

## INFRASTRUCTURE AUDIT CHECKLIST FOR BUILDINGS

(Zone 4: Seismic Zone Map of the Philippines)

## I. GENERAL INFORMATION

## IDENTIFICATION

Region / Province

N - A / CAVITE  
SAN FRANCISCO

City/Municipality

GENERAL TRIAS

Barangay

Street Boundary

/ /

## INSPECTION

Inspector/s: ROD K'NITE M. DELOS REYES  
CRYSTALYN P. MARQUEZPosition: STUDENT  
STUDENTOffice: CNSU - INDANG  
CNSU - INDANGInspection Date / Time: JUNE 21, 2023 / 03:02 Weather Condition:  Sunny  Part Sunny  Cloudy

## II. BUILDING INFORMATION

Building Name: DEPED STANDARD BUILDING

Address: ARNALDO HWY, GENERAL TRIAS, CAVITE

Contact Person: JESSIE D. MENDOZA  Building Owner  Administrator  Tenant

Address: BRGY. SAN FRANCISCO, GENERAL TRIAS, CAVITE

Contact No.: 09190798343

No. of Storey:

Above ground

4

Below Ground

0

Coordinates (if available)

Latitude

14.31086194

Longitude

120.9157536

## A. Type of Building:

 Concrete Frame Timber Frame Reinforced Masonry Steel Frame Composite Steel-Concrete Unreinforced Masonry Reinforced Concrete Shear Wall Other types, pls. specify \_\_\_\_\_

## B. Type of Structure:

 Build-up Section Pre-Cast Combination Rolled Section Cast-In-Place Other types, pls. state \_\_\_\_\_

## C. Design Occupancy:

 Public Assembly Offices School Health Center Industrial Emergency/Evacuation Center Commercial Historical (museum?) Or pls. specify \_\_\_\_\_

Current Occupancy, please specify \_\_\_\_\_

Date / : Constructed / Age of Structure 2015

Year Edition of NSCP used: \_\_\_\_\_

Add'l Storey: \_\_\_\_\_

Add'l span/overhang: \_\_\_\_\_

Original Construction (Y/N)? \_\_\_\_\_

Pls. describe: \_\_\_\_\_

Rehabilitated (Y/N)? N

Available Records/Documents:

 Geotechnical investigation Construction Plan As-built Plan Structural Design Computation Other, pls. specify \_\_\_\_\_

Comments: \_\_\_\_\_

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### III. RAPID VISUAL SCREENING OF BUILDING FOR POTENTIAL SEISMIC HAZARDS (from FEMA-154 2015 Data Collection Form)

TYPE OF CONSTRUCTION	Wood Frame (W1A)	Steel Frame (S1)	Concrete Frame (C1)
Basic Score	1.90	1.50	1.00
Severe Vertical Irregularity	-0.90	-0.80	-0.70
Moderate Vertical Irregularity	-0.50	-0.40	-0.40
Plan Irregularity	-0.70	-0.50	-0.40
Pre-Code (1972)	-0.30	-0.30	-0.10
Post Benchmark (wood=1986, conc. =1992, steel=2001)	1.90	1.00	1.40
Soil Type A or B (hard rock or rock)	0.50	0.3	0.20
Soil Type E (soft soil, 1-3 stories)	-0.2	-0.3	-0.1
Soil Type E (soft soil, >3 stories)	-0.4	-0.3	-0.1
FINAL SCORE, S	(0.7 min)	(0.5 min)	2.3 (0.3 min)

This seismic vulnerability assessment is aimed mainly at determining earthquake resilience, as designed by FEMA 2015 and not the present condition of the structure. The scores above are derived in part from Level 1 Form for Very High Seismicity or Zone 4 of the Seismic Zone Map of the Philippines, wherein the minimum score to be derived should be as indicated. (Note use a different form provided for buildings located in Zone 2, particularly in Sulu/Tawi-tawi and in Palawan.)

