

SACON® Live-Fire Facilities

Developed and Produced by:

Ballistics Technology
International Ltd.





Who is Ballistics Technology?



Ballistics Technology International Ltd. began in 1996 working with the Corps of Engineers on adapting pre-foamed concrete or cellular concrete to the needs of the military. Working under a cooperative development agreement with the Waterways Experimental Station in Vicksburg, Ballistics Technology International helped to refine SCON technology. On a joint basis BTI and WES obtained a patent on SCON and an additive to chemically bind or chelate lead in SCON blocks and panels to reduce leaching of lead. Today Ballistics Technology International is continuing to innovate, working on design-build and supply contracts to produce and install SCON systems in military training facilities.

At Ballistics Technology SCON is our specialty. We only produce SCON in precast facilities such as our Wilson, North Carolina plant. Our refined techniques produce the highest quality of SCON spec'd to meet the needs of our customers applications. SCON panels and blocks are designed, produced, shipped and assembled across the country by Ballistics Technology International Ltd.

Ballistics Technology International Ltd.

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What is SCON?

SCON® is an acronym for Shock Absorbing Concrete. As a highly engineered material BTI's SCON is ideal for absorbing a wide range of shocks. BTI SCON easily absorbs impacts from paint ball and simunitions to 7.62mm rifle rounds and grenades. SCON panels and blocks are designed with a range of weaponry in mind. The material is highly engineered to capture rounds from all angles down to twenty five degrees from the front face .

SCON brings the versatility to reduce ricochets and capture a wide range of rounds for improved safety in training. SCON walls and blocks do not crack or crumble like regular concrete but instead absorb shock efficiently. SCON can be painted, colored, drilled, cut, shot, burned and instrumented to fit any training application.

BTI's SACON® Panels Take Live-Fire Urban Training to the Next Level

BTI

Ballistics Technology International's SACON panels are a flexible modular building system. Our system of simple building blocks create realistic Live-Fire environments that are flexible and functional. By setting up wall panels, doorway panels and window panels, along with specialty wall panels, you can erect a MOUT facility that can meet a variety of training requirements for urban street fighting scenarios.

Example of SACON® panel system:

SACON = 90 lb/cu-ft nom.

Panel module width = 4-ft

Panel height = 8-ft

Width = 24-in.

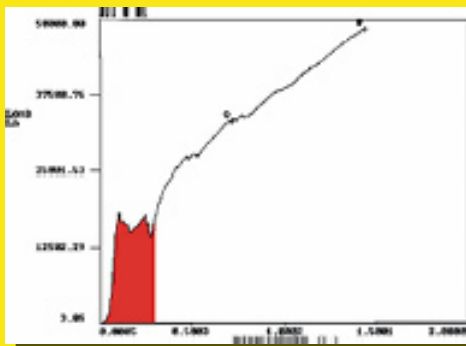
Panel over-lap = 6-in.

Plain panel weigh = 2 ton.

»All panels have lifting bolt holes on top for handling or attaching roofs.



SACON is highly engineered soft concrete designed to meet a specific energy absorption profile to maximize the capture of projectiles within the material. BTI carried out a series of test with corps of Engineer's at Waterways Experimental Station, Vicksburg, MS. The shock absorbing concrete absorbs to its yield point and then continues to absorb energy as it disintegrates into fine particles. SACON is a complete system to train in a safe and environmentally sensitive manner. SACON can be utilized to mitigate lead on ranges or as a build material in erecting structures for training installations.





SACON® at Twentynine Palms



Ballistics Technology International Ltd. of Wilmington, DE and Pankow Special Projects of Oakland, CA supplied and erected this 27 building MOUT training facility at Twentynine Palms Marine base. The SACON buildings range from simple facades through to 3,800 sq-ft two-story buildings with a courtyard and roof access.

The MOUT village offers 360 degree training of dismounted infantry and can be mixed with armor and other mechanized equipment. The main site was expanded with a sniper wall located some 350 yards to the West of the village to add to training options.

The largest building on the site is a two-story structure with 6 rooms, access to the roof and a courtyard. Three other buildings have courtyards as well. In total the village has eight double story buildings.

SACON panels in the MOUT are of 90 lb.cu-ft. SACON bullet absorbing concrete. The wall panels are 30-in thick and 8-ft high on the first floors and 24-thick on the second floors. The structures are made up of plain panels, corner panels, window panels and door panels, which can be moved or re-configured, if required.

The SACON® MOUT design allows for simple and safe combined arms training. The facility easily joins together mechanized elements with troops, within an urban setting. The realistic training will develop communication and movement skills while clearing and controlling objectives. The SACON structures can also be utilized in non-live-fire training events such as force on force or MILES scenarios as a stepping stone to Live-Fire.

