

**ABATTOIR (SLAUGHTERHOUSE) IN
QALADZE
SULAYMANIYAH, IRAQ**



**SIGIR PA-09-179
OCTOBER 16, 2009**

Report Documentation Page

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Abattoir (Slaughterhouse) in Qaladze

Summary of Report: PA-09-179

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 Abattoir in Qaladze is an Economic Support Fund project that began in August 2008 and is still ongoing.

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

The Kirkuk Regional Office of the U.S. Army Corps of Engineers required the contractor to take corrective actions to the construction deficiencies SIGIR identified during the site visit. As a result, this report does not contain any recommendations for further action.

Though not required, SIGIR received comments from the U.S. Army Corps of Engineers, Gulf Region Division, concurring with the report. SIGIR appreciates the concurrence with the report by the U.S. Army Corps of Engineers.

What SIGIR Found

On 21 June 2009, SIGIR performed an on-site assessment of the abattoir project. The overall objective of this \$1.1 million project was to design and construct an abattoir (slaughterhouse) in the Qaladze area in the province of Sulaymaniyah. The project included the construction of a slaughter hall, winter and summer halls, two guard houses, leather store, disembowelment hall, meat store, administration building, laboratory, general store, refrigeration room, and crematory.

At the time of the site visit, the project was approximately 35-40% complete. In general, the observed construction work appeared to meet the standards of the Statement of Work. SIGIR identified two construction deficiencies—an incomplete expansion joint system for the facility's exterior and interior floor and the roof barrier, and a tripping hazard from an improperly constructed riser for a concrete stair unit. The contractor has already taken corrective actions to remedy these deficiencies.

Aside from these two construction issues, SIGIR concluded that the construction work exhibited good-quality material and above-average workmanship and attention to detail.

The contractor's quality control management program was effective. The contractor instituted a three-phase control system to ensure that construction complies with contract requirements. The government quality assurance (QA) program was effective. The QA reports were sufficiently complete, accurate, and timely. In addition to containing project specific information to document construction and highlight deficiencies, the reports also contained detailed photographs reinforcing the narrative information.

Once construction deficiencies were identified, GRN quickly contacted the contractor to determine the corrective actions needed to remedy the issues. The QA program is ensuring the successful completion of the project. To date, project results are consistent with the original contract objectives.

Once construction is completed, this facility will benefit the 120,000 city residents by providing them with access to fresh and processed meat produced in the most hygienic manner possible.





SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION

October 16, 2009

MEMORANDUM FOR COMMANDING GENERAL, UNITED STATES CENTRAL
COMMAND
COMMANDING GENERAL, MULTI-NATIONAL FORCE-
IRAQ
COMMANDING GENERAL, GULF REGION DIVISION,
U.S. ARMY CORPS OF ENGINEERS
COMMANDING GENERAL, JOINT CONTRACTING
COMMAND-IRAQ/AFGHANISTAN
DIRECTOR, IRAQ TRANSITION ASSISTANCE OFFICE

SUBJECT: Report on the Abattoir (Slaughterhouse) in Qaladze, Sulaymaniyah
Province, Iraq (SIGIR Report Number PA-09-179)

We are providing this report for your information and use. It addresses the current status of construction of the Abattoir (Slaughterhouse) in Qaladze, Sulaymaniyah Province, Iraq. 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.

The Kirkuk Regional Office of the U.S. Army Corps of Engineers required the contractor to take corrective actions to the construction deficiencies SIGIR identified during the site visit. As a result, this report does not contain any recommendations for further action. Though not required, SIGIR received comments from the U.S. Army Corps of Engineers, Gulf Region Division, concurring with the report. SIGIR appreciates the concurrence with the report by the U.S. Army Corps of Engineers. No additional comments are necessary.

We appreciate the courtesies extended to our staff. If you have any questions please contact Mr. Brian Flynn via e-mail at brian.flynn@iraq.centcom.mil or at 240-553-0581, extension 2485. For public affairs queries concerning this report, please contact SIGIR Public Affairs at 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

Special Inspector General for Iraq Reconstruction

SIGIR PA-09-179

October 16, 2009

Abattoir (Slaughterhouse) in Qaladze Sulaymaniyah, Iraq

Synopsis

Introduction. The Special Inspector General for Iraq Reconstruction (SIGIR) is assessing projects funded by the Economic Support Fund (ESF) to provide real-time information on relief and reconstruction projects to interested parties to enable appropriate action, when warranted. This ESF-funded project located in Qaladze, Iraq will provide the local community with an environmentally safe facility to process meat products.

Project Assessment Objective. The objective of this project assessment was to provide real-time information on relief and reconstruction projects to interested parties to enable appropriate action, when warranted. Specifically, 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 were 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.

SIGIR conducted this limited scope assessment in accordance with the Quality Standards for Inspections issued by the Council of the Inspectors General on Integrity and Efficiency. The assessment team comprised two engineers/inspectors and two auditors/inspectors.

Project Objective. The overall objective of this \$1.1 million project was to design and construct an abattoir (slaughterhouse) in the Qaladze area in the province of Sulaymaniyah. The project included the construction of a slaughter hall, winter and summer halls, two guard houses, leather store, disembowelment hall, meat store, administration facility, laboratory, general store, refrigeration room, and crematory.

Conclusions. The assessment determined that:

1. The U.S. Army Corps of Engineers Gulf Region North (GRN) Kirkuk Resident Office (KRO) provided SIGIR with the project designs for the abattoir project, including site utilities. The general site design showed the general layout of the site, including the location of the buildings and parking areas, security fence, site utilities, site lighting, and landscaping. The architectural plans identified the location, dimensions, and proposed uses of various spaces within the facility. The architectural plans appeared complete and contained detailed information for the buildings and individual rooms. In addition, the overall design demonstrated a high level of planning between the contractor and the KRO. For example, the contractor designed the project to have separate waste disposals—one for small amounts of human waste (from the bathroom) and another for the animal product wastes (blood, excreta, etc). Since the animal wastes pose significant health

hazards, it is necessary to separate it from the smaller amount of human waste. The animal waste will be collected in tanks and be sent away for proper handling and disposal.

Overall, the design submittals appeared to contain adequate detail to construct the facility and the various systems within the facility.

2. At the time of the site visit, the project was approximately 35-40% complete; consequently, construction work on the abattoir was still ongoing. In general, the observed construction work appeared to meet the standards of the Statement of Work. SIGIR identified two construction deficiencies—an incomplete expansion joint system for the facility’s exterior and interior floor and parapet¹ and an improperly constructed riser for a concrete stair unit that caused a tripping hazard. As a result of the persistence of the KRO, the contractor has already taken corrective actions to remedy these deficiencies.

Aside from these two construction issues, SIGIR concluded that the construction work exhibited good quality material and above average workmanship and attention to detail.

