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Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
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CREATION OF A COMMITTEE TO STUDY AND FORMULATE ACTION PLANS TO STRENGTHEN THE DPWH DISASTER PREPAREDNESS AND RESPONSE MECHANISM

In order to develop a comprehensive and integrated approach to disaster preparedness and response programs in the Department and in order to have a more responsive and coordinated support mechanism to all disaster preparedness plans and activities of the National Disaster Risk Reduction and Management Council (NDRRMC), a Committee is hereby created for this purpose and shall be composed of the following:

Undersecretary ROMEO S. MOMO	-Chairman
Asst. Secretary ROY L. MANAO	- Vice Chairman for Luzon
Asst. Secretary DIMAS S. SOGUILLON	- Vice Chairman for Visayas & Mindanao
Director GILBERTO S. REYES, BOD	- Member
Director ANGELITO M. TWAÑO, BOM	- Member
Director ANTONIO V. MOLANO JR., BRS	- Member
Director EDILBERTO T. TAYAO, BOE	- Member
Project Director PATRICK B. GATAN, PMO MFCDP I	- Member
Project Manager EMMANUEL P. CUNTAPAY, NBCDO	-Member
Regional Director REYNALDO G. TAGUDANDO, NCR	-Member
Regional Director EUGENIO R. PIPO, Region II	-Member
Regional Director ROLANDO M. ASIS, Region VIII	-Member
Regional Director DANILO E. VERSOLA, Region XIII	-Member
Director JOEL I. JACOB, Legal Service	-Member

The Committee is hereby tasked to undertake the following functions:

1. Study the existing disaster preparedness mechanism of the Department and formulate action plans to strengthen its capacity for implementing preparedness and mitigation measures for sustainable infrastructure development.

2. Study ways to improve/strengthen inter-agency coordination relative to disaster mitigation and response mechanism.

3. Develop a program for risk analysis of existing infrastructure taking into consideration various hazards maps prepared by PHIVOLCS, DENR or NAMRIA and recommend action plans to the Secretary.

4. Develop a retrofitting or reconstruction program of essential bridges, critical public buildings as recommended by the Task Force on Building and Bridge Inspections.

5. Formulate capacity building training program for DPWH personnel to enhance their technical knowledge on disaster risk reduction.

6. Create Disaster Response Team for each Regional Offices composed of personnel from the Planning and Design, Maintenance, Materials and Quality Control Divisions and their counterpart from the District Engineering Offices.

7. Develop a comprehensive Disaster Preparedness and Response road map for resilient infrastructure. Include in the road map the study on the viability of integrating disaster risk assessment and risk transfer on infrastructure investments program.

8. Develop protocols for post disaster activities such as damage and construction needs assessment, prioritization, decision making process and disaster information flow.

The Committee may call on any official or employee of the Department, as may be deemed necessary, to carry out its tasks and responsibilities. The Committee may also tap the assistance of Professional Organizations and Academic Institutions for consultations.

This Order shall take effect immediately.

ROGELIO L. SINGSON
Secretary

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DPWH DISASTER MANAGEMENT SYSTEM

INTRODUCTION

The Philippines being an archipelagic country, is located in the region that is exposed to natural events like typhoons, earthquakes and volcanic eruptions. Situated in the Pacific Ring of Fire, the country experiences more than 20 earthquakes per day (PHIVOLCS). About 22 typhoons per year enter the Philippine area of responsibility and about 5 strong typhoons directly traverse the country. There are about 300 volcanoes and 22 are considered active. The presence of these disaster threats made the country highly vulnerable to hazards such as landslides, ground subsidence, strong ground shaking, flooding, tsunami and lahar flows that would induce great economic losses unless the various support infrastructures are developed to withstand the damaging effects of these hazards.

The DPWH as a member of the National Disaster Risk Reduction and Management Council (NDRRMC) must be proactive in its role on disaster preparedness and response. As the engineering and construction arm of the government, the DPWH must provide infrastructure that would pass the test of time especially during calamities and disasters. Disaster risk reduction strategies must be institutionalized and should be part of the overall policies on infrastructure development.

