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HEALTHCARE
GROUP

TBILISI/GEORGIA
SUNSTONE HOSPITAL

**EMERGENCY EXIT SIGNS & EMERGENCY LIGHTING
LUMINARIES TECHNICAL SPECIFICATION
EVEX-SUNSTONE-KAR-SPC-004**

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Employer

Evex Healthcare Group – TBILISI/GEORGIA

prepared by



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TECHNICAL SPECIFICATIONS

A. General Information

1. Description of the Work

- 1.1. Georgian healthcare provider Evex Healthcare Group (hereinafter referred to as Employer) intends to contract out "Emergency Exit Signs & Emergency Lighting Luminaries System Application" works at Sunstone Hospital building in Tbilisi. For building the system, supply, assembly and production of the materials having at least the specifications stated herein and attached shall be carried out and the system shall be delivered, in operational state, according to the technical specifications and the relevant standards.
- 1.2. These specifications reveal technical features and details that need to be respected to perform the said work.
- 1.3. Within the scope of "Application of the "Exit Signs & Emergency Lighting Luminaries System", Contractor shall provide material supply, installation and engineering services, constructional works as a package, to ensure delivery of the system, in operational state, according to the standards mentioned within this technical specification and in accordance with specific approved/listed system details which will be submitted by the contractor.
- 1.4. In this scope, the employer may appoint a certified organization as an auditor to control the company that it will do business with, following the issuance of the work after the tendering process and procurement works. This organization shall have all the powers held by the employer.

2. Scope of the Work

- 2.1. Work, including materials and labor, will be delivered in assembled form and will be made in accordance with the turnkey project requirements. All kinds of materials, installations, labor required for the system to provide the necessary life safety facilities and to be delivered in working condition, whether or not specified in the projects or technical specifications, will belong to the Contractor.
- 2.2. The subjects within the scope of the work are as follows:
Providing and installation of the emergency exit signs and the emergency lighting fixtures
 - The number of devices to be used in the facility is approximate. The device numbers will be determined before assembly and the exact numbers will be approved.
 - All kinds of electrical and assembly works necessary for the operation of the equipment,
 - Trials of the systems
 - Submission of the documents
 - Performing the commissioning operations
 - Delivery of the system in working condition
- 2.3. All unit prices given will be the prices of assembled materials. These unit prices will be taken as basis for any possible decrease or increase in prices in the future. All kinds of complementary-assembly materials and labor costs that do not have a unit price are included in unit priced materials.
- 2.4. The supply of work safety materials, assembly or assembly auxiliary materials (ladder, stand, etc.) to be used during the construction of the work will be provided by the Contractor.
- 2.5. All works, materials to be used and system solutions will be carried out at the highest technical quality, technical safety and reliability level in accordance with the fact that the facility to be established is an industrial facility with high national and international standards, thus protecting these areas from fire.
- 2.6. The system and system elements that will serve the specified purpose are described in the specifications and shown in the specification annexes, which are an integral part of the specifications.
- 2.7. The system and system components that will serve the specified purpose will be aimed to have an economic life of 10 (ten) years and all necessary elements will be fulfilled completely.
- 2.8. The Contractor shall document with the work completion documents or business reference letters that it has successfully installed the Emergency Lighting and Emergency Exit System before.
- 2.9. The static strength of the walls to be installed must be provided in accordance with the standards.

3. Related Standards

- 3.1. Works to be done shall comply with international fire protection and fire safety protection rules and standards. Furthermore, all relevant standards incorporated by reference in this standard, shall prevail with the same validity. In this context, the standards to be valid and applicable in design, installation (assembly), commissioning, trial and acceptance process are;

EN	European Norms (EN 1838)
NFPA	National Fire Prevention Association (NFPA 70,72 and 101) – <i>If require</i>
ISO	International Organization for Standardization (ISO 7010)
UL	Underwriters Laboratories (UL 924) – <i>If require</i>
Local Code	



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EN or DIN or VDS Approvals

- 3.2. The listing of systems and applications are intended as potential applications that may be reflected by the project's scope of work. The Contractor shall be responsible for reviewing the required existing through-system penetrations and the rated system being penetrated to determine appropriate systems required.
- 3.3. No matter which of the above-mentioned certifications the products bear, they shall be submitted to the material approval, notwithstanding the certifications they have, and the administration shall investigate whether they are compliant with where they will be used. Only after the material approval by the employer, supply and installation of such materials shall be permitted.
- 3.4. Even if the changes are highlighted during the proposal phase, and if the Employer does not accept in writing or even if they are accepted and/or installed but deemed to be non-compliant afterwards, such non-compliant material(s) shall not be accepted unless they have the required material certifications.
- 3.5. If any existing detail is not in conformance with the previously tested system by the manufacturer than an Engineering Judgement published and signed by the manufacturer's Registered Professional Fire Protection Engineer or by a NFPA Certified Fire Protection Specialist would be acceptable depending on the 3rd Party Reviewer and/or Employer approval.

