INFRASTRUCTURE AUDIT CHECKLIST FOR BUILDINGS
(Zone 4: Seismic Zone Map of the Philippines)

I. GENERAL INFORMATION

IDENTIFICATION

Region / Province _____ City/Municipality _____

Barangay _____ Street Boundary _____ / _____ / _____

INSPECTION

Inspector/s: _____ Position: _____ Office : _____

_____ _____ _____

_____ _____ _____

Inspection Date / Time: _____ Weather Condition: ☐ Sunny ☐ Part Sunny ☐ Cloudy

II. BUILDING INFORMATION

Building Name : _____

Address : _____

Contact Person : _____ ☐ Building Owner ☐ Administrator ☐ Tenant

Address : _____

Contact No. : _____

No. of Storey : Above ground _____ Below Ground _____

Coordinates (if available) Latitude _____ Longitude _____

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 _____

Year Edition of NSCP used : _____ Date Constructed / Age of Structure

Original Construction (Y/N)? _____ Add'l Storey: _____ Add'l span/overhang: _____

Rehabilitated (Y/N) ? _____ Pls. describe: _____

Available Records/Documents: ☐ Geotechnical investigation ☐ Construction Plan

☐ As-built Plan ☐ Structural Design Computation

☐ Other, pls. specify _____

Comments: _____

_____

_____

_____

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)	(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

☐ Volcanic
☐ Landslide
☐ Flooding
☐ Tsunami
☐ Liquefaction
☐ Fire
☐ Ground-shaking Earthquake
☐ Typhoon
☐ Others, pls. specify _____

B. Soil Foundation

☐ Sandy
☐ Silt
☐ Clay
☐ Loam
☐ Peat
☐ Limestone
☐ Rock
☐ Shale
☐ Adobe
☐ Other types, pls. specify _____

C. Vulnerability to Earthquake

C1. Approximate Distance form a known Active Fault

☐ 5 meters or less ☐ between 5m to 1km _____, approx. distance if more than 1 km.

C2. Ground Condition (select all that applies)

☐ Existence of fissures Remarks: _____
☐ Buldged ground Remarks: _____
☐ Soil Creep Remarks: _____
☐ Scouring (loss of Foundation support) Remarks: _____

D. Vulnerability of Landslide/Soil Erosion

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

E. Vulnerability to Liquefaction

E1. Approximate Distance form Nearest Body of Water _____ (in meters)
E2. Within Reclamation Area ☐ Y ☐ N
E3. Within Low-lying Area ☐ Y ☐ N

F. Vulnerability to Tsunami

F1. Approximate Distance from Coast/Shore line _____ (in meters)
F2. Presence of Water Barriers ☐ Y ☐ N

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 Dum ping Area _____ (in meters)
H5. Approximate Distance from Fire Hazard _____ (in meters)
H6. Approximate Distance from Toxic Chemical Hazard _____ (in meters)

V. DETAILED EVALUATION

Mark: | 0 | 1 | 2 | 3 |

Legend : 0 - None 1 - Minor 2 - Moderate 3 - Severe

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

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

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
b. Separation of Joints/Connection				
(i.e. Floor -wall separation				
Beam/Column/Slabs separation)				
c. Spalling				
- Exposure of reinforcing bars				
d. Evidence of Termite Infestation				
e. Others, pls. Specify				
6. Shear Walls				
a. Spalling and exposure of vertical				
reinforcement at boundary elements				
b. Horizontal cracks 3mm(l /8") or larger				
extending through boundary elements.				
c. Shear failure at piers				
d. Failed spandrel beams				
e. Others, pls. Specify				
7. Roof Framing				
a. Separation from Wall				
b. Cracks/Fractured at welded connections				
c. Buckling of members (including wood)				
d. Corrosion of Steel Members				
e. Sagging				
f. Evidence of Termite Infestation				
g. Others, pls. Specify				
B. NON-STRUCTURAL				
1. Ceiling				
a. Evidence of Termite Infestation				
b. Materials are not securely				
fastened				
c. Warping				
d. Others, pls. Specify				
2. Interior Walls/Partition				
a. Masonry				
a1. Separation from column to beam				
a2. Cracks				
a3. Spalling				
b. Wood				
b1. Separation from column to beam				
b2. Cracks				
b3. Evidence of Termite Infestation				
c. Glass				
c1. Separation from columns/ beams				
c2. Cracks				
3. Doors and Entrances				
a. Not securely fastened and cannot be				
closed or opened				
b. Evidence of Termite Infestation				
c. Glass Crack				
d. Others, pls. specify				
4. Window s and Shutters				
a. Not securely fastened and cannot be				
closed or opened				
b. Evidence of Termite Infestation				
c. Glass Crack				
d. Others, pls. specify				
5. Stairs				
a. Cracks on step and rise				
b. Sagging				
C. Displacement of steps/ railings				
d. Separation from joints				
e. Corrosion				
f. Spalling				
g. Evidence of Termite Infestation				

