REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF FINANCE
BUREAU OF INTERNAL REVENUE
Quezon City

July 10, 2014

REVENUE MEMORANDUM CIRCULAR NO. 64-2014

SUBJECT: Publishing the Full Text of Memorandum from the Office of the Presidential Assistant for Rehabilitation and Recovery Infrastructure Cluster Dated June 11, 2014, Entitled "Minimum Performance Standards and Specifications for Public Buildings"

TO : All Internal Revenue Officials, Employees and Others Concerned

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For the information and guidance of all concerned, quoted hereunder is the full text of Memorandum from the Office of the Presidential Assistant for Rehabilitation and Recovery Infrastructure Cluster dated June 11, 2014:

"Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

JUN 11 2014

OFFICE OF THE PRESIDENTIAL ASSISTANT FOR REHABILITATION AND RECOVERY INFRASTRUCTURE CLUSTER

MEMORANDUM FOR:

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Secretary PROCESO J. ALCALA
Department of Agriculture

Secretary ARMIN A. LUISTRO
Department of Education

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Office of Civil Defense

Hon. JOSE MIDAS P. MARQUEZ
Supreme Court – Office of the Court Administrator

SUBJECT : MINIMUM PERFORMANCE STANDARDS AND SPECIFICATIONS FOR PUBLIC BUILDINGS

Please refer to the attached "Minimum Performance Standards and Specifications for Public Buildings" for your reference in the preparation of design plans for the rehabilitation and reconstruction of typhoon Yolanda damaged office buildings and other vertical structures.

Thank you for your cooperation.

(original signed)
ROGELIO L. SINGSON
Secretary
Chairperson, Infrastructure Cluster

Cc: **Secretary PANFILO M. LACSON**
Office of the Presidential Assistant for Rehabilitation and Recovery

MINIMUM PERFORMANCE STANDARDS AND SPECIFICATIONS FOR PUBLIC BUILDINGS

MINIMUM PERFORMANCE STANDARDS AND SPECIFICATIONS FOR PUBLIC BUILDINGS

(e.g. Municipal Building, Multi-Purpose Building, Public Market)

ARCHITECTURAL DESIGN STANDARDS:

PUBLIC OFFICE BUILDING DESIGN:

PARTICULARS	RECOMMENDED SPACE REQUIREMENTS
Main Lobby	0.25 sq. m/pax; minimum for lobby as waiting/standing room = 0.28 sq. m/pax
Working area of personnel (rank and file)	4.00 – 6.00 sq. m/pax
Conference Room	1.20 sq. m/pax including aisles and demonstration space
Toilet Facilities *{per Revised National Plumbing Code of the Philippines (R.A. 1378)}*	1.50 sq. m per one (1) water closet (WC) enclosure / toilet stall
a. For Employee's use	➢ 1 WC/1-15; 2 WC/16-35; 3 WC/36-55 for male and female ➢ 1 lavatory/40 for male & female (or ratio of: 1 lavatory / 2 WC)
b. For Public use	➢ 1 WC/1-100 for female ➢ 1 WC/1-200 for male ➢ 1 urinal/1-100 for male ➢ 1 lavatory/2 WC for male & female
c. For persons with disabilities (PWDs)	➢ 1 WC / toilet stall (1.70m x 1.80m clear dimension) per male & female (or 1 PWD toilet common for male PWD, female PWD & for the elderly)
Hallway / Corridor / Stairway Width	➢ 1.20 m wide (minimum); ideal = 2.40 m wide (clear) or 0.60m width per person
No. of Fire Escape Stair / Exit Required	➢ Minimum of two (2) exits where no. of occupants is: over 30 for offices; over 50 for assembly areas (e.g. training room/hall, gymnasia, auditoriums) ➢ Subject for compliance with the provisions of the *New Fire Code of the Philippines (R.A. No. 9514)* and the *National Building Code of the Philippines (P.D. No. 1096)*; <u>whichever provision is more stringent shall apply.</u>