4. Related Product Approvals

- 4.1. Devices must have the approvals specified in the "B. Technical Specifications" section.
- 4.2. The auxiliary mounting materials to be used must have first class quality and quality certificates.
- 4.3. Materials that are not fire system materials must have a product approval certificate obtained from IBC or an approval institution subject to approval.
- 4.4. Owned documents for the products must be specified on the catalog pages specifying their technical specifications.
- 4.5. All products will be submitted for material approval and their suitability for the place of use will be questioned by the Employer regardless of the approval they have. However, material procurement and assembly will be allowed after the material approval is given.
- 4.6. Owned documents must be valid "as of the date of bidding"; Approvals and documents whose validity period has expired and not renewed shall not be accepted.
- 4.7. In the relevant product approvals, Emergency Lighting System and Emergency Exit Signs System must have the following criteria, respectively;
 - A. Emergency Lighting System:
 1. The devices must be tested and "certified" that they comply with EN 60598-2-22.
 2. All cables to be used must be preferred to be of non-toxic gas (halogen-free) type.
 3. Approvals and certificates of ISO 9000 series shall not be accepted as device approval.
 - B. Emergency Exit Signs System
 1. Emergency exit signs to be provided must be EN 60598-2-22.
 2. The pictograms to be used are shown in the appendix in accordance with the relevant standards in order to help.

5. Projects and Drawings

- 5.1. Application drawings of the system are under the responsibility of the Contractor. The material quantities to be taken as basis in the proposal phase are given in the site lists and tables. The contractor is obliged to examine all relevant lists and tables in detail before preparing his proposal.
- 5.2. Shop Drawings and as-built drawings consisting of section and assembly details shall be drawn entirely by the Contractor after receiving the work. The Contractor, whose proposal has been approved, shall submit the manufacturing drawings prepared for each material to be used, together with catalogs containing the brand / model / approval information of the materials, to the approval of the Employer and shall only be able to procure and apply materials after approval. Employer officials have the right to request As-built Drawings, other than the one submitted by the Contractor.
- 5.3. The application can only be started after the As-built Drawings and the materials specified in the specification are fully approved, the assembly and application details are finalized and the technical information is presented. The employer has the authority to refuse to apply any material that it understands is not suitable for technical requests at any time, regardless of whether it was previously found appropriate.
- 5.4. After completing the works, the contractor shall prepare the drawings containing the "As-built" information showing the final status of the work done before the "Provisional Acceptance". As-built drawings shall be prepared to include all kinds of manufacturing details such as the entire route and assembly details. As-built drawings shall be delivered in printed form on CD in tracing output and computer output format (plt, pdf, etc.) and also in.dwg (Autocad) format. The extraction, drawing and reproduction of the as-built drawings information is entirely owned by the Contractor.

6. Work Program and Duration of the Work

- 6.1. The Contractor shall make the necessary work planning to do the work on time and submit the work program for the approval of the Employer from the date of contract, within the period of 1 month. The work program that will be submitted shall contain the following information, in days and each individually, according to the order of priority and sequence basis, shall be specified as the actual calendar date: project, material supply time, unloading the site, power outage, hot-work time.



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- 6.2. Because the work will be held in a running facility, place of delivery, making the environment suitable to work etc. shall be considered in the construction period.
- 6.3. Contractor, in order to complete the work within the Construction Period set forth in its proposal, is obliged to provide the necessary manpower and installation team.
- 6.4. The Work Program that will be prepared at beginning of the work shall be updated on weekly basis and submitted to the employer. Especially for the "High Security" sections contractor to inform employer and to get related work permission for the subject area.
- 6.5. Due to the high security precautions throughout the facility Contractor is subject to concomitance of an Escort assigned by the employer during all the construction period.
- 6.6. Following approval of the Work Program, in cases of failing to deliver the work place, to make decisions, to delay the approvals for reasons that may be attributed to the employer and if the contractor is not be able to perform another work due to the delays resulting from employer, those durations will be added to the Work Period. However, contractor may not claim any compensation from the Employer for such extensions.
- 6.7. Work Period shall be deemed the be started after the Provisional Acceptance and by the delivery of the work order.
- 6.8. The Contractor shall clearly state the period required to complete all the work.
- 6.9. The Contractor may ask revision or amendment of the work program content, duration and sequence.