### IV. VULNERABILITY OF BUILDING LOCATION

#### A. Previous Hazard Experience

- |                                    |                                       |   |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> Volcanic  | <input type="checkbox"/> Tsunami      | <input checked="" type="checkbox"/> Ground-shaking Earthquake |
| <input type="checkbox"/> Landslide | <input type="checkbox"/> Liquefaction | <input checked="" type="checkbox"/> Typhoon                   |
| <input type="checkbox"/> Flooding  | <input type="checkbox"/> Fire         | <input type="checkbox"/> Others, pls. specify _____           |

#### B. Soil Foundation

- |  |  |                                |
|--|--|--------------------------------|
| <input type="checkbox"/> Sandy                           | <input checked="" type="checkbox"/> Loam | <input type="checkbox"/> Rock  |
| <input type="checkbox"/> Silt                            | <input type="checkbox"/> Peat            | <input type="checkbox"/> Shale |
| <input checked="" type="checkbox"/> Clay                 | <input type="checkbox"/> Limestone       | <input type="checkbox"/> Adobe |
| <input type="checkbox"/> Other types, pls. specify _____ |  |                                |

#### C. Vulnerability to Earthquake

##### C1. Approximate Distance from a known Active Fault

- 5 meters or less       between 5m to 1km      11.9 km (approx. distance if more than 1 km).

##### C2. Ground Condition (select all that applies)

- |  |                |
|--|----------------|
| <input type="checkbox"/> Existence of fissures                 | Remarks: _____ |
| <input type="checkbox"/> Bulged ground                         | Remarks: _____ |
| <input type="checkbox"/> Soil Creep                            | Remarks: _____ |
| <input type="checkbox"/> Scouring (loss of Foundation support) | Remarks: _____ |

#### D. Vulnerability of Landslide/Soil Erosion

- D1. Approximate Distance from Hillside      3480 (in meters)  
 D2. Approximate Distance from Slopes, Cliffs, Ravines      103.50 (in meters)  
 D3. Within Low-lying Area  
 D4. Presence of Landslide displacement or debris encroaching  
 D5. Presence of Bulging of Slopes  
 D6. Presence of Cracks in Rock Slopes  
 D7. Presence of Fissures in Soil Slopes

- |                            |                                       |
|----------------------------|---------------------------------------|
| <input type="checkbox"/> Y | <input checked="" type="checkbox"/> N |
| <input type="checkbox"/> Y | <input checked="" type="checkbox"/> N |
| <input type="checkbox"/> Y | <input checked="" type="checkbox"/> N |
| <input type="checkbox"/> Y | <input checked="" type="checkbox"/> N |
| <input type="checkbox"/> Y | <input checked="" type="checkbox"/> N |

**E. Vulnerability to Liquefaction**

- E1. Approximate Distance from Nearest Body of Water  
 Y       N  
E2. Within Reclamation Area  
 Y       N  
E3. Within Low-lying Area

63.23 (in meters)

**F. Vulnerability to Tsunami**

- F1. Approximate Distance from Coast/Shore line  
 Y       N  
F2. Presence of Water Barriers

15,210 (in meters)

**G. Vulnerability to Flooding**

- G1. Within Floodplains  
 Y       N  
G2. Within Flood-prone Area  
 Y       N

**H. Vulnerability to Other Hazards**

- H1. Typhoon-prone Area  
 Y       N  
H2. Storm-surge Prone Area  
 Y       N  
H3. Within 20kms Radius of Active Volcano  
 Y       N  
H4. Distance from Garbage Dumping Area  
H5. Approximate Distance from Fire Hazard  
H6. Approximate Distance from Toxic Chemical Hazard

(in meters)  
84.67 (in meters)  
164.20 (in meters)