OFFICE SPACES OF KEY OFFICIALS / OFFICES FOR A TYPICAL MUNICIPAL BUILDING: *(Subject for verification)*	
PARTICULARS	**RECOMMENDED SPACE REQUIREMENTS**
1. Mayor's Office	48.00 – 50.00 sq. m
• Staff	4.00 – 6.00 sq. m/pax
• Conference Room	1.20 sq. m/pax
• Toilet/Bathroom (T&B)	3.75 – 4.00 sq. m
• Pantry	10.00 sq. m
• Storage Area	10.00 sq. m
2. Vice Mayor's Office	40.00 – 48.00 sq. m
• Staff	4.00 – 6.00 sq. m/pax
• Conference Room	1.20 sq. m/pax
• T&B	3.75 – 4.00 sq. m
• Pantry	8.00 – 10.00 sq. m
• Storage Area	8.00 – 10.00 sq. m
3. Municipal Administrator	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 sq. m
4. Office of the Sangguniang Bayan (SB)	SB/SK Member Cubicle/
• SB Members	Office = 9.00-12.00 sq. m;
• SK Members	staff = 4.00 – 6.00 sq. m/pax;
• SB Secretariat	storage area = 6.00 sq. m;
• Toilet	3.00 – 4.00 sq .m
• Storage Area	8.00 – 10.00 sq. m
5. Session Hall	1.40 sq. m / pax
6. Municipal Planning & Development Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 sq. m
7. Municipal Engineer's Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 8.00 – 10.00 sq. m
8. Municipal Social Welfare & Development Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 sq. m
9. Municipal Budget Officer	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 sq. m

10. Municipal Treasurer's Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 – 8.00 sq. m; vault room/sto. = 6.00 – 8.00 sq. m
11. Municipal Accounting Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 – 8.00 sq. m
12. Municipal Legal Officer	-do-
13. Municipal Assessor's Office	-do-
14. Municipal Agricultural Services	-do-
15. Municipal Disaster Risk Reduction Management Office (MDRRMO)	-do-
16. Municipal Post Office	Chief's Office = 12.00 sq. m; staff = 4.00 – 6.00 sq. m/pax; storage area = 6.00 – 8.00 sq. m
17. Municipal Trial Court • MTC Judge Room • Court Room • Staff • Pantry • Toilet • Storage Area	 12.00 – 16.00 sq. m 30.00 – 40.00 sq. m 4.00 – 6.00 sq. m/pax 6.00 – 8.00 sq. m 3.00 – 4.00 sq. m 8.00 – 10.00 sq. m
18. Extension Offices of National Government Agencies, e.g.: (*subject for verification)* • DILG • COMELEC • BIR (DOF)	4.00 – 6.00 sq. m/pax; storage area = 5.00 – 6.00 sq. m

MULTI-PURPOSE BUILDING / PUBLIC GYMNASIUM DESIGN:

PARTICULARS	RECOMMENDED SPACE / AREA REQUIREMENTS	
Equipment Storage Room	3.75 m x 8.8 m	33.00 sq. m
Female Locker & Shower Room	3.75 m x 5.00 m	18.75 sq. m
Female Toilet	3.75 m x 5.00 m	18.75 sq. m
PWD Toilet	2.00 m x 2.00 m	4.00 sq. m
Male Toilet	3.75 m x 5.00 m	18.75 sq. m
Male Locker & Shower Room	3.75 m x 4.2 m	15.75 sq. m
Basketball Court	28.00 m x 14.00 m	392.00 sq. m
Stage	4.00 m x 11.2 m	44.80 sq. m
Circulation and Bleachers	--	506.9 sq. m
TOTAL	**--**	**1,052.7 sq. m**

NOTE: *For determining the seating capacity of a stand/bleacher, the width of any seat shall not be less than 450 millimeters nor more than 480 millimeters (per Section 1207, Rule XII – General Design and Construction Requirements, Revised IRR of P.D. No. 1096).*

PUBLIC MARKET DESIGN:

Site Selection

Site selection for public markets will primarily consider the physical site condition, availability of infrastructure/utilities, accessibility and location with respect to the population or service center.

Location and Topography

Public markets shall be located in sites determined in accordance with the National Building Code of the Philippines (P.D. No. 1096) and its Revised Implementing Rules and Regulations (IRR), concerned LGU's zoning laws/ordinances.

Site location should be within designated commercial zone/area and accessible, preferably through an arterial street. Service access for trucks is essential for the delivery of goods and other services.

The market site shall be located at least 50m away from schools, religious institutions, public offices, funeral establishments and other public gathering/places such as auditorium, public plazas and 25m away from abattoirs and sources of contamination.

The market should be located at a site which is accessible by walking (0.75km) or an average of 15-minute travel time by public vehicles.

