Safe Hospitals in Emergencies and Disasters

Philippine Indicators for Level 1 to 4 Hospitals

Reduce Risk. Protect Health Facilities. Save Lives.

EUROPEAN COMMISSION

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DEPARTMENT OF HEALTH

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A collaboration of Health Emergency Management Staff, Department of Health, Manila and Emergency and Humanitarian Action, Office of the World Health Organization Representative in the Philippines, with support from the Disaster Preparedness Program of the European Commission Humanitarian Aid Department (DIPECHO) http://ec.europa.eu/echo/index_en.htm

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Message

Every nation must define its path to achieve health for all. In the year 2010, the Department of Health issued an Administrative Order # 2010-0036 describing the Aquino Health Agenda expounding on the strategies towards the attainment of Universal Health Care. One of the general guidelines in this approach highlights the need to have accessible hospitals capable of providing quality care. Hospitals harbor the intermingling of infrastructure, technology, and human resource necessary to provide health care. Cognizant of this, the Department of Health committed to invest in hospital upgrading and capability building. Improving hospital function is not an end by itself, but it is a critical aspect to secure the fulfillment of one of the goals of the health sector. . As a complex resource critical in advancing the goal of providing health for all, hospitals must be safe from disasters.

The Department of Health, being the guardian of health of the Filipino people, has committed to fulfill its role in building a resilient health system that can be relied upon by the Filipino people as stipulated in the Hyogo Framework for Action. When a disaster strikes, hospitals should be able to meet the surging demand for immediate health intervention.

Beginning 2008, the Department of Health and the World Health Organization have worked together to implement the Hospitals Safe from Disasters campaign. The Steering Committee and Technical Working Groups on Safe Hospitals dedicated their expertise and time to consolidate indicators for hospital safety during disasters. The Manual of Indicators compiled important guideposts for hospital managers to be mindful of. Over two years, this manual has undergone revisions, guided by a group of experts, to improve its use. For such a selfless contribution, I commend the men and women behind this manual.

A hospital that will not fall during disasters and continue to function is an important component of the health system for the achievement of Universal Health Care.

ENRIQUE T. ONA, MD, FPCS, FACS
Secretary of Health

Message

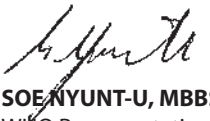
Ingrained to Philippine experience are encounters with different forms of hazards. Among the countries within the Western Pacific Region, this country is continually being challenged by natural calamities as a result of its geographic location and inherent vulnerabilities. In the aftermath of typhoons, flooding, landslides, earthquakes and volcanic eruptions, the value of hospitals becomes even more apparent when the injured need to be tended and many lives need to be saved.

As a result of the tropical storms that affected the country in the fourth quarter of 2009, Ketsana, Parma and Mirinae (local names Ondoy, Pepeng, Santi, respectively), affected regions were faced with devastation which did not spare hospitals. Outright, it meant markedly less capacity of health facilities to address the surge of casualties requiring medical attention. The health sector lost US$ 21 million worth of infrastructure investment as a result of structural and non-structural damages to 138 hospitals. Millions more were required to rebuild the compromised structures. More importantly, there were indirect cost sustained as diminished hospital capacity led to deterioration of health, loss of productivity, and negative social impact of seeing health facilities being overwhelmed by calamities.

Witnessing the recent series of significant earthquakes happening around the world punctuates the importance of being prepared. Hospital preparedness begins with an understanding of its risks relative to potential hazards, its vulnerabilities and capacities.

Since 2008, the World Health Organization has been a partner to the Department of Health in implementing the principles of the Hospital Safe from Disasters campaign which provides guidance in ensuring that health facilities continue to function even in the aftermath of disasters . It is commendable that the Philippines developed the first hospital assessment tool in the region, which made it possible to commence with hospital assessment and direct managers' attention to critical gaps that needed to be addressed.

Along this direction, WHO remains supportive of DOH's initiative towards a more resilient health sector. WHO commits to uphold a partnership that will secure continuous access to health services even in times of emergencies and disasters.



SOE NYUNT-U, MBBS, MSc
WHO Representative in the Philippines

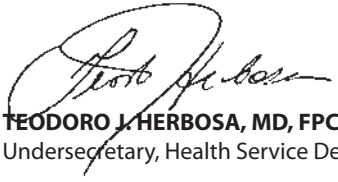
Message

Effective health service delivery is contingent to matching what people need with the best what government can offer. For hospital care, this means having health personnel who are qualified, dedicated and compassionate, supported by an enabling and safe system that will assure uninterrupted service even during disasters. Quality service in the country's hospitals will not be complete without disaster preparedness. The Philippines is constantly exposed to many forms of hazards. Healthcare service is a primary need in such times and must remain at its best.

This manual is a useful tool for DOH. This commenced with the formal hospital assessment which started in 2008 with 25 Metro Manila Hospitals. The indicators refer to three components of a hospital. These are components that hospital managers should take care of: structural, non-structural, and functional. The geographic location and nature of infrastructure should meet the most stringent standards possible. Equipment and fixtures within the hospital should be secured. Finally, plans and human resource capacity development must be in place to ensure continuity of services. The Department of Health aims to assess all hospitals nationwide by 2015, adhering to its commitment to the Hyogo Framework of Action. In lieu of a formal assessment, hospitals can use this manual for self-assessment.

Service and compassion for people drive this initiative forward. Through diligent assessment of hospital risks, the health sector can properly improve its resiliency and ensure there will be minimal interruption of health services after hazard impacts and calamities.

The health service delivery cluster is grateful to all who participated in crafting and revising this manual. Your contribution is vital in making our hospitals safer from disasters.



TEODORO J. HERBOSA, MD, FPCS, FACS
Undersecretary, Health Service Delivery Cluster

Preface

Risk assessment is a critical first step in improving the quality of decisions made in disaster preparedness. In 2008, DOH-HEMS envisioned assessing hospital preparedness in emergencies but no applicable tool was available. When the Hospitals Safe from Disasters campaign (UN International Disaster Risk Reduction 2008 – 2009) was launched in the Philippines early the same year in collaboration with WHO, the process to craft the tool was started. By virtue of Department Personnel Order 0254 series of 2008, a Steering Committee and different Technical Working Committees of Safe Hospitals were formed.

A series of write-shops and validation sessions involving experts in hospital engineering, architecture, safety, regulation, operation and management came up with structural, non-structural, and functional indicators that became the manual on safe hospitals indicators. The first publication, "Hospitals Should be Safe from Disasters" was completed through the support of WHO Western Pacific Regional Office and the Association of Hospital Administrators. Armed with this manual, assessment teams were able to conduct the project entitled, "Capacity Assessment of Metro Manila Tertiary Hospitals in Responding to Emergencies and Disasters". The study was funded by the Health Policy Development and Planning Bureau (HPDPB), coursed through the National Capital Region and was initiated in October 2008.

In the process of assessing the 25 hospitals, revisions were made on the indicators, based on the experience and recommendations of the assessment teams. The second publication released in 2009, "Safe Hospitals in Emergencies and Disasters [Philippine Indicators] was the result of this. In this manual, the scoring system was revised, technical terms simplified, and illustrations provided as necessary. The number of indicators was also reduced reflecting the priority aspects directly referring to hospitals preparedness and response function during emergencies and disasters.

By 2010, the need to customize the indicators to become applicable for level 1 and 2 facilities was recognized; the indicators before that were mainly meant for level 3 and 4 hospitals. The process of trimming down into core indicators was initiated and completed. In the process, it was also determined that the initial set of indicators be revisited for possible revision. The purpose of which is to improve the ease of using the manual by identifying which are very critical and should be made mandatory. In a consultative meeting in November 2010, the different technical working groups discussed and finalized the indicators for levels 3 and 4 hospitals.

This manual provides a quick risk assessment tool for hospital managers and should not be regarded as the final reference for hospital safety. As standards evolve and improve according to new knowledge, technology and experience, the indicators are expected to change as well.

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In the course of developing the current manual for hospital level 1 to 4, many experts provided their support and expertise. The project team of Earthquake and Megacities Initiatives (EMI) led by Dr Tabassam Raza and advised by Dr Fouad Bendimerad assisted in the workshop for the level 1 and 2 hospital indicators. Members of the team include Atty Violeta Seva, Mr Jerome Zayas, Ms Zenaida Tejerero, Mr Johnny Lozano, Mr Jose Mari Daclan, Ms Julie Paran, and Mr Jerome Cruz. The consultative meeting to revise the indicators for level 3 and 4 hospital was conducted through the assistance of WHO Country Office Emergency and Humanitarian Action Unit. Together with the project team were resource persons from the fields of hospital administration, safety, engineering and architecture who also provided their input:

Consultative meeting for level 1 and 2 hospitals – (Structural) Arch Ma. Rebecca Peñafiel, Engr Adam Abinales, Arch Corazon Cruz, Arch Prosperidad Luis & Dr Tabassam Raza; (Non – Structural) Dr Romeo Bituin, Engr Ramon Alfonso, Dr Joseph Bacareza & Engr Carlos Bariring; (Functional) Dr Marilyn Go, Dr Carmencita Banatin, Dr Roland Cortez, Dr Alexis Dimapilis, Dr Ginoo Karlo Angelo Galvez Tan, Dr Lester Sam Geroy, Ms Susana Juangco, Dr Noel Juban, Dr Ronald Law, Dr Edmundo Lopez, Dr Corazon Mendoza, Dr Arnel Rivera and Dr Benjamin Sablan.

Consultative meeting for level 3 and 4 hospitals – (Structural) Arch Ma. Rebecca Peñafiel, Arch Corazon Cruz, Arch Christopher Espina, Engr Fernando Germar, Atty Violeta Seva, Dr Fouad Bendimerad, Engr Adam Abinales, Engr Ulpiano Ignacio Jr, Engr Sheila Estanero, Dr Edmundo Lopez, Dr Jane Punongbayan, Engr Erlinton Olavere, and Dr Ginoo Karlo Galvez Tan; (Non – Structural) Dr Romeo Bituin, Ramon Alfonso, Engr Carlos Bariring, Engr Severino Reyes III, Arch Prosperidad Luis, Insp Jeni-Rose Lee, Engr Michael Abundo, & Dr Ma Ellen Licup; (Functional) Dr Ronald Law, Dr Arnel Rivera, Dr Corazon Mendoza, Dr Noel Juban, Mrs Vilma Jarencio-Cruz, Mr Joselito Sagario, Arch Reynaldo Rabe Jr, Dr Danielle Guillen, Engr Rolando Rabot, Mr Jose Maria Daclan, and Dr Katherine Villegas.

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The completion of this Manual is also due to the support of the Emergency and Humanitarian Action of the World Health Organization Office of the Country Representative through the technical supervision of Dr Maria Lourdes Barrameda and Dr Gerardo Medina, technical support of Dr Katherine Ann Villegas and administrative support of Ms Nina Hermosa. The WHO – Western Pacific Region EHA also provided technical supervision through Dr Arturo Pesigan and technical support by Dr Maria Ellen Licup. This project is supported by the European Commission through its Humanitarian Aid department.

Health Emergency Management Staff
Department of Health

Introduction

Hospitals and other health facilities should be a source of strength during emergencies and disasters. They should be ready to save lives and to continue providing essential health services such as laboratories, medicines, treatment and rehabilitation. They should also contribute to the community's sense of security and well-being. However, there are circumstances wherein hospitals and health facilities are made vulnerable, especially during an emergency or disaster. The hospitals or health facilities may be damaged or destroyed, their capacities stretched to the limit by the surge in number of patients seeking health services and support.

The Hyogo Framework for Action in 2005 emphasized the importance of "making hospitals safe from disasters by ensuring that all new hospitals are built with a level of resilience that strengthens their capacity to remain functional in disaster situations and implement mitigation measures to reinforce existing health facilities, particularly those providing primary health care." The roles of hospitals and health facilities in emergencies and disasters cannot be underestimated.

The World Health Organization, in support of the World Disaster Reduction Campaign on Hospitals Safe from Disaster (2008-2009) aims to raise awareness in making hospitals safe in emergencies and from disasters which is to:

- Protect the lives of patients and health workers by ensuring the structural resilience of health facilities;
- Ensure that health facilities and health services are able to function in the aftermath of emergencies and disasters when they are most needed; and
- Improve the emergency management capacity of health workers and institutions.