3. The contractor’s quality control (QC) management program was effective. The contractor instituted a three-phase QC control system (preparatory, initial, and follow-up phases) to ensure that construction complies with the requirements of the contract. The contractor submitted QC reports on a daily basis, which were reviewed by the KRO project manager. The QC representatives supplemented the daily QC reports with photographs that reinforced the information provided in the daily reports. Further, the QC representatives were also present for all significant pours and testing and followed up on the test results.

The government quality assurance (QA) program was effective in monitoring the contractor’s QC program. The KRO QA representative maintained daily QA reports that documented any deficiencies noted at the site. For example, the QA representative also identified and documented the contractor’s construction deficiency with the concrete stair unit riser that SIGIR found. Based on SIGIR’s review, the QA representative’s reports were sufficiently complete, accurate, and timely. In addition to containing project-specific information to document construction and highlight deficiencies, the QA representative also supplemented the QA reports with detailed photographs that reinforced the narrative information.

In addition, when construction deficiencies were identified, the KRO quickly contacted the contractor to determine corrective actions to remedy the issues. The KRO’s QA program is ensuring the successful completion of the abattoir project.

4. Sustainability was addressed in the contract requirements. The Statement of Work included sustainability elements to assist the Iraqi ministry ultimately responsible for operating this project after turnover. The contract requires the contractor to provide a warranty for construction work for a period of one year after the date of final acceptance of the work. In addition, the contract specifications require the contractor to provide and certify warranties in the name of the appropriate ministry for all materials and equipment. Upon completion of

¹ A parapet is a wall-like barrier at the edge of a roof, terrace, balcony, or other structure.

each facility, the contractor must prepare and furnish as-built drawings, which will be a record of the construction as installed and completed.

5. To date, the abattoir project results are consistent with the original contract objectives. An abattoir presents significant health and environmental hazards to local communities because of the discharge of waste and highly polluted effluents. Before this project, the city of Qaladze did not have an abattoir to kill and process meat in a safe and sanitary environment. When construction is completed, this facility will benefit the 120,000 local city residents by providing them with access to fresh and processed meat produced in the most hygienic manner possible.

Recommendations. Since the KRO has already required the contractor to take corrective actions to the construction deficiencies SIGIR identified during the site visit, the draft report did not contain any recommendations for further action and comments on the draft report were not required.

Management Comments. Though not required, SIGIR received comments from the U.S. Army Corps of Engineers, Gulf Region Division, concurring with the draft report.

Evaluation of Management Comments. SIGIR appreciates the concurrence with the draft report by the U.S. Army Corps of Engineers. No additional comments are required.

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Introduction

Background

Twenty years ago, the city of Qaladze in Kurdistan was in ruins, destroyed by Saddam Hussein's repressive regime. Since then, the city has been coming back to life. Today, after years of successful reconstruction, locals refer to Qaladze as the "breadbasket of Iraq" for its surpluses of grain and livestock.

Nevertheless, Qaladze does not currently have an abattoir (slaughterhouse) to kill and process meat in a safe and sanitary environment. SIGIR visited Qaladze to inspect progress on a project to construct a new abattoir that will benefit the approximately 120,000 residents of the area.

The Kurdistan Region

According to many archeologists, the Kurdistan Region dates back to the dawn of civilization. The great prophets Nahum, Jonah, Habakkuk, and Daniel were buried within the Kurdistan Region. It has also been long rumored by many archeologists that the Kurdistan Region was once the Garden of Eden. In addition, watered by the Euphrates and Tigris Rivers, the early Kurds left their mark upon the world by pioneering agriculture, animal husbandry, weaving, metal work, and pottery making.

The establishment of the Kurdistan Region of Iraq dates back to the March 1970 autonomy agreement between the Kurdish opposition and the Iraqi government (after years of heavy fighting). Today, the Kurdistan Region is a federated region of approximately 4 million people in Iraq covering about 40,000 square kilometers (km) (bordering Iran to the east, Turkey to the north, Syria to the west and the rest of Iraq to the south). Iraqi Kurdistan refers to the three northern Iraqi provinces—Dahuk, Erbil, and Sulaymaniyah—that are populated predominately by Kurdish peoples governed by the Kurdistan Regional Government (KRG) and autonomous of the Iraqi central government. The capital and seat of the KRG is Erbil, a city locally known as Hawler.

Sulaymaniyah

The governorate of Sulaymaniyah is located approximately 355 km northeast of Baghdad and is 2,895 feet above sea level. Sulaymaniyah is surrounded by the mountains of Azmer, Goyzha, Pirmagrun², Qaradax, Sagrma, Sara, Gmo, and Qandil. Sulaymaniyah is geographically dominated by its rolling terrain, lying at the foothills of the Zagros Mountain range, which provides a majority of its water supply, collecting in lakes such as Dukan and Drabandixan.

Sulaymaniyah was founded in 1784 by a Kurdish prince (Ibrahim Pasha Baban) who named the city after his father, Sulayman Pasha. Prince Baban chose to live in this city because of its favorable weather and its strategic trade location. The predominant religion is the Sunni branch of Islam, although Shiite Islam is also practiced by Kurds displaced by Saddam Hussein from the Diyala governorate.

Sulaymaniyah is composed of the following districts: Sulaymaniyah, Ranya, Dokan, Penjwin, Sharbazher, Pishdar, Halabja, Kalar, Darbandikhan, Chamchamal, and Sharazoor.

² Many archeologists believe Mount Pirmagrun was the landing point for Noah's Ark after the great flood.

Qaladze

Qaladze³ is a city located in the middle of the Pishdar district of Sulaymaniyah. The name Qaladze translates as “caste of two rivers” from the Kurdish words “Qala, dw and ze,” because of a small hill between two rivers to the southwest. Qaladze has a population of approximately 70,000 people who belong primarily to the Mirawdale tribe.

Al Anfal Campaign Against the Kurds

In the early 1970s, Saddam Hussein began making war against Iraq’s Kurds. In an effort to achieve the “Arabization” of the oil-producing areas in Kurdistan, the Iraqi army forcibly evicted at least 250,000 Kurdish farmers and replaced them with poor Arab tribesmen from the south, guarded by military troops. From 1987 through 1989, Saddam launched a series of military offensives against Kurdish villages and Kurdish resistance.

In February 1988, Saddam unleashed the *Al Anfal Campaign*, an eight-stage military initiative run by Ali Hassan al-Majid,⁴ against the Kurdish people. The campaign began when the Iraqi army, assisted by the Iraqi Air Force, launched a large military operation in Kurdistan, using chemical weapons and nerve gas with catastrophic effects. Al-Majid ordered that all adult males “shall be executed after any useful information has been obtained from them.” It is estimated that 50,000-200,000 Kurdish people—including women, children, and the elderly—were killed during the Al Anfal Campaign.

