

# **SIMULATOR OF EXPLOSIVE TECHNIQUES IN BUILDING**

## **JAKUB BUILDING EXPLOSIVE**

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### ***TECHNICAL DESCRIPTION OF THE FACILITY***



## **1. Purpose**

- 1.1. Successful actions of police forces against persons and towards seizing prohibited objects in urban areas require quickness, decisiveness and surprise. To incite confusion, panic, chaos and mental and physical paralysis of persons police forces often use light, acoustic, pressure and devastation effects of various explosives, such as hand grenades, detonators, smoke shells etc.
- 1.2. Training of tactical methods of breaching into buildings using explosives is for these reasons an important element of police forces training.
- 1.3. Training of explosive techniques in real buildings is from methodical, safety and economic point of view unsuitable. A solution is intense, efficient, safe, ecological and financially acceptable explosive training in buildings using models of buildings constructed and fitted for this purpose.
- 1.4. The simulator of explosive techniques in JAKUB BUILDING BREACH is a complex training facility for training and drilling of forced overcoming of doors and windows in various ways.
- 1.5. Simulator of explosive techniques in JAKUB BUILDING BREACH is designed for special training of technical and tactical skills of policemen for operational, fast and surprising break into closed buildings by individuals and police teams using explosive techniques.
- 1.6. Simulator of explosive techniques in JAKUB BUILDING BREACH creates a model of a building, which allows intensive, efficient, attractive and safe simulation training of forced overcoming of doors and windows by:
  - a) hand grenades RPG
  - b) smoke grenade with tear gas (RGSL-85)
  - c) detonators, e.g. mini detonator (P1A6A1), large detonator (P1A14P),
  - d) smoke shells, e.g. smoke shells with percussion lock (SG 45) and (Da 25),
  - e) detonators with electrical initiator (V10bL)
  - f) detonating fuses,
  - g) electrical detonators (Že-B)etc.

## **2. Technical description**

- 2.1. Simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE is a model of ground-floor residential building with total ground area 12.0 m x 6 m. The building is separated into 2 training rooms. Interior of the building is fully clad with indoor ballistics.
- 2.2. The object of simulator consists of steel construction, training modules, outside protective partition and foundation.

2.3. Steel construction of the building consists of: load-carrying skeleton, walls, floor, roof and inside partitions.

2.3.1. The load-carrying skeleton consists of steel grid made of closed and open steel profiles. Attached on the steel grid are the walls of the building. Vertical load-carrying elements of the skeleton are anchored in the foundation by means of bolts and chemical anchors HILTI RE 500.

2.3.2. The walls of the building consist of external and internal surfaces and ventilation gap.

External cladding of the walls consists of sandwich panels that, besides protecting function, also provide thermal and acoustic insulation. Sandwich panel has three layers: 1<sup>st</sup> layer – sheets of steel 0.5 mm thick, 2<sup>nd</sup> layer – insulation PUR foam, 3<sup>rd</sup> layer – sheets of metal 0.5 mm thick.

Internal cladding of the walls is, with respect to its purpose (explosive techniques), ballistic, i.e. installed are ballistic panels consisting of steel boards covered by rubber.

Ventilation gap is all along walls, between the upper edge of the walls and ceiling. It is 0.5 m high. It provides natural ventilation of products of explosion. The gap has ballistic protection provided by overlapping roof.

2.3.1. Floor of the building is rammed sand earth with ballistic properties.

2.3.4. Roofing of the building is provided by:

- a) outside saddle roof, fitted for the walls of the building,
- b) inside ceiling, with ballistic protection.

2.3.5. Inside partitions divide the interior of the building into 2 training rooms. The partitions are ballistic just like the walls.

2.4. The outside walls and internal steel construction partitions carry the training modules. Training modules are the actual training facilities of the simulator, modeling real conditions for various explosive techniques, tasks and activities.

Training modules consist of:

- a) door for explosive training in the building,
- b) various types of windows for explosive training in the building.

