GEORGIA HEALTHCARE GROUP

TBILISI/GEORGIA
DEKA HOSPITAL

FIRE WATER DISTRIBUTION SYSTEM TECHNICAL SPECIFICATION

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Employer

Evex Healthcare Group – TBILISI/GEORGIA

prepared by

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TECHNICAL SPECIFICATIONS

1. General Information

1.1. Georgian healthcare provider Evex Healtcare Group (hereinafter referred to as Employer) intends to contract out “Fire Water Distribution and Hydrant System” works at Deka 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. This specification sets out the technical features and details that must be followed in order to do the work in question.

1.3. Within the scope of "Construction of New Fire Water Distribution System", material supply, installation and engineering services will be provided by the Contractor as a whole for the delivery of the system in accordance with the drawings and standards presented in the Technical Specification annex.

2. Purpose of Work

2.1. The systems to be delivered in working condition will work together with each other and with other systems as a whole (fire water pressurization system, automatic water extinguishing systems, fire hose cabinet system, etc.) to ensure the control and extinguishing of a possible fire.

2.2. The facility does not have an existing Outdoor Fire Hose Cabinet (Hydrant) System. With this project, piping, hydrants and building entrances will be made and the system will be provided to serve the entire Facility..

2.3. The purpose of the work is to design and build in accordance with NFPA (National Fire Protection Association) and FM (Factory Mutual) standards.

2.4. All systems and works to be done will provide the desired fire protection performance by working either individually or as a whole.

3. Content of Work

3.1. The system that will serve the specified purpose is described with specifications and shown in the drawings attached to the specifications.

3.2. All works, materials to be used, system solutions, in accordance with the fact that the facility to be established is an industry with high standards, will be carried out at the highest level of technical quality, technical safety and reliability, thus protecting these areas from fire.

3.3. All kinds of material, installation, workmanship required for the system to provide the desired fire protection and deliver it in working condition, whether specified in the request for proposal documents or not, will belong to the Contractor.

3.4. All unit prices given will be the prices of the assembled material, and in case of any future decrease or increase, these prices will be taken into consideration. All kinds of complementary-assembly materials and labor that do not have a unit price will be included in unit price materials.

3.5. The topics covered under the work are:

a) Connecting the new outdoor fire water distribution piping to be built by the employer to the existing outdoor fire water distribution line and the fire water pressurization (pump) system
c) Filling the excavated areas appropriately and making the floor covering where necessary
d) Tests of the system
e) Hydrostatic pressure testing of the system in accordance with the relevant standards.
f) Commissioning
g) Submission of documents
h) Delivery of the system in working condition

3.6. For the realization of these works, the preparation of all necessary infrastructure and installations, commissioning in accordance with the technique of the work and making it ready and functional are an integral part of the work.

3.7. Occupational safety materials to be used during the construction of the work, assembly or assembly auxiliary materials (ladder, stand, etc.) will be supplied by the Contractor.

3.8. The system and system elements that will serve the specified purpose will be aimed to have an economic life of 20 (twenty) years, and all necessary elements will be fulfilled in full to achieve this

4. Related Standards

4.1. The work to be done will be in accordance with international fire protection and fire safety protection rules and standards. In addition, all relevant standards referred to as reference in these standards will be based on the same validity.

In this context, the standards that will be valid and based on design, installation (assembly), commissioning, test and acceptance processes are as follows:

NFPA	National Fire Protection Association
FM	Factory Mutual

Other major valid standards are:

NFPA 14-2007	Standard for the Installation of Standpipe, Private Hydrant and Hose System
NFPA 25-2008	Inspection, Testing & Maintenance of Water-based Fire Protection Systems
NFPA 24-2007	Inst. of Private Fire Service Mains and Their Appert.
ANSI/AWWA	Piping Design
DIN 19630, DIN 4033	Guidelines for the Construction of Water Pipelines
DIN 18300, EN 1610	Installation and Quality Control Rules of PE Pipes
EN 10255 / 10217-1	Steel Pipes

4.2. Current editions and versions of the relevant standards valid at the time of construction will be considered. The contractor is obliged to obtain the relevant standards and publications. When there are documents that are difficult to find, they can request this from the employer in parts and benefit from the existing standards in parts within the boundaries of the facility.

5. Related Product Approvals

5.1. Except for the installation elements specified below, all system elements to be provided will be FM (Factory Mutual) approved and no other approval will be accepted.

The following installation elements will have at least EN approval.

- Pipes
- Pipe Supports
- Level Indicators

5.2. Regardless of the above-mentioned approvals, all products will be submitted for material approval, regardless of the approval they have, their suitability for the place of use will be questioned by the administration. However, material supply and assembly will be allowed after the material approval is given.

