

**Distribution of Houses by Predominant Materials of Roof and Wall  
and Level of Damage Risk**

**Table No. : MP 02**

**State : MADHYA PRADESH**

**MORENA**

Wall / Roof		Census Houses		Level of Risk under									Flood Prone Area in %
		No. of Houses	%	EQ Zone				Wind Velocity m/s					
				V	IV	III	II	55 & 50	47	44 & 39	33		
				Area in %				Area in %					
<b>WALL</b>								100		100			
<b>A1 - Mud &amp; Unburnt Brick Wall</b>	Rural	52,032	12.9										
	Urban	4,223	1.1										
	<b>Total</b>	<b>56,255</b>	<b>14.0</b>					<i>L</i>		<i>H</i>			
<b>A2 - Stone Wall not packed with mortar</b>	Rural	19,403	4.8										
	Urban	1,509	0.4										
	<b>Total</b>	<b>20,912</b>	<b>5.2</b>					<i>L</i>		<i>M</i>			
<b>Total - Category - A</b>		<b>77,167</b>	<b>19.2</b>										
<b>B - Burnt Bricks Wall &amp; Stone wall packed with mortar</b>	Rural	229,498	57.1										
	Urban	81,538	20.3										
	<b>Total</b>	<b>311,036</b>	<b>77.4</b>					<i>VL</i>		<i>M</i>			
<b>Total - Category - B</b>		<b>311,036</b>	<b>77.4</b>										
<b>C1 - Concrete Wall</b>	Rural	299	0.1										
	Urban	217	0.1										
	<b>Total</b>	<b>516</b>	<b>0.2</b>					<i>VL</i>		<i>VL</i>			
<b>C2 - Wood wall</b>	Rural	1,029	0.3										
	Urban	152	-										
	<b>Total</b>	<b>1,181</b>	<b>0.3</b>					<i>VL</i>		<i>H</i>			
<b>Total - Category - C</b>		<b>1,697</b>	<b>0.4</b>										
<b>X - Other Materials</b>	Rural	10,440	2.6										
	Urban	1,705	0.4										
	<b>Total</b>	<b>12,145</b>	<b>3.0</b>					<i>VL</i>		<i>H</i>			
<b>Total - Category - X</b>		<b>12,145</b>	<b>3.0</b>										
<b>TOTAL HOUSES*</b>		<b>402,045</b>											

<b>ROOF</b>													
<b>R1 - Light Weight Sloping Roof</b>	Rural	46,998	11.7										
	Urban	4,669	1.2										
	<b>Total</b>	<b>51,667</b>	<b>12.9</b>					<i>VL</i>		<i>VH</i>			
<b>R2 - Heavy Weight Sloping Roof</b>	Rural	246,194	61.2										
	Urban	64,295	16.0										
	<b>Total</b>	<b>310,489</b>	<b>77.2</b>					<i>VL</i>		<i>M</i>			
<b>R3 - Flat Roof</b>	Rural	19,509	4.9										
	Urban	20,380	5.1										
	<b>Total</b>	<b>39,889</b>	<b>10.0</b>	Damage Risk as per that for the Wall supporting it									
<b>TOTAL HOUSES*</b>		<b>402,045</b>											

Probable Maximum Precipitation at a Station of the district in one day for arial extent of 1000 sqm. 711 mm

**Housing Category : Wall Types**

**Category - A** : Buildings in field-stone, rural structures,  
unburnt brick houses, clay houses

**Category - B** : Ordinary brick building; buildings of the large block & prefabricated type, half-timbered structures, building in natural hewn stone

**Category - C** : Reinforced building, well built wooden structures

**Category - X** : Other materials not covered in A,B,C. These are generally light.

**Notes** : 1. Flood prone area includes that protected area which may have more severe damage under failure of protection works. In some other areas the local damage may be severe under heavy rains and choked drainage.

2. Damage Risk for wall types is indicated assuming heavy flat roof in categories A, B and C (Reinforced Concrete) building

3. Source of Housing Data : Census of Housing, GOI, 2011

**Housing Category : Roof Type**

**Category - R1** - Light Weight (Grass, Thatch, Bamboo, Wood, Mud, Plastic, Polythene, GI Metal, Asbestos Sheets, Other Materials)

**Category - R2** - Heavy Weight (Tiles, Stone/Slate)

**Category - R3** - Flat Roof (Brick, Concrete)

EQ Zone V : Very High Damage Risk Zone (MSK > IX)

EQ Zone IV : High Damage Risk Zone (MSK VIII)

EQ Zone III : Moderate Damage Risk Zone (MSK VII)

EQ Zone II : Low Damage Risk Zone (MSK < VI)

Level of Risk : VH = Very High; H = High;

M = Moderate; L = Low; VL = Very Low

\* Total No.of Houses excluding Vacant/Locked Houses