This Manual defines a hospital that will be safer during an emergency or disaster. It also describes the essentials in supporting safe hospitals. It also lists the structural, non-structural as well as functional indicators which every hospital and health facilities should consider as standards to be achieved.

This manual, "Safe Hospitals in Emergencies and Disasters Philippine Indicators for Level 1 to 4 Hospitals" is a guide to help assess the vulnerability and resilience of hospitals and health facilities to ensure patient safety and staff security and guarantee continuous operations in times of emergencies and disasters. This manual is intended for people who are recognized to play important role in hospitals and health care facilities during emergencies and disasters. These people include hospital leaders, planners, administrators, health emergency management staff, health professionals and other implementers.

The sets of indicators listed in this manual were completed after a comprehensive review of existing codes and guidelines which are related to structures, non-structural elements and functions of hospitals and health facilities. This manual neither provides nor claims to be the definite and only guide to follow in ensuring safety in health facilities in emergency and disaster settings. This is a work in progress and subsequent revisions will be made accordingly to ensure that hospitals and health facilities are safe in emergencies.

SAFE HOSPITAL IN EMERGENCIES AND DISASTERS

Safe hospitals are health facilities whose services remain accessible and functioning at maximum capacity and within the same infrastructure, during and immediately following disaster emergencies or crises.

A safe hospital…

…will not collapse in disasters, killing patients and staff

…will be able to continue to function and provide critical services in emergencies

…will be organized, with contingency plans in place and health personnel trained to keep the network operational

Achievement of safer hospitals involves knowledge of the many factors that contribute to their vulnerability, which includes:

- Buildings: The location and design specifications and the resiliency of the materials used contribute to the ability of hospitals to withstand adverse natural events.
- Patients: A disaster will inevitably increase the number of potential patients.
- Hospital beds: In the aftermath of a disaster, the availability of hospital beds frequently decreases even as the demand for emergency care increases
- Medical and support staff: The loss or unavailability of personnel disrupts the care of the injured. Hiring outside personnel to sustain the response capacity adds to the overall economic burden.
- Equipment and facilities: Damage to non-structural elements can sometimes surpass the cost of the structure itself. Even when the damage is less costly, it can still disrupt hospital operations.
- Basic lifelines and services: A hospital's ability to function relies on lifelines and other basic services such as electrical power, water and sanitation, and waste treatment and disposal. When some services are affected, the operations of the entire hospital are affected; thus, its economic potential and actual performance are compromised also.

Further, sustaining support for safe hospitals entails vision and commitment to ensure that measures that will retain full function especially in times of emergencies and disasters are carried out. There should also be involvement of various sectors such as planning, finance, public services, architecture and engineering. Several skills and expertise are needed to protect health facilities which include mainly:

- Ensuring risk reduction in the design and construction of all new health facilities;
- Reducing the non-structural and functional vulnerability of existing health facilities; and
- Adopting legislative and financial measures to select and retrofit the most critical facilities and increase the levels of protection.

HOW TO USE THIS MANUAL

1. The purpose of this manual is to gather information on the structural, non-structural, and functional components of hospitals from level 1 to 4, which are related to its ability to withstand emergencies and disasters.
2. The assessment shall be based on available and existing information. Results are not expected to provide a comprehensive picture of hospital integrity but rather a preliminary yardstick that can indicate areas requiring more specialized evaluation.
    a. Indicators are presented into two sections, the first part for level 1 to 2 hospitals while the second section for level 3 and 4.
    b. In each section, the tool is divided into three groups of indicators corresponding to the components of a safe hospital: structural, non-structural and functional.
3. Assessment results shall not, by any means be used to rate and criticize hospitals. This tool is only a way to systematically identify gaps and guide hospital managers on possible priorities that need to be addressed.
4. This tool can be used by both internal and external assessors. Data must be gathered within hospitals, together with the hospital emergency managers / disaster committee of the institution concerned.
5. This manual neither provides nor claims to be definite and only guide to follow in ensuring safety in health facilities. Assessors are advised to consult more recent standard references or complementary references as needed.
6. If needed, the list of indicators can be photocopied for distribution to the assessment team.

PHILIPPINE INDICATORS FOR SAFE LEVEL 1 AND 2 HOSPITALS

STRUCTURAL INDICATORS for SAFE LEVEL 1 and 2 HOSPITALS

The structural elements of health facilities, such as foundations, columns, beams, slabs, load-bearing walls, braces, and trusses, are essential elements that determine the overall safety of the building. Following is a checklist that can be used to identify strengths and vulnerabilities when planning for new construction or reviewing an existing health facility.

Instruction:
Encircle the CHECK (means YES or complies completely with what is asked for) or the CROSS sign (means NO or does not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is No.

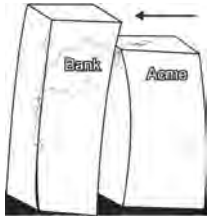
1. The location of the hospital is in a highly suitable site, away from areas that will diminish its accessibility and threaten its physical structure in times of emergencies.			**Remarks**
1.1 It is away from a landslide-prone area or away from the edge of slope	✓	✗	
1.2 It is not within a fault rupture zone	✓	✗	
1.3 It is located within a low risk seismic fault zone:	✓	✗	
Low Risk (Zone 3): over 10 kms from the fault zone Medium Risk (Zone 2): over 5 kms but not more than 10 kms from the fault zone High Risk (Zone 1): 5 kms and nearer to the fault line			
1.4 It is away from bodies of water			
1.4.1 more than 5 meters away from creeks	✓	✗	
1.4.2 more than 30 meters away from rivers and seas	✓	✗	
1.4.3 more than 20 meters away from floodways	✓	✗	
1.5 If not within the prescribed distance in no.1.3, it is provided with protective barriers	✓	✗	
1.6 It is not in a reclaimed site or not in a liquefaction prone area	✓	✗	
1.7 It is not in flood-prone areas	✓	✗	

1.8	It is within low-risk typhoon zone (expected maximum winds of less than 140 kph)	✓	✗	
1.9	It is not in a storm surge-prone area	✓	✗	
1.10	It is outside the permanent danger zone of the nearest active volcano	✓	✗	

References:

- Valley Fault Systems and Distribution of Active Faults and Trenches of the Philippines, Philippine Institute of Volcanology and Seismology (PHIVOLCS)
- Risk Maps and Hazard Scoring from the Center for Environmental Geomatics of the Manila Observatory. Available online at http://www.observatory.ph
- Preliminary Typhoon Damage Scale in the Philippines (PAGASA)

2.	**The design of the hospital structural system must strictly conform with the requirements of the most current National Structural Code of the Philippines (NSCP 2010); especially for wind and earthquake design (per structural computations).**			
2.1	The Building uses reinforced masonry *Buildings with reinforced masonry are structures whose walls have vertical and horizontal steel bars.*	✓	✗	
2.2	The Building is resistant to:			
2.2.1	Flood - ground floor level is higher than anticipated flood level	✓	✗	
2.2.2	Wind **2.2.2.1** Doors – no glass cracks	✓	✗	
2.2.2.2	Windows - no glass cracks	✓	✗	
2.2.2.3	Roofing - no loosely fastened trusses and roofing sheets	✓	✗	
2.2.3	Earthquake – No visible cracks and exposed reinforcing steel bars on:			
2.2.3.1	Walls			
	Shear wall	✓	✗	
	Masonry wall	✓	✗	
2.2.3.2	Columns	✓	✗	
2.2.3.3	Beams	✓	✗	
2.2.3.4	Floor and Roof Slabs	✓	✗	

3.	**The shape and form of the hospital building is simple and regular.**			
3.1	Hospital has simple shape and is symmetrical in both the lateral and longitudinal axes (e.g. square or rectangle) making it resilient when subjected to stress such as that produced by an earthquake	✓	✗	
3.2	Building form has no irregularities	✓	✗	
3.2.1	It is not Top heavy	✓	✗	
3.2.2	It has no cantilevers *A cantilever is a projecting structure, such as a beam, that is supported at one end and carries a load at the other end or along its length.*	✓	✗	
				
3.2.3	It has balanced loading *Load is the weight and force that is supported by a structure.*	✓	✗	
3.2.4	There is sufficient distance between the hospital and adjacent buildings to avoid any pounding effect. *Pounding effect is a phenomenon where a structure has a possibility to strike on adjacent structure during an earthquake. It usually occurs between structures built with different heights.* 	✓	✗	

3.2.5 It has no short columns *A short column is one whose load capacity is limited by its ability to resist strain or rupture induced by external forces, rather than failure by lateral or torsional instability.*	✓	✗	
3.2.6 It has no soft storeys. *When columns are not continuous from lower floor to upper floor of a building, the resulting floor is called a soft storey.*	✓	✗	
4. The hospital building is subjected to structural evaluation.			
4.1 Structural evaluation is conducted annually	✓	✗	
4.2 Structural evaluation is conducted after a very strong ground shaking (at least intensity 6.0) or typhoon (at least signal number 3)	✓	✗	
4.3 If built before 2001, rapid evaluation was undertaken through any of the following methods			
4.3.1 Evaluation was done by a qualified structural engineer who is recognized by the accredited professional organization	✓	✗	
4.3.2 Rapid evaluation using the Department of Public Works and Highways' Guidelines	✓	✗	
5. Building Documents & Permits are readily available & accessible			
5.1 As – Built/ As- Found plans per project. Available			
5.1.1 Architectural plans	✓	✗	
5.1.2 Structural plans including structural analysis and computations	✓	✗	
5.1.3 Electrical Plans including computations	✓	✗	
5.1.4 Sanitary Plans	✓	✗	
5.1.5 Mechanical plans including medical gas line system	✓	✗	

5.1.6	Electronics and communications plans	✓	✗	
5.1.7	Fire Safety Plans including automatic sprinkler system	✓	✗	
5.2	Permits			
5.2.1	Building Permit per project	✓	✗	
5.2.2	Sanitary Permit per project	✓	✗	
5.2.3	Electrical Permit per project	✓	✗	
5.2.4	Mechanical Permit per project	✓	✗	
5.2.5	Occupancy Permit per project	✓	✗	
5.2.6	Fire Safety Permit	✓	✗	
5.2.7	Elevator Permit where applicable	✓	✗	
5.2.8	Generator Permit where applicable	✓	✗	

NON-STRUCTURAL INDICATORS for SAFE LEVEL 1 and 2 HOSPITALS

Non-structural elements are all other elements that, without forming part of the resistance systems, enable the facility to operate. These include architectural elements, equipment and contents, and services or lifelines. Nearly 80% of the total cost of building a hospital is spent on non-structural components.

Following are indicators that can be used to evaluate the non-structural elements of a hospital. As with the structural indicators, this list can be used to identify strengths and vulnerabilities when planning for new construction or reviewing an existing health facility.