Iraqi military operations also destroyed approximately 3,000 Kurdish villages, which resulted in the deportation of more than a half-million people to new “collective settlements” or to detention camps. The campaign devastated Iraqi Kurdistan, leaving the entire region in ruins and a large portion of the population displaced.

The Destruction of Qaladze

On 26 June 1989, the campaign reached Qaladze. ` Saddam Hussein’s troops destroyed the city, systematically dynamiting and bulldozing houses, stores, schools, and hospitals. Those among the population of 70,000 who had not fled to Turkey or Iran were rounded up and moved far away into purposefully built and easily policed settlements, officially called “collective towns.” Some residents simply “disappeared.” According to the Qaladze Mayor, “it was a kill zone” with not a single home spared from the destruction. The Qaladze Mayor’s photograph graphically documents the forced evacuation of the city during the destruction of the entire city’s homes (Site Photo 1).

However, almost exactly 20 years to the day from that horrific scene, SIGIR found the city of Qaladze fully rebuilt and thriving with multiple-story buildings and paved roads (Site Photo 2). Today, Qala Diza II is rising from the rubble. The aura of fear and oppression created by Saddam Hussein is gone.

Since the establishment of the safe haven and the no-flight zone after the Gulf War of 1990-91, the 3.5 million Kurds in this mountainous region in northern Iraq have been conducting what they call their “democratic experiment” in self-rule. Free from the brutal hand of Baghdad, those who returned to pick up the pieces in such towns as Qaladze now exude a burgeoning self-confidence. The KRG has made significant progress towards rebuilding the land and property destroyed during the Al Anfal

³ The city of Qaladze is also spelled in various documents related to it as Qaladiza, Qaladeza, Qala Diza, Qat Al Diza. For consistency within this report, unless used in a verbatim quotation, we spell it as Qaladze.

⁴ Saddam Hussein’s cousin, also referred to as “Chemical Ali.”

Campaign. Specifically, more than 65% of the razed villages have been rebuilt. New roads, schools, hospitals, even hotels, have been built or are under construction. This quarter, SIGIR visited Qaladze to conduct an inspection of a project to build the first abattoir in Qaladze, which will benefit the approximately 120,000 residents of the area.



**Site Photo 1. Aerial view of the forced evacuation of Qaladze by Saddam Hussein's Al Anfal Campaign
(Courtesy of the Qaladze Mayor)**



Site Photo 2. Aerial view of rebuilt Qaladze in June 2009

Objective of the Project Assessment

The objective of this project assessment was to provide real-time information on relief and reconstruction projects to interested parties to enable appropriate action, when 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 29 June 2008, the U.S. Army Corps of Engineers, Gulf Region Division – North District (GRN)⁵, awarded Contract W917BE-08-C-0067, a firm-fixed-price-contract, in the amount of \$1,100,000, to a regional contractor. The period of performance for this project was 360 calendar days from the date of the notice to proceed, which GRN issued on 30 August 2008. Consequently, the project was to be completed by 25 August 2009.

This contract had no modifications⁶.

Project Objective

The overall objective of this project was to design and construct an abattoir in the Qaladze area in the province of Sulaymaniyah. Commonly referred to as a slaughterhouse, an abattoir⁷ is a facility in which animals are killed and processed for meat or meat food products. These animals are the most commonly slaughtered for human consumption:

- cattle (for beef and veal)
- sheep (for lamb)
- goats (for chevon)
- fowl (chickens, turkeys, and ducks for poultry meat)

Slaughtering animals poses significant public health concerns, such as E. coli and salmonella.

Prior to this project, the city of Qaladze did not have a slaughterhouse to kill and process meat in a safe and sanitary environment; such conditions endangered the health and welfare of the citizens of Qaladze. This project will benefit approximately 120,000 local city residents by providing them with access to fresh and processed meat produced hygienically.

⁵ The USACE GRN Kirkuk Resident Office (KRO) provided construction management for this project.

⁶ According to KRO representatives, a modification is currently being drafted to extend the period of performance.

⁷ From the French verb “abattre” – to strike down.

Pre-construction Description

Slaughterhouses present significant health and environmental hazards to local communities because of the discharge of waste and highly polluted effluents. In countries without strict safety and sanitary enforcement, people living near slaughterhouses have suffered from insanitary conditions, with many of them owing their ailments to unhygienic conditions. For example, kidney and liver ailments have been attributed to toxic waste coming from slaughterhouses. In less developed countries, animal excreta often goes directly into waterways, carrying with it female hormones, antibiotics, uric acid, E. coli, and colon bacteria.

Due to the potential environmental and human hazards, the location of the abattoir was critical to the overall health of the local residents. The KRG provided a parcel of vacant land in the outskirts of the Qaladze city limits (Figure 1 and Site Photo 3). The project site is situated on land that is slightly elevated compared to the center of the developed city. The site is appropriate for a slaughterhouse—away from the city center. Any animal wastes and/or pollutants will be isolated from the local city residents.

The city of Qaladze is well developed and bordered by a small river and mountains separating Kurdistan from Iraq. A small dirt road from the city leads to the project site (Site Photo 4).

