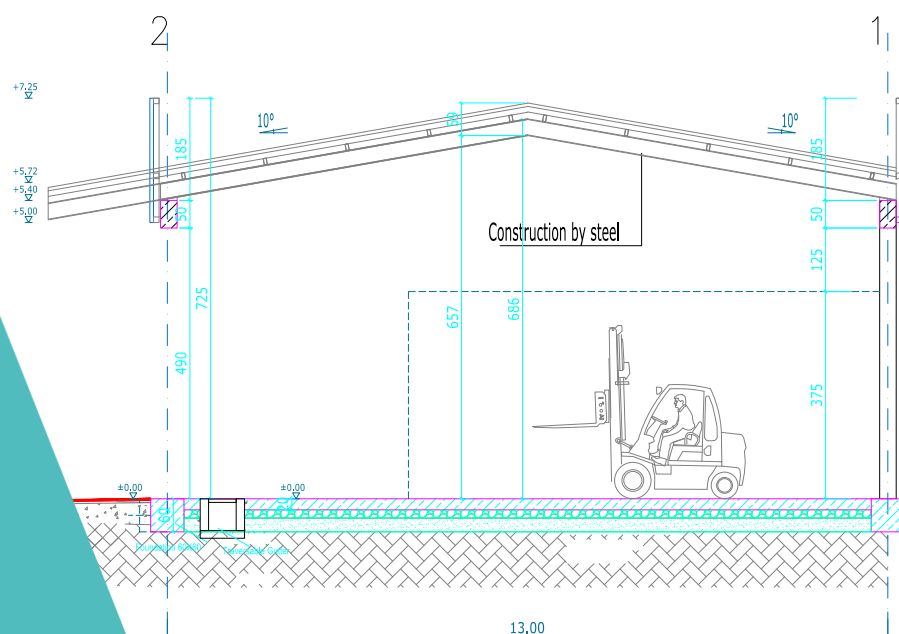


November 2020

Reduction of UPOPs emissions by improving waste management practices at landfills

Tender specifications to support the design upgrade for 3 hazardous waste storage facilities – ANNEX 1

Antigua & Barbuda



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Contents

- 1 Site preparation 5
 - 1.1 Preparation of site installation and facilities 5
 - 1.1.1 Preparation of works and temporary site installations 5
- 2 Hazardous Waste Storage Building 11
 - 2.1 Earthworks 11
 - 2.1.1 Mechanical excavation with excavator, in soil with natural humidity 11
 - 2.1.2 Backfilling and compaction of soil 11
 - 2.1.3 Hardcore layer of ballast or compacted gravel 12
 - 2.1.4 Nylon water barrier 12
 - 2.2 Concrete works, formworks, reinforcement 12
 - 2.2.1 Reinforced concrete class C12/15 (B200) 12
 - 2.2.2 Formwork for concrete in foundations, made of 8 mm plywood 12
 - 2.2.3 Vertical formwork for concrete for columns made of reusable panels 12
 - 2.2.4 Horizontal ceiling formwork 12
 - 2.2.5 OB37 reinforcements bars mounted in foundations 13
 - 2.2.6 OB37 type reinforcement bars mounted in the superstructure 13
 - 2.2.7 The interior walls 13
 - 2.2.8 The exterior walls 13
 - 2.2.9 Exterior plastering 13
 - 2.2.10 Exterior painting 14
 - 2.3 Gates for the building 14
 - 2.4 Roofing with corrugated metal panel 15
 - 2.4.1 Roof truss 15
 - 2.4.2 Single Layer Roof Panels 15
 - 2.4.3 Rainwater Pipes 16
 - 2.4.4 Rainwater Down Pipe 16
 - 2.5 Floors 17
 - 2.5.1 Polished cement screed 17
 - 2.5.2 Epoxy Paint Floor 17
 - 2.6 Electrical installation 17
 - 2.6.1 Distribution board and circuit breakers 18
 - 2.6.2 Cable tray installations 18
 - 2.6.3 Canal excavation & cable installations 19
 - 2.6.4 Other equipment 19
 - 2.6.5 Luminaries and Installations 20
 - 2.6.6 Earthing and Other Protections 21
 - 2.6.7 Fire Detection System 22

