

BORDER FORTS  
NUMBERED 602, 604,  
628, AND 634  
SULAYMANIYAH, IRAQ

**SIGIR PA-05-021**

**SIGIR PA-05-022**

**SIGIR PA-05-023**

**SIGIR PA-05-024**

**JANUARY 31, 2006**



## SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION

January 31, 2006

MEMORANDUM FOR COMMANDER, GULF REGION DIVISION, U.S. ARMY  
CORPS OF ENGINEERS AND DIRECTOR, PROJECT  
AND CONTRACTING OFFICE  
COMMANDER, JOINT CONTRACTING COMMAND-  
IRAQ/AFGHANISTAN  
DIRECTOR, IRAQ RECONSTRUCTION MANAGEMENT  
OFFICE

SUBJECT: Report on Project Assessments of Border Forts Numbered 602, 604, 628, and 634 in Sulaymaniyah, Iraq (Report Numbers SIGIR PA-05-021, PA-05-022, PA-5-023, and PA-05-024)

We are providing this project assessment report for your information and use. We assessed the in-process construction work being performed at Border Forts Numbered 602, 604, 628, and 634 in Sulaymaniyah, Iraq to determine their status and whether intended objectives will be achieved. These assessments were made to provide you and other interested parties with real-time information on the relief and reconstruction projects underway and in order to enable appropriate action to be taken if warranted. The assessment team included an engineer and an auditor.

We discussed the results of this project assessment with representatives of the Project and Contracting Office, Gulf Region Division of the U.S. Army Corps of Engineers, and Joint Contracting Command-Iraq/Afghanistan who concurred with our conclusions. This report includes no recommendations that required management comments.

We appreciate the courtesies extended to our staff. This letter does not require a formal response. If you have any questions please contact Mr. Brian Flynn at (703) 343-9149 or [brian.flynn@iraq.centcom.mil](mailto:brian.flynn@iraq.centcom.mil) or Mr. Michael Stanka, P.E., at (703) 343-9149 or [michael.stanka@iraq.centcom.mil](mailto:michael.stanka@iraq.centcom.mil).

A handwritten signature in black ink that reads "Stuart W. Bowen, Jr." with a period at the end.

Stuart W. Bowen, Jr.  
Inspector General

# Special Inspector General for Iraq Reconstruction

SIGIR PA-05-021  
SIGIR PA-05-022  
SIGIR PA-05-023  
SIGIR PA-05-024

January 31, 2006

## Border Forts Numbered 602, 604, 628, and 634 Sulaymaniyah, Iraq

### Synopsis

**Introduction.** This project assessment was initiated as part of our continuing assessments of selected sector reconstruction activities for Facilities and Transportation. The overall objectives are to determine whether selected sector reconstruction contractors are complying with the terms of their contracts or task orders and to evaluate the effectiveness of the monitoring and controls exercised by administrative quality assurance and contract officers. This project assessment was conducted in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included a professional engineer and an auditor.

**Project Assessment Objectives.** The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project results will be consistent with original objectives;
2. Project components were adequately designed prior to construction or installation;
3. Construction or rehabilitation met the standards of the design;
4. Contractor's Quality Control plan and the U.S. Government's Quality Assurance program were adequate; and
5. Project sustainability was addressed.

**Conclusions.** The assessment determined that:

1. The completed project will not meet or be consistent with the original objective to complete and commission border denial posts. Specifically, the border forts were not constructed with the perimeter security requirements. The jail facility, generator units, fuel tanks, and water system are not secured, and there are no physical restrictions preventing access to the walls of the border post.
2. The contractor was required to design and construct 57 border posts under Task Order 36. The contractor's design for the structural I-beam construction was inadequate for this project. The contractor did not prepare a properly designed facility, and the contractor's drawings were not submitted and approved by the Project and Contracting Office.

3. The construction of the border posts did not meet the standards of the design. In particular, undersized and under strength I-beams were used in construction of the border posts that resulted in requiring a design modification and retrofit of the I-beams.
4. The Border Posts contract specified a requirement for a Contractor Quality Control plan. A Contractor Quality Control plan was submitted to the U.S. Government; however, the Contractor Quality Control was deficient. The contractor did maintain Quality Control daily reports and test results, which could be accessed by the U.S. Government. The Quality Assurance (QA) program was adequate due to the Quality Assurance Representative being on-site during rehabilitation and reconstruction events, monitoring field activities, and completing daily Quality Assurance reports. In addition, the Quality Assurance Representative's reports were sufficiently complete and included project specific information in the reports. The QA Representative did not maintain deficiency logs and the QC deficiency logs did not adequately identify construction problems.
5. Sustainability coverage under the current contract appears adequate for the operation of the border forts. The contract included the turnover of the operation and maintenance manuals; training; a one year warranty for all mechanical and electrical systems and devices after the issuance of the Taking-Over-Certificate; providing any other commonly offered extended warranties for equipment and machinery purchased; spare repair parts; and the as-built drawings.

**Recommendations:** The Project and Contracting Office should:

1. Complete perimeter security requirements as stated in the objectives.
2. Develop and implement stringent design reviews for construction projects, especially when a single design is used for multiple facilities.
3. Increase on-site monitoring of construction projects for both the government and contractors to decrease construction deficiencies, especially during critical phases of construction.
4. Ensure the contractor provides adequate Quality Control plans for future contracts.

**Management Comments.** The Commander, Gulf Region Division (GRD), concurred with the project assessments and provided the following comments:

1. It was determined by the Client, the Department of Border Enforcement (DBE), that the requirement was only needed at seven forts. Many of the forts had existing berms/fences. A contract modification is pending to de-scope the remainder of the berms/fences from the contract.
2. The Border Fort Program is now 98 percent complete and all design reviews have been finished.

3. The Border Fort Program is now 98 percent complete and GRD/Project and Contracting Office (PCO) has increased on-site monitoring along with the contractor.
4. The Border Fort Program is now 98 percent complete and all remaining quality control reviews are now on going with strict attention to detail by the contractor and the GRD/PCO.

The Principal Assistant Responsible for Contracting at the Joint Contracting Command – Iraq/Afghanistan concurred with the project assessments and provided the following comments.

1. If funding is re-instated, then perimeter security objectives will be re-instated and completed.
2. Concur.
3. GRD, which has been assigned Administrative Contracting Officer authority, is responsible for and provides quality assurance during all stages of construction. In addition, GRD is provided a 4% fee to manage the project construction.
4. GRD has been assigned ACO authority to approve the contractor's quality control plan and provide quality assurance throughout construction.

**Evaluation of Management Comments.** Management comments addressed the issues raised in our conclusions and actions taken should correct the deficiencies. We agreed with an additional management statement that the contractor does not unilaterally revise the scope of a contract. Therefore, we revised this final report accordingly.

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# **Introduction**

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## **Objective of the Project Assessment**

The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project results will be consistent with original objectives;
2. Project components were adequately designed prior to construction or installation;
3. Construction or rehabilitation met the standards of the design;
4. Contractor's Quality Control Plan and the U.S. Government's Quality Assurance Program were adequate; and
5. Sustainability and operational effectiveness were addressed.

## **Pre-Site Assessment Background**

### **Contract, Task Order, and Costs**

The Border Forts project will be completed under Task Order (TO) 0036 of Contract W914NS-04-D-0009.

Contract W914NS-04-D-0009, dated 26 March 2004, was a design-build, indefinite delivery, indefinite quantity guaranteed minimum of all orders under this contract, including all option periods (base period of two years and three one-year options) is \$500,000, and the maximum total of this contract, including any option periods is \$900,000,000. The contract was between the Coalition Provisional Authority and Parsons Delaware Inc., Pasadena, California. There are currently 14 modifications to the initial contract.

- Modification # A00001, issued 8 April 2005, executed a business name change in accordance with Federal Acquisition Register 42.12. The contractor's name is changed from Parsons Delaware, Inc to Parsons Global Services, Inc. The obligation amount remains unchanged.
- Modification # P00001, issued 6 April 2005, transferred Contracting Officer authority from Marsha F. Rudolph to LTC Scott Kiser. All other terms and conditions remain unchanged.
- Modifications # P00001/2, issued 3 August 2004, included the language for processing invoices. The modifications do not increase or decrease the total amount of the contract.
- Modification # P00003, issued 13 August 2004, corrected the modification number on the last modification issued (dated 3 August 2004) from P00001 to P00002. The modification does not increase or decrease the total amount of the contract.
- Modification # P00004, issued 18 October 2004, was an administrative modification, which transferred administrative responsibility for the contract's issued task orders to the U.S. Army Corps of Engineers (USACE) Gulf Region

