	10	Completed
2(d)	Completion of the roofing, electrical wiring, plumbing (without fittings), gas piping (it any) and internal telephone trunking and cabling to the said Building .	10	Completed
2(e)	Completion of the internal and external finishes of the said Building including the wall finishes.	10	Completed
2(f)	Completion of the sewerage works serving the said Building.	5	Completed
2(g)	Completion of the drains serving the said Building.	5	Completed
2(h)	Completion of the roads serving the said Building.	5	Completed
3	On the date the Purchaser takes vacant possession of the said Building, with water and electricity supply ready for connection.	12.5	-

We hereby certify that the work have been completed up to the respective stages for the above name lots as shown in the progress above.

Sincerely,

ENVIRONMENTAL INSPECTION

COMPLIANCE TO ENVIRONMENTAL QUALITY ACT

SCHEDULE WASTE REGULATION 2005 SEC 3,8,9,10,11

INSPECTION OF SCHEDULE WASTE FACILITY ON SITE

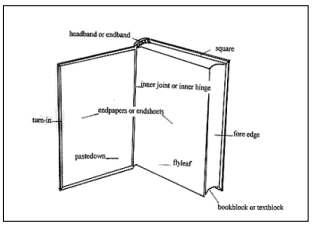
MEMPUNYAI KAWASAN BERBUMBUNG DAN BOLEH DIKUNCI

TERSUSUN DAN DILABEL

SEDIAKAN PEMADAM API

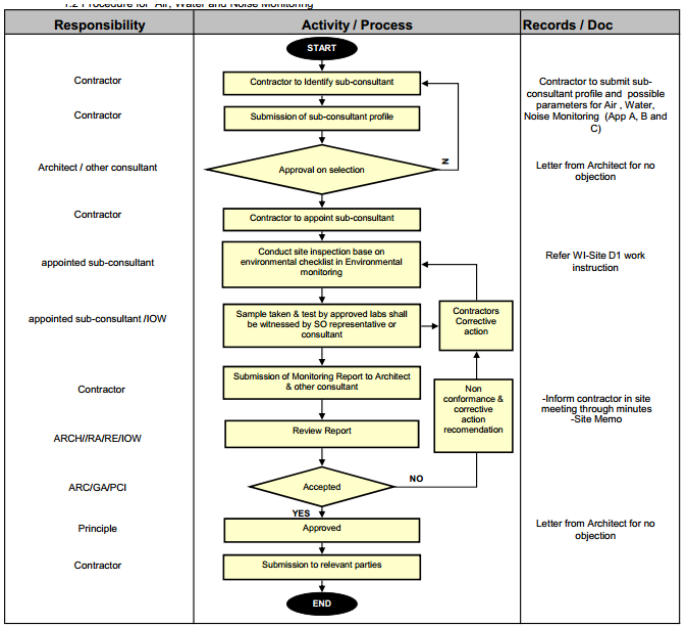
MENGIKUT JABATAN ALAM SEKITAR (DOE)

DILABEL DENGAN BETUL



BUKU INVENTORI

Review Water, Noise, Pollution report



Review Water report

Third Schedule
Environmental Quality Act, 1974
Environmental Quality (Sewage and Industrial Effluent) Regulations. 1979
[Regulations 8(1), 8(2), 8(3)]
Parameter limits of effluent of standards A and B

No.	Parameter	Unit	Standard A*	B
a)	Temperature	°C	40	40
b)	PH Value	-	6.0-9.0	5.5-9.0
c)	BOD_5 or 20°C	mg/l	20	50
d)	COD	mg/l	50	100
e)	Suspended Solids	mg/l	50	100
f)	Mercury	mg/l	0.005	0.05
g)	Cadmium	mg/l	0.01	0.02
h)	Chromium, Hexavalent	mg/l	0.05	0.05
i)	Arsenic	mg/l	0.05	0.1
j)	Cyanide	mg/l	0.05	1
k)	Lead	mg/l	0.1	0.5
l)	Chromium, Trivalent	mg/l	0.2	1
m)	Copper	mg/l	0.2	1
n)	Manganese	mg/l	0.2	1
o)	Nickel	mg/l	0.2	1
p)	Tin	mg/l	0.2	1
q)	Zinc	mg/l	2	2
r)	Boron	mg/l	1	4
s)	Iron (Fe)	mg/l	1	5
t)	Phenol	mg/l	0.001	1
u)	Free Chloride	mg/l	1	2
v)	Sulphide	mg/l	0.5	0.5
w)	Oil and Grease	mg/l	Not Detectable	10

Review Pollution report

Recommended Malaysia Air Quality Guidelines
(Ambient Standards)
(at 25^{0}C and 101.13kPa)

No.	Pollutant and method	Averaging Time	Malaysia Guidelines (ppm)	Malaysia Guidelines (ug/m^3)
1	Ozone AS 2524	1 Hour	0.1	200
		8Hour	0.06	120
2	Carbon # Monoxide AS 2695	1 Hour	30	35
		8 Hour	9	10
3	Nitrogen Dioxide AS 2447	1 Hour	0.17	320
4	Sulfur Dioxide AS 2523	10 Minute	0.19	500
		1 Hour	0.13	350
		24 Hour	0.04	105
5	Particles TSP AS 2523	24 Hour	-	260
		1 Year		90
6	PM10 AS 2724.6	24 Hour	-	150
		1 Year	-	50
7	Lead AS 2800	3 Months	-	1.5

Recommended Malaysian Secondary Guidelines

No.	Pollutant and method	Averaging Time	Malaysia Guidelines (mg/m^2/day)
1	Dustfall AS 2724.1	1 Year	133

Stack gas Emission Standards [Extract from Environment Quality (Clean Air) Regulations 1978]

No.	Pollution	Emission Sources	Standards
1	Dark Smoke	(1.1) Solid fuel equipment of facilities	Ringlemann Chart No. 2
		(1.2) Equipment using other types of fuel	Ringlemann Chart No. 1
2	Dust	(2.1) Facilities used for the heating of metal other than Cold Blast Foundry Cupola	0.2 gm/Nm^3
		(2.2) Facilities discharging dust containing asbestos and free silica	0.12 gm/Nm^3
		(2.3) Portland Cement Manufacturing	
		(2.3.1) Kiln	0.2 gm/Nm^3
		(2.3.2) Clinker, cooler, grinder, others	2.0 gm/Nm^3
		(2.4) Asphalt concrete/bituminous mixing plant	
		(2.4.1) #Stationary Plant	0.3 gm/Nm^3
		(2.4.2) #Mobile Plant	0.4 gm/Nm^3
		(2.5) Other sources	0.4 gm/Nm^3
3	Metal and Metallic Compound		
	3.1 Mercury	Industry	2.0 gm/Nm^3
	3.2 Cadmium	Industry	0.015 gm/Nm^3
	3.3 Lead	Industry	0.025 gm/Nm^3
	3.4 Antimony	Industry	0.025 gm/Nm^3
	3.5 Arsenic	Industry	0.025 gm/Nm^3
	3.6 Zinc	Industry	2.0 gm/Nm^3
	3.7 Copper	Industry	0.1 gm/Nm^3
4	Gases		
	(a) Acid gases	Sulphuric Acid manufacturing	3.5 gm of SO_3/Nm^3 and no persistent mist
		Any Sources other than (a)	0.2 gm of SO_3/Nm^3 and no persistent mist
	(b) Sulphuric Acid Mist or SO_3 or both	Any source	0.2 gm of HCl/Nm^3
	(c) Chlorine gas	Any source	0.2 gm of HCl/Nm^3
	(d) HCl	Aluminium Manufacturing From Alumina	0.2 gm of Hydrofluoric acid/Nm^3
	(e) Fluorine, Hydrofluoric acid, inorganic fluorine compound		
	(f) –do-	Any sources other than (e)	0.10 gm of Hydrofluoric acid/Nm^3
	(g) Hydrogen Sulphide	Any source	5 ppm (Vol%)
	(h) Nox	Acid Nitric Manufacturing	1.7 gm of SO^3/Nm^3 and substantially Colourless
	(i) Nox	Any source other than (h)	2.0 gm SO_3/Nm^3

ADVISE CONTRACTOR TO MONITOR ENVIRONMENTAL , SAFETY AND HEALTH REQUIREMENTS

ENVIRONMENTAL MONITORING CHECKLIST

PROJECT NAME :	
MAIN CONTRACTOR :	
INSPECTION NO :	
MONTH:	

NO	DESCRIPTION	REPORTING FREQUENLY	RESPONSIBILITY	YES	NO	DATE ACTION
1	MAINTAINENCE OF EARTH	EVERY WEEK	MC/ SC	☐	☐	
2	SILT TRAP	EVERY WEEK	MC/ SC	☐	☐	
3	FOGGING	FORTHNIGHT AFTER 1800	MC/ SC	☐	☐	
4	LARVACIDING	FORTHNIGHT AFTER 1800	MC/ SC	☐	☐	
5	DUST CONTROL	MAIN/ ENTRANCE TO BE CLEAN AND SPRAYED WATER	MC/ SC	☐	☐	
6	WASH THROUGH	VEHICLE TYRE BEING CLEAN OFF USING WATER JET	MC/ SC	☐	☐	
7	DISPOSABLE OF CONSTRUCTION DEBRIS	EVERY WEEK	MC/ SC	☐	☐	
8	SCHEDULE WASTE	EVERY WEEK	MC/ SC	☐	☐	
9	SITE HOUSE KEEPING	ONCE A MONTH	MC/ SC	☐	☐	
10	WORKERS ACCOMODATION	ONCE A MONTH	MC/ SC	☐	☐	
11	SITE OFFICE	ONCE A MONTH	MC/ SC	☐	☐	
12	NOISE, WATER, AIR MONITORING	QUARTERLY	MC/ SC	☐	☐	

