

PHILIPPINE GREEN BUILDING CODE



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SITUATIONER

There is
demand for buildings

Energy Cost

Climate Change

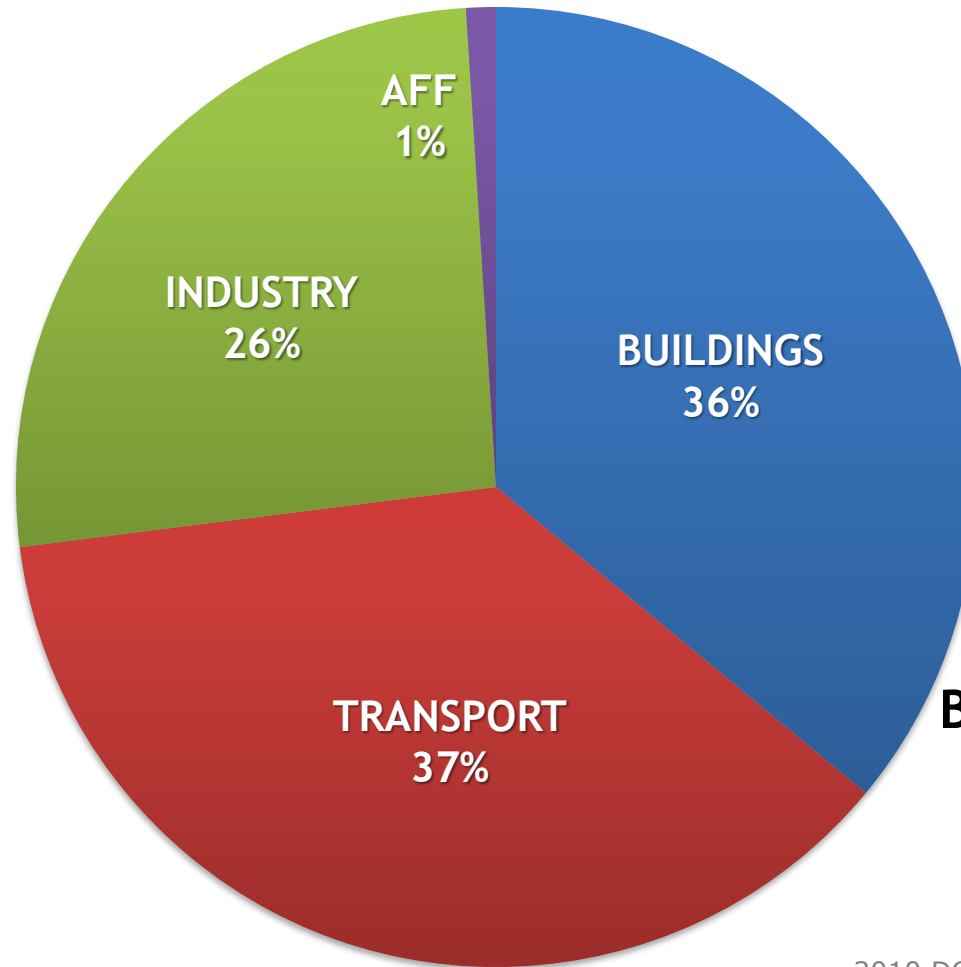


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SITUATIONER

2010 ENERGY CONSUMPTION BY SECTOR



Buildings account for 36% of the national energy consumption

2010 DOE Key Energy Statistics Philippines

Energy Use Profile in the Philippines

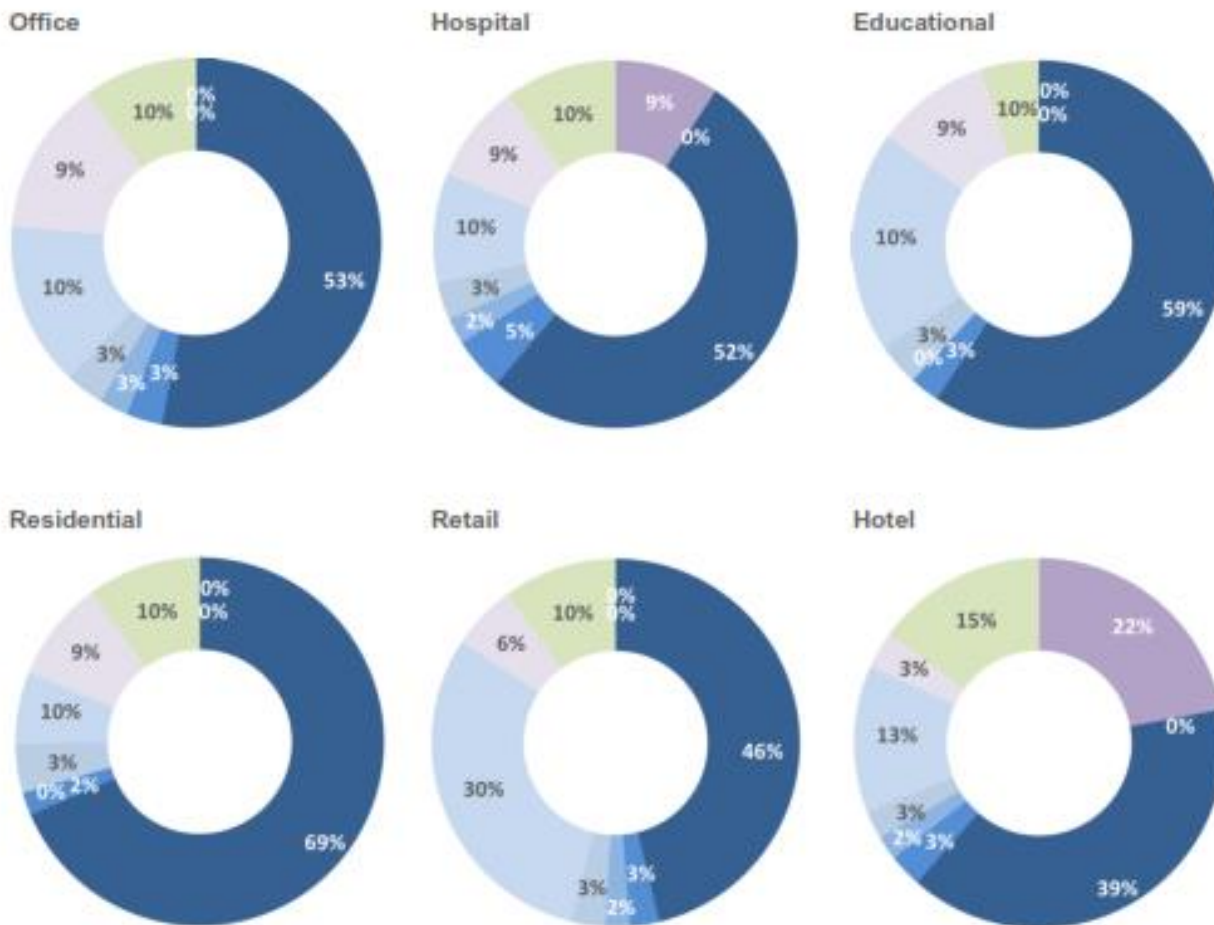


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SITUATIONER

Data from IFC Philippine
Green Building Code Study
2012-2015



53-70% of a building's energy consumption is due to cooling



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MITIGATION IMPERATIVE



Climate Vulnerability



Resource efficiency
and security



Shared Responsibility

.... pursuing
climate change
mitigation as a
function of
adaptation

.... improve
bottomline



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Why GO green

- use **36%** of energy supply
- accounts for **40%** of GHG emission
- Electricity cost is high
- Committed industry
- Policies and technology are in place to deliver emission cuts



Significant co-benefits including cost-savings will be created.

Failure to build green will lock countries into high carbon economy and poor performing buildings

Contribute to achieve Philippine target



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Green Building provides a window of opportunity to prevent being locked in a high carbon economy.





**Green
Building?**

What?

Why?

How?



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...the State has adopted the Philippine Agenda 21 framework which espouses **sustainable development**, to fulfill human needs while maintaining the quality of the natural environment for current and future generations.

- SECTION 2 RA 9729



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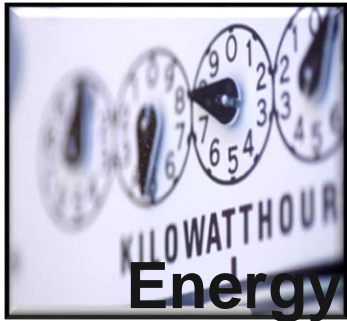
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Green Buildings

Practice of increasing efficiency with which buildings use resources such as energy, water and materials

While also reducing the buildings' impact on human health and the environment





Energy

Efficient Use
Efficient Equipmt
& Sys
Less Heat Gain
Natural Cooling
Daylight

Bonus!



Site

More Greens
Cooler Environ
Feasible Location
Protection of
Biodiversity

Recycled
Re-used
Renewable



Efficient Fixtures
Rainwater Collect
Re-use



Materials

Local & Regional
Waste Segregation



Water

Wastewater
treatment

Daylight
Outdoor Connect
Thermal Comfort
Fresh air supply



**Indoor
Envi
Quality**



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in partnership with the Department of Public Works and
Highways and the City of Mandaluyong
with the support of the Canadian International
Development Agency and the Swiss State Secretariat for
Economic Affairs

PHILIPPINE GREEN BUILDING CODE

Referral Code
of the NBC;
mandatory

Signed in June
2015, effective
January 2016



PHILIPPINE
GREEN
BUILDING
INITIATIVE



GREEN BUILDING CODE DEVELOPMENT



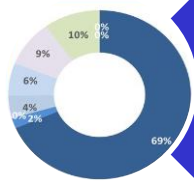
Building Trends & Baselines



Market Analysis



Sensitivity Analysis



Green Building
Recommendations



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- **Energy Efficiency** 16
- **Water Efficiency** 3
- **Material Sustainability** 1
- **Solid Waste Management** 1
- **Site Sustainability** 2
- **Indoor Environmental Quality** 2



25 GB Measures



COVERAGE AND APPLICATION

Minimum Total Gross Floor Area (TGFA) coverage

USE / OCCUPANCY	TGFA
Hotel	10,000 sqm
Mall	15,000 sqm
Office	10,000 sqm
Residential Condominium	20,000 sqm
School	10,000 sqm
Hospital	10,000 sqm
Mixed Occupancy	10,000 sqm

GB Code is for **new construction** only

Applicable to additions, alterations, conversion or renovations with TGFA as stated in the table

Mixed use – if more than one (1) building use.



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ENERGY EFFICIENCY

BUILDING ENVELOPE

1. Air Tightness and Moisture Protection

- reducing air infiltration and exfiltration
- preventing outside air moisture infiltration.



