PÖYRY

ELLOMAY
Pumped Storage (2014) Ltd.

PSPP MANARA
156 MW

ISRAEL

PARTICULAR

CIVIL SPECIFICATIONS

TS-26 – Double Floors (Gravity Floors)

Written:	Kronberger	10.09.2018
Checked:	Lang	10.09.2018
Approved:	Binder	xx.xx.2019

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REVISION NUMBER:

1.0 First edition
2.0 Second edition: April 2019
2.1 Third edition: May 2019

Note:

Owner means Owner/Employer and/or Owners Engineer (OE)

It is further hereby clarified that any approval/non-objection made by the Owner shall not, in any way, release the Contractor from any of its responsibilities and liabilities, nor shall it impose any obligation or responsibility on the Owner which fully relies on the Contractor's expertise. It is further clarified that in any event of Owner's reservations and/or comments, it shall be the sole responsibility of the Contractor to recheck and confirm any such comment.

The Owner disclaims any and all liability for any errors, inaccuracies or incompleteness contained in this document. To the extent that the terms and conditions set forth herein conflict with the terms and conditions of the EPC Contract Agreement and/or O&M Contract Agreement, as applicable, the terms and conditions of the EPC Contract Agreement and/or O&M Contract Agreement, as applicable, will prevail.

Notwithstanding anything to the contrary in this document or any other Project Document, the Design and Works and Services (as applicable) shall be done and executed in compliance and shall adhere to the Israeli applicable standards. Compliance with an applicable recognized international standard shall not in no way derogate from the above requirement to comply at all times with the Israeli applicable standards. In the event that no Israeli standard is applicable the Design and Works and Services (as applicable) shall be done and executed in compliance and shall adhere to the relevant standard specified in the list included in the general specifications (Volume 2 Section IV, Section VI of the RFP Documents).

1 SCOPE OF WORK

This specification covers the requirements for the execution of Double Floors (Cavity Floors) as specified, including supply of all plant, labor, equipment, appliances and materials, performance and completion of all works, and provision of all related services.

This specification covers the requirement for double floors.

The work shall include but not be limited to the following:

a) Complete double floor system

b) Frames for supporting electrical boards

Submittals:

The Contractor shall produce all necessary drawings and information for this work, allowing the Owner to appraise, approve and monitor the works, comprising the following in particular.

- Shop drawings showing complete details of fabrication of panels, supports, frames and accessories including elevations, plan views, full size details and fastening methods for this complete scope of supply as well as identification of pieces. The shop drawings shall be performed in conformity with the best modem practice and with due regard to speed and economy in fabrication and erection.
- Engineering calculations supporting the design in conformity with this specification.
- Certification test results and label of materials conforming to cited requirements and standards.
- At the request of the Owner samples and relevant technical information for any item of materials shall be submitted for approval.

2 DESIGN

2.1 Contractor's Drawings

- Drawings shall be produced by the Contractor and submitted for approval. Manufacture shall not be started prior to approval of the shop drawings.
- Shop drawings shall indicate the following minimum information:
  - Plans and dimensions of areas covered
  - Details of stringers, panels and pedestals
  - Confirmation of adequacy to support design loads
  - Color chart of surface material
  - Construction details of supporting frames for electrical boards and cubicles.
- Approval of shop drawings will be for arrangement only and shall not relieve the Contractor of the responsibility for errors, omissions or the accuracy of his dimensions.
- After approval or comments by the Owner, all drawings shall be stamped as "Final Drawing Approved for Construction". Only drawings identified as such will be released on site for construction.
- The shop drawings shall be prepared in conformity with the best modern practice and with due regard to speed and economy fabrication and installation.

2.2 Submittals

- Manufacturer's literature, giving materials description, details of fixing, preparation of the sub-floor, range of products, accessories together with recommendations for good workmanship practice.
- The Contractor shall submit samples of each type of materials Items to the Owner for review and selection of materials.
- Sample panels of each type of double floor system shall be provided to the Owner. The Contractor shall obtain the approval of the Owner concerning quality, installation method, workmanship, etc. before work commences. No subsequent work which is substandard to the approved sample shall be accepted.
- Size of each sample shall be as directed by the Owner.
- As-built drawings related to the works shall be submitted with soft copy.

3 CODES AND STANDARDS

The codes and standards of the following organizations are specifically applicable to the design, manufacture and testing of the work covered by this Specification:

The Standards Institution of Israel (SII):

Israeli Inter-ministerial Standardization Committee specifications including:

- chapter 08 (Electrical Installations)
- chapter 18 (Communication Infrastructure)

International Standards:

ANSI C 33.65	Conduits and Boxes
ANSI C 80.1	Rigid Steel Conduit, Zinc Coated
ANSI C 80.4	Fittings for Rigid Metal Conduits

The works shall comply with local Standards where available but shall be in no case of lower quality than the above mentioned standards indicate.

4 GENERAL REQUIREMENTS

4.1 General Description

The double floor shall consist of fully removable square modular panels supported by pedestals. The panels shall be easily removed for access to the underfloor cavity, which will be used, for housing electrical cables. The system will be used for several electrical rooms.