Instruction:
Encircle the CHECK (means YES or complies completely with what is asked for) or CROSS sign (means NO or does not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

				Remarks
1.	**Ceilings**			
1.1	All ceiling materials are securely fastened	✓	✗	
1.2	Ceilings made of wood are termite-protected and are coated / treated with fire retardant paint	✓	✗	
1.3	Ceiling materials are not made of asbestos	✓	✗	
1.4	Ceiling accessories or light fixtures are adequately fastened and supported	✓	✗	
2.	**Doors and Entrances**			
2.1	Door systems are securely attached	✓	✗	
2.2	Doors with glass panels are made of tempered glass or provided with protective films	✓	✗	
2.3	Power-operated doors can be opened manually	✓	✗	
2.4	Door swings for the corresponding areas are:			
2.4.1	Double swing – main doors, ER/OR/DR/ Nursery	✓	✗	
2.4.2	Swing-out – patient room, toilets and emergency exit doors	✓	✗	
2.5	Each single door has a width of not less than 112 cm. and not more than 122 cm.	✓	✗	

2.6	Doors in rooms with less than 50 persons occupant load capacity are single doors with a minimum width of 91 cm and not more than 122 cm and swings out	✓	✗	
2.7	Doors in rooms more than 50 persons occupant load capacity (conference rooms, function rooms) shall have at least two doors remotely located from each other, at least 112 cm wide and swings out.	✓	✗	
2.8	Smoke partition doors located along hallways and corridors are double swing	✓	✗	
2.9	Room locks are arranged to permit exit from room by a simple operation without the use of key	✓	✗	
2.10	Exit doors have alarm or any device installed to prevent improper use of such exits but do not impede emergency use for egress	✓	✗	
2.11	Doors in the Operating Rooms, Recovery Rooms, Delivery Rooms, Labor Rooms, Isolation Rooms and other sterile areas are provided with manual door closer	✓	✗	
2.12	Doors designed to be kept normally closed as a means of egress bear the sign: FIRE EXIT, KEEP DOOR CLOSED	✓	✗	
3.	**Windows and Shutters**			
3.1	Windows and shutters are securely attached and fastened	✓	✗	
3.2	Windows have wind protection devices (e.g. shutters)	✓	✗	
3.3	Windows are leak-proof	✓	✗	
3.4	Windows which could be mistaken for doors have protective barriers, like railings or signages	✓	✗	
3.5	Window glass panels are tempered glass or provided with protective films	✓	✗	
4.	**Walls, Divisions and Partitions**			
4.1	Partition walls are securely attached and fastened	✓	✗	
4.2	Exterior walls meet the fire resistance rating of 2 hours	✓	✗	

4.3	Interior walls are made of fire-resistive materials and reach from floor to floor	✓	✗	
4.4	Partitions are fire-resistive, floor-to-floor and compartmentalized	✓	✗	
5.	**Floor Coverings**			
5.1	Floor materials in all clinical/service areas are non-slip	✓	✗	
5.2	Floor materials are durable and heavy duty	✓	✗	
5.3	Floor materials are fire-resistive	✓	✗	
6.	**Lifeline Facilities**			
6.1	Electrical System			
6.1.1	Electrical system is in conformity with the Philippine Electrical Code (PEC) requirements for health facilities	✓	✗	
6.1.2	Emergency generator has the capacity to meet 100% of hospital demand for at least 3 days	✓	✗	
6.1.3	Generator housing or power house is made of reinforced concrete	✓	✗	
6.1.4	Generator housing or power house floor level is elevated above flood level	✓	✗	
6.1.5	Generators are fixed by special brackets which allow some movement but prevent them from overturning	✓	✗	
6.1.6	Generator is provided with an Automatic Transfer Switch (ATS)	✓	✗	
6.1.7	Control panel is protected with electrical surge suppressor	✓	✗	
6.1.8	Ducting system / conduits are made of Polyvinyl Chloride (PVC), Rigid Steel Conduit (RSC) or Intermediate Metal Conduit (IMC)	✓	✗	
6.1.9	All areas have functioning emergency lights	✓	✗	
6.1.10	All electrical systems in rooms are protected with appropriate chemical type fire suppression units	✓	✗	
6.1.11	Switches and outlets for Operating Rooms are explosion-proof	✓	✗	

6.2 Communication System			
Communication equipment and cables are secured with anchors and braces	✓	✗	
6.3 Domestic Water Supply System			
6.3.1 Water storage tank has sufficient reserve to satisfy the hospital demand for 3 days at all times	✓	✗	
6.3.2 Water storage tank has safe location and support system	✓	✗	
6.3.3 Fusion-weld pipes or galvanized iron pipes, valves, and fittings are free from breakage, leaks and harmful agents	✓	✗	
6.4 Medical Gas System			
6.4.1 Individual cylinders of oxygen have minimum gas storage of 3 days	✓	✗	
6.4.2 Tanks, cylinders and related equipment are anchored	✓	✗	
6.4.3 Automatic gas leak detection system is interconnected with the automatic fire alarm system	✓	✗	
6.5 Fire Suppression System			
6.5.1 Detection, alarm and extinguishing systems are interconnected/ inter-phased.	✓	✗	
6.5.2 Fire alarm system is a combination of automatic and manual system	✓	✗	
6.5.3 Fire alarm system is monitored by Fire Service Station or accredited monitoring agency	✓	✗	
6.5.4 Heat and smoke detection devices are installed in all areas	✓	✗	
6.5.5 Smoke detectors are spaced not further apart than 9.0 meters in the center of big rooms, and not more than 4.6 meters from any wall	✓	✗	
6.5.6 Each room is provided with portable fire extinguishers			
6.5.6.1 ABC fire extinguishers for general services areas	✓	✗	

6.5.6.2 Carbon Dioxide (CO2), Hydrochloro-fluorocarbon (HCFC),or Fluoroethane 36 fire extinguishers for rooms with electronic and electrical equipment	✓	✗	
6.6 Emergency Exit System			
6.6.1 6.6.1 Every floor of the building has at least 2 emergency exits remote from each other (Revolving doors and elevators are not used as emergency exits)	✓	✗	
6.6.2 Fire Exit Doors are fire-resistive, swing-out type, self-closing, and with panic bar hardware (of 7 kilograms or less pressure)	✓	✗	
6.6.3 Illumination system of the exits is AC/DC operated/self-illuminating	✓	✗	
6.6.4 Illuminated "EXIT" signs have distinctive color (red/green) and are located just above the door frame	✓	✗	
6.6.5 Emergency signs are made of plainly legible letters not less than 15 centimetres high with the principal strokes of letters not less than 1.9 centimetres wide	✓	✗	
6.6.6 Luminous directional exit signs are located one foot (30 cm) above floor level leading to the nearest fire escape route	✓	✗	
7. Heating, Ventilation and Air Conditioning (HVAC) Systems			
7.1 Rooms are well-ventilated	✓	✗	
7.2 Pipes, valves, and fittings are leak-free	✓	✗	
7.3 Air-conditioning equipment are anchored	✓	✗	
7.4 There are safety enclosures or guards for rotating parts of HVAC equipment	✓	✗	
7.5 Pipes and ducts have fire-stopping materials	✓	✗	
8. Medical and Laboratory Equipment and Supplies used for Diagnosis and Treatment			
8.1 Medical equipment in operating rooms and recovery rooms			

8.1.1	Equipment in the operating room and recovery room are anchored or fastened	✓	✗	
8.1.2	Lamps, equipment for anaesthesia and surgical tables are secured; tables on cart wheels are locked	✓	✗	
8.2	Radiological Equipment and Other Support Devices in the Radiology Department (X-ray units)			
8.2.1	Heavy and movable equipment are anchored or bolted to the floor (X- ray machine) or to a wall	✓	✗	
8.2.2	Adequate and appropriate shield systems are installed (e.g., protection against radiation, radio-frequency, magnetic fields, etc.)	✓	✗	
8.2.3	Rooms housing the equipment are air-conditioned and humidity-controlled	✓	✗	
8.2.4	Rooms housing the equipment are safe from flooding	✓	✗	
8.3	Laboratory Equipment and Other Support Devices			
8.3.1	Supplies and contents of laboratories are secured on shelves and in racks (cabinets are anchored to walls and shelves are strapped)	✓	✗	
8.3.2	Safe and secured storage of culture organisms / media	✓	✗	
8.3.3	There is an available standard decontamination area (fixed/mobile)	✓	✗	
8.3.4	Waste water is connected to neutralization tank before disposal to sewage treatment plant	✓	✗	
8.4	Medical Equipment in Emergency Rooms			
8.4.1	Each bed is provided with wheel lock or anchor	✓	✗	
8.4.2	Equipment and accessories that are placed near the bed are supported, anchored or fixed	✓	✗	

8.4.3	Supplies and contents of medical cabinets are secured on shelves and in racks (shelves are anchored and strapped to the wall)	✓	✗	
8.5	Medical Equipment in the Pharmacy Department			
8.5.1	Supplies and contents of pharmacy cabinets are secured on shelves and in racks (cabinets are anchored to the walls)	✓	✗	
8.5.2	Storage for hazardous materials is free from leaks	✓	✗	
8.6	Medical Equipment in the Sterilization Unit			
8.6.1	Supplies and contents of sterilization unit cabinets are secured on shelves and in racks (cabinets are anchored to the walls)	✓	✗	
8.6.2	Heavy and movable equipment (e.g., autoclaves) are anchored or bolted to the floor or to the wall	✓	✗	
8.7	Medical Equipment in the Wards			
8.7.1	Each bed is provided with wheel locks or hooks	✓	✗	
8.7.2	Equipment and accessories are supported, anchored or fixed	✓	✗	
8.7.3	Equipment on roller trolleys have proper anchoring system using hooks and chains and can be attached to beds or walls	✓	✗	

FUNCTIONAL INDICATORS for SAFE LEVEL 1 and 2 HOSPITALS

A safe hospital must have health services that remain accessible when needed most. It must be functioning at maximum capacity during and immediately after disasters. It must have the capability and capacity to remain functional and operational in the event of disaster. It shall not collapse; it can continue to function as a health facility and provide services; and it must be organized with contingency plans and workforce during or even after disasters. The hospitals shall have risk and emergency management capability to operate in emergency settings. It promotes multidisciplinary involvement in identifying and reducing risk as well as resilience building.

Instruction:
Encircle the CHECK sign (means YES or complies completely with what is asked for) or the CROSS sign (means NO or does not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

1.	**Site and Accessibility**			**Remarks**
1.1	The hospital is located along / near good roads accessible to the community with adequate means of transportation	✓	✗	
1.2	There are no road obstructions leading to the hospital	✓	✗	
1.3	There are separate ingress and egress routes	✓	✗	
1.4	Directional signages within the hospital are highly visible and properly fastened	✓	✗	
2.	**Internal Circulation and Inter-Operability**			
2.1	Emergency Room (ER)			
2.1.1	The ER is readily accessible to incoming emergency transport	✓	✗	
2.1.2	ER doors are wide enough to accommodate a stretcher and the bearers	✓	✗	
2.1.3	ER doors are two-way swing type	✓	✗	
2.1.4	There are minimum partitions so as to have more space for mass casualties	✓	✗	

2.2	Areas to be converted to mass casualty handling during disasters are properly identified with adequate lighting, electrical outlets, water supply and toilets / bathrooms	✓	✗	
3.	**Basic Equipment and Supplies Availability**			
3.1	Basic equipment and emergency supplies are available in all wards and treatment areas and can last for at least one week: * Two (2) sets at the Emergency Room * One (1) set at the regular ward	✓	✗	
3.2	Basic diagnostic and therapeutic equipment are functional, properly labeled, accompanied by their operating manuals	✓	✗	
3.3	Stock pile of medical supplies within the identified stockroom are good for at least one week	✓	✗	
3.4	Basic Proper Personal Protective Equipment are available at the emergency room and all service areas	✓	✗	
3.5	There is an available functional sterilizing unit for equipment and supplies	✓	✗	
3.6	Medical and industrial gas systems undergo regular testing procedures	✓	✗	
3.7	Material Safety Data Sheets (MSDS) are available for all chemical substances in use	✓	✗	
4.	**Hospital Emergency Preparedness, Response and Recovery Plan**			
4.1	An Operational Plan, which includes the Hazard Prevention and Mitigation Plan, Vulnerability Reduction Plan, and the Capacity Development Plan is -			
4.1.1	Approved by the Chief of Hospital or Director	✓	✗	
4.1.2	Disseminated	✓	✗	
4.1.3	Tested, updated and applied	✓	✗	
4.2	The hospital has contingency plans for emergency and disasters not covered by the regular Emergency Preparedness Response Plan.			
4.2.1	Approved by the Chief of Hospital or Director	✓	✗	

4.2.2	Disseminated	✓	✗	
4.2.3	Tested, updated and applied	✓	✗	
4.3	There are written, incorporated and applied Hospital Emergency Management Systems, Procedures and Protocols like:			
4.3.1	Standard Operating Procedures (SOP) /Guidelines on infection control	✓	✗	
4.3.2	SOP for internal and external referral of patients	✓	✗	
4.3.3	Emergency response procedure/ guidelines	✓	✗	
4.3.4	Treatment guidelines/protocols	✓	✗	
4.3.5	Special administrative procedures for disasters	✓	✗	
4.3.6	Procedures for resource mobilization (funds, logistics, human resources) to include shifting of duties during emergencies or disasters	✓	✗	
4.3.7	SOP for admission to Emergency Department during emergency/ disaster	✓	✗	
4.3.8	Procedures to expand services, spaces and beds, in case of surge of patients	✓	✗	
4.3.9	Procedures to protect patients' records and other vital documents	✓	✗	
4.3.10	Procedures for regular safety inspection of equipment by appropriate authority and preventive maintenance	✓	✗	
4.3.11	Procedures for hospital epidemiologic surveillance	✓	✗	
4.3.12	Procedures for preparing sites for temporary placement of dead bodies for forensic medicine	✓	✗	
4.3.13	Procedures for transport and logistic support	✓	✗	

