

HAMMAM AL ALIL DIVISION TRAINING  
CENTER  
MOSUL, IRAQ

**SIGIR PA-09-174**  
**JANUARY 7, 2010**

## Report Documentation Page

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## Hamмам Al Alil Division Training Center

### Summary of Report: PA-09-174

#### Why SIGIR Did this Study

SIGIR is charged to conduct assessments of Iraq reconstruction projects funded with amounts appropriated or made available by the U.S. Congress. SIGIR assessed this project to provide real-time information on relief and reconstruction to interested parties to enable appropriate action, when warranted.

The objective of this project assessment was to determine if:

- project components were adequately designed
- construction complied with design standards
- adequate quality management programs were used
- project sustainability was addressed
- project results were consistent with original objectives

#### What SIGIR Recommends

SIGIR recommends that the Mosul Area Office of the USACE take these actions:

1. Conduct a ground safety study to determine the danger zone for the small arms range and the MOUT facility, and provide this information to the Hamмам Al Alil Training Center for planning to lessen the severity of any danger presented by the open range.
2. Require the contractor to replace all deteriorating sandbags.
3. Ensure that the rebar lifting lugs are removed from panels that are used as footbridges.
4. Implement controls to ensure that the procedures outlined in the QA and QC plans of the project are applied.

#### Management Comments

SIGIR received comments on the draft of this report from the United States Forces-Iraq concurring with comment with the recommendations in the report and also providing technical comments for clarification.

#### Evaluation of Comments

The comments addressed our recommendations and provided additional clarifying information for this final report.

For more information, contact SIGIR  
Public Affairs at (703) 428-1100 or  
[PublicAffairs@sigir.mil](mailto:PublicAffairs@sigir.mil)

#### What SIGIR Found

On 8 July 2009, SIGIR performed an on-site assessment of the Hamмам Al Alil Division Training Center project. The overall objective of this \$3.5 million Iraq Security Forces Fund project was to construct a division training center consisting of new ranges and facilities. The contract required the construction of three multi-purpose small arms ranges, two military operation on urban terrain (MOUT) facilities, a combat assault course, and 14 three-sided outdoor training structures.

At the time of the site visit, the project was approximately 78% complete. SIGIR observed ongoing and completed construction work. SIGIR found:

- project components were adequately designed
- construction did not fully adhere to the contract
- quality management programs were in need of improvement
- project results were or will be consistent with their original objectives

The contract required the construction and installation of overhead baffles between the firing positions and the terminal end of the range. Overhead baffles were designed to contain all bullets which overshot the berm at the terminal end of the range. However, at the time of the SIGIR site assessment there were no overhead baffles present.

The Mosul Area Office representative stated that the overhead baffles were constructed, but were of such poor quality that they were removed. Therefore, the multi-purpose small arms ranges went from being fully contained to non-contained ranges. Documentation that addressed the safety concerns of removing the overhead baffles was not available.

In addition, the contractor used precast concrete planks in several areas as footbridges over the swale constructed to convey runoff away from the range site. SIGIR observed a safety hazard where the contractor had not removed the rebar lifting lugs from the precast planks.

SIGIR determined that the quality control (QC) and quality assurance (QA) staff were not effective in achieving quality construction. The QC personnel did not maintain a presence on the job site, or provide effective project management and oversight. The QA representative did not enforce the daily QC report requirements.





## SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION

January 7, 2010

MEMORANDUM FOR COMMANDING GENERAL, UNITED STATES CENTRAL  
COMMAND  
COMMANDING GENERAL, UNITED STATES FORCES-  
IRAQ  
COMMANDING GENERAL, JOINT CONTRACTING  
COMMAND-IRAQ/AFGHANISTAN  
DIRECTOR, IRAQ TRANSITION ASSISTANCE OFFICE

SUBJECT: Report on the Hammam Al Alil Division Training Center, Mosul, Iraq  
(SIGIR Report Number PA-09-174)

We are providing this project assessment report for your information and use. We assessed the design and construction work performed at the Hammam Al Alil Division Training Center, Mosul, Iraq to determine its status and whether objectives intended will be achieved. This assessment was made to provide you and other interested parties with real-time information on a relief and reconstruction project underway and in order to enable appropriate action to be taken, if warranted.

Comments on a draft of this report from the United States Forces-Iraq addressed our recommendations and provided additional clarifying information for this final report. As a result, no additional comments are required.

We appreciate the courtesies extended to our staff by the United States Forces-Iraq and the offices of the Gulf Region District of the U.S. Army Corps of Engineers. If you have any questions please contact Mr. Brian M. Flynn at [brian.flynn@sigir.mil](mailto:brian.flynn@sigir.mil) or at 240-553-0581, extension 2485. For public queries concerning this report, please contact SIGIR Public Affairs at [publicaffairs@sigir.mil](mailto:publicaffairs@sigir.mil) or at 703-428-1100.

A handwritten signature in black ink, appearing to read "Stuart Bowen, Jr.", with a period at the end.

Stuart W. Bowen, Jr.  
Inspector General

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# Introduction

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## Objective of the Project Assessment

The objective of this project assessment is to provide real-time relief and reconstruction project information to interested parties to enable appropriate action, if warranted. Specifically, the Special Inspector General for Iraq Reconstruction (SIGIR) determined whether:

1. Project components were adequately designed prior to construction or installation;
2. Construction or rehabilitation is in compliance with the standards of the design;
3. Adequate quality management programs are being utilized;
4. Sustainability was addressed in the contract or task order for the project; and
5. Project results were or will be consistent with their original objectives.

## Pre-Site Assessment Background

### Contract, Costs and Payments

On 17 May 2008, the Joint Contracting Command – Iraq/Afghanistan and Multi-National Security Transition Command – Iraq Support Division awarded Contract W91GYO-08-C-0030, a firm-fixed-price contract to a local contractor in the amount of \$4,209,956. The project was funded by the Iraq Security Forces Fund.

There were five amendments and/or modifications to contract W91GYO-08-C-0030.

A00001, dated 27 June 2008, incorporated revisions to the technical requirements and incorporated the contractor quality control (QC) plan. The modification was a no cost modification, and all other terms and conditions remained unchanged.

A00002, dated 19 June 2008, incorporated Appendix A, which had been mentioned in the original contract. Also, the modification referenced that the plan would be acceptable for a trailer structure; however, a concrete masonry unit or masonry structure would require a change of cost modification. A00002 was a no cost modification.

A00003, dated 17 September 2008, decreased the total cost of the contract by \$297,456 from \$4,209,956 to \$3,912,500. The change in cost resulted from a partial termination that reduced the items to be delivered as follows:

- three latrine trailers containing six eastern-style toilets and six wash basins for the multi-purpose small arms range
- two latrine and shower facilities outside of building number 4 and building number 6 that would include four 10,000 liter water tanks outside the latrines
- three underground septic tanks 3 meter (m) by 3m by 2m with a 150 millimeter double reinforced concrete slab
- three water supply and distribution systems for the latrines at the multi-purpose small arms range

A00004, dated 21 October 2008, decreased the total cost of the contract by \$51,792 from \$3,912,500 to \$3,860,708. The change in cost resulted from another partial termination that reduced the items to be delivered as follows:

- three potable water tanks of 10,000 liters
- three water pumps
- mechanical work addressed in the Statement of Work (SOW)

A00005, not dated or signed, decreased the total cost of the contract by \$287,000 from \$3,860,708 to \$3,573,708. The change resulted from elimination of the overhead baffles requirement.

### **Project Objective**

The overall objective of this Iraq Security Forces Fund project was to construct a division training center for the Iraqi Army. The project consists of new construction for ranges and facilities. The end goal is to provide the base with training facilities.

### **Pre-Construction Description**

The site for the Hammam Al Alil Division Training Center project was at Forward Operating Base Scorpion, Hammam Al Alil, Iraq. The project site is approximately 15 miles south of Mosul, located near the Tigris River. The location for the proposed improvements consisted of vacant land. The site was relatively flat with little ground cover or vegetation (Site Photo 1).



**Site Photo 1. Site location prior to construction (Courtesy of USACE)**

### **Statement of Work**

The SOW required the contractor to design and construct ranges and facilities for the Hammam Al Alil Division Training Center in Iraq. Specifically, the SOW required the construction of the following:

### Multi-Purpose Small Arms Ranges

- clear and level an area 400m wide by 300m deep
- construct overhead baffles<sup>1</sup>, so the prone or kneeled shooter on the pad cannot shoot over the top of the berm
- construct a ballistic berm<sup>2</sup> to surround the range on three sides in the direction of fire and between adjacent pads
- survey in 3 each live fire pads 5m deep and the full width of the range
- construct an access road from each pad to the established road network
- construct an access road joining all pads together to serve as a service road
- construct a minimum of 300 permanent target holders for the two 100m ranges
- construct 300 pairs of permanent target holders for the 300m range
- construct 50 firing points each for the two 100m ranges and the 300m range
- construct one sunshade at each of the three ranges with bleachers to accommodate approximately 100 soldiers
- install two eastern-style ablution trailers
- install one eight meter flagpole at each of the ranges to be seen from the main road
- install one intermodal shipping container at the three ranges for target storage and administration
- provide 1,500 sand bags filled with sand
- create a minimum of nine danger and warning signs in Arabic and Kurdish
- construct three range control towers
- provide a general announcing system
- install spotlights for the range towers
- install a chain link fence around the entire range area to prevent unauthorized use and to control entry during live fire training

### Military Operation on Urban Terrain (MOUT) Facility

- construct two live-fire shoot houses

### Combat Assault Course

- remove existing ground cover and vegetation
- clear and level an area approximately 130m by 50m
- construct 20 basic training exercise obstacles in line, along two parallel paths
- construct a bed to surround each obstacle, and fill the bed 15 centimeters deep with sand, sawdust, or crushed/ground rubber
- install a chain link fence around the entire combat assault course to prevent unauthorized use and to control entry during training

### Outdoor Training Facilities

- construct 14 facilities throughout the complex that the trainees can use to train while remaining out of the elements

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<sup>1</sup> An overhead baffle is a ballistic safety structure. The baffle is angled, 12 to 32 degrees from the horizontal, and installed downrange to deflect and contain direct-fired rounds. The overhead baffles prevent line-of-sight daylight when sighting downrange from any firing position.