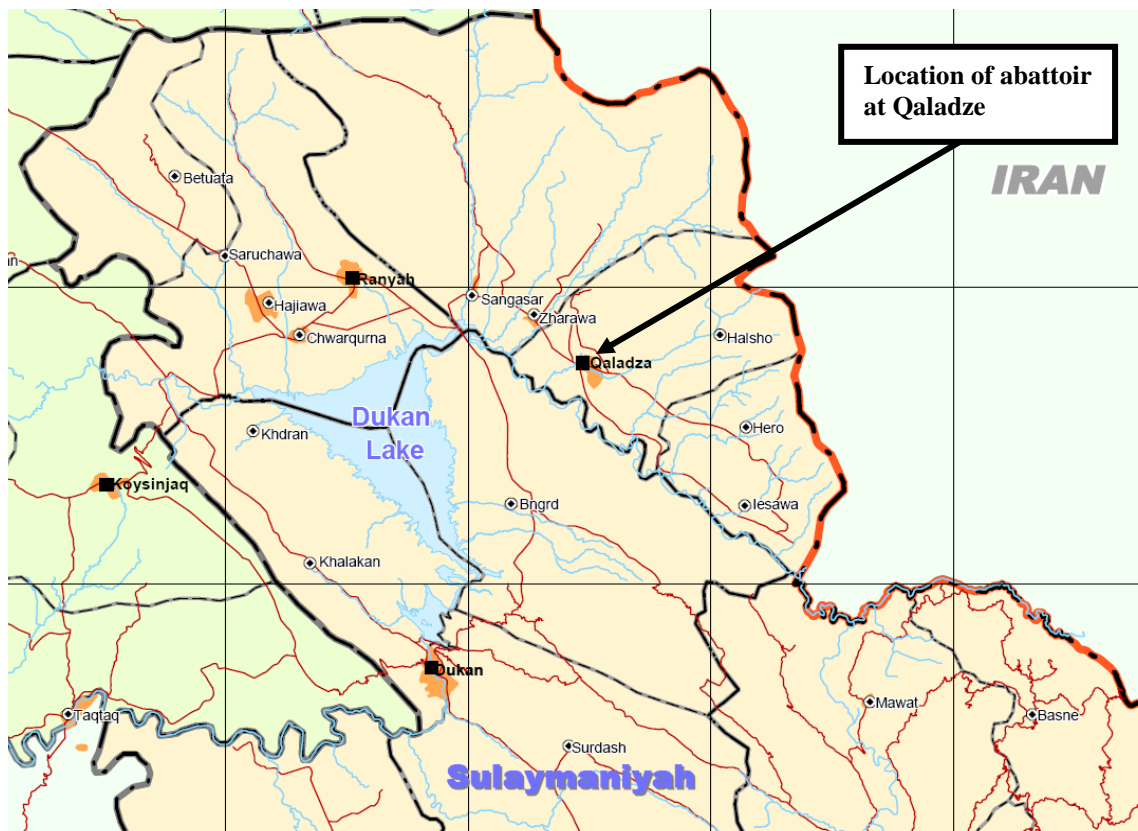
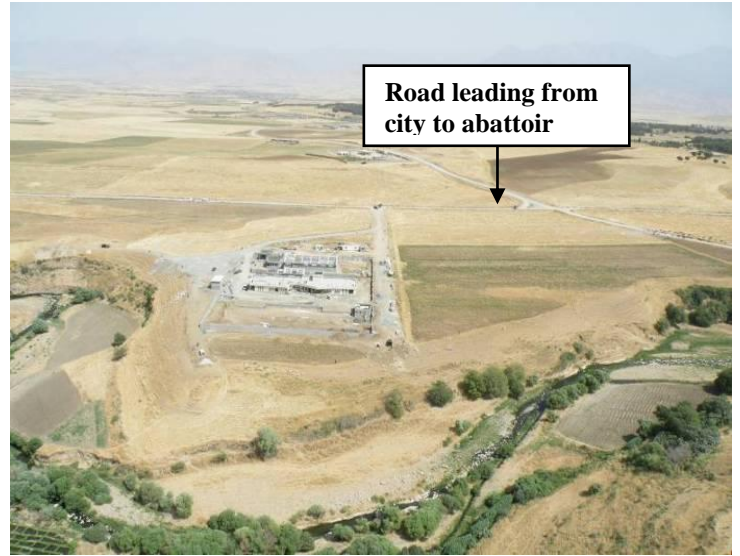


Figure 1. Location of the city of Qaladze (Courtesy of the USACE KRO)



Site Photo 3. Project site prior to construction
(Courtesy of the USACE KRO)



Site Photo 4. Location of road leading from city to project site

Statement of Work

The Statement of Work (SOW) required the contractor to design and construct a fully functioning slaughterhouse to support the entire city of Qaladze. The SOW required the construction of:

- a slaughter hall
- winter and summer halls
- two guard houses
- a leather store
- a disembowelment hall
- a meat store
- an administration facility
- a laboratory
- a general store
- a refrigeration room
- a crematory

Project Design and Specifications

The SOW broke down the work involved into two levels of effort—civil works and electrical and mechanical works:

- The civil works comprised site preparation, earth works, concrete works, plain concrete, masonry and stone pitching, sanitary installation, metal works, carpentry works, aluminum works, truss works and roofing, finishing works, tile works, and fence work.
- The electrical and mechanical works comprised supply, installation, and operational test of all electrical items, such as distribution boards, ceiling and exhaust fans, interior and exterior lighting, and outlets.

The SOW required the contractor to submit for review all 30%, 60%, and 90% designs for conformance with the contract's technical requirements. The designs had

to include site surveys, topographic surveys, geotechnical investigations, design calculations, major equipment catalog cuts, and other pertinent information as appropriate.

In addition, the SOW required the contractor to complete the design and construction of this project in accordance with all requirements in the contract, Iraqi General Technical Specifications, and any other international or Iraqi Building Codes. The SOW specifically stated that the contractor is responsible to use all available information and make any adjustments necessary to “develop a final design necessary for [the] construction of complete, usable, and maintainable facilities.”

The KRO provided SIGIR with the project designs for the slaughterhouse project, including site utilities. The general site design showed the general layout of the buildings and parking areas, security fence, site utilities, site lighting, and landscaping. The architectural plans identified the location, dimensions, and proposed uses of various spaces within the facility. The architectural plans appeared complete, including detailed information for the buildings and individual rooms. The architectural plans contained information on various building systems, including electricity, plumbing, and mechanical.

In addition, the overall design demonstrated a professional level of planning between the contractor and the KRO. For example, the contractor designed separate waste disposals—one for the small amounts of human waste (from the bathroom) and another for the animal product waste (blood, excreta, etc.). Since animal waste poses significant health hazards, it must be separated from the smaller amount of human waste. The animal waste will be collected in tanks and be sent away for proper handling and disposal.

Further, the contractor designed the project with locally available construction material, methods, and skilled labor and techniques in mind. This project is under contract with a local contractor using locally supplied material and skilled and unskilled workers from Qaladze.

The design submittals appeared to contain adequate detail to construct the various systems within the facility.

Site Assessment

On 21 June 2009, SIGIR performed an on-site assessment of the abattoir project, accompanied by KRO representatives, the contractor, and the Mayor and Deputy Mayor of Qaladze.

The Sulaymaniyah province is significantly safer than the rest of Iraq. According to the KRG:

“Since March 2003 not a single coalition soldier has died or not a single foreigner been kidnapped in the areas administered by the Kurdistan Regional Government (KRG). With the cooperation of ordinary people, the Kurdistan Region’s security forces have kept the area safe and stable.”⁸

⁸ Security responsibility was formally transferred from Multi-National Force-Iraq to the KRG in May 2007.

This level of safety allowed SIGIR to inspect the entire project site without any restrictions and for an extended amount of time on site (approximately three hours). At the time of the site visit, the project was approximately 35-40% complete. Building systems included:

- potable water distribution
- wastewater conveyance/disposal
- electrical power production and distribution
- heating, ventilation, and air conditioning
- fire alarm and suppression
- an external security lighting system

At the time of the site visit, the building systems had not been completed; some had not been started. Therefore, a functional assessment of the facility was not possible. Instead, SIGIR performed an assessment of the work that was partially completed.