The market site should have an adequate size and suitable shape to allow proper area and space for expansion. Infrastructure/facilities (e.g. electricity, water supply, telecommunications, etc.) shall be available at the proposed sites.

If located near rivers, streams or lakes, the easement shall be in accordance with the Water Code of the Philippines (R.A. No. 1067).

Market Lot Use

Use the following guide for land use allocation and market lot area:

- Building Area: 50 to 70%; and
- Space: 30 to 50%.
    - Based on the above guidelines, the maximum use of building area is 70% of the market area and market building basically consists of stalls (area) and related offices and facilities. The open spaces will be used for loading and unloading purposes, parking area and maintenance.
    - Landscaping and Buffering. The market complex needs sufficient landscaping and buffering. A minimum of 5.00m for this purpose may be provided along perimeter of the site.

Building Structure and Architectural Standard

All market buildings shall be designed in accordance with the provisions of P.D. No. 1096 and its Revised IRR. New market buildings shall be constructed in an orientation such as no side must be directly east or west to avoid glare to shoppers. If possible, a North-South or Northeast-Southwest orientation (second is the best choice) of the market building should be adopted.

The building shall be properly oriented in such a way that the prevailing breeze blows at a right angle to the building walls. The following are the approximate building area distribution by percentage:

- Selling Area: 55 to 60%;
- Circulation: 35 to 40%; and
- Facilities (Toilets and Utility Rooms) and Offices: 5 to 10%.

The market building shall be designed and constructed to allow adequate natural light and ventilation. To ensure cleanliness and sanitation, adequate supply of water and a good drainage system shall be provided.

The design shall be open and flexible for future renovation. The structure shall be designed and constructed to withstand tropical typhoon and earthquakes.

The market height level shall be 4.50m. This is measured from the floor level to the top of the roof beam or bottom of the truss.

Accessibility facilities and features for persons with disabilities (PWDs), as provided under the Accessibility Law (B.P. Blg. 344), shall be integrated in the design.

Water Supply

Potable water supply should be adequate to keep the market clean. The fish and eatery section shall have one 12mm faucet in each stall. The meat and vegetable sections shall have at least one 12mm faucet for every five (5) stalls. Furthermore, comfort rooms and cold storages should be provided with water.

Drainage and Sewage Facilities

Sewage shall be disposed to a public sewerage system or in the absence thereof, in a manner complying with Chapter XVII – Sewage Collection and Disposal, Excreta Disposal and Drainage of the Sanitation Code of the Philippines (P.D. No. 856) and its IRR.

There shall be sufficient facilities in the market and its premises. AT least one floor drain shall be provided in every 46.50 sq. m of floor area. Slope shall not be less than 20.50mm per meter to the drainage outlet. The fish and meat sections should be provided with ample catch basins for retention of solids.

Sewer lines from toilets and urinals shall not be connected with drainage lines in the market.

All floor drains shall be provided with a deep seal trap (P-trap or U-trap).

Waste Disposal

Proper solid waste management shall be instituted in the market in accordance with the pertinent provisions of Chapter XVIII – 'Refuse Disposal' of P.D. No. 856 and its IRR.

On market premises, adequate number of refuse bins (separate bin or bins with separator) or refuse depository, one for biodegradable and one for non-biodegradable wastes, shall be provided in strategic places for temporary disposal of refuse before being collected. Each stall shall be provided with at least two (2) covered refuse receptacles lined with green-colored plastic bag for biodegradable and another receptacle line with black-colored plastic bag for non-biodegradable wastes.

Electrical Power Supply

Power supply shall be connected to an approved public or community power supply system. A standby generator must be provided in case of power failure.

Guidelines for the design and installation of an electrical system shall be in accordance with the latest Philippine Electrical Code (PEC).

Telecommunication Supply

Telecommunication supply shall be connected to an approved public or local Telecommunication exchange company.

Guidelines for the design and installation of the telecommunication system shall be in accordance with the local Electronics and Communication Laws and Code.

Fire Protection System

An adequate fire protection system should be installed providing for fire hydrants and rising mains with pipe hydrant outlets connected directly to the main distribution line. Fire hydrants should likewise be visibly and accessibly installed or provided outside market buildings. Fire hydrants inside market building should be provided with fire hose cabinets and should unobstructed from internal traffic circulation.

A portable fire extinguisher is recommended for every market stall, except wet and semi-wet.

Road Network and Pedestrian Walk

Intersection of major pedestrian and vehicular flows should be minimized.