<sup>2</sup> A ballistic berm is a contaminant recovery system for a rifle range having an upstanding retaining wall which serves as a rear wall for the range.



## Project Design and Specifications

The U.S. government was to provide the contractor drawings and specifications. The contractor was to check and compare the drawings, verify the figures, notify the contracting officer of any discrepancies, and be responsible for any errors. Further, the contractor was to provide shop drawings for the project to the Gulf Region Northern District (GRN), of the Gulf Region Division, U.S. Army Corps of Engineers (USACE).

The contract stated that the contractor was to provide the resources, personnel, equipment, and management necessary to construct the Hammam Al Alil Division Training Center project. In addition, the SOW had a general project outline, which included major items of work. Also, the SOW included more specific design requirements for the outdoor training facilities, assault course obstacles, and the site utilities (water, sewer, and electrical systems).

The SOW required conformance to the following codes and standards for the design and construction:

- International Building Code
- International Plumbing Code
- International Mechanical Code
- International Electrical Code
- International Fire Code

The GRN Mosul Area Office provided SIGIR with the drawing documents submitted by the contractor. The drawings were used for the construction of the project and consisted of civil, architectural, electrical, mechanical, plumbing, and structural drawings. In addition, GRN provided the contractor's calculations and submittals.

The SOW contained aerial views of the proposed project layout for the contractor. The contractor provided GRN with a site plan, which indicated specific locations and configuration of the facilities (Figure 1).

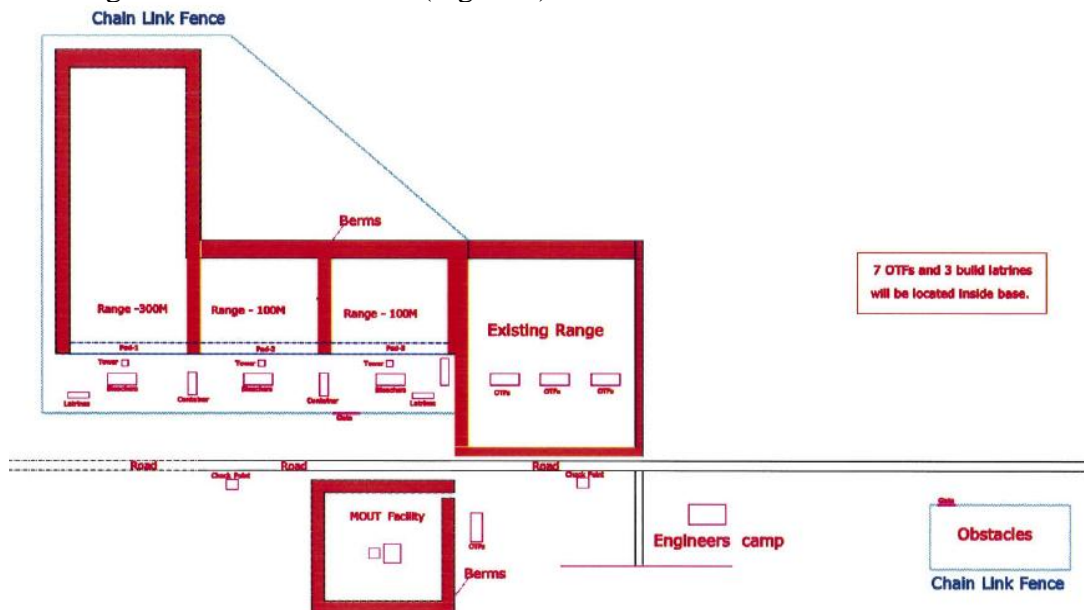
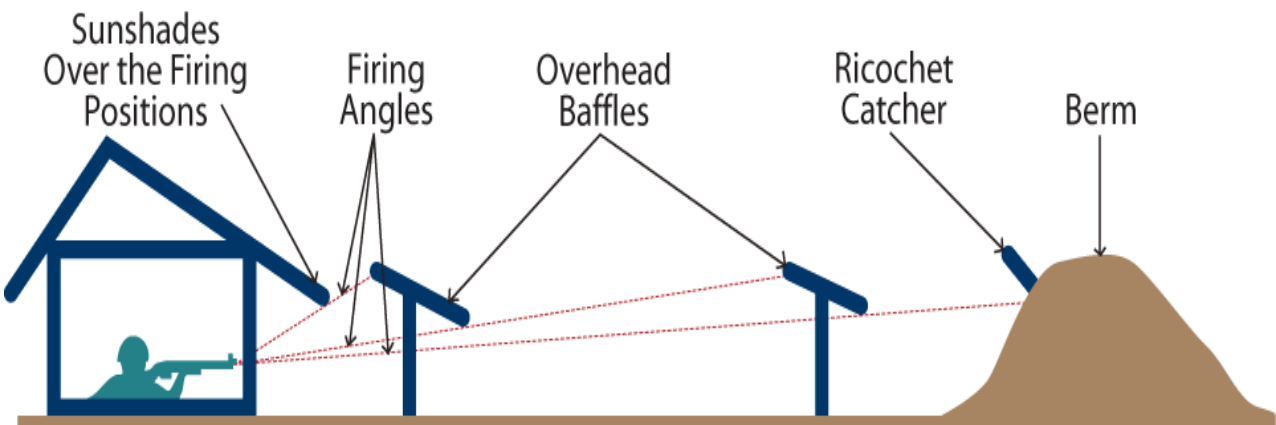


Figure 1. Proposed project site plan (Courtesy of USACE)

### Multi-Purpose Small Arms Range

The contractor designed the multi-purpose small arms range with several primary elements to protect the trainees and prevent rounds from leaving the range area. The range was configured with covered firing positions, multiple baffles (to prevent rounds from leaving the range area), and a terminal ricochet catcher. In addition to these primary items, range towers, range flags, a public address system, lighting, storage facilities, and other associated items were proposed.

The SOW required that the overhead baffles be constructed between the firing positions and the ricochet catcher and berm (Figure 2) to prevent projectiles from exiting the small arms range. The SOW also required the overhead baffles and ricochet catcher to be “... impervious to M193 ball ammo fired from an M-16, either made from 15 centimeters of 5,000 psi concrete or other material...”. Also, the contractor was to angle the overhead baffles at least 25 degrees and construct the ricochet catcher 2m tall at a 90 degree angle to the berm with the base 6m off of the ground level.



**Figure 2. Multi-purpose small arms range design (Courtesy of USACE)**

GRN Mosul Area Office provided the contractor-submitted designs for the overhead baffles and ricochet catchers at the multi-purpose small arms range. The overhead baffles were designed with a steel frame supporting a pre-cast concrete panel. The foundation system for the overhead baffles consisted of embedment of the support columns in the ground and pouring them in place with concrete. Wind blowing against the 2.2 m baffle will generate a significant force; therefore, the baffle requires a large foundation to prevent it from falling over. The contractor did not submit calculations to verify the foundation system will support the baffles.

The contractor submitted ricochet catcher designs similar to the overhead baffle designs; the ricochet catcher consisted of pre-cast concrete panels that were supported on a steel frame. The foundation system for the steel frame consisted of embedment of the front support columns in the ground and affixing them in place with concrete. The foundation system for the rear consists of a slab foundation supported on the fill slope. Due to the reliance of the fill beneath the rear foundation slab, protection of the slope against failure or erosion is critical to the stability of the steel frame.

### *Military Operations on Urban Terrain (MOUT) Facility*

The contractor designed the MOUT facility to provide a training structure with associated protective and support facilities. The MOUT consisted of two training structures constructed on a concrete slab, a perimeter earthen berm of similar construction to the multi-purpose small arms range, exterior lighting, and an electrical generator with fuel tank.

The SOW contained specific requirements for the MOUT facility, which included specifications for the layout of the training structures. In addition, the contractor was required to use a proprietary system, Action-Target MATCH system or equivalent, in constructing the training facility. The proposed system consisted of a double walled panel. The exterior wall of the panel is a hardened steel plate capable of resisting penetration from live ammunition. The interior wall of the panel was replaceable plywood, which prevents bullet fragments from ricocheting back into the training area. Spacers were used to create a 1½” gap between the outer and inner wall. This gap was required to be filled with sand. The purpose of the sand is to trap bullet fragments and prevent them from reentering the training area.

The contractor provided detailed design drawings for the MOUT facility. The drawings included a general layout of the training structures, details of the proposed wall panels, and observation platforms. According to the documentation provided by the GRN Mosul Area Office, the contractor did not specify the proprietary system in the design. Instead, the contractor provided a design that a third party would fabricate.