MOUT Structures

BTI



2 Story, 6 rooms,
with accessible
balcony,
121 panels



Simple Facade,
1 door and
1 window
13 panels



Single story
2 room courtyard,
3 exterior doors,
courtyard & gate,
72 panels



SACON "L" 2 story,
6 rooms,
courtyard,
sniper roof
214 panels



Single story 7 rooms, accessible roof
traffic deck, with or without courtyard,
2300-sq/ft, 98 panels,
137 panels with courtyard
& gate

*panel count is for wall panels only

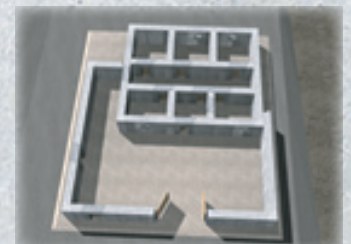
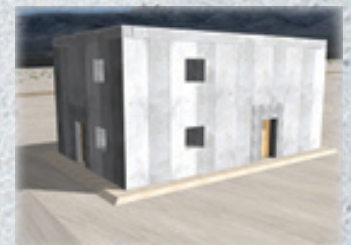
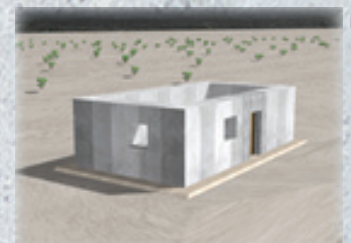


Single room
1 story, 1 door,
2 windows
24 panels

Storefront
2 story, 4 room,
dual staircases
70 panels

Two room
1 story, 2 doors,
3 windows
33 panels

2 story, 4 rooms,
staircase,
2 exterior doors
74 panels



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Ballistics Technology was the prime contractor on this design/supply project that was completed in a five month period from the award date. Pankow Special Projects handled the site work and erection with BTI's contract manufacturer, Mid-State Precast LC, producing the 1,500 SACON panels required. Wireless targetry was supplied by ATA Defense Industries.



BTI's SACON Convoy Trainer

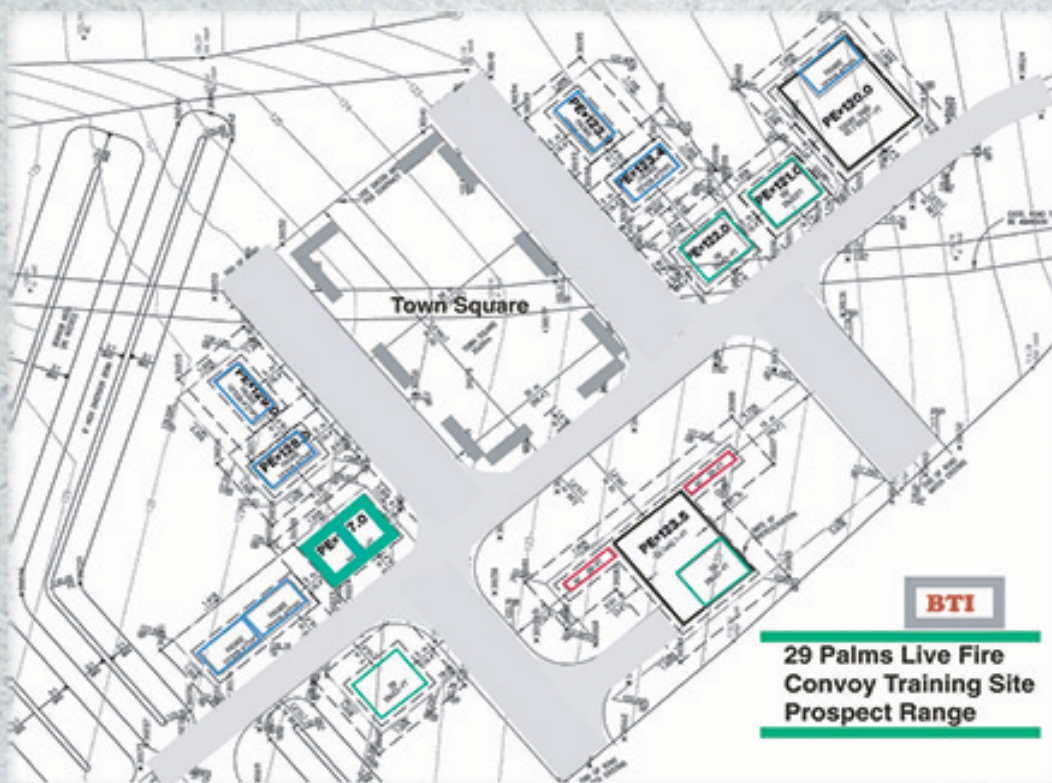
Ballistics Technology International Ltd. supplied and erected a 13 building convoy training facility for the Marine base at Twenty-nine Palms opening in January 2005. The SACON panels in the live fire training complex create both one and two-story structures set along either side of a section of road.