Loading and unloading areas should be located as near as possible to the market but should not influence traffic congestion to the main roads.

Customers and service access and circulation must be separated. Pedestrian walks should likewise be isolated from vehicular traffic and protected from weather elements. Long walks should as much as possible be discouraged. Priority should be given to market-goers availing of public transportation modes.

The road system should be provided with safe and convenient ingress and egress from the site to a collector street or feeder road. If this has to connect to an arterial road, provision of service road is recommended.

Market roads shall be at least two (2) lanes or at least 7.00m in carriageway width (i.e. excluding sidewalks). Road intersections must be properly designed to minimize traffic congestion in the vicinity of the market.

Parking and Delivery Area

The provisions of adequate parking area is a basic requirement of any market, regardless of its size and location (reference to P.D. No. 1096). The location of the parking area is generally between the stores and the streets that it will be away from the pedestrian areas.

For planning purposes, it may be assumed that for every 100 sq. m of leasable (stalls) floor area, four (4) parking spaces (both for consumers and stallholders) with an area of 2.50m by 5.00m shall be provided.

Parking is recommended on the lowest level of the public market. Off-street parking is not encouraged since it contributes to traffic congestion.

The hawker's plaza and '*bagsakan'* (wholesale) area are places near the semi-wet and dry sections for the convenience of both vendors and delivery vans, most of which supply goods such groceries and *sari-sari* items (different/wide variety of goods). It is recommended that the hawker's plaza should not exceed 60% of the size of the market core, except for those markets which may have only one or two market per week. The '*bagsakan'* (wholesale) area is computed at around 10% to 13% of the total built-up area.

Market Stalls and Aisles

A public market basically consists of stalls and aisles. A stall is the most important element of the market. In detailed design, great care must be exercised in analyzing the needs of vendors, particularly in the case of the net stalls.

The required stall area for a market must be about 60% of the total floor area. The circulation area, which is the aisle, is 35% and the offices, toilets and utility room at 5% of the total floor area.

For planning purposes, the average sizes of the different market stalls may be assumed at:

- 2 – 4 sq. m per stall for vegetable, fruits, meat and dried fish;
- 5 – 9 sq. m per stall for shops and *sari-sari* (general) store; and
- 15 – 18 sq. m for *carinderia* (eatery) and cereals.

For purposes of preliminary programming, the following illustrate the above applications:

- 1.70m x 2.25m or 3.80 sq. m – for meat and vegetables;
- 1.70m x 2.25m or 3.80 sq. m – for fruits and vegetables;
- 3.40m x 4.50m or 15.30 sq. m – for cereals and *carinderia* (eatery);
- 2.25m x 3.41m or 7.67 sq. m – for shops and *sari-sari* (general) store; and

- 2.27m x 4.49m or 10.19 sq. m – for garments.

Recommended stall sizes should be matched with existing stall sizes and should be related to the market vendor analysis. Any deviations from the recommended stall sizes should be done in increments/multiples of 1.44 sq. m (1.20m x 1.20m) or even fractions (1/2, 1/4, 1/8, 1/16.

The counter aisle should be at 1.50 – 2.00m wide while the primary and secondary entry aisles may be assumed at 2.00 – 3.50m wide.

Comfort Rooms and Hand-Washing Facilities

The public comfort rooms shall be adequately and strategically located within the market area. One (1) toilet stall and a wash-hand basin for personnel and stallholder's use and the same ration for the consumers\ use may be allocated for every 50 market stalls. Seventy percent (70%) of the toilet facilities may be allocated for women since approximately 70% of the market-goers are women.

Offices

The Administrative Office must be situated at a strategic point wherein it can control deliveries and at the same time watch over market operation. It will provide office space for the market administrator, chief teller, vendor's association and conference room. The office space shall be 4.2 sq. m per person.

This office can be located in any part of the market building or an independent small building. A small mezzanine floor for administration office located at the center of the proposed market building is highly recommended.

Maintenance Room

This room serves as the locker room for the security and maintenance staff. It may be adjacent to the administration office.

Structural Design Standard

The structural design must be in accordance with the latest edition of the National Structural Code of the Philippines (NSCP), Volume 1, 2010 and P.D. No. 1096, the 1977 NBCP and its 2004 Revised IRR.

All concrete materials and workmanship shall conform to the latest building code of American Concrete Institute (ACI-138) while steel construction will be based on AISC Manual.