### *Combat Assault Course*

The contractor designed the combat assault course as a secure area with multiple obstacles used for training. The course was designed level and surrounded by a chain link security fence, which included a vehicle gate.

The contractor designed the obstacle course with obstacles in a continuous line along two parallel paths. The obstacles were designed to be built with heavy timber, and a sunshade was proposed over one of the obstacles. The contractor designs were similar to the designs provided in the SOW and provided adequate detail for construction.

### *Outdoor Training Facilities*

The contractor was required to design and construct 14 outdoor training facilities. The SOW contained specific locations for seven facilities, with the remaining facilities to be placed as directed. Also, the SOW contained detailed drawings for the outdoor training facilities that included plans, elevations, sections, and other associated details.

Based on SIGIR’s review of GRN documentation, the SOW included detailed requirements and specifications that instructed the contractor on how to design and construct the facilities. The contractor-provided drawings contained specific information for the proposed structures, foundations, site utilities, and other project features. SIGIR determined that there was adequate information provided to complete the final design and construct the facilities.

# Site Assessment

On 8 July 2009, SIGIR performed an on-site assessment of the Hammam Al Alil Division Training Center project. During the site visit, a GRN Mosul Area Office representative accompanied SIGIR. Due to scheduling, the total time available on site was approximately 1 hour. This afforded the SIGIR assessment team with the ability to collect information for a limited project overview. Consequently, a complete review of all the work at the project site was not possible. At the time of the site assessment, SIGIR determined that the project was approximately 78% complete. Also, the GRN Mosul Area Office representative stated that the project would be completed and turned over in the coming weeks.

## Multi-Purpose Small Arms Range

The multi-purpose small arms range provided for simultaneous firing of more than one type of weapon. The range was designed as a fully contained range,<sup>3</sup> and the range consisted of adjacent baffled and/or impact bays. A sidewall or berm<sup>4</sup> separated the three range types to prevent bullets from one range entering the adjacent ranges (Figure 3).

An access road was constructed between the multi-purpose small arms range and the MOUT facility. The access road was constructed of crushed gravel and appeared graded in a consistent and uniform manner with no depressions or significant irregularities present (Site Photo 2). There was a service road which connected the individual pads of the range to the access road. The access road led to the small arms range which was surrounded by a chain link fence. The chain link fence surrounded the entire range, preventing unauthorized use and controlling entry during live fire training.

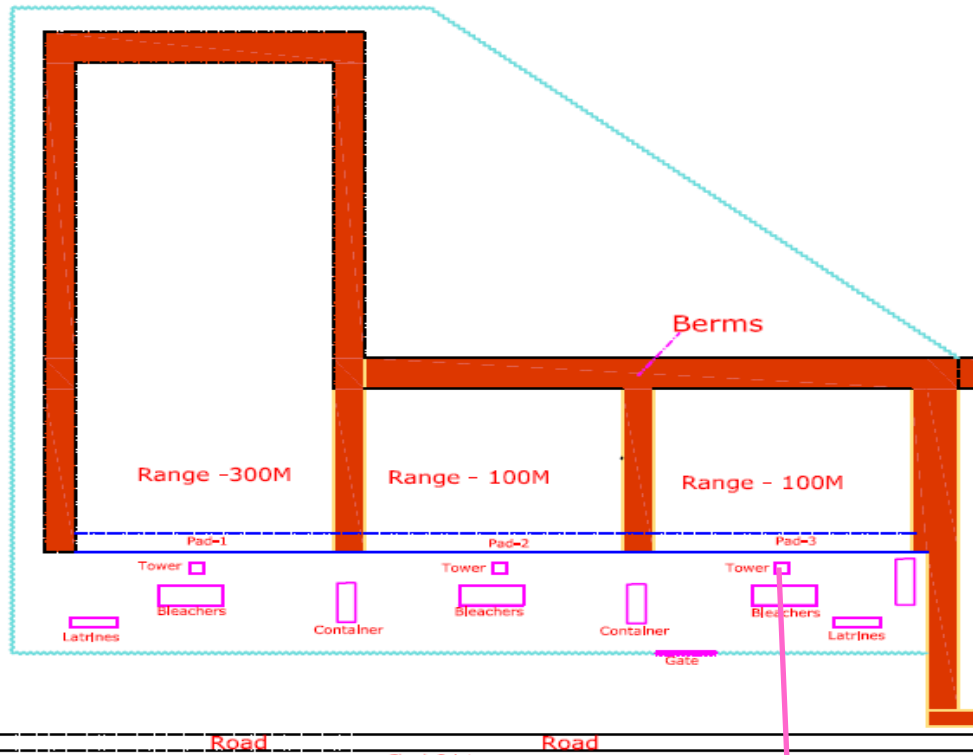
The contractor furnished metal containers for target storage and administrative materials that were located inside the chain link fence. Range towers were constructed directly behind the firing positions and had a roof, staircase, and spotlight. The range towers were constructed with steel framing and metal plate decking which were joined together with what SIGIR observed to be poor quality welding (Site Photo 3). However, the connections used the entire perimeter of the joining members as faying<sup>5</sup> surfaces, and relatively light loads were expected in the tower, so the connections appeared adequate (Site Photo 4).

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<sup>3</sup> A fully contained range is a range in which direct fire and ricochets are totally contained within the limits of the range.

<sup>4</sup> A berm is a mound of earth used to contain an area.

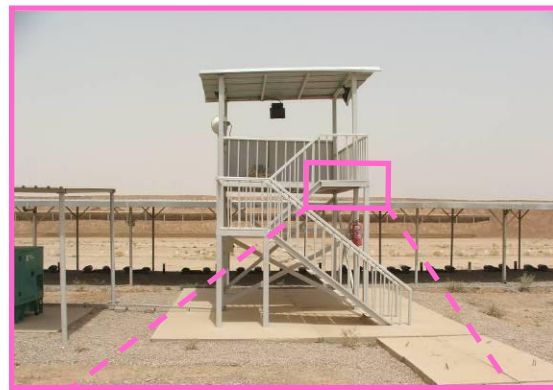
<sup>5</sup> Faying is when two abutting surfaces are joined tightly.



**Figure 3. Multi-purpose small arms range design (Courtesy of USACE)**



**Site Photo 2. Access road**



**Site Photo 3. Range tower**



**Site Photo 4. Poor weld quality at connections**

At the up-range end of the small arms range were the outdoor training facility bleachers, and firing positions (Figure 4). The firing positions were constructed with coarse aggregate pads and an overhead sunshade (Site Photo 5). The contractor constructed the sunshades over the firing positions with corrugated metal roofing supported on steel framing.

The SOW required the construction and installation of overhead baffles between the firing positions and the terminal end of the range (Figure 4). Overhead baffles were designed to contain all bullets fired from a prone or kneeling position. Also, the overhead baffles were designed to contain shots that would otherwise travel over the berm.

At the time of the SIGIR site assessment; there were no overhead baffles present between the firing positions and the terminal end of the range. The GRN Mosul Area Office representative stated that the overhead baffles were constructed. However, GRN visited the site and determined that the quality of construction of the overhead baffles was extremely poor and non-compliant with the specifications as stated in the SOW. The contractor was asked to remedy the deficiencies noted for the overhead baffles. The contractor attempted to address the deficiencies, but upon further inspection of the overhead baffles, the Multi-National Security Transition Command-Iraq (MNSTC-I) made a decision to completely remove the defective work. This resulted in a descoping of the overhead baffle requirement.

Due to the descoping of the overhead baffles, the multi-purpose small arms range was no longer considered a fully contained range. The GRN Mosul Area Office documentation did not address the status change of the range from a fully contained range<sup>6</sup> to a non-contained range<sup>7</sup>. In addition, the documentation did not address the safety concerns of removing the overhead baffles or the impact on public safety.

In response to a draft of this report, the Gulf Region District of the U.S. Army Corps of Engineers (USACE) stated: “On 1 December 2009, the GRN Mosul Resident Office provided SIGIR documentation showing the chronology of events concerning the construction status of the range baffles and the customer’s decision to remove them. In addition, that the contractor’s program manager stated that the Iraqis, the end users, didn’t see a need for the baffles. The 30-foot berm at the terminating end of the range serves as the primary backstop. Further, the facility is located 24 kilometers south of Mosul in an isolated and sparsely populated area so the potential for collateral damage or injury is minimal.”

At the terminal end of the range, the contractor constructed a ricochet catcher<sup>8</sup> against the earthen berm. The ricochet catcher was constructed of pre-cast reinforced concrete panels that were supported on a steel frame (Site Photo 6).

The GRN Mosul Area Office representative stated that the original construction for the ricochet catcher included light gage steel angles supporting the concrete panels. After initial construction, the angles failed under the weight of the panels, and the contractor was required to replace the angles with steel I-beam sections.

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<sup>6</sup> The fully contained range is a range in which the direct fire is totally contained by the firing line canopy, side containment, baffles (firing positions observe no “blue sky”), ricochet catcher, and earthen berm.

<sup>7</sup> A non-contained range is an open range where the direct fire rounds and ricochets are unimpeded and may fall anywhere, even past the terminal end of the range.

<sup>8</sup> A ricochet catcher provides the primary impact area for the bullets being fired on a particular range and under normal conditions prevents the bullet from leaving the range.



