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CONSTRUCTION OF
ÇERKEZKÖY INTERMODAL TERMINAL (IMT)

SECTION I – EMPLOYER'S REQUIREMENTS

GENERAL

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Contract terms

PRAG	FIDIC
Works contract	The Works
Supervision contract	The Supervision
End Recipient of Assistance (ERA)	N.A.
The Contracting Authority (CA)	The Employer
The Works contractor / the contractor	The Contractor
The supervisor / the contractor	The Engineer
Provisional Acceptance Certificate	Taking Over Certificate
Final Statement of Account Certificate	Final Payment Certificate
Final Acceptance Certificate	Performance Certificate
Maintenance Period	Defects Notification Period (DNP)

1. SUBJECT AND SCOPE OF THE PROJECT

1.1. Subject of the Contract

Çerkezköy Intermodal Terminal (IMT) project aims to contribute to the development of a competitive, accessible, and sustainable transport system, thereby supporting Turkey's economic and social development and EU integration.

IMT project was developed within the operation financed by the EU Instrument for the Pre-Accession Assistance (IPA) as a result of analyses carried out by Turkish and European experts, following the best practices in this area of business.

IMT will be located on Halkalı - Kapıkule railway line which will form part of Orient/East-Med Corridor, providing connection with sea ports of Baltic, Black, North and Mediterranean seas. Halkalı - Kapıkule project is a 231 km-long rail line being developed in Turkey to connect the national railway network with Trans-European Transport Network (TEN-T) through Bulgaria.

Construction of IMT will contribute towards improvement of national intermodal infrastructure, increasing the share of freight traffic by rail transport vis a vis road transport and shift towards a safer, environmentally friendly transport system reflecting more balanced modal split.

The results of this IPA funded operation will be:

- IMT built and connected with the existing railway network (with the high-speed railway line);
- an increased capacity and level of service for freight customers (in particular from and to Europe and in connection with Near, Middle East and Asia);
- an improved level of service provided by railway operators to the freight customers/ shippers (by providing infrastructure for intermodal transportation);
- a reduced road traffic demand and decreased traffic on highways (minimising traffic safety risks and greenhouse gas (GHG)).

Once put into operation, IMT is expected to maximise a potential to develop freight traffic volumes and increase the modal split in favor of railway transport (in Thrace area). As a result of IMT activities, a shift from rail to road transport of 0.98 million tons (in the first year of operation) to 2.6 million tons by 2050 is expected.

1.2. Contract management structure

Ministry of Transport and Infrastructure (MoTI), Directorate General for European Union Affairs and Foreign Relations (DGEUAFR), Department of European Union Investments (EUID) shall be the Contracting Authority / the Employer.

Besides the Engineer, the Employer will appoint the Project Manager, as the focal point from the Employer's side, in managing the Contract. The Project Manager shall co-ordinate and provide assistance and information, as necessary, for the successful implementation of the project.

Ministry of Transport and Infrastructure, General Directorate of Infrastructure Investments (DGII) shall be the End Recipient of Assistance (ERA).

DGII will establish the Project Implementation Unit (PIU) and will be responsible for the overall coordination of the technical aspects of the Contract, as well as for monitoring the project implementation.

1.3. Description of the Works

IMT shall be done in 2 phases, IMT Phase I (subject of this Contract) and IMT Phase II (not subject of this Contract). The Works subject to this Contract shall include but not be limited to:

- Survey and site investigation as necessary, including existing structures;
- Functional planning, development of layout, engineering and architectural design including Preliminary design, Final / Detailed design, Application / Implementation drawings and As-built drawings;
- Obtaining all approvals and permits necessary for implementation of works according to Turkish legislation including Usage permit for IMT;
- Manufacture, testing at places of manufacture, supply, delivery, erection, setting to work, commissioning and tests on completion and tests after completion of all plant to prove compliance with the required standards and with duties and guarantees required for the Works, including electrical and mechanical equipment, apparatus, materials, articles, spared, lubricants and ancillaries of all kinds required to produce a complete and operable works in line with Employer's Requirements according to FIDIC Conditions of Contract for Plant and Design Build (FIDIC Yellow Book);
- Tests after completion as minimum should include:

No	Subject	System/Equipment	Test	Interval
1	Commissioning	All Electric & Mechanical Systems shall be commissioned before Employer's Taking Over and required first tests shall be done as per related codes/standards; - Pipe leakage test, - Duck leakage test, - Refrigerant piping leakage test, - Illumination test, - Internal air temperature and humidity test, - Main equipment performance tests (boiler, chiller, VRF, etc.)	Commissioning	Once before Taking Over
2	Electric Power Consumption	All Mechanical and Electrical Main Systems & Equipment such as; - Cooling pumps, - Heating pumps, - Ventilation units, - Chillers/VRFs, - DHW heaters,	Electrical power Consumption record	Monthly during DNP
3	Natural Gas Consumption	Heating and DHW Production system shall be followed for gas consumption	Gas consumption record	Monthly during DNP

4	Performance Tests	Main equipment shall be recalibrated at a given interval. All Electromechanical main equipment shall be recalibrated for targeted efficiency, at minimum below given tests may be followed; - Chimney gas analyze for boilers and burning air proportion calibration, - Gas pressure check and operating temperature calibration for chillers and VRFs, - Circulation pumps shall be checked, - All electrical panels and inverters shall be checked with thermal imaging, in case of overheating, - All piping shall be check with thermal imaging in case of insulation lack, - PV panels shall be cleaned and efficiency check shall be done, - Firefighting pump shall be manually tested additional to weekly automatic tests, - Fire alarm system shall be checked as if it is still in the first commissioned condition,	Performance testing and record	1st test at commissioning stage, 2nd test at winter conditions, 3rd test at summer conditions
5	Gantry Crane	As per Volume 3, Section IV (ER - Gantry Crane)		
6	Railway	-Before the railway operation of the intermodal terminal is opened, safety indicators and all components of the system will be certified by an independent accredited Assessment Body (AsBo)/Independent Safety Assessor (ISA). -Ultrasonic inspection of rail welding		

- Execute all works and remedy any defects or damages during the Defects Notification Period (DNP);

An energy efficient design criteria definition has been created in parallel with the development of the architectural, structural and Mechanical Electrical and Plumbing (MEP) output specifications of the Çerkezköy IMT. This is to address the requirement to reduce the overall carbon footprint of the proposed development and to identify solutions towards the improvement of its energy efficiency as the design further develops.

Refer to the Section 6 Energy Efficiency and Sustainability of the Vol 3 – Employer's Requirements Section II – Design for Construction.

During the implementation of the contract, the Contractor shall deliver all IMT design documents, reports, manuals, communications, MoMs and others, in a format and number of copies to be discussed and agreed with the Engineer / the Employer / DGII.

1.4. Scope of the Works

IMT will consist of several functional parts to be designed and constructed:

- Buildings for terminal operator, pre-check area, customs authority and customs warehouse;
- Road and rail access;
- Parking spaces;
- Transshipment tracks;
- Truck loading/unloading and passing lanes;
- Handling and storage area;
- Gantry crane;
- Others.

More specifically, the Works of IMT consist of the following elements:

- Fenced area of approx. 149.500 m^2;
- One (1) entrance gate;
- Total paved area of approx. 76.700 m^2, including:
  - Internal road system and trailer park (approx. 35.000 m^2);
  - Container stacking area (approx. 18.250 m^2) to be constructed with a special type of asphalt pavement due to increased loads;
  - Administration area (approx. 4.700 m^2) to accommodate buildings and car parking facilities for IMT employees, customs and service facilities (minimum 60 cars);
  - Customs area (approx. 10.350 m^2) to accommodate a minimum of 10 parking slots for trucks, a container examination area and the storage building;
  - Truck park area for trucks entering IMT (minimum size of approx. 8.400 m^2 to include 24 truck parking slots as a minimum);
- Storage and office buildings of a total area of 4.100 m^2 (as a minimum), including:
  - A storage building of approx. 1.650 m^2 to satisfy the storage function of customs;
  - An administrative office building of approx. 1.200 m^2 for the terminal operations;
  - A customs office building of approx. 1.200 m^2;
  - A security building of approx. 50 m^2;

For storage and office buildings, a **modular design** shall enable their expansion for IMT Phase II.

- Green areas, approx. 5.300 m^2, distributed among IMT areas (truck park, administration, customs and other);
- Utility networks: electricity, telecommunications, water, gas and sewage. For the electricity network connection, solar panel installations shall be taken into account and the electricity

infrastructure shall be planned accordingly. Electric vehicle charging stations shall also be considered;

- Railway tracks of a total length of 5.200 m (minimum) and respective switches connecting the tracks (approx. 8);
- One (1) rail mounted gantry crane and associated rail tracks of approx. 1.500 m (minimum);
- The Contractor shall take into accounts plans for expansion of IMT that foresee installation of additional railway lines and gantry cranes;
- Highway connection to IMT from Velimeşe: widening of the existing road from two to four traffic lanes. The approximate road length is 1.870 m;
- Relocation of existing utility networks;
- Future supply of industrial equipment including weighbridge, leakage container and dangerous goods area, in & out OCR gate, X-ray equipment (Phase II).

A shunting rail station will be implemented (designed, build & operated by TCDD Railway Infrastructure as a facility separate from IMT. The purpose of the shunting station is to carry out the process of splitting and forming trains. Before/after the loading/unloading process, freight wagons are to be handled (organized, sorted and dis/assembled) in the shunting area.

The most important part of IMT will be the handling area, which shall consist of:

- 5 rail tracks: 4 transshipment tracks for loading and unloading of containers and 1 additional maneuvering track for locomotives (including space reserved for maneuvering tracks in IMT Phase II);
- Container stack: 7 (5+2) container lanes for temporary storage of containers, reefer containers, swap bodies and dangerous goods containers;
- Rail and road connection/access.

Conceptual design drawings referred to subject and scope of IMT project are:

WKS	102	IMT		CD	DWG	LYT	1
WKS	102	IMT		CD	DWG	TYP	1-11
WKS	102	IMT		CD	DWG	PLN	1-10
WKS	102	IMT		CD	DWG	PRF	1-10
WKS	102	IMT		CD	DWG	CRA	1-7

1.5. Terminal operation

Road access from/to IMT is planned with two traffic lanes per each direction with the right-hand side lane, available for parking and use in case of congestion and one traffic lane for exiting the terminal.

The gate will function as a control point, where the authorization of trucks / drivers to deliver and pick up intermodal units (containers, trailers, and others) will be checked and documented. Administrative and safety-related procedures will be carried out at the administration counters and at the external parking place. Figure 1. illustrates the conceptual workflow of IMT operations.

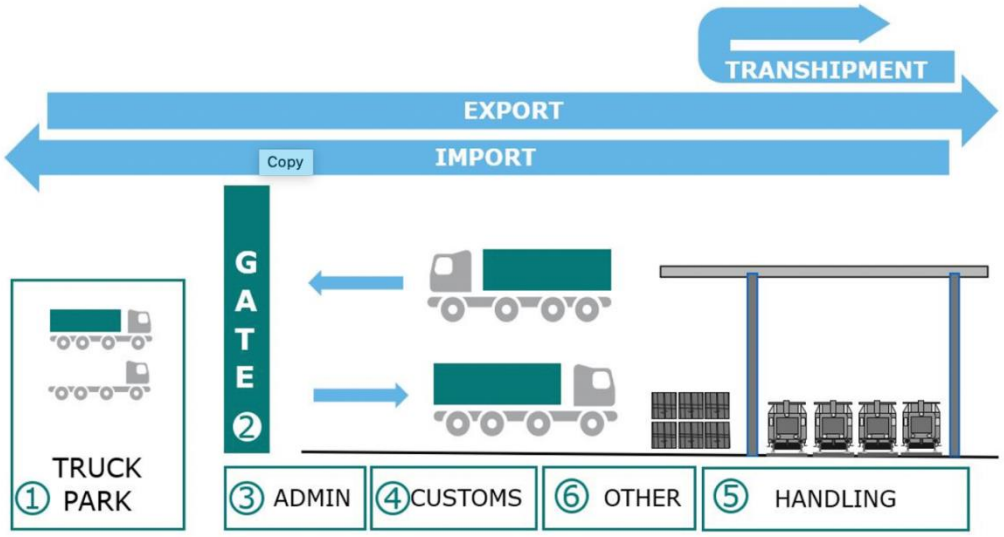

Figure 1. Conceptual workflow of IMT operations

Workflow for check and clearance of loading units is foreseen to be as follows:

International Transport Units (ITU) delivered to IMT to be loaded on train (Export):

- The truck driver parks the vehicle at the designated parking area and shows up at the respective counter with consignment documents (Figure 1 #1),
- IMT officer working at the gate/admin (Figure 1 #2 / #3) receives order to check the unit regarding ID, damages, dangerous goods issues, seals and other and to make a document (at least paper version, best case handheld with data transfer to the counter),
- Commercial handling is performed by customs as part of basic control procedures for 95% of the export intermodal units (IMUs) (5% of the export IMUs should be subject to detailed customs checks, which will be performed in the dedicated customs area at Figure 1 #4),
- When commercial, administrative, and technical procedures (weighing and others) are completed, the truck driver receives permission to enter the gate (best case by chip card to open the barrier) and is instructed to drive to the handling location where ITU lifting equipment (gantry crane) carries out its operation (Figure 1 #5),
- IMT staff is informed about arriving of ITU at least by radio, best case by data transfer on display (Figure 1 #5),
- ITU is unloaded at the given place and then the empty truck exits IMT area.