SIGIR inspected these exterior and interior areas of the Abattoir Facility project:

Exterior Areas

- approach road, site preparation, and rough grading
- perimeter security walls and containment fencing
- support facilities, including guard houses, power production area, fuel tank location, water supply and wastewater-handling septic tanks system, and waste incineration units
- entrance/exit gate areas

Interior Areas

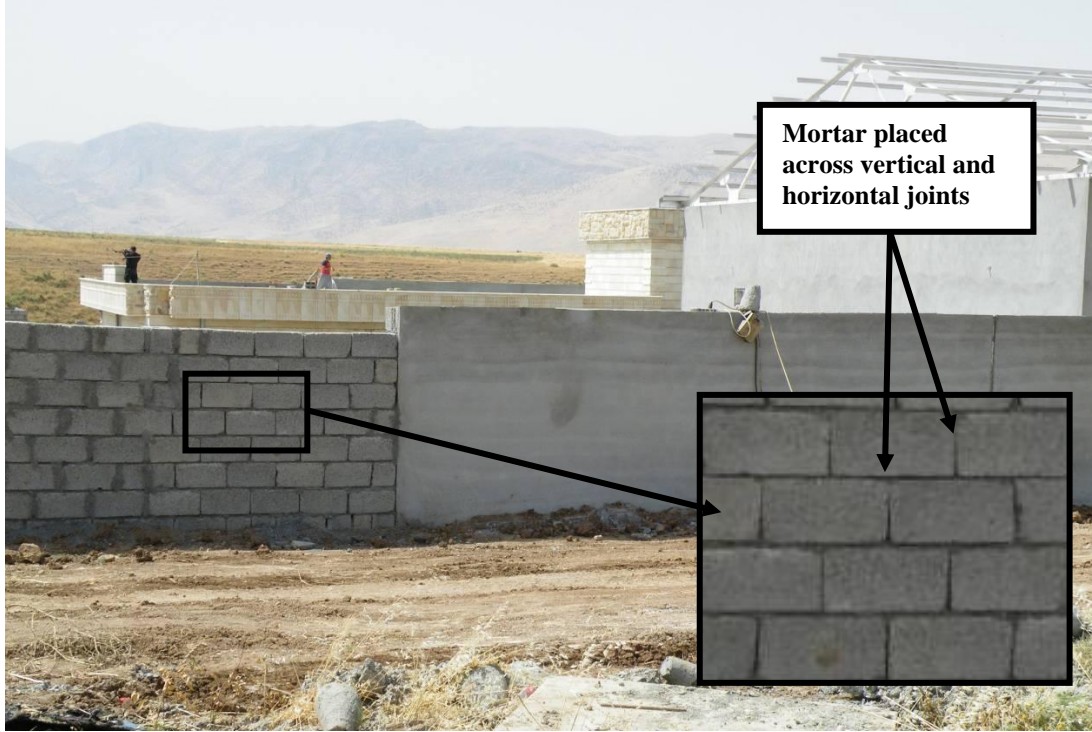
- administration facility to accommodate veterinarian support, business offices, meat process/packing/refrigeration, laboratory, and storage
- slaughterhouse
- winter and summer halls
- secondary meat processing unit
- personal hygiene facility for process workers
- liquid and solid waste collection/handling/processing units

Fence

The SOW required the construction of a fence to provide security and containment for the abattoir. The SOW called for the use of solid concrete blocks below the ground surface and hollow concrete blocks above ground.

SIGIR inspected the partially completed security fence (Site Photo 5). The contractor had performed the required excavation work of backfilling and compaction prior to construction. The above-ground portion of the wall consisted of hollow concrete blocks with a cement plaster finish. The contractor fully bedded the joints between the concrete blocks for additional strength⁹. To complete the fence, the contractor must finish the cement plaster finish and install a metal door at the main gate.

⁹ Fully bedded refers to placing mortar across the entire joint. Bed joints are the horizontal joints; while head joints are the vertical joints.



Site Photo 5. Partially completed security fence surrounding the abattoir

Guard Houses

The SOW required the construction of two guard houses (one for each entrance/exit) (Site Photo 6). The designs called for a single-story structure with a kitchen, living room, water closet (bathroom), and storage room.

SIGIR inspected both partially constructed guard houses (Site Photo 7). The concrete floor slabs and block walls had been completed; preliminary rough-in plumbing and electrical wiring had been started but not yet fully completed (Site Photo 8). SIGIR observed that the contractor used glazed ceramic tiles on the guard house walls (Site Photo 9), which provided a maintenance-free, nice aesthetic touch to the room.



Site Photo 6. Location of the guard houses within the abattoir facility



Site Photo 7. Concrete floor and roof slabs poured for the guard house



Site Photo 8. Preliminary electrical wiring



Site Photo 9. Glazed ceramic tiles on the interior walls

Slaughterhouse

The SOW required the construction of a single-story facility to slaughter sheep and cows, with a wall divider between the two animal groups. The contractor designed a single-story, rectangular facility for the slaughter of sheep and cows. The animals are partitioned from each other by a series of horizontal meat-hook assemblies. Since the slaughtering of animals results in significant amounts of blood, the SOW required the slaughterhouse facility to have:

- a floor trough/trench in the middle of the room to direct blood directly to a collection/holding septic tank
- tile from floor to ceiling to make the facility easier to clean

SIGIR inspected the open area slaughterhouse (Site Photos 10-11). The contractor had poured the concrete floor slab and placed the concrete block walls. The metal roof trusses and purlin (horizontal) supports had been welded together and were ready for the placement of the roof. SIGIR observed that the contractor did an above-average job welding the roof supports, which will provide additional strength for the roof. SIGIR noticed the floor trough/trench line in the middle of the facility, which will transport blood by gravity to the collection tanks outside the facility. The contractor had begun to install glazed ceramic tile along the walls, which is necessary for the abattoir workers to wash blood from the walls into the floor trough/trench line for proper disposal.



Site Photos 10 and 11. Interior views of the slaughterhouse room

Winter and Summer Halls

The SOW required the construction of summer and winter halls. Since the Qaladze area experiences extreme temperature fluctuations—snow in the winter and intense heat in the summer—winter and summer halls are necessary to keep the animals in a comfortable environment before being slaughtered. The winter hall provides the animals with an indoor facility to protect them from the harsh cold environment outside; the summer hall provides an enclosed outdoor area with an overhead awning to give the animals shade and comfort during intense summer heat.

The contractor designed a 10 x 7 meter (m) single room for the winter hall. SIGIR inspected the partially completed winter hall (Site Photo 12). The contractor had poured the concrete floor and ceiling slabs and placed the concrete block walls. SIGIR observed good-quality concrete pours, which resulted in very little noticeable honeycombing or segregation. In addition, to provide additional support for the walls, the contractor buttered¹⁰ the joints between concrete blocks.

SIGIR inspected the outside summer hall, which the contractor designed as an enclosed area approximately 10.4m x 7m (Site Photo 13). The animal retaining wall was constructed of concrete blocks and appeared to be approximately 1m high. The summer hall provided some shade for the animals and also an open area to roam freely.