7. Documentation

- 7.1. After the Contractor is determined, the Contractor will submit the following documents in three sets to the approval of the Employer in order to continue the work and obtain approval for the materials to be used. The information must be in soft copy.
 - o Catalogs of products to be used (in English or Georgian)
 - o Manufacturing Plan, Section and Detail Drawings
 - o Product and Material List (Brand, Model, Description, Manufacturer, Supplier Information)
 - o Technical Data Sheets
- 7.2. After the completion of all works and procedures, detailed maintenance and usage instructions shall be provided for each material used in order to ensure the correct operation and maintenance of each material and element used. The package of documents will include the following in both English and Georgian.
 - o As-built information (processed on the project)
 - o Warranty documents of the products used (obtained from the material or device manufacturer)
 - o Warranty documents regarding the whole system (issued by the Contractor)
 - o Operations Handbook / Notes documents (English and Georgian)
 - o Maintenance Handbook / Notes (English and Georgian)

In the event that any document from this documentation is missing or not at all, final accept processes will be delayed by the Employer until the documentation is complete.

- 7.3. The documentation package will be bound in bulk and delivered in 2 sets (Hard Copy). The information shall be provided in soft copy, on 1 set of CDs.

8. Maintenance and Warranty Commitment

- 8.1. The system will be under the Contractor's Maintenance and Warranty Commitment for 2 (two) years after the Temporary Admission date. During this period, the entire system will be cleaned and maintained at least once every 6 (six) months, within the scope of "annual trial". The content of the trials and maintenance will be in accordance with the manufacturer's requirements and NFPA / EN standards. All kinds of labor, materials, spare parts, etc. that may be required during the maintenance and warranty period. It will be covered by the contractor without any charge. These maintenance will be documented and presented to the Employer.
- 8.2. In case of any problems other than regular maintenance and when the Employer deems necessary, the Employer may send a written notification to the Contractor. In this case, after the notification is sent to the Contractor, the Contractor shall send an authorized and expert staff with the necessary materials and equipment and carry out the works to ensure the normal operation of the system. No additional fee shall be paid for these works to be carried out under warranty. User errors shall be excluded from this situation.
- 8.3. The Contractor shall undertake to procure the materials used in the systems at market prices for at least 10 (ten) years. In addition, in the event that any material used in the system is removed from sale at the end of 10 (ten) years, it shall inform the Employer in writing at least 6 (six) months before the sale and, if necessary, undertake to provide the material at market value.
- 8.4. These commitments will be clearly stated in the Warranty & Notarization Statement to be provided by the Contractor.
- 8.5. In addition, a typical maintenance contract sample shall be included with the offer, and a sample maintenance contract shall be submitted with the offer, with a maintenance fee of one (1) year.

B. Technical Specifications

9. Material Supply

- 9.1. All materials, equipment and tools to be used during construction shall be provided by the Contractor.