2.4.1. Door (1x) for explosive training in the building are made of steel construction 90 cm wide with ballistic protection from the inside.

2.4.3. Windows (4x) for explosive training in the building are made of steel construction with ballistic protection from the inside. The building contains:

- standard windows (2x ),
  - skylight window (1x),
  - cellar window (1x ).
- 2.5. Outside protective partitions are located on the outside of the building in places of the doors and windows. They protect outside areas of exposed places of training doors and windows against fragments from exploded objects. Protective partitions are treated from the side facing the building.
- 2.6. The foundation of the simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE is concrete and provides
- a) basis for the walls of the building, into which vertical elements of the carrying construction are fixed,
  - b) training area around the building, 5 m from at each side of the building.

## **2. Description of function**

- 3.1. Simulator of explosive trainings in JAKUB BUILDING EXPLOSIVE is in terms of its complex design and spatial construction a unique facility for training of police forces. It is a multi-purpose training facility, which models activities that may be encountered frequently in real police practice or that are expected and therefore it is necessary to create technical, physical and mental dispositions of policemen to carry out such activities.
- 3.2. Training focus of the simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE reacts to generally known fact that explosive techniques, which are not technically mastered and carried out with decisive force, surprise and purposeful tactical behavior of policemen prevent successful completion of action and expose policemen to risk.
- 3.4. Simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE is functionally organized to allow:
- a. simulate standard and critical situations while entering buildings by means of explosive techniques,
  - b. forming and perfecting basic and special technical and motoric skills for entering buildings by means of explosive techniques,
  - c. developing tactical thinking, fast reactions, anticipation of situations, mental endurance and team cooperation,
  - d. application of methodical procedures and didactic principles for efficient and safe process of explosive training,
  - e. using technical and tactical approaches to dealing with real situations, which are subject to simulated explosive training,
  - f. testing individual successfulness of training.

- 3.5. Simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE allows methodological and safe training of explosive activities by gradually increasing complexity and technical and physical intensity of training. It complies with strict ecological requirements, because it does not lead to wear out of buildings.
- 3.6. Training on simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE to large extent substitutes training in real conditions. Using the simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE it is possible to transfer substantial part of methodical training of explosive activities to environment-friendly and methodologically developed safe facility.

#### **4. Technical parameters**

4.1. Total dimensions of the building	width	12.1 m
	length	6.7 m
	height	3.4 m
4.2. Dimensions of rooms in the building	width	5.7 m
	length	4.5 m
4.3. Dimensions of doors	width	0.9 m
	height	2.0 m
4.4. Dimensions of windows		
- standard window	width	1.5 m
	height	1.0 m
- skylight window	width	0.6 m
	height	0.4 m
- cellar window	width	0.6 m
	height	0.4 m