4.3.14 SOP/guidelines for food and supplies of hospital staff during emergency	✓	✗	
4.3.15 Measures to ensure well being of all personnel mobilized during emergency, to include guidelines for mental health and psycho-social support	✓	✗	
4.3.16 Guidelines on drills / simulation exercises * Fire * Other disasters	✓	✗	
4.3.17 SOP for handling of volunteers especially during emergencies/ disasters	✓	✗	
4.3.18 SOP for hospital security system during emergencies or disasters	✓	✗	
4.3.19 Health care waste management program during emergencies or disasters	✓	✗	
4.3.20 Fire Safety Program			
4.3.20.1 There is an organized "Fire Brigade" which has undergone seminar/ training on Fire Drill/ Fire Evacuation Drill/ Earthquake Drill	✓	✗	
4.3.20.2 Fire Drills/ Fire Evacuation Drill are conducted at least twice a year	✓	✗	
4.3.20.3 Fire mitigation prevention and suppression training are conducted	✓	✗	
4.3.20.4 Firefighting equipment are available	✓	✗	
4.3.20.5 Preventive maintenance of firefighting equipment is undertaken	✓	✗	

	4.3.20.6 "Fire Exit Plan" and provision of Fire exit/ evacuation plan are available in conspicuous places at every floor level	✓	✗	
	4.3.20.7 Alarm signaling system is arranged so that the normal operation of any required alarm initiating device will automatically transmit an alarm to the nearest fire station or to such other outside assistance as may be available.	✓	✗	
5.	**Back-up system SOP for critical services is available**			
5.1	Back-up generators	✓	✗	
5.2	Alternate / back up source of drinking water	✓	✗	
5.3	Fuel reserves	✓	✗	
5.4	Medical gases	✓	✗	
5.5	Wastewater Treatment	✓	✗	
5.6	Solid waste Treatment	✓	✗	
5.7	Communication facilities (cellular phone, handheld radios, satellite communication facilities, etc)	✓	✗	
5.8	Fire suppression system	✓	✗	
6.	**Organization, Management and Human Resources**			
6.1	There is a Hospital Disaster Committee and an Emergency Operation Center	✓	✗	
6.2	There is a Crisis Management Committee – under the Executive Committee, with technical expertise, who could give advice to the Executive Committee regarding crisis/ emergency/ disaster management	✓	✗	
6.3	There is an Emergency Response Team led by a designated Hospital Emergency Management Coordinator and composed of Physicians, Nurses, Emergency Medical Technician, Paramedics, Ambulance Driver	✓	✗	

6.4 There is a Health Emergency Planning Group responsible for the development of Health Emergency Preparedness, Response and Recovery Plan and other hospital response plans	✓	✗	
6.5 There is a Safety Committee headed by a Safety Officer. The committee is in charge of promoting safety in the hospital from all types of hazards	✓	✗	
6.6 There is a Hospital Operation Center headed by the Hospital Emergency Management Coordinator (in- charge of monitoring incidents of emergency or disaster, dispatching of response teams, mobilizing other resources for emergency) that can be activated during emergencies and disasters. It has a designated office/unit with personnel equipped with computer system, directories, communication facilities (with alternate in case the system bogs down)	✓	✗	
6.7 There is an established protocol to manage information:			
6.7.1 A census of admission and referral is properly recorded and reported using standard forms	✓	✗	
6.7.2 There is an SOP on sharing information with proper authorities, the public and the media	✓	✗	
6.7.3 The hospital has an identified spokesperson during emergencies and disasters who is trained in risk communication	✓	✗	
6.7.4 There is a Public Information Center where the public can go to request information concerning family members	✓	✗	
6.7.4.1 The Public Information Center is coordinated by a social worker and staffed by personnel and volunteers	✓	✗	
6.7.4.2 Public education campaign with advisories, IECs, and warning messages are available	✓	✗	

6.7.4.3	Available IEC materials for patients and personnel on what to do during emergencies / disasters	✓	✗	
6.8	Capability Building of Personnel			
6.8.1	100% of health workers are trained in Basic Life Support and Cardio-pulmonary Resuscitation	✓	✗	
6.8.2	100% of health workers are trained in Standard First Aid	✓	✗	
6.8.3	Emergency Room medical staff are trained in Advance Cardiac Life Support and Pediatric Advance Cardiac Life Support	✓	✗	
6.8.4	Hospital Responders trained in Basic Emergency Medical Technician Course (EMT), Incident Command System (ICS), Mass Casualty Incident (MCI)	✓	✗	
6.8.5	Hospital managers are trained in Hospital Emergency Incident Command System (HEICS) and Hospital Emergency Awareness Response Training (HEART)	✓	✗	
6.8.6	There is available IEC materials for patients and personnel on what to do during emergencies / disasters	✓	✗	
6.9	Drills and Exercises			
6.9.1	Earthquake drills are conducted at least once a year	✓	✗	
6.9.2	Other emergency simulation drills or exercises are conducted at least once a year	✓	✗	
7.	**Monitoring and Evaluation**			
7.1	Post-incident evaluation of response to emergencies or disasters within or in relation to coordination with other hospitals is conducted	✓	✗	

PHILIPPINE INDICATORS FOR SAFE LEVEL 3 AND 4 HOSPITALS

STRUCTURAL INDICATORS for SAFE LEVEL 3 and 4 HOSPITALS

The structural elements of health facilities, such as foundations, columns, beams, slabs, load – bearing walls, braces, and trusses, are essential elements that determine the overall safety of the building. Following is a checklist that can be used to identify strengths and vulnerabilities when planning for new construction or reviewing an existing health facility.

Instruction:
Encircle the CHECK sign (means Yes or complies completely with what is asked for) or thumbs – down CROSS sign (means NO or may not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

1. The location of the hospital is in a highly suitable site and away from areas that will diminish its accessibility and threaten its physical structure in times of hazardous events			**Remarks**
1.1 It is away from landslide-prone area or away from the edge of a slope	✓	✗	
1.2 It is not within a fault rupture zone	✓	✗	
1.3 It is located within a low risk seismic fault zone.	✓	✗	
Low Risk (Zone 3): over 10kms from the fault zone Medium Risk (Zone 2): over 5kms but not more than 10kms from the fault zone High Risk (Zone 1): 5 kms and nearer to the fault zone			
1.4 It is away from bodies of water:			
1.4.1 more than 5m away from creeks	✓	✗	
1.4.2 more than 30m away from rivers and seas	✓	✗	
1.4.3 more than 20m away from floodways	✓	✗	
1.5 If not within the prescribed distance in 1.4, it is provided with protective barriers	✓	✗	
1.6 It is not on a reclaimed site or not in a liquefaction-prone area	✓	✗	
1.7 It is not in flood – prone areas	✓	✗	
1.8 It is within the low-risk typhoon zone (expected maximum winds of less than 140kph)	✓	✗	
1.9 It is not in a storm surge-prone area	✓	✗	
1.10 It is not in a tsunami-prone area	✓	✗	

1.11	It is outside the permanent danger zone of the nearest active volcano	✓	✗	
1.12	It is outside volcanic hazard-prone areas			
1.12.1	It is outside heavy ashfall-prone areas	✓	✗	
1.12.2	It is outside lava flow-prone areas	✓	✗	
1.12.3	It is outside pyroclastic flow-prone areas	✓	✗	
1.12.4	It is outside lahar and mudflow-prone areas	✓	✗	

References:

- Valley Fault Systems and Distribution of Active Faults and Trenches of the Philippines, Philippine Institute of Volcanology and Seismology (PHIVOLCS)
- Risk Maps and Hazard Scoring from the Center for Environmental Geomatics of the Manila Observatory. Available online at http://www.observatory.ph
- Preliminary Typhoon Damage Scale in the Philippines (PAGASA)

2.	**The design of the hospital structural system must strictly conform with the requirements of the most current National Structural Code of the Philippines (NSCP, 2010) especially for wind and earthquake design (per structural computations).**			
2.1	The Building uses reinforced masonry *Buildings with reinforced masonry are structures whose walls have vertical and horizontal steel bars.*	✓	✗	
2.2	The Building is resistant to:			
2.2.1	Flood - ground floor level is higher than anticipated flood level	✓	✗	
2.2.2	Wind	✓	✗	
2.2.2.1	Doors – no glass cracks	✓	✗	
2.2.2.2	Windows – no glass cracks	✓	✗	
2.2.2.3	Roofing - no loosely fastened trusses and roofing sheets	✓	✗	
2.2.3	Earthquake – No visible cracks and exposed reinforcing steel bars on:			
2.2.3.1	Walls			
	Shear wall	✓	✗	
	Masonry wall	✓	✗	
2.2.3.2	Columns	✓	✗	
2.2.3.3	Beams	✓	✗	
2.2.3.4	Floor and Roof Slabs	✓	✗	

3.	**The shape and form of the hospital building must be simple and regular.**			
3.1	Hospital has simple shape and is symmetrical in both the lateral and longitudinal axes (e.g. square or rectangle) making it resilient when subjected to stress such as that produced by an earthquake	✓	✗	
3.2	Building form has no irregularities			
3.2.1	It is not top heavy	✓	✗	
3.2.2	It has no cantilevers *A cantilever is a projecting structure, such as a beam, that is supported at one end and carries a load at the other end or along its length.* 	✓	✗	
3.2.3	It has balanced loading *Load is the weight and force that is supported by a structure.*	✓	✗	
3.2.4	There is sufficient distance between the hospital and adjacent buildings to avoid any pounding effect. *Pounding effect is a phenomenon where a structure has a possibility to strike an adjacent structure during an earthquake]. It usually occurs between structures built with different heights.* 	✓	✗	

3.2.5	It has no short columns *A short column is one whose load capacity is limited by its ability to resist strain or rupture induced by external forces, rather than failure by lateral or torsional instability.*	✓	✗	
3.2.6	It has no soft storeys *When columns are not continuous from lower floor to upper floor of a building, the resulting floor is called a soft storey.*	✓	✗	
4.	**The hospital building is subjected to structural evaluation.**			
4.1	Structural evaluation is conducted annually.	✓	✗	
4.2	Structural evaluation is conducted after a very strong ground shaking (at least intensity 6.0) or typhoon at least signal number 3)	✓	✗	
4.3	If built before 2001, rapid evaluation was undertaken through any of the following methods:			
4.3.1	Evaluation done by a qualified structural engineer who is recognized by the accredited professional organization	✓	✗	
4.3.2	Rapid evaluation using the Department of Public Works and Highways Guidelines	✓	✗	
5.	**Building Documents & Permits are readily available & accessible**			
5.1	As – Built/ As- Found plans per project. Available:			
5.1.1	Architectural plans	✓	✗	
5.1.2	Structural plans including structural analysis computations	✓	✗	
5.1.3	Electrical Plans including computations	✓	✗	
5.1.4	Sanitary Plans	✓	✗	
5.1.5	Mechanical plans including medical gas line system	✓	✗	
5.1.6	Electronics and communications plans	✓	✗	

5.1.7	Fire Safety Plans including automatic sprinkler system	✓	✗	
5.2	Permits			
5.2.1	Building Permit per project	✓	✗	
5.2.2	Sanitary Permit per project	✓	✗	
5.2.3	Electrical Permit per project	✓	✗	
5.2.4	Mechanical Permit per project	✓	✗	
5.2.5	Occupancy Permit per project	✓	✗	
5.2.6	Fire Safety Permit	✓	✗	
5.2.7	Elevator Permit where applicable	✓	✗	
5.2.8	Generator Permit where applicable	✓	✗	

NON – STRUCTURAL INDICATORS for SAFE LEVEL 3 and 4 HOSPITALS

The non – structural elements are all other elements that, without forming part of the resistance systems, enable the facility to operate. They include architectural elements, equipment and contents and services or lifelines. In the case of hospitals, nearly 80% of the total cost of the facility is made up of non – structural components.

The following are the indicators for the architectural elements, equipment and contents and services or lifelines. As with the structural indicators, this list can be used to identify strengths and vulnerabilities when planning for new construction or reviewing existing hospital or health facility.