- Division (GRD). The Contracting Officer reserves the right to modify the delegation of specific task orders. The modification does not increase or decrease the total amount of the contract.
- Modification # P00005, issued 20 October 2004, incorporated the Letter of Instruction regarding procedures concerning hostage reporting into the contract. The modification does not increase or decrease the total amount of the contract.
  - Modification # P00006, issued 8 November 2004, incorporated the revised Award Fee Plan, while changing the current Award Fee Period. The initial award fee period was extended to 26 December 2004. The current period will be followed by a three-month period (26 December 2004 to 25 March 2005), then the six month award fee period will resume. The modification does not increase or decrease the total amount of the contract.
  - Modification # P00007, issued 3 December 2004, incorporated the following clauses: Subcontracts (Alternate I), Competition in Subcontracting, and Inspection of Services – Cost Reimbursement to the contract. In addition, the warranty language in the Task Order is restricted to commercial warranties provided by the original equipment manufacturer. The modification does not increase or decrease the total amount of the contract.
  - Modification # P00008 was not located in the contract file. The Project and Contracting Office (PCO), the USACE Area Engineer (AE), Resident Engineer (RE), Quality Assurance Representative (QAR), and Parsons Task Manager were contacted regarding Modification #P00008, but were unable to locate the modification.
  - Modification # P00009, issued 4 August 2005, incorporated the Contract Clause Defense Federal Acquisition Regulations 252-245.7001 Reports of Government Property (May 1994) in the contract. The modification does not change the cost in funding.
  - Modification # P00010, issued 8 August 2005, transferred administrative responsibility for this contract’s task orders issued to the USACE GRD’s District offices directly, in accordance with the Memorandum of Understanding between the Joint Contracting Command-Iraq/Afghanistan (JCC-I/A) – Principle Assistant Responsible for Construction – Reconstruction and GRD Business Management Director, signed 21 July 2005. The Contracting Officer retains the right to modify or terminate delegation for specific task orders at any time.
  - Modification # P00011, issued 25 August 2005, further amended the previously amended Award Fee Plan, Attachment 5 of the Base Contract, pages 148-150 of 150. The changes are made unilaterally and are effective for the Award Fee Period commencing after 26 September 2005. The modification does not change the cost in funding.
  - Modification # P00012, issued 26 October 2005, added to the Statement of Work (SOW) the following sentence: “Contractor may obtain fuel from Government sources, when available, in support of this contract.” The modification does not increase or decrease the total amount of the contract.
  - Modification # P00013, issued 29 October 2005, rescinded Modification #P00012, effective date of 26 October 2005. Modification #P00012, effective date 26 October 2005, transferred one Toyota Land Cruiser Armored vehicle from



Contract W914NS-04-D-009 to Contract W914NS-04-D-006. There is no change to Modification #P00012, effective date 26 October 2005, to obtain Government fuel, if available. The modification does not increase or decrease the total amount of the contract.

- Modification # P00014, issued 27 November 2005, changed the word “fifth” in Section 00020 SOW, Paragraph 2.3.5 to “twentieth”. The modification does not change the cost in funding.

TO 0036 was a design/build, Not-To-Exceed (NTE) \$36,525,974, task order for work associated with the GRD North Class C Border Forts in Sulaymaniyah<sup>1</sup>, Iraq. Additionally, TO 0036 was to build approximately 100 Class C Border Posts to be used as a base of operations for border police along the Iraqi border. The TO 0036 included site surveys, site preparation, design/build and commissioning of border posts for sustained operation, site clearing/grubbing/demolition of unsalvageable structures and removal of rubble, interior drainage, develop or improve basic road access from the nearest access road to the facility entrance, and install communication systems. There are currently five modifications to TO 0036.

- Modification # 01, issued 16 October 2004, increased the amount in the Limitation of Government Liability Clause for \$12,784,091 from \$5,478,896 to \$18,262,987.
- Modification # 02 issued 20 October 2004, changed the Statement of Work (SOW). The modification does not increase or decrease the total amount of the contract.
- Modification # 03, issued 9 December 2004, definitized the task order and fully funded the task order. The completion date for this task order is 20 March 2005. The estimated cost for the design/build is \$31,237,702. The base fee for the GRD North Class C Border Points is \$933,408. The Award Fee for the CPAF is \$3,729,039. The total is \$35,900,149.
- Modification # 04, issued 15 May 2005, put immediately Stop Work Orders on the following Border Forts: SBIN 600, SBIN 609, SBIN 616, and SBIN 620 (GRD North Class “C” Border Forts). In addition, the Stop Work Order applies to all subcontracts issued on the work not completed. All necessary steps to mitigate the cost to the Government shall be taken, which includes: canceling purchase orders placed that can be terminated for supplies, materials, or services not received by the date of the Stop Work Order; not placing any new orders; removing contractor personnel from working on this work item; and not allowing contractor personnel to perform any work in a “standby mode” for this work item.
- Modification # 05, issued 14 August 2005, clarified that four border forts (600, 609, 616, and 620) had been removed from the SOW of Contract W914NS-04-D-0009. In addition, Border Fort 640 had been de-scoped for the convenience of the Government.

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<sup>1</sup> Due to the various spellings for governorates in Iraq, and in an effort to achieve standardization in SIGIR reports, Al Sulaymaniyah, as noted in project documentation will henceforth be referred to as Sulaymaniyah.

On 17 September 2005, the JCC-I/A issued a Cure Notice to Parsons Global Services, Iraq for Contract W914NS-04-D-0009, TOs 34 and 36. The U.S. Government notified Parson that the quality control (QC) on the Border Fort Program was endangering the performance of the contract, and if the condition was not cured within ten days the U.S. Government may terminate the contract. The cure notice had not been resolved at the time of the site assessment.

Although final contracting action included the construction of 57 border denial posts, this assessment addresses only four of the 57 posts - Marwa #628, Issawa #604, Safrah #634, and Azmick #602. According to the 29 October 2005 PCO Construction Database, the individual project costs were listed as the following: Safrah #634 - \$271,912.30, Marwa #628 - \$271,912.30, Azmick #602 - \$274,631.50, and Issawa #604 - \$271,912.30.

### **Project Objective**

The overall objective of the original contract Task Order SOW was to “build sixty-eight new border denial points along the Iraq-Iran border in Sulaymaniyah and Diyalia Governorates.” (Modification 02 of TO 36). The number of border denial points was de-scoped to 57 border denial posts (Modification 04 of TO 36). The specific objective is the construction and commissioning of the 57 new border denial points in Sulaymaniyah.

### **Description of the Facility (preconstruction)**

The description of the facilities (preconstruction) is based on information obtained from the PCO project manager, the contract, and the USACE project files. All four border denial points are located on the Iraq/Iran border, approximately 30 kilometers (km) north of Sulaymaniyah, and approximately 325 km northeast of Baghdad. The locations of the four border denial forts are in the generally remote, mountainous region of northeast Iraq, although there is an unimproved road network to or near each of the forts. The elevation of the site locations range from 800 to 1000 meters (M) or (2624 to 3280 feet (ft)) above sea level. The sites are located on generally flat grades of the mountain ridges, and steeper grades on the side of the mountains. The locations of the sites were unimproved areas before construction, without utilities (electrical, water, and communications).

### **Scope of Work of the Task Order**

The TO contract SOW, located within Modification #02 of contract W914NS-04-D-0009, dated 20 June 2004, outlined general requirements for the construction of the border denial forts. The SOW states, "It is expected that Class C Border Posts will be built in the traditional 'fort style' unless site conditions dictate otherwise." Specific tasks include: site surveys, site preparation, design/build, and commissioning of new border denial points ready for sustained operation. Specific construction activities for the four border forts assessed include:

- Construct perimeter security;
- Construct border post facility;
- Construct jail facility;
- Supply and install electrical generators;
- Supply and install sanitary and water systems;
- Supply and install mechanical systems;
- Construct covered automobile parking area; and
- Construct access roads.

### **Current Project Design and Specifications**

The SOW requires the contractor to submit all designs, design changes, drawings, specification, and manufacture's submittals to the SPMO (Sector Project Management Office) and Resident/Project Engineer for review and approval. The contractor was required to submit 30% and 90% design submittals and as-builts. Specification requirements were not directly required in the contract.

The contract's SOW lists the following Codes and Standards, although it states "Significant deviations from the following codes are anticipated. Material used in this project is currently found on the local Iraqi market."

- International Building Code,
- International Existing Building Code,
- International Mechanical Code,
- International Electrical Mechanical Commission,
- International Plumbing Code,
- International Fire Code,
- National Fire Protection Agency,
- Sheet Metal and Air Conditioning Contractor's National Society,
- Underwriter's Laboratories,
- ASTM,
- SAME, and
- ASHRAE 52.

The following is based on a review of the contract requirements and the design and design modifications, discussions with the USACE Area and Resident Engineers, contractor, and the PCO representatives. The contractor completed design drawings for a reinforced concrete column and beam constructed border fort. In order to reduce the time

schedule, the contractor proposed the concept of replacing the concrete columns and beams with structural steel I-beams. The contractor prepared 90% design drawings for the structural steel construction; there is no record that the PCO reviewed or approved of the design changes. The design calculations used for the structural steel design did not include snow load requirements and the drawings did not specify the type of steel required.

During construction, the USACE QAR and Area and Resident Engineers observed that the roof support horizontal I-beams were deflecting under the weight of the roofing material and that some of the I-beams were installed improperly. Further investigation determined that the I-beams were smaller than design requirements and that normal strength A36 steel was used instead of high strength A50 steel.