**V. DETAILED EVALUATION**Mark: 

0	1	2	3
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Legend: 0 - None

1 - Minor

2 - Moderate

3 - Severe

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
<b>A. STRUCTURAL</b>				
<b>A1. Exterior Part of Building</b>				
<b>1. Building Site</b>				
a. Existence of Fissures	0			
b. Bulged Ground	0			
c. Soil Creep	0			
d. Others, pls. specify				
<b>2. Foundation</b>				
a. Settlement (meter)	0			
b. Tilting (degree)	0			
c. Scouring				
d. Others, pls. specify				
<b>3. Columns</b>				
a. Cracks	3			
-diagonal/ vertical/horizontal cracks				
-Panel zone cracks				
b. Drifting	0			
c. Spalling	0			
-Exposure of reinforcing bars				
d. Changes in the Vertical Alignment	0			
(i.e. Column out of plumb)				
e. Broken, Buckled or Fractured	0			
f. Joints Separation	0			
g. Detached Bracing/s	0			
h. Corrosion of Steel Member	0			
i. Evidence of Termite Infestation			0	
j. Others, pls. specify				
<b>4. Beams</b>				
a. Cracks	1			
-diagonal/vertical / horizontal cracks				
b. Spalling	0			
-Exposure of reinforcing bars				

# Infrastructure Audit Checklist for Buildings

Zone 4: Very High Seismicity

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
c. Excessive Deflection	0			
d. Broken, Buckled or Fractured		0		
e. Joints Separation		0		
f. Detached Bracing		0		
g. Corrosion of Steel Member		0		
h. Evidence of Termite Infestation			0	
i. Others, pls. specify				
<b>5. Walls</b>				
a. Cracks	1			
- diagonal/ vertical horizontal cracks				
b. Separation from Joints or Connections,	0			
i.e. Beam/Column				
c. Spalling	0			
- Exposure of reinforcing bars				
d. Racking	0			
e. Solid Shear Walls				
- diagonal/vertical/horizontal cracks				
f. Evidence of Termite Infestation			0	
g. Others, pls. specify				
<b>A2. Interior Part of Building</b>				
<b>1. Foundation</b>				
a. Bowing of underground walls	0			
b. Others, pls. specify				
<b>2. Columns</b>				
a. Cracks	1			
- diagonal/ vertical/ horizontal cracks				
b. Broken, Buckled or Fractured	0			
c. Joints Separation	0			
d. Spalling	0			
- Exposure of reinforcing bars				
e. Changes in the Vertical Alignment	0			
f. Detached Bracing/s		0		
g. Corrosion of Steel Member		0		
h. Evidence of Termite Infestation			0	
i. Others, pls. specify				
<b>3. Beams</b>				
a. Cracks	1			
- diagonal/ vertical/ horizontal cracks				
b. Excessive Deflection	0			
c. Spalling	0			
- Exposure of reinforcing bars				
d. Separation from vertical support	0			
e. Beam-column joint failure		0		
f. Corrosion of Steel Member		0		
g. Evidence of Termite Infestation			0	
h. Others, pls. specify				
<b>4. Slab/ Flooring</b>				
a. Cracks	1			
- Along vertical plane of beam edge				
- Punching Shear				
b. Sagging	0			
c. Leaks	0			
d. Separation from vertical support	0			
(failure at columns)				
e. Spalling	0			
- Exposure of reinforcing bars				
f. Evidence of Termite Infestation			0	
g. Others, pls. Specify				
<b>5. Wall</b>				
a. Cracks	1			
- diagonal/vertical/ horizontal cracks				