¹⁰ Joint butter is a vinyl based adhesive joint compound.



Site Photo 12. Interior view of winter hall



Site Photo 13. Exterior view of summer hall

Administration and Meat-processing Facility

The SOW required the construction of several administrative and meat-processing rooms, including a staff room, doctor (veterinarian) room, meat-testing hall, refrigeration room, and laboratory. The contractor designed a single-story facility with 12 individual rooms. SIGIR visited this facility, which was partially constructed (Site Photo 14). The contractor had poured the concrete floor and ceiling slabs, placed the floor tiles, constructed the concrete block walls, and begun preliminary rough-in of the electrical and plumbing throughout the facility. The amount of remaining work varied by room: some rooms still required glazed ceramic tiles on the walls and finishing of the block walls.

SIGIR observed good-quality concrete pours, which resulted in very little noticeable honeycombing or segregation. In addition, SIGIR noticed that the contractor used an elaborate and creative design for the exterior of this facility, using columns, unique geometric shapes, and stone-masonry facades (Site Photo 15). The facility has a distinctive exterior look.



Site Photo 14. View of partially completed meat-testing hall



Site Photo 15. Exterior view of meat-processing facility

SIGIR did identify two construction deficiencies:

- an incomplete expansion joint system for the facility's exterior and interior floor and parapet
- a tripping hazard from an improperly constructed riser for a concrete stair unit

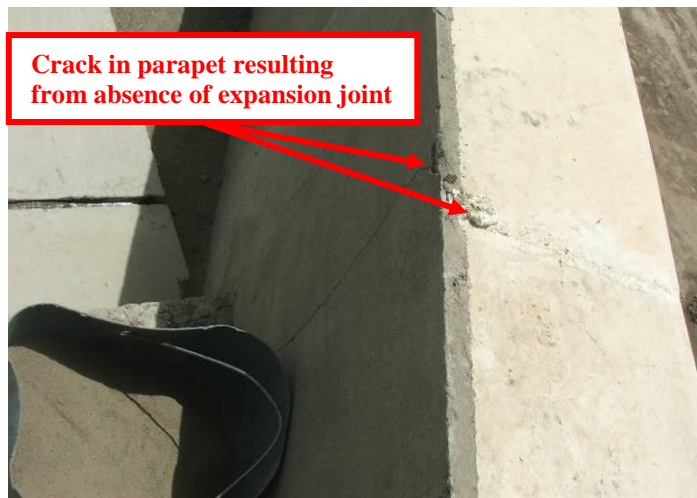
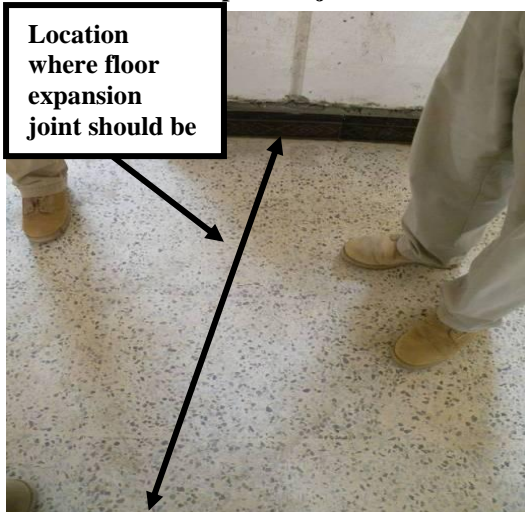
First, the facility's expansion joint system, which is to protect the structure from thermal variations, was incomplete. The expansion joint was correctly designed/placed for the ceiling beams, columns, walls, and roof slab; however, the joint was incorrectly finished and/or not finished at all for the floor and parapet (Site Photos 16-19). An expansion joint was designed and constructed for the wall columns; however, instead of placing the proper expansion joint material inside the joint, the contractor plastered inside it instead. The absence of an expansion joint for the parapet has resulted in a vertical crack. SIGIR found no expansion joint system for the facility's exterior walls. Considering that these walls are exposed to excessive heat in the summer and snow in the winter, a well-designed expansion joint system was warranted. Additionally, sealed joints prevent moisture, dust/dirt particles, and crawling insects from entering the living spaces. Consequently, an expansion joint system promotes structural safety for the building and also provides a better living environment for the occupants.



Site Photo 16. Correctly designed/placed ceiling beam expansion joints



Site Photo 17. Wall expansion joint incorrectly filled with plaster



Site Photos 18 and 19. Absence of expansion joint for the floor (left) and parapet (right)

Second, SIGIR identified a tripping hazard inside the facility (Site Photo 20). The risers for a reinforced concrete stair unit are inconsistent and not within the dimensional range specified by the building code and detail shown on the design submittal (Figure 2). Specifically, the first step is only 7 centimeters high, instead of the required 17 centimeters. The site condition of the stair unit does not reflect the original design drawing. In order to provide a safe working environment, this tripping hazard needs to be corrected.

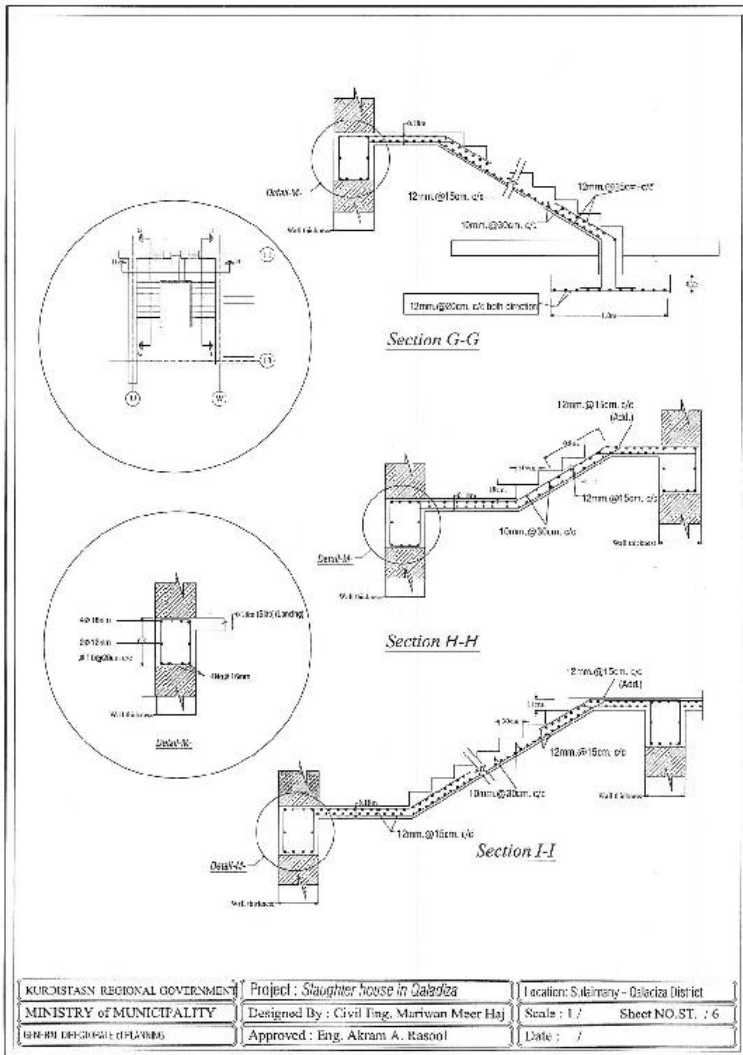


Figure 2. Design submittal for concrete stair unit (Courtesy of USACE KRO)



