

A PRACTICAL GUIDELINE TO
**Making School Safer
from Natural Disaster**
For School Principals and School Committees





Running through the evacuation route to the assigned assembly area.

Preface

A Practical Guideline to Making School Safe from Natural Disaster for School Principals and School Committees is developed based on the experiences in implementing Safe School Pilot Program by the World Bank in collaboration with Ministry of National Education, Ministry of Public Work, Agency for Assessment and Application of Technology (BPPT), and National Secretariat of Safe School. The pilot program funding was supported by Basic Education Capacity Trust Fund (BEC-TF: European Union and Kingdom of Nederland) and Global Facility for Disaster Reduction and Recovery (GFDRR), and implemented by the Education and Disaster Risk Reduction Units of the World Bank Office Jakarta in July- December 2012 in Provinces of Sumatera Barat, Jawa Barat and Nusa Tenggara Barat.

This practical guideline, designed for one-floor building, refers to formal documents of safe school and earthquake resilient building available, among others: Regulation of Head of National Agency for Disaster Management No. 4 Year 2012 on Safe School; Indonesia National Standard on Guideline for Earthquake Resilient Planning for Building and Non-Building Structures issued in 2012 by Indonesia National Agency for Standard; Technical Guideline for Earthquake resilient Building and Housing issued in 2006 by Ministry of Public Works (MPW); Technical Guideline on Education Implementation issued in 2012 by Ministry of National Education; and some other documents. Some journals produced by experts on disaster resilient building construction and disaster risk reduction, also enriches this practical guideline.

This practical guideline is developed for school management with expectation to enable them to do risk assessment, planning development, and initiate the activities required to establish and implement safe school from disaster risk. Though various hazards discussed in this guideline, but it is focused on efforts to implement safe school from earthquake and tsunami risk. It is expected that this practical guideline will build the school management capacity in implementing safe school from disaster risk program and at the same time in reducing the risk of disaster on students and school communities.

Jakarta , September 2014

Author Team





About this Guideline

Every year the Government of Indonesia provides funding to public schools throughout the country to undertake civil works to rehabilitate existing classroom or to build brand new classroom buildings. Between 2010-2012 alone, more than 368,000 classrooms have been rehabilitated under national school rehabilitation program. Today, the Government continued to build around 300 new schools and rehabilitate or build more than 5,000 new classrooms annually. While the design for these government funded schools had incorporated earthquake resilient standard, compliance to this standard in the implementation remains weak. With the above high rate of new structures being built every year, the newly constructed buildings may pose vulnerability to natural hazards in particular earthquake.

With most of the construction works under this program were managed by the school management (i.e., school principals and school committees), providing the school principals and school committee with easy to read and simple guideline on how to manage and supervise basic quality construction becomes very critical. As the schools undertake quality construction to ensure safety from earthquake risks, broader disaster preparedness could also be introduced to the school community.

This Guideline was designed specifically for the Indonesian context of school construction scheme as described above. Any translation or utilization of this Guideline for use in any other context needs to consider the different specificity to this Indonesian particular situation.



Gathering at the assigned assembly area.

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The schools vulnerable to disaster not only will increase safety risk to students, teachers and school community, but also influence the flow of teaching-learning process at schools.

01. Why Safer School

Indonesia is located in the subduction zones of three tectonic plates and at the borders of four major tectonic plates of the world: the Eurasian, Indian and Australian, and Pacific Plates. This has made the country prone to natural disasters, including earthquake and tsunami.

The borders of the plates and active subductions are the sources of tectonic earthquakes and they form a ring of active volcanoes notoriously known as the Ring of Fire that can pose catastrophic risks to people living around them. Depending on the magnitude, disaster risks posed by an earthquake can be dispersed along subduction zones and their surrounding areas to a radius of hundreds of kilometers. An earthquake tremor may also trigger secondary disaster events such as landslide and land subsidence while the dispersal of an undersea earthquake may lead to tsunami.

Indonesia is also prone to other types of disasters such as strong wind, flood, drought, and fire. The increasing earth temperature caused by human activities that are not environmental friendly – including emission of greenhouse gases from the use of fuel oil and gas as well as deforestation – has led to increased frequency and intensity in extreme natural events.

School buildings and madrasa (Islamic school) buildings are among the public facilities that are prone to the impacts of natural disasters. A number of disaster events have caused damage or destruction to many schools and madrasas. The impacts may intensify and potentially claim many lives when disasters strike during school hours, such as the earthquake that hit Padang, West Sumatra, Indonesia in 2009 that took lives of many school children.

Disaster assessment made by the National Agency for Disaster Management (BNPB) and the World Bank indicated that 75 percent of school buildings in Indonesia are located in disaster prone areas. The assessment also shows that the frequency of earthquake, tsunami, volcano, flood and landslide events has continued to increase and caused many more human casualties and damages to buildings including school buildings.

Around 40 million school children in Indonesia are vulnerable to the impacts of earthquake. School buildings that are vulnerable to the impacts of earthquake will not only expose school children and teachers to increased risks but also disrupt learning process in the schools.

The Government of Indonesia has taken a number of critical steps in reducing risks in the education sector. The National Disaster Management Plan 2010-2014 contains a plan for the implementation of disaster preparedness in schools and madrasas.

Along with the plan and as part of Indonesia's contribution to UN One Million Safe Schools and Hospitals Campaign, on 29 July 2010 the Coordinating Minister for People's Welfare, the Health Minister, the Head of BNPB and the Vice Minister of Ministry of National Education launched 3.000 safe schools and 100 safe hospitals campaign in Indonesia. The Ministry of National Education further issued Circular Letter Number 70a/MPN/SE/2010 addressed to Governors, Majors/Heads of Districts all over Indonesia, urging them to promote mainstreaming of disaster risk reduction at schools



The terrace coloumn of elementary school (SD) 7 Kuripan reinforced with steel bars.

The National Agency for Disaster Management on 2 May 2012 issued the Ministerial Decree Number 4 Year 2012 on the Guidelines for Safe Schools/Madrasas in Disaster. The Regulation has become the basis for the implementation of a pilot program on Safe Schools administered by the World Bank and funded by the European Union and the Netherlands, and Global Facility for Disaster Reduction and Recovery. The program was implemented from July until December 2012 in West Sumatra, West Java , and West Nusa Tenggara. It has provided valuable experiences for school communities, Education Offices at the local level and relevant agencies on the strategy and active steps in reducing disaster risk in school environment.

There are two key aspects in the implementation of Safer school program: structural aspect, that includes building location, structures and design; and non-structural aspect that covers school preparedness and community in disaster management.

This guideline is developed based on the basic principles in making schools safer from disaster and from the experiences obtained from the pilot program. It is intended for school administrators, especially schools principals, school management, school committees, teachers, and those involved in disaster emergency and preparedness in schools.

In line with the above, the expectation is that collective goal and target in increasing safety at schools and in promoting safer culture mainly in general on the disaster risk reduction, is achievable.

By implementing the earthquake resilient standard for structure and infrastructure and implanting safe culture, schools will reduce disaster risk and protect school community and surrounding from hazards.

02. What is Safer School

By implementing the earthquake resilient standard for structure and infrastructure and implanting safer culture, schools will reduce the disaster risk and protect school community and the surrounding from hazards.

Natural disaster can occur anywhere anytime, but the worst part is that the devastating impact of disaster is most often caused by the vulnerable building structures and the improper emergency response efforts. The two factors can be prevented by establishing the efforts and disaster preparedness strategy. As a country located in a disaster prone area, Indonesia is working on building the capacity in readiness to manage disasters in various sectors; one of the sectors is education through implementation of the safer school from disaster, which is so called safer school from disaster or only safe school.

2.1. What is A Safer School?

Regulation of Head of National Agency for Disaster Management (BNPB) No. 4 in 2012 (Perka BNPB No. 4/2012 on Guideline on Implementation of Safe School/Madrasa from Disaster provides definitions of safe school:

1. General Definition: Safe School is school that recognizes and protects child rights by provision of situation and environment guaranteeing process of learning-teaching, health, safety, and security of the students at any time.
2. Specific Definition: Safe School is the school that implement standard of structures and infrastructures protecting the school community and surrounding environment from hazards.
3. DRR-related definition: safe school is a learning community with commitment to safe and healthy culture, aware of risk; developing well-made plan for pre-disaster, during disaster and post disaster events; and being prepared to respond to an emergency situation.

Safer School creates the secure, safer, comfortable and healthy feeling to students and teachers both in normal and also in disaster situation. By implementing the standard of structures and infrastructures with resilience to disaster, and implanting the safer culture, schools are able to protect school community and surrounding environment from disaster risk.

The National Agency for Disaster Management guideline defines safe school as a school that complies with predetermined standards for facilities and infrastructure and implements a culture that may protect school communities and their environment from hazards. The Safe Schools/Madrasas program is implemented based on the following considerations:

1. A safe school may minimize disruption to learning activities to ensure the health, safety, and appropriateness particularly for children with special needs, comfort and security for students in schools and *madrasas* at all times.
2. A safer place for learning can allow identification of and better provision of disaster relief assistance aimed at school children from emergency response up to the post disaster recovery.
3. A safe school can serve as a center for community activities and become a very important social means in helping eradicate poverty, illiteracy and health problems.

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4. A safe school can become a center for community activities in the coordination of disaster response and recovery.
 5. A safe school can be used as a temporary shelter providing protection to not only the school/madrasa community members but also the local communities in the area where the school/madrasa is located.

2.2. Why Safer School Required?

In Indonesia around three-fourth of the schools are located in the prone areas. This fact causes that more than 40 million of Indonesia students are prone to the impact of disaster event. Moreover, most of the school buildings are more than 20 years old and in bad condition due to previously constructed with disaster non-resilient structures, in particular to earthquake. An earthquake with quite significant power will damage the school buildings with earthquake substandard construction. In addition, a substandard constructed building having experience previous earthquake will be more vulnerable to upcoming disaster. In an event of disaster during the school hours, the collapsed building will increase the potential of affected people and fatalities in quite significant number. Beside the loss of lives, in an event of earthquake, rehabilitation and construction of school buildings architecturally only and not structurally, will be a waste of time and fund.

The implementation of safer school has two basic aspects:

1. Structural—including location, structure, building design, and safer structural and infrastructural support.
2. Non-structural—include capacity building; attitude and behavior; safer school policy; preparedness planning; and resource mobilization.

By meeting safer school standard, schools will reduce disaster risk by ensuring the building structure resilient to earthquake. Safer school building construction actually has more resilient capacity to earthquake, as presented in the illustration of earthquake resilient school building. If the school building structures stand tall in an event of earthquake, the opportunity of the students, teachers and school community to evacuate to safer areas after the shake, is bigger.



When hit by an **Earthquake with Small Magnitude**, the school building will stay fully intact.



When hit by an **Earthquake with Moderate Magnitude**, the school building will sustain damage to walls, roof and other parts but the structure will remain intact, including the foundation, beams, columns, and sloof.



When hit by an **Earthquake with Big Magnitude**, the school building will:

- Not collapse in part or entirety.
- Sustain repairable damage.
- Will sustain damage that can be immediately repaired to acquire back its normal function.

Earthquake-Resilient School Building

2.3. How to Implement Safer School Initiative?

School can reduce the disaster risk by rehabilitating and strengthening building structure in order to meet the safer school standard. School rehabilitation to increase the resilience to disaster has been government priority. In 2011 and 2012, Ministry of Education and Culture of Republic of Indonesia rehabilitated more than 194,000 class rooms with funding more than IDR 19 trillion. In upcoming years, it is expected that school rehabilitation program of the government can adopt the safer school element in building construction, as stipulated in Regulation of BNPB Head No. 4 Year 2012.

Building resilience is only one of elements of safer school implementation. Another element that is also important is the preparedness of the school community in responding to an event of disaster. Preparedness means the ability to undertake the correct and prompt actions in an event of disaster to ensure the safety of students, teachers and all school community members.

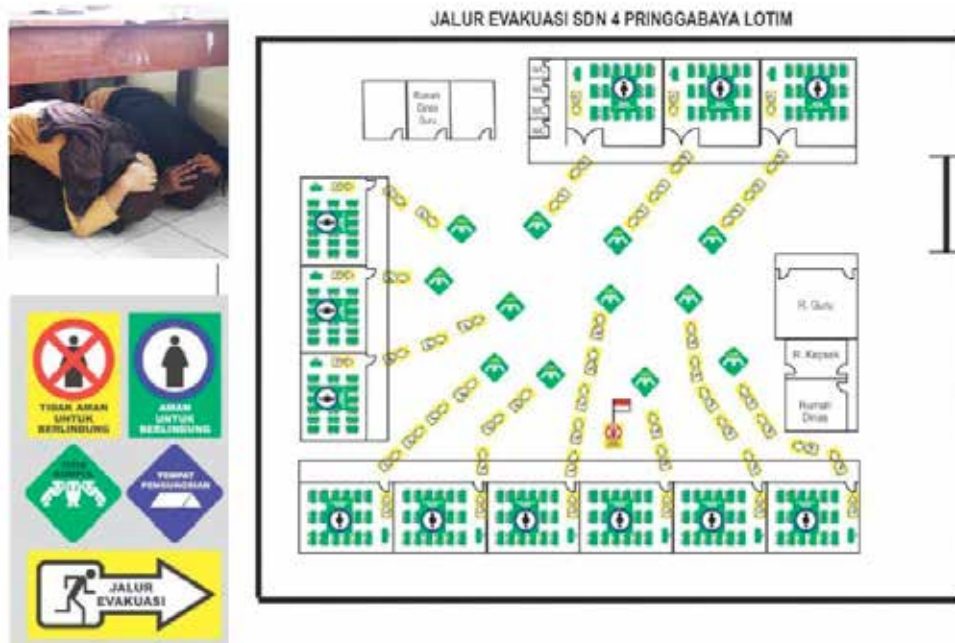
Preparedness can be built if all school community members understand the symptoms of an event of disaster (for example tremors or shake of an earthquake), and are well trained to immediately do the self-evacuation. This capacity needs knowledge on the disaster potential, precise evacuation plan, and regular training to implant the safer culture to the school community members. Earthquake drills and simulation, for example, will train the students to secure their head in reflex during the shake and seek shelter in safer area.

School is also obliged to facilitate the emergency response action in disaster event, for example, by ensuring the presence of evacuation route equipped with visually clear signage to assist the clear, orderly and calm evacuation process. The increase in the preparedness capacity in non-structural aspect actually prevents the side impact of disaster due to panic or incorrect actions in an emergency situation.

Reading materials such as books, guidelines on disaster risk reduction in school curriculum can be integrated into subjects such as geography, environment, and or extracurricular activities.

Of course, structural and non-structural efforts can be different for different hazards (for example earthquake and flood), but the principles that a building should be able to stay standing in time of disaster and that students and teachers have the capacity for self-rescue and evacuation constitute the key principles of a Safe School. Combination of the building structure resilience and preparedness to an event of disaster is the key to develop a disaster resilient school.

Evacuation Routes of Public Elementary School
Number 4 of Pringgabaya, East Lombok



From top left, clockwise: school students is sheltering under the table while covering their heads with hands in earthquake simulation; sample of school design and layout and evacuation route of SDN 4 Pringgabaya East Lombok; posters of evacuation signage and safe shelter location.



Earthquake simulation, taking shelter under the tables.

Actually, the implementation of the safer school needs time, energy and quite significant amount of funding, but this is a valuable investment. By ensuring the safety of the school environment, school will reduce the disruption to the education process, provision of safety insurance, feasibility, comfort and security at school anytime to the students, including the students with special needs.

In line with that, humanitarian assistance in from an emergency situation to recovery can be implemented smoothly. Ideally even school can be the center of community activity in coordinating the emergency response activity and post disaster recovery.

Identifying the school vulnerability level; implementing safe school planning; implementing the structural strengthening and easing the evacuation access; and developing preparedness of school community toward a disaster event, are four main steps in creating the disaster resilient school.

03. Practical Guideline to Making School Safer

Developing and implementing an effective disaster management system is a continuous process requiring good leadership and cooperation of all relevant stakeholders in an environment and community. Through a correct planning and consistent implementation, all schools can be developed to be safer schools, even old school buildings.

With support from school committee, school principal holds an important role in making decision on implementation of safer school development. In addition, school principal is expected to be a role model and inspiration to the school community in creating a safer school environment from disaster event.

Simple ways can be done to make aging school buildings meet the requirements of safer schools. In principle, School Principals with support from the School Committees play a very crucial role in making decisions and implementing efforts to make their school safer from disaster to ensure the safety of the students and the functioning of the schools even in disaster situation.

The management of safer school to disaster involves school management, teachers, students, school committee and students' parents, and has a long term vision to change the behavior and implant the safer culture in school environment. But, these efforts can be implemented in stages by focusing on the things required improvement and implemented firstly.

3.1. Four Main Steps

There are four main steps that need to be undertaken in effort to establishment of a safer school. **Firstly**, identification vulnerability rate of school location and surrounding by assess the school location, area and school building layout, surrounding, structure and construction work, structure and infrastructure facilitating the disaster management, including safer or vulnerable or weak evacuation route in an event of disaster. This process needs to be equipped with assessment tool for building and school environment vulnerability as a simple analysis of disaster risk for school for various hazards such as earthquake, tsunami, landslide, flood and fire; **secondly**, planning the safer school program; **thirdly**, implementation of school building retrofitting and ease the evacuation access, to improve the damage or other building structural issues, **fourthly**, build the preparedness of the school community to disaster. Following is the elaboration of each steps identified above:

3.1.1. Identification of School Environment and School Building Vulnerability

Disaster risk can be identified by recognizing the disaster potential in the area where school is located and also the surrounding community vulnerability. In this case, the community vulnerability includes the community member consisting of children, elderly, people with physical disabilities, and other community group with possibly higher vulnerability in an event of disaster.

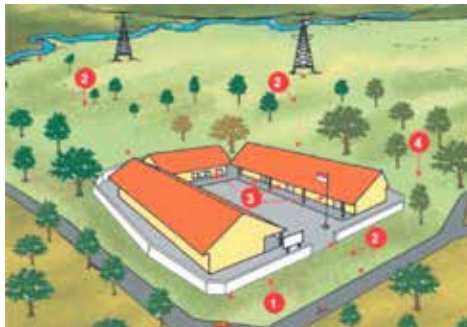
Moreover, the disaster potential will be much higher if school building construction does not comply with the standard for earthquake resilient building, and if school is located in earthquake prone area.

