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Ghour Al- Safi Grading Facility

Description of Design and Rehabilitation Work

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Ghour AL-Safi Grading Facility

DESCRIPTION OF DESIGN AND REHABILITATION WORKS

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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Executive Summary

This assignment is undertaken as part of USAID Jordan Economic Development Program's contribution to improve the competitiveness of key economic sectors in Jordan including the agricultural sector. In 2009, SABEQ developed a business plan for a grading facility in Ghour Al-Safi. This led to a partnership between the municipality of Ghour Al-Safi, a private investor and SABEQ to establish the facility. Accordingly, a Memorandum of Understanding was signed between the Municipality and SABEQ according to which it was agreed that the municipality of Ghor Al-Safi will contribute by providing a hanger, the private investor will contribute by investing in the required machineries and equipments and running the operations while SABEQ will renovate the Hangar.

The objective of this assignment is to provide the required engineering support to develop design drawings, determining the technical specifications and identifying the bill of quantities required to renovate the facility and develop an RFP to solicit interests of potential contractors to carry out the engineering work.

By doing this activity, some of SABEQ's intermediate results will be served; first of which is the increased market access to high value markets, enhanced competitiveness of priority sectors and high value fruits and vegetables, and increased income of the participated families.

INTRODUCTION

This report evaluates, based on a site inspection of the hanger, the work required to rehabilitate the existing site into a suitable structure to host the intended grading facility. It examines two scenarios with each having its own set of drawings and BOQs. The proposed rehabilitation drawings include the following;

- Architectural
- Structural
- Electrical
- Mechanical
- BOQs and specifications.

▪ Scenario one,

Includes minimal works needed to rehabilitate the hanger to enable quick implementation with minimal cost. In this scenario, the hanger's skeleton and shell were maintained, to secure the structure and ensure the whole hanger is sound and sealed.

▪ Scenario Two,

Includes the full work required to transform the Hanger into a proper Grading Facility with its full support offices and logistic requirements.

STRUCTURAL DESIGN

1- General Structure and Existing Situation

Based on an evaluation of the main skeleton of the hanger and of its structural composition, which consists of a number of steel frames repeated at the interval of 8 meters approximately and a main beam in the frame made of a truss, it was concluded that the hanger looks sound and safe, and therefore can serve as a place for a new function.



The truss technique utilized in the hanger is considered as an advantage for the rehabilitation course of work given that the truss is made of smaller structural elements that can be maintained or replaced without major effect on the whole hanger. Such advantage would not be available if a beam frame was used.

The ground of hanger is built of structural solid slab which, from the visual inspection point of view, looks good and able to serve the new function. However; capacity of the slab shall be verified against the new imposed loads through inspection test.

However; the smashed side walls members and panels are not considered as main structural elements and do not affect the structural soundness of the hanger.



a- Problems:

Main problems identified in the structural design consist of a number of structural elements and panels that are smashed or dent

b- Treatment:

- Dismantle the smashed elements, maintain, re-paint and re-install.
- Install new elements due to the reason that maintenance cost may be equal or more than the costs of new elements.
- Fix new equivalent member adjacent to the existing smashed elements in order to bear its loads

2- Bracing

- Lateral stability along the width of steel hanger is provided by designing the frames to resist the imposed lateral loads such as wind loads.
- Usually bracing systems are furnished along the length of buildings to provide longitudinal stability due to the weakness of the building structure in that direction.
- The main purpose of a bracing system is the transmission of lateral forces due to wind from their point of application on the structure to the column bases and eventually into the foundations.
- Standard bracing systems available in the industry are diagonal X-bracing (which is utilized in our hanger) and portal frames bracing

a- Problems: absence of the side walls bracing

b- Treatment: Introduce sidewall bracing by adding rods (*X-Bracing*) in the sidewall of the hanger. Rods shall be added in the same bay of the roof bracing.

3- Doors

Existing Doors are of two types:

- Single sliding doors
 - Double sliding doors
-
- Standard single sliding doors slide horizontally in one direction whereas the leaves of double sliding doors slide in opposite directions.
 - Framing of the door is made typically from galvanized cold-formed channels. It is delivered knocked-down for field assembly. The door leaves are sheeted with 0.5 mm pre-painted panels normally matching the color of the wall panels. The doors should be designed for quick assembly and ease of operation.

a- Problems :

The two double sliding doors available in the hanger are in bad condition

b- Treatment:

Due to the need to minimize repair cost; the recommended treatment included in the drawings and documents was to dismantle the two doors, maintain, re-paint and re-install.

4- Translucent Panel

Translucent panels for roof and walls are used to allow natural light into the Hanger and thus reduce electrical lighting requirement. The translucent panels are made normally of white light-stabilized weather-resistant polyester resins mixed with split strand fiberglass

a- Problems:

The translucent panels available in the hanger are in bad condition.

b- Treatment:

Due to the need to minimize repair cost, the proposal was to dismantle the translucent panels, maintain, change the transperance panel, re-paint and re-install.



5- Block Wall Works

The most common reasons for choosing a block wall are when:

- Storage inside the building might be placed against the exterior walls of the building.
- Storage material, if in contact with panels, might initiate or encourage steel corrosion
- Heavy forklift activity outside and inside the building may accidentally dent the metal walls ***(In the hanger: therefore; if block walls were employed it could prevent the damage and spoil of Panels)***
- There is desire to buy locally made accessories (personnel doors, windows, etc.) that are designed primarily for block walls.



a- Problems:

Block walls available in the hanger are in bad condition.

b- Treatment:

It was proposed to replace the broken blocks, plaster and paint them.

6- Windows and Doors

a- Problems :

Windows and doors within the block wall available in the hanger are in bad conditions; in addition, new doors and windows were needed and proposed in response to the new architectural design of the new facilities within the Hanger.

b- Treatment:

New windows and doors were proposed for the reason explained above and because maintaining existing windows and doors cost maybe around or more than cost of new windows and doors



7- Paint

- Paint on the skeleton is in fair condition inside the Hanger, but in bad condition on the external elevations.
- Nevertheless, based on the new functional requirements and to enhance the Hanger's durability and hygienic qualities, it was proposed to re-paint the Hanger both inside and outside.

8- New Facilities

New facilities were proposed in response to the new function of the Hanger including outdoor and indoor facilities. Outdoor facilities included access, water supply and drainage. While indoor facilities included workers amenities and management offices. Drawings and documents included details, specifications and BOQs covering the proposed facilities.

APPENDICES: available on the attached CD

Appendix 1:

Report No. 1: Evaluation of Structural and Architectural Existing Situation.

Appendix 2:

Photo report registering the existing situation of the Hanger.

Appendix 3

Contract Document including:

- a- General Conditions
- b- Particular Conditions
- c- Supervision Services
- d- Division I – General Requirements
- e- The Invitation to Tender

Appendix 4

Rehabilitation Documents for Scenario 1 and Scenario including:

- a- Drawings (Auto CAD format) – Architectural, Electrical, Mechanical and Structural
- b- BOQs

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