Site Photo 5. Firing positions



Site Photo 6. Ricochet catcher



Site Photo 7. Earthen berm

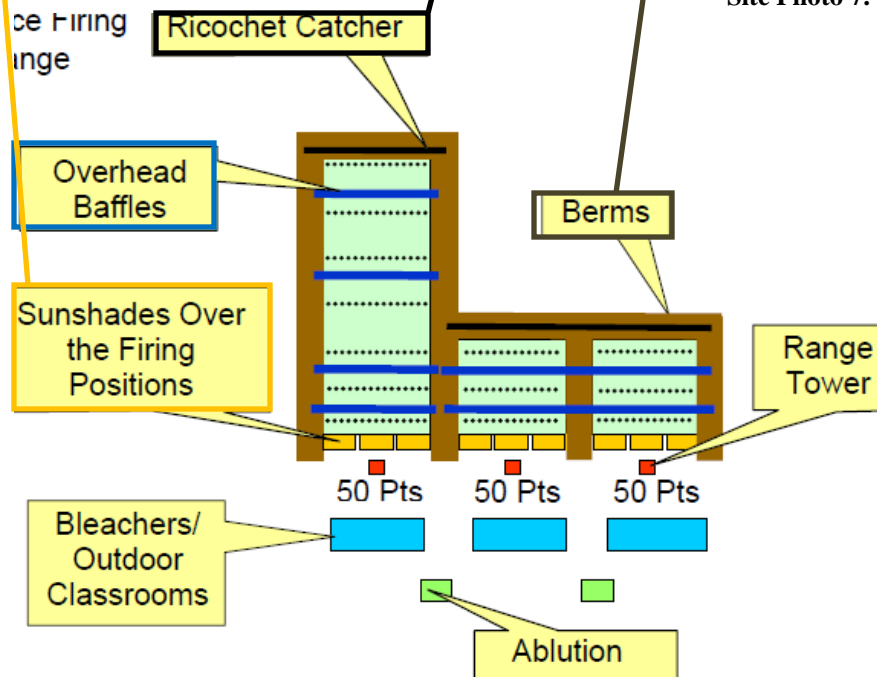


Figure 4. Multi-purpose small arms range layout (Courtesy of USACE)

In addition to the replacement of the panels, the contractor was required to modify the vertical support posts for the ricochet catchers to address the SOW requirements regarding the ballistic resistant properties of the construction materials.

Also, the GRN Mosul Area Office representative stated that the initial configuration of the vertical support posts was standard weight steel pipes. To meet the SOW requirements, the contractor reconfigured the supports to include an armor angle, welded along the length of the column, with the heel of the angle facing the firing positions. Ideally, this presents the shooter with two planes at 45 degrees from the line of fire to deflect rounds into the earthen berm.

The range was surrounded by a 9m high earthen berm. At the time of the SIGIR site assessment, the berms surrounding the range appeared to be constructed with native fill materials, which consisted almost completely of fines (finely crushed or powdered material) with low plasticity (the ability to be shaped or formed) and little or no cohesion and appeared highly erosive. Also, at the time of the site assessment initial sloughing (erosion) of the earthen berm was already apparent (Site Photo 7). The contractor made no provision to protect the soil of the berm. Therefore, the berm was susceptible to erosion from wind and precipitation.

The contractor was required to provide 1,500 sandbags, filled with sand, for the project. During the site assessment, SIGIR observed that the contractor used two different types of sandbags. The contractor used one type of sandbag that was natural fiber and a second type of sandbag that was constructed from polypropylene (type of plastic). Polypropylene sandbags are known to degrade in sunlight; therefore, polypropylene sandbags require covering to prevent deterioration. Several of the polypropylene sandbags had already deteriorated (Site Photo 8). In addition, the contractor used the polypropylene sandbags to construct a headwall for the drainage pipe through the earthen embankment (Site Photo 9). At the time of the site assessment, a majority of the sandbags used in the construction of the headwall were disintegrating. The failure of the headwall coupled with the instability of the slope material will likely lead to a localized collapse of the berm, which will result in blocking the drainage pipe.

In addition to piping, roadside swales<sup>9</sup> were constructed to convey runoff away from the range site. The contractor used precast concrete planks in several areas as footbridges over the swale (Site Photo 10). SIGIR observed a safety hazard where the contractor had not removed the rebar lifting lugs from the panels

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<sup>9</sup> A swale is a defined geographic feature used for surface drainage.





**Site Photo 8. Deteriorating sandbags**



**Site Photo 9. Deteriorating headwall**



**Site Photo 10. Precast concrete panel footbridge**

The SOW required a new electrical distribution system to support the multi-purpose small arms range that included the following items:

- concrete pad
- fuel tank
- feed and return line connections
- sound enclosures
- engine specifications
- service spare parts

The electrical system for the multi-purpose small arms range consisted of a small generator, exterior fuel tank, distribution system, and exterior lighting (Figure 5). The SOW did not include requirements on the actual size or capacity of the generator. Also, the contractor did not provide calculations to determine if the generator provided meets the current and future requirements for power for the multi-purpose small arms range and MOUT facility.

During the site assessment, SIGIR verified that the generator was present at the multi-purpose small arms range. The contractor constructed a concrete pad and sunshade for the generator. The generator was enclosed in a metal enclosure and a fuel tank was placed in a concrete spill containment structure (Site Photo 11).

The generator was connected to the fuel tank with galvanized steel piping. SIGIR noted that there was evidence of a fuel leak at one of the joints in the fuel line (Site Photo 12). The GRN Mosul Area Office representative stated that the leak was previously discovered and repaired and that the fuel noted during the site assessment was from an earlier leak. As the Gulf Region District of USACE stated in response to a draft of this report: “Given the frequent sand and dust storms in Iraq, dirt would have re-accumulated had the pipes and foundation been pressure washed or replaced when the leak was repaired.”

High mount and low-level exterior lighting was constructed at the multi-purpose small arms range. The lighting was configured to provide adequate visibility at the firing positions and near the outdoor training facilities.

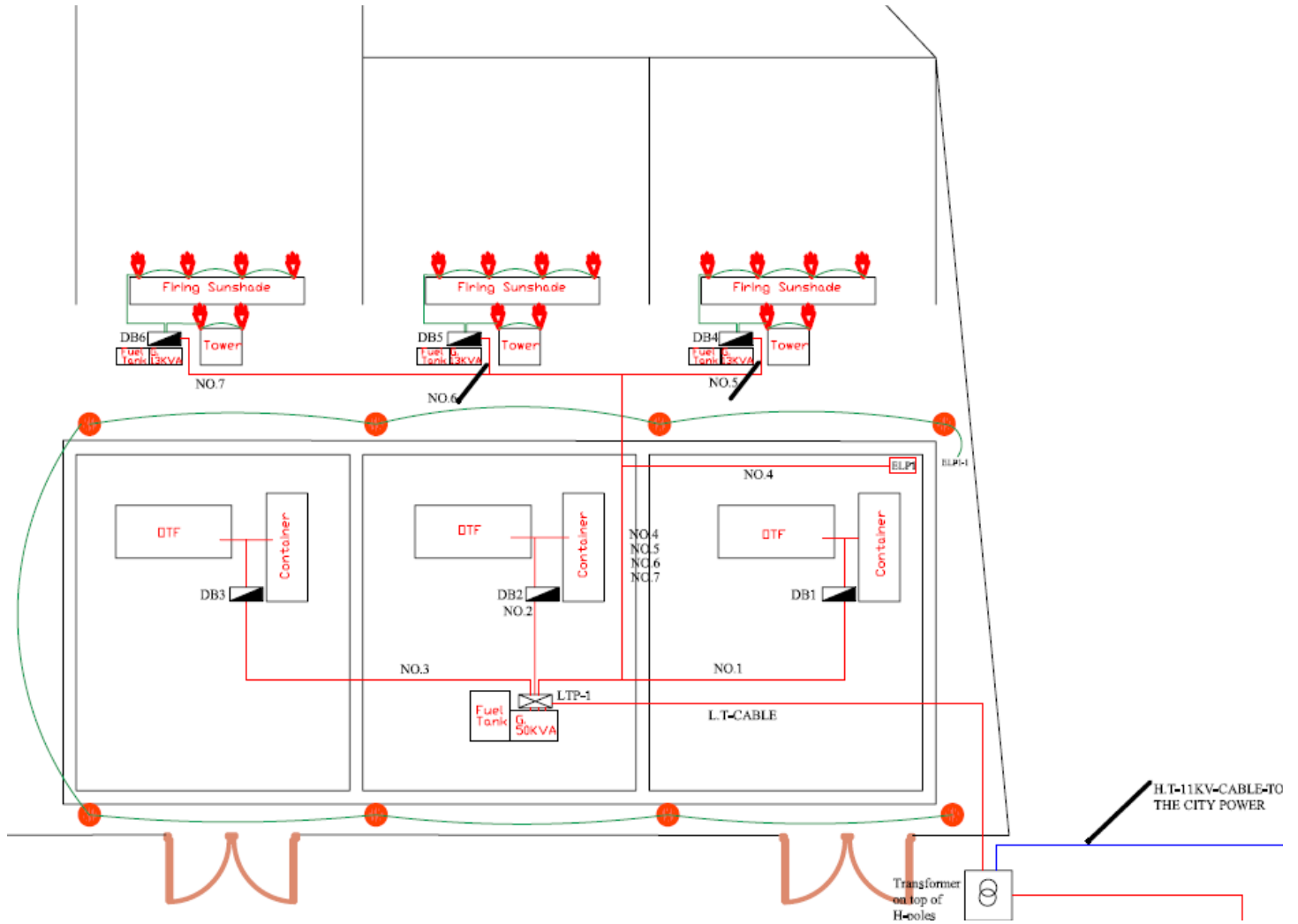


Figure 5. Multi-purpose small arms range electrical plan (Courtesy of USACE)



Site Photo 11. Sunshade with generator & fuel tank



Site Photo 12. Fuel leak at joint

### Military Operations on Urban Terrain (MOUT) Facility

The MOUT facility consisted of two freestanding training structures— the larger one rectangular and the smaller one square. They were approximately 3m apart with independent overhead observation walkways (Site Photo 13). The facility was constructed on a concrete pad surrounded by an earthen berm of similar construction to those surrounding the multi-purpose small arms range. Power was supplied to the facility by a generator.