Site Photo 20. Bottom step poses tripping hazard

During the site visit, SIGIR identified these deficiencies to the KRO representatives. They readily agreed to the need for internal and external expansion joints and discussed the issue directly with the contractor's on-site representative. The contractor's representative agreed to provide a corrective action plan for the expansion joints to the KRO representatives.

With regard to the tripping hazard, KRO representatives stated that a quality assurance (QA) daily report had previously identified this problem and that the KRO QA representative was working with the contractor on a corrective action plan.

Finally, SIGIR noticed exposed meat-product support hooks throughout the entire abattoir—in the slaughterhouse, winter hall, and administration and meat processing facility (Site Photo 21). The very sharp tip of the exposed meat hook is approximately 5'7" above the ground (Site Photo 22). A typical construction area contains many tripping hazards, such as bags of materials, loose parts, and uneven flooring. It is a distinct possibility that a worker or visitor to the site may trip and fall into the meat hook. The meat hooks are essential to the production process for the facility; however, they also pose an extreme hazard for the workers.

SIGIR pointed out this potential safety hazard to the KRO representatives, who agreed with the assessment and stated they would look into corrective action, such as covering the pointed ends with a suitable length of ½-inch diameter polyvinyl chloride pipe.



Site Photo 21. Exposed meat support hooks located throughout facility



Site Photo 22. Close-up of exposed meat hook

Corrective Actions Taken Since Site Visit

The KRO representatives immediately followed up with the contractor to take corrective actions relating to the deficiencies that SIGIR identified during the site visit. By September 2009, the contractor had already corrected the stair issue and was working on the expansion joints. The contractor provided photographic documentation to support his claim of corrective actions taken. The photographs show measurements of stair heights and also the initial construction of an exterior expansion joint (Site Photo 23).



**Site Photo 23. Contractor's initial attempts to add expansion joints to exterior of the facility
(Courtesy of the USACE KRO)**

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. The regulation states, "...obtaining quality construction is a combined responsibility of the construction contractor and the government."

The SOW required the contractor to perform all quality control (QC) throughout the duration of the design, construction, installation, testing, and commissioning of the project. The SOW called for the implementation of a three-phase QC system (preparatory, initial, and follow-up phases) 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, and supporting other contractor QC requirements. Also, the contractor is responsible for all testing at the project site.

The QC representatives monitored field activities and completed daily QC reports, which presented a brief background on the number of workers on site, as well as the work activities and testing performed; the reports also documented deficiencies identified. The

QA representative signed off on the reports. In addition, the QC representatives supplemented the daily QC reports with photographs reinforcing the information provided in the daily reports. Further, the QC representatives were present for all significant structural concrete castings and testing and follow-up on the test results.

Government Quality Assurance

The USACE ER 1110-1-12 and GRD policy “Quality Assurance through Visits at Construction Worksites” specifies the requirements for a government QA program. Similar to the QC program, a crucial oversight technique is presence at the construction site.

The KRO, which is responsible for construction oversight of the abattoir project, employs local-national Iraqi engineers as QA representatives to visit the project site daily and write daily QA reports. In addition, KRO representatives visited the project site approximately every two weeks to verify the contractor’s work and mentor the local QA representatives. Since this project site is a 3-4 hour drive from KRO headquarters, the ability of KRO representatives to visit the site depends on the availability of personal security detail escorts.

Local-national QA representatives monitored field activities and completed daily QA reports, which were reviewed by the KRO project engineer. 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 did an effective job identifying and correcting construction deficiencies at the project site.

Project Sustainability

The SOW included a number of sustainability elements to assist the Director General of Health for the Sulaymaniya province in operating this project after turnover:

Operations and Maintenance Support

The SOW requires the contractor to provide operations and maintenance support for all facilities and equipment installed, constructed, or rehabilitated in the scope of this project. This support will be provided during the construction, start-up, and commissioning phases of the project.

Warranty of Construction Work

The contract states that the warranty for construction work continues for a “period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.”

Warranties

The contractor is required to provide and certify warranties in the name of the appropriate ministry of all materials or equipment—including any mechanical, electrical, and/or electronic devices—and all operations for 12 months after the final acceptance of the project. In addition, the contractor must provide any other

commonly offered extended warranties for material, equipment, and machinery purchased.

As-built Drawings

The SOW required the contractor, upon completion of each facility under this contract, to prepare and furnish as-built drawings. The as-built drawings will record the construction as installed and completed by the contractor and will include all information shown on the contract set of drawings. They will also include all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work—, including all additional work not appearing on the contract drawings, and all changes made after any final inspection of the contract work. If the contractor accomplishes additional work that changes the as-built conditions of the facility after submission of the final as-built drawings, the contractor must furnish revised and/or additional drawings and drawing files to depict the final as-built conditions.

Submittals

The contract required the contractor to provide submittals, which include the contractor or manufacturer's drawings, catalogue cuts, diagrams, operating charts, test reports, test cylinders, certifications, and warranties.

Conclusions

1. Determine whether project components were adequately designed prior to construction or installation.

The U.S. Army Corps of Engineers Gulf Region North (GRN) Kirkuk Resident Office (KRO) provided SIGIR with the project designs for the abattoir project, including site utilities. The general site design showed the general layout of the site, including the location of the buildings and parking areas, security fence, site utilities, site lighting, and landscaping. The architectural plans identified the location, dimensions, and proposed uses of various spaces within the facility. The architectural plans appeared complete and contained detailed information for the buildings and individual rooms. In addition, the overall design demonstrated a high level of planning between the contractor and the KRO. For example, the contractor designed the project to have separate waste disposals—one for small amounts of human waste (from the bathroom) and another for the animal product wastes (blood, excreta, etc). Since the animal wastes pose significant health hazards, it is necessary to separate it from the smaller amount of human waste. The animal waste will be collected in tanks and be sent away for proper handling and disposal.

Overall, the design submittals appeared to contain adequate detail to construct the facility and the various systems within the facility.