ITUs to be picked up (Import):

- ITU enters IMT by rail and is unloaded at the container stacking area by ITU lifting equipment. Basic customs procedure takes place at the handling area (visual inspection, weighing and others) for in average 80% of the incoming ITUs (Figure 1 #5). For approx. 20% of ITUs, a more detailed customs control will be performed in the dedicated customs area (Figure 1 #4),
- Truck driver with authorization to pick up IMU shows up at the respective counter at the gate where the commercial and administrative procedures are performed (signing receipt, check for customs status and other) (Figure 1 #1,2,3),

- Truck driver receives authorization to enter IMT area with the truck and is informed about the section where ITU is located,
- The driver of the container lifting device and or/ground staff receive/s information/ handling order (by radio or data transfer),
- After ITU is loaded on the truck (Figure 1 #5), the vehicle exits IMT (passing the barrier guard, video surveillance), movements are documented (Figure 1 #1),
- Claims (e.g., damaged units, if any) may be declared at the administrative counters before leaving IMT.

ITU in both directions

- Combination of the two procedures listed above.

Transshipment of ITUs (Rail – Rail)

- This type of IMT services can be provided when there is rail connection between Thrace Region and Anatolia via the third bridge or Marmaray tunnel,
- International trains coming from Europe can unload their ITUs at IMT so that national trains can pick them up and transport them to the Anatolia. The same applies for the opposite direction of freight movement (Figure 1 #5).

Other operations

There should be an area (Figure 1 #6) within IMT that can be used for trailer parking, workshop facilities, and overflow container storage area. In this area, the following activities can be performed:

- Trailer parking,
- Basic functions of cleaning and repair of empty containers and other units,
- Overflow storing of containers in a case the regular container storage in terminal modules is not sufficient.

Within the container stacking area (Figure 1 #5), a specific space shall be allocated for the storage of loaded units with dangerous and environmental hazardous goods. This space should be constructed as a concentration area in a case of leakages and must be isolated from ground water and the drainage system. For emergency cases, a movable leakage container (to be shifted by crane or forklift) should be provided.

For reefers or other temperature-controlled units a separate space equipped with power outlets and working platforms correspondent to the needs, has to be provided.

1.6. Gantry crane

IMT will be operated with rail gantry crane that shall be placed over the handling tracks, road, container stacking area and trailer park.

The length of the gantry cranes' tracks is defined in the detailed design and the Contractor should coordinate the specific technical requirements with the supplier of the cranes.

Subject of this contract is an installation of one gantry crane (IMT Phase I).

The crane will be provided and installed as a part of the works contract as per the agreed implementation schedule, so to ensure complete testing and commissioning of IMT.

2. SITE INFORMATION AND CONDITIONS

2.1. IMT site information

IMT site is to be located approx. 15 km west of Çerkezköy, within the Ergene Municipality and close to the existing European Free Zone. At the south end of the plot, there is a highway connection to European motorway O-3 between Velimeşe and Karamehmet, which also serves European Free Zone. IMT will be connected to both Halkalı Kapıkule Rail Line (HKRL) and the 0-3 European Motorway. The site has an area of approx. 20 hectares (Figure-3).

The terminal shall be located close to Çerkezköy Industrial Zone, providing connection to the main domestic and international transport networks, as designated in the urban plan. IMT shall be thus located between the TEN_T corridor to Turkey and the E80 Motorway which is the main road link between Europe and Turkey.

Access to IMT site is possible by using the access road derived from Atatürk Street which is a local road in Velimeşe which is the territory of Tekirdağ Municipality. The connection between this road and the road leading to the terminal shall be designed as an at-grade three-way intersection, whose detailed layout will be subject of the design. The connection road shall be designed as a four-lane road with 18 m cross-section (Figure-3).

A hard-surfaced road providing access to the site must be properly maintained for the anticipated construction traffic, as well as the regular traffic.

All access to the site will be served via the access roads.

The Contractor shall observe all rules and regulations regarding the use of public roads.

No payment will be made to the Contractor for constructing temporary roads used for construction operations or for improving, repairing and maintaining any existing road or structure that may be used by the Contractor.

The Contractor shall hold harmless and indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any such operation or interference.



Figure 2. Aerial photo of IMT location

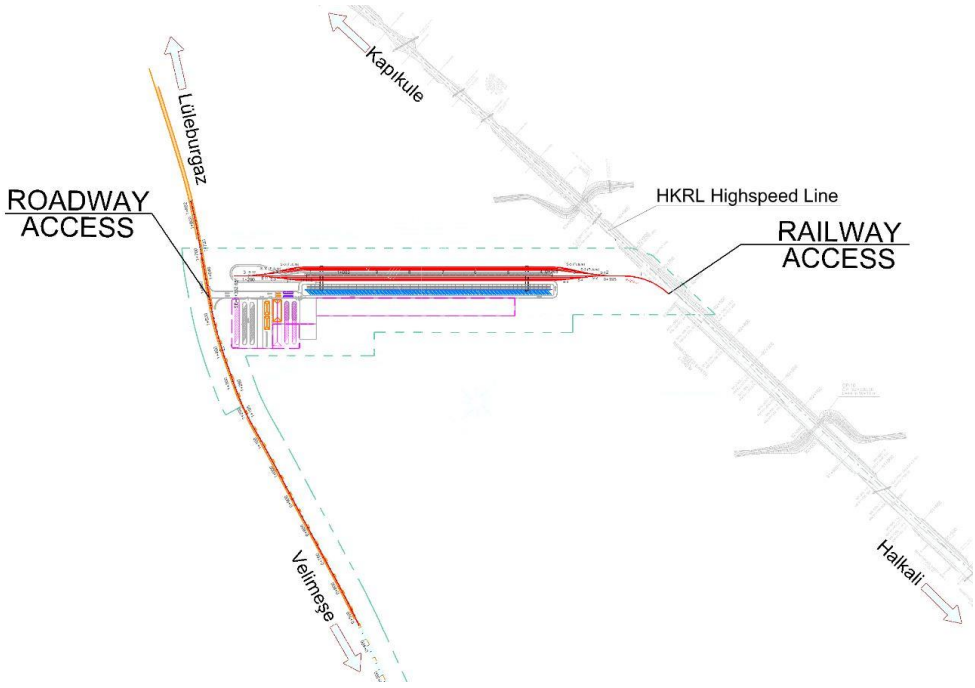

Figure 3. Conceptual layout of IMT

Conceptual design drawings referred to subject and scope of IMT site information are:

WKS-102-IMT-CD-DWG-LSP-001-006

2.2. IMT site conditions

Çerkezköy district is located in Tekirdağ province, in the north-western Marmara region, and Ergene sub-regional area. Çerkezköy is surrounded by Istanbul to the east, Kapaklı to the north, Çorlu to the south and Ergene to the west (Figure 4).

The district's total area is 326.4 km² and the altitude is 150 m above sea level. Çerkezköy is at a distance of 56 km from the provincial centre of Tekirdağ and 110 km from Istanbul. The D567 Istanbul - Tekirdağ road passes along the eastern limits of the district while the Istanbul - Çerkezköy road passes through Tekirdağ city centre. The European Highway is 12.3 km (7.6 mi) away from the district. The road network in and around Çerkezköy is open to traffic both in winter and summer seasons. Çorlu stream, a branch of Ergene River, flows through the district.

Çerkezköy terrain, is occupied by forests and fields in higher elevated zones and settlements in lower zones. Geographical data of Çerkezköy is presented in Table 1.

Table 1. Çerkezköy Geographical Data

Geographical Data	
Elevation	150m
Longitude	28°00' E
Latitude	41°28' N
Neighboring cities	Istanbul, Çorlu, Kapaklı, Ergene
Geographic region	Marmara (Region) – Ergene (Sub-region)
Area of the District	326.4 km^2



Figure 4. Çerkezköy and Tekirdağ in Turkey

Climate

Çerkezköy has climate characteristics of Tekirdağ province, as well as of Ergene sub-region. The Köppen Climate Classification subtype for this climate is "CSA" (Mediterranean Climate). Winters in the region are relatively mild, while summers tend to be very warm and dry.

Table 2 summarizes the climate data for Tekirdağ province.

Table 2. Climate data for Tekirdağ province (1939-2017)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C	23.9	24.7	28.1	34.3	33.8	40.2	38.4	37.5	39.7	35.1	27.9	22.9	40.2
Average high °C	7.9	8.9	10.9	15.7	20.6	25.2	27.9	28.1	24.4	19.4	14.6	10.3	17.8
Average low °C	1.8	2.3	4.0	8.0	12.6	16.6	18.9	19.2	16.0	11.9	8.0	4.2	10.3
Record low °C	-13.5	-13.3	-10.4	-1.2	2.7	8.6	10.9	11.0	3.7	-1.8	-7.8	-10.9	-13.5
Precipitation mm	68.8	54.1	54.4	40.9	36.7	37.9	22.8	13.3	33.6	62.4	75.4	81.5	581.8
Avg. rainy days	12.3	10.6	10.7	9.4	8.1	7.0	3.5	2.4	4.5	7.5	9.4	11.9	97.3
Sunshine hours	2.7	3.3	4.2	5.7	7.6	8.9	9.8	8.9	7.3	4.8	3.3	2.5	69.0

Summary of site investigations and soil conditions

Total 21 borehole investigations were performed (BH-1 to BH-18 for IMT area and AR-01 to AR-03 for access road) as summarized in Table 3 (for details see Annex I (TR&EN)). Pressuremeter tests (PMT) were performed in all boreholes with 5m intervals. Geological and Engineering Geology Report, borehole logs, PMT results and laboratory test results are provided in Annex I Geotechnical Report.

Table 3. Borehole data

Borehole no.	Ground elevation	Borehole depth (m)	Groundwater table (GWT) depth (m)
BH-01	171	25	5.5
BH-02	169	25	6.5
BH-03	168	50	6.5
BH-04	168	25	3.8
BH-05	169	25	4.5
BH-06	170	25	5.5
BH-07	167	50	8.5
BH-08	168	25	3.7
BH-09	169	20	6.0
BH-10	168	20	5.5
BH-11	168	20	3.7
BH-12	168	35	4.0
BH-13	167	20	3.5
BH-14	167	20	3.2
BH-15	167	20	3.2
BH-16	167	35	3.5
BH-17	167	20	3.2
BH-18	167	35	3.2

AR-01	167	25	3.5
AR-02	167	40	3.7
AR-03	168	25	10.0

According to the results of site investigations, the soil profile of the area is generally composed of loose surficial silt deposits underlied by more dense silty sand/sandy silt layers. The soil profile is observed to become stiffer with increasing depth. Evaluating the borehole and laboratory data together, the soil profile was idealized as a 3m thick loose surficial silt (SİM-1) underlied by a 3m thick loose to medium dense silt layer (SİM-2). The deeper layers are composed of sandy silt/silty sand layers (SiSa-1 and SiSa-2) which also contains local clay and sand bands. The variation of SPT-N60 values and PMT-Plnet (net limit pressure) values with depth are presented in Figure 5, Figure 6 and Figure 7, Figure 8, respectively. The local site class is determined as "ZD" according to TBDY (2019). Soil profile should be further studied in detail with additional site investigations after the project details are clarified according to Turkish legislation.