Instruction:
Encircle the CHECK sign (means Yes or complies completely with what is asked for) or CROSS sign (means NO or may not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

1.	**Ceilings**			**Remarks**
1.1	All ceiling materials are securely fastened	✓	✗	
1.2	Ceilings made of wood are termite-protected and are coated / treated with fire retardant paint	✓	✗	
1.3	Ceiling materials are not made of asbestos	✓	✗	
1.4	Ceiling accessories or light fixtures are adequately fastened and supported	✓	✗	
2.	**Doors and Entrances**			
2.1	Door systems are securely attached	✓	✗	
2.2	Doors with glass panels are made of tempered glass or provided with protective films	✓	✗	
2.3	Power-operated doors can be opened manually	✓	✗	
2.4	Door swings for the corresponding areas are:			
2.4.1	Double swing – main doors, Emergency Room / Operating Room complex main doors / Delivery Room / Intensive Care Unit / Nursery	✓	✗	
2.4.2	Swing-out – patient room toilets and emergency exit doors	✓	✗	

2.5	Each single door has a width of not less than 112 cm and not more than 122 cm	✓	✗	
2.6	Doors in rooms with less than 50 persons occupant load capacity are single doors with a minimum width of 112 cm and not more than 122 cm and swings out	✓	✗	
2.7	Doors in rooms more than 50 persons occupant load capacity (conference rooms, function rooms) shall have at least two doors remotely located from each other, at least 112 cm wide and swings out.	✓	✗	
2.8	Smoke partition doors located along hallways and corridors are double swing, per groups of rooms/section, for compartmentation	✓	✗	
2.9	In high rise buildings/structures, the interior vertical exit stairwell/staircase is a pressurized fire exit or smoke proof fire exit, suitably sealed against smoke, heat and fire	✓	✗	
2.10	Room locks are arranged to permit exit from room by a simple operation without the use of key	✓	✗	
2.11	Exit doors with alarm or any device installed to prevent improper use of such exits but do not impede emergency use for egress.	✓	✗	
2.12	Doors in the Operating Room (OR), Intensive Care Unit (ICU), Recovery Room (OR), Delivery Room (DR), Labor Room (LR), Isolation Rooms (IR) and other sterile areas are provided with manual door closer	✓	✗	
2.13	Doors designed to be kept normally closed as a means of egress bear the sign: FIRE EXIT, KEEP DOOR CLOSED	✓	✗	
3.	**Windows and Shutters**			
3.1	Windows and shutters are securely attached and fastened.	✓	✗	
3.2	Windows have wind protection devices (e.g., shutters)	✓	✗	
3.3	Window grilles that secure the safety of the patient, are provided with fire exit opening	✓	✗	
3.4	Windows are leak-proof	✓	✗	

3.5	Windows which could be mistaken for doors have protective barriers or railings or signages	✓	✗	
3.6	Window glass panels are tempered glass or provided with protective films	✓	✗	
4.	**Walls, Divisions and Partitions**			
4.1	Partition walls are securely attached and fastened	✓	✗	
4.2	Exterior walls meet the fire resistance rating of 2 hours	✓	✗	
4.3	Interior walls are made of fire – resistive materials and reach from floor to floor	✓	✗	
4.4	Smoke-proof stairs, lobbies and vestibules are made of non-combustible materials	✓	✗	
4.5	Partitions are fire-resistive, floor-to-floor and compartmentalized	✓	✗	
5.	**Floor Coverings**			
5.1	Floor materials in all clinical / service areas are non-slip	✓	✗	
5.2	Floor materials are durable and heavy duty	✓	✗	
5.3	Floor materials are fire-resistive	✓	✗	
6.	**Lifeline Facilities**			
6.1	Electrical System			
6.1.1	Electrical system is in conformity with the Philippine Electrical Code (PEC) requirements for health facilities	✓	✗	
6.1.2	Emergency generator has the capacity to meet 100% of hospital demand (provision for back-up electrical system to include aircon units and stockrooms) for at least 3 days	✓	✗	
6.1.3	Generator housing or power house is made of reinforced concrete	✓	✗	
6.1.4	Generator housing or power house is elevated above flood level	✓	✗	
6.1.5	Generators are fixed by special brackets which allow some movement but prevent them from overturning	✓	✗	

6.1.6	Generators are provided with an automatic transfer switch (ATS)	✓	✗	
6.1.7	Control panel is protected, with electrical surge suppressor	✓	✗	
6.1.8	Ground fault circuit interrupters (GFCIs) are provided in outlets in bath / shower rooms and in wet or damp locations	✓	✗	
6.1.9	All convenience outlets (COs) are provided with grounding pole / type	✓	✗	
6.1.10	Ducting system / conduits are made of Polyvinyl Chloride (PVC), Rigid Steel Conduit (RSC) or Intermediate Metal Conduit (IMC)	✓	✗	
6.1.11	Lighting in all areas of the hospital, including perimeter/exterior lighting system is adequate	✓	✗	
6.1.12	All areas have functioning emergency lights	✓	✗	
6.1.13	Non-mercury bulb/lights	✓	✗	
6.1.14	Power monitoring system is in place	✓	✗	
6.1.15	All non-current carrying metallic parts of the electrical systems (e.g., enclosures, boxes, gutters, ducts, trays) are adequately grounded	✓	✗	
6.1.16	All electrical systems in rooms are protected with appropriate chemical type fire suppression units	✓	✗	
6.1.17	Switches and outlets for critical areas are explosion-proof	✓	✗	
6.1.18	Antennas and lightning rods protection terminals have bracing / support for safety	✓	✗	
6.1.19	Lightning arrester are provided	✓	✗	
6.2	Communication System			
	Communication equipment and cables are secured with anchors and braces	✓	✗	
6.3	Domestic Water Supply System			
6.3.1	Water storage tank has sufficient reserve to satisfy the hospital demand for 3 days at all times	✓	✗	

6.3.2	Water storage tank has safe location and support system	✓	✗	
6.3.3	Fusion-weld pipes or galvanized iron pipes, valves, and fittings are free from breakage, leaks and free from harmful agents	✓	✗	
6.4	Medical and Industrial Gases (Oxygen, Nitrous Oxide, etc) System			
6.4.1	Pipe-in medical gas have minimum storage for 3 days	✓	✗	
6.4.2	Individual gas cylinders have minimum storage for 3 days	✓	✗	
6.4.3	Tanks, cylinders and related equipment are anchored and secured from theft, vandalism and pilferage	✓	✗	
6.4.4	Pipe-in medical gas undergoes regular testing	✓	✗	
6.4.5	Piping connection are non-interchangeable	✓	✗	
6.4.6	Zone / shut off valves are provided in case of leaks (e.g., in case of fire at the OR complex, zone valve can be shut off)	✓	✗	
6.4.7	Back-up oxygen tanks are secured in case of emergency patient evacuation	✓	✗	
6.4.8	Industrial gases are located outside the building and provided with automatic shut off device (e.g., LPG)	✓	✗	
6.4.9	Tanks bear an intact safety seal from the supplier	✓	✗	
6.4.10	Explosion venting system is provided outside the building for hazardous processes or storage area, such as boiler room, motor pool, electrical rooms, and housekeeping rooms	✓	✗	
6.5	Fire Suppression System			
6.5.1	Detection, alarm and extinguishing systems are interconnected / interphased	✓	✗	
6.5.2	Fire Alarm system is a combination of automatic and manual system	✓	✗	

6.5.3	Fire alarm system is monitored by Fire Service Station or accredited monitoring agency	✓	✗	
6.5.4	Heat and Smoke Detection devices are installed in all areas	✓	✗	
6.5.5	Smoke detectors are spaced not further apart than 9.0 meters on center of big rooms and not more than 4.6 meters from any wall	✓	✗	
6.5.6	Each room is provided with portable fire extinguishers			
6.5.6.1	ABC fire extinguishers for general services areas	✓	✗	
6.5.6.2	Carbon Dioxide (CO2), Hydrochloro-fluorocarbon (HCFC), Fluoroethane 36, or other clean gas used for rooms with electronic and electrical equipment	✓	✗	
6.5.7	There is a wet standpipe system with complete accessories for building more than 5-storey	✓	✗	
6.6	Emergency Exit System			
6.6.1	Every floor of the building has at least 2 emergency exits remote from each other (Revolving Doors and Elevators are not used as emergency exits)	✓	✗	
6.6.2	Fire Exit Doors are fire resistive, swing-out type, self-enclosing, and with panic bar hardware (of 7 kilograms or less pressure)	✓	✗	
6.6.3	Illumination system of the exits is AC/DC operated / self-illuminating	✓	✗	
6.6.4	Illuminated "EXIT" signs have distinctive color (red / green) and located just above the door frame	✓	✗	
6.6.5	Emergency signs are made of plainly legible letters not less than 15 centimeters high with the principal strokes of letters not less than 1.9 centimeters wide	✓	✗	

6.6.6 Luminous directional exit signs are located one foot (30 cm) above floor level leading to the nearest fire escape route	✓	✗	
7. Heating, Ventilation and Air Conditioning (HVAC) Systems			
7.1 There is adequate bracing for pipes and ducts	✓	✗	
7.2 Rooms are well-ventilated	✓	✗	
7.3 Pipes, valves and fittings are leak-free	✓	✗	
7.4 Central heating and / or hot water equipment are anchored	✓	✗	
7.5 Air-conditioning equipment are anchored	✓	✗	
7.6 There are safety enclosures or guards for rotating parts of HVAC equipment	✓	✗	
7.7 Pipes and ducts have fire-stopping materials	✓	✗	
8. Medical and Laboratory Equipment and Supplies used for Diagnosis and Treatment			
8.1 Medical Equipment in operating rooms and recovery rooms			
8.1.1 Equipment in the operating room are anchored or fastened	✓	✗	
8.1.2 Lamps, equipment for anesthesia and surgical tables are secured and table on cart wheels are locked	✓	✗	
8.2 Radiological Equipment and Other Support Devices on the Radiology Department (X-ray units, ultrasound scanners, CT scanners, MRI scanners)			
8.2.1 Heavy and movable equipment are anchored or bolted on the floor (X-ray machine) or to the wall	✓	✗	
8.2.2 Adequately and appropriate shield system are installed (radiation protection, radio-frequency, magnetic fields, etc)	✓	✗	
8.2.3 Rooms housing the equipment are air-conditioned and humidity-controlled	✓	✗	
8.2.4 Rooms housing the equipment are safe from flooding	✓	✗	

8.3	Laboratory Equipment and Other Support Devices			
8.2.1	Supplies and contents of laboratories are secured on shelves and in racks (cabinets are anchored to walls and shelved are strapped)	✓	✗	
8.2.2	Safe and secured storage of culture organisms / media	✓	✗	
8.2.3	There is an available standard decontamination area (fixed/mobile)	✓	✗	
8.2.4	Waste water is connected to neutralization tank before disposal to sewage treatment plant	✓	✗	
8.4	Medical Equipment in Emergency Rooms			
8.4.1	Each bed is provided with wheel lock or anchor	✓	✗	
8.4.2	Equipment and accessories needed for treatment and placed near the bed are supported, anchored or fixed	✓	✗	
8.4.3	Supplies and contents of medical cabinets are secured on shelves and in racks. (Shelves are anchored and strapped to the wall)	✓	✗	
8.5	Medical Equipment in ICU areas			
8.5.1	Each bed is provided with wheel lock and anchor	✓	✗	
8.5.2	Equipment and accessories are supported, anchored and fixed	✓	✗	
8.5.3	Anchor bolts are provided on the walls in appropriate locations so that the equipment can be removed and fixed in a safe place when not in use	✓	✗	
8.6	Medical Equipment in the Pharmacy Departments			
8.6.1	Supplies and contents of pharmacy cabinets are secured on shelves and in racks. (Cabinets are anchored to the walls)	✓	✗	
8.6.2	Storage for hazardous materials is free from leaks	✓	✗	
8.6.3	Rooms are air-conditioned or well ventilated	✓	✗	

8.7	Medical Equipment in the Sterilization Units			
8.7.1	Supplies and contents of sterilization unit cabinets are secured on shelves and in racks (Cabinets are anchored to the walls)	✓	✗	
8.7.2	Heavy and movable equipment (e.g., autoclave) are anchored or bolted to the floor or to the wall	✓	✗	
8.8	Medical Equipment in the Wards			
8.8.1	Each bed is provided with wheel lock or hooks	✓	✗	
8.8.2	Equipment and accessories are supported, anchored or fixed	✓	✗	
8.8.3	Equipment on roller trolleys have proper anchoring system using hooks and chains, and can be attached to beds or walls	✓	✗	
8.8.4	Patients' charts are secured (e.g., during evacuation)	✓	✗	
8.9	Equipment and Other Support Devices in Nuclear Medicine Department and Radiation Therapy Units (including Chemical / Poisoning)			
8.9.1	The room is adequately shielded	✓	✗	
8.9.2	The room is air-conditioned	✓	✗	
8.9.3	Equipment and accessories needed for treatment are supported, anchored or fixed	✓	✗	
8.9.4	There is an available standard decontamination area (fixed / mobile)	✓	✗	
8.9.5	The waste water is connected to "delay to decay" tank before disposal to sewage treatment plant	✓	✗	
8.9.6	There is an independent circuit breaker	✓	✗	
8.9.7	There is a separate facility for the processing of the reagents / chemical substance radio-pharmaceuticals and other diagnostic kits	✓	✗	
8.9.8	It is asbestos free	✓	✗	

8.9.9	Equipment are properly anchored and the materials used for attachments do not cross react with chemical agents	✓	✗	
8.9.10	The following safety equipment are present:			
	Shields	✓	✗	
	Protective Clothing	✓	✗	
	Tools for remote handling	✓	✗	
	Containers for radioactive materials	✓	✗	
	Dose rate monitors with alarm	✓	✗	
	Contamination meters	✓	✗	
	Signs, labels, records	✓	✗	
	Emergency kits	✓	✗	

FUNCTIONAL INDICATORS for SAFE LEVEL 3 and 4 HOSPITALS

A safe hospital must have health services that remain accessible when needed most. It must be functioning at maximum capacity during and immediately after disasters. It must have the capability and capacity to remain functional and operational in the event of disaster. It shall not collapse; it can continue to function as a health facility and provide services; and it must be organized with contingency plans and workforce during or even after disasters. The hospitals shall have risk and emergency management capability to operate in emergency settings. It promotes multidisciplinary involvement in identifying and reducing risk as well as resilience building.