6. Projects and Drawings

6.1. This specification forms an integral whole with design and application drawings. Within the scope of this work, the drawings based on the tender are attached. The contractor should study all drawings in detail before preparing his proposal. The fact that an offer is submitted indicates that the specifications and drawings are also accepted.

6.2. 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.

6.3. The application can only be started after the Manufacturing Drawings and the materials specified in the specification are completely 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, which it understands does not comply with the technical requirements, at any time, regardless of whether it was previously found appropriate. Modifications that can provide ease of installation or ease of operation and maintenance to the employer may be suggested, after the technical suitability of such suggestions is checked and approved, they are reflected in the application and shown in the manufactured status pictures.

6.4. After the contractor completes the work, before the Provisional Acceptance, it will show the final status of the work done and prepare the drawings containing the "As-built" information. Manufactured condition drawings will be prepared to include all kinds of manufacturing details such as the entire route and assembly details. "Manufactured Condition" drawings will 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 "Manufactured Condition" drawings information is entirely owned by the Contractor.

7. Work Program and Duration

7.1. The Contractor will make the necessary work planning in order to do the work on time and submit the Work Program to the Employer's approval within the period specified in the administrative specification from the date of contract signature. In the work schedule to be presented, the project, material procurement times, pier times, site discharge, power outage, fire water network cut-off times, hot work times, etc. It will be specified in days and each separately, on the basis of priority and sequence, with actual calendar dates.

7.2. Since the work will be done in an existing and working facility, site delivery, making the environment suitable for work, etc. The work will be counted within the construction period.

7.3. 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.

7.4. The Contractor is obliged to provide the necessary manpower and installation team to complete the work within the Construction Period of the Work specified in its proposal.

7.5. The Work Program to be prepared at the beginning of the work will be updated once a week during the construction of the work and submitted to the Employer.

7.6. After the approval of the Work Program, the place cannot be delivered due to reasons arising from the Employer, the decision cannot be made, the approvals are delayed, etc. In cases, if the Contractor is not able to do another job at that time, the delays caused by the said Employer are added to the Duration of Work.

7.7. The contractor shall clearly indicate the time required for the completion of the entire work in his proposal.

7.8. The employer may request the content, duration and order of the Work Program to be reviewed or changed.

8. Material Supply

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

8.2. 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.

8.3. 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.

8.4. 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 test.

8.5. 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.

8.6. 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.

8.7. Grooved connection T, Elbow, etc. to the item of material specified as Grooved connection clamp. intermediate fasteners are also included. No additional item will be opened and no payment will be made for these materials.

9. Installation (Assembly)

9.1. Installation (assembly) of the devices is an integral part of the work and will be carried out by the Contractor.

9.2. The Contractor can do the installation work himself or have it done by another Subcontractor company. However, if the Subcontractor is to be used, the Contractor shall clearly indicate what will be the work to be done by the Sub-Contractor during the bidding phase. The Contractor shall add the letter of undertaking from the Sub-Contractor (stating that the Sub-Contractor agrees to work with him in case the Contractor receives the job) to his proposal.

9.3. The Contractor will specify with which Sub-Contractor it will perform the installation during bidding and will not change the Sub-Contractor specified without the request and approval of the Employer; will do the work with the Subcontractor that it has notified. The Contractor may declare more than one Sub-Contractor at the bidding stage. In all cases, the Contractor is responsible for the works to be done by the Subcontractor. If the Employer deems it necessary, he may request the Subcontractor to be changed.

9.4. All installations and materials will be installed, installed and applied by knowledgeable, trained and experienced people in accordance with the manufacturer's knowledge and technique, with first-class workmanship.

9.5. All installation will be protected against corrosion and devices, valves and equipment will be labeled with micron writing on the aluminum plate and numbered, and the piping will be marked.

9.6. Underground pipes will be laid on sand bedding, and metal dust safety information strip will be laid on the piping and covered.

9.7. It is recommended that pipe joints are not sealed before the pressure test. All joints and underground installation information encountered during the excavation should be recorded in the fabricated condition drawings.

9.8. Every installation work will be done by certified and qualified personnel, in full compliance with the requirements of welding, grooved connection technique and assembly rules. The names and certificates of the personnel who will manufacture will be submitted to the approval of the Designer-Consultant and EMPLOYER Project Engineer before starting work. The works will be carried out by persons whose names are approved personally, and assistant and apprentices will not take part in manufacturing.

9.9. During excavation works, the existing electrical and mechanical installations will not be damaged, and maximum care will be taken to prevent damage that may occur during excavations. The Contractor will be responsible for any damage that may occur. The Contractor will never work without the personnel to be assigned by the Employer.