The Contracting Officer issued a Cure Notice, dated 17 September 2005, that identified Contractor Quality Control (CQC) deficiencies and design deviations. The Cure Notice stated, "Specifically, concrete column and steel beam construction was noted in several sites even though no designs were provide[d] nor approved with that hybrid design." The Contracting Officer directed the contractor to "Provide [the] Contracting Officer with specific proposals for fixing these discrepancies."

The contractor prepared a response to the Contracting Officer's Cure Notice, and the contractor submitted subsequent design modifications to the PCO for review and approval. The design modifications incorporated steel I-beam retrofit for the upper and lower roof structures to reinforce the installed, undersized, and standard strength I-beams and to incorporate the additional snow load requirements.

The contractor did not submit separate specifications, although general specifications were annotated on the design drawings. The original design was based on A50 strength steel. The design drawings did not specify the required strength, thus contributing to the installation of incorrect strength steel.

Based on a review of the documentation, the original structural steel design drawings and specifications were not adequate to construct the border forts under this TO. The design was intended to reduce construction time; however, it resulted in increased time to construct, and therefore increased the total cost of the cost plus contract.

### **Reported Project Work Completed and Pending**

Prior to the site visit, we determined the project's status through discussions with the USACE Resident Engineer and QAR, as well as a review of the PCO contract file. According to the 29 October 2005, PCO Construction Database, the status of the following Border Denial Posts was listed as the following: Safrah #634 - 90%, Marwa #628 - 75%, Azmick #602 - 75%, and Issawa #604 - 83%.

## Site Assessment

On 26 October 2005, we performed on-site assessments of four Border Denial Posts. The four posts were Safrah #634, Marwa #628, Azmick #602, and Issawa #604. Work was being accomplished by the contractor at all four locations during the site assessments. The site assessments included an evaluation of work completed, work in progress, and work pending. The USACE Area Engineer, QAR, and contractor representatives were on-site during site assessments. Several common construction issues were identified at all four border forts. The site assessment will summarize the common issues for the four border forts followed by individual assessments.

### **Common Construction Issues:**

#### Construct Perimeter Security

The contract required that “new perimeter security structures shall be built to a height of 2 meters. Installation of barbed wire or concertina wire in one to three rows angled toward the exterior shall be standard. Perimeter walls should be built on the property line, or as reasonably far away from the central building as practical. The goal of the perimeter wall is to provide a space buffer between the high value target and an intruder or threat at the wall” In addition, the contract required a 4 M wide solid (plate steel) locking vehicle gate and guard towers placed on the corners of the perimeter wall. The contractor’s design required a perimeter berm topped with “razor sharp wire” and a main entrance gate for “selected sites” only.

During the site visit, we identified that perimeter security walls, berms, concertina wire, and entrance gates were not constructed at the four border forts addressed in this site assessment. The USACE Resident Engineer and the PCO Project Manager stated that the contractor is not planning on installing perimeter security at these border posts, although there is no contracting documentation alleviating the contractor from the responsibility. In addition, the USACE Resident Engineer stated that the Iraqi Border Patrol Directorate General lists this as a mandatory requirement for force protection. Subsequently, the PCO Project Manager stated that the contract requirements for the perimeter security were being officially de-scoped due to funding issues from the TO. Only seven of the 57 border posts will receive perimeter security. The perimeter security requirements of the four sites evaluated under this assessment were included in the de-scoping of the TO. Perimeter security is still a requirement for the border forts and the PCO Project Manager stated the perimeter security may be funded through alternate sources.

#### Front entrance doors

The contractor’s design required the installation of metal front entrance doors with dimensions of 200 centimeters (cm) (78.7 inches (in) by 275 cm (108.2 in). During the site visit, the entrance doors at the four border forts measured 59” wide by 108” tall. The doors installed were 20 inches narrower than the design required.

### Structural Steel construction

The contract and design required the construction of structural steel I-beam columns and a steel I-beam frame on reinforced concrete footings. The four border forts are scheduled for structural steel retrofit to reinforce the installed undersized and standard strength I-beams and to incorporate the additional snow load requirements. The retrofit of the structural I-beams had not commenced at the time of the site visit. The site visit revealed that several of the I-beam columns were not installed plumb and that some of the I-beam lateral members were not properly aligned. See Site Photos 1 and 2, for an illustration of I-beam columns not installed plumb at the Marwa and Issawa Border Posts. See Site Photo 3 for an illustration of an I-beam lateral member not properly aligned. Improper installation of the structural I-beams will decrease the design strength of the structure. The Contractor Project Manager said the I-beams would be re-installed correctly when the structural steel retrofit is done.



**Site Photo 1. Steel I-Beam Columns – Not Plumb (Marwa #628 Border Post)**



**Site Photo 2. Steel I-Beam Columns – Not Plumb (Issawa #604 Border Post)**



**Site Photo 3. I-Beam Lateral Member Not Properly Aligned (Marwa #628 Border Post)**

### Construction Welding

The design required field welding for the structural steel construction of the border forts, as well as the construction of the steel framed corrugated steel covered generator shed, automobile parking area, and roof mounted water tanks. During the site visit, we identified numerous areas where the fabrication was incorrectly completed, and the welds appeared incomplete and of poor workmanship.

See Site Photo 4 for an illustration of the bearing plate used for the canopy structure of the roof-mounted water tanks at the Azmick Border Post. A lateral I-beam member which appeared to be cut short and then welded together at the Issawa Border Fort can be seen in Site Photo 5. An illustration of a channel section to channel section connection where the fabrication cuts did not produce adequate areas for welding at the Marwa #628 Border Post is shown in Site Photo 6. Shown in Site Photo 7 is scrap metal placed in the voids and welded also at the Marwa #628 Border Post. Site Photo 8 shows incomplete welds between the bearing plate and tubular steel column at the Safra Border Post.

The steel generator shed, automobile parking area, and roof-mounted water tanks had a common construction deficiency. At several locations, the upper column bearing plate was only connected to the I-beam on one edge because the tubular steel columns were not properly angled resulting in a decrease in the strength of the connection due to less welded area. For illustrations of the upper column bearing plate being connected on one edge at the Issawa Border Post (Site Photos 9 and 10).



**Site Photo 4. Bearing Plate on Roof-Mounted Water Tank Canopy  
(Azmick #602 Border Post)**



**Site Photo 5. Lateral I-Beam Member – Cut Short and Welded  
(Issawa #604 Border Post)**





**Site Photo 6. Channel Section to Channel Section Connection  
(Marwa #628 Border Post)**



**Site Photo 7. Channel Section to Channel Section Connection  
(Marwa #628 Border Post)**



**Site Photo 8. Upper Column Bearing Plate Showing Incomplete Welds  
(Safrah #634 Border Post)**



**Site Photo 9. Upper Column Bearing Plate Only Connected On One Edge  
(Issawa #604 Border Post)**



**Site Photo 10. Upper Column Bearing Plate Only Connected On One Edge  
(Issawa #604 Border Post)**

#### **Project site work reported underway**

The USACE Resident Engineer and QAR developed a punch list of pending items required for the contractor to complete the contract. The punch list items included repairs or reworking of particular deficiencies.

#### **Project site work pending**

At the time of the site visit, the retrofit of the structural steel I-beams on the upper and lower roof had not commenced. Retrofit of I-beams is required because of the installation of undersized I-beams and the inadequate live loads used in the design calculations. Snow loads were not added to the live loads during the calculations for the structural steel requirements for the facility. The retrofit design and updated welding QC plan were being submitted to the PCO for review and approval.

#### **Safrah #634**

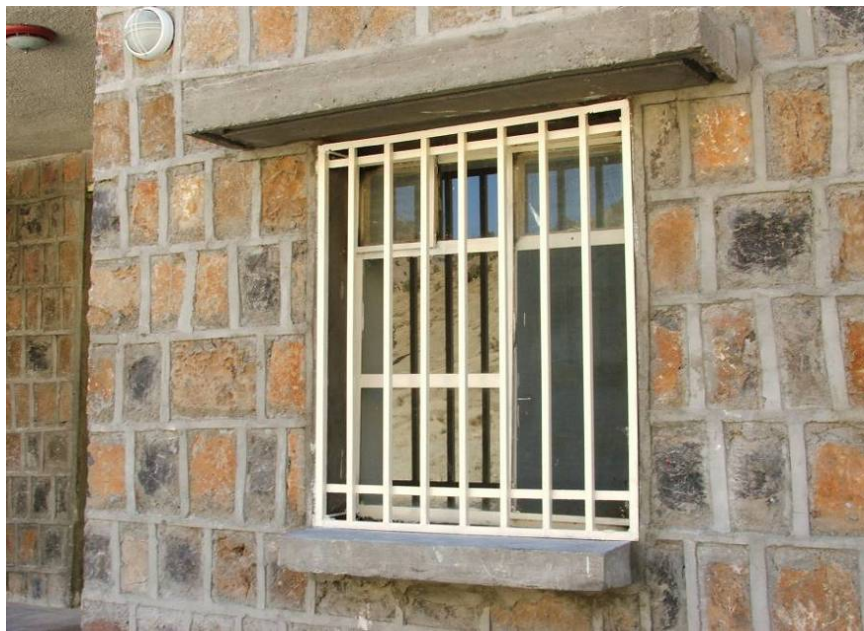
##### **Construct border post facility**

The contract and design required the construction of structural steel I-beam column and steel I-beam frame on reinforced concrete pad with concrete-filled block covered by gypsum plaster and paint or stone exterior. The design required the interior walls to be block with gypsum plaster and paint and the border post outside dimensions to be 20.250 M (66.4 ft) by 25.00 M (82.0 ft). The border post included 11 interior rooms, a central 1.5 story atrium, and corner turrets. Interior rooms were for weapons storage, communications, toilet facilities, kitchen facilities, offices, and bedrooms. Electrical/mechanical requirements included a circuit breaker box, electrical outlets, ceiling fans, lighting, and A/C units.