Prepared By

(Contractor)

Reviewed by,

(COW)

SAFETY AND HEALTH MONITORING CHECKLIST

JOINTLY CHECKED BY CLERK OF WORK AND CONTRACTORS PM/ SAFETY HEALTH OFFICER

Project :	percentage of work	
	Inspection no	
	Date of inspection	

No	HAZARDS / ACTIVITIES	electrocution	Environmental (rain & wind)	dust	falling of objects	falling onto	falling of persons	fire spark	heat stress	knocking / struck by	lightning	noise	struct by object	struct by rock	loose gas/ smoke	tripping	Propose control measure
1	Air compressor																
2	Bending Machine																
3	Brickwork																
4	Ceiling																
5	Chain saw																
6	Concrete mixer																
7	Concreting																
8	Construction of main drain, crib wall and rc wall																
9	Curing machine																
10	Drill																
11	Excavation																
12	Excavator																
13	Formwork																
14	Generator																
15	Grinder																
16	Jack																
17	Ladders																
18	Landscape																
19	Lorry																
20	LVHT & Telephone																
21	Mobile crane																
22	Motar Grader																
23	Painting																
24	Piling																
25	Plastering																
26	Platform																
27	Power tool																
28	Rameet																
29	Road side drain & wall																
30	Road works																
31	Rock blasting																
32	Roller																
33	Roof																
34	Scaffolding																
35	Sewage works																
36	Site clearing and earthwork																
37	Telephone																
38	Tiling, Marble & parquet																
39	TNB substation																
40	Water recticulation																
41	Welder																

	Representative	Signiture	Date
CLERK OF WORK NAME			
CONTRACTOR SHO NAME			
RESIDENT ENGINEER/ PROJECT EXECUTIVE			
Comment by project manager		FOLLOW UP DATE	COMPLETION DATE

(vi) Contractor payment and Management of Variation Order

CONTRACTOR PAYMENT AND MANAGEMENT OF VARIATION ORDER

(vi) Contractor payment and Management of Variation Order

- Measurement for changes VO
- Record for change approval VO

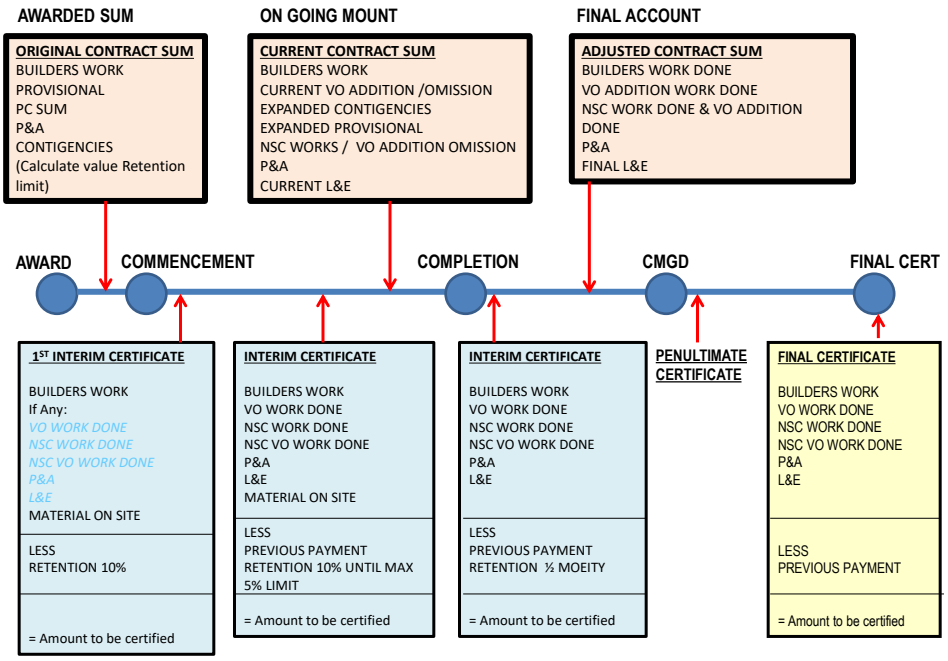
CONTRACTOR PAYMENT

1. PAYMENT IS THE RIGHT FOR THE PARTY PERFORMING THE WORKS TO BE CONSIDERED WHEN ACCEPTING A CONTRACT.

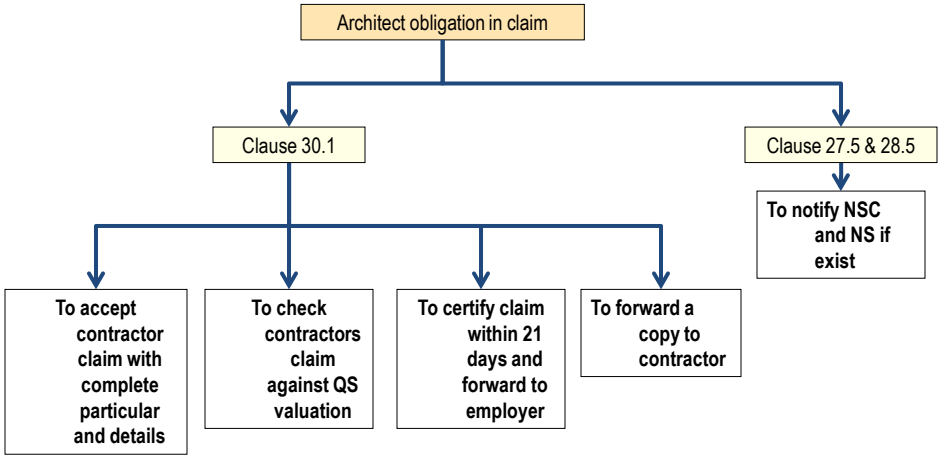
2. WITHOUT CONSIDERATION, THERE IS NO REASON WHY CONTRACTOR SHOULD ACCEPT THE CONTRACT.
3. PAYMENT CLAUSE IN STANDARD CONTRACT AS BELOW.

Brief Description of Relevant Contract Clauses	Contract Clauses					
	PAM 2006	PAM 1998	JKR 203A	IEM 1989	CIDB 2000	FIDIC 4th Edition
The Contractor shall submit a payment application at the Interim Claim Interval stated in the Appendix.	30.1	30.2	47 (a)		42.1	50.2
The Architect / Engineer / Superintending Officer shall within the stipulated period after the Contractor submitted Interim Payment Claims issues the Interim Certificate.	30.2 within 21 days	Architect discretion	14 days after Valuation		42.2(a) within 21 days	50.3 (a) 14 days after application
The Employer has to make the payment to the Contractor within stipulated period after the Architect / Engineer / Superintending Officer issued the Interim Payment Certificate.	30.2	30.3	47 (d)		42.9 (a)	50.3 (c)
Interest imposed on Employer for late payment.	30.17	-	-		42.9 (b)	-

WHEN DO CONTRACTOR GET PAID?



ARCHITECTS ROLE IN CLAIM FOR PAM 2006 CONTRACT



ROLE OF IOW IN PAYMENT

- While the role of IOW does not encompass Certification of Payment to the contractor,
- IOW does play a significant role in assisting Architect/ Engineer/QS to check contractors claim whats completed on site.
- IOW may make recommendation to the Architect to alter the percentage of valuation if the work is not completed or non compliance to the contract.

VARIATION ORDERS

Variation order is a written order issued by the Contract Administrator with approval from the owner to the contractor for a change to the contract within the scope of work

- Variation orders are written for:
  I. extra work
  II. increasing or decreasing the contract quantities
  III. Alterations

- Variation orders state the basis and amount of payment and time extensions

REASONS OF VARIATION ORDERS?

Table 1 - Scope of Variations Under The Common Standard Forms of Building/Construction Contract In Malaysia

Scope of Variation Item / Clause Ref.	PAM 06	PAM 98	CIDB	IEM	JKR PWD 203A(83/07)	JKR PWD DB/T
Alteration and modification of quantity (addition or omission of - CIDB)	11.1	11.1(i)	1.1(a)	23(a)(i)	24(b) / 24.2	27.1(a)
Change in quality (incl alteration and modification - Both PAM forms)	11.1	11.1(i)	1.1(c)	23(a)(iii)	24(b) / 24.2	27.1(a)
Alteration or modification of design	11.1	11.1(i)			24(b) / 24.2	27.1(a)
Exclude any changes for the Contractor's default or breach of contract.	11.1	11.1(vi)	1.1			27.2
Addition or omission	11.1 (a)	11.1(ii)	1.1(b)	23(a)(ii) & (v)	24(b) / 24.2(a)	27.1(a)(i)
Substitution	11.1 (a)	11.1(ii)			24(b) / 24.2(a)	27.1(a)(i)
Alteration of the kind or standard of any materials or goods	11.1 (b)	11.1(iii)			24(b) / 24.2(b)	27.1(a)(ii)
Removal of any part of the works, Equipment, materials/goods from site (include demolition - CIDB)	11.1 (c)	11.1(iv)	1.1(e)		24(b) / 24.2(c)	27.1(a)(iii)
Addition, alteration or omission of any expressed obligations or restrictions imposed by the Employer on any limitation of working hours, working space, or access to or utilisation of any specific part of the site or the execution and completion of the work in any specific order. (exclude obligations or restrictions - PAM06)	11.1 (d)	11.1(v)				27.1(b)
Any change in the original contract intention, which shall include but not restricted to:			1.1			
Change in character and/or nature			1.1(c)			
Change in levels, elevations, layout and dimensions			1.1(d)	23(a)(iv)		
Change in Contractor's Temporary Works, working method and/or construction Plant (working method only - PAM98)		11.1(vi)	1.1(f)			
Postponement of any part of the works by Employer			1.1(g)			
Employer's requirement to complete the works or any part/section earlier than its completion time			1.1(h)			
Include changes to alter the use of the works.		11.1(vi)	1.1			

ROLE OF IOW IN VARIATION ORDER

The IOW plays a big role in assisting Architect to ascertain Variation Order.