The process of vulnerability assessment of school environment can be implemented with participatory approach by establishing one committee being responsible for. In some school the committee is called Committee for Disaster and School Safety (KBKS-Komite Bencana dan Keselamatan Sekolah). The committee comprises of teachers, students' parents, and students' representatives. Committee, then, can decide to conduct the assessment, starting with visual assessment and finalizing with more detailed technical assessment.

Generally, there are three points to note in the efforts to identify the level of vulnerability to disaster in the school environment and buildings. They are:

1. The school location and lay out of school building in the school environment:

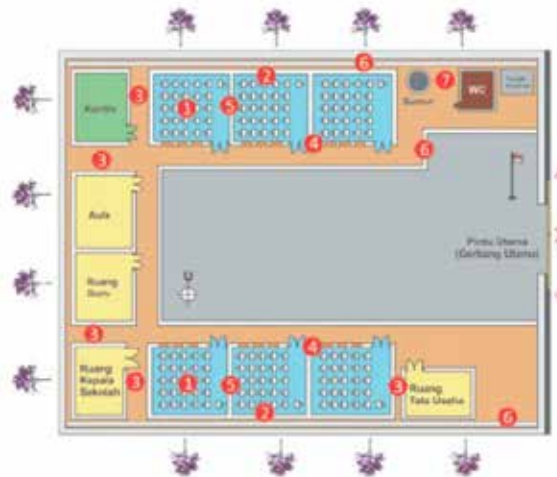
- A. *School location:*** whether or not the school located in an area prone to hazards such as earthquake, flood and landslide. The School Principal can request information from the Local Agency for Disaster Management (BPBD) at the District/City level.



School Safe from Disaster:

1. *Is on land with a slope of less than 6%*
2. *Is far from road reserve line, high voltage power, and river (> 0.5km)*
3. *Is on a land spacious enough to accommodate school members: classroom is 8 x 7m² in size for 35 persons; space is available for playground and sport*
4. *Is surrounded by trees to allow fresh air*

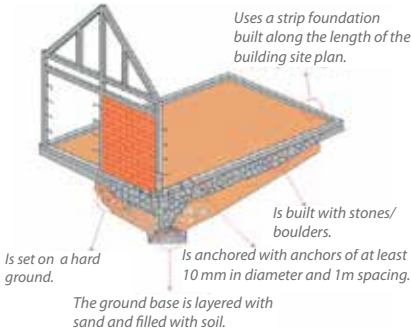
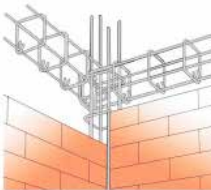
B. Building Lay Out: whether or not the buildings in the school environment have been designed in the first place to provide an open space and have easy access for children to get out of the classrooms and go to the open space without causing them to step on and collide with one another in the state of panic.

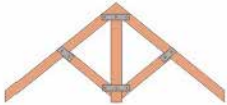
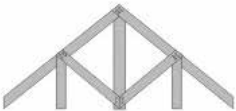


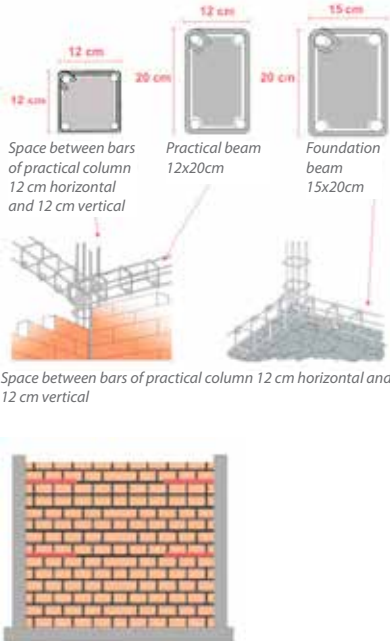
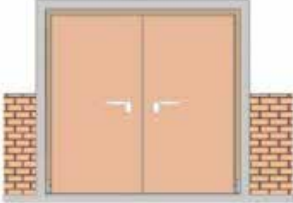
If the layout of the school buildings

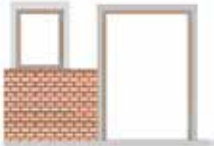
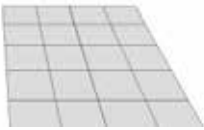
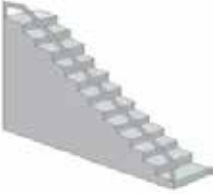
1. *Is simple and spaces between buildings are symmetrical to both axes and not very long*
2. *Has a ratio of the width and length of the building of around 1:2*
3. *Shows safe gaps between building (complying with the required standards)*
4. *Shows the placement of baffle walls and opening of doors/windows that are symmetrical to the axes of the building plan*
5. *Shows that the walls form closed boxes*
6. *Shows that clean water channel is separated from the sewage*
7. *Shows that clean water sources are far from the septic tank*

2. Weak points in the structure of classroom buildings and other buildings that can make the buildings collapse in earthquake.

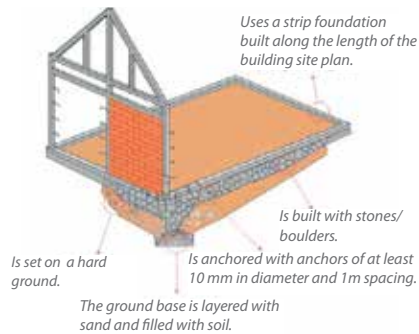
No.	Points	Description
A.	Foundation 	Whether or not the building foundation meet the required standard materials and construction and can bear the load of the building to prevent it from shifting or subsiding in an earthquake: • Is set on hard ground with a trench of 80 cm in depth and 80 cm in width; • Built with stones or boulders set on interlocking layers; • Is anchored with anchors of at least 10 Mm in diameter and 1m spacing; is layered with sand and filled with soil at the ground base; • Is a strip foundation built along the length of the building site plan
B.	Structure  Connection between column, wall, and beam.	Whether or not school buildings have been retrofitted with concrete Frame that serves as the building frame and anchor that fasten the roof and the Walls and prevent them from separating and collapsing in the event of a strong Earthquake: • Columns are built for every room of 3 m x 3 m in size; • Steel bars connection are overlapped along 40 cm length and hooked to the columns, beams and grade beams;

	 Steel bars connection are overlapped along 40 cm length and hooked to the columns, beams and grade beams.	• Connection between column, wall, and beam; • Diameter of steel bars for column, beam, and grade beam is 12 mm; • Diameter of stirrups is 8 mm with 15 cm space and the tips are hooked 45°
C.	Roof  Wood roof truss, reinforced with steel plates of 4.00 mm and bolt of at least 10 mm in diameter.  Lightweight steel truss, set up in compliance with the standards.  Lightweight roofing such as metal roof tiles or iron wood shingles (sirap), zincalume (mixture of zinc and aluminum).	Whether or not the structure of the roof is build from trusses completed with Proper ties to be able to support the load of the roofing slates or lightweight metal Roofing. This roof system should be properly connected to concrete frames to avoid Sliding or fatigue when withstanding lateral forces from earthquakes: • Wood roof truss, reinforced with steel plates of 4.00 Mm and bolt of at least 10 mm in diameter; • Lightweight steel truss, set up in compliance with the standards; • Lightweight roofing such as metal roof tiles or iron wood shingles (sirap), zincalume, (mixture of zinc and aluminum).

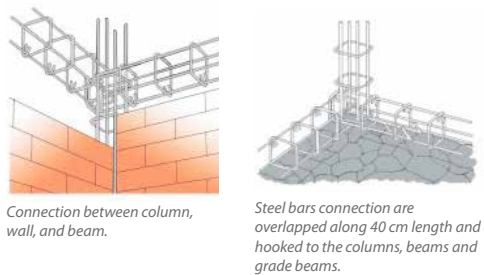
D.	Wall  Space between bars of practical column 12 cm horizontal and 12 cm vertical Practical beam 12x20cm Foundation beam 15x20cm Space between bars of practical column 12 cm horizontal and 12 cm vertical Red bricks or concrete bricks wall anchored to the column of each 6 layers of bricks.	Whether or not the walls stay intact and in perfect shape, have no significant Cracks and do not collapse easily when hit by lateral forces: • Space between bars of practical column 12 cm horizontal and 12 cm vertical; • Practical beam 12x20cm; • Foundation beam 15x20cm; • Space between bars of practical column 12 cm horizontal and 12 cm vertical • Red bricks or concrete bricks wall anchored to the column of each 6 layers of bricks.
E.	Door opening and access to exit the room  Each door has two leaves that open outwards.	Whether or not the doors of the classroom Open to the outside and there is not any hindrance along the evacuation routes to Prevent students from being hindered or step on each other in panic: • Each door has two leaves that open outwards

F.	Door and Window Frames  <i>Door and window frames are reinforced with column and practical beams.</i>  <i>Windows are installed with lateral ties.</i>	Are the door and window frames provided with practical column and beam? Are windows tied laterally? Door and window frames are reinforced with column and practical beams.
G.	Floor  <i>Floor is textured and made from not slippery ceramic materials.</i>	Is floor textured and not slippery? Floor is textured and made from not slippery ceramic materials.
H.	Stairs  <i>Stairs are wide enough with hand rails.</i>	Are stairs wide enough and with hand rails? Stairs are wide enough with hand rails

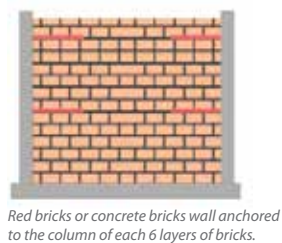
A. Foundation



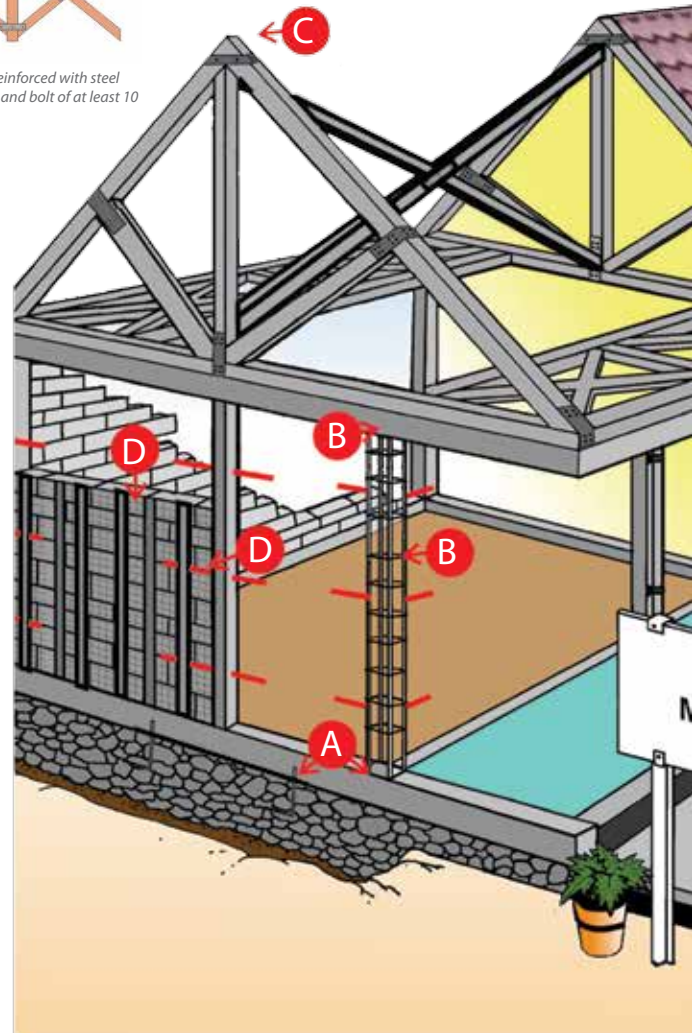
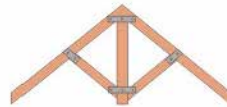
B. Structure



D. Wall



C. Roof





E. Door opening and access to exit the room



Each door has two leaves that open outwards.

F. Door and Window Frames



Windows are installed with lateral ties.

G. Floor



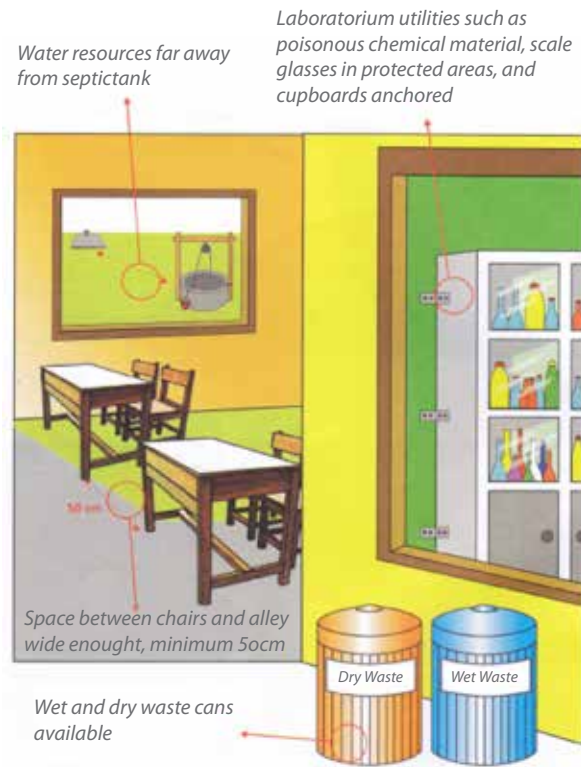
Floor is textured and made from not slippery ceramic materials.

3. Structure and Infrastructure to facilitate disaster management

A. Emergency Situation: Does School have light fire extinguisher on every floor and are they located at easily reachable area without obstacles?

B. Furniture:

- Are table strong enough and providing enough space for protection during earthquake?
- Are cupboards tied well to the wall, and laboratory utilities such as poisonous chemical material, scale glasses stored in protected areas, and cupboards anchored?



4. Components for Assessment of School Environment and Building Vulnerability to Disaster

To furthermore understand the stages in more detailed related to building vulnerability, see **Annex 1**. The vulnerable points found during the process that must be fixed and retrofitted in developing a safer school.

Table below provides the sample of Simple School Risk Disaster Analysis. Though the table covers several types of disaster, but the implementation and activities elaborated in this practical guidelines focuses on safer school from earthquake and tsunami.

Simple School Disaster Risk Analysis Please answer the questions with Yes (Y) or NO (N)		Y	N
Earthquake	Our school is located on earthquake prone area		
	Our school is located on earthquake impacted area		
	Our school building is not earthquake resilient building		
	The door and gate of our school are not wide enough to evacuate in an event of earthquake		
	Our school has not constructed the evacuation route and the assembly point for earthquake disaster event		
	Our school has not implemented drill and simulation for earthquake disaster event		
Tsunami	Our school is located at tsunami prone area		
	Our school is located at tsunami impacted area		
	Our school building has not adopted tsunami resilient building design		
	The door and gate of our school are not wide enough to evacuate in an event of tsunami		
	Our school has not constructed evacuation route and assembly point for tsunami disaster event		

Simple School Disaster Risk Analysis

Please answer the questions with Yes (Y) or NO (N)

		Y	N
Landslide	Our school is located at the steep slope and prone to land movement		
	Our school is located at landslide impacted area		
	Our school is located near the center of previous landslide event		
	Our school design has not adopted the design factoring landslide		
	Our school has not implemented drill and simulation for landslide disaster event		
Flood	Our school is located at flood prone area		
	Our school is located near the river with potential to inundate the surrounding area		
	Our school has experienced flood previously		
	Our school design has not adopted the design factoring flood		
	Our school has not implemented drill and simulation for flood disaster event		
Fire	Our school is located at densely populated area and prone to fire		
	Our school design has not adopted the design factoring fire		
	The door and gate of our school are not wide enough to evacuate in an event of fire		
	Our school has not constructed evacuation route and assembly point for fire disaster event		
	Our school has not implemented drill and simulation for fire event		
	Our school has not developed the standard operation procedure for rescue and evacuation in an fire event		

For each hazard:

If all answers **Y**, school has **VERY HIGH** risk

If more **Y**, school has **HIGH** risk

If more **N**, school has **MEDIUM** risk

If all **N**, school has **LOW** risk

There are three stages of the building assessment to identify the vulnerability that can be exercised, namely:

1. Quick visual assessment consists of assessment on the building layout and configuration to assist in more detailed structural assessment. The result will determine whether the building is vulnerable or not.
2. Quick structural assessment in general strength assessment related to the structural design of the school building
3. Detailed assessment evaluates the detailed risk of the school building quantitatively and accurately

For further identification of damage on the structure, Disaster Committee for School Safety (KBKS) can request assistance from student parents with civil engineering background, or seek recommendation from local Ministry of Public Works, or hiring the supervising civil engineering consultant prior to implement the stages of the rehabilitation and repair.

3.1.2. Planning the Safer School Activity

Upon understanding the school building vulnerability, school principal with support from school committee can then identify the need for school rehabilitation or repair and school activities to be implemented and in line with the disaster risk reduction program. On the next stage, school management can formulate the School Medium Term Planning (RJPM) on safer school with 5 year period. Based on this plan, school will be able to identify priority for development of action plan for the first year in the next step.

The School Medium Term Planning (RPJM) usually consists of structural and non-structural aspects. Structural aspects include: i) school facility rehabilitation to meet the requirements of the safety from disaster; ii) redesign the classroom division layout, alleys, storage and field to increase mobility; iii) relocation of school building partially or overall to a safer area. While the non-structural aspect usually includes: i) improvement of school management for establishment of safety procedure; ii) increase awareness of the importance of disaster mitigation and safety procedure; iii) implementation of drill and simulation of disaster response and safety.