The training structures are constructed on a concrete pad that extends approximately 2m beyond the combined facility. The site assessment occurred after construction was completed; therefore, the SIGIR inspection team could not verify if the slab was properly reinforced.

No significant cracking or displacement of the slab was observed, although minor shrinkage and cracking were present, which indicates poor curing practice. However, the minor shrinkage and cracking should not affect the structural integrity of the slab. The training structures utilized modular, panelized construction with bolted connections between the panels. The training structures were constructed without a roof. The panels were arranged to provide rooms and corridors with some panels containing entry doors (Site Photo 14).

The GRN Mosul Area Office representative stated that the panels were constructed with a steel exterior and replaceable plywood facing. Spacers were placed between the steel and plywood to create a significant gap between them, which allowed the contractor to fill sand between the two surfaces.

During the live fire training exercises, rounds fired from the trainees should pass through the plywood skin and sand, and then impact the steel panels behind. The sand entraps the bullet fragments, and prevents ricochets from re-entering the training area and injuring the trainees.

The GRN Mosul Area Office representative also stated that the contractor initially used interior grade plywood for the facing. The plywood subsequently deteriorated under exposure to the exterior conditions. The contractor was directed to replace the panels with exterior grade plywood. This replacement was performed prior to the site assessment, and SIGIR did not notice any significant defects with the plywood.

Doors were placed in several of the panels to simulate both exterior entry and interior doors. The doors were steel with welded steel frames inset into the panels. The GRN Mosul Area Office representative stated that originally the contractor installed hollow core interior doors. However, the hollow core interior doors were unacceptable for repeated use during breaching and entry tactics and the contractor replaced them with steel doors.

Observation platforms were constructed above the training structures (Site Photo 15). The platforms consisted of galvanized steel framing, open grate steel deck, and handrails. The steel framing for the platform was supported on the training structure's wall panels.

Access to the platforms was provided with galvanized steel stairs. The platforms appeared adequate and solid. The handrail did not flex under lateral load, and the stair treads appeared solid.



**Site Photo 13. MOUT facility exterior**



**Site Photo 14. MOUT facility interior**



**Site Photo 15. Observation platform**

The SOW required a new electrical distribution system to support the MOUT facility include the following items:

- concrete pad
- fuel tank
- feed and return line connections
- sound enclosures
- engine specifications
- service spare parts

The electrical system for the MOUT facility consisted of a small generator, an exterior fuel tank, a distribution system, and exterior lighting. The SOW did not include requirements on the actual size or capacity of the generator. Also, the contractor did not provide calculations to determine if the generator provided meets the current and future requirements for power for the MOUT facility.

SIGIR verified that the generator was present at the MOUT facility. The contractor constructed a concrete pad and sunshade for the generator. The generator was enclosed in a metal enclosure and a fuel tank was placed in a concrete spill containment structure (Site Photo 16).

The generator was connected to the fuel tank with galvanized steel piping. SIGIR noted that there was evidence of a fuel leak at one of the joints in the fuel line (Site Photo 17). The GRN Mosul Area Office representative stated that the leak was previously discovered and repaired and that the fuel seepage noted during the site assessment was from an earlier leak. During the site assessment, the GRN Mosul Area Office representative attempted to start the generator. The generator started, but did not continuously function. Due to the limited time available, SIGIR was unable to determine the cause of the generator fault. However, the generator not functioning could be due to a lack of system load and not a defect in the power generation system.

High mount exterior lighting was constructed at the MOUT facility. The lighting was spaced at significant distances. No lighting was provided for the training structures and power was not extended to the buildings.



**Site Photo 16. Sunshade with generator and fuel tank**



**Site Photo 17. Fuel leak at joint**

The MOUT facility perimeter earthen berm was similar in construction to the berm surrounding the multi-purpose small arms range (Site Photo 18). The berm was constructed with a uniform cross-section and uniform height. The berms surrounding the range appeared to be constructed with native fill materials, which consisted almost completely of fines with low plasticity and little or no cohesion and appeared to be highly erosive. Also, the contractor provided no method of stabilization for the embankment.



**Site Photo 18. Perimeter berm around MOUT facility**

### Combat Assault Course

The combat assault course was constructed adjacent to the MOUT facility and consisted of two parallel courses with an outdoor training facility that was enclosed by a chain link fence around the perimeter. The fence was topped with barbed wire and concertina wire (Site Photo 19). The concertina wire's coiled wire was stretched, which could reduce the concertina wire's effectiveness in preventing unauthorized access to the course. The fence was constructed with additional bracing at the corner posts and at the posts for the vehicle entry gate.

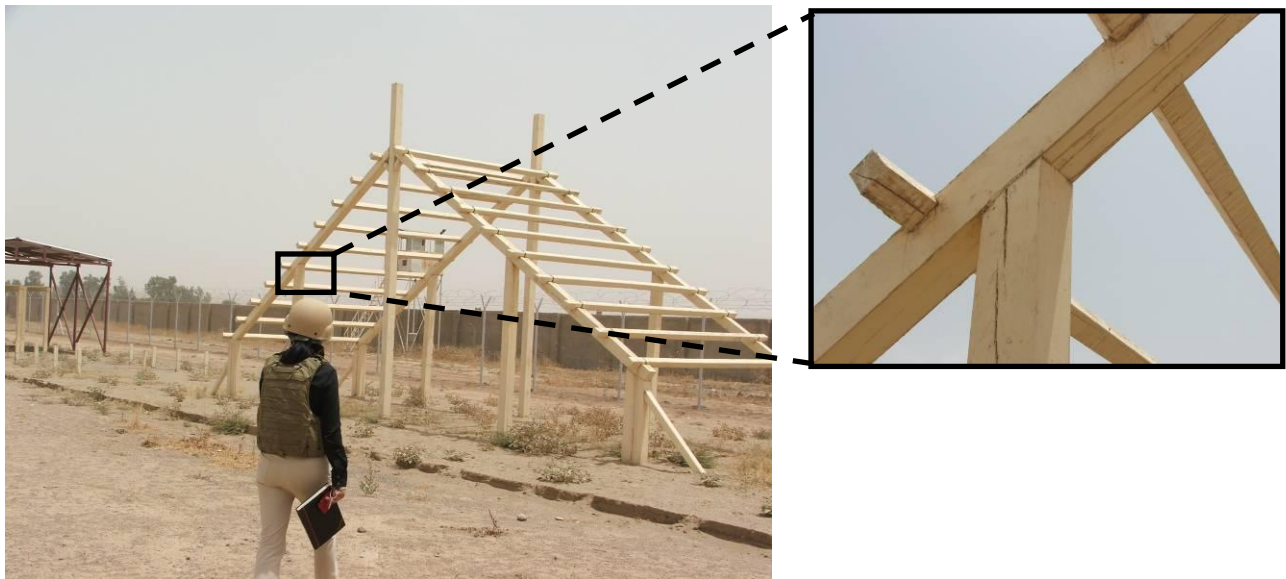
The combat assault course obstacles were constructed of heavy timber (Site Photo 20). The timber was sanded and painted. Also, the timber appeared smooth enough to reduce the chance of injury to the trainees. The paint used for the obstacles was already flaking in some areas. Several of the obstacles required connection of heavy timber posts and beams.

A sunshade was constructed over one of the obstacles. The sunshade consisted of corrugated metal over steel roof trusses supported on steel columns (Site Photo 21). At the time of the site assessment, the sunshade construction was complete, so the configuration of the foundation could not be determined. However, SIGIR did not observe any apparent movement or settlement of the footing. The steel framing appeared adequately constructed, and there were no failures or displacement of the members evident at the time of the site assessment. Cross bracing was provided at end bays to provide lateral stability for the structure.

The SOW required that areas surrounding and underneath the obstacles should consist of a deep bed made of sand, sawdust or crushed/ground rubber. SIGIR observed that the obstacles were constructed over native material similar to the ground cover on other areas of the project. It does not appear that provisions were made to place the required ground cover beneath the obstacles.



**Site Photo 19. Perimeter fence for combat assault course**



**Site Photo 20. Obstacles for combat assault course**





**Site Photo 21. Sunshade over obstacles for combat assault course**

### Outdoor Training Facilities

The SOW required the contractor to construct 14 outdoor training facilities. Also, the SOW stated that the contractor was to construct three outdoor training facilities at the multi-purpose small arms range; three outdoor training facilities at the existing range; and one outdoor training facility at the MOUT facility. SIGIR inspected one of the 14 outdoor training facilities. SIGIR observed three outdoor training facilities at the multi-purpose small arms range. However, SIGIR did not observe the one outdoor training facility at the MOUT facility.