	CONCRETE	STEEL	WOOD	Remarks/Other Observations
h. Others, pls. Specify				
6. Cladding				
a. Materials are not securely fastened				
b. Others, pls. Specify				
7. Parapet				
a. Cracks				
b. Spalling				
c. Others, pls. Specify				
8. Floor Coverings (Tiles)				
a. Cracks				
b. Displacement				
c. Others, pls. Specify				
9. Roof Sheets				
a. Materials are not securely fastened				
b. Corrosion				
C. Others, pls. Specify				
10. Ramps for Differently Abled				
a. Cracks on ramps				
b. Displacement of railings				
c. Corrosion				
d. Spalling				
e. Others pls. Specify				

	Yes	No	Remarks/Other Observations
11 . Presence of open space (easement)			
a. Front			
b. Back			
c. Sides			
12. Parking capacity not exceeding NBC requirements.			
13. Building provisions allowing people to pass within the building premises in due consideration of security, thus providing more options for pedestrian movement.			
14. Covered walkway connecting the building to transport waiting areas.			
C. ANCILLARY/AUXILIARY EQUIPMENT AND FACILITIES (Optional)			
1. Electrical System			
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			
2. Water Supply System			
a. Tank			
Leakages			
Corrosion			
Spalling			
Leaning			
Others, pls. Specify			
b. Pipes			
Corrosion			
Clogging			

	Yes	No	Remarks/Other Observations
Disconnected			
Leakage			
Breakage			
Others, pls. Specify			
c. Faucet			
Corrosion			
Broken			
Securely fastened/connected to support system			
Others, pls. Specify			
3. Sanitary Piping System			
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			
4. Air Conditioning Systems			
a. Bracing and Support			
Securely Fastened			
Corrosion			
Others, pls. Specify			
5. Emergency Exit			
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. Fi re exit doors are fi re- resistive, swing-out type,			
f. Others, pls. Specify			
6. Fire Safety Device System			
a. Functional Smoke Detector			
b. Functional Alarm			
c. Functional Sprinkler			
d . Functional Hose			
e. Functional Fire Extinguisher			
f. Others, pls. Specify			
7. Communication Facilities			
a. Functional Telephone Line			
b. Functional Internet Access			
c. Functional Two Way Radio			
d. Others, pls. Specify			
D. ECOLOGICAL CONSIDERATION (Optional)			
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 = _____ (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 _____, _____, _____, _____
(list down determined vulnerabilities on IV. Vulnerability of Building Location)

C. Physical Over-All Conditions

1. Structural Defects
   - ☐ No adverse defects
   - ☐ Presence of minor structural defects
   - ☐ Presence of some severe defect found (see photos)
   - ☐ Presence of multiple severe defects requiring investigation

2. Non-Structural Defects
   - ☐ No adverse defects
   - ☐ Presence of minor non-structural defects
   - ☐ Presence of localized defect found (see photos)
   - ☐ Presence of interrelated defects for further investigation

3. Ancillary/Auxiliary Equipment and Facilities Defects
   - ☐ No adverse defects
   - ☐ Presence of minor defects
   - ☐ Presence of localized defect found (see photos)
   - ☐ Presence of interrelated defects for further investigation

4 Ecological Consideration
   - ☐ No adverse defects
   - ☐ Presence of minor ecological concerns
   - ☐ Presence of localized concern found (see photos)
   - ☐ Presence of concerns affecting community (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: _____

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: _____

_____ **Inspector / Screener**

_____ **Supervisor / Team Lead**

_____ **Office of the Building Official**

E. Attachment (Photos, Sketches, Drawings, Plans, Other Documents)

Exterior facade

interior walls

slab / flooring

deck / roof

surroundings

others