The Structures shall be designed to have a life to last at least fifty (50) years.

Classification of Structures

Excerpt from the NSCP 2010, the Public buildings/structures shall be designed for the classification as follows:

Occupancy Category	Occupancy or Functions
Essential Facilities	Public School Buildings, Fire & Police Stations, Aviation Control towers, Hospitals, Evacuation Centers
Standard Occupancy	Municipal Buildings, Covered Court, Multi-Purpose Building, Housing, Public Market

I. Loadings

Wind Load

The public buildings/structures, roofing systems and walls shall be designed with the basic wind speed:

Zone	Basic Wind Speed
Zone I	250 kph
Zone II	250 kph
Zone III	150 kph

The importance factor for wind design shall be based from the occupancy category of the buildings.

Occupancy Category	Importance Factor
Essential Facilities	1.15
Standard Occupancy	1.00

The structure should be fully sealed against rainwater intrusion during typhoons and heavy rains. All openings such as doors and windows must be fully sealed against strong vertical and lateral rains.

Seismic Load

Seismic load is defined as the horizontal and vertical forces equivalent in their design effect to the loads induced by ground motion during an earthquake. Building structures shall be designed for seismic loads in accordance with NSCP 2010 Section 208.

The Philippineshavetwo (2) seismic zones. The provinces of Palawan, Sulu and Tawi-Tawi are under the Zone 2 while the rest of the Philippines are Zone 4. The public buildings/structures in the Philippines shall be designed to withstand earthquakes with corresponding seismic zone factor of 0.20 for Zone 2 and 0.40 for Zone 4.

The location and type of the seismic sources should also be defined and near source factors (N_a&N_v) should be considered (*NSCP 2010 Section 208.4.4.4*).

A Seismic Importance Factor shall be used for the effect of the nearby fault lines.

Occupancy Category	Importance Factor
Essential Facilities	1.50
Standard Occupancy	1.00

The default soil profile type SE for earthquake load computation purposes shall be used in the absence of geotechnical report.

Live Load

The live loads shall be the weight of all movable loads including personnel, tools, miscellaneous equipment, and movable partitions. The minimum occupancy or live loads shall be used in the design from the recommended values of the NSCP 2010.

Structure Part	Live Load
Offices	2.4 kPa
Schools (Classrooms)	1.9 kPa
Restrooms	2.4 kPa
Roof decks	Same as area served
Corridors above ground floor	3.8 kPa
Lobbies & ground floor corridors	4.8 kPa
Hospitals (wards & rooms)	1.9 kPa
Hospitals (Laboratories & operating rooms)	2.9 kPa
Exit facilities	4.8 kPa
Stores - Wholesale	6.0 kPa
Assembly Areas & Auditoriums (movable seats)	2.9 kPa

Excerpt from NSCP 2010 Table 205-1

Roof live loads will be as per recommended by the NSCP 2010 Table 205-3. For the design of the roof truss, a 0.60 kPa will be used due to the large tributary are of the roof.

Dead Load

Dead Load shall be the weight of materials forming the permanent part of a building, built-in partitions, equipment, insulation, piping, electrical conduit and other permanent fixtures.

Material	Unit Weight
Concrete	24 kN/m^3
Steel	77 kN/m^3
150mm (6") thick CHB	2.73 kPa
100mm (4") thick CHB	2.11 kPa
Wall Plaster	0.24 kN/m^3

II. Materials&Design Stresses

Structural Concrete

All concrete shall develop a minimum compressive strength at the end of twenty eight (28) days with corresponding maximum size aggregate and slumps as follows:

Location	28 Days Strength	Maximum Aggregate Size	Maximum Slump
Foundation, Elevator shaft, columns, slab & beams	20.7 MPa	¾ inches (19mm)	4 inches (100mm)
Slab on grade	17.2 MPa	¾ inches (19mm)	4 inches (100mm)

Reinforcing Steel Bars

All reinforcing steel bars shall be hot-rolled non-weldable deformed, new billet bars conforming to ASTM A615 Grade 33 for 12mm diameter and smaller bars while Grade 40 for 16mm diameter and larger. Steel reinforcement shall be free from loose mill and rust scale and from coating that may destroy or reduced the concrete-steel bond.

The elastic modulus of reinforced steel bars to be used for analysis purpose is 200,000 Mpa.