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
b. Separation of Joints/Connection (i.e. Floor -wall separation Beam/Column/Slabs separation)	0			
c. Spalling - Exposure of reinforcing bars	0			
d. Evidence of Termite Infestation			0	
e. Others, pls. Specify				
<b>6. Shear Walls</b>				* NO SHEAR WALLS
a. Spalling and exposure of vertical reinforcement at boundary elements				
b. Horizontal cracks 3mm( 1/8") or larger extending through boundary elements.				
c. Shear failure at piers				
d Failed spandrel beams				
e. Others, pls. Specify				
<b>7. Roof Framing</b>				
a. Separation from Wall	0			
b Cracks/Fractured at welded connections		0		
c. Buckling of members (including wood)		0		
d Corrosion of Steel Members		0		
e. Sagging				
f. Evidence of Termite Infestation			0	
g. Others, pls. Specify				
<b>B. NON-STRUCTURAL</b>				
<b>1. Ceiling</b>				
a. Evidence of Termite Infestation			0	
b. Materials are not securely fastened			0	
c. Warping			1	
d. Others, pls. Specify				
<b>2. Interior Walls/Partition</b>				
a. Masonry		0		
a1. Separation from column to beam	0			
a2. Cracks	1			
a3. Spalling	0			
b Wood			0	
b1. Separation from column to beam			0	
b2. Cracks			0	
b3. Evidence of Termite Infestation			0	
c. Glass				
c1. Separation from columns/ beams				
c2. Cracks				
<b>3. Doors and Entrances</b>				
a. Not securely fastened and cannot be closed or opened			1	
b Evidence of Termite Infestation			0	
c. Glass Crack			0	
d. Others, pls. specify				
<b>4. Windows and Shutters</b>				
a. Not securely fastened and cannot be closed or opened			0	
b. Evidence of Termite Infestation			0	
c. Glass Crack			0	
d. Others, pls. specify				
<b>5. Stairs</b>				
a. Cracks on step and rise	1			
b. Sagging	0			
c. Displacement of steps/ railings	0			
d. Separation from joints		0		
e. Corrosion				
f. Spalling	0			
g. Evidence of Termite Infestation			0	

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
h. Others, pls. Specify				
<b>6. Cladding</b>				* NO CLADDING
a. Materials are not securely fastened				
b. Others, pls. Specify				
<b>7. Parapet</b>				* NO PARAPET
a. Cracks				
b. Spalling				
c. Others, pls. Specify				
<b>8. Floor Coverings (Tiles)</b>	0	0		
a. Cracks				
b. Displacement				
c. Others, pls. Specify				
<b>9. Roof Sheets</b>		8		
a. Materials are not securely fastened				
b. Corrosion				
C. Others, pls. Specify				
<b>10. Ramps for Differently Abled</b>	1	0	0	
a. Cracks on ramps				
b. Displacement of railings				
c. Corrosion				
d. Spalling				
e. Others pls. Specify				
	Yes	No		Remarks/Other Observations
<b>11. Presence of open space (easement)</b>				
a. Front	/			
b. Back	/			
c. Sides	/			
<b>12. Parking capacity not exceeding NBC requirements.</b>				
<b>13. Building provisions allowing people to pass within the building premises in due consideration of security, thus providing more options for pedestrian movement.</b>	/			
<b>14. Covered walkway connecting the building to transport waiting areas.</b>		/		
<b>C. ANCILLARY/AUXILIARY EQUIPMENT AND FACILITIES (Optional)</b>				
<b>1. Electrical System</b>				
a. Convenience Outlets				
Breakage				
Corrosion				
Loose Contact				
Others, pls. Specify				
b. Wirings				
Exposed conductor				
Loose connections				
Others, pls. Specify				
c. Fixtures				
Breakage				
Corrosion				
Others, pls. Specify				
d. Generator Sets				
Not securely fastened to base support				
Corrosion				
Others, pls. Specify				
<b>2. Water Supply System</b>				
a. Tank				
Leakages				
Corrosion				
Spalling				
Leaning				
Others, pls. Specify				
b. Pipes				
Corrosion				
Clogging				