#### **5. Technical documents**

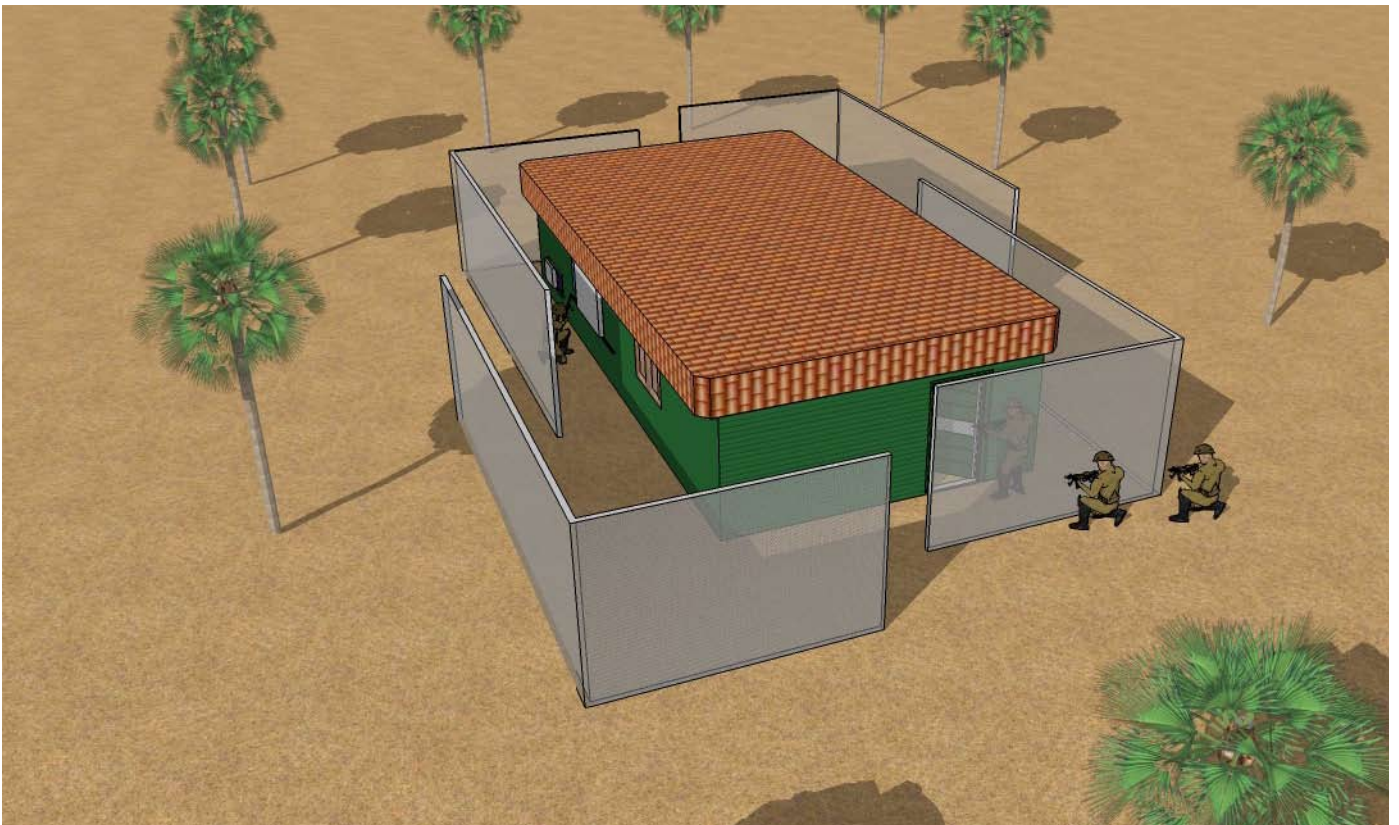
- 5.1. Technical and other documents for simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE include:
- revision report after assembly and yearly revision controls
  - operational and training documentation (safety and methodological principles of training, instructions for maintenance and repairs etc.)