- IOW is expected to liaise with the QS/ contractor to measure the extend of the Variation order.
- To liaise with Project QS and Contractor to obtain estimates of the Variation Order and update the Architect.
- To advise Architect if there is other potential solution to reduce the Variation order.

(vii) Completion and handover

COMPLETION AND HANDOVER

(vii) Completion and handover

- Record for completion of work
- Record for completion approval

WHEN DOES THE PROJECT COMPLETE?

Project Complete when it has achieve practical completion.

The contract administrator certifies practical completion when :

- all the works described in the contract have been carried out.
- In PAM Contract 1998, CPC refers to patent defect must be de minimis.
- Practical completion is referred to as 'substantial completion' on some forms of contract as referred to PAM 2006.

RELEVANCE OF PRACTICAL COMPLETION

For Contractors

- *Certificate practical completion obtain*
- *No longer liable for Liquidated Damages*
- *Half retention becomes due*
- *Defect Liability Period commences*
- *Insurance risks ends and insurance maintenance period commence*

For Employers

- *Period for finalization and agreement of Final Account starts*
- *Possession of site handed over back by contractor*
- *Occupation starts should CCC have been obtain*

WHAT DO AN IOW NEED TO DO?

IOW NEEDS TO ASSIST CONSULTANT FOR:

- *JOINT INSPECTION*
- *CHECK ALL WORKS COMPLY TO APPROVE PLAN*
- *CHECK QUALITY AND WORKMANSHIP*
- *REPORT TO CONTRACT ADMIN FOR ANY SHORT COMINGS*
- *CHECK ALL CONTRACTURAL DOCUMENT NEEDS IS COMPLIED*

CPC CHECKLIST

CERTIFICATE PRACTICAL COMPLETION CHECKLIST

PROJECT NAME :	
MAIN CONTRACTOR :	
CPC DATE :	HAND OVER DATE :
DEFECTS LIABILITY PERIOD	
DURATION OF DLP	COMMENCE DATE / COMPLETION DATE

NO	DESCRIPTION	ACTION	REVIEW YES	REVIEW NO	COMMENT
1	APPLICATION LETTER FROM CONTRACTOR	TO ATTACH	☐	☐	
2	JOINT SITE EVALUATION (CLIENT/CONSULTANT/ CONTRACTOR)	TO ATTACH	☐	☐	
3	CONSULTANT RECOMMENDATION	TO ATTACH	☐	☐	
4	LIST OF OUTSTANDING WORKS	TO ATTACH LIST AND PROGRAM TO BE COMPLETED	☐	☐	
5	LETTER UNDERTAKING TO COMPLETE OUTSTANDING WORK	TO ATTACH	☐	☐	
6	SCHEDULE OF DEFECTS	TO ATTACH	☐	☐	
7	NCR CLOSED	TO CONFIRM	☐	☐	
8	COMMISIONING TEST COMPLETED AND TEST RESULT SUBMITTED, SIGNED BY P.E & WITNESSED BY COW AND AUTHORITIES (WHERE REQUIRED)	TO CONFIRM	☐	☐	
9	SHOP DRAWING SUBMITTED	TO CONFIRM	☐	☐	
10	AS-BUILT DRAWING SUBMITTED (IF REQUIRED)	TO CONFIRM	☐	☐	
11	O&M MANUAL SUBMITTED	TO CONFIRM	☐	☐	
12	MANUFACTURERS WARANTEES ASSIGNED	TO CONFIRM	☐	☐	
13	G1-G21 FORM SUBMITTED WITH SIGNATURE	TO ATTACH	☐	☐	
	WE RECOMMEND FOR THE ISSUANCE OF CPC		☐	☐	

Prepared By

(Contractor)

Reviewed by,

(ARCHITECT INCHARGE)

Important records

1. *Practical completion Application letter*
2. *Joint inspection record*
3. *Consultant recommendation*
4. *Letter undertaking*
5. *All NCR closed*
6. *T&C completed*
7. *All Warranties & Manuals forwarded*
8. *G1-G21 Signed with clearance letter from Technical Agency*

CERTIFICATE PRACTICAL COMPLETION

PAM 2006

CERTIFICATE OF PRACTICAL COMPLETION
(Clause 15.2)

Ref: .....
Date: .....

To: .....
.....
(Name & Address of 'the Contractor')

Works: .....
(Description of the Works)
at .....
for .....
(Name of Employer)

Certificate of Practical Completion

We refer to your written notice of Practical Completion of the Works ref..... dated ..... and

*your letter of undertaking ref..... dated ..... to made good and to complete the works and defects listed therein within .....Days from the date of this letter, and

your having complied with the pre-requisite requirements stated in the Contract for Practical Completion.

Pursuant to Clause 15.2 of the Conditions, we hereby certify that the Works are Practically Completed on .....

The Defects Liability Period in respect of the Works shall expire on .....

You shall forthwith return Site possession to the Employer.

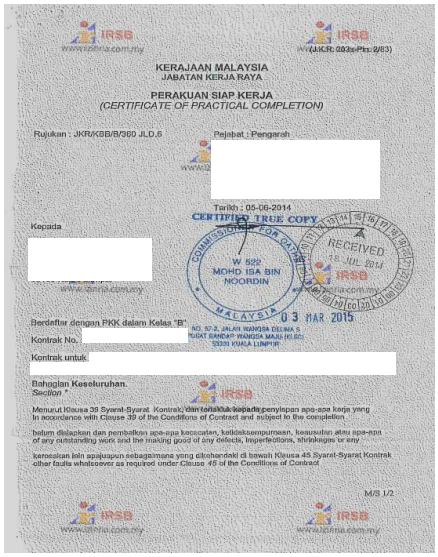
.....
Architect's signature

Name.....

Copies to:
☐ Employer ☐ C & S Engineer ☐ M & E Engineer
☐ Quantity Surveyor ☐ Resident Architect/Engineer/COW ☐ Nominated Sub-Contractor /Nominated Supplierr

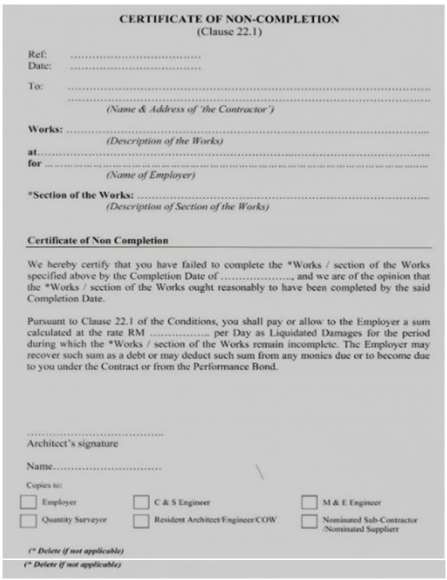
(Delete if not applicable)*

JKR 203A



WHAT HAPPEN WHEN PROJECT NOT COMPLETED?

PAM 2006



CERTIFICATE OF NON-COMPLETION
(Clause 22.1)

Ref: .....
Date: .....

To: .....
.....
(Name & Address of 'the Contractor')

Works: .....
(Description of the Works)

at .....
for .....
(Name of Employer)

***Section of the Works:** .....
(Description of Section of the Works)

Certificate of Non Completion

We hereby certify that you have failed to complete the *Works / section of the Works specified above by the Completion Date of ....., and we are of the opinion that the *Works / section of the Works ought reasonably to have been completed by the said Completion Date.

Pursuant to Clause 22.1 of the Conditions, you shall pay or allow to the Employer a sum calculated at the rate RM ..... per Day as Liquidated Damages for the period during which the *Works / section of the Works remain incomplete. The Employer may recover such sum as a debt or may deduct such sum from any monies due or to become due to you under the Contract or from the Performance Bond.

.....
Architect's signature

Name.....

Copies to:
☐ Employer ☐ C & S Engineer ☐ M & E Engineer
☐ Quantity Surveyor ☐ Resident Architect/Engineer/COW ☐ Nominated Sub-Contractor /Nominated Supplierr

(Delete if not applicable)*

In reference to clause 22.1 PAM Contract 2006 non completion can be define as :

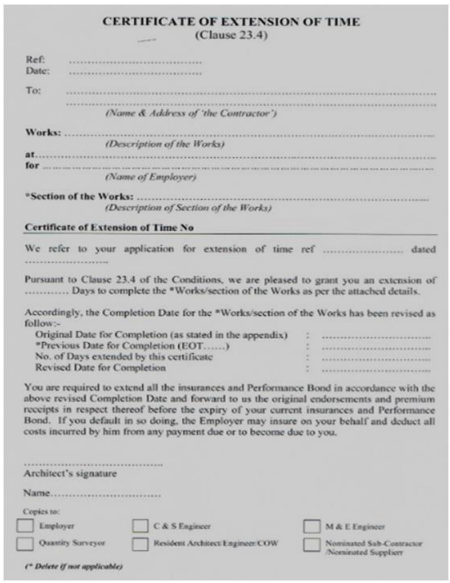
1. If works not completed by Date Of Completion , and
2. Architect is of the opinion that the same ought reasonably so to have been completed
3. Therefore work is not complete according to the contract document
4. Architect can issue Certificate of Non completion

The Effect

the Contractor shall pay or allow to the Employer a sum calculated at the rate stated in the Appendix as Liquidated Damages for the period from the Completion Date to the date of Practical Completion

CAN CONTRACTOR APPLY FOR ADDITIONAL TIME?