2. Window-to-Wall Ratio (WWR)

- Solar Heat Gain Coefficient (SHGC) and WWR
- Windows without sunbreakers or overhangs
- Windows with sunbreakers

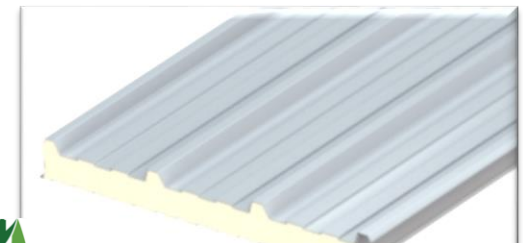


3. Natural Ventilation

- Use of operable windows

4. Building Envelope Color

- High solar reflectance of building envelope surface



5. Roof insulation

- Reduction of heat transfer through the



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ENERGY EFFICIENCY

EFFICIENCY OF MECHANICAL SYSTEMS

1. Efficiency of Air-conditioning Equipment

- PSVARE Standard for Energy Efficient Buildings minimum efficiency requirements

2. Energy Efficient Water Heating System

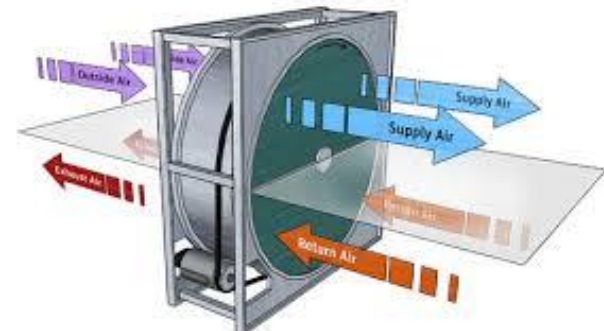
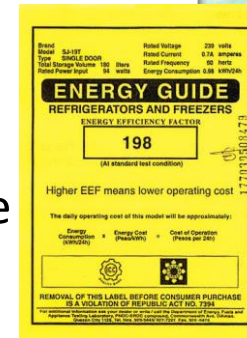
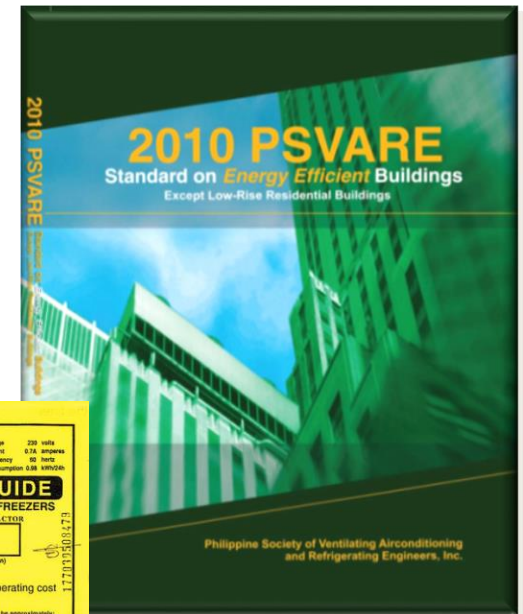
- PSVARE Standard, minimum performance requirements

3. Variable Speed Drives and High Efficiency Motors

- devices that regulate mechanical sys operations based on actual demand

4. Enthalpy Recovery of Exhaust Air

- Fresh air supply with energy efficient system



ENERGY EFFICIENCY

EFFICIENCY OF ELECTRICAL SYSTEMS

1. Daylighting Provision

- Harvest natural daylighting

2. Daylight Controlled Lighting System

- Controlled use of artificial lighting due to daylighting



3. Lighting Power Density

- Regulated power consumption due to lighting



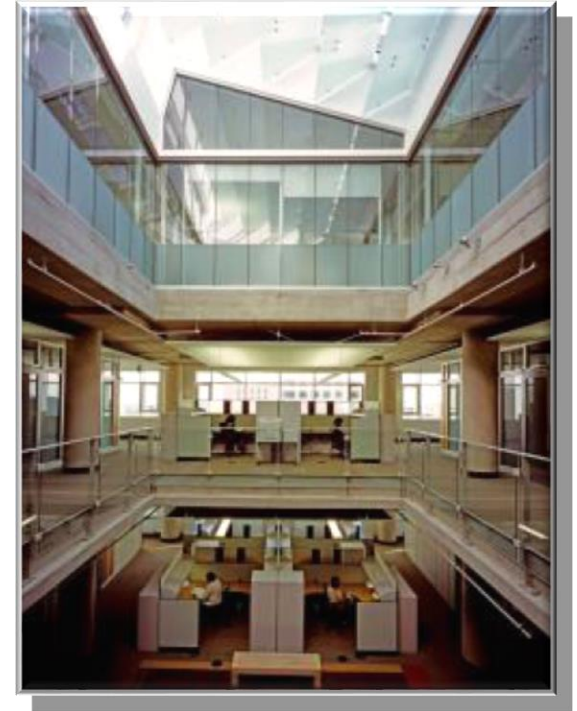
4. Occupancy Sensors

- Controlled use of artificial lighting due to demand



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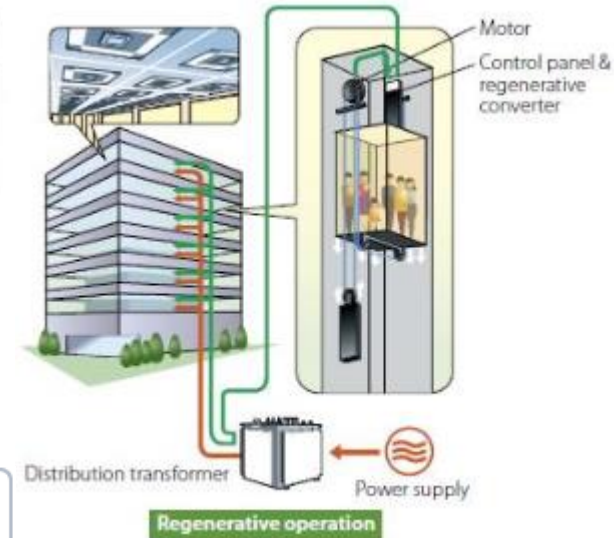


ENERGY EFFICIENCY

EFFICIENCY OF ELECTRICAL SYSTEMS

5. Lifts & Escalators Efficiency

- Use of energy-efficient conveyance systems



6. Transformers

- Use of highly-efficient transformers



7. Overhead or Elevated Water Storage

- Water distribution system that utilize reduced pump requirements



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WATER EFFICIENCY

EFFICIENT WATER FIXTURES

Effectively modulates use of potable water



WASTE WATER MANAGEMENT

1. Rainwater Harvesting

- Re-use of rainwater reduces use of potable water and slows down stormwater surface run-off



2. Water Recycling

- Resulting water from sewage treatment plants (STP) can be re-used
- Cooling Tower / Irrigation



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MATERIAL SUSTAINABILITY

NON-TOXIC MATERIALS

Material resource with least impact to the environment and to human beings



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SOLID WASTE MANAGEMENT

MATERIAL RECOVERY FACILITY

Efficient at source waste management
and segregation



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SITE SUSTAINABILITY

SITE PREPARATION & EARTHWORKS

Reducing impact of construction activities due to erosion and sedimentation



OPEN SPACE UTILIZATION

Providing green and permeable areas to help the re-charging of ground water reservoir, control of storm water surface run-off and cooler
Building outside environment



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INDOOR ENVIRONMENTAL QUALITY

MINIMUM FRESH AIR RATES

Maintaining good indoor air quality
By following PSVARE standards
for the benefit of occupants



DESIGNATED SMOKING AREA

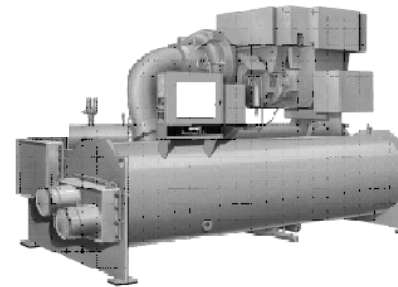
Restricting tobacco smoke to specified
areas to maintain good indoor air
quality



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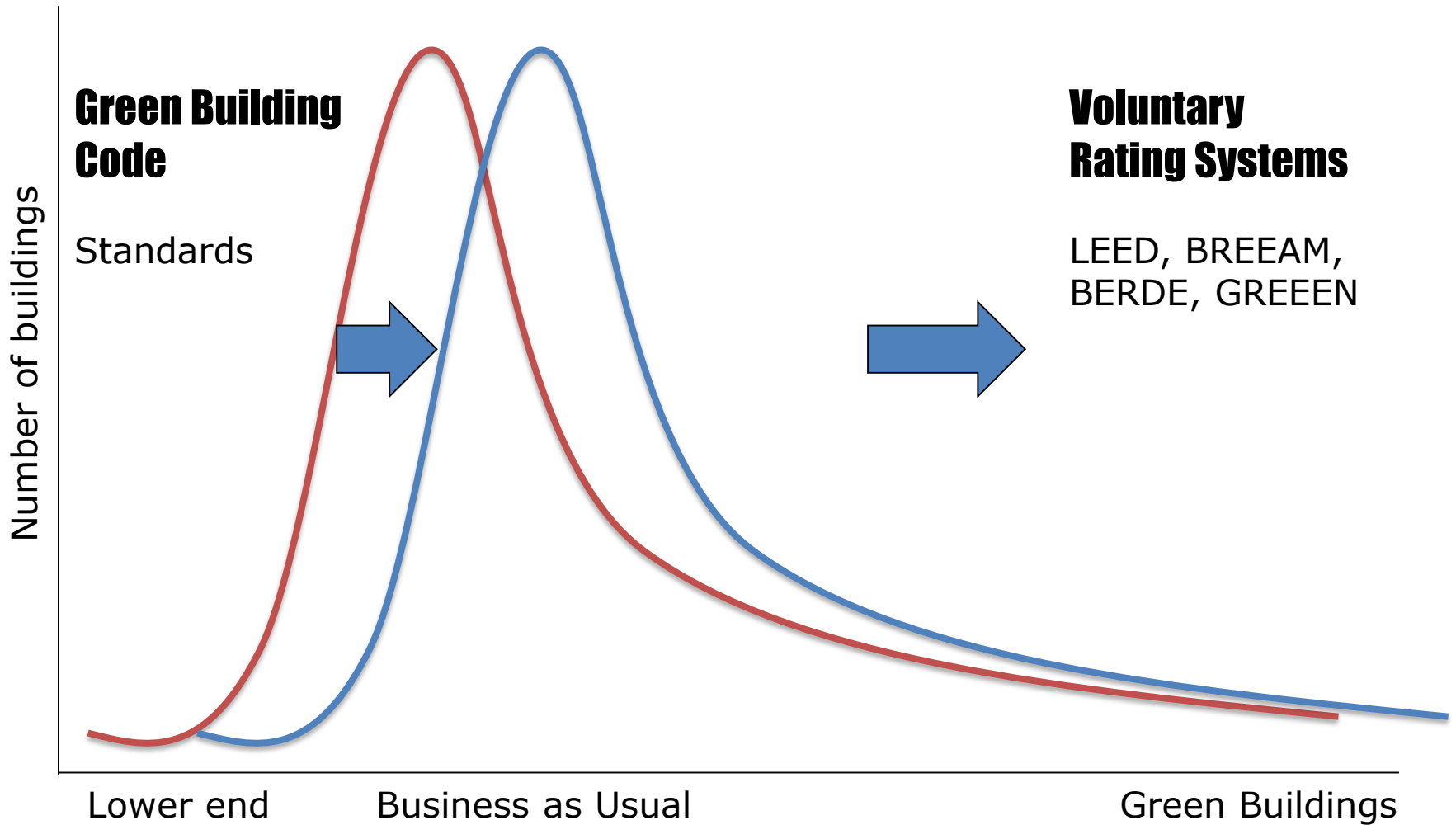
POTENTIAL
15% min.
Energy Savings
Water Savings



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POTENTIAL IMPACT (2030)	
USD 864 Million	Costs expected to be avoided
1.87 Million Metric tons	Reduction in CO2e emissions
3.9 Million KWH	Energy use avoided