9.10. When re-filling process, it should be ensured that there is no organic material in the filling soil and it is purified from waste such as plastic and paper. If necessary, the soil should be separated from foreign objects by sieving. The pipe route will be closed after the tests and examinations are done and the concrete freezing of the impact blocks is completed.

9.11. Foreign material entry into the pipe will be prevented during installation. Pipe mouths will never be left open during manufacturing. If stones or rocks are found on the route, the stone will be removed, if not, at least 20 cm sand bed will be provided on it.

9.12. Only rotary blade cutter will be used in steel pipe cutting. Oxy-Acetylene welding will not be used. After the cutting process, stone correction and necessary corrosion protection will be provided.

9.13. Thrust block will be made in places where every elbow, branch, building entrance, valve or mechanical installation element is used in the new buried fire water pipes to be built in the outdoor area. The contact surface and mass of impact blocks to the pipe will be determined by calculating the force it will be exposed to.

9.14. At least 15cm of sand filling will be poured under the underground piping and it will be made in a way that the contact of the pipe in all areas. After the pipe is laid on the sand filling, sand will be poured again, 30 cm above the upper level of the pipe. Later, soil filling will be made. Spilled soil backfill will be compacted by 90% - 95% with a medium power compactor (ANSI / AWWA C151 Type 2 or 3). This process will be completed up to the finished ground level.

9.15. Fluid additives preventing leaks will not be used.

9.16. After all connections of the new outdoor piping are completed, a DN 25 (1") diameter outlet will be left right after the first shut-off valve from the pump room, and a 3-way valve and a 16 bar scale manometer will be placed on this outlet. This pressure gauge will be used for test runs.

9.17. Machines will be used in concrete crushing works and the concrete pieces removed will not be used as filling material again and will be discarded. The contractor will inform where he left or delivered the wastes taken out of the facility as garbage. After all assembly work is completed, concrete will be poured into the broken parts.

9.18. For the pipes passing through the green area, the landscape will not be damaged, and new ones will be planted in the damaged grass. Other landscape elements will be moved or the employer will be warned before the assembly. The contractor will not ask for an additional fee for these transactions.

9.19. At the stage of repairing the top coating after pipe manufacturing, it should be added to the existing reinforcement with the spacers suitable for the existing cover on concrete roads, by overlapping the steel mesh and two eyes. Materials that will ensure the compatibility (adherence) of old and new concrete will be used. Pouring road concrete with the same dosage, the same slab alignments and dilatations will be done in such a way that the repair work of the same type of curbs with the existing one is not clear. In asphalt pavements, repairs will be made by using ano alignments so that no different lines or layers are seen at the end of the production.

9.20. The Contractor will fully follow the working rules regarding the supply of all kinds of equipment such as masks, gloves, working in a closed area, welding, live electrical installation specified in the occupational safety regulation. The EMPLOYER has the right to supervise and warn on these issues.

9.21. After the completion of the works, labeling and marking will be made to the installation in accordance with the manufactured state drawings, in accordance with the relevant standards.

9.22. The site engineer to be assigned by the contractor will be obliged to follow the work done on the construction site throughout the applications and will comply with the working hours. The works will not be started without the contractor's site engineer.

10. Test Procedures

10.1. The system will undergo detailed Test Processes during and after manufacturing and assembly.

10.2. After independent tests consisting of tests of each element, the Contractor will make at least two total performance tests on its own, and the problems encountered during these test will be eliminated. Any problem seen in the subsystem will be considered as if it were seen in all subsystems, and will be examined and resolved in all of them; after removal, test will be made again.

10.3. The Contractor will make a written application to the Employer in order to make the tests of the systems that are made working flawlessly under the supervision of the Employer. In this report;

a) discription of the test to be made,
b) purpose of the test,
c) events whose performance will be observed,
d) the acceptable values of events whose performance will be observed,
e) methods and devices to be used for measurement,
f) the way the test was recorded,

will be indicate detailed. Tests which the employer will participate as an observer will be made after this report is approved.

10.4. After the piping is finished, flushing will be applied to the piping at a water speed of 3 m / second. For this, after the piping is ready for use with all elements (sprinkler heads, test and discharge valves, etc.) installed, the test and discharge valve will be opened, water at 8 bar pressure will be supplied to the system, and the inside of the pipe will be washed after the sprinkler installation. The flushing process will continue until clean and particle-free water comes out of the drain valve.

10.5. A hydrostatic pressure test will be made at 14 bar by supplying water to the system, in which all elements are attached to the installation. After the system is filled with water, it will be pressurized to 14 bar with a low capacity pump and it will be waited for at least 2 hours. It will be observed on the manometer that there is no drop in pressure during this time. In case of a drop in pressure, leaks will be detected and eliminated and the tests will be repeated for 2 hours until a constant pressure is achieved.