PAM 2006



CERTIFICATE OF EXTENSION OF TIME
(Clause 23.4)

Ref: .....
Date: .....

To: .....
.....
(Name & Address of 'the Contractor')

Works: .....
(Description of the Works)

at .....
for .....
(Name of Employer)

***Section of the Works:** .....
(Description of Section of the Works)

Certificate of Extension of Time No

We refer to your application for extension of time ref ..... dated .....

Pursuant to Clause 23.4 of the Conditions, we are pleased to grant you an extension of ..... Days to complete the *Works/section of the Works as per the attached details.

Accordingly, the Completion Date for the *Works/section of the Works has been revised as follow:-
Original Date for Completion (as stated in the appendix) : .....
*Previous Date for Completion (EOT.....) : .....
No. of Days extended by this certificate : .....
Revised Date for Completion : .....

You are required to extend all the insurances and Performance Bond in accordance with the above revised Completion Date and forward to us the original endorsements and premium receipts in respect thereof before the expiry of your current insurances and Performance Bond. If you default in so doing, the Employer may insure on your behalf and deduct all costs incurred by him from any payment due or to become due to you.

.....
Architect's signature

Name.....

Copies to:
☐ Employer ☐ C & S Engineer ☐ M & E Engineer
☐ Quantity Surveyor ☐ Resident Architect/Engineer/COW ☐ Nominated Sub-Contractor /Nominated Supplierr

(Delete if not applicable)*

Extension of Time

a) Extension of time is a provision made in building contracts for architects to grant extension of time to the completion date

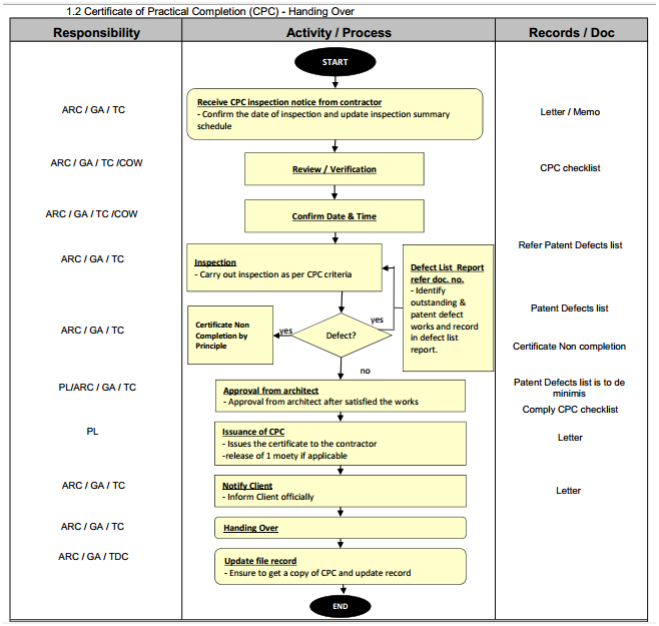
b) The extension of time given is subject to delay that occur due to certain specified causes.

E.O.T. clause is put into the Contract to cater for the delay caused by:-

1) Employer or the Architect
2) Neither Party (neutral event)

Example: Delay giving possession of site, delay appointed NSC, Delay giving AI, Delay supply material from own source, breach of contract, late appointment of replacement consultant, late giving entry to site.

COMPLETION OF WORK & HAND OVER OF SITE



CONCLUSION

CONCLUSION

THE ROLE OF IOW DURING CONSTRUCTION IS VERY CRITICAL FOR THE SMOOTH RUNNING OF THE PROJECT.

THEREFORE, IT IS IMPORTANT FOR IOW TO KNOW ITS OBLIGATION, ROLES AND RESPONSIBILITIES DURING THIS STAGE.

INTRODUCTION

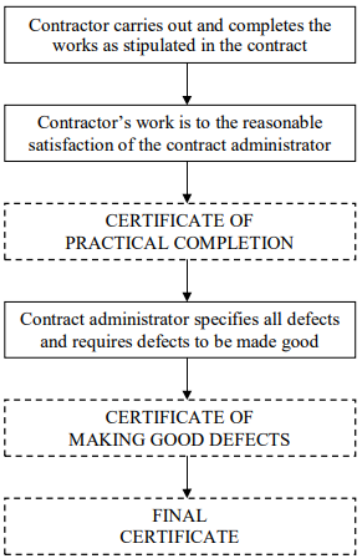
Understanding the IOW role during post Construction is very important.

If not, you will end up doing work for Client or the Contractor or even the purchaser.

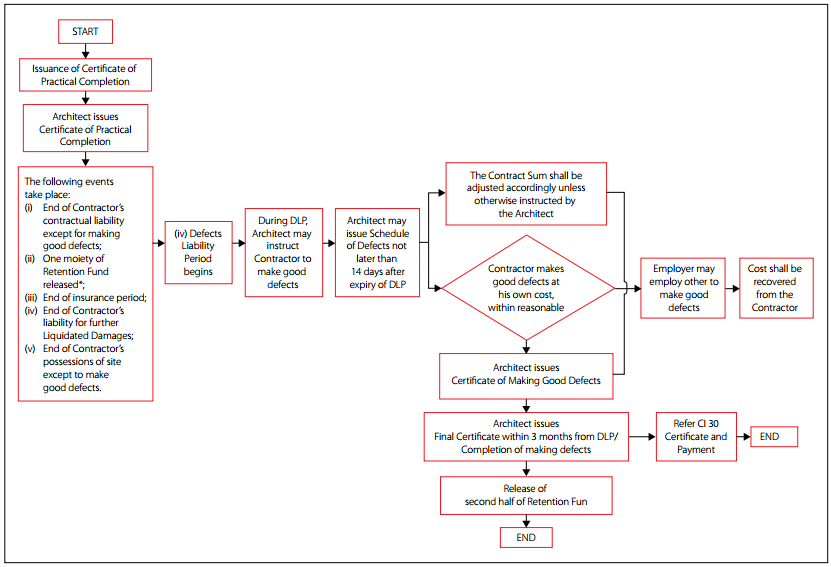
Remember , you are the :

- Architect/ engineers eyes and ears at site.
- Architect / engineer provides Periodic supervision while RA/RE/IOW/COW provides standing supervision

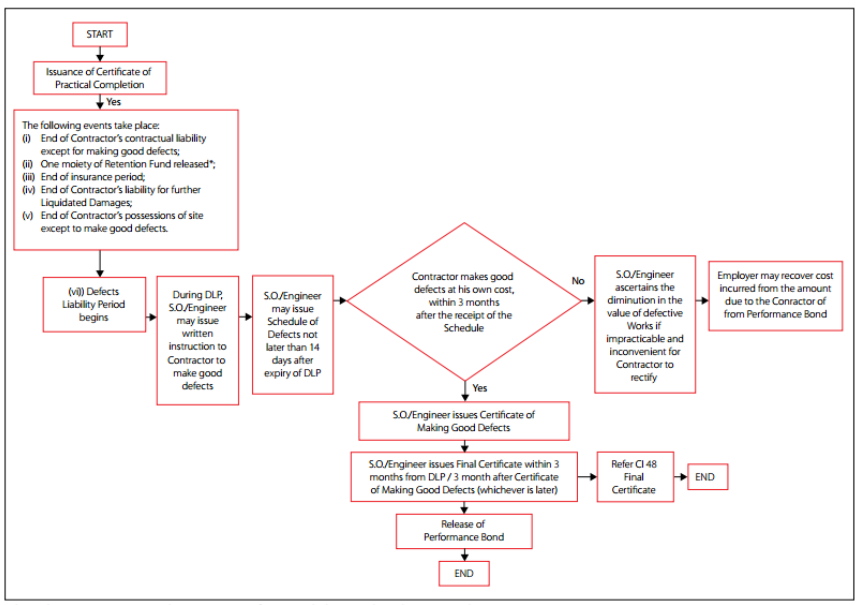
SUMMARY OF EVENTS AFTER CPC



PAM 2006- CPC,DLP & CMGD PROCESS



JKR 203A- CPC,DLP & CMGD PROCESS



CONSIDERATION FOR CLOSING OF PROJECT

CLOSE OUT

1. **CONSTRUCTION CLOSE OUT**
2. **FINANCIAL CLOSE OUT**
3. **CONTRACT CLOSE OUT**
4. **CONTRACT ADMINISTRATION CLOSE OUT**

1. CONSTRUCTION CLOSE OUT

Parties Demobilizing

- Can be Expensive
- Need to clean up project site
- Close project office and telco connections
- Remove equipment & materials
- Disconnect temp utilities
- Contact vendors to close accounts
- Project staff phased out
- Project files taken to main office

2. FINANCIAL CLOSE OUT

Application for Balance and final Payment

Submitted After CPC

- Evidence and documentation
- Balance payment of work and VO
- Request for release of ½ retention sum

Preparation of Final Accounts

- Contractor to submit final accounts to Contract Administration within a stipulated time

Submitted After CMGD

- Evidence and documentation
- Request for release of ½ retention sum
- Final payment

3. CONTRACT CLOSE OUT

Close out handover checklist

- Allows to keep track of what is needed

Why do you need a handover checklist

- Receive final progress payment
- Coordinate release of retention
- To begin clock on warranties and guarantees
- Close out subcontracts and POs
- Maintain good relation with owner, designer and subs
- Minimize project overhead

3. CONTRACT CLOSE OUT

Close out requirements in contract specs

As Built Drawings

- Most significant close out deliverable
- Example: As Built Surveys endorse by License Surveyor

O & M manuals

- Organize into binders and give to owner
- Not sales info only O & M info

Warranties

- Written, original, signed warranties and guarantees from all subs and suppliers to be Placed in O & M manual