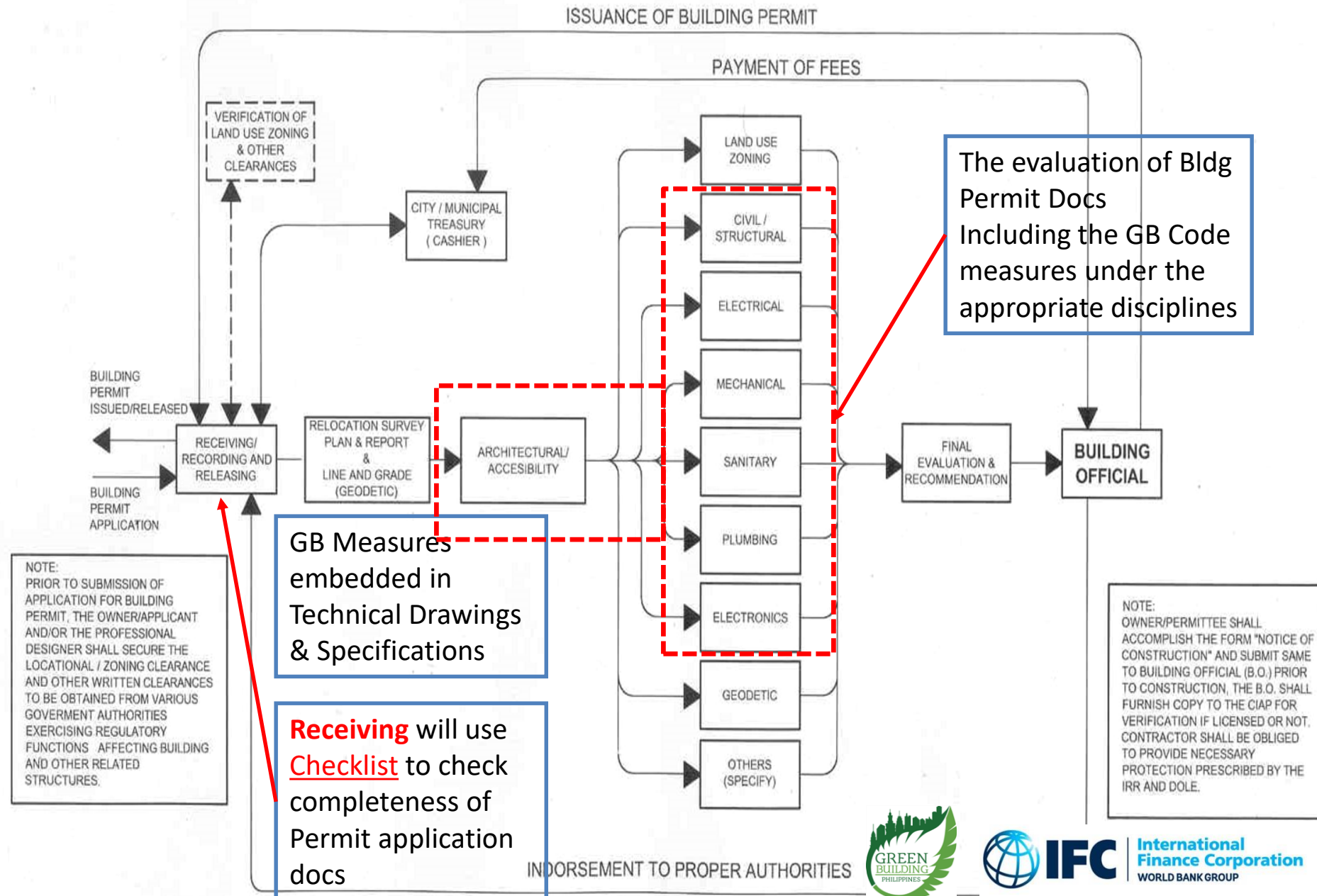




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PROCESSING OF APPLICATION OF BUILDING PERMIT FLOW CHART



BUILDING PERMIT PROCESS



- Application form from the Office of the Local Building Official

- Building Official evaluates and ensure plans conform with approved standard requirements **Receipt & Check of GB Docs**

- Upon conformity the Building Official shall approve building permit application **Review of GB Docs**

- Upon approval, applicant shall pay the prescribed building permit fees

- Building Permit shall be issued



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BUILDING PERMIT PROCESS

Ref Code / Clearance	LGU / Zone	Architectural	Civil/Structural	Electrical	Electronics	Mechanical	Sanitary / Plumbing	Fire Code	BP 344
Tourism		Ch 4	NSCP	Electrical	Electronics	Mechanical	Sanitation	Fire	PWD
DENR		Ch 5	Ch 6	Regulation	Regulation	Regulations	Ch 13	Regulations	Regulations
DPWH		Ch 7	Ch 12	Ch 13	Ch 13	Ch 13	Water Efficiency	Ch 12	
		Ch 8	Ch 19	Lighting Power Density	Daylight controlled Lighting Sys (Control Device Functions)	Air Conditioning Sys	Overhead Tank		
		Ch 10	Ch 15	Transformer	Occupancy Sensors (Control Device Functions)	Water Heating Sys			
		Ch 12	Site / Ground Preparation & Earthworks	Daylight controlled Lighting Sys (Control devices within the Lighting syst)	Elevators, Escalators, Moving Ramps & Walkways (Control Device Functions)	Enthalpy Recovery of Exhaust Air			
		Building Envelope		Occupancy Sensors (Control devices within the Lighting syst)		Elevators, Escalators, Moving Ramps & Walkways			
		Daylight Provision				VSD and Hi-Eff Motors	GB Code measures distributed under relevant disciplines		
		Material Sustain				Indoor Envi Quality			
		Solid Waste Management							
		Open Space Utilization							



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BUILDING PERMIT PROCESS

10	ENERGY EFFICIENCY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification	
Building Envelope						Yes/No	Yes/No	Remarks
10.1.1	Air Tightness & Moisture Protection	Applies to all building occupancies except building and spaces without air-conditioning system	Required?	Complied?				
a	Sealed window and door assemblies				Bay wall sections			
b	Sealed utility services				Enlarged details of building envelope showing required air tightness & moisture protection elements			
c	Sealed walls				Building elevations & sections			
d	Sealed roofing				Technical specifications of required air tightness & moisture protection elements			
e	Sealed ceiling							
f	Sealed flooring							
10.1.2	Glass Properties	Applies to all building occupancies without exceptions	Use SHGC Calculator	Design Value	Documentation needed	Document Provided?	Design Specification	
a	Solar Heat Gain Coefficient (SHGC)				Architectural floor plans, Building elevations & sections			
b	Visual Light Transmittance (VLT)				Window Schedule			
					WWR Computation Table			
					Window Glass specifications			
10.1.3	Natural Ventilation	Applies to all building occupancies without exceptions	Operable Window Calculator	Design Value	Documentation needed	Document Provided?	Design Specification	
a	Operable windows or balcony doors at least 10% of room space floor area	Applies to regularly occupied spaces			Architectural floor plans, Building elevations & sections			
b	Operable window with safety features				Window Schedule			
					Operable Window Computation Table			
					Window Details on operation & safety			
10.1.4	Building Envelope Color	Applies to all building occupancies without exceptions	Required? Yes/No	Complied? Yes/No	Documentation needed	Document Provided?	Design Specification	
a	Building metal roof surface color white or with min. SRI of 70				Roof plan			
					Technical specs of roof			
			GB Code Checklist under Architectural					

BUILDING PERMIT PROCESS

10	ENERGY EFFICIENCY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentation Provided?	Design Specification	
Electrical Systems						Yes/No	Yes/No	Remarks
10.6.2	Daylight Controlled Lighting System	Applies to all regularly occupied spaces of all building occupancies except building spaces where daylight access hinders intended functions	Required? Yes/No	Complied? Yes/No				
a	Daylight sensor or photoelectric sensor in lighting system - for use within lighting control systems in day-lit zones	For residential condominiums, this applies only to common indoor areas with access to daylight			Architectural Reflected Ceiling Plan			
		Installed lighting fixtures within day-lit zones are exempt from using photoelectric sensor if this hinders its intended functions, with justification			Electrical lighting and switching circuitry layout			
					Lighting control diagram			
					Technical specifications			
10.6.3	Lighting Power Density (LPD)	Applies to all building occupancies without exceptions	LPD Calculator	Design Value				
a	Building LPD within maximum LPD requirements		W/m2	W/m2	Architectural Reflected Ceiling Plan w/ LEGEND Box			
a.1	Residential Dwelling		10.8		Electrical Lighting Layout w/ LEGEND Box			
a.2	Hotel/Resort		10.8		Building Lighting Power Density Table			
a.3	Educational: School		12.9		Technical specifications of light fixtures			
a.4	Institutional: Hospital		12.9					
a.5	Business: Office		10.8					
a.6	Mercantile:Mall (excl accent lighting)		16.1					
a.7	Exterior facade		2.15					
a.8	Active entrance (pedestrian conveyance)		98.4					
a.9	Inactive entrance (normally locked/inactive)		65.6					
a.10	Covered Parking		3.2					
a.11	Open Parking		1.6					
10.6.4	Occupancy Sensors	Applies to all building occupancies except hospitals and malls	Required? Yes/No	Complied? Yes/No				
a	Occupancy sensors in lighting system	Provisions for emergency and security lighting are exempted			Architectural Reflected Ceiling Plan			
b	Occupancy sensors in covered parking lighting system - at least 60% of lighting				Electrical Lighting layout			
					Occupancy Sensing System Confirmation Table			
					Technical specifications			

GB Code Checklist under EE & ECE

GB Code Checklist under EE & ECE

BUILDING PERMIT PROCESS

10	ENERGY EFFICIENCY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentation Provided?	Design Specification	
Mechanical Systems						Yes/No	Yes/No	Remarks
10.5.1	Air Conditioning Equipment	Applies to all building occupancies except building and spaces without air-conditioning system	EER or COP or kW/Ton	EER or COP or kW/Ton				
a	Efficient air-conditioning equipment	(Equipment 1)			Equipment Schedule			
		(Equipment 2)			Air-conditioning & Ventilation Layout			
		(Equipment 3)			Technical Specifications of the various AC			
		(Equipment 4)						
		(Equipment 5)						
		(Equipment 6)						
		(Equipment 7)						
		(Equipment 8)						
10.5.2	Water Heating System	Applies to all building occupancies except building with no water heating system and buildings using solar water heating and/or heat pump for water	Required Efficiency Factor	Efficiency Factor				
a	Efficient water heater	(Equipment 1)			Equipment Schedule			
		(Equipment 2)			Plumbing & Electrical power layout			
		(Equipment 3)			Technical Specifications of Water Heating system			
		(Equipment 4)						
		(Equipment 5)						
10.5.3	Variable Speed Drives and High Efficiency Motors	Applies to all building occupancies. Non-centralized air-conditioning systems in buildings are not required to employ variable speed controllers; and kitchen ventilation fans are exempt from this requirement.	Efficiency Factor	Efficiency Factor				
a	VSD and High Efficiency motors for mechanical equipment more than 5kW	(Equipment 1)			Equipment Schedule			
		(Equipment 2)			Plumbing & Electrical power layout and schematic diagram			
		(Equipment 3)			Technical specifications of motors and VSD/VFD			
b	VSD and High Efficiency motors for cooling towers	(Equipment 1)						
		(Equipment 2)						
		(Equipment 3)						
c	High Efficiency motors for domestic pumps	(Equipment 1)						
		(Equipment 2)						
		(Equipment 3)						

GB Code Checklist under Mechanical

GB Code Checklist under Mechanical

BUILDING PERMIT PROCESS

10 ENERGY EFFICIENCY			GB Code	Developer	Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required Value	Design Value	Design Compliance				
					Documentation needed	Documentation Provided?	Design Specification		
Plumbing Systems						Yes/No	Yes/No	Remarks	
10.6.7	Overhead Water Storage	Applies to all building occupancies except buildings below 10 storeys high	Required? Yes / No	Complied? Yes / No					
a	Overhead water storage tank on top of building at least 10 stories high				Water Distribution Layout plan				
					Single Line or Schematic Diagram				
					Water Tank Details				
					Technical Specifications				
11 WATER EFFICIENCY			GB Code	Developer	Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance				
					Documentation needed	Documentation Provided?	Design Specification		
Plumbing Systems						Yes/No	Yes/No	Remarks	
11.1	Water Fixtures	Applies to all building occupancies	Max. Flowrate	Flowrate					
a	Specified water fixture compliant with maximum flow rate requirements as per Table 20				Water Distribution Layout plan with LEGEND box				
a.1	Dual Flush Water Closet		≤6 full 3 low (liters/flush)		Water Distribution Isometries with LEGEND box				
a.2	Single Flush Water Closet		4.9 (liters/flush)		Water Efficient Fixtures Use Confirmation Table				
a.3	Shower		≤9 (80 psi) liters/min at 551.6 kPa		Technical Specifications of plumbing fixtures				
a.4	Urinal		≤1 liter / flush						
a.5	Lavatory tap		≤4.8 (60 psi) liters/min at 417.7 kPa						
a.6	Kitchen Faucet		≤4.8 (60 psi) liters/min at 417.7 kPa						
a.7	Handheld bidet spray		≤4.8 (60 psi) liters/min at 417.7 kPa						

GB Code Checklist under Sanitary

GB Code Checklist under Sanitary

BUILDING PERMIT PROCESS

Air Tightness & Moisture Protection

- Unwanted air infiltration and humidity ingress into the spaces can cause additional load on the air conditioning system and a detrimental impact on air quality.
- Buildings must be planned, designed, specified and constructed with enough detail and quality to ensure air tightness is maximized.
- Vapor barrier prevents the entry of moisture through the walls.