Convoy trainees drive their vehicles along an extended course and then enter the hamlet where they encounter both threat targets as well as civilian identified targets in and around the SACON village. Several of the SACON buildings are designed so the trainees can exit their vehicles and practice skills such as: vehicle dismount, building entry and room clearing skills. Realism details include a town square, road blocking/diversion options and two buildings have courtyards.

SACON panels in the buildings are of 90 lb. Cu-ft SACON bullet absorbing concrete. The wall panels are 30-in thick and 8-ft high. The structures are made up of plain panels, corner panels, window panels and door panels, which can be moved or reconfigured, if required.

The wireless targetry was supplied by ATA Defense Industries of Camden, TN. The battery powered target mechanisms allow for targets to be placed anywhere in the buildings or around the site.



The logo for Ballistics Technology International (BTI) features the letters "BTI" in a bold, red, sans-serif font. The letters are set against a white rectangular background, which is itself centered within a larger, textured gray square frame.

The SACON convoy trainer is laid out to simulate realistic scenarios developed with direct input from the Marine's training needs and battle experiences.

This facility is designed to be rugged enough to capture thousands of rounds of both mounted and dismounted troops in a wide variety of options. In the future the modular capabilities of the SACON panel system will allow the facility to grow and change to future training weaponry and requirements.

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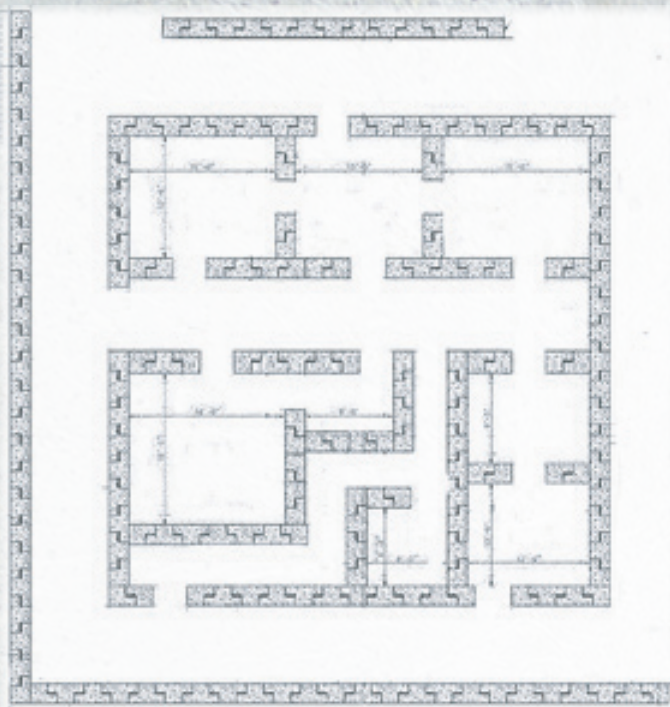
SACON® Shoothouse System

This 2,500 sq-ft shoot house using SACON bullet absorbing concrete panels was erected in 2004 as part of Fort Benning's new Urban Assault Complex MOUT Phase II project. The urban assault course in the project consisted of a shoot house, grenadier gunnery, underground trainer, urban defense building and a Dodge City. The general contractor for the project was RUSH/ConsuTec J.V. of Tampa, FL. and Ballistics Technology International handled the erection and installation of the shoot house's SACON components.

The SACON shoothouse provides an excellent training facility for close combat and room entry skill development. The house has eight rooms and two long corridors to provide training variety. Doorway's in the facility have a wooden doors to allow for realistic room entry drills and scenarios. Trainers can watch the activities of their trainees from a series of wooden catwalks set atop the SACON wall panels.

SACON panels in the shoot house are of 90 lb/cu-ft bullet absorbing concrete. The 11-ft high panels are 43-in wide, 24-in deep and weight 2.6 ton each. The T- shaped panels align together so the overlap prevents any rounds pass between the panels. Doorways carry a SACON lintel above them that sits into the door panels on each side. The floor of the shoot house was cast of 90 lb/cu-ft density SACON.



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The shoothouse is made of 197 SACON panels that interlock. In addition to the training maze, three protective walls prevent rounds from going outside of the facility, providing a 360 degree live-fire training facility. The SACON ensures that there are no ricochet above 25 degrees from the face of the panels leading to a safer training environment.

Individual and squad skills are developed under close supervision using real work weaponry leading to real results. The overhead crane allows for SACON panels to be replaced when maintenance is required, and also could allow for minor changes in the training layout by removing panels.