2. Determine whether construction or rehabilitation is in compliance with the standards of the design.

At the time of the site visit, the project was approximately 35-40% complete; consequently, construction work on the abattoir was still ongoing. In general, the observed construction work appeared to meet the standards of the Statement of Work. SIGIR identified two construction deficiencies—an incomplete expansion joint system

for the facility's exterior and interior floor and parapet¹¹ and an improperly constructed riser for a concrete stair unit that caused a tripping hazard. As a result of the persistence of the KRO, the contractor has already taken corrective actions to remedy these deficiencies.

Aside from these two construction issues, SIGIR concluded that the construction work exhibited good quality material and above average workmanship and attention to detail.

3. Determine whether adequate quality management programs are being utilized.

The contractor's quality control (QC) management program was effective. The contractor instituted a three-phase QC control system (preparatory, initial, and follow-up phases) to ensure that construction complies with the requirements of the contract. The contractor submitted QC reports on a daily basis, which were reviewed by the KRO project manager. The QC representatives supplemented the daily QC reports with photographs that reinforced the information provided in the daily reports. Further, the QC representatives were also present for all significant pours and testing and followed up on the test results.

The government quality assurance (QA) program was effective in monitoring the contractor's QC program. The KRO QA representative maintained daily QA reports that documented any deficiencies noted at the site. For example, the QA representative also identified and documented the contractor's construction deficiency with the concrete stair unit riser that SIGIR found. Based on SIGIR's review, the QA representative's reports were sufficiently complete, accurate, and timely. In addition to containing project-specific information to document construction and highlight deficiencies, the QA representative also supplemented the QA reports with detailed photographs that reinforced the narrative information.

In addition, when construction deficiencies were identified, the KRO quickly contacted the contractor to determine corrective actions to remedy the issues. The KRO's QA program is ensuring the successful completion of the abattoir project.

4. Determine if sustainability is addressed in the contract or task order for the project.

Sustainability was addressed in the contract requirements. The Statement of Work included sustainability elements to assist the Iraqi ministry ultimately responsible for operating this project after turnover. The contract requires the contractor to provide a warranty for construction work for a period of one year after the date of final acceptance of the work. In addition, the contract specifications require the contractor to provide and certify warranties in the name of the appropriate ministry for all materials and equipment. 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. Determine if project results are or will be consistent with their original objectives.

To date, the abattoir project results are consistent with the original contract objectives. An abattoir presents significant health and environmental hazards to local communities because of the discharge of waste and highly polluted effluents. Before this project, the city of Qaladze did not have an abattoir to kill and process meat in a

¹¹ A parapet is a wall-like barrier at the edge of a roof, terrace, balcony, or other structure.

safe and sanitary environment. When construction is completed, this facility will benefit the 120,000 local city residents by providing them with access to fresh and processed meat produced in the most hygienic manner possible.

Recommendations

Since the KRO has already required the contractor to take corrective actions to the construction deficiencies SIGIR identified during the site visit, the draft report did not contain any recommendations for further action and comments on the draft report were not required.

Management Comments

Though not required, SIGIR received comments from the U.S. Army Corps of Engineers, Gulf Region Division, concurring with the draft report.

Evaluation of Management Comments

SIGIR appreciates the concurrence with the draft report by the U.S. Army Corps of Engineers. No additional comments are required.

Appendix A. Scope and Methodology

SIGIR performed this project assessment from April 2009 through October 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 auditor/inspectors.

In performing this Project Assessment SIGIR:

- Reviewed documentation to include the following: contracts, notice to proceed, Statement of Work, and quality assurance/quality control reports;
- Reviewed the design package (plans) and photographs documenting construction progress;
- Interviewed U.S. Army Corps of Engineers Gulf Region North personnel; and
- Conducted an on-site assessment on 21 June 2009 and documented results at the abattoir (slaughterhouse) project in Qaladze, Sulaymaniyah, Iraq.

Scope Limitation. The Sulaymaniyah province is significantly safer than the rest of Iraq. This level of safety allowed SIGIR to inspect the entire project site without any restrictions for an extended amount of time (approximately three hours). The project was approximately 35-40% complete at the time of the site visit. The building systems—potable water distribution; wastewater conveyance/disposal; electrical power production and distribution; heating, ventilation, and air conditioning; fire alarm and suppression; and external security lighting system—were not completed at the time of the site visit, and some had not yet started. Therefore, a functional assessment of the facility was not possible; SIGIR performed an assessment of the work that was partially completed.

Appendix B. Acronyms

ER	Engineering Regulation
ESF	Economic Support Fund
GRD	Gulf Region Division
GRN	Gulf Region North
km	kilometer
KRG	Kurdistan Regional Government
KRO	Kirkuk Resident Office
m	meter
QA	quality assurance
QC	quality control
SIGIR	Special Inspector General for Iraq Reconstruction
SOW	Statement of Work
USACE	U.S. Army Corps of Engineers

Appendix C. Report Distribution

Department of State

Secretary of State

Senior Advisor to the Secretary and Coordinator for Iraq

Director of U.S. Foreign Assistance/Administrator, U.S. Agency for
International Development

Director, Office of Iraq Reconstruction

Assistant Secretary for Resource Management/Chief Financial Officer,
Bureau of Resource Management

U.S. Ambassador to Iraq

Director, Iraq Transition Assistance Office

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

Inspector General, Department of State

Department of Defense

Secretary of Defense

Deputy Secretary of Defense

Under Secretary of Defense (Comptroller)/Chief Financial Officer

Deputy Chief Financial Officer

Deputy Comptroller (Program/Budget)

Deputy Assistant Secretary of Defense-Middle East, Office of Policy/International
Security Affairs

Inspector General, Department of Defense

Director, Defense Contract Audit Agency

Director, Defense Finance and Accounting Service

Director, Defense Contract Management Agency

Department of the Army

Assistant Secretary of the Army for Acquisition, Logistics, and Technology

Principal Deputy to the Assistant Secretary of the Army for Acquisition,
Logistics, and Technology

Deputy Assistant Secretary of the Army (Policy and Procurement)

Commanding General, Joint Contracting Command-Iraq/Afghanistan

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

Commanding General, Multi-National Force-Iraq

Commanding General, Multi-National Corps-Iraq

Commanding General, Multi-National Security Transition Command-Iraq

Commander, Joint Area Support Group-Central

Other Federal Government Organizations

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Comptroller General of the United States
Inspector General, Department of the Treasury
Inspector General, Department of Commerce
Inspector General, Department of Health and Human Services
Inspector General, U.S. Agency for International Development
President, Overseas Private Investment Corporation
President, U.S. Institute of Peace

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Senate Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Foreign Relations
Senate Committee on Homeland Security and Governmental Affairs

U.S. House of Representatives

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

Appendix D. 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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