10.6. Any hardware that fails during the test will be replaced with a new one.

10.7. Test Procedures are not a part of the substantial completion, but an integral part of the direct commitment work.

10.8. All tests will be made within the framework of a form and procedure to be approved by the Contractor to the Employer.

10.9. Tests will be carried out according to FM, NFPA and material manufacturer requirements.

10.10. All kinds of test materials, labor, test and measurement devices, engineering services, etc. required for the delivery of all fire protection systems in working condition. It will be provided by the contractor.

11. Commissioning Process

11.1. Systems with completed test procedures shall be deemed ready for commissioning.

11.2. After the successful tests, the system will be delivered in working condition in accordance with the Commissioning Procedure.

11.3. Commissioning is not a part of the temporary admission process, but an integral part of the direct commitment work.

11.4. 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.

11.5. 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.

11.6. All kinds of commissioning materials, labor, test etc. required for the delivery of all fire protection systems in working condition shall be provided by the Contractor.

12. Documentation

12.1. All kinds of drawings, documents, engineering calculations, suggestion reports etc. prepared as a result of the contractor design process. will submit the documents for the approval of the Employer.

12.2. In order to obtain approval for the materials to be used during the works, the Contractor will submit the following documents in three sets to the approval of the Employer.

- Catalog pages of the products to be used (English or Georgian)

- Product and Material List (Brand, Model, Description, Manufacturer, Supplier Information)
- Product Catalogue

- Technical Data Sheet

12.3. With the completion of all works and processes, detailed and complete documentation for maintenance and use of each material used will be provided in order to ensure the operation and maintenance of each material and element used. The document package will include the following in both English and Georgian.

- Manufactured-status information

- Warranty documents of the products used (obtained from the manufacturer)

- Warranty documents for the whole system (issued by the contractor)

- Maintenance, test and operating instructions

12.4. The documentation package will be bound together and delivered in 3 sets. If the information is in a computer file, it will be provided in 2 sets of hardcover and 1 set of CDs in print.

13. Training

13.1. The Contractor will provide technical training for the user and maintenance staff of the Employer regarding the works done and the systems installed.

13.2. The training will be carried out at the facility itself.

13.3. The training will be given to at least two groups, and written training notes will be distributed to the user during the training. At the end of all training, the Contractor will deliver a list (Training Program Form) of those who attended the training and the training they attended. In addition, the training given will be recorded as audio-visual (using video cameras, etc.) and delivered to the Employer for the future use of the personnel.

13.4. In case of problems related to the quality of the education, inadequacy of the educator, the level of education attained, or the insufficiency of the training documents, the Employer may request that the training be renewed partially or for all the missing parts of the training.

14. Warranty Commitment

14.1. The system will be under the Contractor's Warranty Commitment for 1 (one) year after the Provisional Acceptance date. During the warranty period, any workmanship, material, spare parts, etc. that may be required. It will be covered by the contractor without any charge.

14.2. The Contractor will ensure that the system operates normally by sending its authorized and expert personnel with the necessary materials and equipment within the Warranty Period, within 24 (twenty four) hours after the written call is sent by the Employer in case of any problem.

14.3. In the event that the Contractor fails to arrive within the specified period or fails to intervene satisfactorily to the Employer a penalty of 0.5% (five per thousand) of the daily work will be applied until the necessary actions are taken, and this amount will be collected from the Letter of Guarantee.

14.4. The materials provided by the Contractor will be under the warranty of the Contractor and the material producer and supplier companies separately against manufacturing and assembly faults during the Warranty Period after the materials provided by the Contractor are received individually and as a whole system. In all guarantee transactions, the Employer will accept the Contractor as the addressee.

14.5. The Contractor is not responsible for Maintenance and Warranty related to the materials provided by the employer.

15. Application Rules

15.1. The contractor is obliged to work and manufacture in a manner that does not pose any danger to the facility security in all kinds of works and manufacturing.

15.2. During the installation and field work, a “Responsible Technical Person” will be kept on site at all times. The Technical Man in Charge can be an engineer or a technician. The resume of the Technical Man in Charge will be submitted with the bid in the tender file. The Technical Person in Charge will be in charge of controlling the work and environment and ensuring all necessary work safety. The Responsible Technical Man, who will always be in the works, will coordinate with the relevant units of the Employer.

15.3. The Contractor shall obtain the opinion and approval of the Employer in all kinds of manufacturing, device placement.

15.4. During the construction of the contractor work existing pipes, cables, structures, etc. will not damage the hardware and installation, if it damages, any material supply, manufacturing, assembly, etc. It will perform the works of making the damaged hardware or installation work free of charge, belonging to the Contractor.