During the site visit, we verified that the facility was constructed with stone exterior and that the construction of the facility was completed. Electrical lights and fans were operational at the time of the visit. Site Photo 11 depicts the exterior front of the border fort facility. See Site Photo 12 for an illustration of the exterior window with metal bars located immediately left of the main entrance. See Site Photos 13 and 14, respectively for the interior room with lights and ceiling fan operational and the interior stairwell. Site Photos 15 and 16, respectively, show the interior atrium and the exterior of the atrium. See Site Photo 17 for an illustration of the roof turret .



**Site Photo 11: Exterior front view (Safrah #634 Border Post)**



**Site Photo 12. Exterior Window with Metal Security Bars (Safrah #634 Border Post)**



**Site Photo 13. Interior Room (Safrah #634 Border Post)**



**Site Photo 14. Interior Stairwell (Safrah #634 Border Post)**



**Site Photo 15. Interior Atrium (Safrah #634 Border Post)**



**Site Photo 16. Exterior View of Atrium – Second Level  
(Safrah #634 Border Post)**



**Site Photo 17. Parapet Corner Turret on Roof  
(Safrah #634 Border Post)**

Construct jail facility

The contract and design required the construction of a reinforced concrete pad with exterior walls of concrete filled block covered by gypsum plaster and paint. The jail facility's outside dimensions were required to be 7.300 M (24.0 ft) by 4.500 M (14.8 ft). The interior of the jail facility included a holding area and toilet facility. Electrical requirements included a ceiling fan and lighting. During the site visit, we verified that construction of the complete outside dimension measurements were 27.0 ft by 14.6 ft. We confirmed that interior and exterior lights were operational. Site photo 18 shows the jail facility from the roof of the border post. Site Photo 19 shows the interior holding area.



**Site Photo 18. Jail Facility (Safrah #634 Border Post)**



**Site Photo 19. Interior Holding Area of Jail Facility  
(Safrah #634 Border Post)**

#### Supply and install electrical generators

The contract and design required the installation of a generator and standby generator rated at 60 percent of the rated power of the main service panel and fuel storage tanks. The generators were to be mounted on a concrete reinforced pad with a metal framed wire mesh enclosure with a corrugated roofing system. During the site visit, we verified that two generator units were installed on a concrete pad with metal enclosure. In addition, two fuel tanks were installed on concrete pads. The fuel tank measured 18.25 ft (5.6 M) long and 5.1 ft (1.6 M) in diameter. The generators were operating under load at the time of the site visit.

The generator nameplates listed the following information:

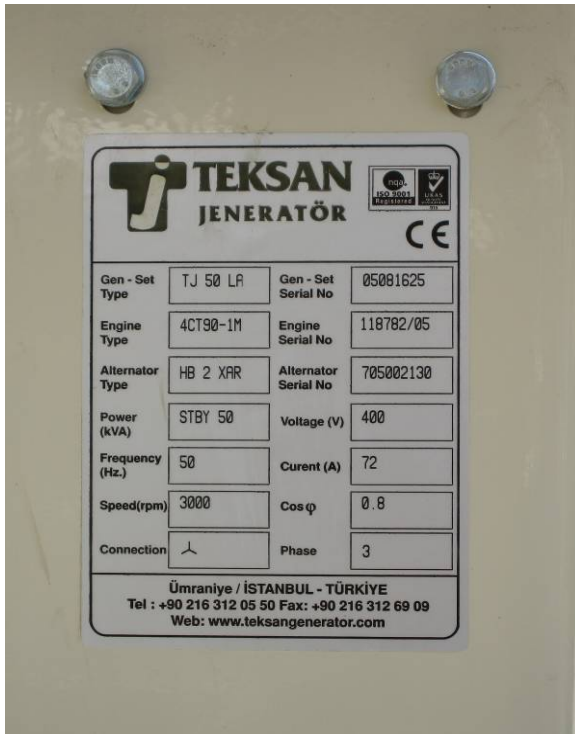
- Name – Teksan;
- Gen Set type – TJ 50 LR;
- Engine type - 4CT90-IM;
- Power (kVA) STBY 50;
- Voltage – 400;
- Alternator type – 4CT90-1M;
- Gen-Set serial number – 05081625 and 05081629;
- Engine Serial No 118782/05 and 118778/05; and
- Alternator Serial No: 705002130 and 705002134.



Site Photo 20 shows the two generator units, metal enclosures, and two fuel storage tanks. Site Photos 21 and 22 show the factory nameplates of the generator units.



Site Photo 20. Two Generator Units, Metal Enclosures, and Fuel Tanks (Safrah #634 Border Post)



TEKSAN JENERATÖR		CE	
Gen - Set Type	TJ 50 LA	Gen - Set Serial No	05001625
Engine Type	4CT90-1M	Engine Serial No	118782/05
Alternator Type	HB 2 XAR	Alternator Serial No	705002130
Power (kVA)	STBY 50	Voltage (V)	400
Frequency (Hz.)	50	Current (A)	72
Speed (rpm)	3000	Cos φ	0.8
Connection		Phase	3
Ümraniye / İSTANBUL - TÜRKİYE Tel : +90 216 312 05 50 Fax: +90 216 312 69 09 Web: www.teksangenerator.com			



TEKSAN JENERATÖR		CE	
Gen - Set Type	TJ 50 LA	Gen - Set Serial No	05001629
Engine Type	4CT90-1M	Engine Serial No	118778/05
Alternator Type	HB 2 XAR	Alternator Serial No	705002134
Power (kVA)	STBY 50	Voltage (V)	400
Frequency (Hz.)	50	Current (A)	72
Speed (rpm)	3000	Cos φ	0.8
Connection		Phase	3
Ümraniye / İSTANBUL - TÜRKİYE Tel : +90 216 312 05 50 Fax: +90 216 312 69 09 Web: www.teksangenerator.com			

Site Photo 21 & 22. Generator Factory Nameplates (Safrah #634 Border Post)

### Supply and install water system

The contract and design required the installation of a water system. Design requirements for the water system included five 1,000 liter (L) insulated ground water tanks and three 1000 L insulated roof mounted water tanks. Metal framed corrugated roof coverings were required for both the ground and roof mounted water tanks. The design included two, ½ horsepower pumps and all associated piping and valves.

We verified the installation of the water system at the facility during the site visit. For an illustration of the three 1,000 L water storage tanks located on the roof of the border post and the five 1,000 L water storage tanks located within the covered parking area, see Site Photos 23 and 24, respectively. Site Photo 25 shows the two ½ horsepower water distribution pumps.

The location of the ground-mounted water storage tanks was not consistent with the design requirements. The ground-mounted tanks were to be located underneath a separate steel framed canopy. During the site visit, we identified that the tanks were located under the automobile parking steel canopy.



**Site Photo 23. Three Roof Mounted Water Storage Tanks  
(Safrah #634 Border Post)**



**Site Photo 24. Five Ground-Mounted Water Storage Tanks (Safrah #634 Border Post)**



**Site Photo 25. Two 1/2-Horsepower Pumps (Safrah #634 Border Post)**

### Supply and install sanitary system

The contract and design required the construction of two septic tanks and four soakaways for collection and disposal of wastewater, including all required associated pipes and fittings. During the site visit, we verified that the construction of two septic tanks and four soakaways was completed. Site Photo 26 shows the top cover surface of one of the septic tank with two access ports and Site Photo 27 shows one of the soakaways. The soakaway access port was made of concrete, appeared to be poorly constructed, and showed signs of deterioration.



**Site Photo 26. Septic Tank (Safrah #634 Border Post)**



**Site Photo 27. Access Hatch of Soakaway (Safrah #634 Border Post)**

### Construct covered automobile parking area

The contract required a covered automobile parking area consisting of a reinforced concrete slab with a steel framed structure and a corrugated steel canopy. We verified that the automobile parking area was constructed and observed no deviations from design drawings.



**Site Photo 28. Automobile Covered Parking Area (Safrah #634 Border Post)**

### Construct access roads

The contract required the contractor to “develop or improve basic road access from the nearest access road to the facility entrance to enable two wheel drive vehicles to pass.” The Safrah Border Post site is located close to an existing access road. During the site visit, we verified the access road with an underground culvert was constructed. Site Photo 29 shows the existing access road.



