



**GOVERNMENT OF PAKISTAN
PRIME MINISTER'S OFFICE
NATIONAL DISASTER MANAGEMENT AUTHORITY
ISLAMABAD**



F. No. 787/IA&PD/Advisory/ NDMA/2026

Islamabad, dated 31st July 2026

Subject: Infrastructure Advisory for Prevention of House Collapses during Remaining Spells of Monsoon 2026

1. During the monsoon season, heavy and prolonged rainfall significantly increases the risk of structural failures in buildings, particularly the collapse of roofs and walls. In Pakistan, a large proportion of residential and public buildings, especially in rural and peri-urban areas, are constructed using unreinforced masonry, adobe (kacha), or poorly maintained materials. These structures are highly vulnerable to water ingress, saturation of walls, and overloading of roofs due to water accumulation or debris. **During Monsoon seasons, majority of the reported fatalities are attributed to house collapses.** This underscores the urgent need to strengthen roofs, walls, foundations, and other critical structural components through resilient construction and retrofitting measures to minimize structural failures and protect human lives during monsoon events.

2. Roof and wall collapse during monsoon are primarily caused by the following factors:
- a. **Water saturation of masonry and adobe walls:** Prolonged exposure to rain weakens mud and unreinforced brick walls, reducing their load-bearing capacity.
 - b. **Roof overloading:** Accumulation of rainwater or additional weight on flat or poorly drained roofs leads to structural failure.
 - c. **Inadequate roof drainage and slope:** Flat roofs without proper slopes or blocked drainage outlets cause ponding of water.
 - d. **Girder and brick infill roofs:** During the monsoon season, prolonged and intense rainfall can significantly increase the risk of collapse in traditional girder and brick infill roofs. Water ponding due to inadequate drainage, combined with moisture infiltration, accelerates corrosion of steel girders, weakens brick masonry and mortar joints, and increases roof loading through material saturation; when compounded by aging, poor maintenance, or unauthorized rooftop additions, these factors can lead to partial or complete roof failure.
 - e. **Absent or improperly sized roof drainage spouts:** Missing, damaged, or undersized roof drainage spouts prevent rainwater from being discharged away from the house. As a result, rainwater flows onto or infiltrates the walls, causing prolonged moisture saturation, deterioration of the wall material, and a

progressive reduction in structural strength, ultimately increasing the risk of wall or roof collapse.

- f. **Deteriorated or missing roof coverings:** Damaged tiles, sheets, or membranes allow water penetration into roof structures and walls.
- g. **Unreinforced and poorly maintained structures:** Absence of proper foundation, lintels, ring beams, or wall ties increases vulnerability to lateral and vertical loads.
- h. **Seepage and rising damp:** Water rising from foundations or penetrating through cracks weakens lower wall sections, leading to progressive failure.

3. Prolonged rainfall, localized cloudbursts, urban flooding, and saturated soil conditions increase the risk of structural instability across many regions of Pakistan. Water infiltration weakens foundations, masonry walls, timber roof members, and roofing systems, significantly increasing the probability of roof failures, wall collapses, and partial building failures. The risk is particularly high for:-

- a. Mud (Kacha) houses
- b. Unreinforced brick masonry houses
- c. Houses with deteriorated roofs
- d. Structures constructed without engineering supervision
- e. Houses located adjacent to steep slopes or water channels
- f. Poorly maintained aged structures

4. The following actions are recommended for Residential Houses:

- a. Immediately repair structural cracks in walls using appropriate cement mortar or approved strengthening techniques.
- b. Install properly sized roof drainage spouts to effectively discharge rainwater away from the house, preventing water from flowing onto exterior walls and reducing the risk of moisture ingress, wall deterioration, and structural damage.
- c. Replace severely damaged, rotten, or termite-infested wooden roof members with properly treated structural timber or steel sections.
- d. Strengthen weak masonry walls using reinforced concrete bands, vertical reinforcement, steel mesh, or approved retrofitting techniques.
- e. Ensure roofs have adequate slope to facilitate rapid rainwater drainage and prevent prolonged water accumulation.
- f. Clean rooftop drains, gutters, downpipes, and rainwater outlets before every major rainfall event.
- g. Repair damaged waterproofing layers, roof membranes, and roof joints to prevent water seepage into structural components.

- h. Anchor corrugated metal sheets, roof tiles, and lightweight roofing materials using appropriate fasteners capable of resisting strong winds.
- i. Avoid placing heavy water tanks, construction materials, or unnecessary loads on weak or deteriorated roofs.
- j. Immediately evacuate occupants from buildings exhibiting major wall cracks, roof deflection, excessive settlement, or any signs of imminent structural failure until detailed engineering assessment is completed.