## **6. Operational instructions**

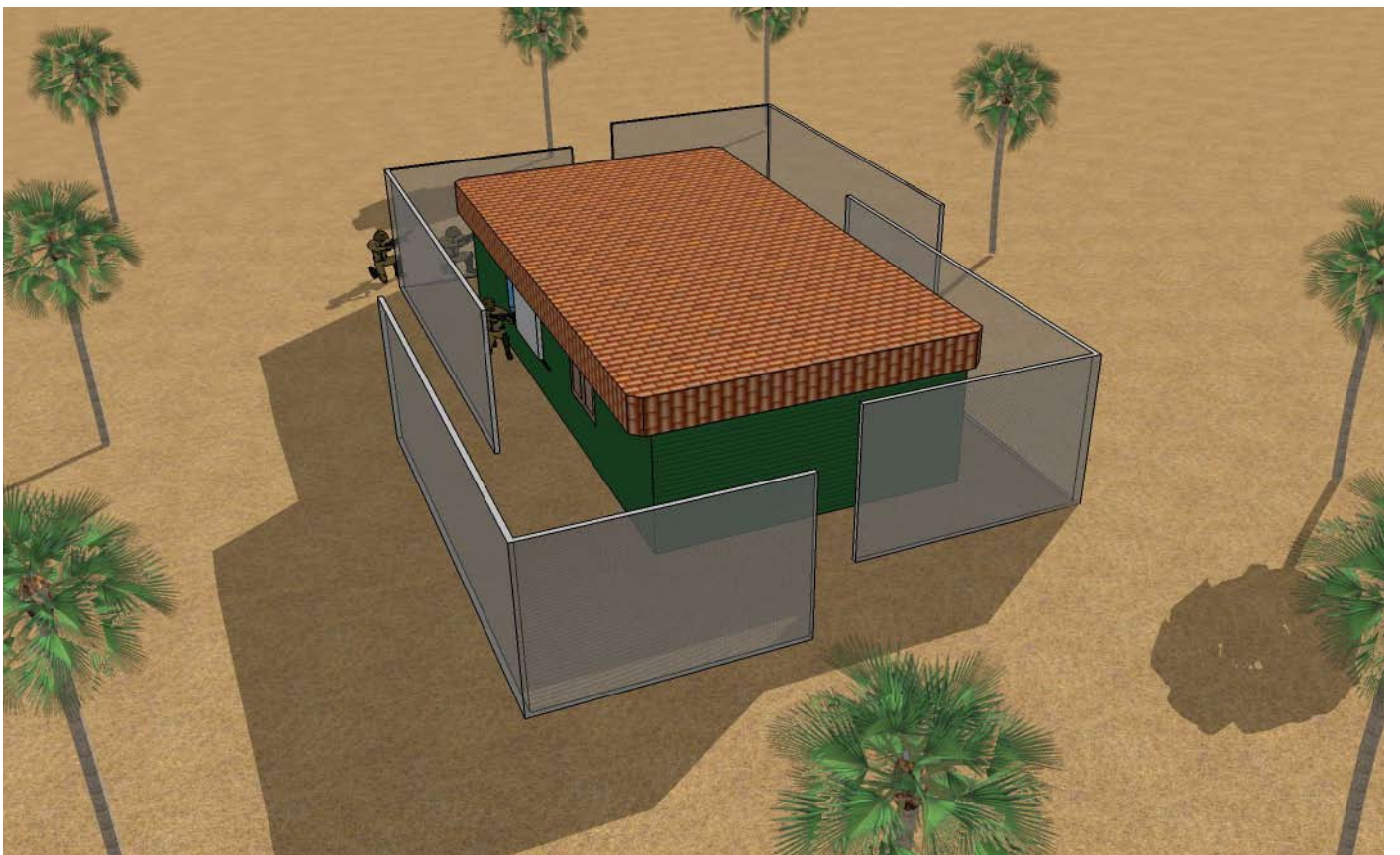
- 6.1. The product maintains functionality in the temperature range from -40°C to +70°C.
- 6.2. Training is carried out within intentions of current orders, regulations and methods of explosive police training
- 6.3. Only trained instructors are allowed to supervise training.
- 6.4. All parts of the simulator of explosive techniques in JAKUB BUILDING EXPLOSIVE must be maintained clean. For this reason dirt (mud, dust, pollutants) is expected to be removed in 3-month intervals or as necessary by washing with water or suitable cleaning agent, in particular in all training modules. Ballistic walls require special procedures. Sand floor must be on regular basis flattened, watered and rolled.
- 6.5. With respect to its surface treatment the steel part of the carrying construction does not require special maintenance within the lifetime. This part also does not require conservation (lubrication).
- 6.6. With respect to its surface treatment the construction of training modules (doors, windows) does not require special maintenance within the lifetime. This part also assumes no conservation (lubrication), except for the hinges of doors and windows.
- 6.7. Complex revision controls of the carrying construction and training modules are carried out by the provider 1x per year until the end of guarantee at own cost, after expiration of the guarantee at the cost of the customer. In case of satisfactory functional condition and completeness of the simulator the provider issues for the customer “Record on revision control and its outcomes”
- 6.8. All repairs on the steel part of the carrying construction and construction of training modules are to be carried out by the provider.