**Site Photo 29. Access Road with Installed Culvert (Safrah #634 Border Post)**

## **Marwa #628**

### **Construct border post facility**

The contract and design required a structural steel I-beam column and steel I-beam frame on a reinforced concrete pad with concrete-filled block covered by gypsum plaster and paint or stone exterior. The design required the interior walls to be blocked with gypsum plaster and paint, and the border posts outside dimensions to be 20.250 M (66.4 ft) by 25.00 M (82.0 ft). The border post included 11 interior rooms, a central 1.5 story atrium, and corner turrets. Interior rooms were for weapons storage, communications, toilet and kitchen facilities, offices, and bedrooms. Electrical/mechanical requirements included a circuit breaker box, electrical outlets, ceiling fans, lighting, and A/C units.

During the site visit, we verified that the facility was completed, that it was constructed with block exterior, and that the electrical systems were installed. Electrical power was not on during the site visit. Site Photo 30 shows the exterior front of the border fort facility and Site Photo 31 shows the roof, parapets, and flagpole.

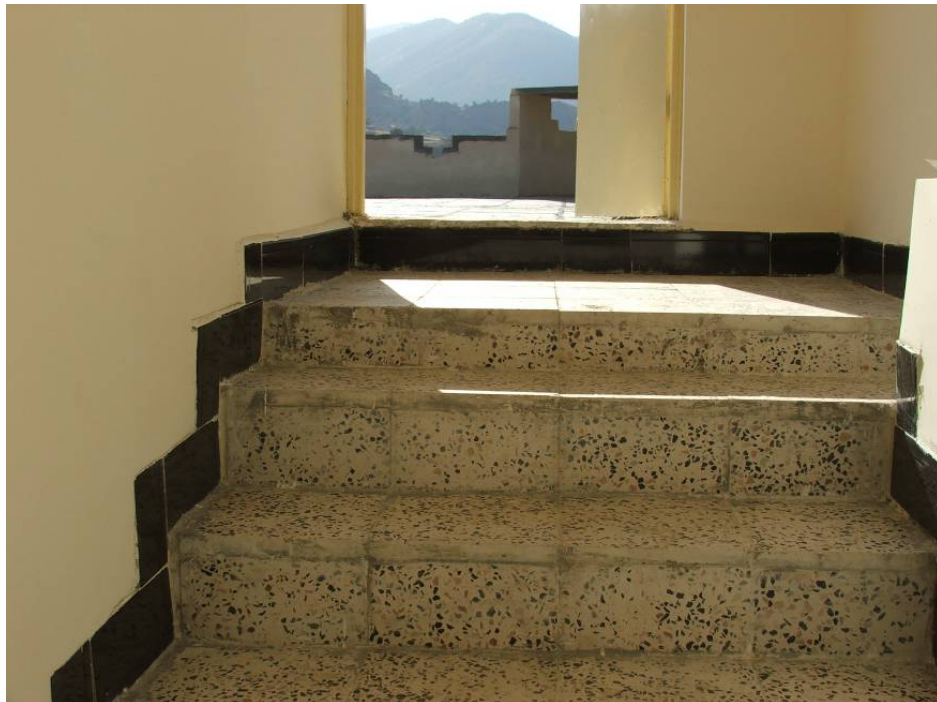


**Site Photo 30. Front Exterior View of Border Post  
(Marwa #628 Border Post)**



**Site Photo 31. Roof, Parapet, and Flagpole (Marwa #628 Border Post)**

The design required the rise for the steps or the internal stairwell to be 18.7 cm (7.4 in) and the run to be 30 cm (11.8 in). Based on measurements obtained during the site visit, the rise varied between 6 in and 9.5 in, although the run was consistent at 12 in. See Site Photo 32 for an illustration of the interior stairwell steps.



**Site Photo 32. Interior Stairwell Steps (Marwa #628 Border Post)**

### Construct jail facility

The contract and design required reinforced concrete footings and pad with exterior walls of concrete-filled block covered by gypsum plaster and paint. The exterior dimensions were required to be 7.300 M (24.0 ft) by 4.500 M (14.8 ft). The interior of the jail facility included a holding area and toilet facility. Electrical requirements included a ceiling fan and lighting. During the site visit, we verified that construction was complete and that the outside dimension measurements were 27.0 ft by 14.5 ft. For an illustration of the jail facility as seen from the roof of the border post, see Site Photo 33. During the site visit, it was noted that the external metal security bars did not sit properly within the window opening. For an illustration of the exterior window opening and security bars of the holding facility, see Site Photo 34.



**Site Photo 33. Exterior View of Holding Facility  
(Marwa #628 Border Post)**



**Site Photo 34. Metal Security Bars of Holding Facility  
(Marwa #628 Border Post)**



### Supply and install electrical generators

The contract and design required the installation of a generator and standby generator that rated at 60 percent of the rated power of the main service panel. In addition, the contract and design required fuel storage tanks. The generators were to be mounted on a concrete-reinforced pad with a metal-framed wire mesh enclosure with a corrugated roofing system. During the site visit, we verified two generator units were installed on a concrete pad with a metal enclosure and two fuel tanks were installed on concrete pads. The fuel tank measured 19.75 ft (6.0 M) long and 5.0 ft (1.5 M) diameter. During the site visit, the generators were not operating.

The generator nameplates listed the following information:

- Name – Staford;
- Gen Set type – VCZZ44D1;
- Power (kVA) 46;
- Voltage – 415;
- Gen-Set serial number – 04121698 and 08080393; and
- Engine Serial (Perkins) No HC50793L04 and HC507666L04.

For an illustration of the two generator units, the metal enclosures, and one of the two fuel storage tanks, see Site Photo 35.



**Site Photo 35. Generator and Fuel Tank (Marwa #628 Border Post)**

### Supply and install water systems

The contract and design required the installation of a water system. Design requirements for the water system included five 1,000 L insulated ground water tanks and three 1,000 L insulated roof mounted water tanks. Metal-framed corrugated roof coverings were required for the ground and roof-mounted water tanks. The design included two ½-horsepower pumps and all associated piping and valves.

The site visit verified the installation of the water system at the facility. For an illustration of the three 1,000 L water storage tanks located on the roof of the border post, see Site Photo 36. For an illustration of the five 1,000 L water storage tanks located within the covered parking area on the ground, see Site Photo 37.



**Site Photo 36. Roof-Mounted Water Storage Tanks (Marwa #628 Border Post)**



**Site Photo 37. Ground-Mounted Water Storage Tanks (Marwa #628 Border Post)**

The location of the ground-mounted water storage tanks was not consistent with the design requirements. The ground-mounted tanks were to be located underneath a separate steel framed canopy. During the site visit, the tanks were located under the automobile parking steel canopy. In addition, the design required anchor bolts imbedded in the concrete footing and the tubular steel columns connected to bearing plates, which would then be bolted to the footing. Anchor bolts were not visible during the site visit.

#### Supply and install sanitary systems

The contract and design required the construction of two septic tanks and four soakaways for collection and disposal of wastewater. In addition, the contract required all associated pipes and fittings for the septic tank and soakaways. The site visit verified that the construction of two septic tanks and four soakaways was completed. For an illustration of the top cover surface of one of the septic tanks with four access ports and two soakaways, see Site Photo 38. The design required two cast iron access ports. The site visit verified four access ports per septic tank, two concrete and two metal.



**Site Photo 38. Septic Tank with Four Access Ports  
(Marwa #628 Border Post)**

#### Construct covered automobile parking area

The contract and design required the construction of a covered automobile parking area. The covered automobile parking area was to have a reinforced concrete slab with steel framed structure and a corrugated steel canopy. The site visit verified that the automobile parking area was constructed as shown in Site Photo 39.



**Site Photo 39. Automobile Parking Area (Marwa #628 Border Post)**

#### Construct access roads

The contract required that the contractor was to “develop or improve basic road access from the nearest access road to the facility entrance to enable two wheel drive vehicles to pass.” The Marwa Border Post site is located on an existing access road. The construction of an additional access road was not required at this location.

#### **Azmick #602**

##### Construct border post facility

The contract and design required the construction of a structural steel I-beam column lateral member frame on a reinforced concrete pad with concrete-filled block covered by a gypsum plaster and paint or stone exterior. The design required the interior walls to be block with gypsum plaster and paint. The border post exterior dimensions were to be 20.250 M (66.4 ft) by 25.00 M (82.0 ft). The border post included 11 interior rooms, a central 1.5 story atrium, and corner turrets. Interior rooms were for weapons storage, communications, toilet facilities, kitchen facilities, offices, and bedrooms. The electrical/mechanical requirements included a circuit breaker box, electrical outlets, ceiling fans, lighting, and air conditioning units.

The site visit verified that the facility was constructed using the block exterior, and that the construction of the facility was in progress. During the site visit, the electrical power was not on. For an illustration of the exterior front of the border fort facility, see Site Photo 40. For an illustration of the interior atrium, and the exterior view of the atrium, see Site Photos 41 and 42, respectively. For an illustration of the electrical circuit breaker panel with good workmanship, see Site Photo 43.