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- 9.2. All materials shall be new, unused, made with first-class workmanship, in accordance with the specifications in the Technical Specifications and shall deliver the required performance.
- 9.3. All material to be used shall be submitted to the employer for approval. During the bidding, mentioning any brand and model, even if they fit in with the Technical Specifications does not mean that they may be used. Also, since installation of the equipment will be realized under the responsibility of the contractor, it shall be essential that the material is received as mounted and operational.
- 9.4. The Contractor shall, before starting work, give a collective Application List for all the penetration points versus materials to be used. This list shall also indicate the appropriate listing (approval) number of the system and drawing of the system. Following the approval of Application List, in accordance with the order and install (assembly) program, all materials shall be submitted for approval separately. Applications shall start when the Application List and Materials are found to be compliant. Employer shall evaluate and answer the material applications for approval, within a maximum of two week, using the Approval / Conditional Approval / Rejection form. Employer may require more details related to the material which is submitted for approval at the approval stage as well as seeing the sample of the material and ensuring the trial.
- 9.5. Employer shall have the right to reject the materials at any time, if such materials are found non-compliant with all kinds of technical requirements and required performance, regardless of whether it was previously deemed compliant.
- 9.6. The Contractor shall submit those who are authorized representative of the provided materials in Georgia with their contact information at the approval process. If the employer needs these materials in the future, it shall have the direct power to procure them from this company. The contractor may not impose any restriction for sales related to the companies in this regard.
- 9.7. All kinds of materials specific to the fire system to be used in the system must have the specified quality approvals. It is preferred that the materials are EN, DIN or VDS approved. General installation materials that are not specific to fire must have a respectable foreign approval or at least IBC certificate.
- 9.8. The following criteria must be met in the procurement of Emergency Lighting and Emergency Exit Signage Systems materials;
- A. Emergency Lighting System:
1. Emergency lighting device placement shall be made by the Contractor on site based on the drawings presented in the Technical Specification. Employer's approval shall be obtained for the device placements foreseen in the field before starting the installation phase.
 2. The installation frequency of the emergency lighting fixtures shall be adjusted to be at least 1 lux at any point on the main escape route center line.
 3. On the main escape routes, at the end of the emergency working period, the emergency lighting level shall not be lower than 0.5 lux at any point.
 4. Provided that the emergency escape route does not affect the illumination level negatively, the arrangements of the emergency lighting devices can be changed. The contractor is obliged to take into account the suggestions and opinions of the facility authorities during the device installations. All changes will be notified in writing to the Employer officials.
 5. Emergency lighting device installations should be fixed against seismic movements regardless of the earthquake zone of the facility.
 6. Emergency lighting fixtures will have portable use by taking them from their places when necessary. For this reason, electrical connections will be made of plug or removable socket type accordingly.
- B. Emergency Exit Signs System:
1. Emergency exit device placement shall be provided by the Contractor on site based on the drawings presented in the Technical Specification annex. Employer's approval shall be obtained for the device placements foreseen in the field before starting the installation phase.
 2. Continuous electricity supply will be taken into consideration in emergency exit signs installations and backup energy sources such as UPS and Generator will be preferred where possible.
 3. In accordance with the relevant standards, it is assumed that the emergency exit sign can be seen from a distance 200 times the height of the sign. Additional marking will be provided if conditions preventing this situation occur.
- 9.9. In the cabling, except for junction boxes and device inputs, there will be no cable joints and a single piece of cable shall be used.
- 9.10. All cables and connection points will be labeled to determine both the intended use and the device it belongs to. Fixture number in accordance with the local facility standard will be given while installing all devices.
- 9.11. During assembly, cables will not be fixed directly with clamps. Cables will be installed through PVC cable duct in office areas such as Control Room and through EMT or conduit in areas such as technical rooms with heavy operating conditions.
- 9.12. All installations shall be earthed, and earthing lines shall be checked at the end of the work. The earthing line resistance value of the fixture shall not exceed 5 Ohms.
- 9.13. Appropriate number of devices (maximum 5 fixtures) or fixtures can be fed through the same circuit breaker. Circuit breakers shall be added to protect the newly installed line closest to the source on the line they belong to.
- 9.14. If the electricity supply is used from the existing weak current network, the existing circuit breaker protection on the line shall be checked. If necessary, the power shall be increased and the existing circuit breaker shall be replaced with it.



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- 9.15. The maximum allowable voltage drop in the installation is 2%. Voltage drop calculation shall be provided in long-distance electricity supplies (lines more than 30 m for 2.5mm² cross-sectioned cable).
- 9.16. The Contractor can use similar type cable with higher cross-section or get energy feed from different points when necessary.
- 9.17. All kinds of assembly and auxiliary materials required for the work, whether they are mentioned in the technical specification, belong to the Contractor. However, since the assembly elements differ according to different products and solutions, the list prepared by the Contractor for the materials referred to as "set" in the material lists shall be given to the administration and the prices will be shown collectively.
- 9.18. Within the scope of the work, all kinds of materials specified in the drawings and specifications, including the construction cost of the work, shall be provided by the Contractor without any privileges. Although the materials to be used include all the materials and labor required for the specified work, the offer items based on the bid unit price are as given in the attached Material List and Technical Specifications.
- 9.19. Any work or material that is not included in the material unit price descriptions but is a natural part of the work for the construction of the work is within the scope of the work, and the material shall be included in the unit price. However, in case of an extraordinary situation that will go beyond the unexpected planned work, a unit price shall be determined if necessary for the use of an unforeseen material.