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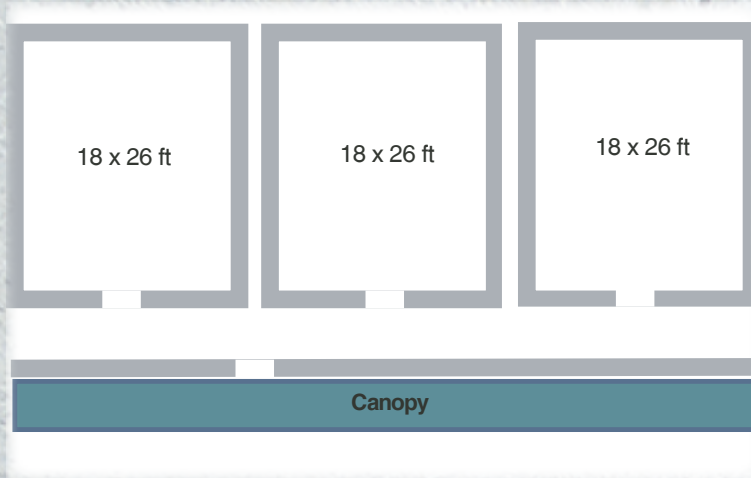
SACON® Grenade House

In early 2002 the grenade house at Fort Bragg's new Urban Assault Course was commissioned. Ballistics Technology International Ltd. supplied the SACON grenade house panels for this 3-room facility as part of Bragg's MOUT Phase II project. The general contractor for the project was Packard Atlas of Fayetteville, NC, a joint venture of Packard Construction and Atlas Construction.

The three-room SACON grenade house provides an excellent training facility for instruction in use of grenades plus close combat and urban warfare training. The typical training routine involves trainees moving through the facility in groups of three. Moving up to the first doorway the trainee throws a grenade into the room then utilizes the SACON walls for protection followed by the team entering with room-clearing fire. At the next room the second trainee throws a grenade and the room clearing commences. The last trainee throws the grenade at the third room completing a simply introduction to grenade use and tactics and simple room clearing skills.

The grenade house panels are of 90 lb.cu-ft SACON bullet absorbing concrete. The 8-ft high panels are 41-in wide, 24-in deep and weight 1.6 ton each. The T-sections fit together so the overlap prevents any rounds passing between the panels. This simple three room design allows for safe hands-on training with grenades and an introduction to urban room clearing skills.





A typical BTI SCON® grenade house consists of 128 SCON wall panels supported by a 6x6-in. steel frame. The outside corridor walls provide blast protection for trainees awaiting to use the grenade house. Also, the canopy provides protection for those awaiting to enter the facility from falling shrapnel. The panels were erected by Benton Welding and Construction using a 35 ton crane with a 65-ft boom. This crane allowed the panels to be lifted into place with only two set-ups on the construction site. SCON as a system that is erected produces ready to use, Live-Fire structures in less time than conventional construction methods.

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1st Force Recon christens new MOUT facility

Submitted by: MCAGCC

Story Identification #: 200542917177

Story by Sgt. Robert L. Fisher III

**MARINE CORPS AIR GROUND COMBAT CENTER
TWENTYNINE PALMS, Calif. (April 23, 2005)** -- Four CH-46 Sea Knights came flying in over a small, simulated Iraqi town. After making a quick pass, the Sea

Knights set down and two squads of 1st Force Recon Marines came barreling out.

Staying swift and silent, the Marines moved up to the doors of two buildings they had watched for two days. One team blew open the main gate for their building while the other team slid into the main courtyard of their building.

Immediately, shots rang out through the darkness as the Marines took the building, claimed their intended target and returned to the helicopters to fly back to their ship.

This was all part of a training operation at Range 210, the new Combat Center's military operations in urban terrain facility, April 23.

"Their mission was to capture a high value individual and take him back to the ship for interrogation," said Lt. Col. Andrew K. Blackhurst, officer-in-charge for the event.

According to Blackhurst, the Marines from 1st Force Recon came from the USS Tarawa located about 25 miles off the coast of Camp Pendleton.

"This was a complete Force Recon show," said Blackhurst. "Two teams provided reconnaissance who came here [April 21] and the remaining platoon was split into two teams to take two different buildings."

Even though the Recon Marines never saw the facility prior to getting out of the Sea Knights, many of them said they had no anxieties about going in and clearing the buildings.

"We just get off the bird and go," said Gunnery Sgt. Christopher L. May, 1st Force Recon team leader. "We all know where to go in the house. The first guy knows to run in along the wall and everybody else does their job. So really, the building doesn't matter. It's the Marines individually doing what they need to do."

The new MOUT facility, which was opened April 20, was built out of a new material called shock-absorbing concrete, or SACON, made from a concrete derivative and fiberglass. SACON is designed to take up to 2,000 rounds in a 12-inch circle before it has to be replaced, according to Maj. Richard D. Doherty, assistant range management officer.

The Marines from 1st Force Recon were the first to go through the range. They christened the range with its first rain of bullets.

"It's a good range," said May. "If you can shoot in every house, it's a good place to come out and train."

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