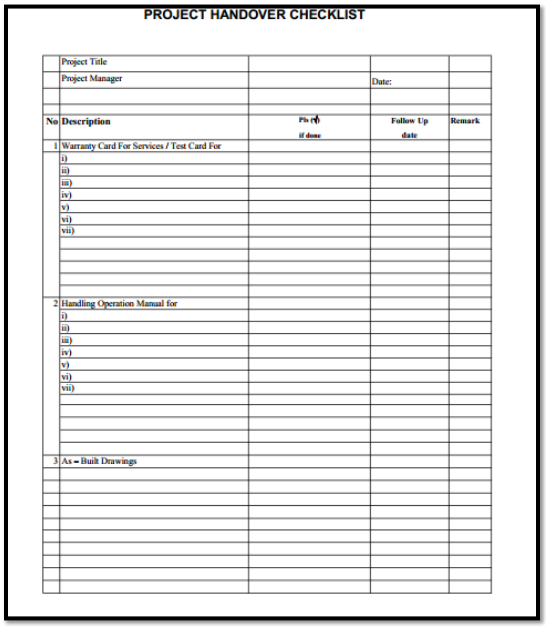
Test Reports

- Placed in O & M manual

Extra Materials

- Contract may state that extra material (1 – 3 %) be supplied to owner upon job completion
- Paint, ceramic tile, ceiling tiles

SAMPLE PROJECT HANDOVER CHECKLIST



PROJECT HANDOVER CHECKLIST

	Project Title			
	Project Manager		Date:	
No	**Description**	**Pls (√) if done**	**Follow Up date**	**Remark**
1	Warranty Card For Services / Test Card For			
	i)			
	ii)			
	iii)			
	iv)			
	v)			
	vi)			
	vii)			
2	Handling Operation Manual for			
	i)			
	ii)			
	iii)			
	iv)			
	v)			
	vi)			
	vii)			
3	As – Built Drawings			

4. CONTRACT ADMINISTRATION CLOSE OUT

Analysis of final forecast project

- cost vs contract amount
- Prepare as built estimate
- Claim for consultant fee

Post project meeting with Stakeholder

- Discuss obligation during DLP
- Personnel In charge
- Line of Communication
- Closing of Defects.

IOW SCOPE DURING POST CONSTRUCTION

BASIC SCOPE OF DUTIES OF A IOW

PRE CONSTRUCTION	CONSTRUCTION	POST CONSTRUCTION
• Inspecting of contractor preliminaries requirements • Liaising with contractor for submissions of work program, insurance and performance bond	A. Reporting, Preparing & Maintaining Records B. Coordination of Consultant/ contractor on site C. Progress of work & progress report D. Site Inspection and Testing E. Building Material F. Contractor payment and Management of Variation Order G. Completion and handover	• **Inspection for closure of defect rectification** • **Assisting consultant for Final Account preparation** • **Assisting Architect for project Closing**

Inspection for closure of defect rectification

INSPECTION FOR CLOSURE OF DEFECT DURING DLP

Among the roles of IOW during this stage are:

<u>Coordination of defect list and rectification</u>

- **Collating defects list from Owner/End user**
- **Ensuring Contractor receive the defect list**
- **Monitoring Contractor rectifies the defects**
- **Informing Contract Administrator for any short falls.**

<u>Monitoring & Closing Defect</u>

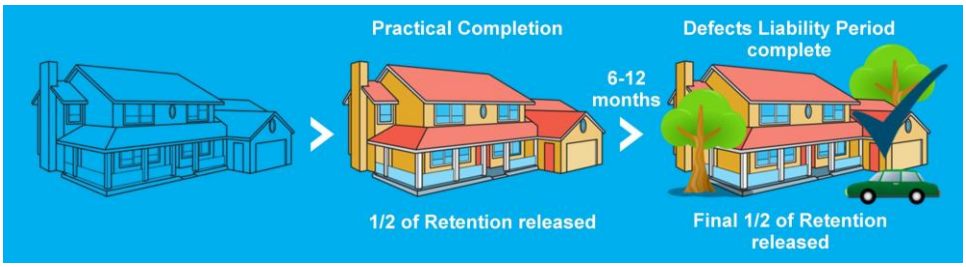
Informing the Contract Administrator that the defects has been completed.

- **Joint inspection with the contract Administrator to close the defects.**

WHAT IS DEFECT LIABILITY PERIOD?

A defects liability period is

- a set period of time after a construction project has been completed
- during which a contractor has the right to return to the site to remedy defects.
- A typical defects liability period lasts for 12 months or more.



PURPOSE OF DEFECT LIABILITY PERIOD?

Defects liability periods - also known as rectification provisions - can be of benefit to both parties.

For the contractor- more economical and efficient for it to carry out remedial works itself than to pay the costs of another contractor hired by the employer.

For employer's -it will not need to hire an alternative contractor to carry out the work, or to carry out the work itself and reclaim the cost. will also not run the risk that any warranties provided by the original contractor may be affected by a third party carrying out works on the site.

COMMON ARCHITECTURAL DEFECTS DURING DLP

Item	Type of defects	Frequent type of defects
A) Wall, Floor and Finishes	1. Water seepage 2. Dirty floor 3. Unevenness paint 4. Untidy wall painting 5. Peeling of paint 6. Plaster crack 7. Wall damaged 8. Uneven floor level 9. Detached of floor tiles 10. Floor tile crack 11. Pebble wash not provided 12. Fungus 13. Improper fixing of wall tile 14. Partition not provided 15. Detached of skirting	Untidy wall painting
B) Windows and Fittings	1. Non-functional window 2. Window damaged 3. Dirty window 4. Window ironmongery damaged 5. Incomplete installation of window 6. Blind not provided 7. Window corrode	1. Non-functional windows 2. Water seepage 3. Window damaged

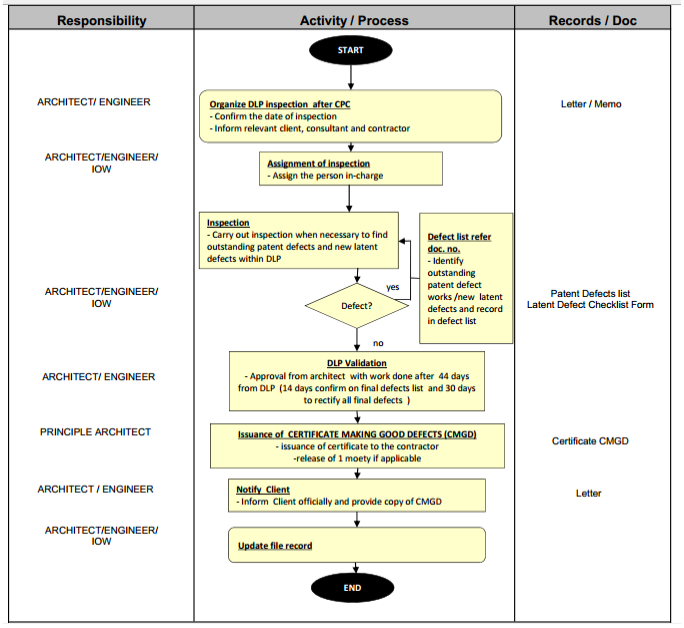
Item	Type of defects	Frequent type of defects
C) Doors and Fittings	1. Door damaged 2. Ironmongery damaged 3. Incomplete installation of ironmongery 4. Door key not provided 5. Untidy door painting 6. Non-functional door 7. Detached of door stopper 8. Peeling of paint at door 9. Door knob inverted	Door damage and not aligned.
D) Ceiling Finishes	1. Ceiling perforated 2. Ceiling not provided 3. Leakage 4. Ceiling damaged 5. Fungus 6. Stain mark	Leakage
E) Sanitary Fittings, Fixtures and Toilet Cubicles	1. Incomplete installation of fittings 2. Tap not provided 3. Leakage 4. Blockage 5. Detached of sanitary fittings 6. Non-functional floor trap 7. Water closet cover damaged 8. Improper installation of fittings 9. Cistern overflow 10. Flush damaged	Missing , Damage and Broken

CAUSE OF DEFECTS

Item	Type of defects	Frequent Cause of defect
A) Wall, Floor and Finishes	1. Lack of protection 2. Poor workmanship 3. Work i n accordance to specification 4. Incorrect levelling 5. Work in accordance to specification 6. Exposed to weather 7. Vandalism 8. Poor quality of material 9. Mishandling by users 10. Design default 11. Construction debris blockage	1. Work not in accordance to specification 2. Poor workmanship 3. Lack of protection 4.Vandalism 5. Water seepage
B) Windows and Fittings	1. Poor workmanship 2. Work in accordance to specification 3. Vandalism 4. Lack of protection 5. Poor quality of material 6. Mishandling by users 7. Exposed to weather 8. Heavy thing crashed	

Item	Type of defects	Frequent Cause of defect
C) Doors and Fittings	1. Work in accordance to specification 2. Vandalism 3. Mishandling by users 4. Poor workmanship 5. Poor quality of material 6. Exposed to weather 7. Lack of protection 8. Design default	1. Work not in accordance to specification 2. Poor workmanship 3. Lack of protection 4.Vandalism 5. Water seepage
D) Ceiling Finishes	1. Work in accordance to specification 2. Lack of protection 3. Poor workmanship 4. Incorrect levelling 5. Vandalism 6. Mishandling by users	
E) Sanitary Fittings, Fixtures and Toilet Cubicles	1. Poor workmanship 2. Lack of protection 3. Construction debris blockage 4. Mishandling by users 5. Vandalism 6. Exposed to weather 7. Poor quality of material 8. Work not accordance to plan and layout 9. Valve gate off	