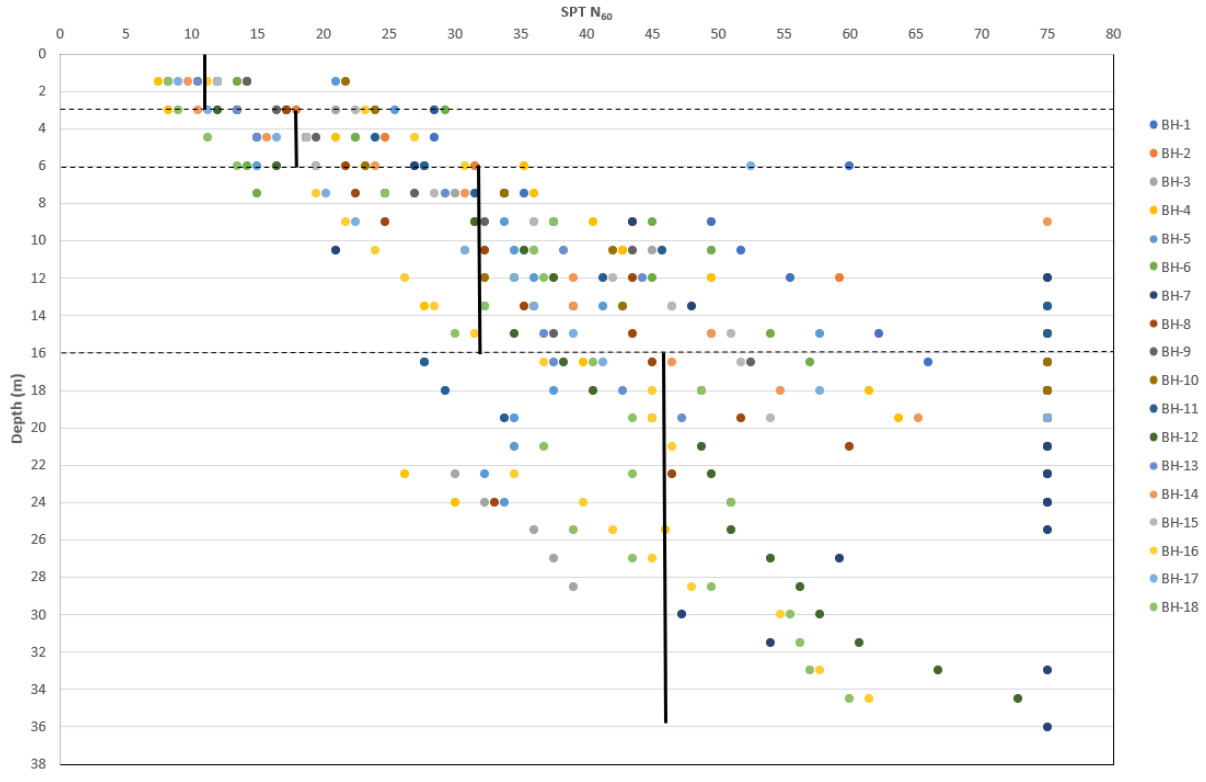

Figure 5. SPT-N_{60} values (BH01 – BH18)

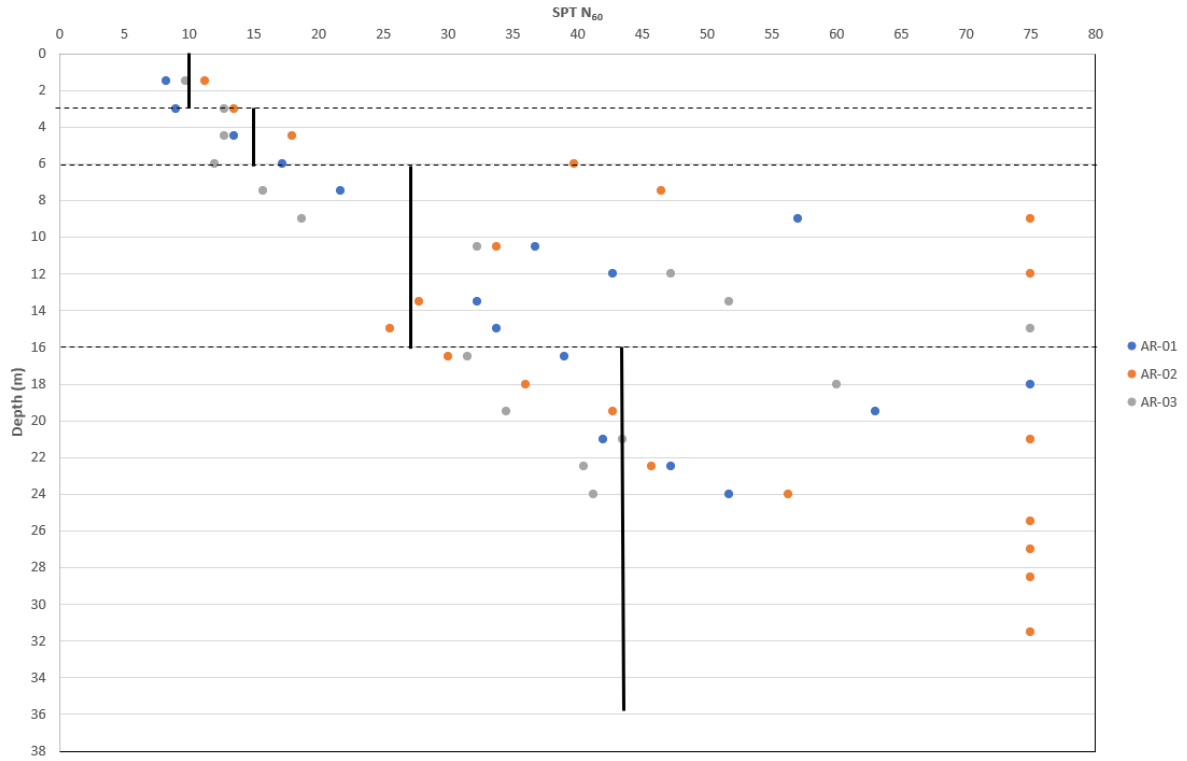

Figure 6. SPT-N_{60} values (AR01 – AR03)

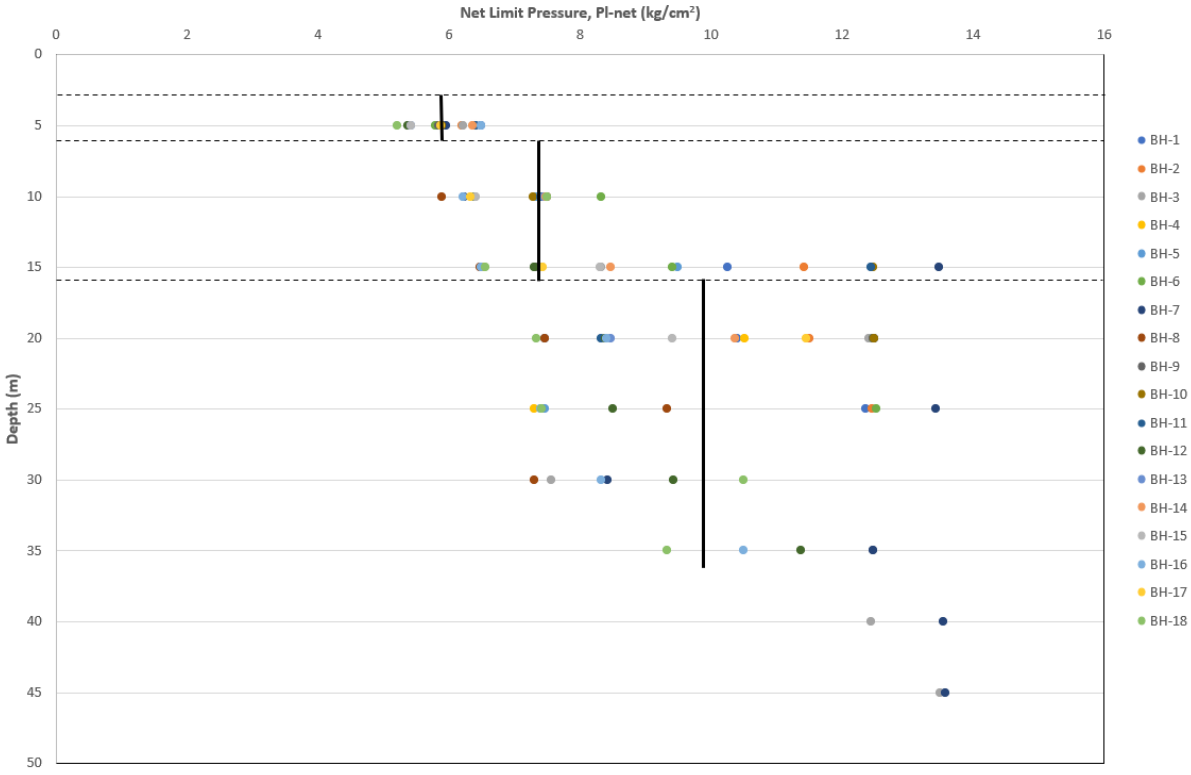

Figure 7. PMT-Pl_{net} values (BH01 – BH18)

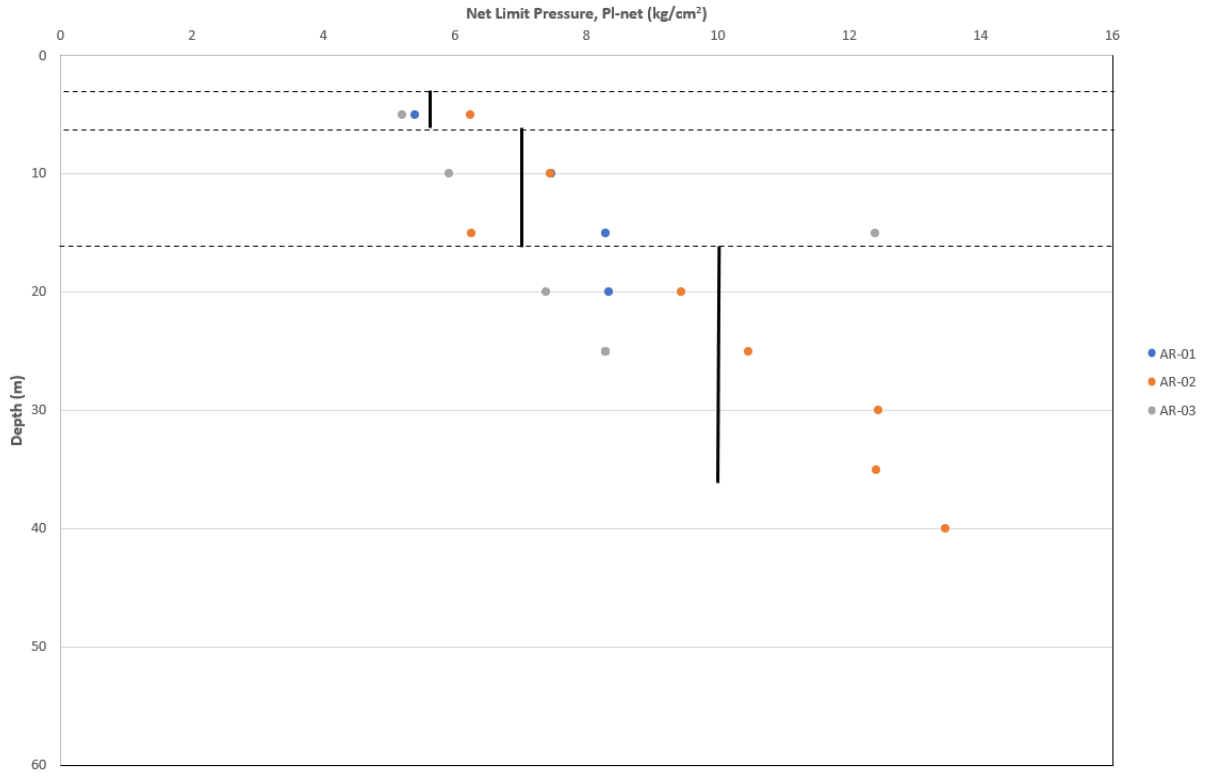

Figure 8. PMT-Pl_{net} values (AR01 – AR03)

Area geology, seismic characteristics of the terrain

The district lies in Thrace (Ergene) basin which is the one of 13 existing sedimentation basins in Turkey. In terms of its geographical structure, it is in the form a basin closed to the sea. The basin area equals to 10,730 km2, while cultivable lands account for about 73% of the area. Forests, heathlands, rock cliffs, settling areas, industrial areas and lake surfaces account for the remaining 27% (Hazar, 1997).

The pre-Tertiary crystalline basement shows platform and deep basin depositional morphology that results in facies pattern and thickness distribution localization formed during the early stages of basin development in Middle to Late Eocene time. Normal fault controlled early and lateral / reverse fault controlled later stage tectonic events characterize basin geometry and the present topography. The early-stage normal faulting caused subsidence and sediment accumulation in the Late Eocene and Early Oligocene, while later stage tectonic events caused intense deformation and structuration in the Early to Middle Miocene. As a result, south-eastern and northern regions were folded or uplifted and deeply eroded.