3.1.3. Structural Retrofitting and Easy Access for Evacuation

The results of the vulnerability assessment of the school environment and building will become the basis for planning and implementation of structural retrofitting and improvement of evacuation means. With reference to Technical Guidance for Earthquake Resilient Building issued by Ministry of Public Works in 2006, the building assessment result can be classified into as follows:

1. **Minor Damage**—there is small crack (width 0,075-0,6 cm) on the wall, plaster collapsing, damage on non-structural parts, no decrease on the structure load capacity. The repair for this type of damage can be done without vacating the building.
2. **Medium Damage**—there is wide crack (width more than 0,6 cm) on the wall, crack spreading in many areas of the wall, like sheer wall and column, the structure load capacity decreases significantly



Reinforcement of school building structure.

3. **Severe Damage**–Sheer wall cracked and collapsed, building parts separated due to failure in joint parts, more than 45% of the main structure element damaged, and the building not livable.
4. **Total Damage**–building totally collapsed (more than 65%), most of the main building structure collapsed, building not for living.

For the medium (b) and severe damage (c), school can implement structure reinforcement using retrofitting technique. Retrofitting include repair, restoration and reinforcement of the building damaged by the earthquake, but this technique can also be used for earthquake mitigation effort.

In principle, retrofitting is a technique in repairing with reinforcement to the vulnerable points identified during the vulnerability assessment as previously elaborated, starting from foundation, building structure, wall, and doors.

According to the experience of the school implementing safer school program, retrofitting can be implemented for old building even if in severe damage condition, without collapsing the building and reconstructing the new one. By implementing retrofitting approach with self-managed method, school can at least save 30-40% of the cost of the new building construction. The followings are several steps to be undertaken in rehabilitating school building:

1. Assess the school building to identify the vulnerability area and measure the level of its vulnerability as elaborated and illustrated further in Annex 1.
2. Develop the technical plan for retrofitting on components considered vulnerable based on building assessment, starting from foundation to roof. This technical plan can be designed simply by using the building floor plan to be rehabilitated and detail the points for the reinforcement, as illustrated in **Annex 1** and **Annex 2**. On those vulnerable points, develop the technical specification and drawing, and calculate the need of material, labor in Bill of Quantity (BoQ) as illustrated in **Annex 3**.
3. Develop the work plan agreed by school committee and construction team appointed to manage the construction or rehabilitation work based on the technical specification for each point and BoQ. The work plan must be documented well and detailed, due to that it becomes the basis for the construction work and progress monitoring.



Annex 4 presents the Master Plan designed by Elementary School (SDN) Cijerokaso in Bandung City, West Java Province, including the detail technical specification and retrofitting process.

In addition to school building structure reinforcement, other structures. Structural modification can be done by the followings:

1. Escape route development
2. Assembly area assignment
3. Modification of room usage with safety consideration
4. Installation of evacuation and safety signage
5. Widening the door leaves with outward opening for evacuation and avoidance of bottlenecking
6. Replacement of window with non-breakable materials
7. Construction of the School Clinic earthquake resistant building
8. Improvement and reinforcement of other structures considered important

3.1.4. Building School Community Preparedness to Disaster

Also not less important than improvement in structural aspects in creating a safer school from disaster, is non-structural aspect, meaning to build safer practice and safer culture at school environment in particular in preparedness for disaster aspect. Implementation of retrofitting as elaborated previously is also an important opportunity in implementation and improvement of non-structural aspect. School building reinforcement toward being resilient to earthquake through retrofitting and improvement of school environment toward prioritizing safety is a good start for behavior change. But, developing safer culture is a long and sequential process.

The first step of these efforts is to educate the student and teachers as well as the school community members about disaster risk at school and inform the action needed to be conducted in an emergency situation. Toward this end, school has to proactively disseminate the correct information effectively in order to create behavior on preparedness becoming an instinctive action for the whole member of school community. Followings are some efforts to be worked on in building disaster preparedness capacity as part of culture of safety:

1. Development of simple materials to improve understanding and awareness of disaster risk. This can be done by including creating reminder slogans on the importance of safe behavior or respond in emergency situation; producing the visual aid material such as posters, evacuation map that describes the routes for evacuation from each classroom to the meeting point.
2. Development of simple standard procedures that usually called SOP indicating clear division of roles of teachers, students, and school guards when disaster strikes during school hours. Such simple division of roles needs to be discussed, agreed upon and disseminated to all elements of the school. **Annex 5** presents the sample of SOP of High School (SMA) Pertiwi, Padang City, West Sumatra.
3. Regular simulation of the standard procedures, at least once in three months, to practice the standard procedure, while assessing whether everyone understands and is able to do their own roles in time of disaster.
4. Establishment of Disaster Preparedness Team at school
5. Preparation on the logistical matter as part of preparedness for the disaster most possibly occurring.



Knowledge dissemination can be conducted by integrating the information about the disaster management in school curriculum, such as in Geography or Social Science subjects; or local content subjects such as Environment or in extracurricular activity such as boy scout.

Some school which has initiated the process of creating safer school has disseminated in such an interactive ways by convening competition or festival such as disaster jingle competition, drawing competition, or poetry reading and writing contest related to disaster risk reduction or competition in activity at school related to disaster risk reduction. For students on lower grades, the dissemination can be done by role playing, singing, puppet shows, or films.



Gathering and forming small circle per class at the assigned assembly area.

Evacuation Plan Map is another important component in disaster management at school. Followings, there are three steps in development of Evacuation Plan Map:

1. Identify the hazard location– places that must be avoided in an event of disaster cause a threat to self-safety such as narrow alleys with a lot of turns, area with much glass material, rooms or area where large furniture such as cupboard is placed.
2. Identify the safer location–safer place to evacuate in an event of disaster, such as an open area and quite distant from structures such as electricity grid and poles or telecommunication tower, while for area with tsunami hazard, identify the high area.
3. Select the evacuation route–route to be passed through in evacuating. The route is escaping from disaster area

Annex 5 presents a sample of standard procedures for earthquake disaster preparedness developed by high school (SMA) Pertiwi, Padang. Every school needs to formulate and develop such a procedure, of course by adjusting the size of the school, number of school community member, location, and existing environment and building condition.

Even though, the retrofitting effort has been implemented as the follow up to the result of the vulnerability assessment, school management and community still have a lot of works to do in developing a safer school from disaster.

3.2. Using Opportunity in the Construction of New Classroom and School Rehabilitation for Making School Safer

Efforts toward development of safer school from disaster can be utilized as the opportunity to rehabilitate classrooms, even to construct new classroom with funding support from government or other concerned parties.

From the government side, the main source government funding support for classroom rehabilitation or construction of new classrooms is from Education Special Allocation Fund (*DAK-Dana Alokasi Khusus*), Social Grant from Government; local, provincial or national. Even school can get funding for rehabilitation and construction new classroom from private or business entity through Corporate Social Responsibility (CSR).

Some schools even obtain the assistance from community or individuals, not only for cash contribution but also non-cash support in form of goods and service such as sand, cement, meals for workers even labor.

To obtain the DAK Education funding from government, school principal is to develop proposal detailing the school needs related to the Medium Term Planning Program for Safer School. Following identifies two aspects needing attention in process of new classroom construction and rehabilitation towards creating a safer school.



Wall reinforcement with wire mesh by retrofitting metode

A. For the construction of new classroom

For structural aspect, key to implementation of safer school is to do required adjustments to ensure that the existing technical plans – either provided by Government or self-managed – comply with the main aspects of a safer school.

Ministry of Public Works has applied standard calculating construction strength to earthquake for all newly built public building. But, in the implementation stage, the standard is ignored during the construction. The main problem dealt with during the construction is to ensure that all parties involved in construction process; workers, supervisor, sub-contractor, and even supplier, do not reduce quality of materials and specification of the work in 'saving' cost.

This "saving" practice will only construct buildings with low quality and will require more cost on the maintenance and rehabilitation post a disaster event.

To avoid and overcome this bad practice, it needs to ensure that school is provided with a competent technical facilitator in building construction. The technical facilitator can be student parent with civil engineering capacity, students or teacher from technical vocational school with specialization in civil engineering or consultant contracted by school committee. The most important thing is closed and regular monitoring on components of the building structure construction as elaborated previously.

B. Related to the rehabilitation of classroom

Classroom rehabilitation, with funding from Special Allocation Fund (*DAK-Dana Alokasi Khusus*) and Social Grants, can be utilized as funding modality to retrofit the school structures and rehabilitate the school environment gradually in implementation of safer school program.

Classroom rehabilitation can be categorized minor, medium and heavy or severe. Minor rehabilitation is usually architectural and aimed at rehabilitating building exterior presentation. Medium rehabilitation is usually building retrofitting, including walls, floors, and structure. Heavy rehabilitation usually involves demolition of old buildings to be replaced with the new ones.

School can use retrofitting planning as previously elaborated (see part 3.1.3), in utilizing



Construction of rebarred foundation for terrace column of SDN 7 Kuripan, West Lombok.

the rehabilitation funding. Rehabilitation funding for retrofitting usually is allocated based on classroom unit. For this purpose, attention should be given to a number of points as follows:

1. The requirement to go through steps- assessment of the vulnerability level; planning to reduce vulnerability; retrofitting the structures and increase school community preparedness for disaster; and implement standard operation and maintenance.
2. The need to document properly all retrofitting plan in step to produce a detail work plan including technical specifications and Bill of Quantity (BoQ), to produce a work plan and detailed work report and be complemented with minutes of the planning process with the School Committee.
3. Approval should be sought on technical plan and bill of quantity (BoQ) plans for retrofitting in self-managed approach from Ministry of Education, and from local Public Works Office for contractual approach. On utilization of Special Allocation Fund (DAK), school obtains approval from Ministry of Education, while for grant approval must be gained from donors or sponsors either local, provincial, or national government.
4. A team should be established for supervision of the work, consisting of members

with knowledge in civil engineering from among parents of the students or from members of community or a technical facilitator with expertise in civil engineering. As stipulated in existing regulation, Ministry Education can also appoint construction supervision consultant team.

School classroom rehabilitation activity using retrofitting approach also deals with challenges as the new classroom construction, which is to ensure that all involved stakeholders in construction work will not do 'saving' practice by reducing the construction qualification and specification.

According to school principals already implementing rehabilitation and new classroom construction, the key aspect to avoid such issue is by utilizing the self-owned resources like student parents, community surrounding the school, and by ensuring the presence of close monitoring during construction process. By implementing these two steps, school can save construction cost significantly without reducing quality of materials, specification and quality of school building.

Even in some schools, implementation of the above mentioned strategy allows them to retrofit four or five classrooms with funding allocation for two classrooms.

The implementation of non-structural activities in building preparedness can actually start prior to construction of new classrooms or rehabilitation. Non-structural activities to support the establishment of safer school such as emergency response simulation can be funded from routine school operation fund or School Operational Fund Aid (BOS-Bantuan Operasional Sekolah) from Ministry of Education.



Rescue and treatment in earthquake simulation.

3.3. Measuring Safer School Achievement

Safer school implementation process will keep continuing upon implementation of structural retrofitting efforts, school environment improvement and preparedness program. To ensure the effectiveness and sustainability of safer school from disaster program, advisably that school ensures the existence of the evaluation and monitoring system for the achieved output and outcome.

The evaluation and monitoring effort is aimed at observing progress of implementation of safer school from disaster program, and identifying and anticipating problems emerging from implementation toward the expeditious respond in finding solution to the issues in due course. The evaluation and monitoring has to be in an periodical scheme and a participatory approach by involving all school community members in obtaining accurate information regarding the implementation, program performance and output and outcome achieved, as well as the issues and challenges arising.

The followings are a number of principles to be taken into account in measuring the school achievement:

1. An Assessment Team is established, consisting of elements with sufficient understanding of building strength and disaster preparedness. The team can request assistance from Local Public Works office or Civil Engineering department of local Vocational High School or universities on technical aspects and from Local Disaster Management Agency (BPBD) as well as local NGOs working in disaster issues.
2. Criteria are agreed to be implemented on practical basis to assess level of safety of school in terms of school building structures and its preparedness. **Annex 4** contains a simple list of elements for assessment.
3. Assessment is carried out to measure achievement in ensuring structural strength and disaster preparedness. In general, a school can qualify as a safer school when it has met most of the criteria required.
4. It is crucial for schools to keep monitoring pending achievements in meeting the criteria as a safer school. Regular monitoring – for instance on annual basis – should be carried out to assess achievement and pending achievement to ensure improvement can always be made and achievement can be maintained.

Effective Implementation of Safe School program will contribute to structural and constructive change in creating a safe environment, comfortable and healthy ensuring the continuous teaching and learning process.

04. Promoting the Culture of School Facilities and Environment Maintenance through Safer School

The establishment Standard Operation and Maintenance Procedure with the empowerment of school resources orientation in safer school implementation, and awareness campaign and routine capacity building efforts, will support the change process of behavior in school environment.

An effective program will contribute to a more structural and constructive change. Development and implementation of safe school program will encourage the creation of good culture and practices in school activities implementation and maintenance.

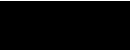


Drawing school layout.

Upon the implementation of the structural and non-structural approaches in creating safe school from disaster, school needs to ensure the sustainability of the program. The assurance of the sustainability can only be reached if all school stakeholders, school management, teachers, students and school committee, contribute in the safe school program implementation.

With assistance from School Disaster and Safety Committee (KBKS-Komite Bencana dan Keselamatan Sekolah), school principal stipulates the Standard Operation and Maintenance Procedure and disseminates the document to student parents. Based on the standard operation document, school management divides the task and responsibilities of all school stakeholders. **Annex 7** provides the sample of Standard Operation and Maintenance of State-owned Elementary School (SDN) Cijecrokaso, City of Bandung, West Java.

In addition, school has to continually do the disaster simulations and drills, ensure that the evacuation map and route placed in strategic locations and evacuation signage in place. School management is also encouraged to mobilize resources from other outside the school community and partnership to embody the short-term, medium-term and long-term school planning and develop the school policy for sustainability of safe school program.



Standard Operation and Maintenance Procedure with the empowerment of school resources orientation in safe school implementation, and awareness campaign and routine capacity building efforts, will support the process of achieving the final goal of safe school program, namely change behavior in school environment, including:

1. Treatment of school facilities, environment, and activities as social and physical assets that have to be built and maintained through a sense of ownership and great passion to protect students and the next generations from disaster risks;
2. Implementation of school building and environment planning and construction by putting emphasis on the application of safety principles and standards
3. Organizing all school elements to put safety as a priority and minimize victims when disaster does strike.

In future, behavior change is expected to be the trigger of the emergence of safe from disaster culture and later transforms to resilience culture. School which creates the young generation with safe culture and prioritize safety, will bring Indonesia as country with a step further in increasing the country disaster resilience compared to other countries.



Recommendation

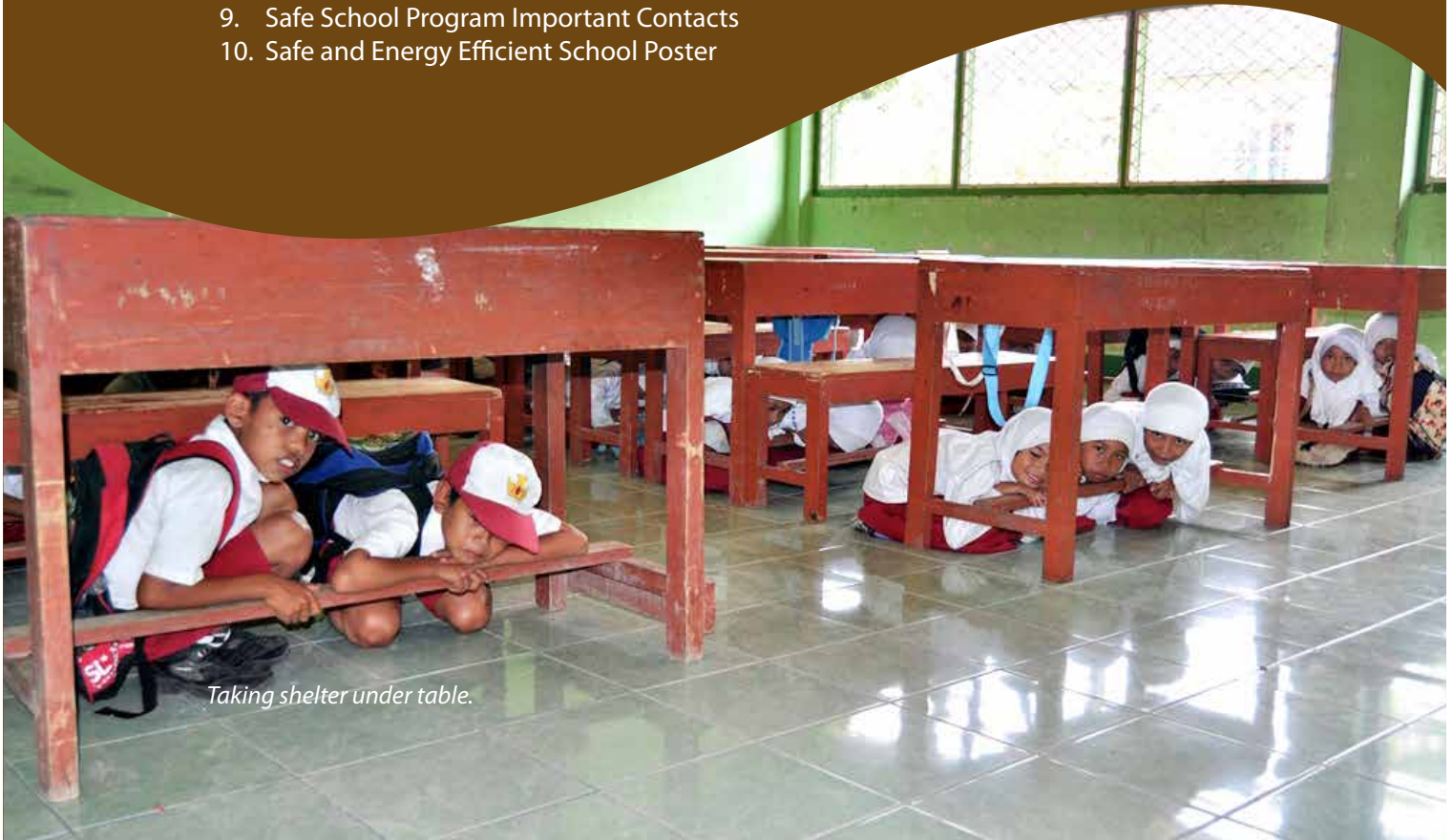
1. School management and school committee encourages the implementation of safe school initiative in school programs conducted by central and local government, community, private companies and other parties being concerned with the safety of schools.
2. Safe school is integrated to the school short term, middle term and long term planning
3. Government school monitoring unit can take the position as the evaluator of the implementation of the safe school and provide the score with the certain assessment tools and awarded with placard (**Annex 8**).
4. Upon the implementation of the structural and non-structural in creating safe school from disaster, school needs to ensure the sustainability of the program. The assurance of the sustainability can only be reached if all school stakeholders, school management, teachers, students and school committee, contribute in the safe school program implementation.
5. For further information regarding the safe school program, school and school committee can contact: National Agency for Disaster Management (BNPB), Ministry of Education and Culture (Mendikbud), Local Agency for Disaster Management (BPBD), and other organizations working on safe school (**Annex 9**).