BUILDING PERMIT PROCESS

Applicability

This measure applies to all building occupancies as indicated in Table 1. of the GB Code

Exceptions

Buildings and spaces without provisions for air conditioning systems are exempt.

Building Envelope



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BUILDING PERMIT PROCESS

Design Application & Documentation

Design Documents needed are the following:

1. **Bay Wall Sections**, showing details or air leakage control & water barrier at **roof joints; roof/gutter joints; roof/wall joints; ceiling/wall joints; window/wall joints, door/wall joints, and wall/floor joints;**
2. **Enlarged details**, showing flashing & counter-flashing; membrane; sealant & tape applications; fenestration (window & door) weatherstripping, gaskets and door bottom sweeps;
3. **Building Elevations & Sections** with call-outs specifying moisture protection material;
4. **Technical Specifications** of moisture protection (moisture barrier for walls, waterproofing membrane, flashings), sealants, gaskets, weatherstripping to be used

Building Envelope

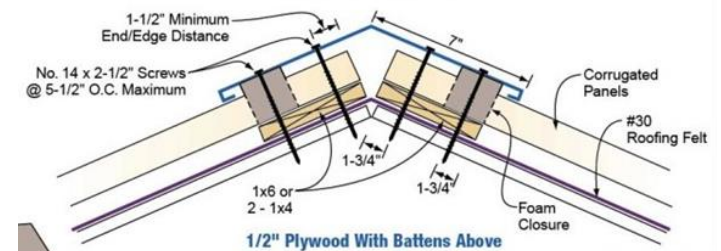
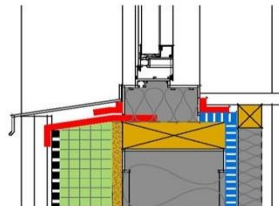
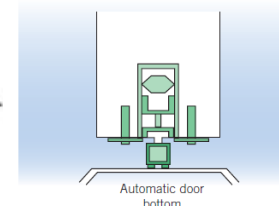
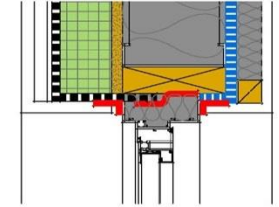
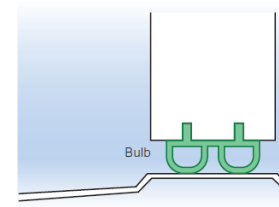
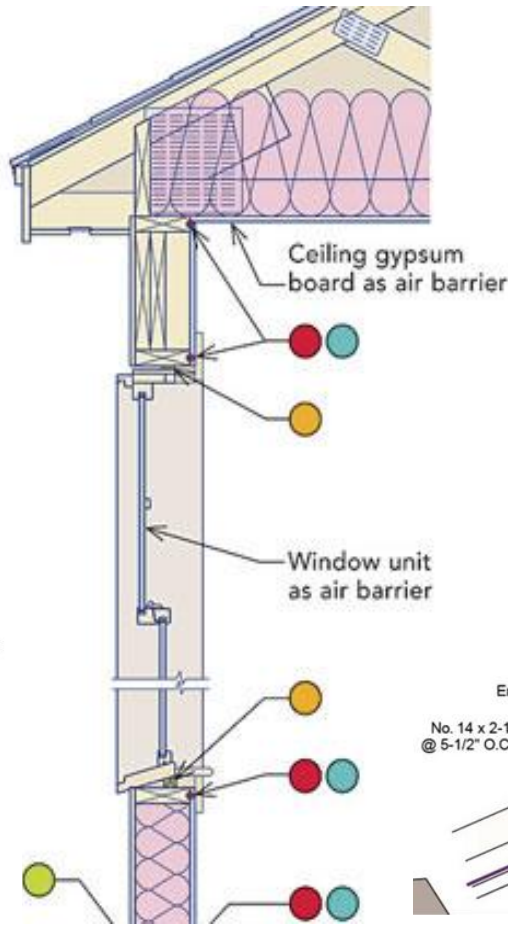
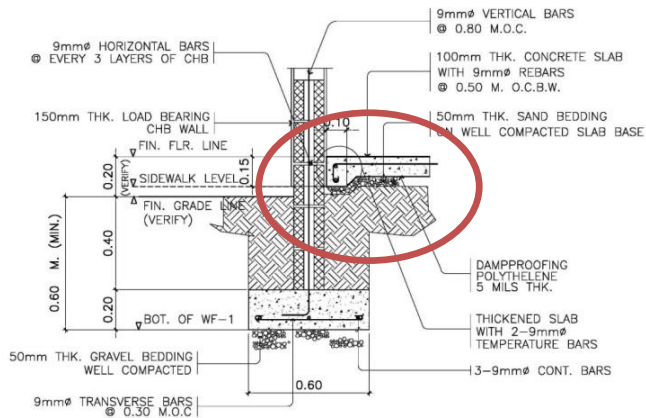
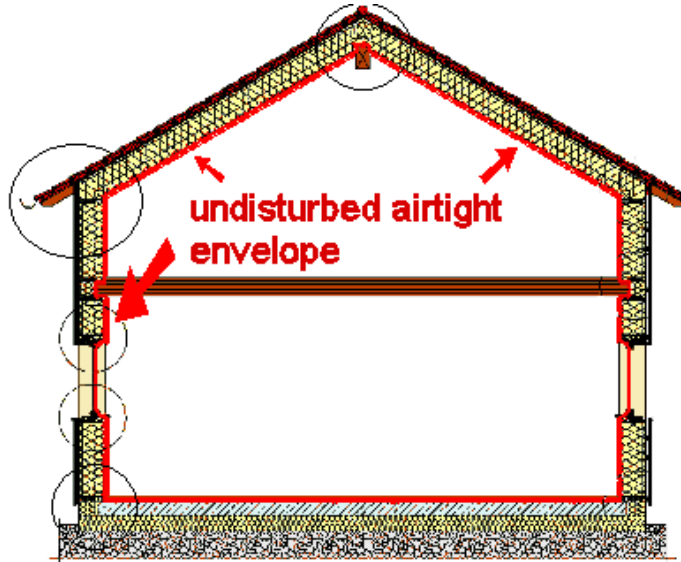


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BUILDING PERMIT PROCESS

Air Tightness & Moisture Protection

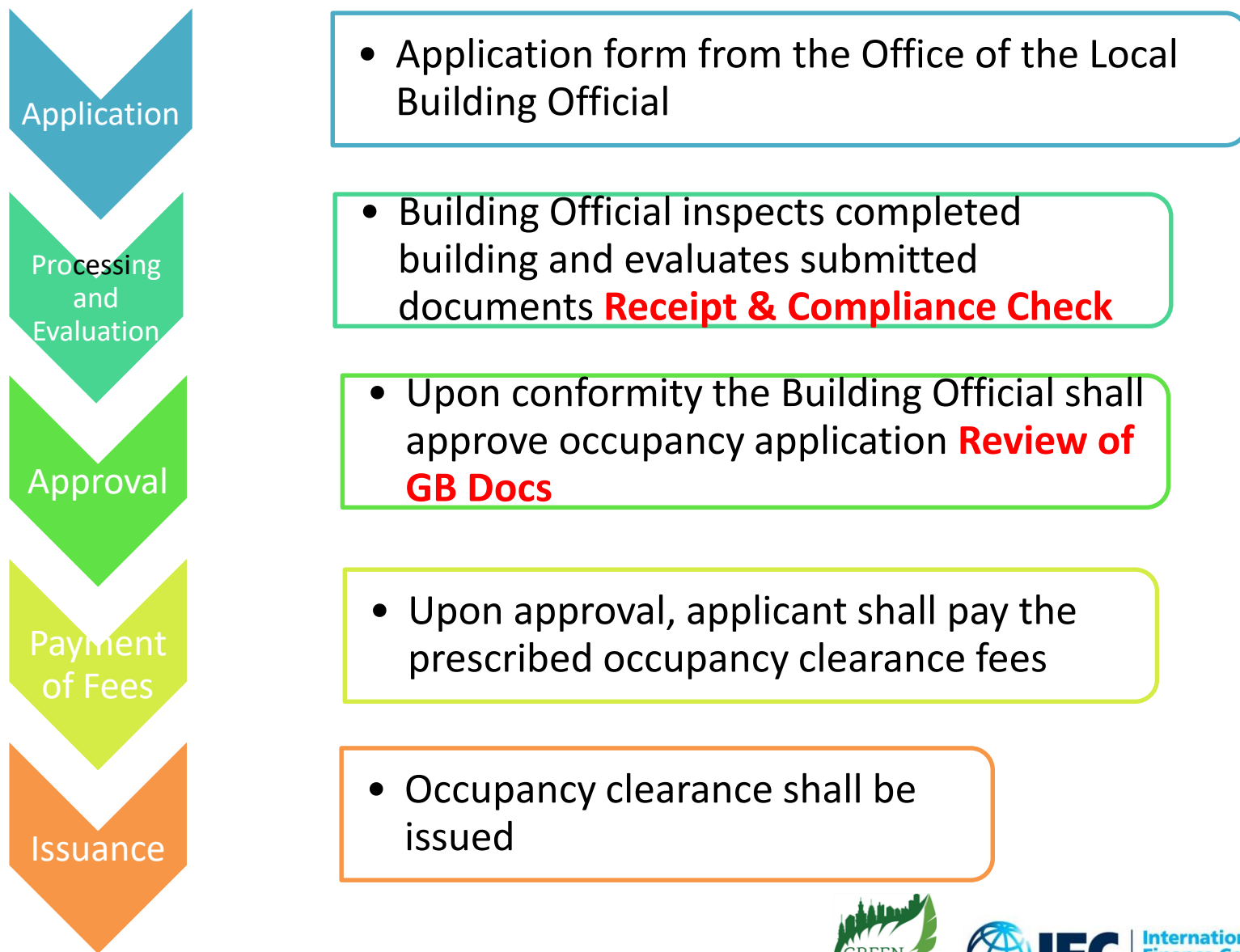


Building Envelope



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OCCUPANCY CLEARANCE PROCESS



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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation

Actions needed are the following:

1. **Ocular inspection** of the completed building envelope system with reference to the building permit plans.
2. **Presentation of product labels, brochures and technical specifications** from manufacturers for airtight/ vapor barrier products.
3. **Shop drawings and as-built drawings** of the actual completed system.