15.5. During the works to be carried out within the scope of the project, it is essential to keep the entire facility under continuous and reliable protection. The principle of "Continuity of Fire Safety" will not be ignored at any stage of the work.

15.6. Since the principle of "Continuity of Fire Safety" is an integral part of the work, 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 this. Therefore, no additional time or fee can be requested.

15.7. Temporary or partial work cannot be done in areas other than the work areas determined by the Employer in order to realize the defined work. Prior permission is obtained for the areas to be used. Without written permission, the studies are not carried out, even if they are described in detail in the projects and specifications.

15.8. Contractor or subcontractors cannot go outside the described working areas and cannot use any image recording device (camera, video camera, etc.) without permission.

15.9. Smoking, lighters and carrying matches are prohibited throughout the facility. However, smoking is allowed in the rest areas or in the marked areas where smoking is allowed during the break times.

15.10. The Contractor will carry out the connections to be made, the infrastructure to be used, with the continuous coordination and cooperation of the Employer's authorized engineer.

15.11. Installation and commissioning of all elements will be carried out in accordance with NFPA, FM Standards and manufacturer company requirements. The lack of any subject or information in the tender documents (specification, material list and technical specifications, projects, etc.) cannot cause the work to be done to be against the relevant standards.

15.12. The contractor can do any "hot work" in the building such as cutting, grinding, drilling, welding, etc. will not do any action that will create fire hazards, and will only install inside the building after manufacturing in a workshop or in safe areas.

15.13. Contractor, Employer's quality control, work and worker safety, environmental protection, work permit, etc. It will fully comply with the general rules and procedures and will not request any additional fees for this.

15.14. The works will start after the Site Delivery to the Contractor.

15.15. All kinds of labor required for the installation, assembly and delivery of the system in working condition, including the construction cost of the work, will be provided by the Contractor without any privileges.

15.16. Contractor or subcontractors cannot leave the work areas described without permission and cannot use any image recording device (camera, video camera, etc.).

15.17. Connections to be made will be made by the Contractor, the permanent coordination and cooperation of the Employer project engineer. Electricity will not be interrupted in the facility and necessary measures will be taken for this. If the deduction is mandatory, the Employer will be informed in advance.

15.18. The Contractor is obliged to comply with the "Hygiene and Cleaning" rules of the Employer during the manufacturing works. It will take the opinion of the Employer about equipment cleaning, equipment that are not allowed to be used, etc. prior to manufacturing and apply them.

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MATERIAL LIST & TECHNICAL SPECIFICATION

1) Outdoor Hydrant — 7 Ea.

Species	: Aboveground hydrant, with automatic discharge against frost
Inlet Diameter	: DN100 (4")
Outlet Diameter	: 2xDN 65 (2 x 2-1/2")
Inlet Connection	: Flanged
Outlet Connection	: Storz
Activation	: Manual
Accesories	: With 1 switch and hydrant elbowtir
Approval	: EN Approved
Spare	: None
Producer	: Klinger-Yakacık, Fetaş or Valftek etc.

2) Aboveground Hydrant Cabinet — 7 Ea.

Type	: Above ground
Protection	: Weather resistant and protected
Installation	: Hidrant yakınına
Material	: Phosphated galvanized sheet (epoxy coated)
Colour	: RAL3000 Red
Accessories	: 1 Hydrant opening switch, 2 pieces DN65 (2-1/2") PVC coated 30 m fabric hose and with wheels and 2 adjustable nozzles and nozzle fixing clamps
Approval	: EN Approved
Spare	: None
Manufacturer	: Fetaş or Normeks etc.

3) Butterfly valve, — 2 Ea.

Inlet– Outlet	: DN 250 (12")
Connection	: Wafer Type
Mounting Style	: Vertical-Horizontal
Opening	: With handwheel with gearbox
Material	: Cast iron body, bronze disc
Indicator	: Position indicating pointer
Accessories	: TKÇY Monitoring key and 2 pcs. With Connection Clamp
Manufacturer	: Fivalco, Nibco, Tyco, Victualic Or Similar
Approval	: UL Listed, FM Approval

4) Burried NRS, DN200 — 2 Ea.

Type	: Burried NRS
Diameter	: DN 200
Mounting Type	: Concrete rainforced,
Connection	: ANSI/DIN Flanged
Purpose of Use	: Water control, Shut-off Valve
Approval	: FM approved
Manufacturer	: Kennedy or Volon or Weflo

5) Indicator Post — 2 Ea.

Type	: Indicator Post
Size	: Top ipe diameter connected
Embedding Depth	: 100-150 cm
Complimentary Equipment	: Handle (1 Ea.)
Approval	: FM approved
Manufacturer	: Kennedy or Volon or Weflo

6) PE Underground Fire Water Pipe, DN 200 — 700 m.