DEFECT LIABILITY PERIOD PROCEDURE



DEFECT INSPECTION FORM

LATENT DEFECT CHECKLIST

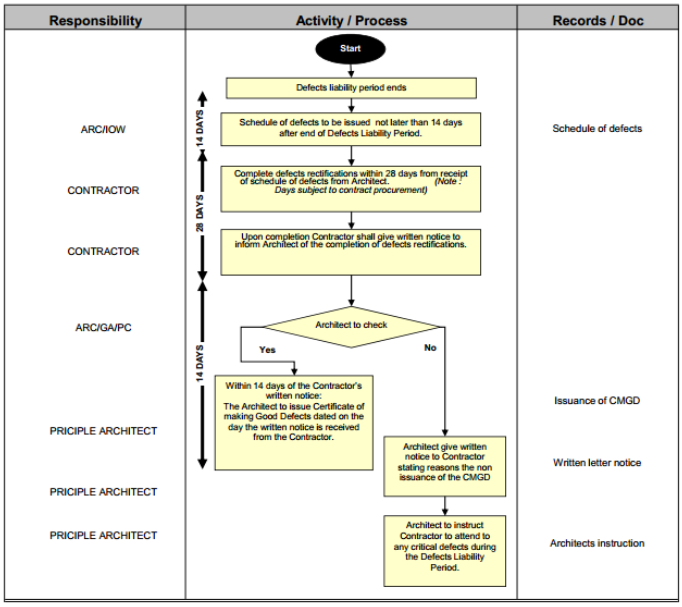
Project Title :

BIL	LOCATION / SPACE	DEFECTS	PICTURE	ACTION	STATUS	CONFIRMATION	
						CONTRACTOR	CONSULTANT

DUTIES OF IOW DURING DEFECT LIABILITY PERIOD (DLP)

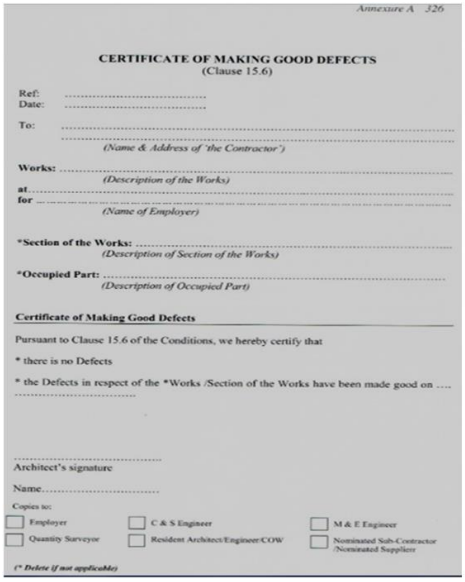
1. Accepting the defect list from Client/ Purchaser.
2. Informing Contractor for defect rectification
3. Reminding Contractor through Site memo
4. Discuss with contractor potential solutions
5. Checking that the works has been completed.
6. If not completed, inform Architect for issuance of Architect Instruction.
7. Monitoring 3rd Party contractor if required.
8. Liaising with contractor for Closing of All Defect Rectification Form
9. Properly log all the DRF for easy reference for CMGD.

PROCEDURE ISSUANCE OF CMGD



SAMPLE CERTIFICATE MAKING GOOD DEFECT

PAM 2006



Annexure A 326

CERTIFICATE OF MAKING GOOD DEFECTS
(Clause 15.6)

Ref: .....
Date: .....

To: .....
.....
(Name & Address of 'the Contractor')

Works: .....
(Description of the Works)
at .....
for .....
(Name of Employer)

***Section of the Works:** .....
(Description of Section of the Works)

***Occupied Part:** .....
(Description of Occupied Part)

Certificate of Making Good Defects

Pursuant to Clause 15.6 of the Conditions, we hereby certify that

* there is no Defects

* the Defects in respect of the *Works /Section of the Works have been made good on ....
.....

.....
Architect's signature

Name.....

Copies to:

☐ Employer ☐ C & S Engineer ☐ M & E Engineer
☐ Quantity Surveyor ☐ Resident Architect/Engineer/COW ☐ Nominated Sub-Contractor /Nominated Supplier

(Delete if not applicable)*

CMGD

- A procedure which is required for the second half of the retention money to be payable to contractor.
- A process which must be finalized before the period to issue Final Completion Certificate begins.

HANDLING DEFECT COMPLAINTS FOR HOUSING PROJECTS

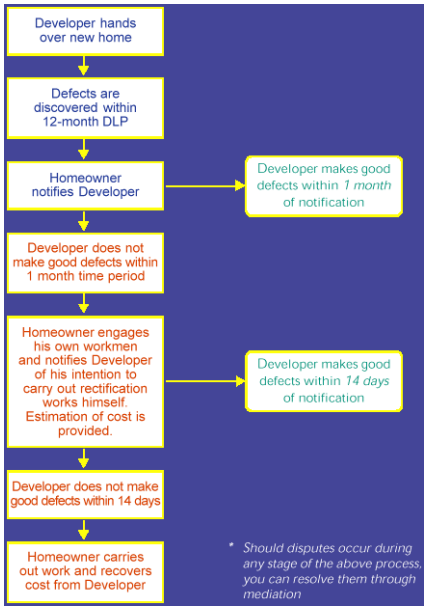
DEVELOPER OBLIGATION/ PURCHASER RIGHT FOR DEFECT RECTIFICATION

Getting the keys to a new home is an exciting time, filled with great anticipation.

- Though we always expect our dream homes to turn out perfect, sometimes this is not the case.
- We find that certain items of work are not in accordance with the specifications, or detect instances of shoddy workmanship.

What can we do about it?

Under the Sale & Purchase Agreement signed with your developer, your developer has certain obligations to fulfill when defects are detected within the Defects Liability Period (usually 12 months).



DLP CLAUSE IN SALES PURCHASE AGREEMENT

SCHEDULE G

27 Tempoh Liabiliti Kecacatan (DLP)

- DLP – **24 bulan** selepas VP.
- Penjual dengan kosnya sendiri membaiki kecacatan (Bangunan) dlm tempoh 30 hari drp tempoh terima notis bertulis drp Pembeli.
- Selepas tamat 30 hari – jika Pembeli tidak baiki kecacatan – hantar notis niat baiki kecacatan sendiri & invois mengenai kos pembaikan & perlu beri peluang kpd Penjual baiki kecacatan.

SCHEDULE H

30 Tempoh Liabiliti Kecacatan (DLP)

- DLP – **24 bulan** selepas VP.
- Penjual dengan kosnya sendiri membaiki kecacatan (Petak / Harta Bersama) dlm tempoh 30 hari drp tempoh terima notis bertulis drp Pembeli.
- Selepas tamat 30 hari – jika Pembeli tidak baiki kecacatan – hantar notis niat baiki kecacatan sendiri & invois mengenai kos pembaikan & perlu beri peluang kpd Penjual baiki kecacatan.

DLP CLAUSE IN SALES PURCHASE AGREEMENT

SCHEDULE G

27 Tempoh Liabiliti Kecacatan (DLP)

- Dalam ~~14~~ 30 hari – jika Penjual tidak baiki juga – Pembeli boleh baiki sendiri – kos dituntut dgn memotong kos drp apa-apa wang yg dipegang oleh Peguamcara.
- Peguamcara membayar kpd Pembeli dlm ~~14~~ 30 hari selepas terima tuntutan bertulis Pembeli.

SCHEDULE H

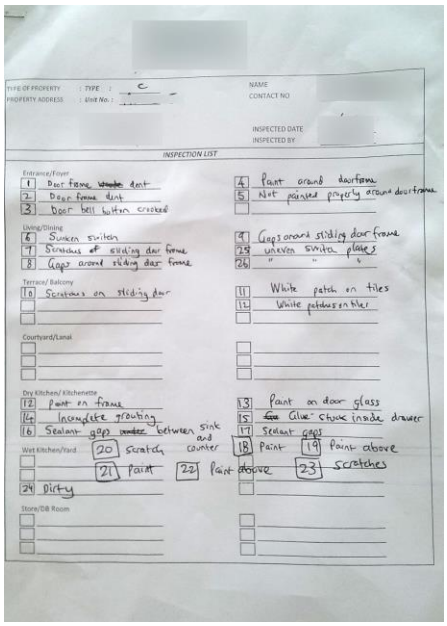
30 Tempoh Liabiliti Kecacatan (DLP)

- Dalam ~~14~~ 30 hari – jika Penjual tidak baiki juga – Pembeli boleh baiki sendiri – kos dituntut dgn memotong kos drp apa-apa wang yg dipegang oleh Peguamcara.
- Peguamcara membayar kpd Pembeli dlm ~~14~~ 30 hari selepas terima tuntutan bertulis Pembeli.

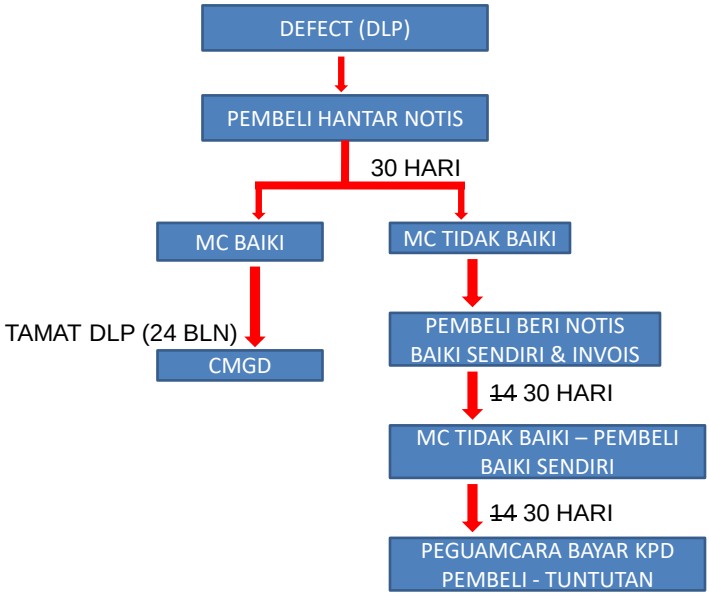
SAMPLE DEFECT FORM BY PURCHASER

Upon vacant possession, The developer will usually supply purchaser a form to fill in the defects list.