# Global view

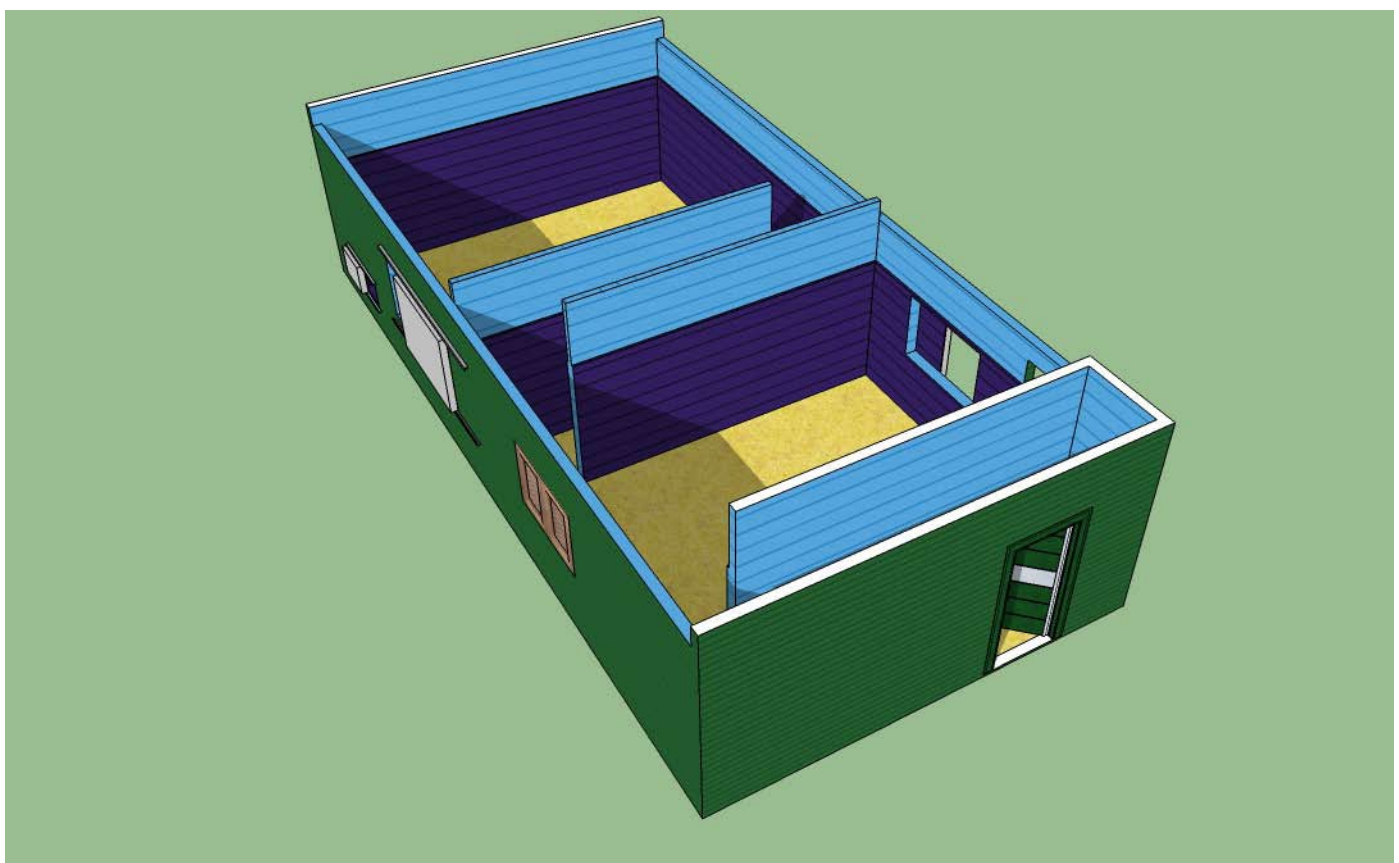