Material	: PE-100 (HDPE), SDR11
Size	: DN 200
Pressure Class	: PN 16
Connection Type	: Electrofusion or Butt Welded
Fittings	: Including any auxiliary equipment,
Convenience	: TS 418-2 EN 12201-2
Approval	: EN-TSE Approved
Manufacturer	: Dizayn, Egeplast, Fırat, Kartal etc.

7) PE Underground Fire Water Pipe, DN 125 — 75 m.
As above but;
Size : DN 125

8) PE Elbow, DN 250, 90º — 12 Ea.
Material : PE-100 (HDPE), SDR 11
Size : DN 250
Pressure Class : PN 16
Elbow Angle : 90º
Convenience : TS 418-2 EN 12201-2
Approval : EN Approved
Manufacturer : Dizayn, Egeplast, Fırat or Kartal etc.

9) PE Elbow, DN 125, 90º — 7 Ea.
As above but;
Diameter : DN 125

10) PE T, DN 250 x DN 250 x DN 250 — 2 Ea.
Material : PE-100 (HDPE), SDR 11
Pressure Class : PN 16
Size (Inlet) : DN 250
Size (Outlet) : DN 250
Size (Branch) : DN 250
Ek Type : Enjeksiyon veya Konfeksiyon
Convenience : TS 418-2 EN 12201-2
Approval : TSE Approved
Manufacturer : Dizayn veya Egeplast veya Fırat veya Kartal

11) PE Inegal T, DN 250 x DN 250 x DN 125 — 7 Ea.
As above but;
Size (Branch) : DN 125

12) Thrust Block — 28 Ea.
Function : Preventing pipe movement, fixing it
Type : Unreinforced or lightly reinforced concrete
Concrete type : BS25 (C25)
Size : Calculated
Approval : -
Manufacturer : On-site manufacturing

13) Soil and Grass Area Excavation Process — 725 m.
Function : Installation of Underground Fire Water Pipes
Excavation Depth : 150cm (to be confirmed according to the depth of canals available on site)
Excavation Width : At least 30 cm larger than 30% of the pipe width.
Excavation : By hand or by machine

14) Concrete / Asphalt and Cobblestone Ground Excavation Process — 50 m.
Function : Installation of Underground Fire Water Pipes
Excavation Depth : 150cm (to be confirmed according to the depth of canals available on site)
Excavation Width : At least 30 cm larger than 30% of the pipe width.
Kazı : Cutting with jet stone, then excavating by hand or machine

15) Grass and Soil Filling Process — 725 m.
Function : Sandblasting and soil filling work after piping excavation
Bedding : At least 15cm deep, with Sieved Bedding Sand
Sand Filling : Up to 30 cm above the pipe elevation
Filling : Filling, compaction with screened excavation soil and SC1-SC2 type soil addition
Titling Strip : Magnetic, monitorible information strip on piping

16) Concrete / Asphalt and Paving Stone Floor Filling Process — 200 m.
Function : Providing proper coating after piping excavation
Bedding : At least 15cm deep, with Sieved Bedding Sand

Sand Filling	: Up to 30 cm above the pipe elevation
Filling	: Filling, compaction with screened excavation soil and SC1-SC2 type soil addition
Titling Strip	: Magnetic, monitorible information strip on piping
Concrete	: Mesh Reinforced, at least 15 cm deep, ground concrete
Coating	: - 7 cm Asphalt pavement where necessary - With epoxy asphalt insulating material - Coating with new paving stones compatible with existing cobblestone

17) Road Crossing Pipe Cover, Concrete Slab, DN 300 — 50 m.

Size	: DN300
Convenience	: TS 821, EN 1916
Approval	: TSE- EN Approved

Note: According to the Specification Requirements, all kinds of Auxiliary Materials, Labor, Transportation, Lifting Machines and Engineering Services will be considered in unit prices. These items include, but are not limited to:

All kinds of Auxiliary Materials and Engineering Services according to the Specification Requirements

- All kinds of working fasteners, auxiliary materials, Labor Services for the realization of the work
- All kinds of fasteners, installation materials
- Manufacturing and ready-made elements for fixing purposes
- Fittings, welding, sealing materials
- Corrosion protection, installation painting works
- Labeling and marking
- All kinds of installation materials required to complete the job
- Preparation of Manufacturing Drawings
- Repair Works
- Test and Commissioning works
- All kinds of engineering services according to specification requirements
- All kinds of work and equipment for the realization of the work