Building Envelope

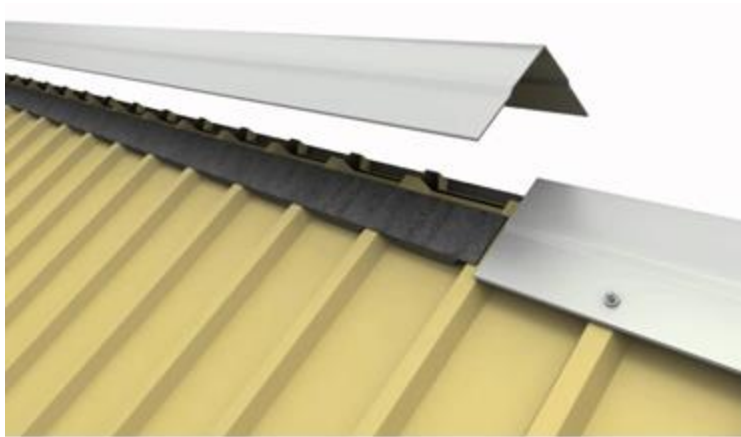


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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation



Building Envelope



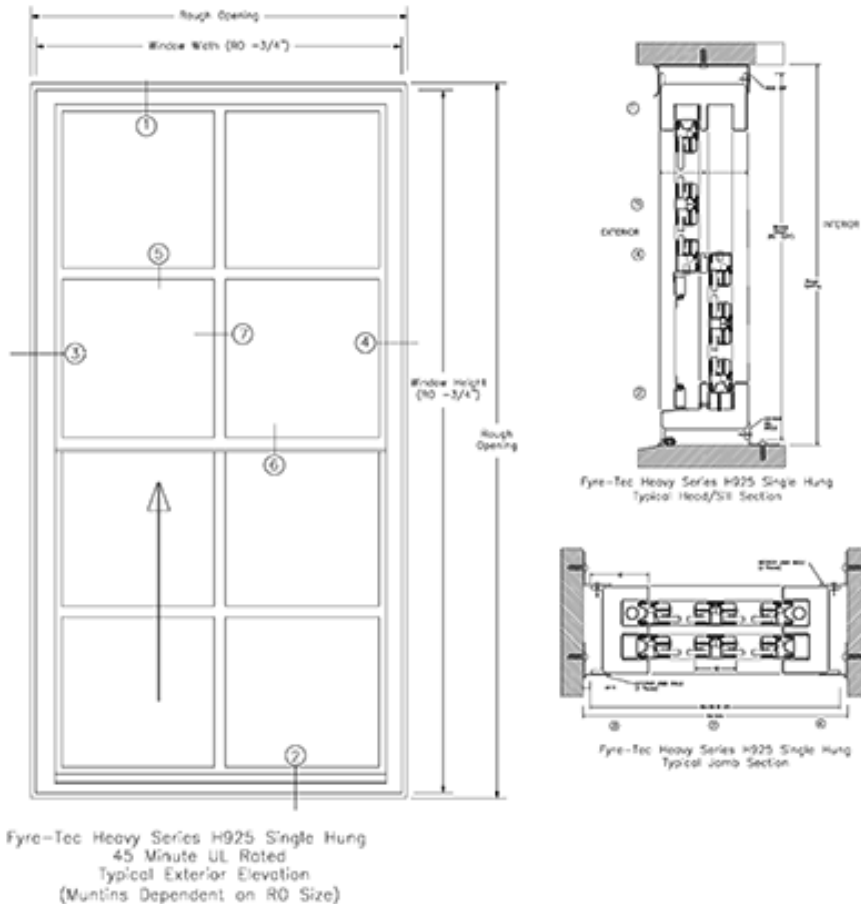
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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation

Shopdrawings & As-built plans



Product label, brochures & catalogs

Building Envelope



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OCCUPANCY CLEARANCE PROCESS

Air-Conditioning Equipment

- The cooling equipment shall meet or exceed the minimum efficiency requirement of the 2010 PSVARE Standards for Energy Efficient Buildings as indicated in Tables 12 and Table 13.



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OCCUPANCY CLEARANCE PROCESS

Applicability

This measure applies to all building occupancies as indicated in Table 1. of the GB Code

Exceptions

No exceptions

Mechanical Systems



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OCCUPANCY CLEARANCE PROCESS

Design Application & Documentation

Design Documents needed are the following:

1. **Equipment Schedule** – showing the different properties of the cooling equipment, including the efficiency rating, represented by EER, kW/ton or COP
2. **Air-conditioning and Ventilation Layout** – schematic diagrams showing the location of the cooling equipment with their equipment ID tag
3. **Technical Specifications** – details the technical make-up or specification of the cooling equipment to be used, including expected efficiency rating.



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OCCUPANCY CLEARANCE PROCESS

Air-Conditioning Equipment

Equipment Schedule

AIR-COOLED CONDENSING UNIT: (VRF-OUTDOOR UNITS)

UNIT DESIGNATION	QTY.	COOLING CAPACITY (KW)	COOLING CAPACITY (TR)	MIN. EFFICIENCY (EER)	AIR ENTERING CONDENSER TEMPERATURE (°C)	SATURATED SUCTION TEMPERATURE (°C)	TOTAL POWER INPUT (KW)	COMPRESSOR DATA			CONDENSER FAN
								TYPE	POWER INPUT (KW)	CRANKCASE HEATER (KW)	TYPE
ACCU 3-1	1	62.98	17.91	11.3	35	7.22	19.02	SCROLL HERMETIC COMPRESSOR	17	0.08	PROPELLER FAN

VENTILATING FANS AND BLOWERS :

UNIT DESIGNATION	QTY	AREA SERVED	TYPE	AIR FLOW RATE (L/S)	TOTAL STATIC PRESSURE (Pa)	FAN MOTOR (KW)	MOTOR EFFICIENCY (%)	ELECTRICAL CHARACTERISTICS		
								VOLTS	PHASE	HERTZ
OF 3-1 TO OF 3-5	5	THIRD FLOOR VAULT, STORAGES, MIXING ROOM, COMPRESSOR ROOM	400MM. DIAMETER ORBIT FAN	555	30	0.075	-	230	1	60
BH 3-1	1	THIRD FLOOR KITCHEN	TWIN MOTOR RANGE HOOD	217	75	0.127	-	230	1	60
KEB-1	1	SECOND FLOOR COFFEE SHOP KITCHEN	CENTRIFUGAL, BC-SISW EXHAUST BLOWER	614	750	1.5	84.0	230	3	60
KEB-2	1	SECOND FLOOR CANTEEN KITCHEN	CENTRIFUGAL, BC-DIDW EXHAUST BLOWER	1246	500	1.5	84.0	230	3	60
KSB-1	1	SECOND FLOOR COFFEE SHOP KITCHEN	CENTRIFUGAL, FC-DIDW CABINET TYPE SUPPLY BLOWER	492	250	0.75	82.5	230	3	60
KSB-2	1	SECOND FLOOR CANTEEN KITCHEN	CENTRIFUGAL, FC-DIDW CABINET TYPE SUPPLY BLOWER	1122	500	1.5	84.0	230	3	60

Mechanical Systems

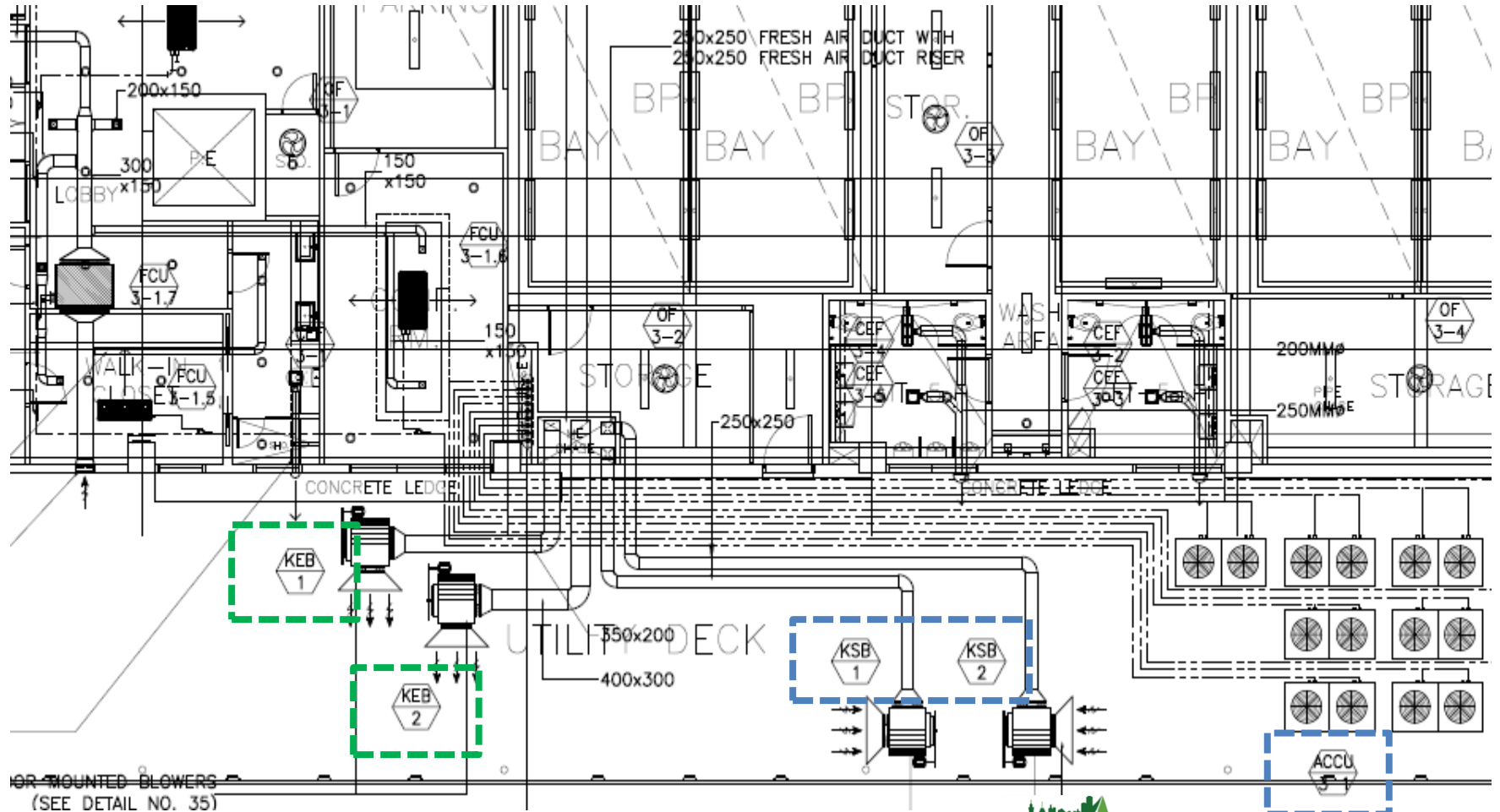


IFC International Finance Corporation
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OCCUPANCY CLEARANCE PROCESS

Air-Conditioning Equipment

AC & Ventilation Layout



Mechanical Systems



International
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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation

Actions needed are the following:

1. **Ocular inspection** of the completed building envelope system with reference to the building permit plans including the Equipment Schedule showing efficiency ratings
2. **Presentation of product labels, brochures and technical specifications** from manufacturer of air-conditioning equipment.
3. **Equipment name plate rating**

Building Envelope



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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation

Ocular Inspection



Mechanical Systems



IFC

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OCCUPANCY CLEARANCE PROCESS

Construction Application & Documentation

Product labels & nameplate rating

Brochures & catalogs

Brand Model SJ-13T
Type SINGLE DOOR
Total Storage Volume 180 liters
Rated Power Input 94 watts

Rated Voltage 230 volts
Rated Current 0.7A amperes
Rated Frequency 60 hertz
Energy Consumption 0.96 kWh/24h

ENERGY GUIDE

REFRIGERATORS AND FREEZERS

ENERGY EFFICIENCY FACTOR

198

(At standard test condition)

Higher EEF means lower operating cost

The daily operating cost of this model will be approximately:

Energy Consumption (kWh/24h)	Energy Cost (Pesos/kWh)	Cost of Operation (Pesos per 24h)
0.96	1.00	0.96

REMOVAL OF THIS LABEL BEFORE CONSUMER PURCHASE IS A VIOLATION OF REPUBLIC ACT NO. 7394

For additional information see your dealer or write to call the Department of Energy, Pscs and Appliances Testing Laboratory, PSC-4000, Comptrol, Commonwealth Ave., Quezon City 1126, Tel. 804-629-MAJ/627-7251, Fax: 629-6474