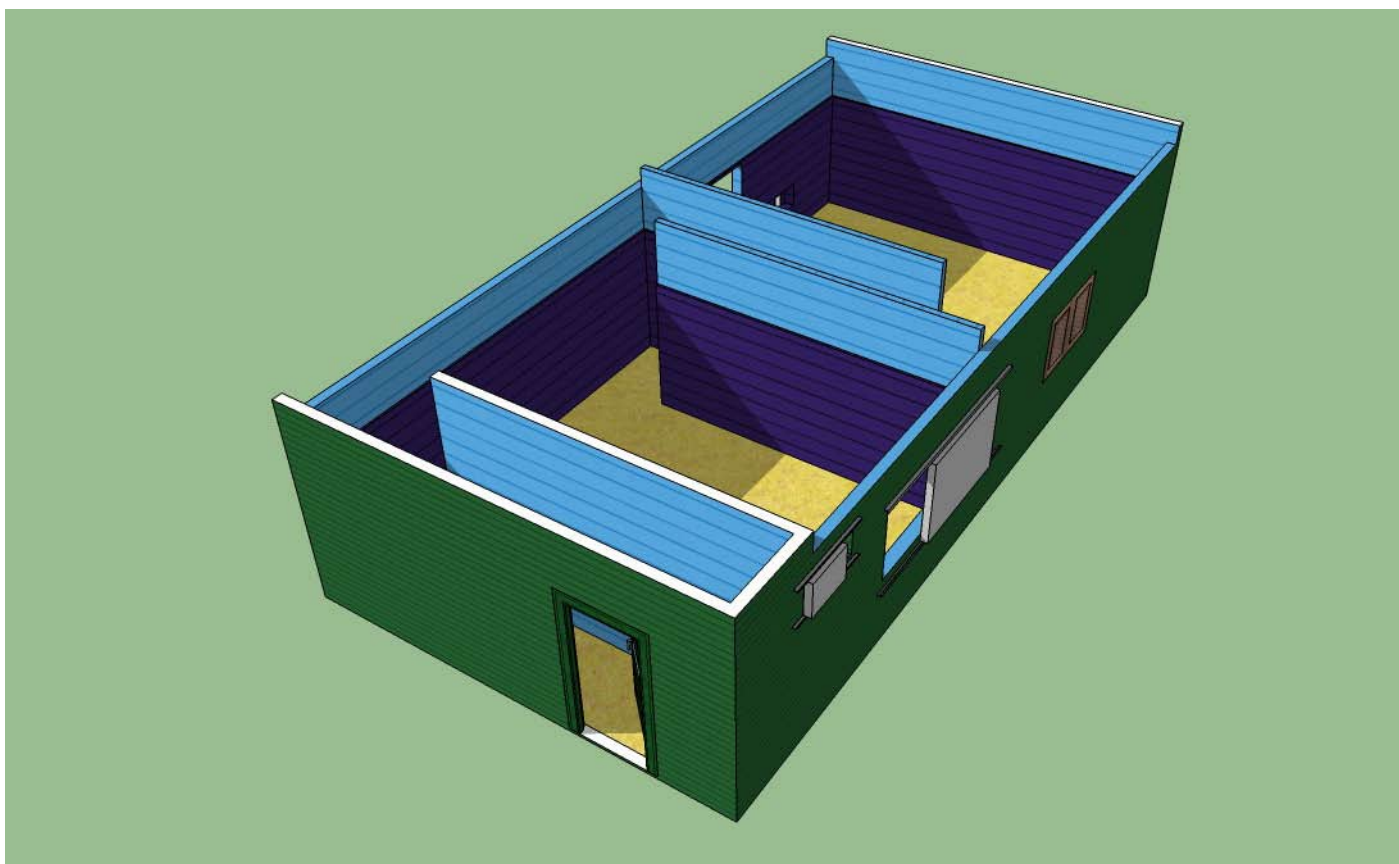