According to the Union of Chambers of Turkish Engineers and Architects (UCTEA), Çerkezköy is located in the "3rd degree" earthquake zone (Figure 9).



Figure 9. Earthquake Hazard Map of Thrace Basin and Çerkezköy

The project area is located in the north western part of Marmara region (Figure 10). The peak ground acceleration and short period spectral acceleration of the site are obtained as PGA = 0.292g and Ss = 0.727 for 475-year return period from AFAD seismic map (Figure 11).

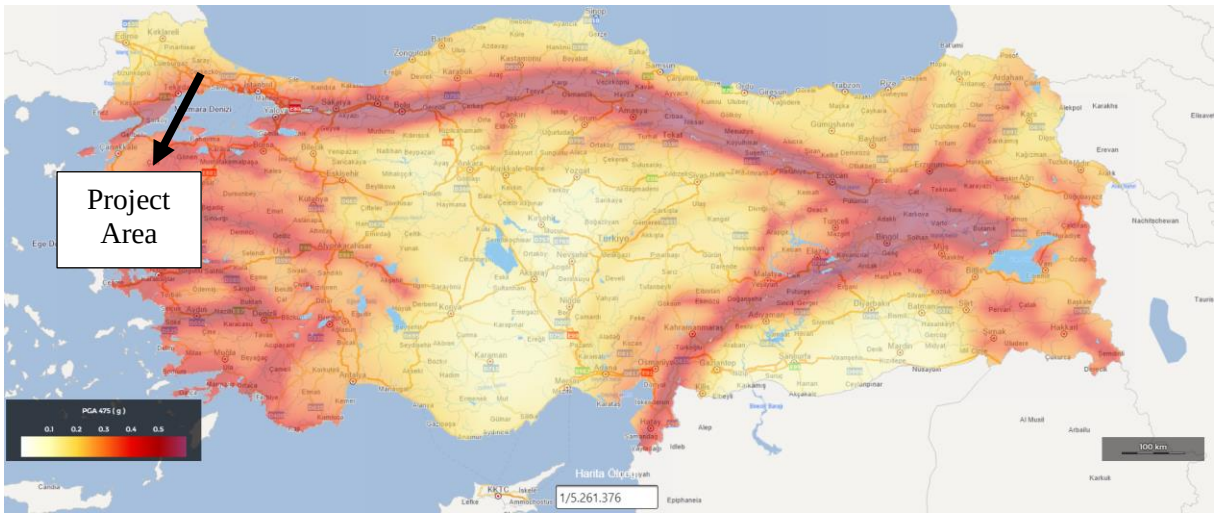

Figure 10. Project area on Seismic Region Map (TBDY, 2019)

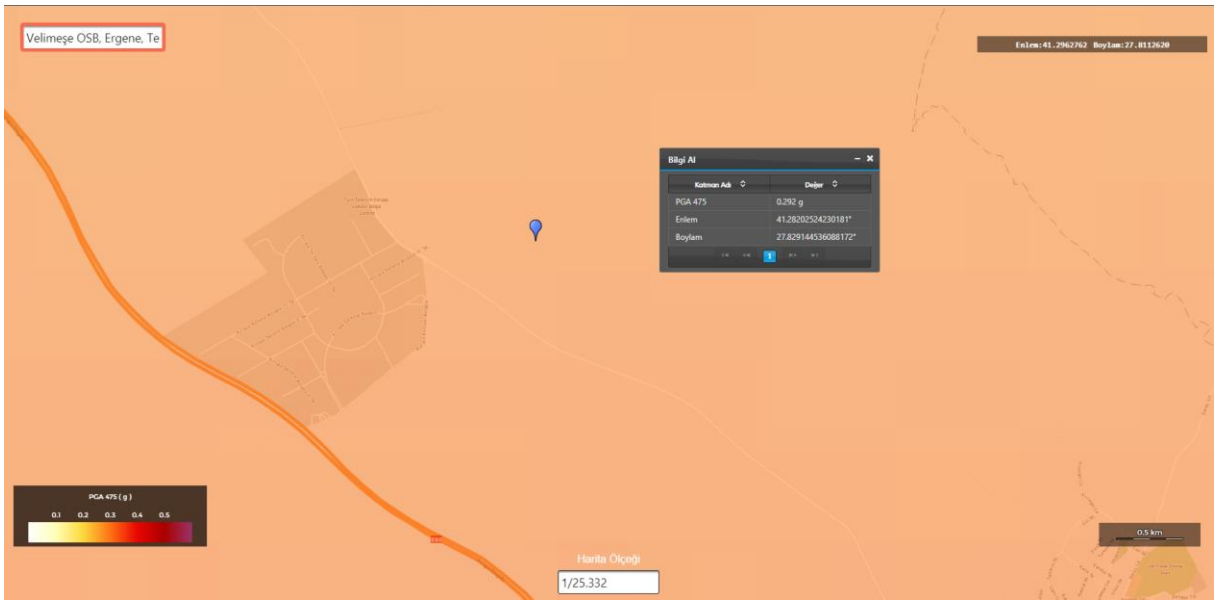

Figure 11. Project location data on Seismic Region Map (TBDY, 2019)

The local site class is determined as "ZD". For "ZD" soil class and Ss = 0.727, the Fs = 1.21 according to Table 4.

SDS = SsxFs = 0.727x1.21 = 0.88g => 0.4SDS ≈ 0.35g

The ground acceleration for seismic stability and liquefaction calculations can be taken as 0.35g.

The moment magnitude of the design earthquake was calculated as Mw = 6.5 in the "Geological and Engineering Geology Report".

Table 4. F_s Values for Different Soil Classes (TBDY, 2019)

Local Site Class	Local Soil Effect Factor for Short Period Region, Fs					
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S = 1.25$	$S_S \geq 1.50$
ZA	0.8	0.8	0.8	0.8	0.8	0.8
ZB	0.9	0.9	0.9	0.9	0.9	0.9
ZC	1.3	1.3	1.2	1.2	1.2	1.2
ZD	1.6	1.4	1.2	1.1	1.0	1.0
ZE	2.4	1.7	1.3	1.1	0.9	0.8
ZF	Site-specific analysis should be performed (see 16.5 in TBDY, 2019)					

3. UTILITY NETWORKS AT SITE

DGII will arrange for the relevant authorities (or by its own means) to provide utility networks up to the boundaries of the Contractor's responsibility. The boundaries of the utility networks are given below. In case no boundary is defined for a utility network or any other interface, the coordinates of the interface shall be assumed as the physical boundary of the site (de-limited by the site fence).

- ***Access road***; the Contractor boundary is the main gate of the site;
- ***Railway infrastructure***; the Contractor boundary is at the physical boundary of the site (fence), the exact coordinates shall be defined by DGII;
- ***Electrical power***; the Contractor boundary is the connection point of transformer;
- ***Water supply***; the Contractor boundary is at the physical boundary of the site (fence), the exact coordinates shall be defined by DGII;
- ***Telecom***; the Contractor boundary is at the connection of the telecom line to the main telecom switchboard within the site;
- ***Internet***; the Contractor boundary is at the connection of the internet to the main server within the site;
- ***Natural Gas***; the Contractor boundary is at boundary of the site;
- ***Discharge collector***; where the wastewater is discharged directly to the receiving body, after suitable treatment in accordance with applicable Turkish and EU standards, there is no boundary and the discharge pipeline with all protective covers, manholes and discharge structure are considered as part of the Works.

The Contractor shall consult all relevant authorities and owners of utility networks before commencing any works and shall obtain information about exact position of existing utility networks that affect or may be affected by the Works. The Contractor shall record the position of all existing utility networks on the site plan.

The Contractor shall execute the Works in such a way, that he does not damage or interfere with existing utility networks on the site. If damage or interference is caused, the Contractor shall make his own arrangements to execute the repairs at his own cost, and to the approval of relevant authority.

It shall be the Contractor's responsibility to safeguard by means of temporary or permanent supports or otherwise, all pipes, cables, structures and other items that could be damaged if such precautionary measures were not taken.

The Contractor shall make connections to existing networks. Connections between existing and new networks shall not be realized until the necessary inspection of the existing infrastructure have been completed and the new layout approved.

The Contractor shall arrange at his own cost, the supply and distribution of electricity, potable water, telephone, compressed air and any other necessary services and shall provide, maintain and remove all pipes, cables and fittings which carry such services to his operations. All electrical installations forming part of such temporary installations shall comply with current Turkish regulations.

4. HEALTH AND SAFETY

It is the Contractor's responsibility to take the necessary precautions to prevent health and safety accidents that may damage people, materials, equipment and facilities during the work.

Within 28 days after the Commencement Date, the Contractor shall provide and submit for an approval **Health and Safety Plan (HSP)** for all IMT Works.

In addition to technical documents for construction, HSP shall be the basis for assessing the risk of injury and damage to health and safety, describing preventive actions at the workplace and working environment.

HSP shall be revised during the construction, if necessary.

When preparing HSP, the Contractor should take in account that all Works shall be carried out in strict accordance with current European and Turkish health and safety legislation; Law numbered 6331 in particular, Labor Law numbered 4857 and Social Insurance and General Health Insurance Law numbered 5510, whichever is more stringent.

In addition, when preparing HSP, the Contractor should observe and take into a consideration Annex II to this tender dossier – Health and Safety Plan table of contents, elaborated and provided as an example that provides relevant information on quality procedures for works.

The Contractor shall appoint the **Health and Safety officer** at the site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents.

The main duties of the Health and Safety officer are including but not limited to the following:

- To raise the awareness and train the employees in terms of actions and practices that will cause accidents and harm;
- To take precautions at least at the level to fulfil the requirements of "TS 8983 General Safety Measures Required to be Taken in Structures During Construction";
- To monitor whether the precautions taken, warnings made are followed;
- To take additional measures, make verbal or written warnings in case of determination of health and safety deficiencies and inaccuracies, when necessary,

The Contractor shall report details of any accident as soon as possible after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property.

4.1. Hazards

Attention is drawn to hazards that are likely to be encountered when carrying out the Works and could affect the health and safety of the Contractor's and the Employer's staff and the general public:

- Excavations (support to prevent earth movement, contact with underground / overhead utility networks, stops to prevent dumpers, barriers / warning signs for pedestrians);
- Working at height (falls, falling materials);
- Confined spaces (oxygen deficiency, poisonous gas/vapor/fumes, explosive gas);
- Sewage, sludge in tanks, chambers and pipelines (leptospirosis/Weil's disease, drowning, poisonous gas);

- Work on roads (traffic, pedestrians);
- Heavy lifting (suitable equipment, stable ground, trained driver/ slinger/ banks man);
- Vibrating equipment;
- Overlap with Employer's undertaking (existing operational plant and equipment);
- Dangerous substances' storage, handling and use (chemicals, explosives);
- Controlled waste materials' handling.

Prior to the commencement of any hazardous operation, the Contractor shall submit a safety method statement for an approval. Where deemed appropriate by the Engineer, HAZCON study shall be undertaken by the Contractor prior to the method statement being prepared.

Prior to commencing works, all staff should be suitably trained in health and safety procedures and be adequately supervised while executing it.

Any part of the site that is designated as a "restricted area" may not be entered without a "permit to work". All places occupied by live, operational, mechanical, electrical or chemical equipment, and "live" sewers, manholes and chambers will usually be so designated. The Contractor shall not allow any of his staff or sub-contractors to enter such an area until a permit has been issued.

4.2. Dangerous goods

During the work on site, the Contractor may be encountered with:

- Known or unknown buried poisonous substances;
- With unnatural coloured ground water or soil;
- Asbestos;
- Volatile organic compounds measured by photoionization detector;
- Chemicals or petroleum products spilled and expanded on the field or other similar situations;
- Other dangerous goods.

the works shall be stopped in the section where the event occurs.

Cleaning of the area in a way that will not harm employees and removal of hazardous material shall be done by trained and equipped specialists for such works.

4.3. First aid

The contractor shall create a First Aid section, equipped with the necessary health tools, equipment and materials, where the first medicine aid can be performed in a case of work accidents or emergency situations.

The Contractor shall provide and maintain in a good condition all necessary first aid equipment. This equipment shall be kept ready on the site and in other places of regular work of the Contractor's personnel. The Contractor shall ensure that in every such place a person with the relevant knowledge about the elementary first aid procedure is available, who is able to render aid in case of injury.