The outdoor training facilities consisted of a steel framed enclosure with corrugated metal cladding (bonding) on three sides. Concrete bleacher seating was constructed on the interior of the facilities (Site Photo 22). The perimeter footing was not exposed; however, SIGIR did not observe any settlement or displacement of the structure during the site assessment. SIGIR observed minor shrinkage or cracking, which was indicative of poor curing; however, the shrinkage or cracking should not affect the structural integrity of the concrete slab. SIGIR did not observe any significant cracking or displacement of the concrete slab.

The SOW required translucent material for the cladding and provided specific details for windows inserted in the walls. SIGIR observed that the exterior cladding of the buildings was not consistent with the SOW, and the outdoor training facilities did not contain windows or translucent material for cladding.



Site Photo 22. Outdoor training facility (interior)

## Project Quality Management

### Contractor's Quality Control Program

Department of the Army Engineering Regulation (ER) 1180-1-6, dated 30 September 1995, provides general policy and guidance for establishing quality management procedures in the execution of construction contracts. According to ER 1180-1-6, "...obtaining quality construction is a combined responsibility of the construction contractor and the government."

The contractor submitted the QC plan initially and revised the QC plan on 25 June 2008, which the GRN Mosul Area Office accepted as meeting the standards addressed in ER 1180-1-6. The QC plan required the contractor to implement a three-phase QC control system (preparatory, initial, and follow-up phases) necessary to ensure that the construction complies with the requirements of the contract. The QC representatives are responsible for preparing daily reports, identifying and tracking deficiencies, documenting progress of work, and supporting other contractor QC requirements. In addition, the SOW required the contractor to develop and maintain a complete list of QC testing and transferred and installed property.

The SOW required the contractor to submit a daily report for each day work activities occurred on site. The reports should provide a description of trades working on the project, number of personnel working, weather conditions encountered, delays encountered. Also, the QC report should cover conforming and deficient features.

The GRN Mosul Area Office representative provided SIGIR with the QC documentation. However, the QC representatives did not complete the daily QC reports which consist of a brief background on the weather, number of workers on site, the daily work activities and testing performed, and deficiencies identified. In

addition, the QC representatives did not supplement the daily QC reports with photographs reinforcing the information in the daily reports.

### **Government Quality Assurance**

According to the GRN quality assurance (QA) memorandum, 3 May 2007, the QA verifies the effectiveness and accuracy of the contractor's control system for producing quality work.

The project engineer's responsibilities include: reviewing QA reports, reviewing QC test results, monitoring the contractor submittal register to insure the required submittals are received, and ensuring the contractor is working in accordance with the health and safety requirements.

The QA representatives prepare the reports to ensure that deficiencies are documented with photographs. Also, the QA representatives review the contractor QC reports for accuracy and completeness. Further, the QA representatives review the contractor submittals to ensure the submittals were approved before starting the work.

GRN Mosul Area Office, which is responsible for the construction of the Hammam Al Alil Division Training Center project, employs local-national Iraqi associate engineers to serve as QA representatives responsible for visiting the project site and writing QA reports. In addition, GRN Mosul Area Office representatives visited project sites to verify the contractor's work.

Local-national QA representatives monitored field activities and completed daily QA reports. The reports document the number of workers on site and the work performed for the day. Also, the QA representatives supplement the daily QA reports with detailed photographs that reinforced the information provided in the reports.

SIGIR reviewed the daily QA reports and found that the QA representatives identified construction deficiencies at the project site. Although the QA deficiency list contained a description of deficiencies and their status, the QA documentation did not address how or when the deficiencies were corrected. Also, the QA representatives did not consistently use photographs to show the deficiencies and corrections made in the QA report.

Obtaining quality construction is the combined responsibility of the construction contractor and the government. The mutual goal is a quality product conforming to the contract requirements, and the contract documents establish the quality standards required for the project. In the Hammam Al Alil Division Training Center project, the QC and QA programs were not effective in obtaining quality construction. QC personnel did not maintain a presence on the job site, make a commitment to project management, or perform project oversight. The QA representative did not enforce the daily QC report requirements.

In response to a draft of this report, the Gulf Region District of USACE stated: that only under exigent circumstances can the QA representative stop the contractor's work. However, it is the QA representative's responsibility to report deficiencies to the project engineer, the contracting officer's representative, and ultimately to the administrative contracting officer or the contracting officer who can direct the contractor's actions. The on-site QA representative conducted daily visual

inspections of the contractor's work and documented the results on QC reports and a deficiency tracking list. Despite repeated direction from the resident office, the contractor did not correct the deficiencies. The resident office gave the contractor ample time to address the deficiencies. From 29 August 2008 to 12 December 2008, the contracting officer notified the contractor multiple times concerning work quality. However, the contractor failed to correct the baffle-related deficiencies. On 27 December 2008, the contracting officer representative notified the contractor that the baffles would be de-scoped from the contract and on 10 February 2009 the Government issued a request for proposal to remove the baffles from the contract.

## **Project Sustainability**

The contract included sustainability elements to assist the Hammam Al Alil Division Training Center project. The contract specifications required that the contractor provide a warranty for all major equipment, which includes but is not limited to air conditioners, air handlers, transformers, electric motors, compressors, condensing units, chillers, exhaust fans, generators, and transfer switches.

### Submittals

The contract required the contractor to provide submittals, which includes the manufacturer's documentation, training manuals, training procedures, quality control, safety, security, and environmental protection procedures. Also, the contract required the contractor to provide the construction inspection reports, testing and inspection reports, and the coordination memorandum.

### Spare Parts

The contract required the contractor to provide recommendations for preventive maintenance on all new equipment installed under this contract. In addition, the contractor will provide one set of the manufacturer's suggested service parts for the first 2,000 hours of operations.

### As-built Drawings

Upon completion of the project, the contractor must provide as-built drawings (hard and electronic copies). Final as-built drawings will depict the facilities and pod footprint, which will include all new electrical, plumbing, and mechanical systems, as well as all known utility services on site.

### Warranty of Construction Work and Training

The contract states the warranty for construction work continues for a period of 12 months.

In addition, the contractor will provide operation and maintenance (O&M) training manuals on each of the following:

- (1) HVAC
- (2) electrical
- (3) generator
- (4) plumbing
- (5) fire alarm systems

Further, the contractor will provide a minimum of one week classroom training covering the O&M manuals that will include a hands-on phase. The contractor will ensure that the O&M manuals and training provide a sufficiently trained and skilled labor force to adequately operate and maintain the installed equipment and systems throughout the warranty period.

## Conclusions

1. Project components were adequately designed prior to construction or installation.

The U.S. government provided the preliminary design drawings and specifications to the contractor. The contract and SOW required the contractor to develop the preliminary package into a complete design package. Specifically, the contract required the contractor to review the preliminary designs and “correct any conflict or deficiency, also provide any missing or required details or drawings.” Further, the contract stated that the contractor was to provide shop drawings to GRN for the project.

GRN Mosul Area Office provided SIGIR with the contractor’s submitted design drawings, calculations, and submittals for the multi-purpose small arms range, MOUT, combat assault course, and the outdoor training facilities. The drawings were used for the construction of the project and consisted of civil, architectural, electrical, mechanical, plumbing, and structural drawings.

The contractor designed the multi-purpose small arms range with several primary elements to protect the trainees and prevent rounds from leaving the range area. Per the SOW, the designed overhead baffles were constructed between the firing positions and the ricochet catcher and berm to prevent projectiles from exiting the small arms range. The SOW required the overhead baffles and ricochet catcher to be “... *impervious to M193 ball ammo fired from an M-16, either made from 15 centimeters of 5,000 psi concrete or other material...*”. Also, the contractor was to angle the overhead baffles at least 25 degrees and construct the ricochet catcher 2m tall at a 90 degree angle to the berm with the base 6m off of the ground level. The contractor’s designed the overhead baffles with a steel frame supporting a pre-cast concrete panel. The foundation system for the overhead baffles consisted of embedment of the support columns in the ground and pouring them in place with concrete. Wind blowing against the 2.2 m baffle will generate a significant force; therefore, the baffle requires a large foundation to prevent it from falling over. However, the contractor did not submit designs or calculations to verify the foundation system will support the baffles.

The contractor designed the MOUT facility to provide a training structure with associated protective and support facilities. The SOW contained specific requirements for the MOUT facility, which included specifications for the layout of the training structures and required the contractor to use a proprietary system, Action-Target MATCH system or equivalent, in constructing the training facility. According to the contractor’s design drawings provided by the GRN Mosul Area Office, the contractor did not specify the proprietary system in the design. Also, the contractor provided a design that a third party will fabricate.

The contractor designed the combat assault course as a secure area with multiple obstacles used for training. The contractor designed the obstacle course with obstacles in a continuous line along two parallel paths. The obstacles were

designed using heavy timber, and a sunshade was proposed over one of the obstacles. The contractor designs were similar to the designs provided in the SOW and provided adequate detail for construction.

The SOW required the contractor to design and construct 14 outdoor training facilities. The SOW provided specific locations for seven facilities. Also, the SOW provided detailed drawings for the outdoor training facilities that included plans, elevations, sections, and other associated details.

Based on SIGIR's review of the GRN-provided documentation, the SOW included detailed requirements and specifications that instructed the contractor on how to design and construct the facility. The contractor provided drawings that contained specific information for the proposed structures, foundations, site utilities, and other project features. SIGIR determined that the civil and architectural, mechanical and plumbing, and electrical design drawings and the inclusion of other applicable codes and standards that there was adequate information provided to complete the final design and construct the facility.