The design required the rise of the steps or the internal stairwell to be 18.7 cm (7.4 in) and the run to be 30 cm (11.8 in). Based on measurement obtained, during the site visit, the rise varied between 7 in and 7.5 in, and the run varied between 10.5 in and 12 in.



**Site Photo 40. Exterior Front View of Border Post  
(Azmic #602 Border Post)**



**Site Photo 41. Interior Atrium (Azmic #602 Border Post)**



**Site Photo 42. External View of Atrium (Azmic #602 Border Post)**



**Site Photo 43. Electrical Circuit Breaker Panel (Azmic #602 Border Post)**

### Construct jail facility

The contract and design requirements for the jail included the construction of reinforced concrete footings and a pad with exterior walls of concrete-filled block covered by gypsum plaster and paint. The exterior dimensions were required to be 7.300 M (24.0 ft) by 4.500 M (14.8 ft). The interior included a holding area and toilet facility. The electrical requirements included a ceiling fan and lighting. The site visit

verified that the construction of the jail facility was complete and that the exterior dimensions measured were 27.0 ft by 14.6 ft. For an illustration of the exterior of the jail facility, see Site Photo 44.



**Site Photo 44. Exterior View of Jail Facility (Azmick #602 Border Post)**

#### Supply and install electrical generators

The contract and design required the installation of a generator and a standby generator which rated at 60 percent of the rated power of the main service panel. In addition, the contract and design required fuel storage tanks. The generators were to be mounted on a concrete reinforced pad with a metal-framed wire mesh enclosure that had a corrugated roofing system. The site visit verified that two generator units were installed on a concrete pad inside a metal enclosure. In addition, two fuel tanks were installed on concrete pads. The fuel tanks measured 19.75 ft (6.0 M) long and 5.0 ft (1.5 M) diameter. The generators were not operating during the site visit. For an illustration of the two generator units, see Site Photo 45.

The generator engine nameplates listed the following information:

- Power (kW) 42;
- Engine Serial (Perkins) No HC508677L04 and HC507621L04; and
- Model Number: 1004G.



**Site Photo 45. Generator Unit (Azmic #602 Border Post)**

#### Supply and install water system

The contract and design required the installation of a complete water system. Design requirements for the water system included five 1,000 L insulated ground water tanks and three 1,000 L insulated roof-mounted water tanks. Metal-framed corrugated roof coverings were required for the ground and roof-mounted water tanks. The design included two ½-horsepower pumps and the associated piping and valves.

The site visit verified the installation of the water system at the facility. For an illustration of the three 1,000 L water storage tanks located on the roof of the border post, see Site Photo 46. For an illustration of the five 1,000 L water storage tanks located within the covered parking area, see Site Photo 47.

The location of the ground-mounted water storage tanks was not consistent with the design requirements. The ground-mounted tanks were to be located underneath a separate steel framed canopy. During the site visit, the water tanks were located under the automobile parking steel canopy. In addition, the design required anchor bolts to be imbedded in the concrete footing, and the tubular steel columns connected to bearing plates, which would then be bolted to the footing. During the site visit, anchor bolts were not visible.





**Site Photo 46. Roof-Mounted Water Storage Tanks and Piping  
(Azmic #602 Border Post)**



**Site Photo 47. Ground-Mounted Storage Tanks, Pumps, and Piping  
(Azmic #602 Border Post)**

### Supply and install sanitary systems

The contract and design required the construction of two septic tanks and four soakaways for the collection and disposal of wastewater. In addition, the contract required all of the associated pipes and fittings. The site visit verified that the construction of the two septic tanks and the four soakaways were completed. For an illustration of the top cover surface of one of the septic tanks with four access ports

and two soakaways, see Site Photo 48. The design required two cast iron access ports; however, the site visit verified that there were four access ports per septic tank, two concrete and two metal.



**Site Photo 48. Septic Tank and Access Ports  
(Azmick #602 Border Post)**

Construct covered automobile parking area

The contract and design required the construction of a covered automobile parking area. The covered automobile parking area construction was to consist of a reinforced concrete slab with a steel-framed structure and a corrugated steel canopy. The site visit verified that the automobile parking area was constructed. For an illustration of the automobile parking area, see Site Photo 49.



**Site Photo 49. Automobile Parking Area  
(Azmick #602 Border Post)**

### Construct access roads

The contract required the contractor to “develop or improve basic road access from the nearest access road to the facility entrance to enable two wheel drive vehicles to pass.” The Azmick Border Post site location is on an existing access road; therefore, construction of additional access roads was not required at this location.

### Issawa #604

#### Construct border post facility

The contract and design required the construction of structural steel I-beam column lateral member frame on reinforced concrete pad with concrete-filled block covered by gypsum plaster and paint or stone exterior. The design required the interior walls to be block with gypsum plaster and paint. The border post exterior dimensions were to be 20.250 M (66.4 ft) by 25.00 M (82.0 ft). The border post included 11 interior rooms, a central 1.5 story atrium, and corner turrets. Interior rooms were for weapons storage, communications, toilet facilities, kitchen facilities, offices, and bedrooms. The electrical/mechanical requirements included a circuit breaker box, electrical outlets, ceiling fans, lighting, and air conditioning units.

The site visit verified that the facility was constructed with block exterior, and the construction of the facility was in progress. During the site visit, electrical power was not on. For an illustration of the exterior front of the border fort facility, see Site Photo 50. For an illustration of the right exterior wall, see Site Photo 51. For an illustration of the interior view of the atrium, see Site Photo 52.



**Site Photo 50. Exterior Front of Border Fort  
(Issawa #604 Border Post)**



**Site Photo 51. Right Exterior Wall (Issawa #604 Border Post)**



**Site Photo 52. Interior Atrium (Issawa #604 Border Post)**

### Construct jail facility

The contract and design for the jail facility required construction of reinforced concrete footings and pad with exterior walls of concrete-filled block covered by gypsum plaster and paint. The exterior dimensions were required to be 7.300 M (24.0 ft) by 4.500 M (14.8 ft). The interior included a holding area and toilet facility. The electrical requirements included a ceiling fan and lighting. The site visit verified that the construction of the jail facility was in progress, and the exterior dimension measured 27.1 ft by 14.6 ft. For an illustration of the exterior of the jail facility, see Site Photo 53.



**Site Photo 53. Exterior View of Jail Facility (Issawa #604 Border Post)**

#### Supply and install electrical generators

The contract and design required the installation of a generator, a standby generator rated at 60 percent of the rated power of the main service panel, and fuel storage tanks. The generators were to be mounted on a concrete reinforced pad with a metal framed wire mesh enclosure and a corrugated roofing system. The site visit verified two generator units were positioned on a concrete pad, although they have not been installed. In addition, two fuel tanks were located on site, one installed on a concrete pad, and the other stored next to the border post. The fuel tanks measured 19.75 ft (6.0 M) long and 5.0 ft (1.5 M) diameter. For an illustration of the generator units, metal canopy, and fuel tank, see Site Photo 54.

The generator engine nameplates listed the following information:

- Power (kW) 42;
- Engine Serial (Perkins) No HC508689L04 and HC502156M04;
- Model Number: 1004G.



**Site Photo 54. Two Generator Units and Fuel Tank (Issawa #604 Border Post)**

Supply and install water system

The contract and design required the installation of a complete water system. Design requirements for the water system included five 1,000 L insulated ground water tanks and three 1,000 L insulated roof-mounted water tanks. Metal-framed corrugated roof coverings were required for both the ground and roof-mounted water tanks. The design included two ½-horsepower pumps and all the associated piping and valves.

The site visit verified that the installation of the water system at the facility was in progress. For an illustration of the three 1,000 L water storage tanks located on the roof of the Border Post, see Site Photo 55. For an illustration of the five 1,000 L water storage tanks located within the covered parking area, see Site Photo 56.

The location of the ground-mounted water storage tanks was not consistent with the design requirements. The ground-mounted tanks were to be located underneath a separate steel framed canopy. During the site visit, the tanks were located under the automobile parking steel canopy.



**Site Photo 55. Roof-Mounted Water Tanks (Issawa #604 Border Post)**



**Site Photo 56. Ground Mounted Water Tanks (Issawa #604 Border Post)**

#### Supply and install sanitary systems

The contract and design required the construction of two septic tanks and four soakaways for the collection and disposal of wastewater. In addition, the contract required all the associated pipes and fittings. The site visit verified that the construction of the two septic tanks and the four soakaways was in progress. For an illustration of the top cover surface of one of the septic tanks, see Site Photo 57. For an illustration of the two soakaways, before backfilling operations were completed, see Site Photo 58.



**Site Photo 57. Septic Tank (Issawa #604 Border Post)**



**Site Photo 58. Two Soakaways (Issawa #604 Border Post)**

Construct covered automobile parking area

The contract and design required the construction of a covered automobile parking area. The covered automobile parking area was to consist of a reinforced concrete slab with steel framed structure and a corrugated steel canopy. The site visit verified that the automobile parking area was constructed. The side of the concrete pad showed areas of segregated concrete as well as a lack of sub-base to support the concrete pad. For an illustration of the automobile parking area, and the segregated concrete with the lack of a sub-base, see Site Photos 59 and 60, respectively.