The Contractor shall provide the necessary monitoring equipment required for entry to hazardous or potentially hazardous atmospheres. Monitoring of all hazardous or potentially hazardous atmospheres shall be carried out by the Contractor and a suitable register maintained.

All persons employed by the Contractor must be tested against pathogenic agents at the Contractor's expense (at the employment date and then quarterly). The employees will be informed about the contamination danger presented by the works they have to execute.

As a part of HSM, the Contractor shall also prepare an **Emergency Aid Manual.**

The Contractor shall also prepare a suitable arrangement and necessary equipment to cater for emergencies, that shall be regularly checked and maintained. A register of equipment checks shall be kept on site:

- First aid equipment;
- Monitoring equipment;
- Rescue equipment;
- Firefighting equipment;
- Person(s) trained to administer first aid (including in the use of breathing apparatus and rescue techniques);
- Ways of communication with, and transport to, the nearest hospital with an accident emergency department;
- Ways of communication with nearest fire brigade station.

This section shall also be supported by specially equipped rescue and transportation vehicles, respiratory equipment.

Personal protective equipment shall be available, and used by staff when appropriate, including:

- Safety helmets;
- Eye protection equipment;
- Ear (hearing) protection equipment;
- Hand protection equipment;
- Foot protection equipment.

Adequate facilities shall be provided, including as a minimum:

- Drinking water;
- Toilets;
- Washbasins with warm water, soap and towels;
- Clean/dry/warm area equipped with tables and chairs.

4.4. Emergency

The Contractor shall organise all formalities in such a way that he is able to quickly call upon the personnel outside the normal working hours, if it is necessary for taking the emergency measures connected with the Works. In the Engineer's constant disposition shall be the list of addresses and telephone numbers of the Contractor's employees, who in the respective moment are responsible for organisation of emergency works.

The Contractor shall acquaint himself and shall acquaint his personnel with the relevant local order in force in the emergency cases.

The Contractor shall inform the fire and police services before closing up of any street outside the border of the site or its part, and shall receive the Employer's approval for every activity of this kind. The fire and police services shall be informed, when the streets are opened again for the transport of emergency services. The method applied in the construction works as much as possible shall decrease the access embarrassment for fire and police services and this access shall in no case be deterred.

The Contractor shall leave his night contact telephone number in the police station, on the territory of which the Works are being executed.

4.5. Fire protection

The Contractor is obliged to take necessary measures to protect the Works, temporary works and all kinds of properties and persons from fire.

All measures, including awareness rising, and the actions to be taken in case of fire shall be determined in a coordination with relevant authorities.

The Contractor shall take necessary precautionary measures in order to prevent fire close to the Works and buildings and shall provide relevant firefighting equipment, if such arise.

During the works, additional measures shall be taken:

- in the storage of easily flammable use materials,
- in the collection, storage and removal of flammable wastes,
- in works with electric arc welding and oxy-acetylene cutting machines,

It is not allowed to burn waste or construction waste on the site.

If fire or explosion risk is caused by combustible tanks or similar dangerous plants or equipment, the Contractor shall immediately notify authorities and the Engineer about such risk. The Contractor shall take all the precautionary measures and shall execute all orders issued by local authorities and the Engineer in order to prevent outbreak of fire or explosion.

The Contractor, in case of a fire, shall provide and make available as ready to operate

- Hand-held, nitrogen-pressure dry chemical type fire extinguishers mounted on the wall in predetermined areas of the site,
- Special extinguishing systems in the work areas where the Fire Authority cannot enter or work quickly that will be used in the fire extinguishing process.

In the Contractor's constant disposition shall be staff trained in firefighting and relevant equipment in order to fight the fire irrespective of the cause of its outbreak.

4.6. Excavations

Protection of all the excavations shall be ensured with the help of temporary barriers, warning signs, cones and signal lights in order to prevent accidents with humans and property damage. All the signs shall be written in Turkish and English and shall comply with the requirements of local authorities.

The Contractor shall take precautionary measures in order to prevent accidents due to open trenches. All the trenches, excavated materials, equipment and other obstacles, which may be dangerous for humans, shall be well-lightened during the time period starting half an hour before sunset until half an hour after sunrise, as well as in other low visibility circumstances. The amount and position of lights shall be sufficient in order that the scope of structures and location are clearly understandable

4.7. Blasting

No blasting works may be executed without the Engineer's written consent.

If blasting is required for clearing of boulders and/or stone mass, it shall be allowed only after the Engineer's written approval, taking the relevant precautionary measures for protection of humans, structures and private and public property. Blasting shall only be performed by experienced staff, which has the necessary certificates to perform such work.

Blasting shall be performed in a controlled way and at the necessary depth, quantity and volume by using only the explosives of such quantity and power and in the places, where no essential damage can be made to the objects outside the defined blasting area borders. The Contractor shall repair all the damages of structures or properties caused as a result of blasting in order they comply with their initial quality. Before execution of blasting works the Contractor shall make sure that all the relevant measures have been taken, necessary for the security of humans and property and protection from injuries or damages, and that the warning signs and signals, acceptable for the Engineer and other authorities connected with safety and public policy, have been erected.

5. QUALITY ASSURANCE

All IMT works shall be carried out in accordance with the application and standards as the construction, materials, equipment and workmanship.

It is the responsibility of the Contractor to keep the quality of the works under control, to ensure its suitability to the given specifications/requirements, approved materials and to carry out the necessary tests.

Within 28 days after the Commencement Date, the Contractor shall provide and submit for an approval **Quality Assurance Plan (QAP)** for all IMT Works.

Quality Assurance Plan (QAP) shall be prepared by the Contractor where the Employer, the PIU, and the Engineer shall actively participate in its development.

The Employer and the Contractor shall confirm their commitment towards the quality of the Works. In order to respond to the contract requirements in an optimal way, a quality assurance system for IMT Works shall be established.

QAP shall be revised during the construction, if necessary.

A qualified Quality Assurance & Quality Control Officer to be appointed shall be responsible for all stages of quality control and shall provide an effective contact with the Engineer.

Standards and recommendations

The Contractor shall make sure that the quality assurance system complies with the effective Turkish standards and take a guidance from the following international standards:

ISO 9000	Standards for the quality assurance - Guideline for selection and utilization
ISO 9001	Quality system - Model for the quality assurance in conception development, production, installation, and after-sales support
ISO 9002	Quality system - Model for the quality assurance in production and installation
ISO 9003	Quality system - Model for the quality assurance in controlling and final tests
ISO 9004	Quality control and element of the quality system – Guidelines
ISO 8402	Quality management and quality assurance – Vocabulary

Quality Assurance Plan

The approved QAP shall be followed throughout the performance of the Contract, unless the Engineer issues specific approvals or instructions.

Quality assurance records, test certificates, reports and daily records of on-site testing and inspection shall be kept on site during the Works. The Contractor shall be responsible for keeping its QAP up-to-date in accordance with the quality assurance procedure and the terms of the Contract.

If needed, the Contractor and the Engineer shall attend the Factory Acceptance Tests (FAT) together with the DGII and Employer (as observer) at the end of the FATs, materials and equipment will be delivered on basis of the FAT Report signed by the Engineer. All costs and expenses for both domestic and abroad FATs' attendances (including but not limited to flight tickets, if required visa expenses, hotel accommodation, transportation, boarding etc.) for the Employer's (MoTI and DGII) staff and also for the Engineer's staff shall be borne by the Contractor. Abovementioned costs and expenses are included in total price of the contract.

The Contractor has to elaborate all arrangements for QAP to be implemented by his company, subcontractors and main suppliers.

The Contractor must keep the documents up-to-date (list of documents, indication of the revision in course, nature of validation etc.) in order to assure their traceability.

QAP shall cover all aspects of the Works, and contain, as a minimum, the following items:

Organization and personnel

- Description of functions and responsibilities of the personnel and of the external controls;
- Organisation chart;
- Identification of QA personnel;
- List of Contractor's staff to be engaged in quality control and materials testing together with details of their relevant experience;
- Organization of internal and external controls,
- Procedure for meetings related with the quality assurance procedure,
- List of facilities which will be inspected and tested by the Contractor during implementation of the Works as part of quality control, together with inspection procedures and test types,
- Checklist for all installations. The checklist shall be for the Contractor's own use, documenting the Contractor's own quality control of the installation.

Design quality control including control of manufacturer's shop drawings, the Contractor's drawings and Temporary Works Design

- Procedures for the identification of critical points and approval points of drawings and design at all stages;
- Procedures for check of the Contractor's O&M manuals,
- Distribution of tasks among the sub-contractors and suppliers,

Technical tests

- Welding procedure specifications for all materials,
- Welder's certificates,
- Weld's testing,
- Certificates of materials,
- Test results,
- Documentation of surface treatment (corrosion protection),
- Documentation of compaction of sub-soil, built-in layers, geological barrier,
- Test results of capacity tests.

Test samples material and equipment

The Contractor shall provide all samples, including storage, packaging and transportation, regarding quality control and testing. The materials represented by these samples shall not be manufactured, brought to the workplace and used in any work without the approval of the Engineer.

Approved material and equipment samples to be used in the field shall be kept carefully until they are allowed to be thrown by the Engineer.

Test laboratory services

Quality Control tests shall be carried out in the laboratory established by the Contractor as much as possible. For the tests that are not possible, an independent laboratory to be approved by the Engineer shall be used, to be covered by the Contractor.

The Contractor shall ensure that both his own laboratory and the independent test laboratory are finalized by performing the desired material control, sampling and testing procedures in the fastest way.

Test results shall be submitted to the Engineer immediately. In case any irregularities or deficiencies that affect the work are detected, the Contractor should take any corrective action immediately.

Material quality and equivalent materials

All materials and equipment supplied for permanent use within the scope of the work shall comply with the applicable standards and specifications. The products of other manufacturers, instead of the specified materials or equipment, shall be accepted on condition that their equivalence is approved by the Engineer. In such cases, the Contractor shall provide all evidence on the equivalence of the new product to the Engineer.

Inspections and manufacturer tests

The Contractor is responsible for ensuring that all inspections and tests related to quality control are carried out properly regardless of whether they are on the field or elsewhere, and taking remedial measures when necessary.

The Engineer may inspect the work carried out at the manufacturer's facilities and the tests related to them on site. In order to do this as desired, the Contractor shall especially inform the Engineer on time.

Manufactured items and materials delivered to the site shall be examined by the Contractor when arrives and any defect shall be reported to the Engineer. Products with significant defects shall be returned to the Manufacturer Company for correction or replacement.

The Engineer or the examinations and tests performed on his behalf do not relieve the Contractor from his responsibilities regarding quality control.

Workplace records and test certificates

Quality Control records, test certificates, reports, daily workplace test and inspection records shall be kept on the forms approved by the Engineer.

All test certificate and inspection records, including those of the Manufacturer Company and other foreign test organizations, shall be kept in their respective business segments. Transactions shall be the responsibility of a skilled staff of the Contractor, and the Contractor shall create a comprehensive archive and library on quality control.

The Contractor shall prepare detailed lists, including test, approval, order and delivery information for materials and products subjected to the quality control and approval. these lists are but in any shall be submitted to the Engineer when updated and otherwise at least once a month.

The test results shall be delivered to the Engineer at the end of the test in order to determine the measures to be taken, if any. Test certificates are shall be submitted to the Engineer.

Traceability and document control

- Rules for the identification of documents,
- Rules for the circulation of the different documents produced,
- Methods for the management of documents (distribution, classification, archiving).

The Contractor shall establish and maintain a **Document Management System** (**DMS**) ensuring that all documents, drawings and revisions are logged, up-to-date, and traceable (list of documents, indication of the revision in course, nature of validation, etc.) in order to assuring their traceability.

The Contractor shall also design and propose one or more system(s) for numbering of:

- All documents and manuals,
- All drawings.

The system(s) shall comprise easy identification of all numbered items, and it shall be easy to see if drawings are made by the Contractor or one of his Sub-Contractors.

Purchases

- Relevant certificates on supplied materials,
- List of suppliers and subcontractors identifying the scope of supply for each respectively,
- Procedures of repercussion of the quality requirements of the Engineer over the suppliers and the subcontractors,
- Procedure of the evaluation of subcontractors,
- Procedure for acceptance of purchased goods.

Performance and test control

- List of documents and procedures written to define the modes of operation, the resources and the sequence of different activities;
- Identification of all off-site / factory testing and witnessing requirements for plant and equipment to be supplied, together with lead times and location for off-site / factory testing;
- Procedures for the establishment of a list of critical and stopping points of the performance, controls and tests;
- Procedures for the internal delivery of subcontracted tasks;
- Procedures for the control of products delivered;
- Procedures for the controls and tests in the course of the performance;
- Procedures for the final control, testing and commissioning before the acceptance of the Works,

- Procedures for the management of controlling documents (distribution, classification, archiving).