2. Construction was not in compliance with the standards of the design.

On 8 July 2009, SIGIR performed an on-site assessment of the Hammam Al Alil Division Training Center project, which was approximately 78% complete. The Hammam Al Alil Division Training Center project required the contractor to design and construct ranges and facilities. Specifically, the SOW required the construction of:

- multi-purpose small arms ranges
- MOUT
- combat assault course
- outdoor training facilities

The multi-purpose small arms ranges were designed as fully contained ranges and constructed for simultaneously firing more than one type of weapon.

The SOW required the construction and installation of overhead baffles between the firing positions and the terminal end of the range. Overhead baffles were designed to contain all bullets fired from a prone or kneeling position. Also, the overhead baffles were designed to contain shots that would otherwise travel over the berm. At the time of the SIGIR site assessment; there were no overhead baffles present between the firing positions and the terminal end of the range. The GRN Mosul Area Office representative stated that the overhead baffles were constructed. However, GRN visited the site and determined the overhead baffle construction quality was extremely poor and non-compliant with the SOW specifications. The contractor was asked to remedy the deficiencies noted for the overhead baffles. However, the contractor did not address the deficiencies and upon further inspection of the overhead baffles, MNSTC-I decided to completely remove the defective work. This resulted in a descoping of the overhead baffle requirement. Due to the descoping of the overhead baffles, the multi-purpose small arms range went from a fully contained range to a non-contained range. SIGIR was unable to locate any documentation addressing the safety concerns of removing the overhead baffles.

The contractor was to provide 1,500 sandbags, filled with sand, for the project. SIGIR observed that the contractor used two different types of sandbags. The

contractor used one type of sandbag that was natural fiber and a second type of sandbag that was constructed from polypropylene. SIGIR observed that some sandbags have already deteriorated. In addition, the contractor used precast concrete planks in several areas as footbridges over the swale constructed to convey runoff away from the range site. SIGIR observed a safety hazard where the contractor had not removed the rebar lifting lugs from the precast planks.

The MOUT was comprised of two freestanding training structures with independent overhead observation walkways. The facility was constructed on a concrete pad and was surrounded by an earthen berm of similar construction to those surrounding the multi-purpose small arms range. Power was supplied to the facility with a small generator.

The combat assault course was constructed adjacent to the MOUT facility. The combat assault course consisted of two parallel courses with an outdoor training facility that was fenced around the perimeter of the course. At the time of the site assessment, SIGIR observed the concertina wire's coiled wire was stretched, which could reduce the concertina wire's effectiveness in preventing unauthorized access to the course. Also, SIGIR noted that the combat assault course obstacles were constructed of heavy timber, sanded, and painted. The paint used for the obstacles was flaking in some areas.

The SOW required that areas surrounding and underneath the obstacles should consist of a deep bed made of sand, sawdust or crushed/ground rubber. SIGIR observed that the obstacles were constructed over native material similar to the ground cover on other areas of the project. It does not appear that provisions were made to place the required ground cover beneath the obstacles.

The outdoor training facilities consisted of a steel framed enclosure with corrugated metal cladding on three sides, and concrete bleacher seating was constructed on the interior of the facility. SIGIR observed minor shrinkage or cracking, which was indicative of poor curing practice; however, SIGIR did not observe any significant cracking or displacement of the concrete slab. The SOW required translucent material for the cladding and detail windows placed in the wall. SIGIR observed that the exterior cladding of the building was not consistent with the SOW, and the outdoor training facility constructed did not contain windows or translucent material for cladding.

### 3. Quality management programs were in need of improvement.

The contractor's QC plan was sufficiently detailed to effectively guide the contractor's quality management program. The contractor submitted a QC plan, which was accepted by the GRN Mosul Area Office as meeting the standards addressed in Engineering Regulation 1180-1-6 (*Construction Quality Management*). The SOW required the contractor to submit a daily activity report that was to include a description of trades working on the project, number of personnel working, weather conditions encountered, delays encountered, and conforming and deficient features. The GRN Mosul Area Office representative provided SIGIR with the QC documentation. The QC representatives did not properly complete the daily QC reports, which consist of a brief background on the weather, number of workers on site, the daily work activities and testing performed, and deficiencies identified. In addition, the QC representatives did not supplement the daily QC reports with photographs.

The GRN Mosul Area Office employed local Iraqi national QA representatives to monitor field activities and complete daily QA reports. The reports document the number of workers on site and the daily work performed. Also, the QA representatives supplement the daily QA reports with detailed photographs that reinforced the information provided in the reports.

SIGIR reviewed the daily QA reports and found that the QA representatives identified construction deficiencies at the project site. However, the QA deficiency list only contained a description of the deficiency and the status of the deficiency; the QA documentation provided does not address the correction of the deficiency or when the deficiency was corrected. Also, the QA representative did not consistently use photographs to show the deficiency and the correction of the deficiency in the QA reports.

Obtaining quality construction is the combined responsibility of the construction contractor and the government. The mutual goal is a quality product conforming to the contract requirements, and the contract documents establish the quality standards required for the project. In the review of the Hammam Al Alil Division Training Center project, SIGIR determined that the QC and QA were not effective in obtaining quality construction. The QC personnel did not maintain a presence on the job site, or a commitment to project management and oversight. The QA representative did not enforce the daily QC report requirements. In addition, the QA representative allowed the contractor to construct overhead baffles deemed as a safety hazard, and unfit for its intended use.

4. Sustainability was addressed in the contract or task order for the project.

Sustainability was addressed in the contract requirements. The contract included sustainability elements to assist in operating this project after turnover. The contract specifications require the contractor to provide warranties for all materials and equipment. In addition, the contractor is required to perform operations and maintenance training appropriate to the facilities and equipment installed, or constructed in the scope of this project, along with providing operations and maintenance manuals. Further, upon completion of each facility, the contractor must prepare and furnish as-built drawings, which will be a record of the construction as installed and completed.

5. Project results were or will be consistent with their original objectives.

To date, the Hammam Al Alil Division Training Facility project results appear to be consistent with the project objectives. As of 8 July 2009, when SIGIR performed an on-site assessment of the Hammam Al Alil Division Training Center project the results were consistent with the end goal to provide the base with training facilities. However, due to the descoping of the overhead baffles, the multi-purpose small arms range status changed from a fully contained range to a non-contained range. The GRN Mosul Area Office did not address the safety concerns of removing the overhead baffles or the impact on public safety.



## **Recommendations**

SIGIR recommends the Mosul Resident Office take these actions:

1. Since removal of the range baffles was directed by MNSTC-I, conduct a ground safety study to determine the actual surface danger zone for the small arms range and the MOUT facility, and provide this information to the Hammam Al Alil Division Training Center for planning to lessen the severity of any danger presented by an open range.
2. Require the contractor to replace all of the deteriorating sandbags located at the division training center project while the warranty is valid.
3. Enforce the contractor warranty and safety plan by ensuring that the rebar lifting lugs are removed from panels that are used as footbridges.
4. Implement controls to ensure that the procedures outlined in the QA and QC plans of the project are applied.

## **Management Comments**

SIGIR received comments on the draft of this report from United States Forces-Iraq (USF-I) concurring with comment with the recommendations in the report. USF-I also provided technical comments for clarification. The complete texts of the comments are provided in Appendix C.

## **Evaluation of Management Comments**

SIGIR appreciates the concurrence by USF-I with the draft report's recommendations. Their comments addressed our recommendations and provided additional clarifying information for this final report. The final report was revised to reflect the additional clarifying information. As a result, no additional comments are required.

## Appendix A. Scope and Methodology

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SIGIR performed this project assessment from April 2009 through December 2009 in accordance with the Quality Standards for Inspections issued by the Council of Inspectors General on Integrity and Efficiency. The assessment team included two engineers/inspectors and two auditors/inspectors.

In performing this Project Assessment SIGIR:

- Reviewed documentation to include the following: contract W91GYO-08-C-0030, contract amendments and/or modifications, Statement of Work, and invoices;
- Reviewed the contractor quality control plan, contractor quality control reports and photographs, tests, government quality assurance reports and quality assurance photographs;
- Reviewed the design package (plans) and submittals; and
- Conducted an on-site assessment of the Hammam Al Alil Division Training Center project in Mosul, Iraq on 8 July 2009 and documented the results.

**Scope Limitation.** The time allotted for the Hammam Al Alil Division Training Center project site assessment was approximately 1 hour; therefore, a complete review of all work completed was not possible.

## **Appendix B. Acronyms**

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ER	Engineering Regulation
GRN	Gulf Region North
m	Meter
MNSTC-I	Multi-National Security Transition Command-Iraq
MOUT	Military Operation on Urban Terrain Facility
O&M	Operations and Maintenance
QA	Quality Assurance
QC	Quality Control
SIGIR	Special Inspector General for Iraq Reconstruction
SOW	Statement of Work
USACE	U.S. Army Corps of Engineers
USF-I	U.S. Forces-Iraq

# Appendix C. USF-I Response to Draft Report

**SIGIR DRAFT REPORT – 8 December 2009  
SIGIR Report 09-174**

**“Hammam Al Alil Divisional Training Center, Mosul, Iraq”**

**USF-I COMMENTS  
TO THE DRAFT REPORT**

SIGIR recommends the Mosul Resident Office take these actions (page 28 of the report):

1. Since removal of the range baffles was accepted by MNSTC-I, conduct a ground safety study to determine the actual surface danger zone for the small arms range and the MOUT facility, and provide this information to the Hammam Al Alil Division Training Center for planning to lessen the severity of any danger presented by an open range.