**Site Photo 59. Automobile Parking Area (Issawa #604 Border Post)**





**Site Photo 60. Concrete Pad of Automobile Parking Area  
(Issawa #604 Border Post)**

#### Construct access roads

The contract required the contractor to “develop or improve basic road access from the nearest access road to the facility entrance to enable two wheel drive vehicles to pass.” The Issawa Border Post site location is located above an existing access road. Therefore, the Issawa Border Post required an access road up to the site. The grade of the access road is steep with numerous turns. Although two-wheel drive vehicles can access the road in the summer months, it is unlikely that a two-wheel drive vehicle will be able to access the site during periods of snow cover.

## **Project Quality Management**

### **Quality Control (Before Cure Notice)**

TO 0036’s Scope of Work for the Border Forts stated that quality control (QC) shall be performed throughout the duration of the design, construction, installation, testing, and commissioning. The RE shall monitor the QC activities and review the QC plans. The QC system should consist of plans, procedures, and organization necessary to produce an end product that complied with contractual requirements. In addition, the QC plan should include the qualifications of the QC personnel, the responsibilities of the QC System Manager (employed by the prime contractor), and procedures for tracking deficiencies from identification through corrective action. The contractor will perform factory tests of primary components and be responsible for all testing at the site. During the interviews with the USACE AE, RE, QAR, and Parson’s personnel, it was stated that the contractor did provide a QC plan, which the contractor furnished to the Government. However, the QC plan was not specific or detailed, and did not document whether the contractor hired adequate personnel to obtain the quality specified in the contract. In addition, the QC plan did not specify

the QC System Manager's responsibilities nor did the QC plan note the procedures to be used for tracking and correcting any deficiencies.

The border forts contract stated that the contractor shall complete a daily QC report for each day that work activities occurred on the site. The daily report was to cover both conforming and deficient features. After a review of the QC daily reports and site visit interviews with the USACE RE, QAR, and contractor personnel, the assessment team noted that the contractor did maintain QC daily reports. The contractor did not provide the QAR the daily CQC report. Instead, the contractor provided the USACE RE and QAR with access to the CQC reports located on the contractor's share point website. Although the QC daily reports were maintained, the QC reports did not cover both conforming and deficient features. The contractor did not note excessive deflections of roof beams where smaller I-beams (A36 – normal strength) versus larger I-beams (A50 – high strength) were used in the construction. In addition, the contractor did not note poor quality connections, inadequate load bearing plates, poor quality welds at the connection of the column to the base plate, missing web stiffeners, and missing bearing plates at the construction sites. The design-build contractor did implement a system to log and track deficiencies detected by the contractor during the daily inspection process. However, the contractor did not maintain and use the system fully to address the logged deficiencies in a timely fashion and note on the deficiency-tracking log that the deficiency has been corrected.

The border forts contract required the contractor to perform testing procedures. The contractor's tests were to verify that control measures were adequate and provided a product, which conformed to contract requirements. In addition, the contractor was to record all test results taken, both passing and failing tests, in the CQC report. After a review of the documents provided to the USACE RE and QAR, the site assessment team noted that the contractor provided all test results to the USACE RE and QAR.

### **Quality Assurance**

USACE Engineering Regulation (ER) 1110-1-12 and PCO Standard Operating Procedure CN-100 specify requirements for a Government QA program. The USACE QA program was adequate. The USACE QARs were on-site during construction events. USACE QARs monitored field activities and completed QA reports, which the QAR forwarded to the USACE RE for review. The QAR reports were sufficiently complete, accurate, timely, and incorporated digital photographs of the sites.

According to the PCO CN-100, the QAR shall review the CQC daily report. If the CQC daily report is accurate, the QAR shall forward the CQC to the RE for review; if the CQC is inaccurate, then the QAR shall require the contractor to submit a supplement to the CQC daily report. CN 102 states that the QAR shall spot check the CQC's deficiency tracking log periodically to ensure the log is being maintained and that the deficiencies are being corrected in an appropriate time-period. The QAR did not review the CQC reports, which were located on the contractor's website, or the CQC's deficiency tracking log consistently. Although the QC daily reports were

maintained, the USACE QAR and RE stated that the contractor's website was time consuming and difficult to navigate, so the USACE QAR checked the CQC reports periodically.

In addition, the PCO CN-102 stated that the QAR shall maintain a QA deficiency log for all the deficiencies noted during the QA inspections which shall include digital photographs of any deficiencies noted. The USACE QAR did not maintain a QA deficiency log; however, the QAR did maintain QA reports that included digital photographs of any deficiencies noted at the site.

### **Quality Control (After Cure Notice)**

On 17 September 2005, the Joint Contracting Command – Iraq/Afghanistan (JCC-I/A) issued a Cure Notice to Parsons Global Services, Iraq, for Contract W914NS-04-D-0009, Task Orders 34 and 36. The U.S. Government notified Parson that the quality control on the Border Fort Program was endangering the performance of the contract and, if the condition was not cured, the U.S. Government may terminate the contract. Specifically, the Government noted excessive deflections of roof beams in 28 of the 45 steel construction sites. Smaller I-beams (A36 – normal strength) versus larger I-beams (A50 – high strength) were used in the construction. The design drawings did not indicate that high strength steel was required. In addition, poor quality connections, inadequate load bearing plates, poor quality welds at the connection of the column to the base plate, missing web stiffeners, and missing bearing plates were noted at the construction sites.

After the issuance of the Cure Notice, Parsons Global Services provided to PCO a Steel Modification Quality Control (QC) plan, which had not been approved at the time of the site assessment. The QC plan will provide the Quality Control Engineer (QCE) with guidance on the proper inspection and documentation techniques to employ during the implementation of the modification to the beams and columns for Task Order 36. The QC plan is solely for steel modifications to the approved SBIN Border Ports.

The Steel Modification QC plan ensures that the welders used are qualified, if the plan is followed. According to the steel modification QC plan, the QCE shall ensure the subcontractor welders are qualified by having the welders produce a weld under the conditions identified for the project and presenting it to the QCE for visual inspection. Before the commencement of any welding, the QCE, Field Engineer, and Safety Engineer, and subcontractor personnel shall conduct a preparatory inspection. The inspection will discuss welding procedures, work conditions, level of quality inspected, tests and inspections to be performed during implementation, and safety requirements.

The weld log shall contain the following information: weld number, welder identification number, weld type, inspector name, weld date, inspection date, and accept or reject. Any reject weld shall be reworked, and entered in the weld log using the same numbering convention as the original weld with an alphabetical suffix (W-

SBIN#-##-A). The weld log shall be maintained in the project files. The QCE will visually inspect 100-percent of the welds. The results of the visual inspection shall be recorded on the weld inspection form. The Government shall be invited to attend any visual inspection performed by the QCE. Any welds found unacceptable shall be so indicated on the inspection form, and the unacceptable welds shall be documented on the deficiency log or result in a Nonconformance Report. A copy of the weld inspection form shall be attached to the daily QC report. The contractor will maintain copies of the weld maps, weld logs, weld inspection forms, preparatory inspections, initial inspections, and Nonconformance Reports in the project files. At the completion of the steel erection, a summary report containing this documentation may be prepared for client review. At the time of the site assessment, PCO had not approved the contractor's Steel Modification QC plan. However, the contractor's welders were undergoing training, and the contractor was ready to commence the corrective actions as soon as PCO approval was received.

## **Project Sustainability and Operational Effectiveness**

A review of the contract file, specification submittals, and discussions with the USACE Area Engineer, Resident Engineer, Quality Assurance Representative, and the Parson's project managers disclosed that the U.S. Government does not plan to operate or maintain the border forts after commissioning and the turnover to the Iraqi Border Patrol and appropriate Ministry. In addition, there is no U.S. Government funding for operation or maintenance post turnover to the Iraqi Border Patrol and the appropriate Ministry after commissioning. Sustainability was addressed in the contract by requiring the contractor to provide the operation and maintenance manuals, which include all generator and equipment information, and to include training. The contract provides one-year (12 month) warranties for all mechanical and electrical systems and devices after the issuance of the Taking-Over-Certificate. The contractor shall provide any other commonly offered extended warranties for equipment and machinery purchased. In addition, the contractor will provide spare repair parts and the as-built drawings. After a review of the contract file, the site visit, and discussions with the USACE AE, RE, and QAR, the border forts will be an operating facility. Sustainability was adequately addressed in the contract and should result in operational border forts.

## **Conclusions**

Based on the field work performed during this assessment, we reached the following conclusions for assessment objectives 1, 2, 3, 4, and 5. Appendix A provides details pertaining to Scope and Methodology.

1. Determine whether project results will be consistent with original objectives.  
The completed project will not meet or be consistent with the original objective to complete and commission border denial posts. Specifically, the border forts were not constructed with the perimeter security requirements of a wall or berm and gate system. Currently the jail facility, generator units, fuel tanks, and water system are not secured and there are no physical restrictions to access the walls of

the border post. This situation occurred because the government de-scoped perimeter security from the task order to stay within contract budget constraints, although the contract was not modified to reflect this de-scoping. PCO management stated alternate funding may be available to complete perimeter in the future through an alternate contractor.