## Infrastructure Audit Checklist for Buildings

Zone 4: Very High Seismicity

	Yes	No	Remarks/Other Observations
Disconnected			
Leakage			
Breakage			
Others, pls. Specify			
C. Faucet			
Corrosion			
Broken			
Securely fastened/connected to support system			
Others, pls. Specify			
<b>3. Sanitary Piping System</b>			
a. Pipes			
Leakage			
Corrosion			
Breakage			
Clogging			
Securely fastened to support system			
Others, pls. Specify			
b. Bracing			
Corrosion			
Securely fastened to support system			
Others, pls. Specify			
<b>4. Air Conditioning Systems</b>			
a. Bracing and Support			
Securely Fastened			
Corrosion			
Others, pls. Specify			
<b>5. Emergency Exit</b>			
a. Presence of at least 2 emergency exits remote			
b. Luminous directional exit signs are located			
c. Illuminated "EXIT" signs have distinctive color			
d. Illumination system of the exit s is AC/DC			
e. Fire exit doors are fire-resistant, swing-out type,			
f. Others, pls. Specify			
<b>6. Fire Safety Device System</b>			
a. Functional Smoke Detector			
b. Functional Alarm			
c. Functional Sprinkler			
d. Functional Hose			
e. Functional Fire Extinguisher			
f. Others, pls. Specify			
<b>7. Communication Facilities</b>			
a. Functional Telephone Line			
b. Functional Internet Access			
c. Functional Two Way Radio			
d. Others, pls. Specify			
<b>D. ECOLOGICAL CONSIDERATION (Optional)</b>			
1. Presence of natural shading using trees and			
2. Presence of open-grid pavement system.			
3. Presence of vegetated roofing.			
4. Presence of wastewater treatment facility.			
5. Presence of water recycling technologies and water			
6. Presence of rain water harvesting			
7. Using Natural Ventilation Techniques			
8. Using natural lighting and access to day lighting.			
9. Using renewable energy technologies, pls. specify.			
10. Using Efficient Lighting.			
11. No Smoking Policy inside the building; smoking areas are designated.			
12. Presence of Materials Recovery Facility			
13. Implementing Solid Waste Management.			
14. Others pls. Specify			

**VI. SUMMARY REPORT****A. Rapid Visual Screening of Building for Potential Seismic Hazard**Final Score, S = 2.3 (tick box below if less than 2.0) Structure may be vulnerable to Seismic Hazards**B. Vulnerability of Building Site / Location**

- No observed locational vulnerability  
 Highly / moderately vulnerable to TYPHOON . GROUND SHAKING, \_\_\_\_\_  
 (list down determined vulnerabilities on IV. Vulnerability of Building Location)

**C. Physical Over-All Conditions****1. Structural Defects**

- |   |   |
|---|---|
| <input type="checkbox"/> No adverse defects                   | <input checked="" type="checkbox"/> Presence of some severe defect found (see photos) |
| <input type="checkbox"/> Presence of minor structural defects | <input type="checkbox"/> Presence of multiple severe defects requiring investigation  |

**2. Non-Structural Defects**

- |  |   |
|--|---|
| <input type="checkbox"/> No adverse defects                                  | <input type="checkbox"/> Presence of localized defect found (see photos)            |
| <input checked="" type="checkbox"/> Presence of minor non-structural defects | <input type="checkbox"/> Presence of interrelated defects for further investigation |

**3. Ancillary/Auxiliary Equipment and Facilities Defects**

- |   |   |
|---|---|
| <input type="checkbox"/> No adverse defects                   | <input type="checkbox"/> Presence of localized defect found (see photos)            |
| <input checked="" type="checkbox"/> Presence of minor defects | <input type="checkbox"/> Presence of interrelated defects for further investigation |

**4 Ecological Consideration**

- |  |  |
|--|--|
| <input type="checkbox"/> No adverse defects                    | <input type="checkbox"/> Presence of localized concern found (see photos)                        |
| <input type="checkbox"/> Presence of minor ecological concerns | <input type="checkbox"/> Presence of concerns affecting community<br>(for further investigation) |

**D. Findings and Recommendation****1. Minor Findings and Recommendation**

- No further action required  
 Recommend to communicate with owner for Level 2 investigation

Remarks:

- MINOR CRACKS WERE FOUND ON THE WALLS  
 - WARPING OF CEILING (4TH LEVEL)

**2. Major Findings and Recommendation**

- Recommend to communicate with owner for Level 2 investigation  
 Recommend to communicate with owner for Level 2 investigation by structural engineer

Remarks:

A CRACK WAS FOUND ON AN EXTERIOR COLUMN (SUSPECTEDLY SEVERE), LEVEL 2 INVESTIGATION BY STRUCTURAL ENGINEER IS RECOMMENDED (SEE PHOTOS)

9/26/2023  
CRYSTALYN P. MARQUEZ BORDUKINTE DELOS REYES

Inspector / Screener

JESSIE D. MENDOZA  
 Supervisor / Team Lead

Office of the Building Official