Condition of one of elementary schools in Indonesia.

Annexes

1. Is Our School Safe from Disaster?
2. Safe School
3. Sample of Bill of Quantity (BoQ)
4. Cijerokaso Masterplan
5. SOP for Earthquake and Tsunami Evacuation of SMA Pertiwi 1, Padang
6. Safe School Assessment Format
7. SOP for Operation and Maintenance SDN Cijerokaso, Bandung
8. Sample of Safe School Placard
9. Safe School Program Important Contacts
10. Safe and Energy Efficient School Poster



Taking shelter under table.



Planning School Layout.



Annex 1. Is Our School Safe from Disaster?

If the school location:

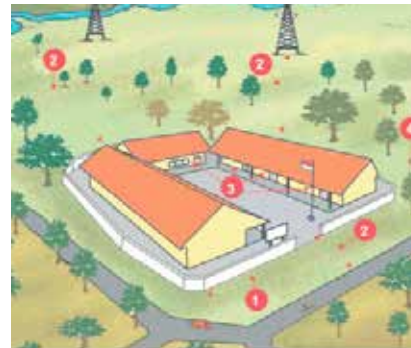
1. Is on land with a slope of $> 6\%$ and if there are no trees uphill nor any water control channels
2. Is on the area formerly used for final waste disposal site
3. Is close to mining area
4. Is close to the river and high-voltage power (distance < 0.5 km)
5. Is close to the road reserve line.



it is **NOT SAFE** from Disaster

School Location:

- Is in an earthquake-safe zone
 - Complies with the land use specified in the Local Spatial Plan (RTRW)
 - Refers to the Regulation of the Ministry of Public Works Number 29 year 2006.
1. Is on land with a slope of less than 6%
 2. Is far from road reserve line, high voltage power, and river (> 0.5 km)
 3. Is on a land spacious enough to accommodate school members: classroom is 8×7 m² in size for 35 persons; space is available for playground and sport
 4. Is surrounded by trees to allow fresh air.



it is **SAFE** from Disaster

If the layout of the school building:

1. Is asymmetrical.
2. Shows no gaps between buildings.
3. Shows that gaps between buildings are used for cafeteria or other purposes.
4. Show that there is no reserve line between clean water channels and the sewage.
5. Shows that there are many trees around the school yard that can be dangerous and become obstacles during evacuation.



It is NOT SAFE from Disaster

If the layout of the school buildings:

1. Is simple and spaces between buildings are symmetrical to both axes and not very long.
2. Has a ratio of the width and length of the building of around 1:2.
3. Shows safe gaps between building (complying with the required standards).
4. Shows the placement of baffle walls and opening of doors/windows that are symmetrical to the axes of the building plan.
5. Shows that the walls form closed boxes.
6. Shows that clean water channel is separated from the sewage.
7. Shows that clean water sources are far from the septic tank.



It is SAFE from Disaster

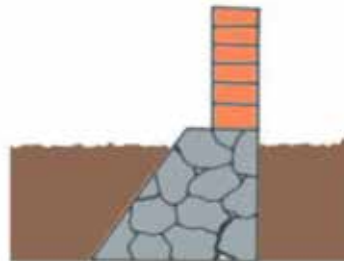
If the building's foundation:



is set on partially hard ground and partially soft ground.



Consists of asymmetrical cross section foundation.



Is not reinforced with ring beam.



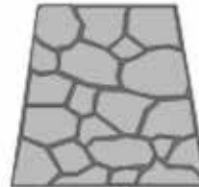
Is a stepped foundation type.

it is NOT RESISTANT to Earthquake

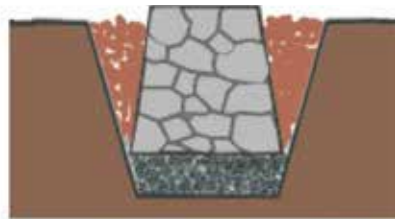
If the building's foundation:



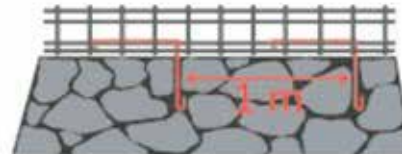
Is set on hard ground with a trench of 80 cm in depth and 80 cm in width.



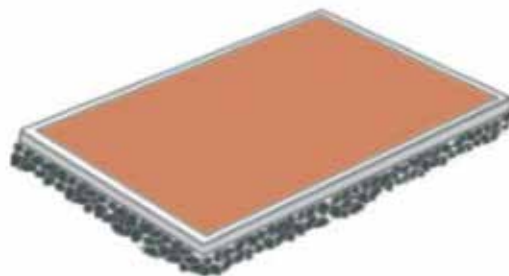
Built with stones or boulders set on interlocking layers.



Is layered with sand and filled with soil at the ground base.



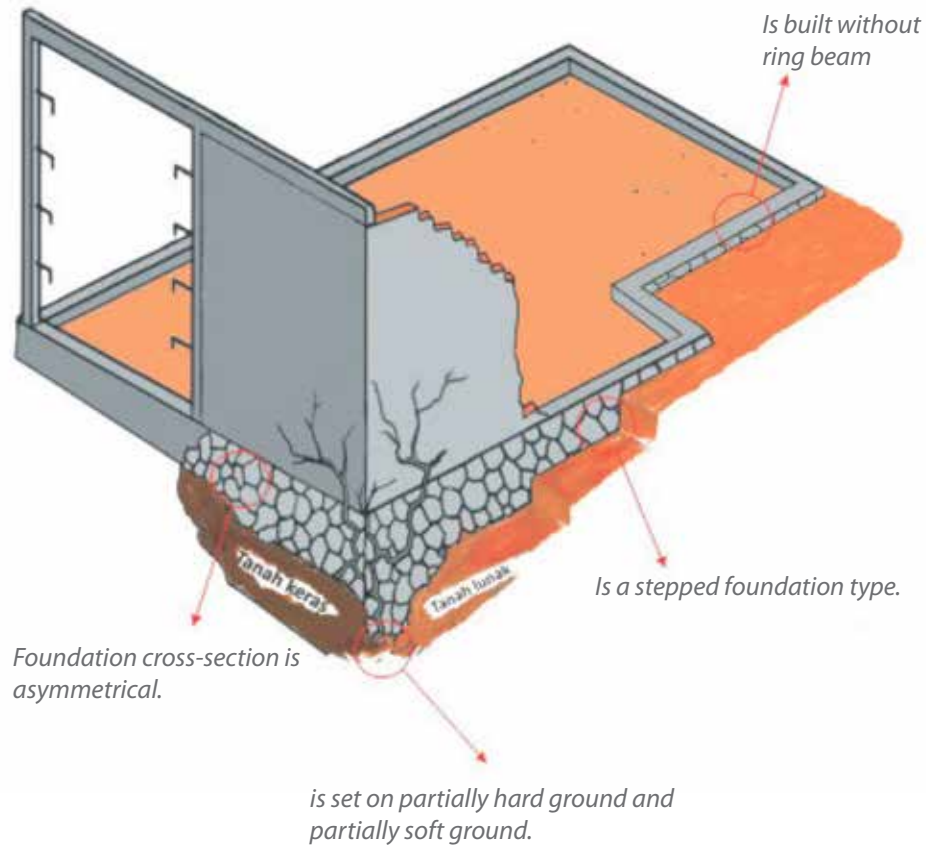
Is anchored with anchors of at least 10 mm in diameter and 1m spacing.



Is a strip foundation built along the length of the building site plan

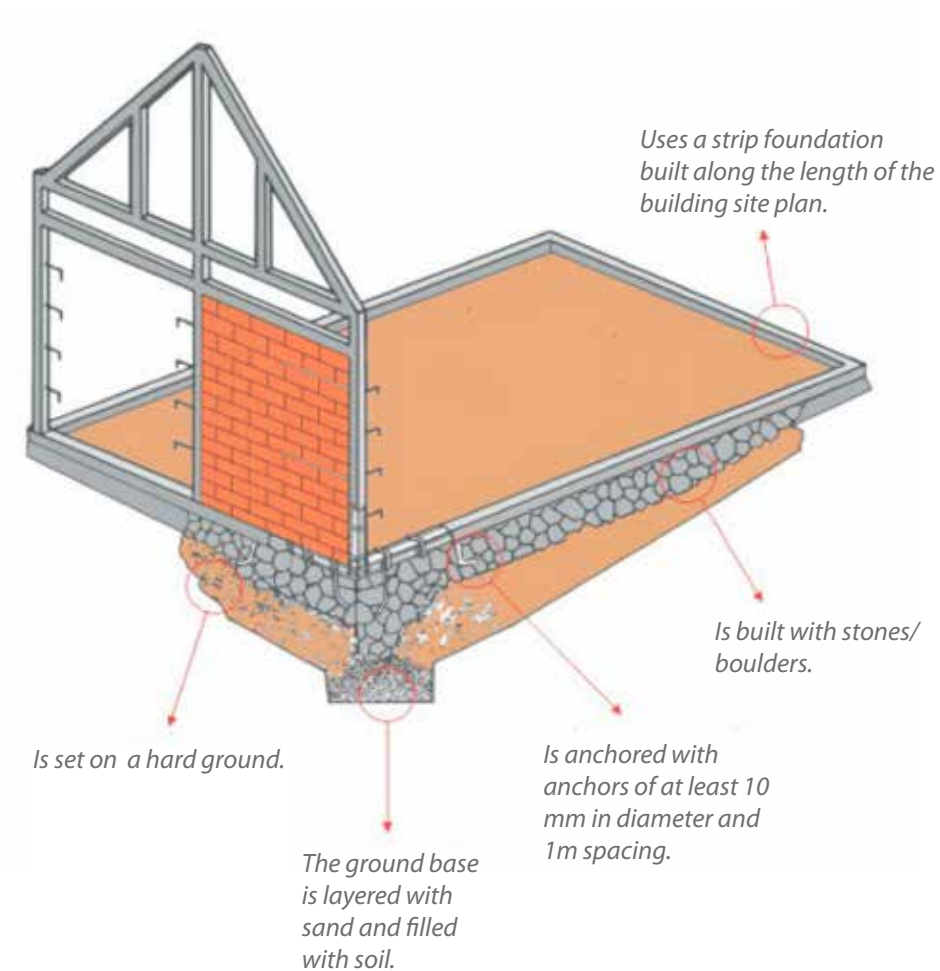
It is RESISTANT to Earthquake

If the building's foundation:



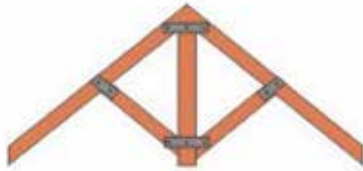
it is NOT RESISTANT to Earthquake

If the building's foundation:

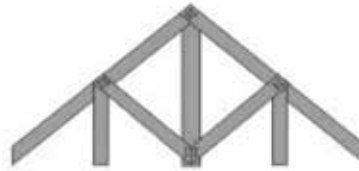


it is RESISTANT to Earthquake

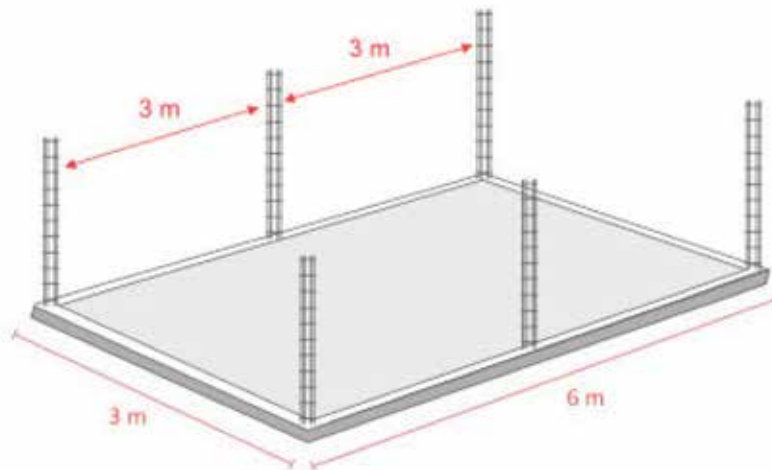
If the building's columns, beams, ring beams, and roof:



Wood roof truss, reinforced with steel plates of 4.00 mm and bolt of at least 10 mm in diameter.



Lightweight steel truss, set up in compliance with the standards.



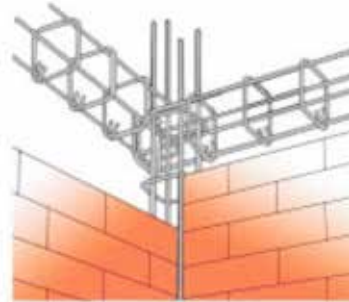
Columns are built for every room of 3 m x 3 m in size.

they are RESISTANT to Earthquake

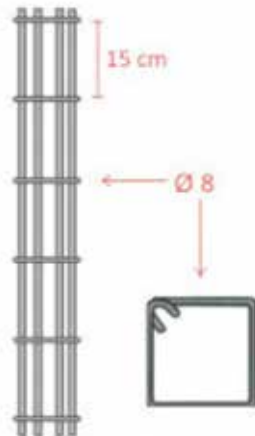
If the building's columns, beams, and ring beams:



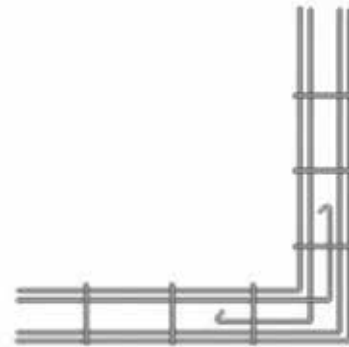
Steel bars connection are overlapped along 40 cm length and hooked to the columns, beams and grade beams.



Connection between column, wall, and beam.



Diameter of stirrups is 8 mm with 15 cm space and the tips are hooked 45°



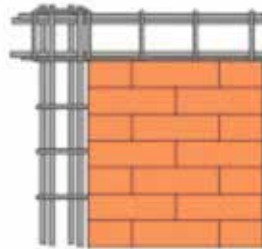
Diameter of steel bars for column, beam, and grade beam is 12 mm.

they are RESISTANT to Earthquake

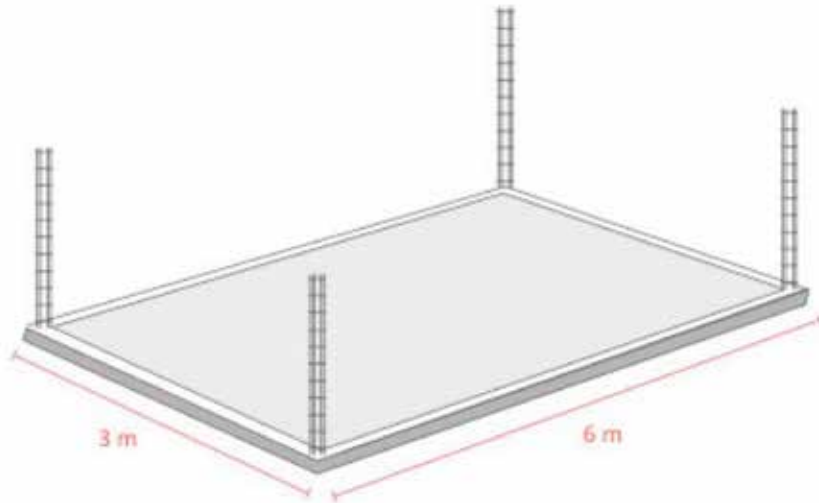
If the building's columns, beams, grade beams and roof:



Tips of steel bars on beam and column are left unhooked.



Bars between beam and column are not overlapped and are not connected.



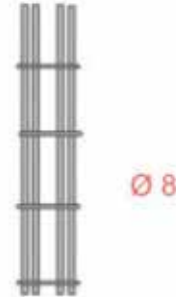
The room is 3m x 6 m in size and only needs four main columns.

they are NOT RESISTANT to Earthquake

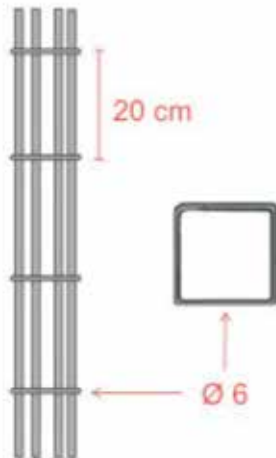
If the building's columns, beams, grade beams and roof:



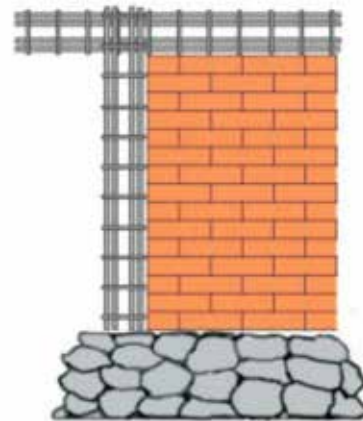
Roof truss is made of wood and not reinforced with steel plates.



Diameter of bars is 8mm.