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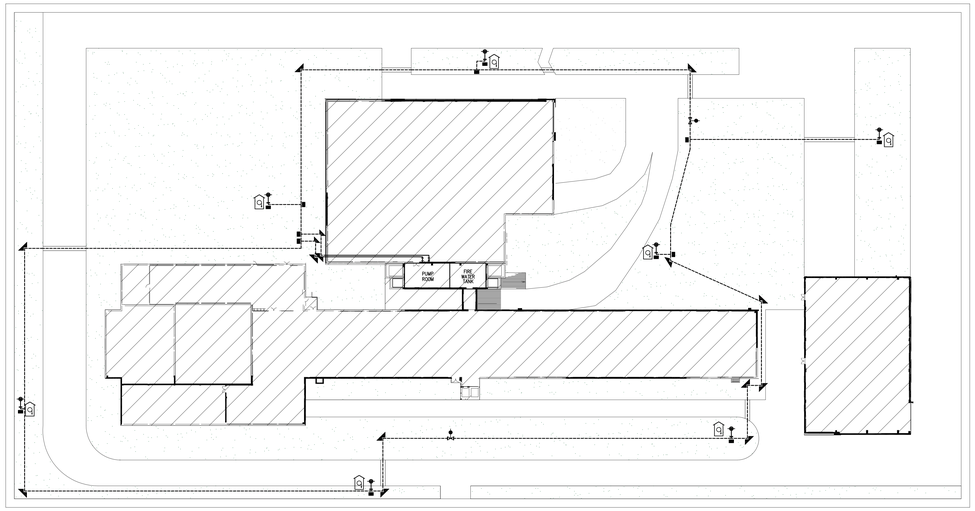
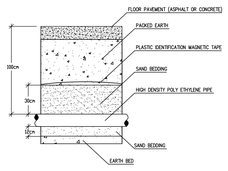
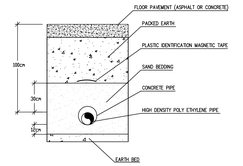


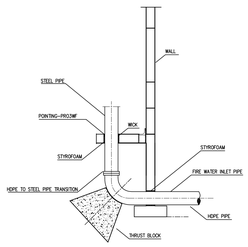
OUTDOOR HOSE-FIRE WATER MAINS SYSTEM
(SCALE: 1/400)



UNDERGROUND PIPE INSTALLATION
(N.T.S.)



UNDERGROUND PIPE INSTALLATION
(N.T.S.)



FIRE WATER INLET PIPE INSTALLATION DETAIL
(N.T.S.)

NOTES

1- Flushing etc. test and commissioning procedure shall be as per NFPA 14-2010.

2- All the hydrants in between the buildings shall be grounded electrically, from the above of the isolation flange.

3- All the piping shall be hydrostatically tested as per manufacturer's spec. and leakages will be eliminated.

4- Before installing, PE pipes will be avoided from sun light (uv).

5- The burry depth given in the installation details is for indication only, the exact bury depth shall be finalized before the installation.

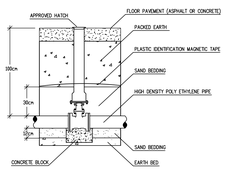
6- The valves whose sizes are not specified explicitly, are equal to the pipe size.

7- All aboveground steel piping shall be connected using flanged connections with at least 16 bar operating pressure.

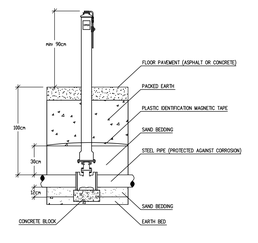
8- All aboveground piping will be marked at each 10 m, to indicate that it is fire water pipe.

LEGEND AND MATERIAL LIST

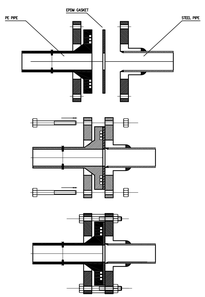
SYMBOL SİMGE	TANIM / DESCRIPTION
	OUTDOOR HYDRANT EQUIPMENT CABINET (2 Ea. 30m 2-1/2" HOSE, 2 Ea. ADJUSTABLE NOZZLE, 1 Ea. WRENCH)
	ABOVEGROUND OUTDOOR FIRE HYDRANT (WITH ELBOW, 4" INLET, 2 x 2-1/2" STORZ OUTLETS)
PIV	POST INDICATOR VALVE (FLANGED, 175 LBS, WITH OPEN AND LOCK LEVER)
	BUTTERFLY VALVE
	OSMY VALVE (FLANGED, C/W SUPERVISORY SWITCH)
	CONCRETE THRUST BLOCK
	NEW UNDERGROUND FIRE WATER PIPING (HDPE, PE100, PN16, SDR11)
	NEW UNDERGROUND FIRE WATER PIPING (HDPE, PE100) - C/W SLEEVE (CONCRETE PIPE)



UNDERGROUNG NRS VALVE INSTALLTION
(N.T.S.)