Concrete cover shall be provided for protection of reinforcement as per NSCP Section 407.8. The following are the minimum concrete cover for nonprestressed cast-in-place concrete.

Usage / Purpose	Minimum Cover
Footing and base slabs at uniform surfaces and bottom in contact with earth	75mm

Formed Concrete surfaces exposed to earth, water or weather:	
20mm diameter bar and larger	50mm
16mm diameter bar and smaller	40mm
Concrete not exposed to weather or in contact with ground	
Slabs, walls, joists	
42mm & 58mm diameter	40mm
36mm diameter and smaller	20mm
Beams and columns	40mm

Structural Steel and Cold Formed Sections

All structural steel such as trusses, beams, columns, bracings, struts, etc. shall have a minimum yield strength of 248 MPa (36,000 psi) conforming with standards for Rolled Structural Steel Sections as per ASTM A36.

High strength connection bolts shall conform to ASTM A325 while anchor bolts shall conform to ASTM A307. Steel Sections for purlins and girts shall be as per JIS G#101 with yield strength of 245 MPa.

All welding shall have E70xx conforming to specifications in the AWS section D1.1.

Masonry and Concrete Blocks

All non-load bearing type concrete blocks shall have a minimum compressive strength of 2.40 MPa while 6.90 MPa shall be developed for load bearing type of concrete blocks.

Building Foundation

Prior to the design/construction of the building, a soil investigation should be conducted for the basis of the foundation and structural design of the buildings/structures. For two stories and higher structures, an exhaustive geotechnical study is recommended as per NSCP 2010 Section 303.

If the actual soil bearing pressure is unknown, an allowable soil bearing pressure of 96 Kpa (2,000 psf) should be assumed for the design. In case the actual soil bearing pressure is found less than or greater than the assumed value, notify the designer for a proper revision of the foundation design.

Electrical Design Standards

Roughing-ins

Service Entrance

Service entrance conduit shall be made of Rigid Steel or Intermediate Metallic for conductors with insulation and rigid non-metallic (non-combustible, non-absorbent insulating tubes) for open conductors. Underground conduit runs shall be encased in concrete envelope or with reinforced steel when crossing roadway.Service conduit that are not encased in concrete and that are buried 460mm or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 300mm above finished grade. Ends of conduits shall be provided with sealing compoundto prevent entrance of liquids or white ants.

Exposed service entrance conduits shall be painted with epoxy primer in three (3) coats application.

Conduit shall be properly cut square, reamedand threaded.

Electric Service Metering equipment shall be installed at a minimum height of 1600mm from the natural grade line to the center of the equipment.

Branch circuit conduits, boxes, fittings and supports shall run parallel to walls and beams of the building

Metal boxes, gutters, supports and fittings shall be painted with epoxy primer in three (3) coats prior to installation.

Polyvinyl Chlorine (PVC) solvent shall be applied on all PVC pipe joints/connections.

End bells shall be used at the end of PVC pipes and locknut and bushing shall be used for metallic conduit on all boxes and gutters termination.

Branch circuit conduits shall be either rigid metallic or rigid non-metallic as applicable.

Ceiling mounted lighting fixture: Flexible metallic tubing shall be used as drop pipe from junction box to octagonal box.

In-sight disconnecting means: Watertight type straight or angle connectors shall be used for pumps, condensing units and other equipment that will be in possible contact with water or rain.

Panel boards and enclosed circuit breakers shall be used to protect the electrical systems from overloading.

Stub-out conduits for spares: 15mm nominal diameter non-metallic or metallic shall be provided as stub-out conduits at different panel board as per schedule of loads and computation. Ends shall be threaded and capped.

Wires and Wiring Devices

Wires shall be properly designed in accordance with the allowable ampacities of insulated conductors provided by Philippine Electrical Code (PEC) Article 3.10.

Grounding wires shall conform to Article 2.50 of the PEC.

Wiring devices such as wall switches, duplex or single convenience/receptacle outlets, and other power outlets shall be of modern type and of the approved type for both location and purpose.

Receptacles and other power outlets

Duplex or single convenience/receptacle and power outletsof the grounding type shall be provided in all rooms/enclosed spaceswhere it is required.