Remember to make a copy before you hand it over.



H.D.A - PURCHASER DLP COMPLAINT PROCESS



DLP CLAUSE IN SALES PURCHASE AGREEMENT

SCHEDULE G

27 Tempoh Liabiliti Kecacatan (DLP)

- Sebelum tamat 8 bulan atau 24 bulan selepas VP – terima notis bertulis mengenai membaikan kecacatan drp Pembeli – dan terima perakuan yg ditandatangani oleh Arkitek bahawa kecacatan telah dibaiki
- - Peguamcara Penjual boleh meminta bayaran 2.5% (butiran 5(a) atau 5(b)) drp Pembeli/ Pembiaya.

SCHEDULE H

30 Tempoh Liabiliti Kecacatan (DLP)

- Sebelum tamat 8 bulan atau 24 bulan selepas VP – terima notis bertulis mengenai membaikan kecacatan drp Pembeli – dan terima perakuan yg ditandatangani oleh Arkitek bahawa kecacatan telah dibaiki
- - Peguamcara Penjual boleh meminta bayaran 2.5% (butiran 5(a) atau 5(b)) drp Pembeli/ Pembiaya.

PURCHASER CONCERN UPON VP?

https://www.recomn.com/blog/defect-liability-period/?hlid=5y411w

Checkpoint 1: Does the property match what was promised by the developer?	Checkpoint 2: Do all the fixtures work properly?	Checkpoint 3: Is the workmanship satisfactory?
1. measure the actual built-up area of every room. Compare against the floor plan given in your SPA. 2. Count the number of lighting points, electrical points and sockets. It should be the same number as in the SPA. 3. Count the number of ceiling hooks for fans or chandeliers 4. Check for broadband point and gas point (if applicable) 5. Check that all given appliances and fixtures in the bathroom, toilets and kitchen are as per listed in the SPA. 6. Also check: • Aircon fan units and compressors are the correct brand and model • Sink, taps and toilet bowl are the correct brand • Fridge, oven, stovetop and cooker hood are the correct brand and model • Shower heads are installed • Kitchen cabinets and countertop are the correct material	1. Turn on all the taps and showers, and flush all the toilets to check for water pressure and drainage. Make sure all drainage systems and water holes in bathroom floor and sink, as well as kitchen floor and sink are not blocked 2. Check all the bathroom fixtures are complete. For example, do the toilets all have seat covers? Do the shower heads have all the nozzles in place? 3. Turn on all the appliances and run them for a little while. If it's an aircon, it may take a moment to get cold as it has not been used for a while 4. *During the defect inspection, some homeowners even deliberately flood their bathrooms and kitchens, or fill the bathtub and leave it there for a few days. Just to check whether the water seeps through to the unit below.*	1. Check the ceiling and the wall for any cracks, water damage, or bad paint work 2. Check on floor tiles, bathroom wall tiles, and kitchen back splash for any misalignment 3. Knock every single tile and if you hear any hollow sound, put it on the repair list 4. Check all doors, door frames, hinges and knobs to make sure there's no dent, scratch or misalignment, can be properly closed and match their keys. Try a couple of times 5. Repeat step above for all the windows 6. Make sure the glass on the sliding doors and windows are properly installed and not cracked 7. Make sure the vanity mirrors in the bathroom are properly installed and have no cracks 8. Check for any trails of dried cement, varnish or paint on any part of the house 9. Shake the railing on your balcony to make sure it is properly installed and firm

- **Assisting consultant for Final Account preparation**

ASSISTING CONSULTANT FOR FINAL ACCOUNT PREPARATION

Among the duties of IOW during this stage are:

- **Attending for joint inspection with Consultants and Quantity Surveyor if any**
- **Verifying works done through site records for the preparation of final Accounts.**
- **Assisting Consultant to resolve issues relating to works performed by contactor in respect of quantity and specifications.**

WHAT IS FINAL ACCOUNT

1. Final account in construction contracts is

- the agreed statement of the amount of money
- to be paid at the end of a building contract
- by the employer to the contractor.

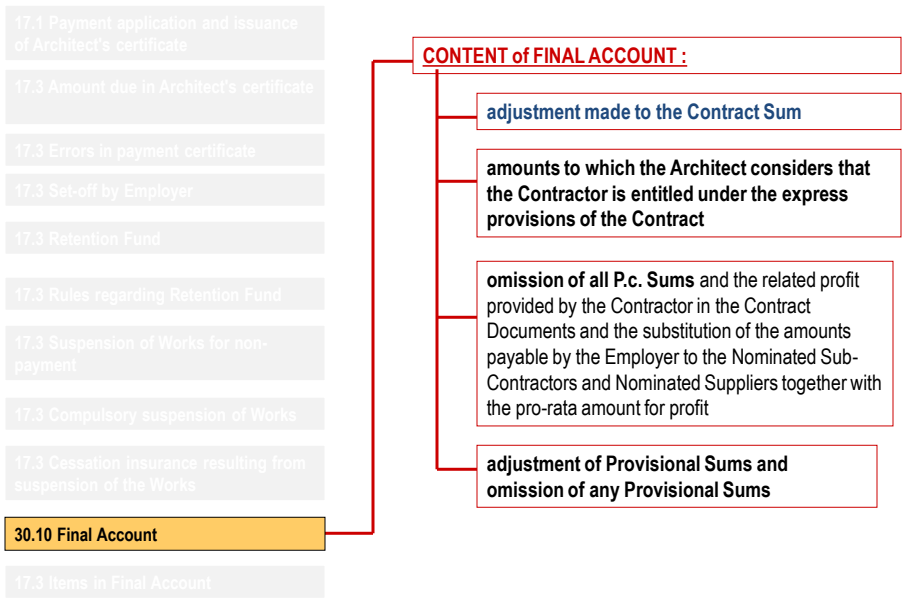
WHAT IS FINAL ACCOUNT FOR?

1. A final account brings about a sense of finality to the negotiations leading up to the agreement of the Final Account between the parties to the contract.

2. The settlement of the final account negotiations between the contractor, and the architect or quantity surveyor will in due course trigger the issue of the final account statement and ultimately, enable the architect to issue the final certificate.

3. Provisions of Final Account in standard contract
   - **PAM Contract – Clause 30.10**
   - **JKR 203A – Clause 31**
   - **CIDB – Clause 42.8**

CONTENT OF FINAL ACCOUNTS



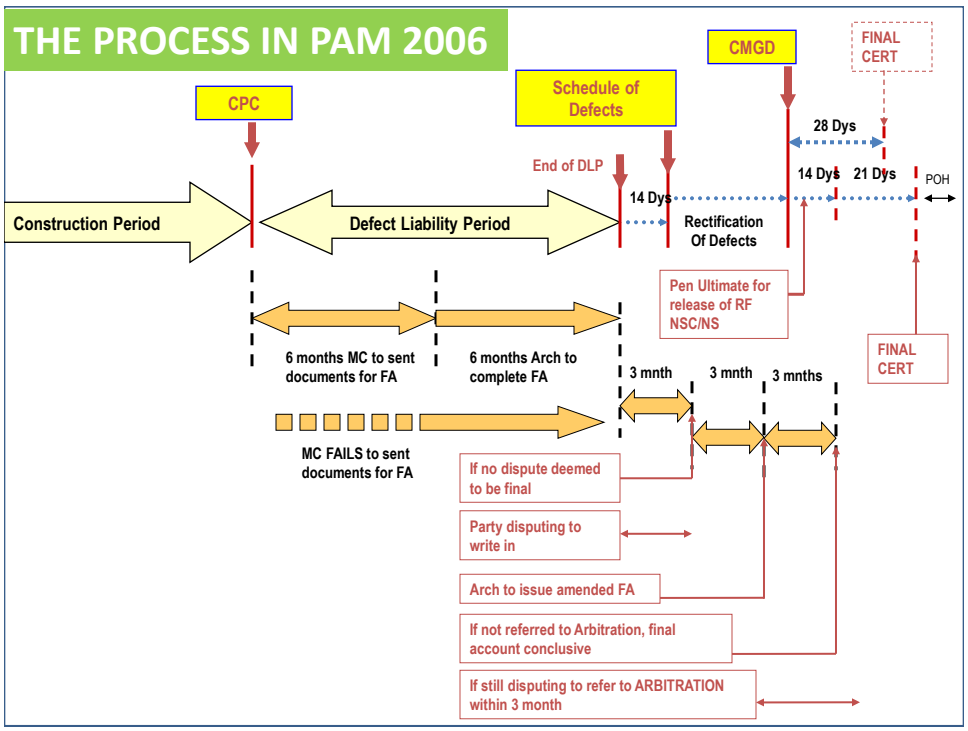
HOW DOES QS FINALIZE THE FINAL ACCOUNT?

QS formulates the final accounts for the Principal Contractor as well as the Nominated and the selected amounts.

Finalising the Final accounts involves:

1. External works are usually measured provisionally, thus at this stage they are included in the BOQ in order to sum up the Total Cost of the project.
2. The pricing and approval of variations brought about by the site instructions and revised drawings.
3. Preliminaries Adjustments calculations.
4. Issuing of the final valuation.

THE PROCESS IN PAM 2006



IOW ROLE DURING FINALIZATION OF FINAL ACCOUNT.

After CPC, it is the onus of the contractor to submit the documents necessary to the Architect/Engineer/ QS to prepare for final accounts.