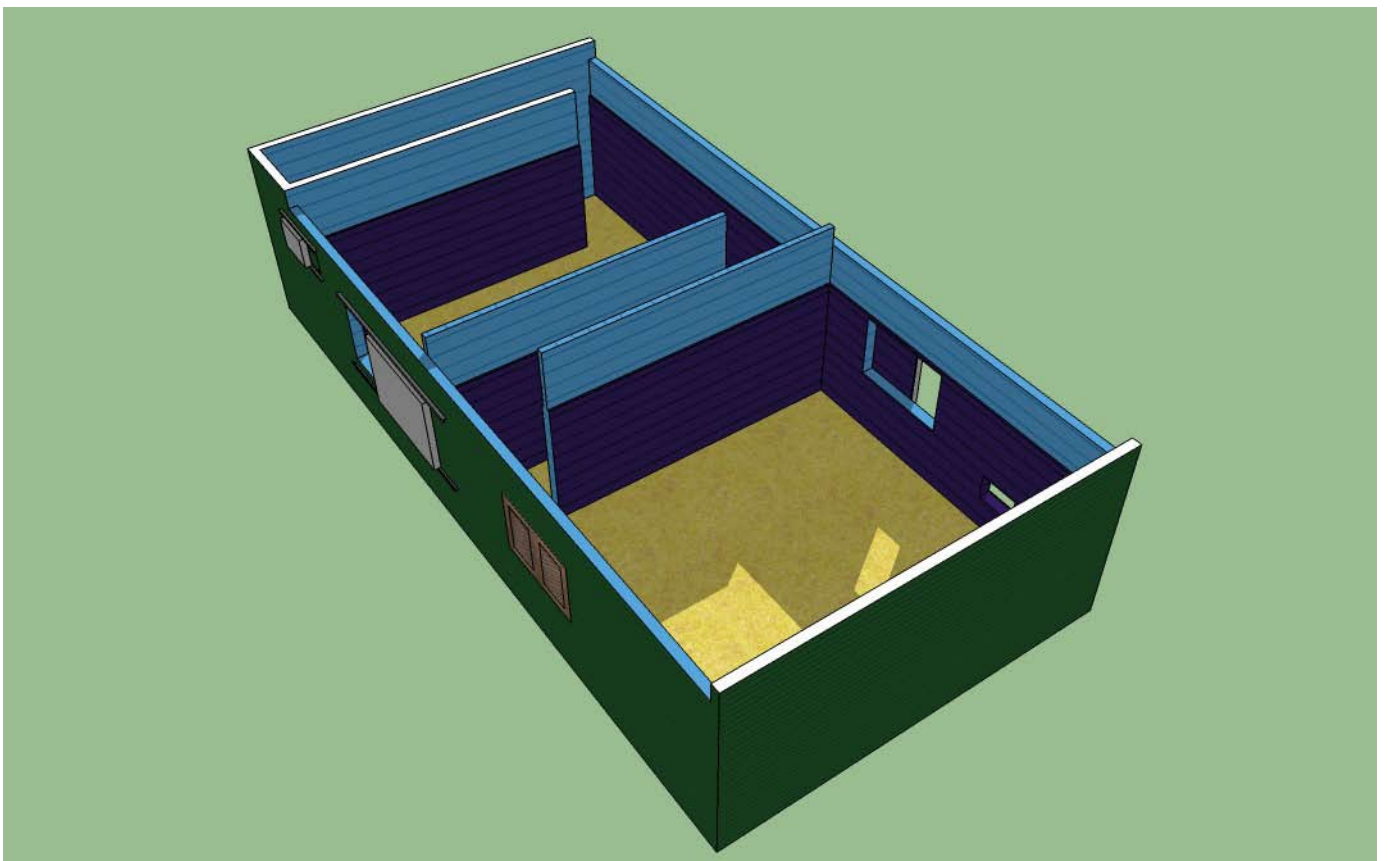
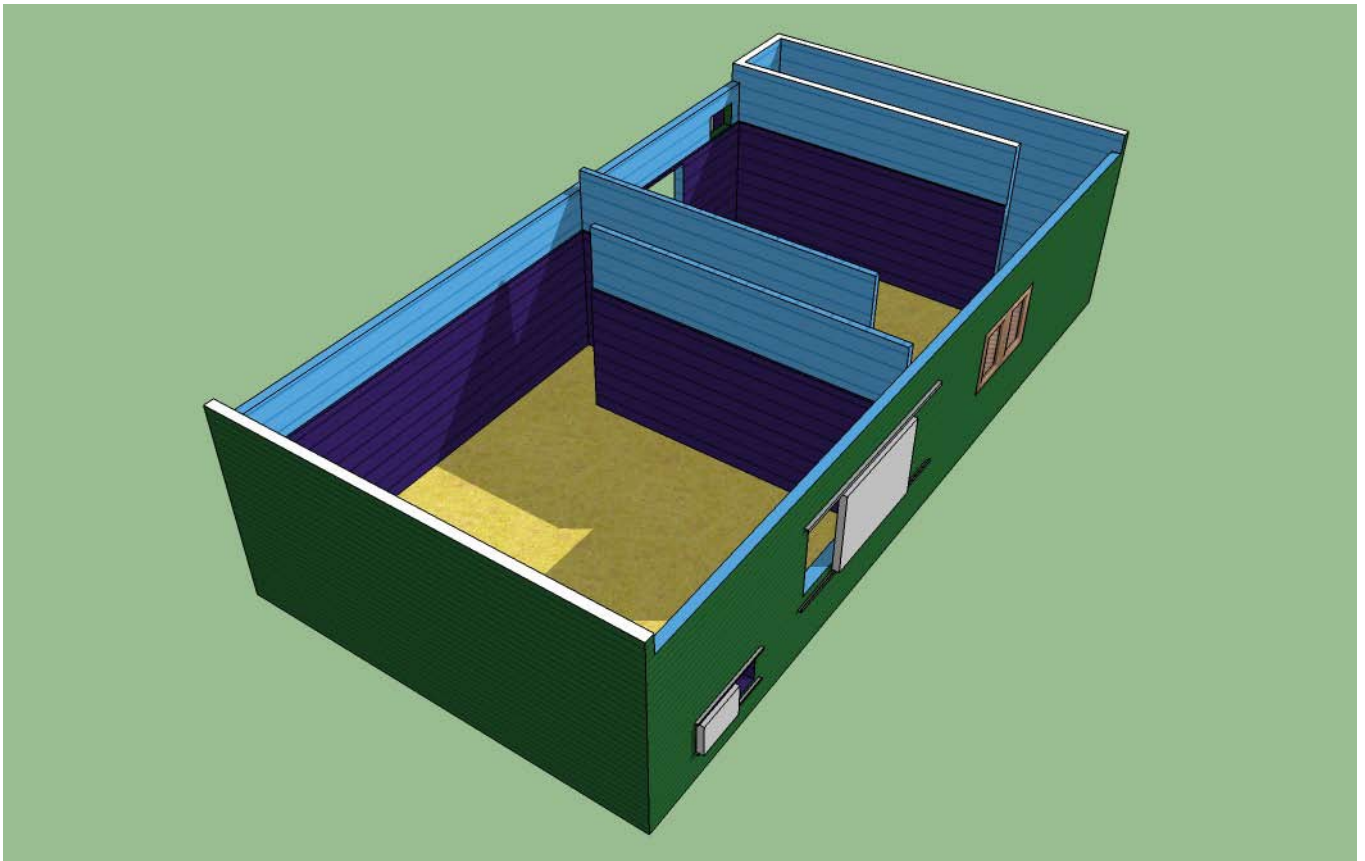






# Ballistic protection inside view





# LEGEND



- Full ballistic protection –bullets trap
- steel plate
  - rubber ballistic panel



- Wall safety ballistic protection
- steel plate
  - rubber ballistic panel



- Ceiling safety ballistic protection
- steel plate
  - rubber ballistic panel



- Simulator door
- RAM use