Instruction:
Encircle the CHECK sign (means Yes or complies completely with what is asked for) or CROSS sign (means NO or may not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

				Remarks
1.	**Site and Accessibility**			
1.1	The hospital is located along/ near good roads readily accessible to the community with adequate means of transportation	✓	✗	
1.2	There are no road obstructions leading to the hospital	✓	✗	
1.3	There are alternative access to well paved roads which are properly identified and labeled	✓	✗	
1.4	There are separate ingress and egress routes	✓	✗	
1.5	There are available, safe and well lighted open space	✓	✗	
1.6	Directional signages within the hospital are available and properly fastened	✓	✗	
1.7	There are entrance ramps using the ratio of 1:12 if the hospital floor is not leveled with the road	✓	✗	
2.	**Internal Circulation and Inter-Operability**			
2.1	Emergency Room (ER)			
2.2.1	The ER is readily accessible to incoming emergency transport	✓	✗	

2.2.2	ER doors are wide enough to accommodate a stretcher and the bearers	✓	✗	
2.2.3	ER doors are two-way swing type	✓	✗	
2.2.4	There are minimum partitions so as to have more space for mass casualties	✓	✗	
2.2	General service areas are located away from normal traffic	✓	✗	
2.3	Areas to be converted to mass casualty handling during disasters are properly identified with adequate lighting, electrical outlets, water supply and toilets/bathrooms	✓	✗	
2.4	Diagnostic areas with heavy equipment are located at floors above the anticipated flood level	✓	✗	
2.5	Corridors, hallways and aisles are 2.44 meters (8ft)in width	✓	✗	
2.6	There are ramps that can be used as access to 2nd and 3rd floors	✓	✗	
2.7	Stairways are safe and adequately secured balusters and railings	✓	✗	
3.	**Basic Equipment and Supplies**			
3.1	Basic equipment and emergency supplies are available in all wards and treatment areas and can last for at least one week: • Two (2) sets at the Emergency Room • One (1) set at the regular ward	✓	✗	
3.2	Basic diagnostic and therapeutic equipment are functional, properly labeled, accompanied by their operating manuals	✓	✗	
3.3	Stock pile of medical supplies within the identified stockroom are good for at least one week	✓	✗	
3.4	Basic Proper Personal Protective Equipment are available at the emergency room and all service areas	✓	✗	
3.5	Medical and industrial gas systems undergo regular testing procedures	✓	✗	
3.6	Material Safety Data Sheets (MSDS) are available for all chemical substances in use	✓	✗	

3.7	Available strerilizing unit for equipment and supplies	✓	✗	
4.	**Hospital Emergency Preparedness, Response and Recovery Plan**			
4.1	An Operational Plan, which includes the Hazard Prevention and Mitigation Plan, Vulnerability Reduction Plan, and the Capacity Development Plan is -			
4.1.1	Approved by the Chief of Hospital or Director	✓	✗	
4.1.2	Disseminated	✓	✗	
4.1.3	Tested, updated and applied	✓	✗	
4.2	The hospital has contingency plans for emergency and disasters not covered by the regular Emergency Preparedness Response Plan (e.g., Highly Infectious Disease Outbreak, Bioterrorism)			
4.2.1	Approved by the Chief of Hospital or Director	✓	✗	
4.2.2	Disseminated	✓	✗	
4.2.3	Tested, updated and applied	✓	✗	
4.3	There are written, incorporated and applied Hospital Emergency Management Systems, Procedures and Protocols like:			
4.3.1	Standard Operating Procedures (SOP) /Guidelines on infection control	✓	✗	
4.3.2	SOP for internal and external referral of patients	✓	✗	
4.3.3	Emergency response procedure/ guidelines	✓	✗	
4.3.4	Treatment guidelines/protocols	✓	✗	
4.3.5	Special administrative procedures for disasters	✓	✗	
4.3.6	Procedures for resource mobilization (funds, logistics, human resources) to include shifting of duties during emergencies or disasters	✓	✗	
4.3.7	SOP for admission to Emergency Department during emergency/ disaster	✓	✗	

4.3.8	Procedures to expand services, spaces and beds, in case of surge of patients	✓	✗	
4.3.9	Procedures to protect patients' records and other vital documents	✓	✗	
4.3.10	Procedures for regular safety inspection of equipment by appropriate authority and preventive maintenance	✓	✗	
4.3.11	Procedures for hospital epidemiologic surveillance	✓	✗	
4.3.12	Procedures for preparing sites for temporary placement of dead bodies for forensic medicine	✓	✗	
4.3.13	Procedures for transport and logistic support	✓	✗	
4.3.14	SOP/guidelines for food and supplies of hospital staff during emergency	✓	✗	
4.3.15	Measures to ensure well being of all personnel mobilized during emergency, to include guidelines for mental health and psycho-social support	✓	✗	
4.3.16	Guidelines on drills / simulation exercises * Fire * Other disasters	✓	✗	
4.3.17	SOP for handling of volunteers especially during emergencies/ disasters	✓	✗	
4.3.18	SOP for hospital security system during emergencies or disasters	✓	✗	
4.3.19	Health care waste management program during emergencies or disasters	✓	✗	
4.3.20	Fire Safety Program			
4.3.20.1	There is an organized "Fire Brigade" which has undergone seminar/ training on Fire Drill/ Fire Evacuation Drill/ Earthquake Drill	✓	✗	

4.3.20.2	Fire Drills/ Fire Evacuation Drill are conducted at least twice a year	✓	✗	
4.3.20.3	Fire mitigation prevention and suppression training are conducted	✓	✗	
4.3.20.4	Firefighting equipment are available	✓	✗	
4.3.20.5	Preventive maintenance of firefighting equipment is undertaken	✓	✗	
4.3.20.6	"Fire Exit Plan" and provision of Fire exit/ evacuation plan are available in conspicuous places at every floor level	✓	✗	
4.3.20.7	Alarm signaling system arranged so that the normal operation of any required alarm initiative device will automatically transmit an alarm to the nearest fire station or to such other outside assistance as may be available.	✓	✗	
5.	**Back-up System for the following critical services is available -**			
5.1	Back-up generators	✓	✗	
5.2	Alternate / back up source of drinking water	✓	✗	
5.3	Fuel reserves	✓	✗	
5.4	Medical gases	✓	✗	
5.5	Wastewater Treatment	✓	✗	
5.6	Solid Waste Treatment	✓	✗	
5.7	Communication facilities (cellular phone, handheld radios satellite communication facilities, etc)	✓	✗	
5.8	Fire suppression system	✓	✗	
6.	**Organization, Management and Human Resources**			
6.1	There is a Hospital Disaster Committee and an Emergency Operation Center	✓	✗	

6.2	There is a Crisis Management Committee – under the Executive Committee, with technical expertise, who could give advice to the Executive Committee regarding crisis/ emergency/ disaster management	✓	✗	
6.3	There is a Hospital Emergency Incident Command System (HEICS) -			
6.3.1	The Chief of Hospital is the Incident commander and other staff are designated to fill up the position of the Incident Command Structure	✓	✗	
6.3.2	The system of activating and deactivating the Incident Command System is clear	✓	✗	
6.3.3	There is a system of activating the Hospital Response Plan	✓	✗	
6.3.4	There is a Hospital Early Warning and Code Alert System in order for the hospital to prepare and mobilize resources in response to early warning signs or signals	✓	✗	
6.3.5	There is a system of activating and deactivating the Code Alert System	✓	✗	
6.3.6	There is a system of recalling staff and positioning them for possible response to emergencies	✓	✗	
6.4	There is an Emergency Response Team led by a designated Hospital Emergency Management Coordinator and composed of Physicians, Nurses, Emergency Medical Technician, Paramedics, Ambulance Driver	✓	✗	
6.5	There is a Health Emergency Planning Group responsible for the development of Health Emergency Preparedness, Response and Recovery Plan and other hospital response plans	✓	✗	
6.6	There is a Safety Committee headed by a Safety Officer. The committee is in charge of promoting safety in the hospital from all types of hazards	✓	✗	

6.7	There is a Hospital Operation Center headed by the Hospital Emergency Management Coordinator (in- charge of monitoring incidents of emergency or disaster, dispatching of response teams, mobilizing other resources for emergency) that can be activated during emergencies and disasters. It has a designated office/unit with personnel equipped with computer system, directories, communication facilities (with alternate in case the system bogs down)	✓	✗	
6.8	There is an established protocol to manage information:			
6.8.1	A census of admission and referral is properly recorded and reported using standard forms	✓	✗	
6.8.2	There is an SOP on sharing information with proper authorities, the public and the media	✓	✗	
6.8.3	The hospital has an identified spokesperson during emergencies and disasters who is trained in risk communication	✓	✗	
6.8.4	There is a Public Information Center where the public can go to request information concerning family members			
6.8.4.1	The Public Information Center is coordinated by a social worker and staffed by personnel and volunteers	✓	✗	
6.8.4.2	Public education campaign with advisories, IECs and warning messages are available	✓	✗	
6.8.4.3	Available IEC materials for patients and personnel on what to do during emergencies / disasters.	✓	✗	
6.9	Capability Building of Personnel			
6.9.1	100% of health workers are trained in Basic Life Support and Cardio-pulmonary Resuscitation	✓	✗	

6.9.2	100% of health workers are trained in Standard First Aid	✓	✗	
6.9.3	Emergency Room medical staff are trained in Advance Cardiac Life Support and Pediatric Advance Cardiac Life Support	✓	✗	
6.9.4	Hospital Responders trained in Basic Emergency Medical Technician Course (EMT), Incident Command System (ICS), Mass Casualty Incident (MCI)	✓	✗	
6.9.5	Hospital managers are trained in Hospital Emergency Incident Command System (HEICS) and Hospital Emergency Awareness Response Training (HEART)	✓	✗	
6.10	Drills and Exercises			
6.10.1	Earthquake drills are conducted at least once a year	✓	✗	
6.10.2	Other emergency simulation drills or exercises are conducted at least once a year	✓	✗	
7.	**Monitoring and Evaluation**			
7.1	Post-incident evaluation of response to emergencies or disasters within or in relation to coordination with other hospitals is conducted	✓	✗	

Additional Non-Structural Indicators for Safe Levels 3 and 4 Hospitals Identified to Triage and Receive Highly Infectious Disease Cases

In times of emergencies and disasters, levels 3 and 4 hospitals may be designated to either triage or receive highly infectious disease cases. Following are additional non-structural indicators for areas within the hospital identified to hold such cases.