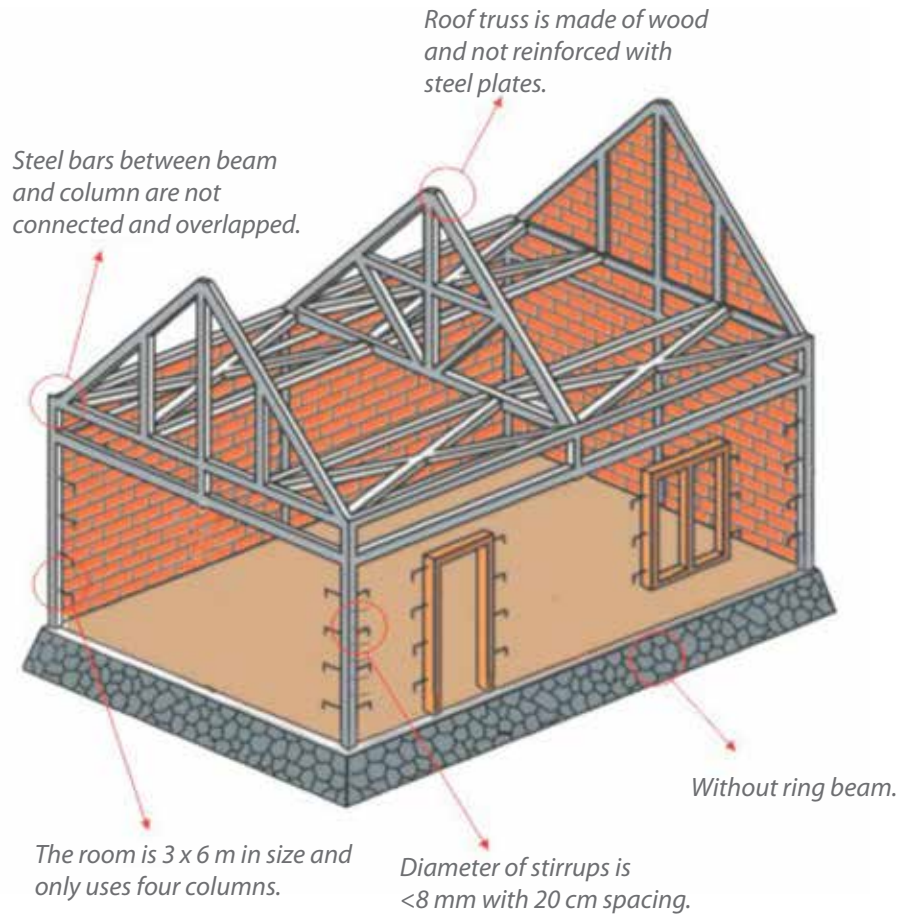
Diameter of stirrups is <8 mm with 20 cm spacing.



Steel bars installed only on column and beam, no bars on grade beam.

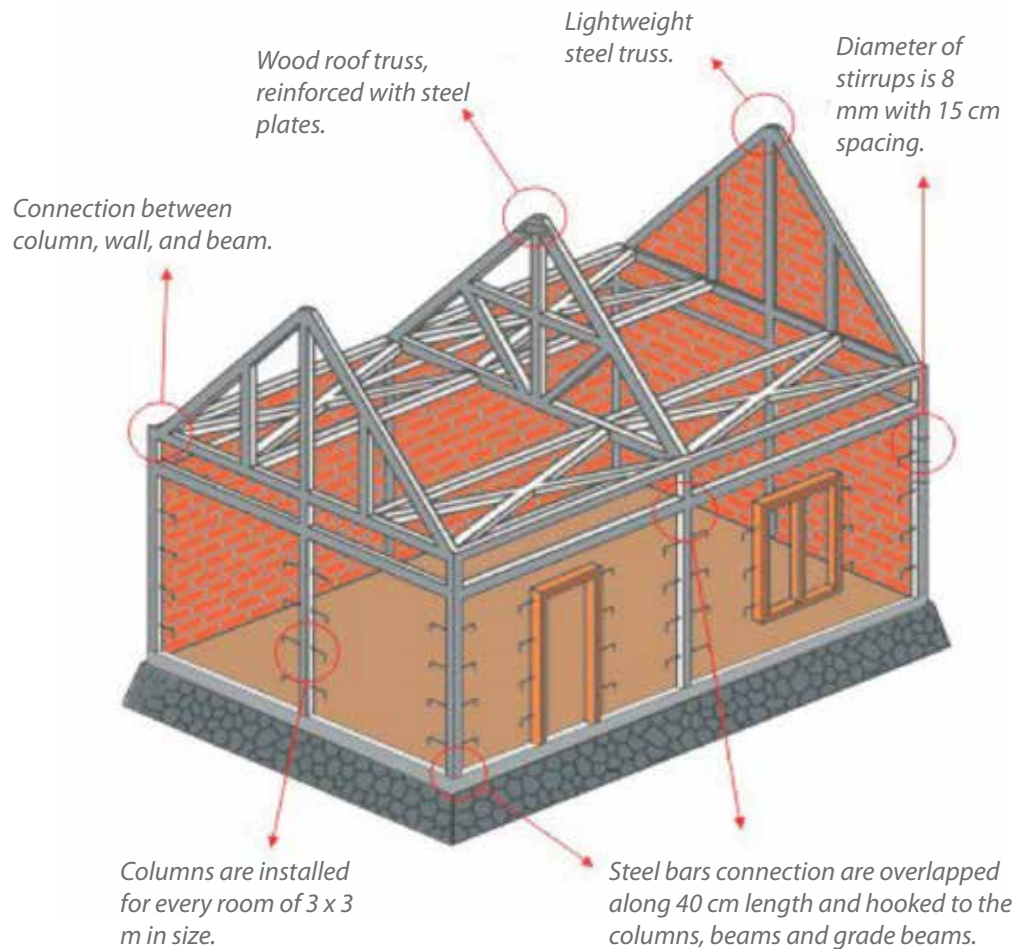
they are NOT RESISTANT to Earthquake

If the building's columns, beams, ring beams, and roof:



they are NOT RESISTANT to Earthquake

If the building's columns, beams, ring beams, and roof:

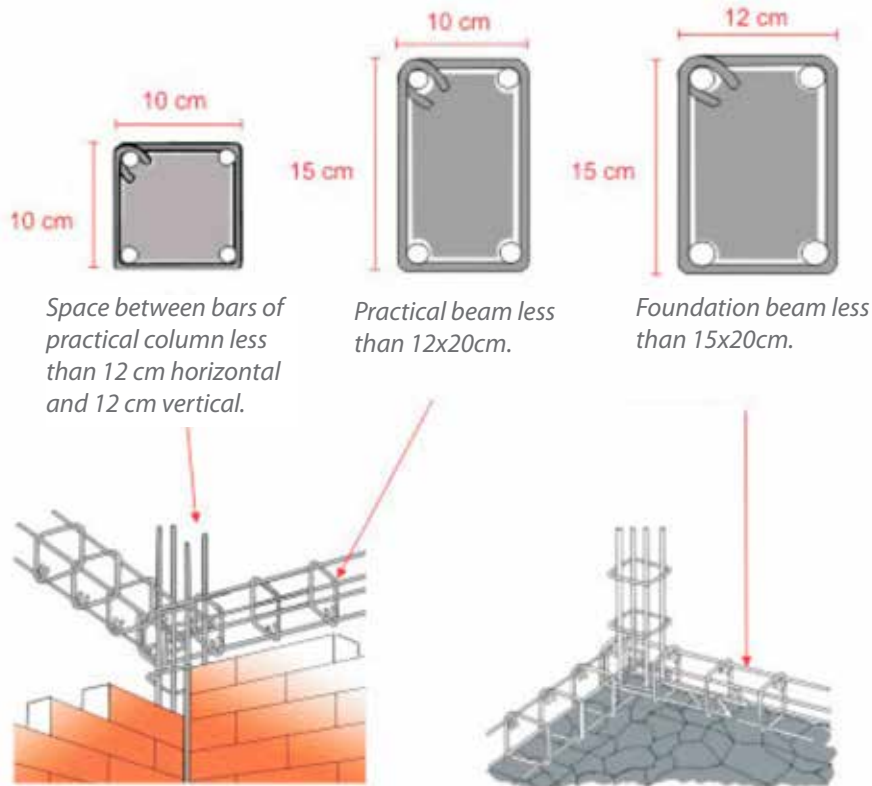


they are RESISTANT to Earthquake

If concrete construction:

Skin reinforcement:

Tebal selimut beton 2,5cm dari as tulangan utama.

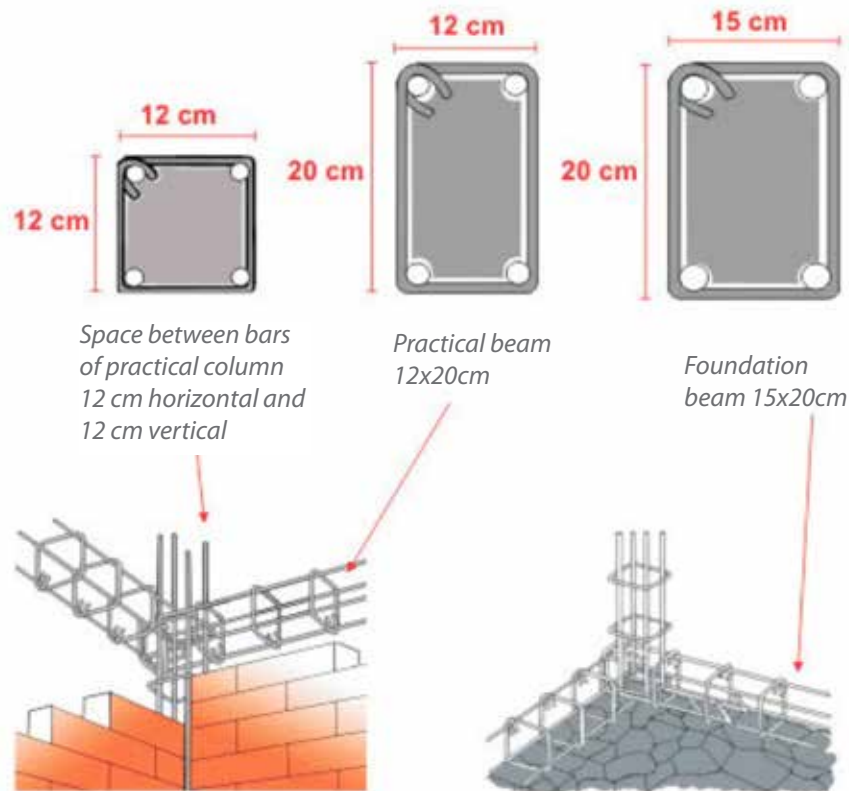


it is NOT SAFE from Disaster

If concrete construction:

Skin reinforcement:

Skin reinforcement is 2.5 cm in thickness from the centre of the main bars

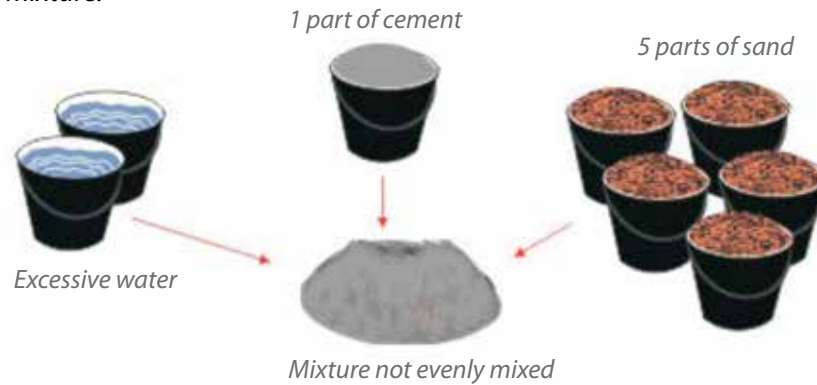


it is SAFE from Disaster

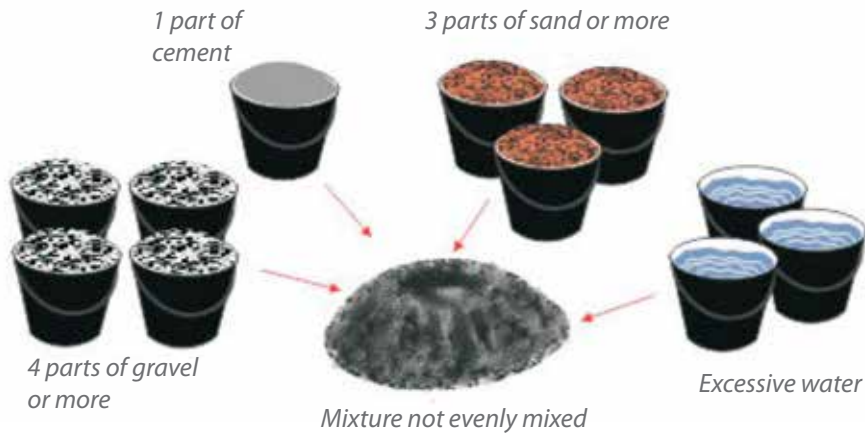
If concrete construction

Cement and sand mixture:

Mortar mixture:



Concrete mix:

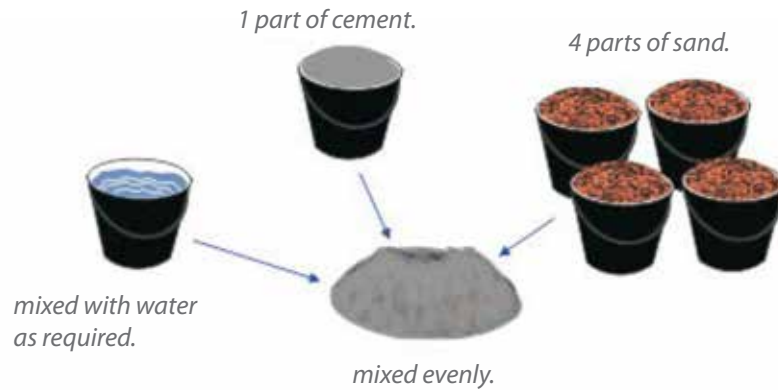


it does Not comply with the standard of Earthquake-Resistant Building

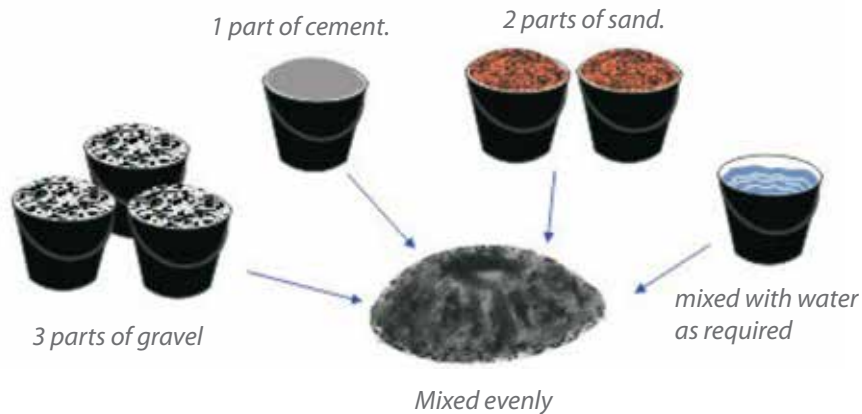
If concrete construction

Cement and sand mixture:

Mortar mixture:



Concrete mixture:

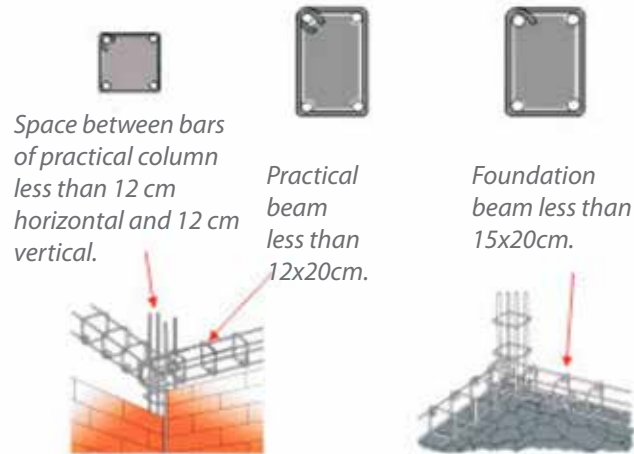


it complies with the standard for 1 story Earthquake-Resistant Building

If concrete construction:

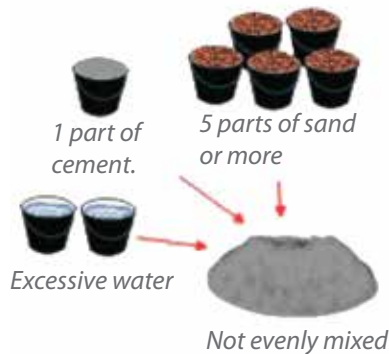
Skin reinforcement:

Skin reinforcement is 2.5 cm in thickness from the centre of the main bars



it complies with the standard of (1 storey) Earthquake-Resistant Building

Mortar mixture:



Concrete mixture:

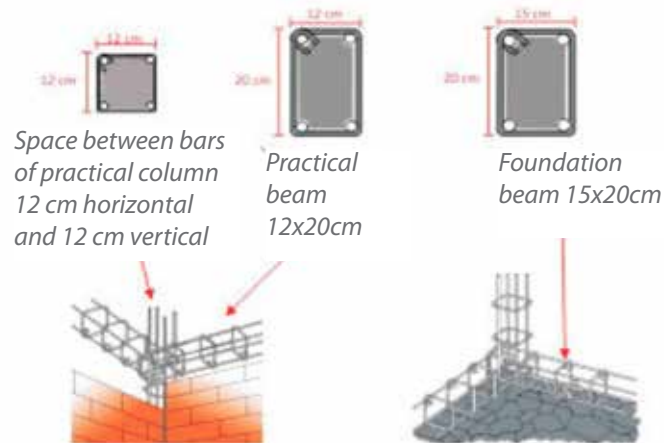


it does not comply with the standard of Earthquake-Resistant Building

If concrete construction

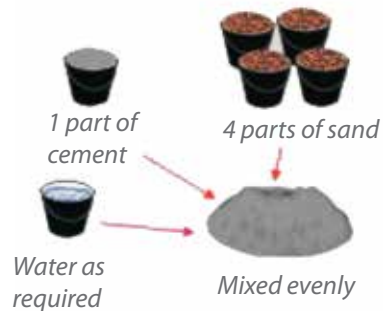
Skin reinforcement:

Skin reinforcement is 2.5 cm in thickness from the centre of the main bars

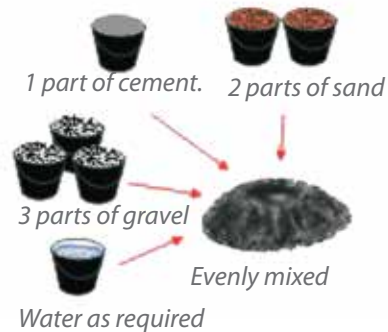


Cement and sand mixture:

Mortar mixture:



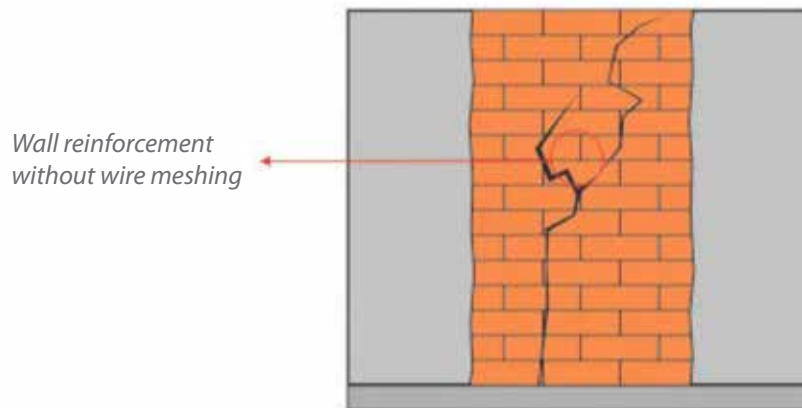
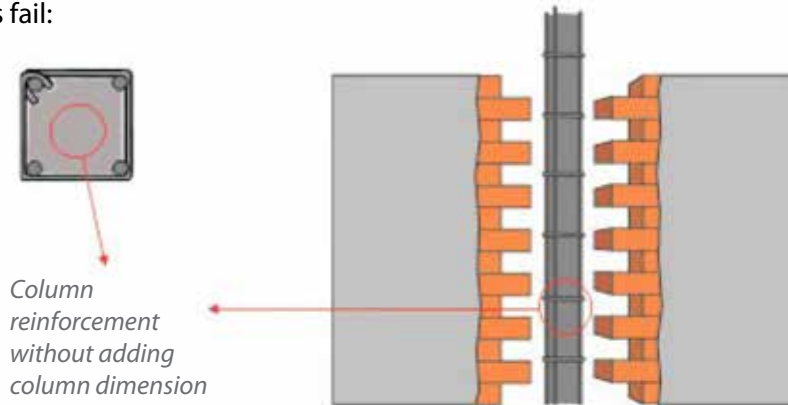
Concrete mixture:



it complies with the standard of (1 story) Earthquake-Resistant Building

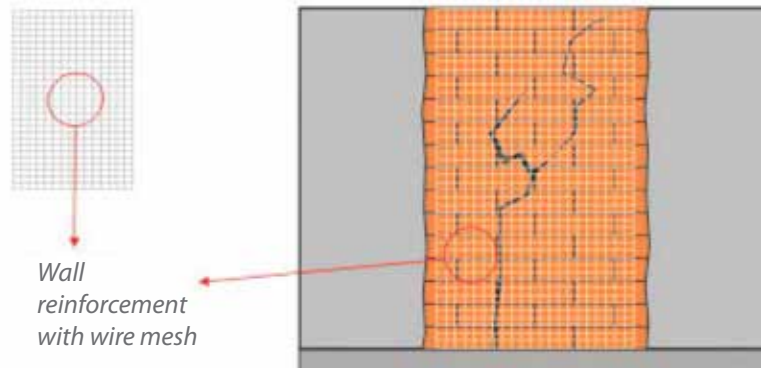
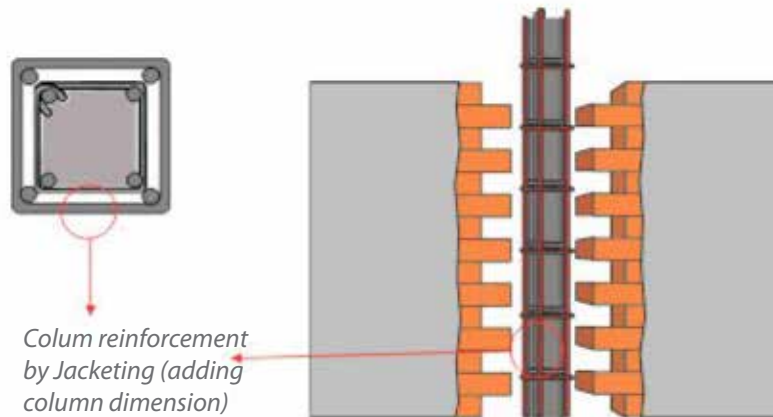
BUILDING REINFORCEMENT

If columns fail:



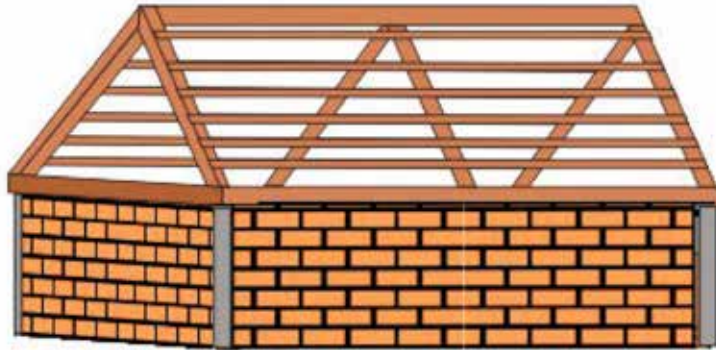
Such building reinforcement is not Earthquake Resistant

If columns fail:



Such building reinforcement is Earthquake Resistant

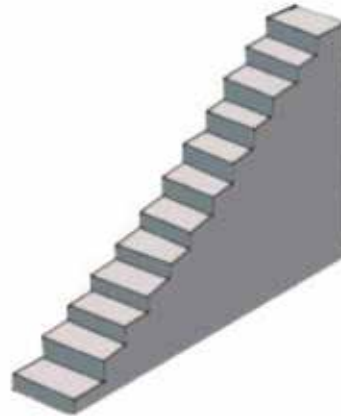
If the materials and design are as follows:



Setting up the roof load directly on brick wall without transferring the load to ring beam with proper bars size.



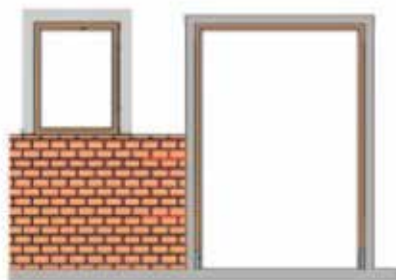
Door only has one leaf and opens inwards. No column and no anchor on door frame .



Narrow steep stairs with no rails .

they are Not Good for Reducing Risk to Earthquake

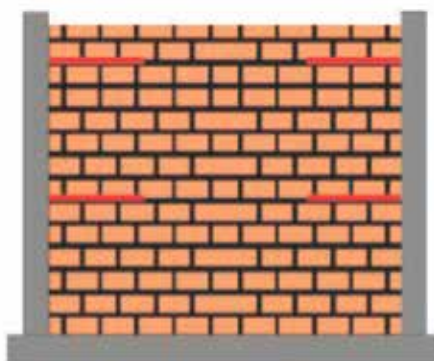
If the materials and design are as follows:



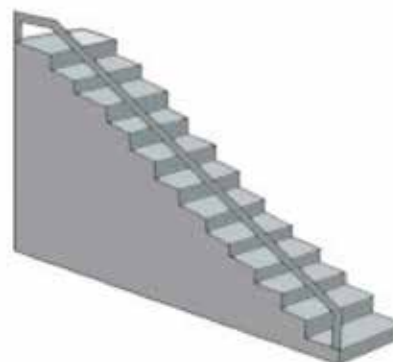
Door and window frames are reinforced with column and practical beams.



Each door has two leaves that open outwards.



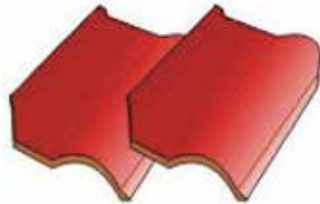
Red bricks or concrete bricks wall anchored to the column of each 6 layers of bricks.



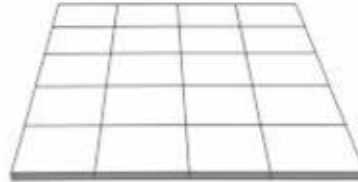
Stairs are wide enough with hand rails.

they are Good for Reducing Risk to Earthquake

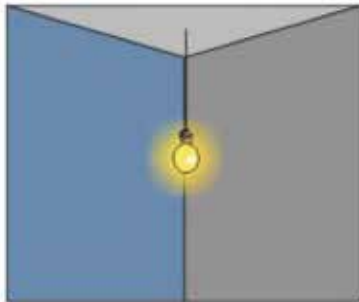
If the materials and design are as follows:



Roofing consists of concrete roof tiles or heavy ceramic roof tiles or non-reinforced zinc.



Floor is made from slippery ceramic materials.



Room is dark that lamp is necessary during the day.



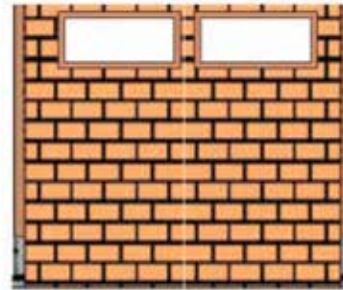
Window is installed without lateral ties.

they are Not Good for Reducing Risk to Earthquake

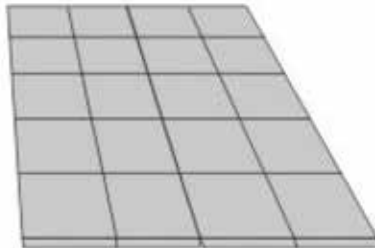
If the materials and design are as follows:



Windows are installed with lateral ties.



Enough ventilation that lamps are not necessary during the day.



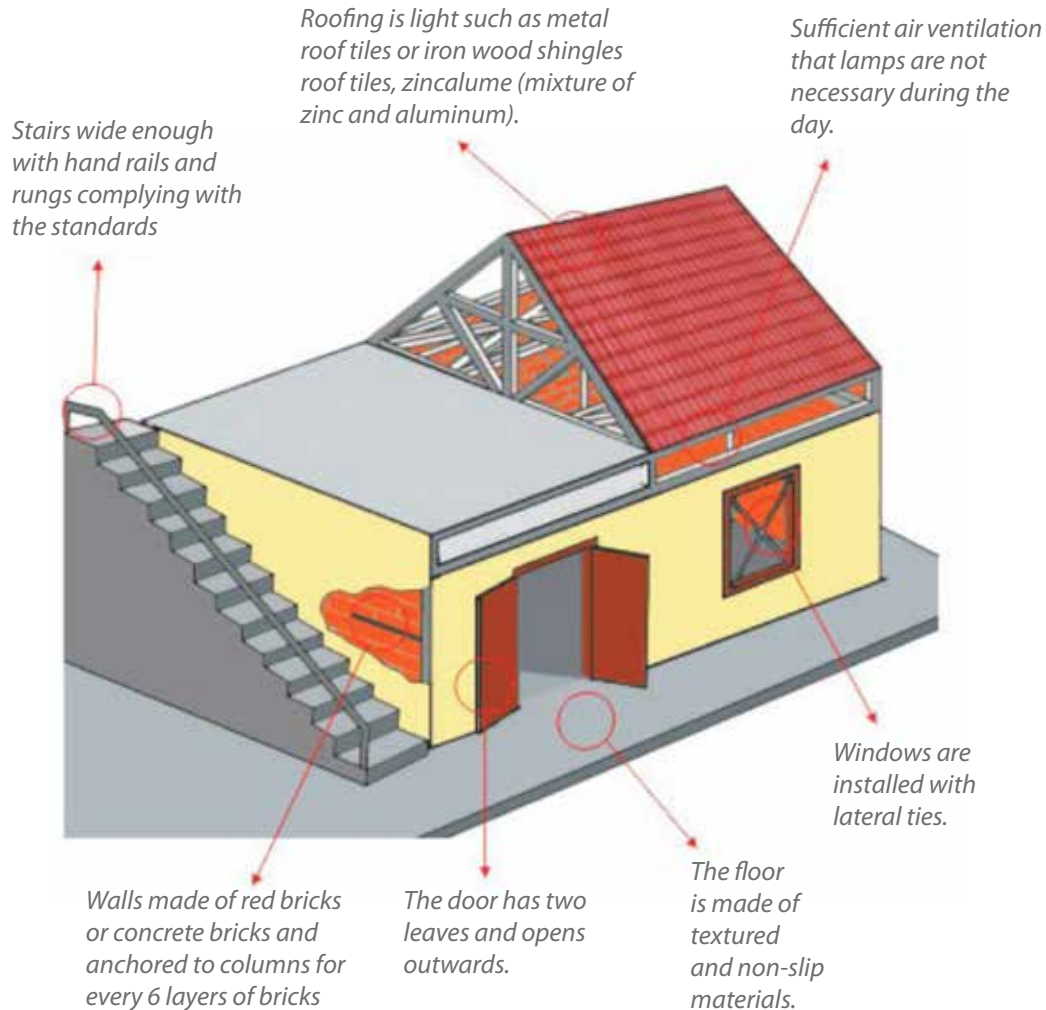
The floors are made from textured and non-slip materials.



Lightweight roofing such as metal roof tiles or iron wood shingles (sirap), zincalume (mixture of zinc and aluminum).

they are Good for Reducing Risk to Earthquake

If the materials and design are as follows:



they are Good for Reducing Risk to Earthquake

Annex 2. Safe School

Safe school is a school that makes school community members feel safe, healthy, comfortable in normal and emergency situation. What do we have to prepare in making our school safe during a disaster event?

Building Structure	Normal	During Disaster
	Columns, beams, sloof, foundation with metal rebars and joints referring to Minister Regulation of MPW NO. 45/PU/PRT/M/2007	Building stands tall and intact in an disaster event
Architectural	Normal	During Disaster
	• Light and strong material comply with SNI standard for ceiling, roof, wall, and frames • Textured floor, not slippery, no crack or holes • Window joins laterally • Two-leaved door, outward opening and wide open • Stairs (if any) easy to climb and railing available	• Material are strong enough, unflammable, tied, not hurting • Evacuation can be done easily and preventing people from falling or stumbling

Utilities	Normal	During Disaster
	• Electricity available comply with Indonesia Electricity Company (PLN) installation standard • Fresh water access available for sanitation, drinking, and fire fighting • Water installation complying with MPW standard • Access to LPG supply available and complying with safety standard • Flag Pole with strong foundation • Wet and dry garbage dump place available.	• Material are strong enough, unflammable, tied, not hurting • Evacuation can be done easily and preventing people from falling or stumbling • Evacuation route available • Chemical material not exploding and burning • Flag Pole not collapsing
Furniture	Normal	During Disaster
	• Tables are strong and enough space for protection • Cupboard well nailed to the wall • Storage for dangerous and poisonous material available	• Tables are strong and enough space for protection • Cupboard not falling

Planning	Normal	During Disaster
	• Map produced from structural and non-structural assessment available • Safe School Master Plan available • Mid-Term Safe School Planning available • Rehabilitation DED for safe school available • Safe School BoQ available • Annual Action Plan available.	• Building intact • School is prepared responding to a disaster event • Rehabilitation and reconstruction of school damaged is based on the safe school master plan

Policy	Normal	During Disaster
	• Policy developed ensures continuous school safety • Standard Operation and Maintenance Procedure, available • Standard Procedure for early warning system (EWS) and evacuation, available • Posters of evacuation route are placed in strategic location and well visualized	• School community will not panic during self-evacuation activity • All school members including people with special need/disable can do self-evacuation • Disaster Risk reduced

Resource Mobilization	Normal	During Disaster
	- Disaster Management and Safety Committee, available - Drill and simulation regularly conducted - Food and drink stock for emergency situation available	- Command system runs as agreed procedure - All school members can do self-evacuation - Disaster Management and Safety Committee members plays the role as stipulated
Layout	Normal	During Disaster
	- Wide enough corridor for quick evacuation and free from obstacles, available - Evacuation area free from obstacles available - Special evacuation route for disable people, available	- Ease and speed up the evacuation - Safe assembly area available
Plants	Normal	During Disaster
	- Type of plants are safe (not thorny, rotten and poisonous) - Trees planted not hindering school activities - Flowers pots tied well to pole or wall	- Plant layout not hindering self-evacuation effort - Flower pots not falling and harmful - Trees not falling and injuring people

Annex 3. Sample of Bill of Quantity of Safe School Construction.