The programme for testing shall be elaborated by the Contractor, including testing methods, schedules and protocols, and be submitted to the Engineer for approval prior to start of any test activity.

Control of non-compliance

QAP shall define procedures for identification, evaluation and treatment of detected non-compliance.

Protection of the site equipment

QAP shall define procedures for establishing a list of equipment to be protected and descriptions of measures to be applied.

Quality Audits

The Engineer can at all times audit the quality assurance procedure of the Contractor in any phase of Works. The audit is carried out on basis of procedures defined in QAP.

6. PROTECTION OF ENVIRONMENT

The Contractor is responsible for planning and executing the Works with great attention to avoid disturbance and harm to the environment. While doing this, the Contractor shall bear the costs of any precautions to be taken and the damages that may arise.

Within 28 days after the Commencement Date, the Contractor shall provide and submit for an approval the **Environment Management Plan (EMP)** to identify and mitigate any damage to the environment which may result from the Works.

EMP shall include monitoring checklist that should be developed specifying when the environmental control activities need to be carried out, who is responsible and what methods will be used to measure effectiveness.

Mitigation measures and environmental monitoring activities are obligatory for the Contractor during the whole IMT construction period.

The Contractor shall appoint an **Environmental protection officer** at the site with a background in ecology / biology sciences. This person shall be qualified for this responsibility and shall have the authority to issue instructions and take protective measures to environment and issue competent opinion on environmental IMT issue.

When preparing EMP, the Contractor should observe and take into a consideration Annex III to this tender dossier – Environmental Management Plan elaborated for Halkalı Kapıkule-Railway Line that provides relevant information on environmental issues and practices including procedures for obtaining the necessary environmental permits.

In particular, the Contractor shall assess whether the project is likely to affect sites of nature conservation importance, potential Natura 2000 sites in accordance with 85/337/EEC, 97/11/EC and art.6 of 92/43/EC (the "Habitats" Directive).

EMP should include but not be limited to:

- Waste management plan for all types of waste and in particular:
    - Solid waste disposal of all construction material and disposal sites for excess and waste materials in an environmentally safe manner; the material should be recycled to the extent possible and where this is not possible, it should be disposed away from the site in a suitable landfill. Burning of waste in site or elsewhere will not be allowed;
    - Liquid management related to potential spills of combustibles and chemicals used during the construction in an environmentally safe manner away from the site in accordance with applicable Turkish and EU standards;
    - Sanitary waste disposal should be done in an environmentally safe manner (e.g., chemical latrines);
- Excavation and storage of top soil;
- Standards of debris movement from and to site;
- Sedimentation and erosion control;
- River and water stream crossing (if any);
- Nature, biodiversity and wildlife protection;

- Measures for the mitigation of environmental fragmentation;
- Culverts shall be constructed in order to allow the passages of animals along the route. Culverts and other drainage system will also allow the passage of smaller fauna. The design to be provided by the Contractor will also include reptile passes at specified locations.

The Contractor shall pay particular attention to quarries and borrow pits delimiting licensed areas for obtaining the borrow materials and the measures to be taken in order to minimize the environmental impact, during and after the construction period.

In addition to the above-described measures, heavy machinery impact, dust emission, noise and vibration control measures shall be implemented by the Contractor:

6.1. Heavy machinery

The Contractor shall implement measures to minimize impact of heavy machinery to human health and the natural environment. This includes minimizing potential damage on the vegetation, dust and noise emissions and accidental spills of combustibles which may lead to the contamination of potable water.

6.2. Dust emissions

Dust from the construction works may be blown by prevailing winds across adjoining lands near the site. The Contractor shall keep dust emissions to a minimum in accordance with good site management procedures. If dust emissions from the site become a problem the following precautions shall be taken:

- Wind barriers at soil piles;
- Conveyor belts, trucks and other transporters shall be closed;
- Materials to be covered with plastic covers;
- Compaction with binding material;
- The upper layer of the soil / land shall be watered.

Turkish regulations as published in 25406 Official Gazette, dated 18.03.2004, for control of excavation soils, construction and demolition and 19269 Official Gazette, dated 02.11.1986, for air quality regulation and 26236 Official Gazette, dated 22 July 2006 for limit values for industrial air pollution are applicable.

6.3. Noise control

The Contractor shall ensure that the impact of noise due to construction activities is minimized through the use of good site management, plant maintenance and communications with the Municipality and adjoining property owners. Therefore, the Contractor shall employ the best practical means to minimize noise produced by his operations, including plant maintenance.

All construction vehicles and mechanical equipment used on the works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working condition for the duration of the Works. Machines in intermittent use shall be shut down in the periods between the works or throttled down to a minimum. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers.

Any equipment, such as electric generators and pumps, required to work outside the normal working hours shall be surrounded by an acoustic enclosure, which shall restrict the noise level to not less than 5 dB(A) below levels quoted hereunder.

Piling, including temporary piling, shall be carried out by recognized noise reduced systems. Piling should not be carried out before 07:00 or after 20:00 hours without the written consent of the Engineer. When the use of explosives is permitted by the Engineer, blasting shall be restricted to the hours authorized in the Engineer's written consent.

With reference to the Regulation on "Environmental Noise Evaluation and Management (2002/49/EC)"(7 March 2008, Official Gazette: 26809), the Contractor shall in a distance of 1 km from the site boundaries ensure that the sound level arising from the construction of building does not exceed L Day (dBA): 70 and from the road construction L Day (dBA): 75. For strokes the noise level shall in a distance of 100 m from the site boundaries not exceed LCmax:100 dBC.

6.4. Vibrations

The Contractor shall take all steps necessary to minimize vibration caused by machinery and equipment used on the site. No machine shall be permitted, which uses a system of dropping a heavy weight, whether power assisted or by gravity, for the purpose of breaking up paving or foundations.

Vibrations associated with mechanical plant shall not exceed 2.5 mm/sec. as peak particle velocity in any perpendicular direction at the site boundary.

6.5. Dust

The Contractor shall take precautions against dust and pollution that may cause discomfort and damage to the environment and workplace created by the work in the field.

- Dusty surfaces will be regularly watered or dust preventing chemicals shall be used.
- Machines and equipment to be damaged from dust shall be protected with ventilated dust filters.
- Maintenance of motor vehicles, machinery and equipment working in the field shall be done regularly and their damaging exhaust gases shall be kept under control.
- The drainage and waterways shall be prevented from being contaminated by plumbing waste, sediment and debris. Plumbing wastes shall not be allowed to enter any drains or waterways other than waste water pipes.

6.6. Temporary drainage

The Contractor shall build the necessary facilities for the drainage of the rainwater accumulating on the site, the water used or discharged during the works. Drainage facilities shall have the capacity to prevent damage to the Works, the Site and adjacent areas. Existing drainage channels and culverts shall be cleaned, expanded or reinforced. Arches and water collection pools shall be opened in order to prevent the increasing flood from entering adjacent properties and to protect the facilities and works.

7. DESIGN REQUIREMENTS

7.1. Design standards

The SI unit system shall be used throughout the Contract.

Design standards and codes are defined in Volume 3, Section II, Employer's Requirements for Design for Construction.

The Contractor shall adopt the role of "Designer" as defined in Turkish construction legislation, with particular reference to the Law in force at the Base Date (including all subsequent amendments and revisions). This responsibility shall cover both the design included in the Contractor's documents and design data and drawings prepared by the Employer and subsequently adopted by the Contractor.

The Contractor shall ensure that all drawings and associated technical memoranda are signed in accordance with Turkish construction legislation and in accordance with the Employer's Requirements.

Acting as the Designer, the Contractor shall ensure that all designer's obligations are met.

Where not otherwise specified, the design shall be carried out according to the latest set of relevant Turkish national standards, Eurocode standards, International Union of Railways (UIC) standards, International Electrotechnical Commission (IEC) standards, EN-standards, regulations and sets of rules of DGII.

Should Turkish national standards, norms and specifications fail to give guidance on a design issue, the Contractor shall incorporate "best practice" from European codes and standards to ensure a safe, modern, economical and viable design.

7.2. Contractor's design

For design purposes, the Contractor shall check the accuracy of the provided information/conceptual design and accept responsibility and liability for all informative data incorporated within his design.

The Contractor shall further carry out any necessary studies and surveys and must satisfy himself that IMT design fully complies with all applicable Turkish and European standards.

Based on provided **Conceptual Design** (making part of this tender dossier) which are given in Volume 5, the Contractor is obliged to produce design documents, and obtain all approvals and permits necessary for performing the Works (including Usage permit for IMT).

Design documents to be produced by the Contractor include:

- Preliminary design;
- Final / Detailed design;
- Application / Implementation drawings;
- As-build drawings;
- Other design documents as necessary.

It is within the responsibility of the Contractor to obtain all the necessary approvals and permits required by Turkish Legislation, before commencement of the Works.

During preparation of technical documents, the Contractor is obliged to cooperate with public utility companies / relevant authorities and provide all required approvals of prepared design documents.

The Contractor shall appoint a **Liaison officer**, responsible to provide a support in obtaining all necessary permits according to Turkish legislation.

In addition, the Contractor shall deliver other plans related with IMT works where the Liaison officer shall be involved, namely:

- Social Facilities and Services Plan,
- Authority and Permitting Plan,
- Community relations Plan,
- Gender Inclusion Plan.

The Contractor shall prepare a design programme and submit it to the Engineer for approval. In the design programme, the Contractor shall consider the time necessary for obtaining necessary approvals and permits.

Preliminary design

Based on provided Conceptual design, the Contractor shall prepare, IMT Preliminary design to be approved by the Engineer. Preliminary design shall represent intermediate design phase between Preliminary and Final design to be provided by Contractor.

Final / Detailed design and Application / Implementation drawings

The Contractor shall prepare Final / Detailed design and Application / Implementation drawings to detail his proposals for the execution of the Works. He shall include all relevant design documentation necessary to obtain the approval of the Engineer and the relevant authorities according to Turkish legislation.

As-Built drawings

Concurrently with the progress of Works the Contractor shall prepare all necessary drawings and diagrams of the "As-Fitted" / "As-Built" Works. During the course of the Works, the Contractor shall maintain a fully detailed record to facilitate easy and accurate preparation of the As-Built Drawing.

After completion of the Works, the Contractor shall prepare design documentation (As-built drawings).

As-Built drawings shall be prepared according to what has actually been built and it shall include all electrical, mechanical and building works in sufficient detail to fully define the location, size, line, level purpose and nature of all elements.

As-Built drawings shall also incorporate full topographical surveys of all alignments, including roads, pavements, rails, existing services and service connections, inspection chambers, property limits, and other.

Drawings shall be prepared on computer-assisted design and drafting software of a form and version compatible with the systems which will be operated by the DGII.

7.3. Design Report

The Contractor shall prepare the **Design Report (DR)** to ensure that all necessary technical solutions were taken into account and recorded during the design phase. All designs, calculations and drawings,

shall be collected in DR. One report shall be prepared for each discipline and divided in sections for each subject.

Preparation of DR shall start at the beginning of the design process and shall be updated upon each approval. As a minimum, DR shall contain the following information:

- Recommended solutions with brief descriptions of alternative solutions considered;
- Assumptions and design criteria upon which the proposed design shall be based;
- Design proposal for process management systems (network systems);
- Engineering parameters in accordance with relevant Turkish and EU regulations;
- Inventory and results of all specialist investigations and surveys out;
- Proposed programme for the procurement and implementation;
- Preliminary confirmed cost estimates;
- Ranking of main project components according to cost efficiency and environmental considerations;
- System for standardization of drawings.

Design documents, depending on the required level of detailed (Preliminary design, Final / Detailed design, Application and As-Built drawings) shall include the following:

- Design main book;
- Design of architecture;
- Design of structures;
- Design of electric power supply installations;
- Design of mechanical installations;
- Synchronous plan of installations and connections;
- Landscaping design including, landscape architecture and horticulture;
- Study on geotechnical requirements for construction;
- Other design documents.