DPWH CHALLENGES

The Metro Manila Earthquake Impact Reduction Study (MMEIRS) conducted by the Japan International Cooperation Agency (JICA) and released in 2004 reveals the high vulnerability of Metro Manila to earthquake impact. The result of that study is an opportunity for the DPWH to revisit and review its disaster preparedness program. According to that study, about 12.7% of residential structures, 7 bridges, 8-10 % of public buildings, 11% of 10-30 story buildings, and 2% of the 30-60 story buildings will suffer severe damage due to a probable earthquake that would originate from the Valley Fault line in the eastern part of Metro Manila. This would result in about 33,500 deaths. To mitigate the impact of that earthquake, various thematic goals were presented to achieve the vision of a "Safer Metropolitan Manila from Earthquake Impact". The DPWH could adopt some of the frameworks that were developed to address those goals as follows:

1. Promote earthquake-resistant buildings, public facilities, infrastructures and lifelines
2. Strengthen institutional capacity for implementing preparedness and mitigation measures
3. Strengthen disaster response capability

4. Establish emergency transportation system
5. Establish debris clearance and management system

The preceding frameworks, although develop for Metro Manila, can be adopted as action plans for disaster mitigation strategies for the entire country and could also be used as guides in developing programs for other types of disasters.

THE DPWH CURRENT DISASTER MANAGEMENT SYSTEM

The DPWH has already responded to a certain extent to the results of the MMEIRS. Action plans were also developed to include measures due to strong typhoons such as Typhoon Milenyo in 2006. The Task Force Building Inspection in 2005 and the Task Force on Baklas Billboard in 2007 were created to initially address the goals of MMEIRS and to mitigate the effects of strong typhoons. Various Memoranda were issued to enforce the National Building Code of the Philippines and other rules and regulations on public safety such as the conduct of assessment and inspection of buildings, bridges, and billboards by the DPWH and the Offices of the Local Building Officials within their areas of jurisdiction. These action plans, although considered as initial plans for disaster mitigation and preparedness, must be sustained and long term programs must be developed to address the structural as well as the non structural measures for post disaster operations.

The activities undertaken by the Task Force are considered part of the pre disaster activities. However, the current DPWH organization on disaster management system may still be viewed as primarily evolves on post disaster response specifically on rehabilitation and reconstruction programs. With a vast manpower and logistical resources nationwide, the DPWH could effectively perform short term post disaster response activities such as damage assessment, immediate rehabilitation of affected roads and bridges, provision of temporary facilities, clearing operations of landslide areas and debris removal. But with a budgetary constraint, long term rehabilitation and reconstruction could only be done for few affected infrastructures.

In order to provide a comprehensive disaster management frameworks, pre - disaster strategies and programs should be strengthened. Disaster mitigation and preparedness plans and mechanism should be institutionalized and integrated with the overall infrastructure development programs. The current DPWH disaster mitigation program involves only the pre earthquake evaluation of public buildings and bridges. Flood control structures, road networks, telecommunications facilities and dams (although these are not within the DPWH responsibilities) should also be regularly assessed for compliance with safety standards against all types of natural disasters. However, safety audit is only an initial step for evaluating structural integrity of existing structures. Program for strengthening or retrofitting vulnerable

structures such as school buildings, hospitals, police/fire stations should also be included in the long term plan of actions.

The issuance of Department Order No. 38 s 2010 underscores the desire of the present leadership to improve the disaster response mechanism during natural calamities. DO No. 38 focuses on the reporting system of affected major roads and bridges to hasten post disaster response on rehabilitation/ reconstruction. This should be supplemented with a standardized procedure on pre-disaster and post-disaster assessment of all major infrastructures focusing not only on the determination of rehabilitation costs but also to establish the level of safety of the affected structures especially buildings and bridges, like for example, during strong earthquake aftershocks. The procedure may also be used to provide a precise estimate of rehabilitation or reconstruction costs.

THE DPWH TASK FORCE ON BUILDING AND BRIDGE INSPECTIONS

The Philippines although located in the highly seismic region of the Pacific has experienced longer gap between damaging earthquakes. Most of the more than twenty earthquakes that occur in the country per day are perceptible only by instruments. This is the reason that preparedness should be given utmost importance since longer gap for damaging earthquakes to occur increases the probability of a much larger magnitude earthquake in the future. Unlike typhoons where their paths can be estimated earthquakes could not yet be predicted.