Areas supporting electrical boards shall have a rigid steel frame system, different from the floor supporting system. The extent of this frame shall be given by the exact areas of the electrical boards and cubicles.

4.2 Loading

The floor panels and the frames for electrical boards and cubicles must carry a uniformly distributed load of 12 kN/m^2 and a point load of 4 kN/m^2 (area of point load 15x15 mm). The deflection of the floor panels shall not be greater than 3 mm at every point.

In addition, the steel frame shall be designed and constructed to sustain earthquake forces. These forces are defined as follows: a horizontal load corresponding to 12 kN/m^2 will be acting at 1500 mm above the surface of the finished floor.

The deflection of the frames shall not be greater than 1 mm.

The factor of safety shall be 2 for the panels and steel frames, and 5 for the pedestals based on the ultimate strength of the material.

4.3 Effect of Fire

The double floors shall be of non-flammable type.

4.4 Durability

The anticipated life shall be 25 years for double floors to be considered in design. The Contractor shall guarantee that panels will be available for replacement 10 years after delivery.

5 MATERIALS

5.1 Floor Panels

Standard panels shall be approx. 600 mm square and shall consist of high-density chipboard of min. 30 mm thickness.

The surfacing shall be of vinyl tiles of anti-static type or other approved material satisfying the requirements of this specification. The surfacing shall be of incombustible materials and not traces of cigarettes.

The panels shall be resistant to biological attack by insects or vermin, resistant to micro-organisms, fungi and mildew under dry conditions.

Panels shall be sound absorbent, prevent chatter and dampen impact noise.

The electrical resistance of the panel shall be 109 Ohm

Steel elements, if any, shall be galvanized and corrosion-resistant.

5.2 Pedestals

The pedestal supports shall be of mid steel with threaded stalks for levelling. The domed head levelling pad shall be of glass-reinforced nylon, or equivalent, and allow sound deadening between panel and pedestal assemblies.

Pedestals shall be secured to the sub-floor with an adhesive able, when cured, of resisting a 9 kg force applied horizontally at the top of the pedestal. Panel bearing area shall have a conductive grounding and sound deadening pad.

Pedestal adjustment shall be made with a thread for fine adjustment within a +/- 25 mm range minimum.

The pedestal base shall be an element of approved type and dimensions.

The stringers, if required by the double floor system, shall be steel and capable of supporting, without panels in place, a concentrated load of 90 kg at the center of a 60 cm with a safety factor of 2. The steel stringers shall be corrosion protected.

5.3 Supporting Frames

Supporting Frames for electrical boards and similar equipment shall be fabricated of steel profiles. The size of these frames shall exactly match the size equipment they have to support.

Bolts and nuts for fastening the equipment to the steel frame, including adequate shims, shall be provided in sizes and quantities required plus 5%.

The frames shall be hot-dip galvanized. The galvanization shall comply with the requirements of the Technical Specification TS-26 "Metal Work".

Steel frames shall be made of profiles minimum L = 45x45 mm, or equivalent unit weight. The minimum requirements for size and number of profiles are defined by the electrical equipment contractor information. The frame shall be constructed with a tolerance of +/-1 mm.

The frames will be fixed to the sub-base by means of self-drilling anchor bolts type "Red Head" or similar, min. bolt size W 1/2. Adequate shims shall be provided

considering that the cement topping will be finished with s tolerance of +/- 10 mm. Self-drilling anchors and shim shall be supplied in quantities required plus 5%.

5.4 Skirting

A skirting shall be provided along walls and at areas as shown on the drawings. The skirting shall be of the same type of material as the surfacing of the panels.

5.5 Accessories

For each room a modular lifting device shall be supplied.

6 INSPECTION AND INSTALLATION

6.1 Inspection and Checking

The Owner shall at any time be entitled to inspect and check materials to be used for the double floors prior to, and during fabrication, including workmanship.

6.2 Transportation

Care shall be taken during transportation in order not to cause any damages. The materials shall be properly packed and identified.

6.3 Erection Instructions

Erection instructions shall be provided by the Contractor for the erection of materials. The Contractor shall submit instruction details which are required to erect his equipment.

6.4 Installation

The complete floor system shall be sturdy, rigid and free of rocking, rattles squeaks and other noises. The overall floor shall be level within +/-2 mm, and shall be level within +/- 1.6 mm in 3 m in each direction.

All panels shall be easily removable by one person with a lifting device. All panels shall be interchangeable except where cut for special conditions.

All stringers shall be easily removable without the use of special tools. Fasteners of stringer attachment are to be accessible from the top surface of the stringer.

Stringers shall be rigidly bolted with a threaded fastener passing through the stronger to provide a shear connection. The fastener is to mate with an integral nut welded to the pedestal cap.

Installation shall be in accordance with approved drawings, manufacturer's instructions and approved shop drawings.

The finished work shall be level, square, rigid, neat in appearance and free from defects.

7 QUALITY ASSURANCE/ QUALITY CONTROL (QA/QC)

The quality assurance/control procedures shall include the requirements defined in this specification but not be limited to, and aspects such as:

- Design
- Drawings
- Shop tests
- Packaging and shipping
- Erection procedures
- Site tests and tolerances
- Commissioning and cleaning