8. GENERAL REQUIREMENTS FOR EXECUTION OF WORKS

8.1. Site protection and security

As a minimum, the Contractor shall provide the following security measures for the site:

- Security guard - The Contractor shall provide security guard to secure all utilities, plants, equipment and material delivered on site and ensure that all signs, lights, fences are at the proper place. Security guard shall be responsible to guard all works carried out under the Contract, including part of the works that have been taken over by the Employer, as well as guard goods or material provided by the Contractor / the Employer for use in the Works. The provision of security guards shall continue until all works have been taken over.
- Fences and barriers - The Contractor shall set-up a suitable temporary fences and barriers around the site in order to protect the site from public access, animal vagabondage.
  Fences and barriers shall fully comply with national laws and regulations, be structurally adequate for purposes and shall be duly maintained during the entire construction period.
  All fences and barriers shall be removed on completion of the Works. The Contractor shall clean the site and repair any damage that may have been caused by him.
- Outside lighting – Outside lighting shall be installed around office buildings and on the parking area.

Warning signs, lighting

- All open excavations, material piles, structures, facilities and equipment to be dangerous shall be surrounded by barricades with appropriate warning signs to protect employees and the public.
- Likewise, roads and passages that are closed to traffic for work shall be protected by barricades.
- The attention of employees and the public will be drawn in such regions by noting with warning signs placed at appropriate distances. All barricades, obstacles and signs shall be illuminated from sunset to sunrise.

To ensure efficient access control, the site shall have only one entrance gate.

8.2. Protection of public and private property

The Contractor shall protect the:

- Underground lines and facilities;
- Overhead lines and facilities;
- Roads, pedestrian roads, sidewalks, bridges and crossings;
- Parks, gardens, fences, railings and walls;
- Tree and vegetation cover;
- Official and private buildings;
- All other public and private property;

carefully and do the necessary obstacles, temporary supports, tension and suspension works for this.

The Contractor shall inform the neighborhood regarding the situations they may be affected during the progress of the Work. Situations such as temporary occupation, blocking, modification, regulation shall

be informed to the affected neighborhood in advance of a suitable period that will enable them to take their precautions. In this declaration, the form and style of which will be approved by the Engineer, the main information such as what the discomfort to be given, its features and when it will be eliminated will definitely be specified.

The Contractor is obliged to better all buildings, facilities and areas that are damaged due to the project, usage or carelessness. The Contractor shall conclude works including:

- Renovation the buildings and facilities by eliminating their old defects and deficiencies, if any,
- Minimizing vegetation and additional afforestation in parks, gardens and empty spaces.

8.3. Contractor's personnel

The Contractor shall submit to the Engineer for an approval, names, details of experience, qualifications and previous appointments of the staff.

For IMT works, the Contractor shall secure competences in at least the following areas:

- Civil engineering design and construction;
- Civil engineering (for road and railway);
- Mechanical engineering (for water and ventilation);
- Electrical and electronics engineering (for signaling and buildings);
- Mapping;
- Geological and geotechnical engineering;
- Architecture;
- Railway engineering;
- Road engineering;
- Environmental engineering;
- Quality assurance and control;
- Cost control and quantity survey;
- Health and safety;
- Works planning and reporting;
- Information technology;
- Community liaison;
- Authority liaison and public relations;
- Communication and visibility;
- Other competences.

The Contractor shall present the qualification documents related with the works carried out by the subcontractors.

The Contractor shall submit proof of payment for all personnel, otherwise, he will not be entitled to payment of Interim Payment Certificate (IPC).

The Contractor has to demonstrate to the Engineer his employees consent for overtime work. Every month, the Contractor has to demonstrate the duration of overtime work for each employee. Total overtime work shall not be more than described in the Turkish labor law numbered 4857 and relevant legislations.

8.4. Temporary works

The Contractor shall build all necessary temporary works at his own cost.

No payment will be made to the Contractor for constructing temporary works used for construction operations or for improving, repairing or maintaining any existing road or structure that may be used by the Contractor for performance of the works.

All permits for the temporary construction and/or temporary use of railway tracks, roads, ways and storage areas/assets shall be obtained by the Contractor without monetary compensation. The elapsed time for the responses of the owners and the responsible authorizing agencies shall be considered in the Contractors Programme.

8.5. Contractor's programme

The programme to be submitted by the Contractor shall cover any specific requirements set out in the Contract and shall be in a substantial conformity with the programme included in the Contractor's Tender.

The Contractor shall prepare a Critical Path Method (CPM) work plan, according to the project time frame, check the integrity of the schedules between different types of works and submit work plan to the Engineer for approval.

8.6. Progress reports and progress meetings

The Contractor shall provide written monthly progress reports on the progress of the Works. These reports shall be distributed at least 3 days prior to monthly progress meetings.

The Contractor shall periodically (minimum at weekly intervals) take photos showing the works progress, works that will be covered later on and to support any potential claims.

Progress meetings will be held by the Contractor at the times indicated on the progress chart, and will take place at location, proposed by the Contractor and approved by the Engineer.

The meetings shall be attended by the Contractor, the Employer, the Engineer and DGII.

The major items to be addressed in the progress meetings are those identified for the progress reports and any other items as deemed necessary.

The agenda of these meetings shall be determined by the Engineer and the Contractor together. In addition to the Engineer and the Contractor, the meetings can be attended by supply companies, manufacturer companies, subcontractors and other institutions when necessary.

For appropriate co-ordination of the site activities, regular (monthly) and special site meetings on request of the Engineer will be held. The Engineer will prepare minutes of meeting (MoM) and supply the Contractor with a copy for comments.

8.7. Operations outside of IMT site

The Contractor should have no need to enter areas other than the proposed construction sites. If, however, the Contractor requires entry into areas outside the site's boundaries, a permission must be requested.

If works have to be executed outside the site's boundaries, the Contractor shall notify the Engineer in writing in advance of his intention to start work. The Contractor is responsible for obtaining agreements with the respective landowners and occupiers and for obtaining all necessary permissions and approvals. On request, the Contractor shall provide the Engineer with a copy of a written agreement with the landowners and occupiers outlining the conditions and payment for the use of the areas. The agreement and use of the areas are entirely a matter between the Contractor and landowners / occupiers.

The Contractor shall keep records of the dates of his entry into and departure from all property and lands of each owner / occupier.

9. TRAFFIC MANAGEMENT

The Contractor shall elaborate **Traffic Management Plan (TMP)** describing how he intends to minimise the impact of the construction activities on public road traffic. The TMP shall include all details and information regarding the impact of the Works on the existing road system and of the measures that will be taken to minimise the effect on road users or pedestrians. TMP shall be also submitted to relevant authorities for an approval.

IMT traffic report is enclosed to IMT Tender Dossier for information purpose only.

Protection of traffic

The Contractor shall arrange the work so that it crosses as little as possible with pedestrian and vehicle traffic. When public or private roads are required to be blocked, the Contractor shall ensure the flow of traffic by taking appropriate measures. In order to prevent traffic interruption, more than half of the street shall not be occupied at the same time in open excavated street crossings and the other half shall be kept open to traffic by taking the necessary measures.

Temporary bridges

The Contractor shall build temporary bridges at the points required for the traffic flow. Vehicle bridges shall be in accordance with the specifications and have the capacity to transfer the traffic of the region safely. The width of the pedestrian bridges shall not be less than one meter and include any necessary safety measures.

Temporary roads

In the event that the traffic flow is interrupted due to the works, the Contractor shall provide the traffic flow by making temporary roads outside the working area. These roads shall have all kinds of safety and traffic requirements such as roadblocks, illuminated and non-illuminated signals, and guardrails.

Traffic regulations, barricades and lighting

The Contractor shall identify and fulfil all requests and suggestions of the public authorities regarding traffic regulations and road safety measures.

Public roads that are closed, restricted or changed to traffic shall be protected by roadblocks with appropriate warning and information devices.

All barricades, obstacles, warning signs shall be illuminated from sunset to sunrise.

Keeping public roads clean

The Contractor shall clean all the public roads it uses from the spills and debris caused by the vehicles of itself and its Subcontractors. Any damage caused by these vehicles during the use of public roads shall be eliminated by the Contractor.

The Contractor shall, throughout the execution of the Works and the rectification of any defects therein, maintain the road diversions to the standard agreed with authorities and described in TMP. The Contractor shall have full regard for the safety of all road users, whether the public or his own staff, and shall ensure that the Works do not subject them to unnecessary risk.

The Contractor shall provide and maintain, at his own cost, all lighting, traffic lights, barriers, traffic signs and warning signs, when and where necessary for the protection of the Works and for the safety and convenience of the public or others.

The Contractor shall not commence any work that affects public roads until all traffic safety measures necessitated by the work are fully operational and TMP is approved by the relevant authority. The traffic signs, road markings, lamps, barriers and traffic control signals shall be in accordance Turkish legislation current at the date of the execution of the work. The Contractor shall keep clean and readable at all times all traffic signs, road markings, lamps, barriers and traffic control signals and he shall position, re-position, cover or remove them as necessitated by the progress of the Works.

Existing railway line

IMT railway line connects to the tracks of TCDD Infrastructure, and with the rail shunting station, which is in parallel with Halkalı-Kapıkule Railway Line, currently under construction.

The Contractor shall be responsible for liaising with TCDD regarding all aspects of his works which potentially affect the line. He shall agree in writing the details of all conditions which TCDD Railway Infrastructure require him to meet and shall plan, design and execute his works in strict accordance with such conditions.

The meetings shall be arranged in time to ensure that the conditions can be agreed with TCDD Railway Infrastructure, the design and procurement of temporary works materials can be arranged and that review and approval of the work proposals can be obtained from TCDD Railway Infrastructure without impact on the overall Programme.

It is likely that works on or in close proximity to the track will be confined to periods when no trains are operating and that the installation of temporary or permanent works over the line will be restricted to specific night time windows. The Contractor shall make provision for these restrictions when preparing Programme and be fully responsible for the time required to comply with them

10. FACILITIES

10.1. Workplace

It is the Contractor's responsibility to pay expenses of the temporary facilities, works and services to be made at the workplace from the start of use until the dismantling at the end of the Works.

Organization of the workplace

The existing ground level of the workplace shall not be changed, no infrastructure, structure and trees shall be removed, and no temporary office or structure shall be built without the permission of the Engineer/DGII.

The Contractor shall remove all temporary structures immediately after the completion of the work, and deliver the areas used in the work to the Employer/DGII in a clean, tidy manner and as agreed by the Engineer.

Cleaning of the workplace

The Contractor shall keep the construction site and any additional sites it occupies to do the work in a clean and neat condition. The Contractor shall clean all dirt and debris on the site without delay. The dirt in the field shall be discharged to a designated place and shall not be buried in the excavations made at the construction site. The contractor shall either connect the liquid wastes to the general sewer line or take it in a sealed vehicle and throw it in a designated place by coordinating with the competent authorities.

All materials on the workplace shall be safely and neatly stored and stacked. The contractor shall clean all public roads and coatings immediately from any contamination caused by overflowing or spillage from vehicles belonging to it or its subcontractors in a manner to be found satisfactory by the Engineer.

The Contractor shall compensate the claims that may be made by third parties to the Employer/DGII due to its fault in meeting these conditions.

Temporary Buildings

The Contractor shall provide offices, dining halls and shelters for himself and the Engineer and shall furnish and maintain them.

The Contractor's office shall be a building that will be used as a centre during the realization of the Works and has offices, service rooms and meeting hall. Any notification made to this office shall be deemed to have been made to the Contractor.

Temporary Water Supply

The Contractor shall supply and distribute the necessary water both for the use of the staff and for the Work. For this, all necessary similar main and intermediate systems such as piping, storage shall be installed in accordance with the designs and specifications. Additional measures shall be taken by the Contractor if the city water supply is not at sufficient quantity or pressure.

All kinds of backup, maintenance and repair works are under the responsibility of the Contractor for the uninterrupted operation of the water system.

Temporary energy supply

The contractor shall supply and distribute the energy required by temporary facilities and sites, workplaces, tools, equipment, machinery and equipment. It is the duty of the Contractor to bring the energy from the supply place to the workplace in accordance with its requirements.

The contractor is obliged to take all precautions regarding the safety of the employees both in energy supply and distribution. All kinds of backup, maintenance and repair works are under the responsibility of the Contractor for the uninterrupted operation of the energy system.

Temporary communication system

The Contractor shall make the necessary arrangements to install separate telephone lines to the offices in the field and the offices of the Engineer, and shall provide all relevant devices. The Contractor shall provide all kinds of maintenance in order to be carried out the communication without interruption.

Temporary plumbing and cleaning

The Contractor shall clean the workplaces, when necessary, by keeping it in a hygienic condition and comply with relevant laws regarding and instructions of the Engineer.

Construction identification plate

The Contractor shall place an identification plate at the entrance of the workplace with the name and information the Project, Employer/DGII, Engineer, him and the details requested by the Engineer.