The experiences on large magnitude earthquakes of other countries within the Pacific Rim have increased the level of awareness of the DPWH leadership on the effects of strong earthquakes and resulted with the creation of Task Force that conducted inspections of public buildings and bridges nationwide. The 2005 Task Force on Building Inspection (DO No. 140 s. 2005) was created after the 2005 M7.6 Pakistan Earthquake. Earlier this year, Special Order No 44 s. 2010 creating the Task Force on Building and Bridge Inspections was issued as an aftermath of the January 2010 M7.0 Haiti Earthquake. The Task Force was able to train DPWH engineers from the Regional and District Engineering Offices and some from LGU's on pre earthquake assessment of public buildings and national bridges. This proactive role of the Department should be replicated for other types of disasters for all major infrastructures such as roads, flood control and other structures.

ACCOMPLISHMENT OF THE TASK FORCE

Public Buildings

As of May 2010, the Inspectorate Teams of the DPWH in the National Capital Region inspected a total of 1,111 public buildings. Out of these, 18 buildings were recommended to be

subjected to urgent structural evaluation due to their vulnerabilities to seismic-induced damages as well as the presence of structural deficiencies. 785 buildings were recommended for further detailed evaluation due to their physical characteristics such as configuration and foundation problems which, if not rectified, would influence the building's behavior and may negate its intended structural performance during seismic events. And lastly, 22 buildings were recommended for repairs due to deterioration as well as due to presence of non structural damages. The Task Force recommendations were forwarded to building owners, such as DepEd for school buildings and Housing to the NHA for implementation. It is to be noted that the conduct of detailed evaluation is a necessary component of safety assessment since the procedure adopted in evaluating existing buildings, which is based from established procedure in the United States, is ocular in nature and is not intended for the full determination of seismic safety of buildings (FEMA 154). However, this procedure allows for the conduct of an inventory procedure of vulnerable buildings in the event of a major earthquake. Moreover, the conduct of detailed evaluation eliminates the danger of declaring unsafe buildings as safe or unintentionally declaring safe buildings as unsafe.

The DPWH Regional Offices were also directed to conduct assessment of public buildings in the regions. To date, the DPWH Regional Offices except Regions I, V, VI and CAR have furnished the Central Office of inspection reports.

National Bridges

Structural Integrity inspection of bridges along national roads was conducted by the Task Force in all regions. To date, in the NCR, a total of 61 interchanges/flyovers, 3 underpasses, 4 tunnels, and 263 bridges were inspected. Out of these, 6 bridges, 1 overpass and 2 interchanges were recommended for seismic retrofitting, 7 bridges for reconstruction and 22 bridges, 6 flyovers, 2 tunnels, and 3 interchanges were recommended for major repairs. From the Regional Offices, Regions I, V, VI, VII, VIII and CAR have not yet submitted their reports.

RECOMMENDATIONS

The following recommendations may be considered to strengthen the DPWH disaster preparedness and response mechanism:

a. Short Term (one year)
    1. Create a special committee that would oversee the disaster mitigation measures of the DPWH. Appoint a Disaster Manager who will be in charge of all disaster management activities of the DPWH.
    2. Assessment of public infrastructures and buildings nationwide must be regularly undertaken by Regional and District Engineering Offices.

3. DPWH shall order the Building Officials to undertake a complete structural integrity assessment of all private buildings and to strictly enforce the required structural integrity evaluation for commercial buildings prior to issuance of business permits.
4. A uniform standard format of structural integrity assessment for each type of structure must be developed. Tap the assistance of PICE and ASEP.
5. Review the provisions of building code including its enforcement especially on disaster risk reduction.
6. Continuous training and upgrade knowledge and skills of engineers on the conduct of inspection of all infrastructures including buildings. Undertake training for Officials and personnel on Disaster Risk Reduction.
7. Strengthen the Bureau of Design through hiring of additional structural engineers, acquire instruments and computer software for the conduct of structural evaluation of buildings, bridges and other structures.