Instruction:
Encircle the CHECK sign (means Yes or complies completely with what is asked for) or CROSS sign (means NO or may not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

			Remark
1. Isolation Room/ Biological Unit/Negative Pressure Room			
1.1 The windows and doors (including ante room) are closed and air tight or leak proof	✓	✗	
1.2 With signage "ISOLATION"	✓	✗	
2. Divisions/Partitions			
2.1 Isolation room has an ante room for dressing with Personal Protective Equipment (PPE)	✓	✗	
2.2 The ante room has lavatory and PPE rack	✓	✗	
3. Floor Covering			
3.1 Floor materials are reinforced concrete	✓	✗	
3.2 Floor materials are non-slippery	✓	✗	
4. Attachments			
4.1 There is no nebulizer	✓	✗	
4.2 Oxygen tank is not routinely used, reserved only for life and death situation	✓	✗	
4.3 Lavatory of ante room has foot/knee/ elbow-operated trash bin, soap dispenser, disinfectant, dispenser and faucet	✓	✗	
5. Communication System			
5.1 Communication System There are 2 dedicated telephone lines for inside and outside communication	✓	✗	

6.	**Heating, Ventilation and Air Conditioning (HVAC) Systems**			
6.1	There is a negative pressure room	✓	✗	
6.2	The exhaust system exits into the open air far from human activity	✓	✗	
6.3	It is airtight with dedicated exhaust fan	✓	✗	
7.	**Operating Room and Recovery Room**			
7.1	Medical Equipment			
7.1.1	Equipment on roller trolleys have proper anchoring system using hooks and chains, and can be attached to beds or walls (ECG, monitors, suction units, ventilators, incubators, BP monitors, resuscitation equipment, etc.)	✓	✗	

Additional Functional Indicators for Safe Level 3 and 4 Hospitals Identified to Triage and Receive Highly Infectious Disease Cases

In times of emergencies and disasters, levels 3 and 4 hospitals may be designated to either triage or receive highly infectious disease cases. Following are additional functional indicators for areas within the hospital identified to hold such cases.

For Receiving Hospitals

Instruction:
Encircle the CHECK sign (means Yes or complies completely with what is asked for) or CROSS sign (means NO or may not comply completely with what is asked for) when assessing the hospital or health facility according to the following indicators. Use the Remarks column to write essential observations when doing the assessment, especially when the result is NO.

1.	**Internal Circulation and Inter-Operability**			**Remark**
1.1	There is a dedicated Isolation Room/ Biological Unit for highly infectious cases (i.e. SARS, Avian Flu)	✓	✗	
1.2	There is a dedicated Emergency Room/ Consultation Room for highly infectious patients away from the usual Emergency Room and Out-Patient Department	✓	✗	
1.3	Presence of decontamination areas near the entrance at the Emergency Room, at the laboratory, and at the Isolation Room/ Biological Unit	✓	✗	
1.4	There are identified zones for highly infectious cases which are away from normal traffic and are properly labeled with signages.	✓	✗	
2.	**Equipment and Supplies**			
2.1	There are dedicated equipment and supplies for the Isolation Room/Biological Unit/Emergency Room	✓	✗	
2.2	There are dedicated diagnostic and therapeutic equipment which are functional, properly labeled and accompanied by their operating manuals (e.g., portable X ray, ventilators, stethoscope, laryngoscope, BP apparatus)	✓	✗	

2.3 Disposable special Personal Protective Equipments (e.g., N95 masks, goggles, caps, gowns, gloves, and booties) are available	✓	✗	
2.4 There are available sterilizing unit for equipment and supplies	✓	✗	
3. Laboratories			
3.1 There is a laboratory safety protocol	✓	✗	
3.2 The laboratory has bio-safety cabinet with hood	✓	✗	
3.3 There are safety devices in the laboratory	✓	✗	
3.4 There are available PPEs	✓	✗	
3.5 Laboratory doors are labeled with emergency contact information	✓	✗	
4. Hospital Emergency Management Policies, Guidelines, Procedures, and Protocols are available for the following:			
4.1 Guidelines/Protocols for Emerging/Re-emerging Infections	✓	✗	
4.2 System for prioritizing hospital personnel to be given prophylactic/ therapeutic drugs for highly infectious diseases in times of drug scarcity	✓	✗	
4.3 Procedures for preparing sites for managing dead bodies with highly infectious disease	✓	✗	
4.4 Guidelines for transferring patients	✓	✗	
4.5 Manual on collection, transport, storage, handling and transferring of specimen	✓	✗	
5. Transportation System			
5.1 There is a dedicated ambulance for highly infectious patients with glass separator between the driver and the patient compartment equipped with proper decontamination/disinfection supplies and materials	✓	✗	
6. Human Resources			
6.1 There are dedicated trained and competent staff in managing highly infectious cases	✓	✗	

6.2	There are dedicated trained and competent ambulance drivers	✓	✗	
6.3	Dedicated trained, competent, and active Infection Control Committee	✓	✗	
6.4	Dedicated staff assigned in isolation room / biological unit	✓	✗	

For non-receiving hospitals:

1.	**There are identified separate holding / triaging area for suspected/diagnosed cases of highly infectious diseases before transfer to hospitals identified to receive highly infectious diseases**	✓	✗	

GLOSSARY OF TERMS

Balanced massing – is the process wherein the relations among massing elements in architecture are studied; this includes the relations of the building with its surrounding context and the building with its sub-parts

Cantilever – a projecting structure, such as a beam, that is supported at one end and carries a load at the other end or along its length

Level 1 Hospital:

- An emergency hospital that provides initial clinical care and management to patients requiring immediate treatment, as well as primary care on prevalent diseases in the locality;
- Clinical services include general medicine, pediatrics, obstetrics and non-surgical gynecology and minor surgery;
- General administrative service and may provide ancillary services (primary clinical laboratory, first level radiology, pharmacy)
- Provides nursing care for patients who require minimal category of supervised care for 24 hours or longer

Level 2 Hospital

- Non – departmentalized hospital that provides clinical care and management on the prevalent diseases in the locality;
- Clinical services include general medicine, pediatrics, obstetrics and gynecology, surgery and anesthesia
- Appropriate administrative and ancillary services (secondary clinical laboratory, first level radiology, pharmacy)
- Nursing care provided in the Level 1 Hospital as well as intermediate, moderate and partial category of supervised care for 24 hours or longer

Level 3 Hospital

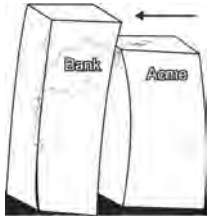
- Departmentalized hospital that provides clinical care and management of the prevalent diseases in the locality, as well as particular forms of treatment, surgical procedure and intensive care;
- Clinical services provided in Level 2 hospital as well as specialty clinical care;
- Appropriate administrative and ancillary services (tertiary clinical laboratory, second level radiology, pharmacy);
- Nursing care provided in Level 2 Hospital as well as total and intensive skilled care.

Level 4 Hospital

- Teaching and training hospital (with at least one Accredited Residency training Program for Physicians) that provides clinical care and management on the prevalent diseases in the locality, as specialized and sub-specialized forms of treatment, surgical procedure and intensive care;
- Clinical services provided in Level 3 Hospital as well as sub-specialty clinical care;
- Appropriate administrative and ancillary services (tertiary clinical laboratory, third level radiology, pharmacy)
- Nursing care provided in Level 3 Hospital as well as continuous and highly specialized care

Load – the weight and force that is supported by a structure

Pounding effect – a phenomenon where a structure has a possibility to strike on adjacent structure during an earthquake. It usually occurs between structures built with different heights



Reinforced masonry – structures whose walls have steel reinforcements.

Short columns – the load capacity is limited by its ability to resist strain or rupture induced by external forces, rather than failure by lateral or torsional instability

Soft storey – a resulting building floor when columns are not continuous from lower floor to upper floor of a building

Zoning – the different areas of a hospital shall be grouped according to zones as follows:

- Outer zone – areas that are immediately accessible to the public: emergency service, outpatient service, and administrative service. They shall be located near the entrance of the hospital.
- Second zone – areas that receive workload from the outer zone: laboratory, pharmacy and radiology. They shall be located near the outer zone
- Inner zone – areas that provide nursing care and management of patients: nursing service. They shall be located in private areas but accessible to guests
- Deep zone – areas that require asepsis to perform the prescribed services: surgical service, delivery service, nursery and intensive care. They shall be segregated from the public areas but accessible to the outer, second and inner zones
- Service zone – areas that provide support to hospital activities: dietary service, housekeeping service, maintenance and motorpool service and mortuary. They shall be located in areas away from normal traffic.

ANNEX A

TECHNICAL WORKING COMMITTEE ON SAFE HOSPITALS (2008 to present)

Advisers

Dr Mario Villaverde	Undersecretary of Health, Department of Health (2008 to 2010)
Dr Teodoro Herbosa	Undersecretary of Health, Department of Health (2010 to present)
Dr Soe Nyunt-U	WHO – Representative in the Philippines
Dr Arturo Pesigan	WHO – Western Pacific Regional Office Emergency and Humanitarian Action

Steering Committee

Dr Mario Villaverde	DOH Policy and Standard Development Team for Service Delivery (PSDTSD) (2008 to 2010)
Dr Teodoro Herbosa	DOH Health Service Delivery Cluster (2010 to present)
Dr Carmencita Banatin	DOH - Health Emergency Management Staff (DOH – HEMS)
Dr Criselda Abesamis	DOH – National Center for Health Facility Development (DOH-NCHFD)
Dr Ma. Alicia Lim	Jose Reyes Memorial Medical Center
Atty Nicolas Lutero III	DOH – Bureau of Health Facilities and Services (DOH – BHFS)
Dr Rosalinda Arandia	Quirino Memorial Medical Center
Dr Bernardino Vicente	National Center for Mental Health
Dr Shirley Domingo	Philippine Health Insurance Corporation (PHIC)

Technical Working Group for Structural Indicators

Hospitals Should Be Safe from Disasters (2008) Safe Hospitals Philippine Indicators (2009)	Safe Hospitals Indicators for Levels I and II Hospitals (2010)	Safe Hospitals Indicators for Safe Levels III and IV Hospitals (2010)
• Arch Ma. Rebecca Peñafiel DOH – NCHFD • Engr Maximo Adan DOH – NCHFD • Arch Christopher Espina UP College of Architecture • Arch Corazon Cruz UST College of Architecture • Engr Fernando Germar UP College of Engineering • Engr Michael Abundo UP College of Engineering	• Arch Ma. Rebecca Peñafiel DOH – NCHFD • Arch Corazon Cruz UST College of Architecture • Engr Adam Abinales Association of Structural Engineers of the Philippines • Arch Prosperidad Luis United Architects of the Philippines • Dr Tabassam Raza Earthquake and Megacities Initiative	• Arch Ma. Rebecca Peñafiel DOH – NCHFD • Dr Edmundo Lopez Las Piñas General Hospital & STC • Arch Corazon Cruz UST College of Architecture • Arch Christopher Espina UST College of Architecture • Engr Fernando Germar UP Institute of Civil Engineering

• Engr Peter Lim UST College of Engineering • Engr Ricardo Balog UST College of Engineering • Engr Ronaldo Ison Association of Structural Engineers of the Philippines • Engr Anthony Pimentel Association of Structural Engineers of the Philippines • Engr Jorge Genota Association of Structural Engineers of the Philippines • Arch Herminio Prudente United Architects of the Philippines		• Engr Ulpiano Ignacio Jr UP Institute of Civil Engineering • Atty Violeta Seva Earthquake and Megacities Initiative • Dr Fouad Bendimerad Earthquake and Megacities Initiative • Engr Adam Abinales Association of Structural Engineers in the Philippines • Engr Sheila Estanero Association of Structural Engineers in the Philippines • Dr Jane Punongbayan PHIVOLCS • Engr Erlinton Olavere PHIVOLCS • Dr Ginoo Karlo Galvez Tan WHO - WPRO