Job Name: _____ Location: _____

Engineer Name: _____ Contractor: _____

System No.: _____ Date: _____

OUTDOOR VRF HEAT PUMP SYSTEM FEATURES

- 3-phase, 230/230V
- Modular variable refrigerant flow (VRF) systems: small capacity units can be piped together to form a single, large-capacity two-pipe system
- Required Piping Kit allows for easy field piping connection
- Selectable fan static: 0.12 or 0.24" WG external static pressure, factory set to 0.12" WG
- Compatible to C.T.Y. MULTI indoor unit; controlled via C.T.Y. MULTI Control's Remote A
- External Finish: Pre-coated Galvanized-steel Sheets
- Operating Temperature Range: Cooling (Outdoor): 23° ~ 110° F (-5° ~ +43° C) DB Heating (Outdoor): -4° ~ +60° F (-20° ~ +16° C) WB

OPTIONAL PARTS

Part Name	Part No.	Part Name	Part No.
Flaming Kit	CMV-V2000-KC	Flaming Kit	CMV-V2000-KC
4 branch joint (32,000 Btu/h)	CMV-V2000-G2	4 branch joint (32,000 Btu/h)	CMV-V2000-G2
4 branch joint (16,000 Btu/h)	CMV-V2000-G1	4 branch joint (16,000 Btu/h)	CMV-V2000-G1
4 branch joint (8,000 Btu/h)	CMV-V2000-G0	4 branch joint (8,000 Btu/h)	CMV-V2000-G0
4 branch joint (4,000 Btu/h)	CMV-V2000-G0	4 branch joint (4,000 Btu/h)	CMV-V2000-G0
4 branch joint (2,000 Btu/h)	CMV-V2000-G0	4 branch joint (2,000 Btu/h)	CMV-V2000-G0
4 branch joint (1,000 Btu/h)	CMV-V2000-G0	4 branch joint (1,000 Btu/h)	CMV-V2000-G0
4 branch joint (500 Btu/h)	CMV-V2000-G0	4 branch joint (500 Btu/h)	CMV-V2000-G0
4 branch joint (250 Btu/h)	CMV-V2000-G0	4 branch joint (250 Btu/h)	CMV-V2000-G0
4 branch joint (125 Btu/h)	CMV-V2000-G0	4 branch joint (125 Btu/h)	CMV-V2000-G0
4 branch joint (62.5 Btu/h)	CMV-V2000-G0	4 branch joint (62.5 Btu/h)	CMV-V2000-G0
4 branch joint (31.25 Btu/h)	CMV-V2000-G0	4 branch joint (31.25 Btu/h)	CMV-V2000-G0
4 branch joint (15.625 Btu/h)	CMV-V2000-G0	4 branch joint (15.625 Btu/h)	CMV-V2000-G0
4 branch joint (7.8125 Btu/h)	CMV-V2000-G0	4 branch joint (7.8125 Btu/h)	CMV-V2000-G0
4 branch joint (3.90625 Btu/h)	CMV-V2000-G0	4 branch joint (3.90625 Btu/h)	CMV-V2000-G0
4 branch joint (1.953125 Btu/h)	CMV-V2000-G0	4 branch joint (1.953125 Btu/h)	CMV-V2000-G0
4 branch joint (0.9765625 Btu/h)	CMV-V2000-G0	4 branch joint (0.9765625 Btu/h)	CMV-V2000-G0
4 branch joint (0.48828125 Btu/h)	CMV-V2000-G0	4 branch joint (0.48828125 Btu/h)	CMV-V2000-G0
4 branch joint (0.244140625 Btu/h)	CMV-V2000-G0	4 branch joint (0.244140625 Btu/h)	CMV-V2000-G0
4 branch joint (0.1220703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.1220703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.06103515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.06103515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.030517578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.030517578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0152587890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0152587890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00762939453125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00762939453125 Btu/h)	CMV-V2000-G0
4 branch joint (0.003814697265625 Btu/h)	CMV-V2000-G0	4 branch joint (0.003814697265625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0019073486328125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0019073486328125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00095367431640625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00095367431640625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000476837158203125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000476837158203125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0002384185791015625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0002384185791015625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00011920928955078125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00011920928955078125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000059604644775390625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000059604644775390625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000298023223876953125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000298023223876953125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00001490116119384765625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00001490116119384765625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000007450580596923828125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000007450580596923828125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000037252902984619140625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000037252902984619140625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000186264514923095703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000186264514923095703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000931322574615478515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000931322574615478515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000004656612873077392578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000004656612873077392578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000023283064365386962890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000023283064365386962890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000116415321826934814453125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000116415321826934814453125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000582076609134674072265625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000582076609134674072265625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000002910383045673370361328125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000002910383045673370361328125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000014551915228366851806640625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000014551915228366851806640625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000072759576141834259033203125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000072759576141834259033203125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000363797880709171295166015625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000363797880709171295166015625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000001818989403545856475830078125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000001818989403545856475830078125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000009094947017729282379150390625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000009094947017729282379150390625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000045474735088646189596751953125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000045474735088646189596751953125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000227373675443230947983759765625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000227373675443230947983759765625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000001136868377216154739918988828125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000001136868377216154739918988828125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000005684341886080773699594944140625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000005684341886080773699594944140625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000028421709430403868497974720703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000028421709430403868497974720703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000142108547152019342489873603515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000142108547152019342489873603515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000710542735760096712449368017578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000710542735760096712449368017578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000003552713678800483562246840087890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000003552713678800483562246840087890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000017763568394002417811234200439453125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000017763568394002417811234200439453125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000088817841970012059056171002197265625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000088817841970012059056171002197265625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000044408920985006029528085501098828125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000044408920985006029528085501098828125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000222044604925030147640427505494140625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000222044604925030147640427505494140625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000001110223024625150738202137502720703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000001110223024625150738202137502720703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000005551115123125753691010687513603515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000005551115123125753691010687513603515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000027755575615628768455053437568017578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000027755575615628768455053437568017578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000138777878078143842275267187840087890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000138777878078143842275267187840087890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000006938893903907192113763359392004394140625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000006938893903907192113763359392004394140625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000034694469519535960568816796960021970703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000034694469519535960568816796960021970703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000173472347597679802844083984800109853515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000173472347597679802844083984800109853515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000867361737988399014220419924000549267578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000867361737988399014220419924000549267578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000004336808689941995071102099620002746337890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000004336808689941995071102099620002746337890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000021684043449709975355102498100013731689453125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000021684043449709975355102498100013731689453125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000108420217248549876775512490500068658447265625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000108420217248549876775512490500068658447265625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000542101086242749383877562452500343292236328125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000542101086242749383877562452500343292236328125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000002710505431213746919387812262500171646181640625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000002710505431213746919387812262500171646181640625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000013552527156068734596939061312500085822308703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000013552527156068734596939061312500085822308703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000067762635780343672984695306562500042911153515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000067762635780343672984695306562500042911153515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000003388131789017183649234765328125000214557578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000003388131789017183649234765328125000214557578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000016940658945085918246117326640625000107278890625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000016940658945085918246117326640625000107278890625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000000084703294725429591230558663203125000053639453125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000000084703294725429591230558663203125000053639453125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000004235164736271479561527933160156250000268197265625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000004235164736271479561527933160156250000268197265625 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000000211758236813573978076396658007812500001340986828125 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000000211758236813573978076396658007812500001340986828125 Btu/h)	CMV-V2000-G0
4 branch joint (0.000000000000000000105879118406786989403698329003906250000067049340625 Btu/h)	CMV-V2000-G0	4 branch joint (0.000000000000000000105879118406786989403698329003906250000067049340625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000000005293955920339349470184916450195312500000335246703125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000000005293955920339349470184916450195312500000335246703125 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000000264697796016967473509245822509765625000001676233515625 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000000264697796016967473509245822509765625000001676233515625 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000000001323488980084837367546229112548781250000008381167578125 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000000001323488980084837367546229112548781250000008381167578125 Btu/h)	CMV-V2000-G0
4 branch joint (0.00000000000000000000661744490042418683773114573939453125000000419058390625 Btu/h)	CMV-V2000-G0	4 branch joint (0.00000000000000000000661744490042418683773114573939453125000000419058390625 Btu/h)	CMV-V2000-G0
4 branch joint (0.0000000000000000000033087224502120934418655728696972656250000002095291953125 Btu/h)	CMV-V2000-G0	4 branch joint (0.0000000000000000000033087224502120934418655728696972656250000002095291953125 Btu/h)	CMV-V2000-G0

BUILDING PERMIT PROCESS



GB Code User Guide

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST										
B3 ENERGY EFFICIENCY		SB Code	Developer	Design Consultant			Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Assessed value	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	OS Measure Applied
Building Envelope										
10.1.1	Air Tightness & Moisture Protection	Applies to all building enclosures except building and space without air-conditioning system	Required	Completed	Yes and details			Under Inspection & Verification		
10.1.2	Sealed windows and door assemblies		Required	Completed	Technical drawing: Detailed window showing required air tightness & moisture protection elements			Product Labels		
10.1.3	Sealed utility services		Required	Completed	Building elevations & details			Drawings		
10.1.4	Sealed roofs		Required	Completed	Technical specifications of required air tightness & moisture protection			Drawings		
10.1.5	Sealed ceiling		Required	Completed	Technical specifications of required air tightness & moisture protection			Drawings		
10.1.6	Sealed flooring	Required	Completed	Technical specifications of required air tightness & moisture protection			Drawings			
10.1.7	Sealed Properties	Applies to all building enclosures without exceptions	Required	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	OS Measure Applied
10.1.8	Color-reflect Coefficient (CRCC)	Applies to all building enclosures without exceptions	Required	Completed	Building elevations & details			Under Inspection & Verification		
10.1.9	Visible Light Transmittance (VLT)		Required	Completed	Product Labels			Product Labels		
10.1.10	Roof Slope	Applies to all building enclosures without exceptions	Required	Completed	Technical drawing: Roof Slope			Drawings		
10.1.11	Roof Ventilation	Applies to all building enclosures without exceptions	Required	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	OS Measure Applied
10.1.12	Operable windows or access doors at least 10% of room space floor area	Applies to regularly occupied spaces	Required	Design Value	Technical drawing: Operable windows & doors			Under Inspection & Verification		
10.1.13	Operable window with safety features	Applies to regularly occupied spaces	Required	Design Value	Technical drawing: Operable window with safety features			Product Labels		
10.1.14	Building Envelope Color	Applies to all building enclosures without exceptions	Required	Completed	Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	OS Measure Applied
10.1.15	Building Envelope Color		Required	Completed	Technical spec of roof			Under Inspection & Verification		
10.1.16	Roof Insulation	Applies to all building enclosures without exceptions	Required	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	OS Measure Applied
10.1.17	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.18	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.19	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.20	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		
10.1.21	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.22	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.23	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.24	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		
10.1.25	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.26	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.27	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.28	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		
10.1.29	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.30	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.31	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.32	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		
10.1.33	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.34	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.35	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.36	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		
10.1.37	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Under Inspection & Verification		
10.1.38	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Product Labels		
10.1.39	Roof insulation at least R-6 in thermal resistance	Applies to all building enclosures without exceptions	Required	Design Value	Roof plan & section			Drawings		
10.1.40	Roof insulation at least R-6 in thermal resistance		Required	Design Value	Technical specifications of required roof insulation			Drawings		

GB Code Checklists with Calculators



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EVALUATION SIMULATION NO. 1

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST								
10	ENERGY EFFICIENCY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Building Envelope						Yes/No	Yes/No	Remarks
10.1.1	Air Tightness & Moisture Protection	Applies to all building occupancies except building and spaces without air-conditioning system	Required?	Complied?				
a	Sealed window and door assemblies		Required	Complied	Bay wall sections	Yes	Yes	
b	Sealed utility services		Required	Complied	Enlarged details of building envelope showing required air tightness & moisture protection elements	No	No	No submission of details and specs
c	Sealed walls		Required	Complied	Building elevations & sections	Yes	Yes	
d	Sealed roofing		Required	Not Complied	Technical specifications of required air tightness & moisture protection elements	Yes	No	No specifications provided
e	Sealed ceiling		Required	Not Complied				
f	Sealed flooring		Required	Not Complied				
10.1.2	Glass Properties	Applies to all building occupancies without exceptions	Use SHGC Calculator	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	
a	Solar Heat Gain Coefficient (SHGC)		0.24	0.7	Architectural floor plans, Building elevations & sections	Yes	Yes	
b	Visual Light Transmittance (VLT)		0.35	0.35	Window Schedule	Yes	Yes	
					WWR Computation Table	Yes		
					Window Glass specifications	Yes	Yes	