Lighting Fixtures

Each room or enclosed space shall be provided with a lighting product(s) that can producethe required illumination level to wit:

Room/Area to be illuminated	Lux(Lumens/m^2)
I. For Municipal Building	
Offices	
Drafting Room	
Detailed drafting and designing, cartography	2200
Rough layout drafting	1600
Accounting offices	
Auditing, tabulating, bookkeeping, business	
machine operation, computer operation	1600
General offices	
Reading poor reproduction, business machine operation,	
computer operation	1600
Reading handwriting in hard pencil on poor paper,	
reading fair reproduction, active filing, mail sorting	1100
Reading handwriting in ink or medium pencil or good	
quality paper, intermittent filing	750
Private offices	
Reading poor reproductions, business machine operation	1600
Reading handwriting in hard pencil on poor paper,	
reading fair reproductions	1100

Reading handwriting in ink or medium pencil on good quality paper	7500
Reading high contrast or well-printed materials	330
Conferring and interviewing	330
Conference room	
Critical seeing task	1100
Conferring	330
Note-taking during projection (variable)	330
Corridors	220
Police	
Identification	1600
Jail cells and interrogation rooms	320
Fire hall	
Dormitory	220
Recreation room	320
Wagon room	320
II. For Multi-Purpose Buildings	
Auditoriums	
Assembly only	160
Exhibitions	32
Social activities	50
Gymnasiums	
Exhibitions, matches	540
General exercising	320
Assemblies	110
Dances	50
Lockers and shower rooms	220
Basketball	
College and professional	540
College intramural and high school	320
Recreational (outdoor)	110
III. For Public Market	
Stores/Stalls	
Circulation areas	320
Merchandizing areas	
Service	1100
Stockrooms	320
IV. For all areas	
Service space	
Stairways, corridors	220
Elevators, freight and passenger	220
Toilets and wash rooms	320

Mechanical Design Standards

Air Conditioning System

Rooms/enclosed spaces where temperature and relative humidity of the air for confortable cooling shall be maintained at 20-24°C and 50-55% humidity, respectively at an air movement from 4.57 to 7.6m/min within living zone, air conditioning system shall be provided.

Ventilation System

The quantity of air to be exhausted in a given room/enclosed area is based on the number of air changes per hour.

Storage room

Ventilation by gravity shall have grilles in the doors or partitions leading into corridors. Top grilles shall have total free area of 6800sq. mm per sq. m of floor area.

Toilets

Gravity ventilated toilets shall have exhaust ducts and inlet exhaust grilles with free areas of $0.093m^2$ for two fixtures plus $0.031m^2$ for each additional fixture. Apply 50 cubic feet per min (50CFM) per fixture bowl/urinary bowl or 4 to 6 air changes per hour on excessive area of the toilets.

WATER PUMPING SYSTEM

A shut-off value shall be placed at the suction and at the discharge side of the pump and check valves shall be provided at the pump discharge and before the shut-off valve.

Overhead tank supply shall be provided with float switch or other device to start and stop operation of pump.

Overhead water tank shall be provided with air vent and an over-flow pipe leading to a storm drain.

Pneumatic tank shall be provided with suitable pressure switch and air volume control device to maintain correct air volume inside the tank.

Tank with a capacity of 3785 litres or more shall be provided with air compressor.

Tank shall be designed for twice the maximum total dynamic pressure required.

All piping 102mmØ and above shall be flanged while smaller sizes can be screwed.

All piping subject to varying temperature shall be provided with expansion joints.

All piping shall be clamped by 20" bolts or clamps to supporting racks except steam piping.

FIRE PROTECTION SYSTEM

Fire Sprinkler System

Pipes and tubes used in sprinkler system shall be designed to withstand a working pressure of not less than 1206 kilopascals.

All pipes shall be provided with protective coating where corrosive fumes or moisture conditions exist.

Mechanical groove coupling sleeves and sway bracing shall be provided to prevent pipe breakage.

Drain valves and test valves shall be provided.

Check valves shall be installed on a vertical or horizontal position.

Valves controlling sprinkler system shall be provided.

Sprinkler piping shall be substantially supported from the building structure.

Flushing shall be made with a flow of not less than 2836 litres for 152mmØ pipe, 3785 litres for 203mmØ pipe, 5678 litres for 254mmØ pipe and 7570 litres for 305mmØ pipe.

Hydrostatic test shall be made of not less than 1378 kilopascals for @2 hours."

All concerned are hereby enjoined to be guided accordingly and give this Circular a wide publicity as possible.

(Original Signed)
KIM S. JACINTO - HENARES
Commissioner of Internal Revenue

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