5. Following community awareness measures should be taken:

- a. Educate communities to recognize early warning signs of structural failure, including:
 - i. Large diagonal wall cracks
 - ii. Separation between walls and roofs
 - iii. Doors and windows becoming difficult to open or close
 - iv. Bulging or leaning walls
 - v. Roof sagging
 - vi. Unusual settlement of foundations
 - vii. Water seepage through structural elements
- b. Discourage residents from occupying visibly damaged houses during continuous heavy rainfall.
- c. Immediately report dangerous structures to local authorities for engineering inspection.
- d. Avoid sheltering beneath cracked walls, deteriorated roofs, boundary walls, or partially collapsed buildings during rainfall.

6. All concerned Federal Ministries, Provincial Governments, Provincial Disaster Management Authorities (PDMAs), District Disaster Management Authorities (DDMAs), Municipal Corporations, Development Authorities, and Local Governments are requested to implement the above recommendations throughout the monsoon season to reduce the risk of roof and wall collapses, safeguard human lives, and enhance the resilience of residential infrastructure.

7. Forwarded for information/ necessary action by all concerned, please.



COMMON CAUSES OF ROOF AND WALL COLLAPSE DURING MONSOON



HEAVY RAIN + WEAK STRUCTURES = HIGH RISK OF COLLAPSE

a Water saturation of masonry and adobe walls

Prolonged exposure to rain weakens mud and unreinforced brick walls, reducing their load-bearing capacity.



b Roof overloading

Accumulation of rainwater or additional weight on flat or poorly drained roofs leads to structural failure.



c Inadequate roof drainage and slope

Flat roofs without proper slopes or blocked drainage outlets cause ponding of water.



d Girder and brick infill roofs

Water ponding, moisture infiltration and corrosion of steel girders, weakening of brick and mortar joints, added loads, aging and poor maintenance can lead to partial or complete roof failure.



e Absent or improperly sized roof drainage spouts

Missing, damaged, or under sized spouts prevent rain water from being discharged away from the house. Water flows onto or infiltrates the walls, causing moisture saturation, deterioration of wall material.



f Deteriorated or missing roof coverings

Damaged tiles, sheets, or membranes allow water penetration into roof structures and walls.



g Unreinforced and poorly maintained structures

Absence of proper foundation, lintels, ring beams, or wall ties increases vulnerability to lateral and vertical loads.



h Seepage and rising damp

Water rising from foundations or penetrating through cracks weakens lower wall sections, leading to progressive failure.



National Disaster Management Authority
Infrastructure Advisory and Project Development Wing



RECOMMENDED ACTIONS FOR RESIDENTIAL HOUSES



Take preventive measures now to protect your home and family during the monsoon.

a Immediately repair structural cracks in walls

Repair structural cracks in walls using appropriate cement mortar or approved strengthening techniques.



b Install properly sized roof drainage spouts

Install properly sized roof drainage spouts to discharge rainwater away from the house, preventing water from flowing onto exterior walls and reducing the risk of moisture ingress, wall deterioration, and structural damage.



c Replace damaged or infested wooden roof members

Replace severely damaged, rotten, or termite-infested wooden roof members with properly treated structural timber or steel sections.



d Strengthen weak masonry walls

Strengthen weak masonry walls using reinforced concrete bands, vertical reinforcement, steel mesh, or approved retrofitting techniques.



e Ensure adequate roof slope

Ensure roofs have adequate slope to facilitate rapid rainwater drainage and prevent prolonged water accumulation.



f Clean roof drains and gutters regularly

Clean rooftop drains, gutters, downpipes, and rainwater outlets before every major rainfall event.



g Repair waterproofing and roof membranes

Repair damaged waterproofing layers, roof membranes, and roof joints to prevent water seepage into structural components.



h Anchor roofing materials against strong winds

Anchor corrugated metal sheets, roof tiles, and lightweight roofing materials using appropriate fasteners capable of resisting strong winds.



i Avoid placing heavy loads on weak roofs

Avoid placing heavy water tanks, construction materials, or unnecessary loads on weak or deteriorated roofs.



j Evacuate if signs of imminent failure

Immediately evacuate occupants from buildings exhibiting major wall cracks, roof deflection, excessive settlement, or any signs of imminent structural failure until detailed engineering assessment is completed.



National Disaster Management Authority
Infrastructure Advisory and Project Development Wing