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EVALUATION SIMULATION NO. 1

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST								
10 ENERGY EFFICIENCY			GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Building Envelope						Yes/No	Yes/No	Remarks
10.1.1	Air Tightness & Moisture Protection	Applies to all building occupancies except building and spaces without air-conditioning system	Required?	Complied?				
a	Sealed window and door assemblies		Required	Complied	Bay wall sections	Yes	Yes	
b	Sealed utility services		Required	Not Complied	Enlarged details of building envelope showing required air tightness & moisture protection elements	No	No	No submission of details and specs
c	Sealed walls		Required	Complied	Building elevations & sections	Yes	Yes	
d	Sealed roofing		Required	Not Complied	Technical specifications of required air tightness & moisture protection elements	Yes	No	No specifications provided
e	Sealed ceiling		Required	Not Complied				
f	Sealed flooring		Required	Not Complied				
10.1.2	Glass Properties	Applies to all building occupancies without exceptions	Use SHGC Calculator	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	
a	Solar Heat Gain Coefficient (SHGC)		0.24	0.7	Architectural floor plans, Building elevations & sections	Yes	Yes	
b	Visual Light Transmittance (VLT)		0.35	0.35	Window Schedule	Yes	Yes	
					WWR Computation Table	Yes		
					Window Glass specifications	Yes	Yes	

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EVALUATION SIMULATION NO. 2

Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentat ion	Design Specification Relevant	
13.1	Material Recovery Facility (MRF)	Applies to all building occupancies without exceptions	MRF floor area Calculator			Yes/No	Yes/No	Remarks
a	MRF with minimum floor area as per Table 15		19.29	25.00	Architectural floor plans & site development plan showing location of MRF	Yes	Yes	
b	MRF fully enclosed & easily accessible		Required	Complied				
c	Solid waste containers for 4 types of waste; compostable; non-recyclable; recyclable; special		Required	Complied	MRF Floor Area Computation Table	Yes	Yes	
d	For hospitals, isolated bins for hazardous wastes		Not Required	Not Applicable	Technical specifications for the MRF			
14	SITE SUSTAINABILITY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentat ion Provided?	Design Specification Relevant	
14.1	Site / Ground Preparation and Earthworks	Applies to all building occupancies without exceptions	Required?	Complied?		Yes/No	Yes/No	Remarks
a	Building site and erosion control		Required	Complied	Site Erosion and Sedimentation Control Plan	Yes	Yes	
b	Pollution mitigation and construction safety per Rule XI of the NBC		Required	Complied				
c	Storm water collection management plan		Required	Complied	Technical specifications in support of the erosion & control plan	Yes	Yes	
d	Storm water collection facilities		Required	Complied				
14.2	Open Space Utilization	Applies to all building occupancies without exceptions	USA Calculator	Design Value				
a	Minimum 50% of the required Unpaved Surface Area (USA) shall be vegetated		50%	Complied	Site Development Plan	Yes	Yes	
					Technical specifications	Yes	Yes	
					USA Computation Table	Yes		



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EVALUATION SIMULATION NO. 2

Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentat ion	Design Specification Relevant	
13.1	Material Recovery Facility (MRF)	Applies to all building occupancies without exceptions	MRF floor area Calculator			Yes/No	Yes/No	Remarks
a	MRF with minimum floor area as per Table 15		19.29	25.00	Architectural floor plans & site development plan showing location of MRF	Yes	Yes	
b	MRF fully enclosed & easily accessible		Required	Complied				
c	Solid waste containers for 4 types of waste; compostable; non-recyclable; recyclable; special		Required	Complied	MRF Floor Area Computation Table	Yes	Yes	
d	For hospitals, isolated bins for hazardous wastes		Not Required	Not Applicable	Technical specifications for the MRF			
14	SITE SUSTAINABILITY		GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Documentat ion Provided?	Design Specification Relevant	
14.1	Site / Ground Preparation and Earthworks	Applies to all building occupancies without exceptions	Required?	Complied?		Yes/No	Yes/No	Remarks
a	Building site and erosion control		Required	Complied	Site Erosion and Sedimentation Control Plan	Yes	Yes	
b	Pollution mitigation and construction safety per Rule XI of the NBC		Required	Complied				
c	Storm water collection management plan		Required	Complied	Technical specifications in support of the erosion & control plan	Yes	Yes	
d	Storm water collection facilities		Required	Complied				
14.2	Open Space Utilization	Applies to all building occupancies without exceptions	USA Calculator	Design Value				
a	Minimum 50% of the required Unpaved Surface Area (USA) shall be vegetated		50%	Complied	Site Development Plan	Yes	Yes	
					Technical specifications	Yes	Yes	
					USA Computation Table	Yes		

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EVALUATION SIMULATION NO. 3

Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Electrical Systems						Yes/No	Yes/No	Remarks
10.6.2	Daylight Controlled Lighting System	Applies to all regularly occupied spaces of all building occupancies except building spaces where daylight access hinders intended functions	Required?	Complied?				
	a Daylight sensor or photoelectric sensor in lighting system - for use within lighting control systems in day-lit zones	For residential condominiums, this applies only to common indoor areas with access to daylight	Required	Complied	Architectural Reflected Ceiling Plan	Yes	Yes	
		Installed lighting fixtures within day-lit zones are exempt from using photoelectric sensor if this hinders its intended functions, with justification			Electrical lighting and switching circuitry layout	Yes	Yes	
					Lighting control diagram	Yes	Yes	
					Technical Specifications	Yes	Yes	
10.6.3	Lighting Power Density (LPD)	Applies to all building occupancies without exceptions	LPD Calculator	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	
	a Building LPD within maximum LPD requirements		W/m2	W/m2	Architectural Reflected Ceiling Plan w/ LEGEND Box	Yes	Yes	
	a.1 Residential Dwelling		10.8	2.25	Electrical Lighting Layout w/ LEGEND Box	Yes	Yes	
	a.2 Hotel/Resort		10.8	0.00	Building Lighting Power Density Table	Yes	Yes	
	a.3 Educational: School		12.9	0.00	Technical specifications of light fixtures	Yes	No	Technical specifications of lights is different from lamp fixtures indicated in LEGEND BOX of Electrical Lighting Layout
	a.4 Institutional: Hospital		12.9	0.00				
	a.5 Business: Office		10.8	0.00				
	a.6 Mercantile:Mall (excl accent lighting)		16.1	0.00				
	a.7 Exterior facade		2.15	0.00				
	a.8 Active entrance (pedestrian conveyance)		98.4	0.00				
	a.9 Inactive entrance (normally locked/inactive)		65.6	0.00				
	a.10 Covered Parking		3.2	0.00				
	a.11 Open Parking		1.6	0.00				



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EVALUATION SIMULATION NO. 3

Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Electrical Systems						Yes/No	Yes/No	Remarks
10.6.2	Daylight Controlled Lighting System	Applies to all regularly occupied spaces of all building occupancies except building spaces where daylight access hinders intended functions	Required?	Complied?				
	a Daylight sensor or photoelectric sensor in lighting system - for use within lighting control systems in day-lit zones	For residential condominiums, this applies only to common indoor areas with access to daylight	Required	Complied	Architectural Reflected Ceiling Plan	Yes	Yes	
		Installed lighting fixtures within day-lit zones are exempt from using photoelectric sensor if this hinders its intended functions, with justification			Electrical lighting and switching circuitry layout	Yes	Yes	
					Lighting control diagram	Yes	Yes	
					Technical Specifications	Yes	Yes	
10.6.3	Lighting Power Density (LPD)	Applies to all building occupancies without exceptions	LPD Calculator	Design Value	Documentation needed	Document Provided?	Design Specification Relevant	
	a Building LPD within maximum LPD requirements		W/m2	W/m2	Architectural Reflected Ceiling Plan w/ LEGEND Box	Yes	Yes	
a.1	Residential Dwelling		10.8	2.25	Electrical Lighting Layout w/ LEGEND Box	Yes	Yes	
a.2	Hotel/Resort		10.8	0.00	Building Lighting Power Density Table	Yes	Yes	
a.3	Educational: School		12.9	0.00	Technical specifications of light fixtures	Yes	No	Technical specifications of lights is different from lamp fixtures indicated in LEGEND BOX of Electrical Lighting Layout
a.4	Institutional: Hospital		12.9	0.00				
a.5	Business: Office		10.8	0.00				
a.6	Mercantile:Mall (excl accent lighting)		16.1	0.00				
a.7	Exterior facade		2.15	0.00				
a.8	Active entrance (pedestrian conveyance)		98.4	0.00				
a.9	Inactive entrance (normally locked/inactive)		65.6	0.00				
a.10	Covered Parking		3.2	0.00				
a.11	Open Parking		1.6	0.00				

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EVALUATION SIMULATION NO. 4

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST								
10 ENERGY EFFICIENCY			GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Mechanical Systems						Yes/No	Yes/No	Remarks
10.5.1	Air Conditioning Equipment	Applies to all building occupancies except building and spaces without air-conditioning system	EER or COP or kW/Ton	EER or COP or kW/Ton				
a	Efficient air-conditioning equipment	Air-cooled, split systems <68,585 KJ/H	12.0 EER	13	Equipment Schedule	Yes	Yes	
		Water cooled, Electrically operated, centrifugal ≥600 tons	0.57 Kw/ton	0.55	Air-conditioning & Ventilation Layout	Yes	Yes	
		Through-the-wall, air-cooled, single packaged <31,655 KJ/H	12.0 SEER	10.9	Technical Specifications of the various AC equipment	Yes	Yes	
10.5.2	Water Heating System	Applies to all building occupancies except building with no water heating system and buildings using solar water heating and/or heat pump for water	Required Efficiency Factor	Efficiency Factor	Documentation needed	Document Provided?	Design Specification Relevant	
a	Efficient water heater	none			Equipment Schedule			
		(Equipment 2)			Plumbing & Electrical power layout			
		(Equipment 3)			Technical Specifications of Water Heating system			
		(Equipment 4)						
		(Equipment 5)						



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EVALUATION SIMULATION NO. 4

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST								
10 ENERGY EFFICIENCY			GB Code	Developer	Regulator			
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			
					Documentation needed	Document Provided?	Design Specification Relevant	
Mechanical Systems						Yes/No	Yes/No	Remarks
10.5.1	Air Conditioning Equipment	Applies to all building occupancies except building and spaces without air-conditioning system	EER or COP or kW/Ton	EER or COP or kW/Ton				
a	Efficient air-conditioning equipment	Air-cooled, split systems <68,585 KJ/H	12.0 EER	13	Equipment Schedule	Yes	Yes	
		Water cooled, Electrically operated, centrifugal ≥600 tons	0.57 Kw/ton	0.55	Air-conditioning & Ventilation Layout	Yes	Yes	
		Through-the-wall, air-cooled, single packaged <31,655 KJ/H	12.0 SEER	10.9	Technical Specifications of the various AC equipment	Yes	Yes	
10.5.2	Water Heating System	Applies to all building occupancies except building with no water heating system and buildings using solar water heating and/or heat pump for water	Required Efficiency Factor	Efficiency Factor	Documentation needed	Document Provided?	Design Specification Relevant	
a	Efficient water heater	none			Equipment Schedule			
		(Equipment 2)			Plumbing & Electrical power layout			
		(Equipment 3)			Technical Specifications of Water Heating system			
		(Equipment 4)						
		(Equipment 5)						