**USF-I RESPONSE:** *USF-I concurs with comment to the recommendation and information provided in this SIGIR Report. See ANNEX 1 for additional comments related to construction.*

2. Require the contractor to replace all of the deteriorating sandbags located at the division training center project while the warranty is valid.

**USF-I RESPONSE:** *USF-I concurs with comment to the recommendation and information provided in this SIGIR Report. The contract is complete and closed. Depending on the conditions of acceptance, the only method available for any repairs is through the warranty of construction. The warranty is valid for 1-year from the time of acceptance. However, it is important to note that any deficiencies apparent at the time of acceptance cannot be claimed later under the warranty. If the US Government accepted the facility with deteriorating sandbags, the contractor is not liable for replacing these sandbags under the warranty. See ANNEX 1 for additional comments related to construction.*

3. Enforce the contractor warranty and safety plan by ensuring that the rebar lifting lugs are removed from panels that are used as footbridges.

**USF-I RESPONSE:** *USF-I concurs with comment to the recommendation and information provided in this SIGIR Report. The contract is complete and closed. Depending on the conditions of acceptance, the only method available for any repairs is through the warranty of construction. The warranty is valid for 1-year from the time of acceptance. However, it is important to note that any deficiencies apparent at the time of acceptance cannot be claimed later under the warranty. If the US Government accepted the facility with the rebar lifting lugs in place on the panels used as footbridges, the contractor is not liable for removing the lugs under the warranty. See ANNEX 1 for additional comments related to construction.*

4. Implement controls to ensure that the procedures outlined in the QA and QC plans of the project are applied.

**USF-I RESPONSE:** *USF-I concurs with comment to the recommendation and information provided in this SIGIR Report. While the Administrating Contracting Office should ensure procedures in the QA and QC are followed during the contract's period of performance, once*

## Appendix C. USF-I Response to Draft Report

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*the contract is completed and closed out no action can be taken. Depending on the conditions of acceptance, the only method available to correct any problems is through the warranty of construction. However, it is important to note that any deficiencies apparent at the time of acceptance cannot be claimed later under the warranty. See ANNEX 1 for additional comments related to construction.*

=====

### GENERAL COMMENTS ON THE REPORT

1. (U) See ANNEX 1 for general comments regarding the report.

APPROVED BY:  
JOSEPH ANDERSON  
BG, USA  
Chief of Staff

PREPARED BY:  
Matthew LaChapelle  
LCDR, USN  
Detailed IG - Chief of Inspections  
SVOIP 708-243-6308

# Appendix C. USF-I Response to Draft Report



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
GULF REGION DISTRICT  
ARMY CORPS OF ENGINEERS  
APO AE 09342



CETAG

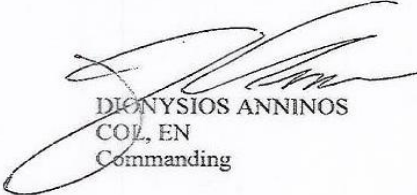
17 December 2009

MEMORANDUM FOR Special Inspector General for Iraq Reconstruction, US Embassy Annex II, Room 1013, APO AE 09316

SUBJECT: Draft SIGIR Audit Report – Hammam Al Alil Division Training Center (SIGIR PA-09-174)

1. This memorandum provides the U.S. Army Corps of Engineers, Gulf Region District response to the subject draft audit report.
2. The Gulf Region District reviewed the subject draft report and generally agrees with the facts as presented in the report. Gulf Region District provided additional comments for clarity and accuracy in the enclosure.
3. Thank you for the opportunity to review the draft report and provide written comments for incorporation in the final report.
4. If you have any questions, please contact Mr. Robert Jones at (540) 678-2996 or via email [Robert.A.Jones@usace.army.mil](mailto:Robert.A.Jones@usace.army.mil).

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## Appendix C. USF-I Response to Draft Report

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GULF REGION DISTRICT  
COMMAND REPLY

to

SIGIR Draft Audit Report – Hammam Al Alil Division Training Center  
(SIGIR Project PA 09-174)

**Report Comments:**

1. **Draft Report, Page 10, paragraph four.** “The GRN Mosul Area Office documentation did not address the status change of the range from a fully contained range<sup>6</sup> to a non-contained range<sup>7</sup>. In addition, the documentation did not address the safety concerns of removing the overhead baffles or the impact on public safety.”

**Response:** On 1 Dec 2009 The Mosul Resident Office provided SIGIR documentation showing the chronology of events concerning the construction status of range baffles and the customer’s decision to remove them. In addition, the contractor’s program manager stated that the Iraqis, the end users, didn’t see a need for the baffles. The 30 foot berm at the terminating end of the range serves as the primary backstop. Further, the facility is located 24 kilometers south of Mosul in an isolated and sparsely populated area so the potential for collateral damage or injury is minimal.

2. **Draft Report, Page 14, paragraph two.** The report references the repair of the fuel leak; the last sentence in the paragraph reads, “Due to the lack of disturbance on the accumulated dirt located on the pipe joints, SIGIR was unclear how a repair was made.”

**Response:** Given the frequent sand and dust storms in Iraq, dirt would have re-accumulated had the pipes and foundation been pressure washed or replaced when the leak was repaired.

3. **Draft Report, Page 23, paragraph continued from page 22.** The last sentence states, “In addition, the QA representative allowed the contractor to construct overhead baffles, which were later deemed a safety hazard, and unfit for its intended use.”

**Response:** Only under exigent circumstances can the QA representative stop the contractor’s work. However, it is the QA’s responsibility to report deficiencies to the project engineer, COR and ultimately the ACO or KO who can direct the contractor’s actions. The on-site QA conducted daily visual inspections of the contractor’s work and documented the results on QC reports and a deficiency tracking list. Despite repeated direction from the resident office, the contractor did not correct the deficiencies. The resident office gave the contractor ample time to address the deficiencies. From 29 August 2008 to 12 December 2008, the contracting officer notified the contractor multiple times concerning work quality. However, the contractor failed to correct the baffle-related deficiencies. On 27 December 2008 the contracting officer representative notified the

## Appendix C. USF-I Response to Draft Report

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GULF REGION DISTRICT

COMMAND REPLY

to

SIGIR Draft Audit Report – Hammam Al Alil Division Training Center  
(SIGIR Project PA 09-174)

contractor that the baffles would be de-scoped from the contract and on 10 February 2009 the Government issued a request for proposal to removal (de-scope) the baffles.

**Recommendations:**

**Recommendation 1.** Since removal of the range baffles was accepted by MNSTC-I, conduct a ground safety study to determine the actual surface danger zone for the small arms range and the MOUT facility, and provide this information to the Hammam Al Alil Division Training Center for planning to lessen the severity of any danger presented by an open range.

**Response:** Concur. The customer and the end user (Division Training Center Personnel) were aware of the baffle construction problems and concurred with the baffle removal. As stated earlier, the range is located in an isolated and sparsely populated area and has a 30 foot berm that serves as the backstop. However if the customer, MNSTC-I, is willing to support and resource the effort, Gulf Region District will petition a safety study.

**Recommendation 2.** Require the contractor to replace all of the deteriorating sandbags located at the division training center project while the warranty is valid.

**Response:** Concur. The statement of work requires the contract to "Provide 1500 sand bags, filled with sand, and place 300 at each range with a minimum of five bags per firing stations" The report implies the sandbags were to be used for construction. The sand bags were to be used for support when firing from the prone position. However, because the contractor used the polypropylene sandbags that deteriorated in sunlight; we concur, the contractor should replace the disintegrating sandbags.

**Recommendation 3.** Enforce the contractor warranty and safety plan by ensuring that the rebar lifting lugs are removed from panels that are used as footbridges.

**Response:** Concur. The lifting lugs could present a tripping hazard. The resident office will have the contractor remove the lugs or otherwise identify the lugs and area as a potential tripping hazard.

**Recommendation 4.** Implement controls to ensure that the procedures outlined in the QA and QC plans of the project are applied.



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**Response:** Concur: Gulf Region District will review its quality assurance procedures and revise and/or implement controls where necessary to ensure adherence to established procedures and that the contractors abide by their quality control plans.

## **Appendix D. Report Distribution**

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Senior Advisor to the Secretary and Coordinator for Iraq

Director of U.S. Foreign Assistance/Administrator, U.S. Agency for  
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Director, Office of Iraq Reconstruction

Assistant Secretary for Resource Management/Chief Financial Officer,  
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U.S. Ambassador to Iraq

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Mission Director-Iraq, U.S. Agency for International Development

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Deputy Chief Financial Officer

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Assistant Secretary of the Army for Financial Management and Comptroller

Chief of Engineers and Commander, U.S. Army Corps of Engineers

Commanding General, Gulf Region Division

Chief Financial Officer, U.S. Army Corps of Engineers

Auditor General of the Army

### **U.S. Central Command**

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House Committee on Armed Services  
House Committee on Oversight and Government Reform  
House Committee on Foreign Affairs

## **Appendix E. Project Assessment Team Members**

The Office of the Assistant Inspector General for Inspections, Office of the Special Inspector General for Iraq Reconstruction, prepared this report. The principal staff members who contributed to the report were:

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