Technical Working Group for Non-Structural Indicators

Hospitals Should Be Safe from Disasters (2008) Safe Hospitals Philippine Indicators (2009)	Safe Hospitals Indicators for Levels I and II Hospitals (2010)	Safe Hospitals Indicators for Safe Levels III and IV Hospitals (2010)
• Dr Marilyn Go DOH – HEMS • Dr Arnel Rivera DOH – HEMS • Engr Carlos Bariring • DOH - NCHFD • Engr Abraham Castanaga DOH – NCHFD • Dr Ma. Theresa Vera DOH – BHFS • Engr Bayani San Juan DOH – BHDT • Dr Arturo Cabanban San Lazaro Hospital • Dr Romeo Bituin Dr Jose Fabella Memorial Hospital	• Dr Romeo Bituin Dr Jose Fabella Memorial Hospital • Engr Ramon Alfonso Tondo Medical Center • Dr Joseph Bacareza Bureau of Fire Protection • Engr Carlos Bariring DOH - NCHFD	• Dr Romeo Bituin Dr Jose Fabella Memorial Hospital • Engr Ramon Alfonso Tondo Medical Center • Engr Carlos Bariring DOH – NCHFD • Engr. Severino Reyes III DOH – NCHFD • Arch Prosperidad Luis United Architects of the Philippines • Insp Jeni-Rose Lee Bureau of Fire Protection • Engr Michael Abundo UP – EEEI • Dr Ma. Ellen Licup WHO - WPRO

• Dr Edmundo B. Lopez Las Piñas General Hospital & STC • Dr Roland Cortez East Avenue Medical Center • Engr Ramon Alfonso Tondo Medical Center • Dr Joseph Bacareza Bureau of Fire Protection • Arch Prosperidad Luis United Architects of the Philippines • Engr William Juan Institute of Integrated Electrical Engineers		

Technical Working Group for Functional Indicators

Hospitals Should Be Safe from Disasters (2008) Safe Hospitals Philippine Indicators (2009)	Safe Hospitals Indicators for Levels I and II Hospitals (2010)	Safe Hospitals Indicators for Safe Levels III and IV Hospitals (2010)
• Dr Marilyn Go DOH – HEMS • Dr Arnel Rivera DOH – HEMS • Engr Carlos Bariring DOH - NCHFD • Engr Abraham Castanaga DOH – NCHFD • Dr Ma. Theresa Vera DOH – BHFS • Engr Bayani San Juan DOH – BHDT • Dr Arturo Cabanban San Lazaro Hospital • Dr Romeo Bituin Dr Jose Fabella Memorial Hospital • Dr Edmundo B. Lopez Las Piñas General Hospital & STC • Dr Roland Cortez East Avenue Medical Center • Engr Ramon Alfonso Tondo Medical Center	• Dr Marilyn Go DOH – HEMS • Dr Carmencita Banatin DOH – HEMS • Dr Roland Cortez East Avenue Medical Center • Dr Alexis Dimapilis San Lazaro Hospital • Dr Edmundo Lopez Las Piñas General Hospital & STC • Dr Corazon Mendoza Laguna Provincial Hospital • Dr Arnel Rivera DOH - HEMS • Ms Susana Juangco DOH – HEMS • Dr Ronald Law DOH – HEMS • Dr Benjamin Sablan UP Philippine General Hospital • Dr Noel Juban UP College of Medicine	• Dr Carmencita A. Banatin DOH – HEMS • Dr Arnel Rivera DOH – HEMS • Dr Ronald Law DOH - HEMS • Arch Reynaldo Rabe Jr DOH – BHFS • Dr Corazon Mendoza PHO – Laguna Provincial Hospital • Dr Noel Juban UP Institute of Clinical Epidemiology • Mrs Vilma Jarencio – Cruz San Lazaro Hospital • Mr Joselito Sagario San Lazaro Hospital • Dr Danielle Guillen Earthquake and Megacities Initiative • Mr Jose Marie Daclan Earthquake and Megacities Initiative

• Dr Joseph Bacareza Bureau of Fire Protection • Arch Prosperidad Luis United Architects of the Philippines • Engr William Juan Institute of Integrated Electrical Engineers	• Dr Ginoo Karlo Galvez Tan WHO – WPRO • Dr Lester Sam Geroy WHO - WPRO	• Engr Rolando Rabot TII – Ex Company • Dr Katherine Villegas WHO Philippines

Technical Working Group for Advocacy (2008)

Dir Angelina Sebial	DOH – National Center for Health Promotion
Dr Victor dela Cruz	Tondo Medical Center
Dr Ricardo DG Lustre	Amang Rodriguez Medical Center
Dr Ruben Flores	Dr Jose Fabella Memorial Hospital
Dr Edgardo Javillonar	Dr Jose N Rodriguez Memorial Hospital
Dr Mario Panay	Valenzuela Medical Center
Dr Isabelita Estrella	San Lorenzo Ruiz Women's Hospital
Dr Robert Enriquez	National Children's Hospital
Dr Teodoro Castro	Philippine Orthopedic Center

HOSPITAL ASSESSMENT TEAM (2008 – 2009)

Dr Joseph Bacareza; Dr Jose Edgar Balita; Engr Aida Barcelona; Dr Romeo Bituin; Ms Josefina Blanco RN; Arch Allen Buenaventura; Dr Emmanuel Bueno; Engr Israel Camposano; Mr Elmer Benedict Collong RMT; Arch Leonard Cordero; Dr Ma. Paz Corrales; Arch Corazon Cruz; Ms Aida Cuadra RN; Arch Ferdinand dela Paz; Dr Alex Dimapilis; Mr Philip Dr; Engr Marilyn Ebuen; Arch Christorpher Espina; Dr Jasminda Espiritu; Ms Ma. Belinda Evangelista RN; Ms Jacinta Garcia; Mr Manny Guevarra RN; Engr Eric Gutierrez; Dr Rodrigo Hao; Dr Joseph Juico; Dr Cesar Brence Labastida; Mr Gerardo Lirag RN; Engr Jesus Lorenzo; Arch Prosperidad Luis; Engr Nilo Marayag; Dr Rommel Menguito; Dr Joseph Nocom; Dr Antoinette Pacapac; Ms Celia Pangan RN; Engr Jennifer Quintero; Dr Mary Grace Reyes; Dr Myrna Rivera; Dr Epifania Simbul; Dr Alexis Uy; Mr Willy Veloria RN and Engr Vivian Young.

Technical Assistance: Dr Noel Juban and Prof Nina Carandang
Technical Guidance for NCR: Dr Asuncion Anden and Dr Irma Asuncion
Technical Supervision: Arch Ma. Rebecca Penafiel and Dr Nathaniel Carl Tan

ANNEX B

PHILIPPINE POLICIES RELATED TO SAFE HOSPITALS IN EMERGENCIES AND DISASTERS

These are the Codes, Policies and Guidelines on which the indicators in this manuals are based. Hospitals and health facilities are advised to have a copy of these materials for reference. The pertinent sections are the following:

The National Building Code of the Philippines (PD 1096) revised 2006 guidelines

The National Building Code of the Philippines, also known as Presidential Degree No. 1096 was formulated and adopted as a uniform building code to embody up-to-date and modern technical knowledge on building design, construction, use, occupancy and maintenance. The Code provides for all buildings and structures, a framework of minimum standards and requirements to regulate and control their location, site design, and quality of materials, construction, use, occupancy and maintenance.

The National Structural Code of the Philippines (5th ed, 2001) and revised 2010 guidelines

The purpose of this code is to provide minimum standards to safeguard life or limb, property and public welfare by regulating and controlling the design, construction, quality of materials pertaining to the structural aspects of all buildings and structures within its jurisdiction.

The provision of this code shall apply to the construction, alteration, moving, demolition, repair, maintenance and use of any building or structure within its jurisdiction, except work located primarily in a public way, public utility towers and poles, hydraulic flood control structures, and indigenous family dwellings.

The Fifth edition has the following significant revisions:

In **Chapter 1. General Design Requirements**, major changes in this section include provisions where building owners are required to get the services of independent recognized structural engineers to perform design review for certain structures, and the installation of recording accelographs for every building over six storeys (with floor area of 5,500 square meter or more), and every building over ten storeys in height regardless of fool area.

In **Chapter 2. Minimum Design Loads**, revisions of load combinations were made to adopt the new strength-based seismic forces, and special load combinations to reflect the provision of the 1997 Uniform Building Code (UBC). Near-source factors are specified in seismic zone 4 to recognize the amplified ground motions that occur close to known acyive faults. The Philippine Institute of Volcanology and Seismology (PHIVOLCS) issued the maps showing the active faults throughout the country as reference for determining near-source factors. Also basic wind speed are revised based on statistical studies of PAGASA data over 30 years and recommendations of the sub-committee on Design Loads and Lateral forces and on the ASCE 7 – 95 provisions.

In **Chapter 4. Structural Concrete**, includes significant changes in several aspects of reinforced concrete design. Shear-governed concrete walls are designed for increased forces and special detailing requirements are clarified and improved, many of which reflect changes in American Concrete Institute (ACT 318-99).

In **Chapter 5. Steel**, recommendations to adopt AISC's 1997 Edition of the Seismic Provision for Structural Steel Buildings (AISC Seismic '97) incorporates on-going development of seismic design and much of the current knowledge on design and quality assurance following intensive research and testing in the U.S. Significant issues associated with moment frames and AISC's Seismic Provisions are also addressed. Likewise, important issues and considerations on braced frames, eco-centric braced frames, and truss moment frames following much research and development in recent years are also discussed.

Philippine Electrical Code of 2000
The purpose of this Code is the practical safeguarding of persons and property from hazards arising from the use of electricity. It contains provisions that are considered the minimum requirements necessary for safety. Compliance therewith and proper maintenance will result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service of future expansion of electrical use. This Code is not intended as a design specification nor an instruction manual for untrained persons.

Fire Code of the Philippines (PD 1185)
The Fire Code of the Philippines (PD 1185) sets the uniform standards and regulations for the prevention and suppression of fires; for incorporating fire safety design and constructions; and for the provision of protective and safety devices in buildings, facilities, and structures in order to effect a meaningful reduction in death and injury to persons, and loss and damage to property by fire.

Republic Act 8495 – Philippine Mechanical Code
The Mechanical Code sets minimum standards for the design, construction and quality of materials pertaining to the mechanical works, processes, and equipment of all building, structures, mechanical plants, to safeguard life or limb, property and public welfare.

Republic Act 344 - Accessibility Law
An Act to enhance the mobility of disabled persons by requiring certain buildings, institutions, establishments and public utilities to install and incorporate in such buildings, establishments, institutions or public utility, such as architectural facilities or structural features that shall reasonably enhance the mobility of disabled persons, such as sidewalks, ramps, railings and the like.

Republic Act 9275 - Philippine Clean Water Act of 2004
The ***"Philippine Clean Water Act of 2004" or R.A. 9275*** aims to pursue a policy of economic growth in a manner consistent with the protection, preservation, and revival of the quality of our fresh, brackish, and marine waters. To guarantee effective water utilization and conservation, the Clean Water Act of 2004 has set the standards that would determine how clean is water; how to achieve it and how important is the role of every citizen, in the public and private sectors in regulating and minimizing pollution, maintaining environmental policies, waste managing, environmental education and information recognizing the impacts of human activity to the health of the water bodies.

Republic Act 9003 - Ecological Solid Waste Management Act of 2001

Republic Act 9003 sets the guidelines and targets for solid waste avoidance and volume reduction through source reduction and waste minimization measures, including composting, recycling, re-use, recovery, green charcoal process, and others, before collection, treatment and disposal in appropriate and environmentally sound solid waste management facilities in accordance with ecologically sustainable development principles. It is equipped with the proper machinery to carry on the task stated by the law, through the National Solid Waste Management Commission.

The Act in a nutshell is about- Segregation, Storage and Collection systems; Selection of Vehicle for Solid Waste Collection; Designing and Planning a Collection System; Operation of a Transfer Station; Intelligent Service Contracting; Public Education and Awareness; and the critical part is the Policy Formulation of the Act as well as its enforcement. Under the latter is the Solid Waste Management Financing, Incentives and Cost Recovery, wherein the money aspect and proceedings of the Act is discussed.

Administrative Order No. 2008 - 0021

Subject: Gradual Phaseo-ut of Mercury in all Philippine Health Care Facilities and Institutions

Recognizing the unnecessary risks posed by the continued use of mercury-containing products in the health care system, the DOH hereby orders that:

1. All Hospitals shall immediately discontinue the distribution of mercury thermometers to patients through the distribution of hospital admission/ discharge kits.
2. All Hospitals shall follow the guidelines for the gradual phase-out of mercury in health care facilities described in this document in the timeline specified.
3. All new Health Care Facilities applying for a License to Operate shall submit an inventory of all mercury-containing devices that will be used in their facilities and a corresponding mercury elimination program.
4. All other Health Care Facilities other than hospital shall make a Mercury Minimization Program based on the guidelines set by the Administrative Order.

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