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EVALUATION SIMULATION NO. 5

11.2.1	Rainwater Harvesting		Rainwater Harvesting Tank Calculator (Cu M)	Designed volume (Cu M)	Documentation needed	Document Provided?	Design Specification Relevant	
a	Rainwater harvesting tank with minimum required volume capacity	Applies to all building occupancies.	20.00	22.00	Stormwater drainage layout plan	Yes	Yes	
b	Provision of rainwater collection and distribution system for toilet flushing, irrigation and cooling tower make-up use		Required	Complied	Stormwater drainage Isometries	Yes	Yes	No distribution to Cooling Tower as there is no such system installed
					Rainwater harvesting tank details	Yes	Yes	
					Rainwater harvesting Storage Tank Computation Table	Yes		
					Technical Specifications	Yes	Yes	
11.2.2	Water Recycling		Required?	Complied?	Documentation needed	Document Provided?	Design Specification Relevant	
a	Provision of a separate recycled water (sourced from STP) filtration and distribution system for non-potable purposes such as toilet flushing, irrigation and cooling tower make-up use.	Applies to all building occupancies with sewage treatment plant (STP)	Not Required	Not Applicable	Sewage system plan showing filtration and distribution system			
					Sewage system Isometries showing filtration and distribution system			
					STP & Filtration details			
					Technical Specifications of STP with narrative on treatment and recycling operations			



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EVALUATION SIMULATION NO. 5

11.2.1	Rainwater Harvesting		Rainwater Harvesting Tank Calculator (Cu M)	Designed volume (Cu M)	Documentation needed	Document Provided?	Design Specification Relevant	
a	Rainwater harvesting tank with minimum required volume capacity	Applies to all building occupancies.	20.00	22.00	Stormwater drainage layout plan	Yes	Yes	
b	Provision of rainwater collection and distribution system for toilet flushing, irrigation and cooling tower make-up use		Required	Complied	Stormwater drainage Isometries	Yes	Yes	No distribution to Cooling Tower as there is no such system installed
					Rainwater harvesting tank details	Yes	Yes	
					Rainwater harvesting Storage Tank Computation Table	Yes		
					Technical Specifications	Yes	Yes	
11.2.2	Water Recycling		Required?	Complied?	Documentation needed	Document Provided?	Design Specification Relevant	
a	Provision of a separate recycled water (sourced from STP) filtration and distribution system for non-potable purposes such as toilet flushing, irrigation and cooling tower make-up use.	Applies to all building occupancies with sewage treatment plant (STP)	Not Required	Not Applicable	Sewage system plan showing filtration and distribution system			
					Sewage system Isometries showing filtration and distribution system			
					STP & Filtration details			
					Technical Specifications of STP with narrative on treatment and recycling operations			

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EVALUATION SIMULATION NO. 6

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST												
10 ENERGY EFFICIENCY			GB Code	Developer	Regulator			Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required Value	Design Value	Design Compliance			Construction Compliance				
					Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	GB Measure Applied		
Plumbing Systems						Yes/No	Yes/No	Remarks		Yes/No	Yes/No	Remarks
10.6.7	Overhead Water Storage	Applies to all building occupancies except buildings below 10 storeys high	Required?	Complied?								
a	Overhead water storage tank on top of building at least 10 stories high		Required	Complied	Water Distribution Layout plan	Yes	Yes		Ocular Inspection & Verification	Yes	Yes	
					Single Line or Schematic Diagram	Yes	Yes		Product Labels and/or nameplate rating	Yes	Yes	Capacity indicated on the tank
					Water Tank Details	Yes	Yes		Brochures & Catalogues	No	No	Tank is site fabricated
					Technical Specifications	Yes	Yes		Shopdrawings	Yes	Yes	
								As-built Drawings	Yes	Yes		
11 WATER EFFICIENCY			GB Code	Developer	Regulator			Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			Construction Compliance				
					Documentation needed	Document ation	Design Specification Relevant	Documentation needed	Document ation	GB Measure Applied		
Plumbing Systems						Yes/No	Yes/No	Remarks		Yes/No	Yes/No	Remarks
11.1	Water Fixtures	Applies to all building occupancies	Max. Flowrate	Flowrate								
a	Specified water fixture compliant with maximum flow rate requirements as per Table 20				Water Distribution Layout plan with LEGEND box	Yes	Yes		Ocular Inspection & Verification	Yes	Yes	
a.1	Dual Flush Water Closet		=<6 full 3 low (liters/flush)	6 full and 3 low	Water Distribution Isometries with LEGEND box	Yes	Yes		Product Labels and/or nameplate rating	No	No	no serial or model number of lavatory faucet and shower head installed for reference
a.2	Single Flush Water Closet		4.9 (liters/flush)	4.9	Water Efficient Fixtures Use Confirmation Table	Yes	Yes		Brochures & Catalogues	Yes	Yes	
a.3	Shower		=<9 (80 psi) liters/min at 551.6 kPa	7.2	Technical Specifications of plumbing fixtures				Shopdrawings	No	No	
a.4	Urinal		=<1 liter / flush	1					As-built Drawings	Yes	Yes	
a.5	Lavatory tap		=<4.8 (60 psi) liters/min at 417.7 kPa	4								
a.6	Kitchen Faucet		=<4.8 (60 psi) liters/min at 417.7 kPa	4								
a.7	Handheld bidet spray		=<4.8 (60 psi) liters/min at 417.7 kPa	3.9		Yes	Yes					



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EVALUATION SIMULATION NO. 6

PHILIPPINE GREEN BUILDING CODE COMPLIANCE CHECKLIST												
10 ENERGY EFFICIENCY			GB Code	Developer	Regulator			Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required Value	Design Value	Design Compliance			Construction Compliance				
					Documentation needed	Document Provided?	Design Specification Relevant	Documentation needed	Document Provided?	GB Measure Applied		
Plumbing Systems						Yes/No	Yes/No	Remarks		Yes/No	Yes/No	Remarks
10.6.7	Overhead Water Storage	Applies to all building occupancies except buildings below 10 storeys high	Required?	Complied?								
a	Overhead water storage tank on top of building at least 10 stories high		Required	Complied	Water Distribution Layout plan	Yes	Yes		Ocular Inspection & Verification	Yes	Yes	
					Single Line or Schematic Diagram	Yes	Yes		Product Labels and/or nameplate rating	Yes	Yes	Capacity indicated on the tank
					Water Tank Details	Yes	Yes		Brochures & Catalogues	No	No	Tank is site fabricated
					Technical Specifications	Yes	Yes		Shopdrawings	Yes	Yes	
								As-built Drawings	Yes	Yes		
11 WATER EFFICIENCY			GB Code	Developer	Regulator			Regulator				
Item	Philippine Green Building Code Requirement	Applicability	Required value	Design Value	Design Compliance			Construction Compliance				
					Documentation needed	Document ation	Design Specification Relevant	Documentation needed	Document ation	GB Measure Applied		
Plumbing Systems						Yes/No	Yes/No	Remarks		Yes/No	Yes/No	Remarks
11.1	Water Fixtures	Applies to all building occupancies	Max. Flowrate	Flowrate								
a	Specified water fixture compliant with maximum flow rate requirements as per Table 20				Water Distribution Layout plan with LEGEND box	Yes	Yes		Ocular Inspection & Verification	Yes	Yes	
a.1	Dual Flush Water Closet		≤6 full 3 low (liters/flush)	6 full and 3 low	Water Distribution Isometries with LEGEND box	Yes	Yes		Product Labels and/or nameplate rating	No	No	no serial or model number of lavatory faucet and shower head installed for reference
a.2	Single Flush Water Closet		4.9 (liters/flush)	4.9	Water Efficient Fixtures Use Confirmation Table	Yes	Yes		Brochures & Catalogues	Yes	Yes	
a.3	Shower		≤9 (80 psi) liters/min at 551.6 kPa	7.2	Technical Specifications of plumbing fixtures				Shopdrawings	No	No	
a.4	Urinal		≤1 liter / flush	1				As-built Drawings	Yes	Yes		
a.5	Lavatory tap		≤4.8 (60 psi) liters/min at 417.7 kPa	4								
a.6	Kitchen Faucet		≤4.8 (60 psi) liters/min at 417.7 kPa	4								
a.7	Handheld bidet spray		≤4.8 (60 psi) liters/min at 417.7 kPa	3.9		Yes	Yes					

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GREEN BUILDING IN THE PHILIPPINES

**Mandatory
GB Code**

**Other Codes
& Laws**

Voluntary





PHILIPPINE
GREEN
BUILDING
INITIATIVE



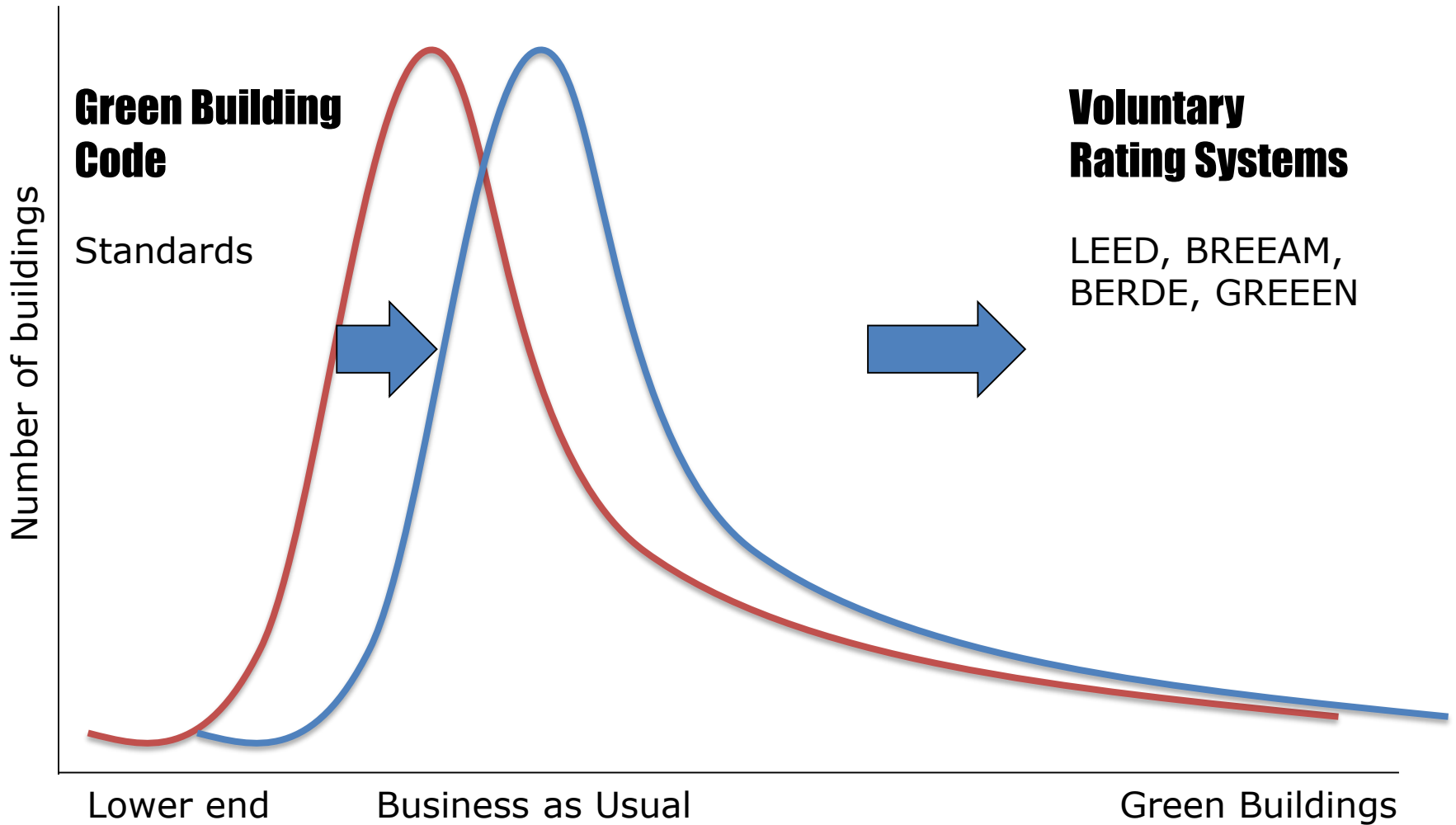
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