10.2. Facilities for Contractor's personnel

As from the Commencement Date, the Contractor shall provide, maintain, service and unless otherwise described remove from site, on the issue of the Tests on Completion certificate, appropriate mobile accommodation completed with sanitary facilities for the use of site employees.

The Contractor will be required to comply with all current Turkish health and safety regulations and comply with all other construction regulations and the working rules of any industry appertaining to all work personnel employed on the site.

The Contractor shall ensure that his employees do not at any time loiter on, or adjacent to, the site, or in any way enter or otherwise make unlawful use of contiguous public or private property, and are not otherwise a nuisance to third parties.

The Contractor shall install temporary plumbing on site to meet the requirements of the working staff. For this, the Contractor shall provide flush toilets, central toilet facilities, including hot water and shower, and toilets at appropriate locations on the site. The domestic water connections of the facilities shall be freeze-resistant. Wastewater outlets shall be connected to the sewer network as much as possible. In cases where this opportunity cannot be found, connection shall be made to sealed cesspits constructed in accordance with their specifications. Cesspits shall be emptied at appropriate intervals.

The Contractor shall establish for own use and at own expense fax, telephone and internet connections at the site.

10.3. Facilities for Engineer's personnel

The Contractor shall provide all necessary site office facilities for Engineers personnel.

The Contractor shall supply reasonable and suitable accommodation as detailed below to satisfy the needs of the Engineer and his team on the Site. These offices shall be located adjacent to the main site

office of the Contractor. All utility networks including electricity, telephone, drinking water lines and wastewater lines shall be supplied by the Contractor.

The office shall be provided with electric power, lighting, heating and air conditioning. It shall be fit for the purpose of use as a permanent site office for the staff of the Engineer, the Employer and DGII. It shall have a minimum of three (3) telephone lines connected to the local fixed system, the call charges for which shall be paid by the Engineer.

Separate sanitary facilities, including toilet and hand washing facilities shall be provided for the exclusive use of the Engineer's staff, the Employer and DGII for the duration of the Contract.

The Contractor shall provide Site offices for the Engineer including but not limited to;

- Office accommodation for each expert working on the site, containing:
  - 10 m^2 area,
  - 1 desk, 1 chair, 1 telephone connected to the internet and 2 guest chairs,
  - Cabinets for storage of design drawings,
  - 1 table for inspection of drawings,
  - 2 cupboards with 4 rows of shelves,
  - 1 air-condition unit that has summer/winter conditioning,
- 1 meeting room of 50 m^2, with air-conditioning, projection device along with a PC,
- Minimum of 1 fax machine, 2 photocopy machines, 2 network printers, 3 personal printers (one for each key expert),
- Additional 2 telephone machines, which shall be open for international calls and connected to the internet (one for each key expert)

The Contractor shall also prepare 2 offices each of 25 m^2 for the use of the Employer's and DGII personnel.

Office's layout shall be approved by the Engineer prior to construction.

The Contractor is responsible for daily cleaning of the offices and the disposal of waste.

For the entire construction period, the Contractor has to supply the offices with drinking water and water for sanitary installations.

The Contractor shall make available for the Engineer and staff surveying equipment and other instruments, equipment and consumables as required by the Engineer to check the setting out of the Works, for measurement and control of the works purposes, with minimum requirements as follows:

- Electronic theodolite : 1 set
- Automatic level : 1 set
- Levelling staff : 2 units
- Steel rod : 2 units
- Fibre glass measuring tape (30 m) : 3 units
- Necessary consumables for printing and stationery : as needed
- Personal protective equipment : 6 sets or as needed (including safety helmet, steel toe safety shoe, warning vests, raincoat, rain boot (short & long)

The Contractor shall provide manpower and every other assistance to the Engineer and his staff in carrying out their duties and shall provide pegs, poles, paint, lines and spirit levels and other materials and small tools as needed by the Engineer and his staff for checking and setting out and for the measurement of the Works.

All provided equipment shall be new and of a quality and precision appropriate to its proposed use and shall be provided in a serviceable condition to the Engineer. The Contractor shall ensure that all equipment is kept in good condition and shall repair or replace, as instructed by the Engineer, any equipment that becomes unserviceable.

All costs and expenses for the abovementioned requirements will be deemed to be included in the Accepted Contract Amount.

10.4. Meeting facilities

The Contractor must provide facilities for site meeting on site for up to 20 participants.

10.5. Material and equipment

The contractor shall constitute suitable and sufficient open and closed warehouse spaces for the storage of materials and equipment at the workplace, at its own cost. The Contractor is obliged to take protective measures against any damage, contamination, unfavorable weather conditions and robberies during this storage.

The Contractor shall obtain permission for the materials and equipment that he wants to store outside the workplace and will satisfy the Engineer regarding the safety and quality of these warehouses. In this case, such warehouse areas shall be accepted as a part of the workplace. The Contractor cannot take any materials or equipment out of the workplace without the permission of the Engineer.

All materials and equipment shall be packaged in a way to facilitate moving them from outside to warehouse the and from the warehouse to Work and to be protected against damage.

Materials and equipment shall be loaded on vehicles in accordance with the rules of transportation on international roads and additional protection measures shall be taken during transportation and transportation insurance shall be provided.

11. OPERATION AND MAINTENANCE MANUALS

Prior to start of the Tests on Completion, the Contractor shall elaborate provisional **Operation and Maintenance (O&M) manuals** in sufficient detail for DGII to operate, maintain, dismantle, reassemble, adjust and repair the installed machinery and equipment.

For all installations, the manuals shall include:

- A general section comprising contents, description of the installation, relevant addresses and phone numbers;
- Description of IMT with all connected systems;
- Description of plant and equipment installed;
- O&M instructions of each unit and installations;
- Flow and control diagrams showing place and function of all system components, instruments;
- As-Built documentation;
- List of components indicating manufacture, type, component numbers, ordering numbers, other data;
- Maintenance instructions stating maintenance routines and intervals;
- Fault finding instructions;
- Calibration reports;
- Data leaflets;
- List of spare parts;
- List of tools;
- List of consumables.

For mechanical installations the O&M manual shall further as a minimum include:

- Machinery type and serial no. (all in one chart);
- Operating instructions;
- Lubrication charts and maintenance instructions;
- Fault finding details for rectification of basic faults;
- List of spare parts giving part numbers in relation to a drawing preferably of the exploded view type. The list shall be appropriate for correct reordering of the complete component and its spare parts;
- Brochures including all components accompanied with names and addresses of suppliers;
- Performance curves, diagrams, test certificates and other relevant information;
- Specification of corrosion protection;
- Specifications for repair of all painted/coated surfaces;
- Warranty certificates of mechanical equipment.

For all electrical components the O&M manual shall be divided into separate sections for the following installations:

- Control panels;
- Instruments;
- Control and measuring components (signaling system);
- Other components.

The manual shall further for electrical equipment include but not be limited to:

- CE-labelling and declaration of conformity;
- Layout drawings;
- Schematic and wiring diagrams;
- Detailed description;
- Specific operation instructions;
- Specific maintenance instructions;
- Component list for all equipment;
- Fault-finding chart;
- Emergency procedures;
- Warranty certificates of electrical equipment.

All information in the manuals shall apply specifically to the equipment being supplied, and shall be free from such irrelevant matters as might be contained in the manufacturer's general literature.

Any additions, alterations or revisions which may be required following DNP shall be incorporated into the final versions in the form of additional pages or replacement of sections. All costs of these amendments shall be included in Accepted Contract Amount.

12. TRAINING OF BENEFICIARY'S PERSONNEL

DGII staff assigned to PIU will be trained and briefed during construction works on site by the Contractor, where deemed necessary. Additionally, the Contractor shall provide training to DGII staff on the basis O&M manuals for all equipment.

The training shall be completed before the issue of the Taking-Over Certificate.

The purpose of the training is to enable the staff to:

- Understand the functional description of IMT in detail;
- Operate equipment in an optimal way;
- Improve energy efficiency of the overall plant;
- Carry out the necessary adjustments and corrections;
- Undertake correct preventive and normal maintenance;
- Undertake troubleshooting and repair of all equipment and auxiliaries installed;
- Adjust all equipment to optimize the plant;
- Select the necessary spare parts;
- Intervene in case of disturbance;
- Understand IMT environmental aspects.

The Contractor shall prepare a training plan for an approval of the Engineer and submit it at least one month before the intended start of the first training course/commissioning of the plant.

Personnel having an expert knowledge of the subjects shall undertake the training. Instruction and demonstration shall be given at appropriate levels for personnel and for plant operators and their supervisors. Separate courses for different categories of staff may be necessary dependent on number of staff to be trained.

The trainings shall be presented in the Turkish language, and if necessary, by use of interpreters provided by the Contractor. Documentation of the training carried out shall be submitted to the Engineer immediately after the Tests on Completion.

The Contractor shall provide all the necessary training materials and audiovisual aid, inter alia notes, diagrams, films and other training aid, in order to give the possibility to staff to start the self-education retraining courses and to train the shift employees.

Training shall be conducted both theoretical and practical. Also, there shall be an adequate set of exams following the training and the Contractor must give "certificate of competency for maintenance" accordingly.

13. EC PUBLICITY & VISIBILITY REQUIREMENTS

13.1. EU Communication and Visibility Manual for EU External Actions

The Contractor shall take all necessary measures to publicize the fact that the European Union has financed the Program.

In addition, the Contractor shall take the necessary measures to ensure the visibility of the European Union financing or co financing. These measures must comply with the rules laid down and published by the Commission on the visibility of external operations: https://ec.europa.eu/international-partnerships/comm-visibility-requirements_en.

All projects /contract implemented under this programme shall comply with the Visibility Guidelines for European Commission Projects in Turkey published by the EU Delegation to Turkey, at https://www.avrupa.info.tr/tr/avrupa-birligi-gorunurluk-ilkelerini-ogrenin-16.

All communication and visibility activities should be carried out in close co-operation with the Employer. The Employer is the main authority in charge of reviewing and approving visibility-related materials and activities. Before initiating any information, communication or visibility material and activity, Contractors and implementing partners should seek the approval of the Employer in writing. Also, EUD's prior consent will be obtained for visibility & publicity actions/materials/plans, etc. Therefore, the Employer will submit those materials in advance as to allow enough time and flexibility to address comments from the EU Delegation.

The EU-Turkey cooperation logo should be accompanied by the following text:

"This project is co-financed by the European Union and the Republic of Turkey."

Whether used in the form of the EU-Turkey cooperation logo for information materials or separately at events, the EU and Turkish flag have to enjoy at least double prominence each, both in terms of size and placement in relation to other displayed logos and should appear on all materials and at all events as per the Communication and Visibility Manual for European Union External Actions. At visibility events, the Turkish and the EU flag have to be displayed prominently and separately from any logos.

Logos of the end-recipient institution and the Employer should be clearly separated from the EU-Turkey partnership logo and be maximum half the size of each flag. The logos will not be accompanied by any text. The Employer and end-recipient logo will be on the lower left-hand corner and lower right-hand corner respectively. The contractor logo with the same size will be in the middle of the Employer and end-recipient logo. If the contractor is a consortium, only the logo of the consortium leader will be displayed.

EU - Turkey visibility logo of visible size should be placed at the top part of the gantry crane including led lights to make it visible at night.

13.2. Signboards & Commemorative plaques

Signboards

The Contractor must, as soon as possible, but no later than 45 days after the Commencement Date, provide, erect and maintain on site a signboard in accordance with the Communication and Visibility Manual for EU External Actions bearing:

- The EU's name and logo,
- The Employer's name,
- The End Recipient's name,
- The Contractor's name,
- The project name,
- Start and finish dates of the contract,
- Other information to be inserted upon it according to the EU visibility guidelines.

The signboards shall be not less than 2.5 m x 4 m, lettered in Turkish and English. The design of the signboard and information given are to be approved by the Engineer prior to manufacture and erection. Further information regarding the standardized size and colour of flags and logos can be found in the publication "Visibility Guidelines" for contractors and other Implementing Partners operating in Turkey issued by The European Commission on https://www.avrupa.info.tr/tr/avrupa-birligi-gorunurluk-ilkelerini-ogrenin-16.

The locations for the signboards shall be decided by the Engineer. The Contractor shall remove the signboards from the site on completion of the Works.

Commemorative Plaques

Prior to completion of the Works the Contractor shall install, in accordance with the Communication and Visibility Manual for EU External Actions, Commemorative Plaques at the following locations:

- In each of IMT building;
- Surrounding wall or permanent fence of IMT (one plaque between each pole);
- At gantry crane.

* * *