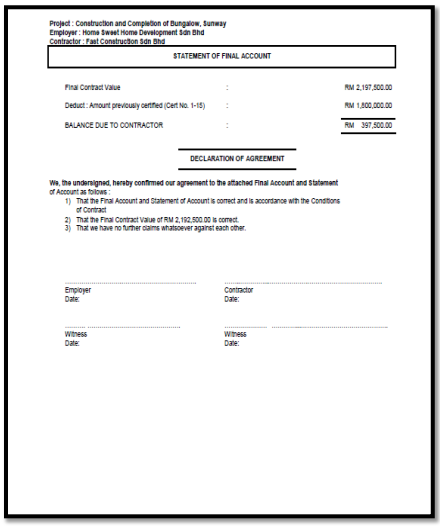
Upon receive the necessary documents, the consultant prepare the final accounts against the supporting documents.

The Consultant may require the assistance of the IOW to :

1. Verify supporting documents
2. Verify works done on site through site records.
3. If necessary, conduct Joint inspection on site to verify the works.
4. Should there be dispute, IOW may be key witness to the dispute.

DOCUMENTS REQUIRED BEFORE FINAL CERTIFICATE CAN BE ISSUED

1. Certificate Making Good Defects by Architect
2. Statement of Final Account from QS
3. Financial Summary Status Contract by QS
4. Supporting Documents
   - Architects Instructions for VO items



Project : Construction and Completion of Bungalow, Sunway
Employer : Home Sweet Home Development Sdn Bhd
Contractor : Fast Construction Sdn Bhd

STATEMENT OF FINAL ACCOUNT

Final Contract Value	:	RM 2,197,500.00
Deduct : Amount previously certified (Cert No. 1-15)	:	RM 1,800,000.00
BALANCE DUE TO CONTRACTOR	:	RM 397,500.00

DECLARATION OF AGREEMENT

We, the undersigned, hereby confirmed our agreement to the attached Final Account and Statement of Account as follows :

1) That the Final Account and Statement of Account is correct and is accordance with the Conditions of Contract
2) That the Final Contract Value of RM 2,192,500.00 is correct.
3) That we have no further claims whatsoever against each other.

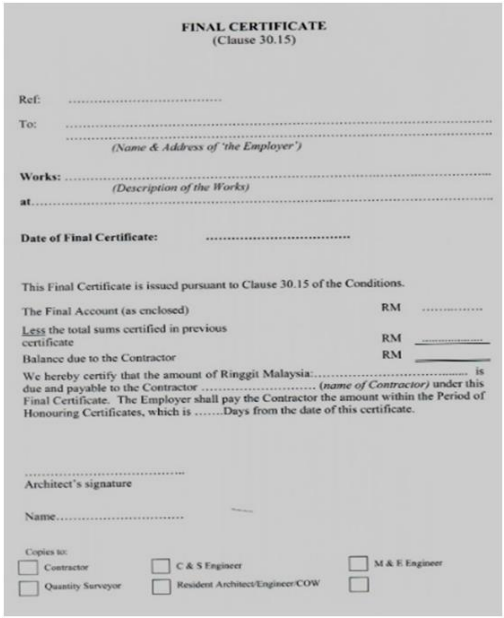
Employer
Date:

Contractor
Date:

Witness
Date:

Witness
Date:

FINAL CERTIFICATE



FINAL CERTIFICATE
(Clause 30.15)

Ref: .....

To: .....
.....
(Name & Address of 'the Employer')

Works: .....
(Description of the Works)
at.....

Date of Final Certificate: .....

This Final Certificate is issued pursuant to Clause 30.15 of the Conditions.

The Final Account (as enclosed) RM .....

Less the total sums certified in previous certificate RM .....

Balance due to the Contractor RM .....

We hereby certify that the amount of Ringgit Malaysia:..... is due and payable to the Contractor ..... *(name of Contractor)* under this Final Certificate. The Employer shall pay the Contractor the amount within the Period of Honouring Certificates, which is .....Days from the date of this certificate.

.....
Architect's signature

Name.....

Copies to:
☐ Contractor ☐ C & S Engineer ☐ M & E Engineer
☐ Quantity Surveyor ☐ Resident Architect/Engineer/COW ☐

CONCLUSION

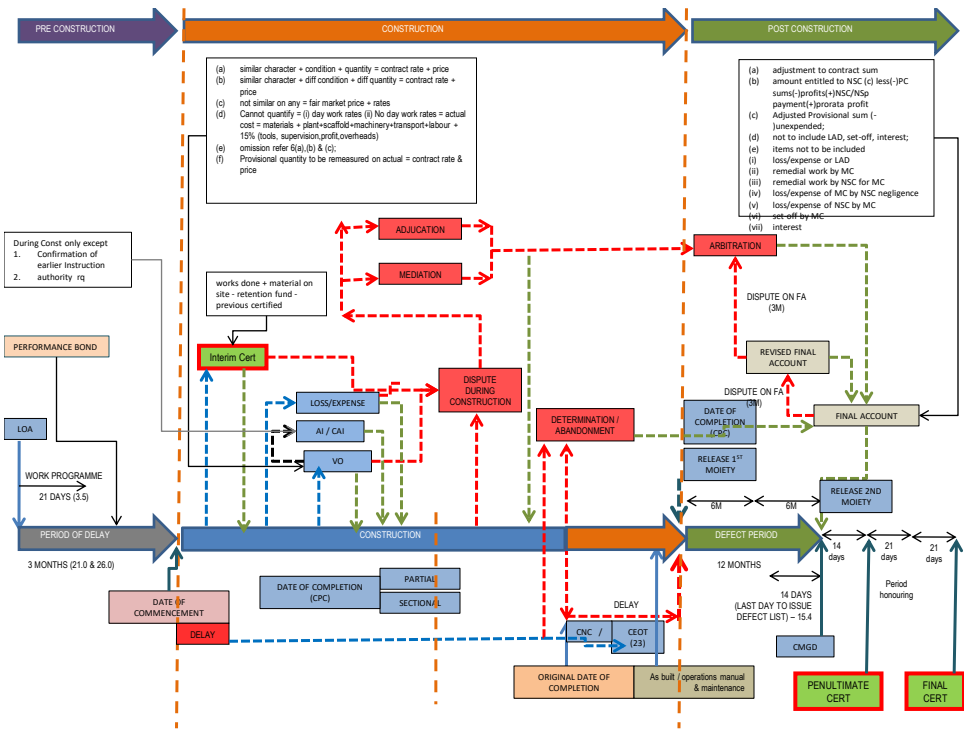
UNDERSTAND THE BASIC SCOPE OF AN IOW

PRE CONSTRUCTION | CONSTRUCTION | POST CONSTRUCTION

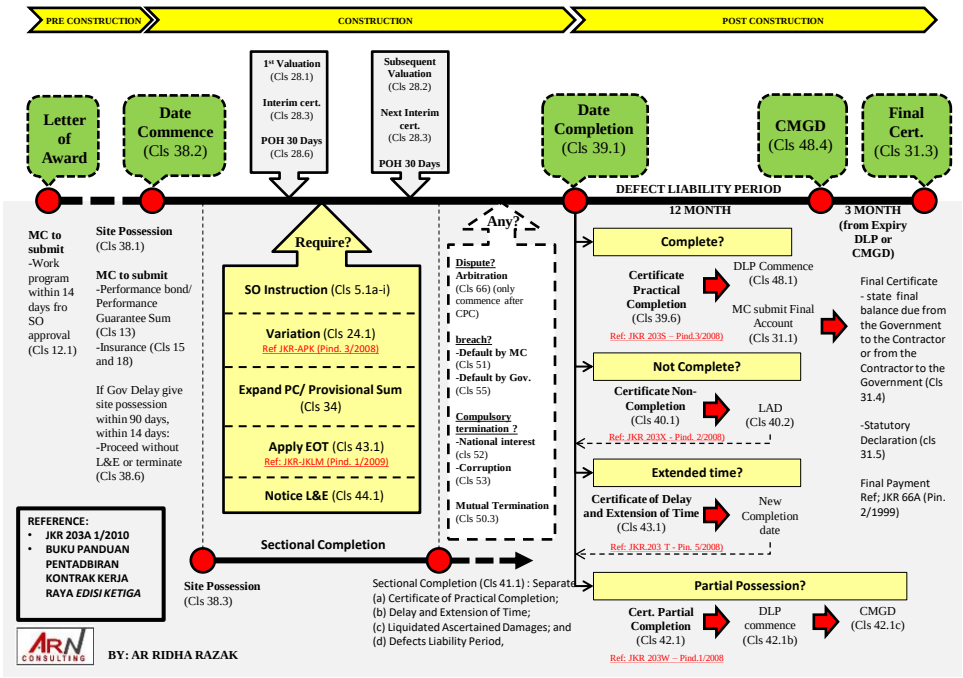
- Inspecting of contractor preliminaries requirements
- Liaising with contractor for submissions of work program, insurance and performance bond

A. Reporting, Preparing & Maintaining Records
B. Coordination of Consultant/ contractor on site
C. Progress of work & progress report
D. Site Inspection and Testing
E. Building Material
F. Contractor payment and Management of Variation Order
G. Completion and handover

- Inspection for closure of defect rectification
- Assisting consultant for Final Account preparation



MAPPING JKR 203A REV1/2010 CONTRACT PROCESSES



WHAT WE HAVE LEARN FROM DAY 1 TO DAY 10

1. IOW PROFESIONALISM
2. TYPES OF CONSTRUCTION IN MALAYSIA
3. AWARENESS OF STANDARD CONTRACTS.
4. IOW RELATION TO CONSTRUCTION LEGAL REQUIREMENTS
5. THE SCOPE OF WORK OF IOW FROM PRE TO POST
6. INSPECTION AND MATERIAL SELECTION STANDARDS.