10. Application Rules

- 10.1. The work to be done shall be in accordance with the specified standards (See Article 3) and shall be in a content that will fulfill all the requirements mentioned by these standards.
- 10.2. The work is not only the purchase of materials, but also the installation of armatures and signs, electricity supply, the supply and installation of mounting feet, taking all kinds of physical and electrical safety precautions belong to the contractor.
- 10.3. The fact that any subject or information is missing or unclear in the tender documents (specification, material list and technical specifications, project, etc.) cannot cause the work to be done to be against the standards. In case of any contradiction or hesitation, written opinions shall be obtained by consulting the Employer's officials.
- 10.4. During the work to be done, it is essential to keep the entire facility under continuous and reliable protection. The principle of "Continuity of Fire Safety" shall not be ignored at any stage of the work.
- 10.5. The principle of "Continuity of Fire Safety" is an integral part of the work, and the Contractor is obliged to consider the changes to be made in the work schedule due to this principle and the delays that may arise from it. Therefore, no additional time or fee can be requested.
- 10.6. The contractor shall work in a way that does not cause production disruption during the works.
- 10.7. The Contractor shall not perform any operation that will cause fire hazard, such as cutting, grinding, drilling, welding, etc., which are considered to be "hot work". After the necessary manufacturing is done in the workshop or in safe areas, only assembly shall be made inside the building. Factory security units shall be notified in case of mandatory hot works encountered in connection with the existing system, and shall be worked after taking the necessary permits and security precautions.
- 10.8. The Contractor shall fully comply with the general rules and procedures of the Employer for quality control, work and worker safety, environmental protection, work permit, etc., and shall not request any additional fees for this.
- 10.9. The contractor shall perform the work as stated in the as-built project, which will be prepared based on the Site Distribution Chart. It shall be able to make suggestions to make the job better, easier and more reliable, but for whatever reason, it shall not be able to request an additional price to the bid price.
- 10.10. Companies that shall bid for the construction of the work shall examine the location of the work and current conditions on site before bidding.
- 10.11. Each installation work shall be performed by certified and qualified personnel in full compliance with the requirements of the assembly rules. The names and certificates of the personnel who shall manufacture shall be submitted to the approval of the Designer-Consultant and Employer Project Engineer before starting work. The works shall be carried out by persons whose names are approved personally, and assistants and apprentices shall not take part in production. The Contractor shall accept the replacement of its personnel to be involved in the production as a result of a dispute with the Employer.
- 10.12. The working rules regarding the supply of all kinds of equipment such as masks and gloves, working in a closed area, welding, working at high places, and energized electrical installation specified in the occupational safety regulation shall be completely followed by the Contractor. The employer has the right to inspect and warn on these issues.

A meeting shall be held between the Employer and the Contractor every week or in a period determined by the parties involved, including the status of the project and occupational safety issues.

11. Trial (Test) Procedures

- 11.1. After the systems are installed, they shall be tested before they are put into operation. The trials described under this title are not a part of the temporary admission process, and the temporary admission procedures can only be started after these trials are deemed sufficient by the Employer. In this context, re-execution of all or part of the specified trials can also be required for temporary admission procedures. It shall be ensured that specialist institutions or organizations participate



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in the trials. Third party expert supervisors shall present their opinions in written reports to the Employer at the stages of installation supervision, trial, commissioning and acceptance. All equipment and consumables required during trial and commissioning shall be provided by the Contractor.

- 11.2. The Contractor shall apply to the Employer in writing to perform the trials under the supervision of the Employer of the systems that are brought into working condition without error. The Contractor shall also submit a "Trial Report" as an attachment to this application. In this report,

1. Description of the trial to be performed,
2. The purpose of the trial,
3. Events or measurement values whose performance is to be observed,
4. Methods and devices to be used for measurement,

shall explain clearly and in detail. Trials in which the Employer shall participate as an observer shall be performed after this report is approved.

- 11.3. As stated above, the re-execution of all or part of the trials mentioned can also be requested during temporary admission procedures.
- 11.4. All kinds of commissioning materials, labor, test and measurement devices, engineering services, etc. required for the delivery of the systems in working condition shall be provided by the Contractor.
- 11.5. After the successful completion of the Trial Procedures, the system shall be delivered in working condition in accordance with the Commissioning procedure.
- 11.6. Commissioning shall be performed in accordance with a form and procedure to be approved by the Contractor to the Designer-Consultant and the Employer.
- 11.7. All kinds of commissioning materials, labor, trial and measurement equipment, engineering services, etc. required for the delivery of the manufactured section in working condition shall be provided by the Contractor.

12. Commissioning Process

- 12.1. Systems with completed trial procedures shall be deemed ready for commissioning.
- 12.2. After the successful trials, the system will be delivered in working condition in accordance with the Commissioning Procedure.
- 12.3. Commissioning is not a part of the temporary admission process, but an integral part of the direct commitment work.
- 12.4. The commissioning work shall be performed in accordance with a form and procedure to be approved by the Contractor to the Designer-Consultant and the Employer.
- 12.5. The Contractor shall prepare the transactions, observations, values and comments performed during commissioning as "Commissioning Report" and submit it to the Designer-Consultant and Employer.
- 12.6. All kinds of commissioning materials, labor, trial etc. required for the delivery of all fire protection systems in working condition shall be provided by the Contractor.

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