Bill of Quantity of Safe School Construction

Province : West Java Working Group : Cijerokaso 2
 City : Bandung Type of Activity : Safe School Rehabilitation
 Sub-District : Sukasari Volume : 5 Local
 Village : Sarijadi Location : Jl. Sarijadi No. 73

No	Activity		Volume	Unit Price (IDR)	Sub Total (IDR)
I	Dismantling Work				
1.	Dismantling of brick wall	m ³	5.62	49,000	275,184
2.	Dismantling of concrete	m ³	2.16	326,655	705,575
3.	Dismantling of door and window frames	m ³	21.83	14,400	314,304
4.	Dismantling of ceiling frames	m ²	164.25	9,800	1,609,650
5.	Dismantling of cover of roofing tiles	m ²	274.30	3,400	932,612
6.	Dismantling of truss	m ³	2.40	202,000	484,800
Sub Total					4,322,124
II	Soil Work				
1.	Land excavation for building foundation	m ³	24.58	35,750	878,592
2.	Land fill	m ³	19.66	11,916	234,278
3.	Sand fill for foundation + floor	m ³	2.46	158,300	389,038
Sub Total					1,501,908
III	Structural Reinforcement And Foundation Works				
	2nd Floor [concrete mix ratio 1:2:3 = K-175]				
1.	Foundation works	m ³	1,98	580.150	1.148.697
2.	1st Floor stone foundation with mix ratio 1:4 [width and depth = 80 cm]	m ³	-	4,171,350	-
3.	Grade beam 15/20 [6D12], stirrups D8 – 150 mm	m ³	0.89	4,667,768	4,144,978
4.	Concrete beam 15/20 [4D12], stirrups D8 – 150 mm	m ³	0.80	4,632,686	3,706,149

No		Unit	Volume	Unit Price (IDR)	Sub Total (IDR)
5.	Columns 15/15 [4D10], stirrups D8 – 150 mm	m ³	0.72	5,230,811	3,766,184
6.	Lintels 12/15 [4D10], stirrups D8 – 150 mm	m ³	0.53	5,720,553	3,047,911
				Sub Total	15,813,919
1st Floor [concrete mix ratio 1:2:3 = K-175]					
1.	Foundation works;				
	Concrete foundation : width = 1.2 m depth = 1.5 m thickness = 0.2 m	m ³	2.62	2,728,365	7,137,403
2.	Sloof beton 20/35 (8D13U), sengkang D8-150 mm	m ³	9.28	3,234,225	30,020,076
3.	Concrete beam 20/45 [12D13U], stirrups D8 – 100 – 150 mm	m ³	13.32	4,026,109	53,627,771
4.	Structural concrete column 30/30 [8D13U], stirrups D8 – 150 mm	m ³	5.76	4,303,519	24,788,267
5.	Columns 15/15 [4D10], stirrups D8 – 150 mm	m ³	2.88	5,230,811	15,064,736
6.	Concrete slab, thickness = 0.10 m [D8 – 125 mm, 2 layers]	m ³	25.40	4,165,718	105,825,910
7.	Concrete stairs, thickness = 0.12 m [D8 – 125 mm, 2 layers]	m ³	0.86	4,165,718	3,599,181
8.	Concrete lintels 12/15 [4D10], stirrups D8 – 150 mm	m ³	1.07	5,720,553	6,095,821
				Sub Total	246,159,166
IV	Brick work				
1.	Brick walls with thickness equals to the width of the brick: red brick mixed ratio of cement - sand for mortar = 1 : 4	m ²	100.43	84,585	8,495,041
2.	Plaster	m ²	200.86	48,000	9,641,472
3.	Finishing coat on plaster	m ²	200.86	20,062	4,029,734
				Sub Total	22,166,246

No.		Unit	Volume	Unit Price (IDR)	Sub Total (IDR)
V	Roof Work				
1.	Lightweight steel truss <30°	m ²	89.28	120,000	10,713,060
2.	List planks GRC, thickness = 12 mm	m	8.50	45,000	382,500
3.	Metal roofing with insulation	m ²	89.28	85,000	7,588,418
4.	Metal peak gusset	m	8.50	60,000	510,000
Sub Total					19,193,978
VI	Doors, Windows, and Framing Works				
1.	Borneo wood frames	m ³	0.73	6,561,500	4,773,859
2.	paneled doors for classrooms [outward opening: 2 doors]	piece	6.00	374,000	2,244,000
3.	outward opening window leaves	piece	9.00	269,670	2,427,030
4.	Door hinges	pair	6.00	40,035	240,210
5.	1 pc door handle [Kuda Terbang brand]	piece	6.00	154,050	924,300
6.	Plain glass, thickness = 5 cm + frame	m ²	9.00	124,821	1,123,389
7.	Window hinges	pair	9.00	31,690	285,210
8.	Window catches	pair	9.00	20,000	180,000
9.	Window latches	pair	9.00	15,000	135,000
Sub Total					12,332,998
VII	Ceiling Work				
1.	Wood ceiling frame	m ²	69.00	101,175	6,981,075
2.	Plywood ceiling covering	m ²	69.00	35,245	2,431,905
3.	Wood list profile to wall 2 cm	m	41.00	11,966	490,606
Sub Total					9,903,586
VIII	Floor Covering & Wall Work				
1.	Floor ceramic ex. roman 30/30 plain white	m ²	63.75	93,934	5,988,293
Sub Total					5,988,293

No.		Unit	Volume	Unit Price (IDR)	Sub Total (IDR)
IX	Electrical Installation Work				
1.	Installation and lamps point	point	8.00	75,000	600,000
2.	Installation of outlets of power	point	8.00	75,000	600,000
3.	Installation of switch	piece	2.00	35,000	70,000
4.	Installation of outlets	piece	2.00	40,000	80,000
Sub Total					1,350,000
X	Paint Work				
1.	New Exterior & interior wall paint	m ²	577.45	19,699	11,375,188
2.	Ceiling paint	m ²	136.88	26,906	3,682,759
3.	Wood frame, door and window leaves paint	m ²	18.19	26,906	489,391
4.	GRC List plank paint	m ²	4.25	26,906	114,351
Sub Total					15,661,687
XI	Other Work				
1.	Debris disposal	wheelbarrow	1.00	400,000	400,000
Sub Total					400,000
XII	Furniture Rehabilitation Work				
1.	Student bench and chairs	piece	-	200,000	-
2.	Cabinet	piece	-	600,000	-
3.	Board	piece	-	200,000	-
4.	Teacher's chair	piece	-	200,000	-
5.	Teacher's desk	piece	-	200,000	-
				Sub Total	-
TOTAL				354,793,905	

Bandung, October 2012

Examined by:
Technical Facilitator

School Principal SDN Cijerokaso

Prepared by:
Working Group

Iwan Setiawan, ST.

Sri Yuliasih, M.Pd.

Carli, S.Pd

Annex 4. School Layout Master Plan of SDN Cijorekso Public Elementary School, Bandung

1. STRUCTURE

A. LAYOUT BETWEEN BUILDINGS

- Buildings are symmetrical, neat, simple and in square form
- Has an open space for facilitating easy access to evacuation routes and safe zones
- Dilation is in place between constructions/building blocks
- Building demarcation line is in place



Ground Floor

B. STRUCTURE

- The building is sturdy, strong and safe
- Dimension of building components complies with the Indonesian National Standard (SNI)
- Complying with the standards of PU Cipta Karya for joints of structural column and beam, steel bars bended at overlapping 40 x diameter: Ensuring the reinforcement, grade beam is anchored to the stone foundation in every maximum 1 meter span and stone is set in zig zag with the largest ones first.

C. ARCHITECTURE

Using light, strong and environmental-friendly materials that comply with SNI standards :

Textured and non-slip flooring

Brick wall to concrete column tied with anchors every six layers of bricks.

Frame is anchored to the wall

Two doors with outward opening

Window frames

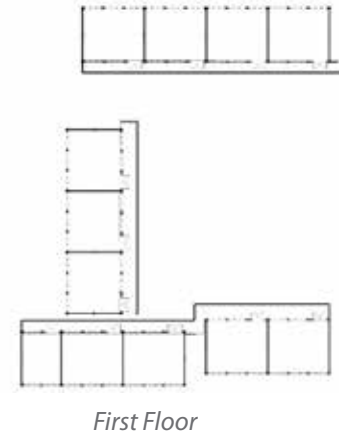
Window sills are cross-braced

Window glass layered with protective film

Ceiling and roof

FACILITIES AND INFRASTRUCTURES

- Availability and safety :
- Clean water pipe network and sewerage system
- Clean drinking water
- Fire extinguisher
- Electricity network
- Gas network
- Electricity supply to support teaching and learning activities
- Wet and dry waste disposal
- Number of bathing-washing-toilet facilities are proportional to the number of students and teachers
- Strong furniture for protection and to be anchored
- Hazardous and toxic substances are stored in a safe place and anchored
- Flag pole and name sign are anchored
- Standard operating procedures on early warning and evacuation are in place
- Early warning alarm is in place
- Disaster preparedness and response team is established
- Ramp is in place for people with special needs
- Place of worship is available
- Parking lot is available



NON-STRUCTURAL

- Capacity
- Policy
- Preparedness

FUNDAMENTAL ASPECTS OF SAFE SCHOOL IN DISASTER

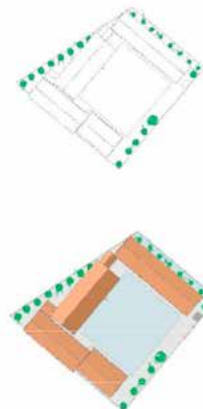
- School location is safe from disaster
- Building structure
- Classroom design and layout
- Supporting Facilities and Infrastructure
- Knowledge, Attitude, and Behavior
- School/Madrassa's policy
- Preparedness plan



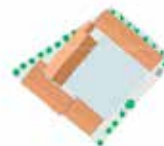
3 Dimensional Building Details



3 Dimensional Building Details



3 Dimensional Façade Details



3 Dimensional Façade Details

Annex 5. Standard Operating Procedure for Earthquake and Tsunami Response

Standard Operating

Procedure for Earthquake And Tsunami Response



SMA PERTIWI 1 PADANG

Jl. Cendrawasih No. 7 Air Tawar Barat Padang, 25132 Sumatera Barat,

INTRODUCTION

Padang is a city prone to disasters due to its geographical location and climatic and demographic conditions. Geologically, Padang is located between the two major plates, the Eurasian and the Indo-Australian plates, and as a result has the highest vulnerability in the world to earthquake and disaster. Against this background and to provide the protection to all members of the Pertiwi 1 Senior High School community in Padang, a clear standard operating procedure for earthquake and tsunami response is deemed necessary. The standard operating procedure will help all members of the school community to be able to respond quickly and appropriately by referring to one command, one rule and one organization to prevent panic and death casualties when disaster occurs.

GLOSSARY OF TERMS

1. Disaster: an event or a series of events that threaten and disrupt the lives and livelihoods of a community, which can be caused by either natural and/or non-natural as well as human factors and which can result in human casualties, environmental damage, loss of property, and psychological impact.
2. Hazard: biological, geographic, social, economic, political, cultural and technological situation, condition or characteristics of a community in a given area within a given period of time that can potentially cause death casualties and damage.
3. Threat: an event that can potentially lead to disaster.
4. Preparedness: a series of activities in anticipation of disaster through organizing as well as efficient and effective measures.
5. Early warning: a series of activities of giving an urgent warning as a result of analysis of a potential disaster in a given area issued by the authorized agency at the central level to the authorized agency at the local level.
6. The Local Disaster Management Agency (Badan Penanggulangan Bencana Daerah) here in after abbreviated as BPBD: local government agencies that are responsible for the conduct of disaster management at the local level.
7. Standard Operating Procedure: structured description agreed by all relevant stakeholders on who should do what, when, where, why and using what approach.

8. Mode of communication: all devices that are capable of receiving and transmitting information that is formally issued by authorized agencies.
9. Disaster emergency response: a series of prompt actions in response to a disaster to deal with its adverse impacts, such as rescue and evacuation of victims/ survivors and material possessions, provision of basic necessities, protection and management of internally displaced people, and salvaging and recovery of infrastructure and facilities.

INDICATORS OF ACHIEVEMENT

1. Evacuation process following an earthquake is carried out safely and in an orderly manner;
2. Equipment and personnel are activated immediately after an earthquake to receive early warning from the Indonesian Agency for Meteorology, Climatology, and Geophysics (BMKG);
3. Reports are available and documented on the situation starting from when an earthquake strikes up to the end of early warning and or the implementation of emergency response operation.

PROCEDURE MAJOR TSUNAMIGENIC EARTHQUAKE

CONDITION (When An Earthquake Occurs With The Following Characteristics):

1. Lasting continuously for more than 1 minute;
2. Strong tremor that human cannot stand up straight; and/or
3. The tremor causes damages to buildings that are not resistant to earthquake.

TIME OF EVENT:

On an active school day (Monday-Saturday or holiday that is agreed as schoolday).

In That Event , The entire members of the school community::

1. Shall evacuate themselves by leaving the building and going to a meeting point (when applicable) while covering their heads using their bags/other items to prevent from being struck by harmful falling objects. Upon arriving at the meeting point shall make a circle and read the asma'ul husna prayer/recite prayers.
2. When it is not possible to leave the building, shall stay in safe points (under a sturdy desk, under a door frame) while covering their heads using their bags/other items. Shall later leave the building when the tremor of the earthquake subsides and go to the meeting point.

CONDITION: Earthquake Is No Longer Felt

In That Event, The entire members of the schoool community:

Shall evaucate themselves by leaving the meeting point in an orderly manner to the school ceremony ground while covering their heads using their bags/other items and taking caution of any falling ruin, flag pole, trees, etc.

Maka, guru yang sedang mengajar saat itu:

Melakukan pendataan terhadap jumlah siswa yang sedang diajar saat itu, untuk melihat apakah seluruh siswa selamat atau ada yang menjadi korban.

Teachers on teaching duty:

Shall make a list of all students present to see if they are all safe or affected by the earthquake.

Teachers on guard duty:

Shall make a list all members of teacher council, administration staff, school guards and other school community members present.

Religion subject teacher:

Shall help students to keep calm by reciting prayers/ asmaul husna together until further instructions are given by the school authority (chain of command).

Youth red cross, school disaster preparedness group:

Shall conduct rescue and emergency response activities in case of injuries among members of the school community caused by falling objects/ruin

Disaster preparedness group on duty:

Shall seek information relating to the earthquake on its potential to generate tsunami using all means of communication available and possible (rig, handy talkie, internet, telephone, radio, mobile phone, etc). Information can be directly sourced from formal agency on early warning (bmkp) or through media interface, such as:

1. The operation control centre (pusdalops) of the local disaster management body of padang: 161.550 mhz.
2. Indoensian inter-community radio (rapi) of west sumatra : 143.500 mhz.
3. Disaster concerned boy/girl scouts crisis centre : 145.320 mhzz

The information generated shall be forwarded to the chain of command orally/by any available and possible means of communication for further actions.

Chain of command of Pertiwi 1 senior high school, Padang:

1. School principal
2. Vice school principal for students affairs
3. Vice school principal for curriculum
4. Vice school principal for public relation
5. Vice school principal for facilities and infrastructure
6. Facilitator of intra-school students organisation
7. Facilitator of school disaster preparedness group.



After acquiring the necessary information, the chain of command shall issue an order of evacuation using loud speaker. The formal instruction shall say:

Tsunamigenic earthquake.....!!!
All school members should remain calm and on alert.
All students should evacuate themselves
to the indonesian television building of west Sumatra

All members of school community:

Shall evacuate themselves taking with them the emergency bag to the indonesian television building through the evacuation routes that have been established by the school.

Boy/girl scouts:

1. Shall secure the evacuation routes for the evacuation of members of school community and the community.
2. Shall as much as possible ensure that the entire process of evacuation runs well especially on the main roads and at iintersections that may cause traffic jam due to panic..

Youth red cross:

Shall accompany and evacuate injured people to the indonesian television.

School guard and school disaster preparedness group:

1. Shall secure the school and all school members to get safely to the indonesian television building.
2. Shall monitor development of information relating to the earthquake through available means of communication.

CONDITION: ALREADY AT THE EVACUATION POINT (INDONESIAN TELEVISION BUILDING)***IN THAT EVENT, Boy/girl scouts:***

Shall establish an information and communication command post intended for updating information obtained from the government or other reliable sources and for the place where parents can find information on the condition of their children who go to pertiwi 1 senior high school.

School disaster preparedness group:

1. Shall erect tent (when possible) for the information post, health command post, and temporary shelter for internally displaced people.
2. Shall document activities of community members in evacuation point and document all information related to evacuation process and early warning received from communication radio, the internet, and other communication means.

Youth red cross:

Shall establish health command post for school members and community members.

Boy/girl scouts , school disaster preparedness group and youth red cross:

Shall establish communal kitchen together with their respective facilitators.

All school community members:

Shall remain calm and stay in the evacuation point until the meteorological, climatology, and geophysics agency/local government issues the formal announcement of the end of stage four of early warning through all existing means of communication.

CONDITION: TSUNAMI ENDS.

IN THAT EVENT, Head of school disaster preparedness group and Head of boy/girl scouts:

1. Shall find additional information on the latest condition and safe evacuation routes through existing means of communication.
2. Shall forward information acquired to the chain of command orally/through existing means of communication for further actions.

Chain of command:

When condition is safe based on the information provided by the government (operation control centre, local disaster management body) or other reliable sources, chain of command will issue an instruction using a loud speaker requesting all members of school community to resume their activities (to go back to the school building or in line with the school policy).

All school community members::

Shall comply with the instruction issued by the chain of command, in line with the condition and situation.

School disaster preparedness group, boy/girl scouts and Youth red cross:

1. Shall be prepared for emergency response operation (by complying with the school policy/request from other disaster management institutions/agencies/ organisations.
2. Shall implement for emergency response operation together with other disaster management agencies/institutions/organisations.

The standard operating procedure is developed to provide the guidance for all members of school community to be able to take immediate and appropriate action in time of disaster. The procedure is expected to be understood by all students of Pertiwi 1 Senior High School, both through discussions and disaster simulation, to minimize panic and death casualties in disaster

Padang, July 2012

SCENARIO OF EVENT: Major Earthquake with Tsunami Potential

CONDITION (when an earthquake occurs with the following characteristics):

- 1. Lasting continuously for more than 1 minute;
- 2. Strong tremor that human cannot stand up straight; and/or;
- 3. The tremor causes damages to buildings that are not resistant to earthquake.

No	ACTIVITY	WHO	WHEN	WHERE	HOW
1.	Self-evacuation	All members of school community	When earthquake hits (j+0 min)	In classroom/at each location	When possible everyone should leave the classroom/ places of activities and reach the meeting point while covering their heads using bags/other items from falling objects while gathering in circle (to check if everyone is already there)
					When it is not possible to leave the classroom/places of activities, everyone should find a safe place in the room (under a sturdy desk, under a door frame) while covering their heads using bags/other items from falling object in the room
2.	Evacuation from the meeting point to the school ceremony ground	All members of school community	When earthquake hits (h+0 min)	On the school ceremony ground	Everyone should protect themselves from falling objects while covering their heads. Evacuation runs in orderly manner.