POST INDICATOR VALVE INSTALLATION
(N.T.S.)

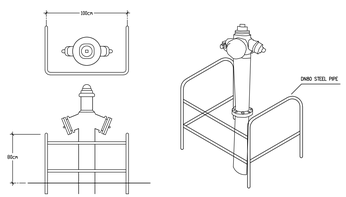


PE - STELL PIPES CONNECTION RULES
(N.T.S.)

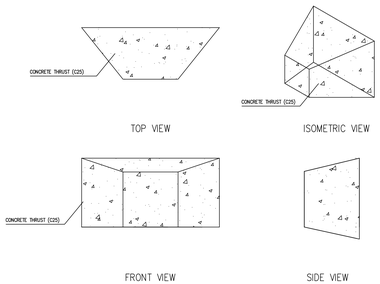
HDPE PIPE SCHEDULE

ANMA ÇAPI NOMINAL DIAMETER	DIŞ ÇAP OUTSIDE DIAMETER	İÇ ÇAP INSIDE DIAMETER	ET KALINLIĞI WALL THICKNESS
DN 110	110,0 mm	90,0 mm	10,0 mm
DN 180	180,0 mm	147,2 mm	16,4 mm
DN 250	225 mm	179,8 mm	22,7 mm

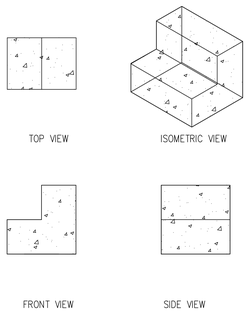
1) ALL UNDERGROUND POLYETHYLENE PIPING SHALL BE OF PE100, HDPE TYPE, AT 16 BAR OPERATING PRESSURE.
2) ALL PE PIPES SHALL BE FACE WELDED OR ELECTROFUSION WELDED CONNECTED.
3) BEFORE INSTALLING, INSIDE OF THE PIPES WILL BE CLEANED FROM SAND AND DIRT.



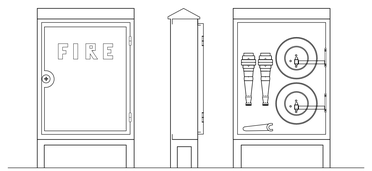
OUTDOOR HYDRANT PROTECTION DETAIL
(N.T.S.)



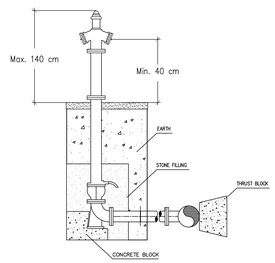
THRUST BLOCK (FOR ELBOW AND TEE)
(N.T.S.)



THRUST BLOCK (FOR HYDRANT)
(N.T.S.)



OUTDOOR HYDRANT EQUIPMENT CABINET
(N.T.S.)

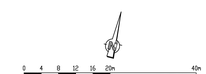


OUTDOOR HYDRANT INSTALLATION
(N.T.S.)

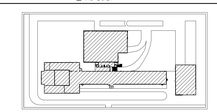
THRUST BLOCK DIMENSIONS

BORU ÇAPI PIPE DIAMETER	DÖNÜŞ AÇISI BEND ANLE	A (mm)	B (mm)	C (mm)	D (mm)
HDPE DN250		800	450	450	800

1) DIMENSIONS IN THIS TABLE ARE DERIVED USING 225 PSI WATER PRESSURE AND FOR A SOIL OF SAND AND GRAVEL (THE BEARING AREA IS MULTIPLIED BY 0.5 ACC. TO TABLE-2 OF FM DS 3-10)



- ☐ FOR SYSTEM APPROVAL
- ■ FOR TENDER
- ☐ FOR INSTALLATION
- ☐ AS BUILT



KEY PLAN

Rev.	Tarih / Date	Açıklama / Explanation
00	21.01.2021	For Tender

İŞVEREN CLIENT

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TEKNİK DANIŞMANLIK TECH. CONSULTANCY	: KARİNA
SİSTEM TASARIMI SYSTEM DESIGN	: KARİNA
MALZEME TEMİNİ MATERIAL SUPPLY	: -
MONTAJ INSTALLATION	: -
ONAY APPROVAL	: -
TARİH DATE	: 21.01.2021
ÖLÇEK SCALE	: 1/400

DEKA HOSPITAL
MANUAL INTERVENTION MEANS
OUTDOOR HOSE-FIRE WATER MAINS SYSTEM
PLAN AND INSTALLATION DETAILS

ÇİZİM NO DRAWING NO : EVEX-DEKA-KAR-MECH-301
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EVEX-DEKA-KAR-MECH-301

ORIGINAL DRAWING SIZE : 1485mm x 841mm