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

The contractor was required to design and construct 57 border posts under Task Order 36. The contractor design for the structural I-beam construction was inadequate for this project. The border forts required a significant design modification and retrofit because snow loads were not incorporated in the design calculations. In addition, under strength steel was used in the construction because the steel design drawings did not specify the type of steel required. This occurred because the contractor did not prepare a properly designed facility and because the drawings were not submitted and approved by PCO. The results of the design deficiencies were increased time to construct which increased the total cost of this cost plus contract.

3. Determined whether construction or rehabilitation met the standards of the design.

The construction of the border posts did not meet the standards of the design. In particular, undersized I-beams and under strength I-beams were used in construction of the posts, resulting in a design modification and retrofit of the I-beams. This occurred because the design drawing did not specify the requirement for high strength steel and also due to a deficient contractor quality control program (see conclusion 4). This resulted in an increased time to construct and therefore increased the total cost of this cost plus contract.

4. Determine whether the Contractor's Quality Control plan and the Government Quality Assurance Program were adequate.

The Border Forts contract specified a requirement for a CQC plan. A CQC plan was submitted to the U.S. Government; however, the QC plan was not specific or detailed, and did not document whether the contractor hired adequate personnel to obtain the quality specified in the contract. In addition, the QC plan did not specify the QC System Manager's responsibilities nor did the QC plan note the procedures to be used for tracking and correcting any deficiencies.

A daily QC report that covered conforming and deficient features was required by the border forts contract. After a review of the QC daily reports and site visit interviews with the USACE RE, QAR, and contractor personnel, the assessment team noted that the contractor did maintain QC daily reports. The contractor did not note excessive deflections of roof beams where smaller I-beams (A36 – normal strength) versus larger I-beams (A50 – high strength) were used in the construction. In addition, the contractor did not note poor quality connections, inadequate load bearing plates, poor quality welds at the connection of the column

to the base plate, missing web stiffeners, and missing bearing plates at the construction sites.

The border forts contract required the contractor to perform testing procedures. The site assessment team noted that the contractor maintained all test results.

The USACE ER 1110-1-12 and the PCO SOP CN-100 specified requirements for a Government QA program. The USACE QA program was adequate. The USACE QAR was on-site during construction. The QAR monitored field activities and completed daily QA reports. The QAR did not maintain QA deficiency logs nor did the QAR review the CQC reports consistently. However, procedures in-place ensured that potential construction deficiencies were detected and evaluated. For example, JCC-I/A issued a Cure Notice to Parsons Global Services, Iraq for Contract W914NS-04-D-0009, Task Orders 34 and 36, due to the Government noting excessive deflections of roof beams in 28 of the 45 steel construction sites. After the issuance of the Cure Notice, Parsons Global Services provided a Steel Modification Quality Control (QC) plan, which has not been approved, to PCO. At the time of the site assessment, PCO had not approved the contractor's Steel Modification QC plan. However, the contractor's welders were undergoing training, and the contractor was ready to commence the corrective actions as soon as PCO approval was received.

5. Determine if project sustainability was addressed.  
Sustainability was adequately addressed in the contract and should result in operational border forts. Sustainability was addressed in the contract by requiring the contractor to provide the operation and maintenance manuals and to include training. The contract provides one-year (12 month) warranties for all mechanical and electrical systems and devices after the issuance of the Taking-Over-Certificate. The contractor shall provide any other commonly offered extended warranties for equipment and machinery purchased. In addition, the contractor will provide spare repair parts and the as-built drawings.

## **Recommendations**

The Project and Contracting Office should:

1. Complete perimeter security requirements as stated in the objectives
2. Develop and implement stringent design reviews for construction projects, especially when a single design is used for multiple facilities.
3. Increase on-site monitoring of construction projects for both the government and contractors to decrease construction deficiencies, especially during critical phases of construction.
4. Ensure the contractor provides adequate QC plans for future contracts.

## **Management Comments**

The Commander, Gulf Region Division, concurred with the project assessment and provided the following comment.

1. It was determined by the Client, the Department of Border Enforcement (DBE), that the requirement was only needed at seven forts. Many of the forts had existing berms/fences. A contract modification is pending to de-scope the remainder of the berms/fences from the contract.
2. The Border Fort Program is now 98 percent complete and all design reviews have been finished.
3. The Border Fort Program is now 98 percent complete and GRD/PCO has increased on-site monitoring along with the contractor.
4. The Border Fort Program is now 98 percent complete and all remaining quality control reviews are now on going with strict attention to detail by the contractor and the GRD/PCO.

The principal Assistant Responsible for Contracting, JCCI/A concurred with the project assessment and provided the following comments.

1. If funding is re-instated, then perimeter security objectives will be re-instated and completed.
2. Concur.
3. GRD assigned ACO authority, is responsible for and provides quality assurance during all stages of construction. In addition, GRD is provided a 4% fee to manage the project construction”
4. GRD assigned ACO authority to approve the contractor’s quality control plan and provide quality assurance throughout construction.

## **Evaluation of Management Comments**

Management comments addressed the issues raised in our conclusions and actions taken should correct the deficiencies. We agreed with an additional management statement that the contractor does not unilaterally revise the scope of a contract. Therefore, we revised this final report accordingly.

## **Appendix A. Scope and Methodology**

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We performed this project assessment from October through December 2005 in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included the Assistant Inspector General for Special Operations, a professional engineer, and an auditor.

In performing this Project Assessment we:

- Reviewed contract documentation, including the Independent Government Estimate, Scope of Work, Contract, Contract Modifications, Task Order, Task Order Modifications, and Cure Notice;
- Reviewed the design package (drawings and specifications), Quality Assurance Plan, Quality Control Plan, Contractor's Quality Control daily reports, Task Order 36 Steel Modification Quality Control Plan, and the Quality Assurance Representative reports;
- The assessment team interviewed the United States Army Corps of Engineers Area Engineer, Resident Engineer, and Quality Assurance Representative. In addition, the assessment team interviewed the Contractor's Vice President, Senior Vice President Iraq Country Manager, Operation Manager, Safety Manager, Design Manager, Quality Control Manager, Quality Control Program Manager, Quality Control Manager for Steel, and other on-site staff. Finally, the assessment team interviewed Major Anderegg and PCO staff regarding preliminary findings;
- Conducted and documented results of an on-site assessment of Border Forts, located in Sulaymaniyah, Iraq.



## Appendix B. Acronyms

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A/C	Air Conditioning
AE	Area Engineer
CM	Centimeters
CQC	Contractor Quality Control
FE	Field Engineer
GRD	Gulf Region Division
JCC-I/A	Joint Contracting Command – Iraq/Afghanistan
l	Liters
m	Meters
PCO	Project and Contracting Office
PE	Professional Engineer
QA	Quality Assurance
QAR	Quality Assurance Representative
QCE	Quality Control Engineer
RE	Resident Engineer
SOW	Scope of Work
TO	Task Order
USACE	U.S. Army Corps of Engineers

## **Appendix C. Report Distribution**

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### **Department of State**

Secretary of State

Senior Advisor to the Secretary and Coordinator for Iraq

U.S. Ambassador to Iraq

Director, Iraq Reconstruction Management Office

Inspector General, Department of State

### **Department of Defense**

Deputy Secretary of Defense

Director, Defense Reconstruction Support Office

Under Secretary of Defense (Comptroller)/Chief Financial Officer

Deputy Chief Financial Officer

Deputy Comptroller (Program/Budget)

Inspector General, Department of Defense

### **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)

Director, Project and Contracting Office

Commanding General, Joint Contracting Command – Iraq/Afghanistan

Assistant Secretary of the Army for Financial Management and Comptroller

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 Defense Organizations**

Director, Defense Contract Audit Agency

### **Other Federal Government Organizations**

#### **Director, Office of Management and Budget**

Comptroller General of the United States

Inspector General, Department of the Treasury

Inspector General, Department of Commerce

Inspector General, Health and Human Services

Inspector General, U.S. Agency for International Development

# **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

## **U.S. Senate**

Senate Committee on Appropriations

Subcommittee on Defense

Subcommittee on Foreign Operations

Senate Committee on Armed Services

Senate Committee on Foreign Relations

Subcommittee on Near Eastern and South Asian Affairs

Subcommittee on International Operations and Terrorism

Senate Committee on Homeland Security and Governmental Affairs

Subcommittee on Government Efficiency and Financial Management

Subcommittee on Financial Management, the Budget, and International Security

## **U.S. House of Representatives**

House Committee on Appropriations

Subcommittee on Defense

Subcommittee on Foreign Operations, Export Financing and Related Programs

House Committee on Armed Services

House Committee on International Relations

Subcommittee on Middle East and Central Asia

House Committee on Government Reform

Subcommittee on Government Efficiency and Financial Management

Subcommittee on National Security, Emerging Threats and International Relations

## **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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