No.	ACTIVITY	WHO	WHEN	WHERE	HOW
3.	Listing of evacuating school community members and calming them	Teachers on teaching duty (for students)	When earthquake hits (h+0 min)	On the school ceremony ground	Teachers on teaching duty count the number of students and
		Teacher on guard duty (for other than students)			Religion subject teachers calm down all members of school community by reciting asmaul husna/ prayers, etc.
4.	Looking for information whether the recent earthquake can generate tsunami or not	Disaster preparedness team on duty		On the school ground	Using all existing means of communication to access information from the Agency for Meteorology, Climatology and Geophysics (handy talkie, mobile phones, internet, radio, etc).
					Using all existing means of communication to access information from the Agency for Meteorology, Climatology and Geophysics (handy talkie, mobile phones, internet, radio, etc).
5.	Performing first aid in emergency to anyone suffering injuries	Youth Red Cross, School Disaster Preparedness Group, and Boy/ Girl Scouts		On the school ground and in the classroom	Assess the condition of the injured and provide medical treatment
6.	Feeding information to the chain of command	Disaster preparedness group on duty		On the school ground	Providing information obtained orally or using other communication devices for further actions

No.	ACTIVITY	WHO	WHEN	WHERE	HOW
7.	Issuing instruction for evacuation	1. School principal	After the Earthquake hits (h+7minutes)	On the school ground	Using loud speakers
		2. Vice Principle for Students Affairs			
		3. Vice Principle for Curriculum			
		4. Vice Principle for Public Relations			
		5. Vice Principle for Facilities and Infrastructure			
		6. Facilitator of Inter-Students Organization			
		7. Facilitator of School Disaster Preparedness Group			
		(The order is used during crisis. In the absence of the School Principal, the chain of command can be assumed by the next in the sequence			

No.	ACTIVITY	WHO	WHEN	WHERE	HOW
8.	Conducting evacuation	All members of school community	After the Earthquake hits (h+7minutes)	From the school to the Indonesian Television building	Running while taking the Emergency Bag/Kit to the Indonesian Television building through the evacuation routes already established by the school authority
		School Disaster Preparedness Group and School guards			Securing the school and ensuring that no one is left behind
		Boy/Girl Scouts			Assisting the injured to reach the evacuation point
					Securing evacuation routes by standing by at some points along the routes that may cause jam
9.	Erecting tents	School Disaster Preparedness Group	After the Earthquake hits (h+52minutes)	At the evacuation point	Carrying out duties according to each respective responsibility and all activities are documented in writing
	Establishing information command post	Boy/Girl Scouts			Waiting for further information from the government or the authorities
	Establishing communal kitchen & logistics	Youth Red Cross			When information from the government or the authorities indicates that the condition is safe, all members of the school community can resume their activities (going back to school or according to the school policy)
	Establishing public kitchen and logistical centre	School Facilitator,, School Disaster Preparedness Group, Boy/Girl Scouts, Youth Red Cross			

No.	ACTIVITY	WHO	WHEN	WHERE	BAGAIMANA
10.	Prepared for emergency response operation	School Disaster Preparedness Group, Boy/Girl Scouts, Youth Red Cross	In line with the school policy and on request by related agencies/ institutions/ organizations	To be adjusted	Direct operation or joint operation with other disaster management agencies/institutions/ organization for emergency response.



Monitoring school rehabilitation work.

Annex 6. Safe School Assessment Tool

Structural

School Building				
No.	Ideal Condition	Yes	No	Remarks/Proposed Action
1.	Foundation available			
2.	Column available			
3.	Concrete Sloof available			
4.	Ring beam available			
5.	Brick wall anchored every 1 m height			
6.	Column and foundation joined well			
7.	Column and Concrete Sloof joined well			
8.	Column and ring beam joined well			
9.	Trusses joined well to ring beam			
10.	Mast pole joined well to column and ring beam			

School Environment				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Spacious empty field for assembly area available			
2.	Safety route signage available			
3.	Evacuation route signage available			
4.	Hardened evacuation road to safer area available			

School Terrace				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Floor flat and not slippery			
2.	Terrace directly connected to school yard			
3.	Terrace free from rain splash			
4.	Terrace width minimum 1.8 m			

Classroom Walls				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Made of strong and solid material			
2.	Made of unflammable material			
3.	Easily cleaned			
4.	Not layered with poisonous material			

Floor				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Flat			
2.	Rough/not slippery			
3.	No crack			
4.	Strong and solid			

Doors				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Ideal Condition			
2.	Size more than 95 cm			
3.	Made of strong and solid material			
4.	Outward opening			
5.	Handle easily reached			

Windows				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Number of opening sufficient in illuminating the room			
2.	Made of solid and strong material			
3.	Outward opening			
4.	Layered with glass protection avoiding scattering parts if breaking			

Toilets				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Sufficient to serve the school community (student-restroom ratio)			
2.	Construction comply with the building specification/code			
3.	Sufficient space for student with wheelchair			
4.	Provided with equipment operable by all school community members (children/parents/disable and student with special need)			

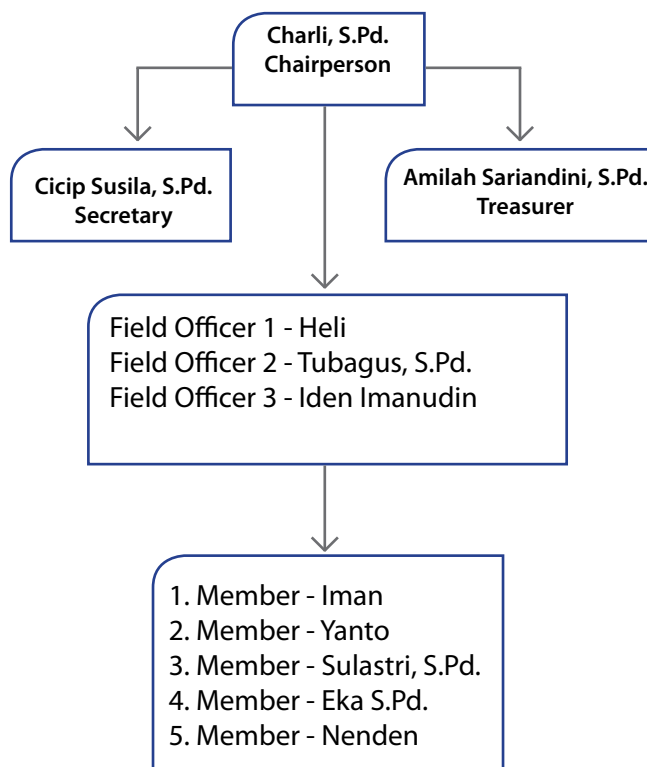
Furniture Arrangement				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Tables and chairs made of strong and solid material			
2.	Table and chairs not polished/painted with poisonous material			
3.	Table and chairs arrange with 95 distance			
4.	Cupboard made of strong material			
5.	Cupboard not disrupting the evacuation route			
6.	No pile of stuffs on top of the cupboard			
7.	Cupboard lockable			
8.	Wall decoration light and strong enough			
9.	Wall decoration strongly nailed to the wall			

Non-Structural

School				
No.	Ideal Condition	Yes	No	Remarks/ Proposed Action
1.	Established Disaster Management Committee			
2.	Disaster response SOP available			
3.	Conduct drill and simulation regularly			
4.	Collaborate with Local Agency for Disaster Management (BPBD)			
5.	Having been trained on Disaster Management by BPBD or relevant NGO			
6.	Integrate disaster management issue into school curriculum and teaching-learning process			
7.	Allocating budget for Disaster Management activity in school budget			
8.	Developing DRR-based school Master Plan			
9.	First Aid equipment available			

Annex 7. Standard Operating Procedure for Operation and Maintenance of SDN Cijerokaso Elementary School, Bandung

Structure Of Operation and Maintenance



Note: Local government offices should be involved as much as possible in the structure of Operation and Maintenance.

Infrastructure Beneficiary Member List

OPERATION AND MAINTENANCE FORM 2	Name of Operation and Maintenance	:	Date:
	Infrastructure Activity	:	
	Location of Public/Private Elementary School	:	
	Village/Sub-District	:	
	City	:	

List Of Infrastructure Beneficiary Member

No	Name	Male/ Female	Address	Occupation	Remarks
1	2	3	4	5	6

.....200...
Chairperson of Operation and Maintenance

PLAN OF ACTIVITY/WORK PROGRAM MAINTENANCE OF INFRASTRUCTURE (Format description and completion guidance))

OPERATIONALISATION AND MAINTENANCE FORM 1	Name of Operationalization and Maintenance	: Safe School
	Infrastructure Activity	: School Building
	Location	: SDN Cijerokaso
	Village/Sub-District	: Sarijadi/Sukasari
	City	: Bandung

No.	Type of Activity	Frequency	Responsibilities	Estimated Cost (IDR)	Source of Finance
1	2	3	4	5	6
1.	Listing of Beneficiary Members	Agreed at the latest every six month	Making a list of people who become the members that benefit infrastructure (completing form 2)	50,000	School operational assistance from central government
2.	Fund raising	Funding is raised the whole year through	Fund raising for financing of infrastructure (including for development when necessary) from many sources of legal financing such as contribution, retribution, local government or Village government assistance, or funding agency	50,000,000	School committee
3.	Inventory of Condition of Infrastructure	Monthly	Direct monitoring and inventories of condition of parts of infrastructure (form 3)	25,000	School Operational Assistance fund

1	2	3	4	5	6
4.	Maintenance: a. Weekly b. Monthly	Specified in accordance with regular or periodic maintenance of infrastructures managed: - every one week - every 2 months	Description of works or details of activities are in line with the types of infrastructure (referring to the methods of maintenance, simple technical guidelines for construction)	120,000	Provincial school operational assistance fund
5.	Developing the Cost Estimate Plan and schedule of maintenance	According to the results of inventories (carried out at the latest once in 6 month)	1. Developing Cost Estimate Plan for maintenance (rehabilitation of damage) of infrastructure (example of format 4) 2. Developing schedules for implementation of maintenance and rehabilitation on the ground including assigning person in charge for the implementation (completing form 5)	50,000	Central school operational assistance fund
6.	Regular meetings	Every three months	Discussing urgent issues	350,000	School Operational Assistance fund
7.	Periodic report	Every semester	Report on all activities of procurement as well as maintenance	250,000	School Operational Assistance fund

Bandung, November 2012
Chairperson of Operation and Maintenance

(Charlie, S.Pd.)

Standard Operating Procedure for Operation and Maintenance of SDN Cijerokaso Public Elementary School

No	Type of Activity	Implementer	Time of implementation	Follow up plan	Remarks
1.	Inventory	School	Every 3 months	Document	Rehabilitation
2.	Painting	School	Start of school year	Funding of IDR 15,000,000	School Operational Assistance fund
3.	Rehabilitation	Third party/self-management	Start of school year	New Classrooms	Government
4.	New students admission	Third party/self-management	Start of school year	1 room for library	Government
5.	New classrooms	Third party/self-management	Start of school year	9 classrooms	Government
6.	Learning media	School	Every semester	Fund of IDR 10,000,000	School Operational Assistance Fund
7.	Laboratory	Third party/self-management	Every semester	For Natural Science, Language, and Computer subjects	Government
8.	Field	Third party/self-management	Every semester	Paving block replacement	Government

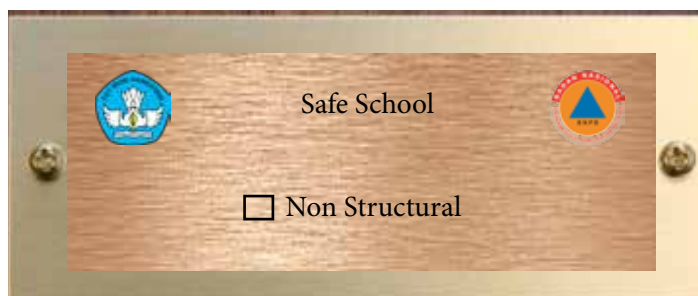
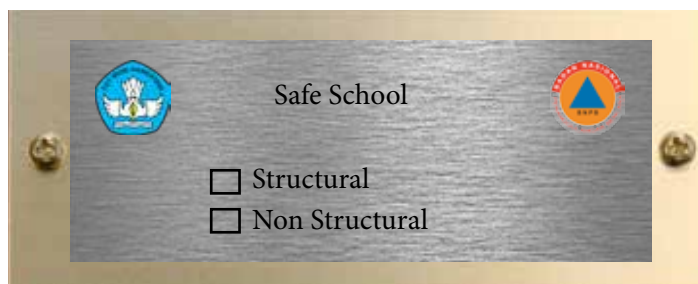
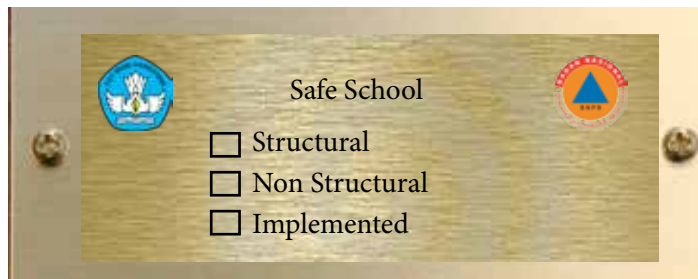
School Principal

Bandung, December 2012

Sri Yuliasih, S.Pd., M.Pd.

Charli, S.Pd.

Annex 8. Sample of Safe School Placard





Playing to heal the trauma of disaster-affected children

Annex 9. Safe School Program Important Contacts.

For further information regarding the safe school program, school and school committee can contact: National Agency for Disaster Management (BNPB), Ministry of Education and Culture (Mendikbud), Local Agency for Disaster Management (BPBD), and other organization working on safe school.

Badan Nasional Penanggulangan Bencana (BNPB)

Addres: Jl. Ir. H. Juanda No. 36, Jakarta Pusat

Telephone: 021-344 2734, 345 8400, 344 2985

Fax: 021-3505075, 345 8500,

Email: contact@bnpb.go.id, posko@bnpb.go.id

Website: www.bnpb.go.id

Badan Penanggulangan Bencana Daerah (BPBD) setempat

Kementerian Pendidikan dan Kebudayaan

Addres: Pusat Informasi dan Hubungan Masyarakat (PIH) Kemdikbud
Gedung C Kemdikbud Lt 4, Jalan Jenderal Sudirman Senayan Jakarta 10270.

Telephone: 021 5703303 / 5711144 ext. 2115

Fax: 021 5733125

Email: pengaduan@kemdikbud.go.id

Website: www.kemdiknas.go.id





UNESCO

Representative office UNESCO, Jakarta

Addres: Jl. Galuh (II), No. 5, Kebayoran Baru, Jakarta 12110, Indonesia

Telephone.: +62 (21) 739 9818

Fax: +62 (21) 7279 6489

Email: jakarta@unesco.org

Website: www.unesco.org

Australia - Indonesia Facility for Disaster Reduction (AIFDR)

Addres: Tower Thamrin Building Suite 1505 , Jl. MH. Thamrin Kav. 3 Jakarta 10250 Indonesia

AIFDR - Tower Thamrin Suite 1505, 15th Floor, Jl. MH Thamrin kav 3, Jakarta, DKI Jakarta 10250, Indonesia

Website: www.aifdr.org

Plan Indonesia

Addres: Tower Duta Building 2nd Floor, Jl. H.R. Rasuna Said Ka v. B-9 Kuningan, Jakarta Selatan 12910 Indonesia

Telephone: +62-21-5229566

Fax: +62-21-5229571

Website: plan-international.org

Save The Children

Website: www.savethechildren.org

Yayasan Kerlip

Website: rumahkerlip.blogspot.com

Safe and Energy Efficient School



STRUCTURAL

Level

- Ground level is enough for construction
- Foundation is available and free from obstacle
- Safe for use
- School layout and building orientation

Building Structure

- Structural components include column, beam, slab and foundation
- Non-structural part and load capacity with material available
- Component does not comply with technical standard
- Technical standard relating to Ministry of Public Works Regulation No. 11/PW/M/2007 on Technical Guidance for Government Building

Reinforcement

- Right and strong reinforcement in structural element
- Standard (SNI) for Cutting Reinforcement and not comply technical rule
- There is no proper reinforcement
- Weakness in safety

Structure and infrastructure in building

- Water supply network available
- Drainage network available
- Electricity network
- GPS
- Reinforcement enough for drinking, sanitation and fire fighting
- Electric power supporting teaching learning process
- Financial Management in safety and security
- Firefight and other infrastructure available
- Evacuation information for students and staff

Facility

- Equipment well maintained
- Training and available for disaster prevention

NON-STRUCTURAL

Disaster Preparedness

- Information system and potentially impacting school and environment
- Having knowledge, attitude and skill to respond to disaster

Planning

- Mapping of school building and surrounding area
- School Map and Safety
- Map of school building and surrounding area
- Rehabilitation and reconstruction plan
- Rehabilitation and reconstruction plan
- Rehabilitation and reconstruction plan
- Rehabilitation and reconstruction plan

Policy

- Policy for disaster prevention and mitigation
- Building operation and maintenance procedure available
- Building operation and maintenance procedure available
- Building operation and maintenance procedure available
- Building operation and maintenance procedure available
- Building operation and maintenance procedure available

Resource Mobilization

- Disaster and Safety Committee established
- Planning and monitoring disaster prevention activity
- Fund and risk source for emergency disaster
- Insurance and infrastructure for emergency response such as fire and flood
- Insurance and infrastructure for emergency response such as fire and flood
- Insurance and infrastructure for emergency response such as fire and flood



Assessment and Evaluation



Result

- Institution name and people in charge for safe school
- Type and level of potential hazard to school and environment
- School building vulnerability
- Electricity source and utilization
- School capacity and preparedness in responding to disaster
- Disaster and School Safety Committee (DSSC)

Planning and Designing



Result

- Expertise Model of Safe School from disaster
- Medium Term Safe School Program Planning
- Building CDD and CDD
- First year action plan
- Safety and Security Committee established

Construction and Improvement



Result

- Building rehabilitation and reinforcement activity ongoing
- Earthquake resistant building construction ongoing
- Early warning and evacuation procedures available, simulation exercised
- Capacity building activity and awareness campaign ongoing

Operation and Maintenance



Result

- Development of building operational and maintenance procedure
- Routine monitoring and evaluation
- Routine simulation
- Clearing strategic placement of evacuation route map
- Clearing installation of evacuation route signage
- External resource mobilization and partnership for endorsement of mid-term plan
- Formulation of school policy of safe school sustainability
- Routine awareness campaign and capacity building