Attached is a matrix of strategies for the short term action plans.

b. Medium term (within 5 years)
1. Develop a program for rehabilitation/retrofitting of old essential buildings like schools, hospitals, police and fire stations, and buildings housing emergency and relief services. Similar programs may be developed for essential bridges and flood control structures.
2. Create an office that would solely oversee safety standards for school buildings and hospitals from design to construction. Increased the level of design standards for said structures. (This may be patterned after the experience of California, USA- from World Bank Report October 2010)
3. Similarly, enforce the provisions of the National Structural Code of the Philippines on the mandatory third party review of high rise buildings. Through the NBCDO, enforce the provision of the NSCP on the installation of seismograms on high rise buildings for data acquisition on ground movement due to earthquake and building's response due to typhoons. These are invaluable data for post earthquake- or typhoon- related structural analysis/evaluation.
4. Update or include provisions of building code on disaster risk reduction.
5. Make an inventory of all infrastructure including buildings nationwide using a standard format for developing a data base of said infrastructures.
6. Develop a data base of all available and serviceable equipment nationwide for post disaster response activities.
7. Strengthen quality inspection of on-going infrastructures.

8. Integrate risk reduction programs in infrastructure development.
9. Develop a program on structural integrity assessment of all existing buildings in existence for 15 years or more. 15 years is the threshold for engineers of record to cease responsibility on the safety of the structures and after which building owners assume this responsibility. However, expectedly private building owners would resist this program due to additional financial constraints. Insurance is an alternative measure however this would not impact to the safety of building occupants.
10. DPWH must actively support professional organizations and other research groups on disaster management. In Japan, the Building Research Institute and the Public Works Research Institute are undertaking researches on various types of disasters especially earthquake and are supported by the Ministry of Construction, the counterpart of our own DPWH.

The strategies for the medium term action plans are still being studied.

	PROPOSED ACTION PLANS TO STRENGTHEN DISASTER PREPAREDNESS AND RESPONSE MECHANISM	STRATEGY
	a. Short Term (one year)	
1	Create a special committee that would oversee the disaster mitigation measures of the DPWH.	Issue Department Order
2	Continuous assessment of public infrastructures and buildings.	Issue Memorandum to all Regional Directors
3	Undertake a complete structural integrity assessment of all private buildings.	NBCDO to prepare Memo to all Building Officials
4	Strictly enforce the required structural integrity evaluation prior to issuance of business permits for commercial buildings.	NBCDO to prepare Memo to all Building Officials
5	Develop a standard format for structural integrity assessment for each type of structure.	Include in the MOA with UP-ICE
6	Review the provisions of building code including its enforcement especially on disaster risk reduction.	Include in the review of NBC by the Board of Consultants, NBCDO
7	Conduct continuous training and upgrade knowlede of engineers in the conduct of inspections/assessment of infrastructures. Undertake training for all DPWH Officials/personnel on disaster risk reduction	AMMS
9	Strengthen the Bureau of Design in the conduct of structural evaluation of buildings, bridges and other structures.	BOD to request authority to hire two (2) structural engineers on a temporary basis. BOD to request funding for procurement of rebound hammer, micro coring machine and ETABS software

	PROPOSED ACTION PLANS TO STRENGTHEN DISASTER PREPAREDNESS AND RESPONSE MECHANISM	STRATEGY
	a. Medium Term (within 5 years)	
1	Develop a program for rehabilitation/retrofitting of old essential bridges, public buildings and other structures.	
2	Create an office that would oversee safety standards for school buildings and hospitals from design to construction. Increased the level of design standards for said structures. (This may be patterned after the experience of California, USA)	
3	Enforce the provisions of the NSCP on the mandatory third party review of high rise buildings. Enforce the provision of the NSCP on the installation of seismograms on high rise buildings for data acquisition on ground movement due to earthquake and building's response due to typhoons.	
4	Update or include provisions of building code on disaster risk reduction.	
5	Make an inventory of all infrastructure including buildings nationwide using a standard format for developing a data base of said infrastructures.	
6	Develop a data base of all available and serviceable equipment nationwide for post disaster response activities.	
7	Strengthen quality inspection of on-going infrastructures.	
8	Integrate risk reduction programs in infrastructure development.	
9	Develop a program on structural integrity assessment of all existing buildings in existence for 15 years or more.	
10	Support professional organizations and other research groups on disaster management.	