2.6.8	Emergency shower	23
2.6.9	Domestic Water piping and Piping Accessories.....	23
3	Shed for gas cylinders and aerosol containment.....	24
3.1	Mechanical excavation with excavator, in soil with natural humidity	24
3.2	Backfilling and compaction of soil	24
3.3	Reinforced concrete class C12/15 (B200)	24
3.4	Formwork for concrete in foundations, made of 8 mm plywood.....	25
3.5	Steel Columns	25
3.6	Side walls and gate of wire mesh	25
3.7	Roof truss	25
3.8	Single Layer Roof Panels	26
3.9	Rainwater Pipe	26
3.10	Rainwater Down Pipe	26
4	Spillage collection system.....	27
4.1	Covered gutter	27
4.2	Prefabricated spillage containment.....	27
5	Maneuvering Area	28
5.1	Cut and fill	28
5.2	Base layer	28
5.3	Top layer	29
5.4	Concrete ditch for surface water	30
5.5	Permanent traffic, warn and information signs	30
6	Fence	31
6.1	Earthwork	31
6.2	Foundation	31
6.3	Metallic elements	31
6.4	Industrial Gate.....	31
7	Equipment	32
7.1	Pallet Shelf with Collection tank.....	32
7.2	Euro Pallets.....	33
7.3	Barrels and Bins.....	33
7.3.1	Plastic Barrels 200l with lid.....	33
7.3.2	Fluorescent lighting tubes collecting box	33
7.3.3	Collecting Box used lead acid batteries	34
7.3.4	Storage Box with lid for used lead acid batteries	34
7.3.5	Collecting Tank HZW Liquids 400 l	35
7.3.6	Collecting Tank HZW Liquids 980 l	35
7.3.7	Special HZW Collecting Boxes.....	35
7.3.8	Mobil Box 170l	36
7.3.9	Mobil Box 250l	36

7.4	Personnel Protection Equipment	37
7.4.1	Coveralls.....	37
7.4.2	Safety footwear.....	37
7.4.3	Safety gloves	37
7.4.4	Helmets.....	38
7.4.5	PPE Safety Kit.....	38
7.4.6	Safety Box	38
7.4.7	HZW binding agent.....	38
7.4.8	HZW emergency box.....	39
7.4.9	First Aid box DIN13169	39
7.5	Transport and operation equipment.....	39
7.5.1	Forklift 3 t.....	40
7.5.2	Hand Forklift 2 t	40
7.5.3	Hand Barrel Lift.....	41
7.5.4	Pushcart 200 Kg	41
7.5.5	Oil filter press.....	41
7.5.6	Aerosol can disposal system.....	42
7.6	Fire Protection Equipment	42
7.6.1	50 Kg Mobile fire extinguisher	42
7.6.2	6 Kg Fire drencher	43
7.6.3	Chemical bonding agent.....	43
7.7	Equipment for reception area (Furniture).....	44

Scope of Works

The Works comprise the following main elements:

- All required supply lines (water supply, power and telephone) including connections, necessary valves, meters and shafts within the site boundary.
- Clearing of the site area of vegetation and waste
- Preparation of the terrain for construction of the hazardous waste interim storage facility.
- Construction of the hazardous waste storage building
- Electrical installation including inside and outside light
- Construction of a shed for gas cylinders
- Construction of the fence, the perimeter embankment and surface water drainage around the HWISF area
- Construction of a collection and storage system for spillage
- Supply of fixed and mobile equipment for storage operation

Only for general information of the tenderer. In case of contradiction the detailed text of the Particular Technical Specification is valid.

1 Site preparation

1.1 Preparation of site installation and facilities

1.1.1 Preparation of works and temporary site installations

All temporary site installations must satisfy the requirements of the utility companies and the general rules concerning legal and industrial procedures for health and safety.

Site organisation

The work must be executed during normal working hours on normal working days. Deviation from these rules will be allowed only under extraordinary circumstances like a previously written request or special permission of the engineer.

Installations for the contractor

The contractor must set up his own temporary buildings, sheds and barracks to operate as changing rooms and lunch rooms for the working members and as storing for materials and equipment. The size, lay-out and place for them will be approved by the engineer. The installation, dismantling and insurance of the changing rooms, canteens, offices and tool sheds and materials, etc, shall be done on the account of the contractor and before the work is accepted provisionally.

The contractor shall be fully responsible for the stored materials and equipment. He must lock his sheds and secure the stored items and make arrangements for protecting them against extreme heat and moisture. Only approved materials may be stored and rejected materials must be removed immediately from the site.

Cables and wiring

During execution of work, cables and wiring must be uncovered and shifted, particularly in the vicinity of (service) roads. The contractor is hereby informed that he must receive engineer's approval about the position of cables and then must carry out the work within these zones with all necessary caution.

If cables and wiring are located near the place where the work is going to be carried out, these areas must be secured. If it is found necessary to shift them temporarily or definitively, the authorised people will execute this. The contractor shall notify the concerned authorities. He shall also be responsible for the required co-ordination work and shall ensure that there are no delays during construction.

Electrical power supply and motive power

Arrangements for power supply and motor power, to the extent that such installations do not have any definitive character, shall be on the account of the contractor and he shall also bear the maintenance and consumption costs for them. The contractor may, if so required, make arrangements with the local electricity provider company to obtain supply from the existing installations. The site installation must be independently protected with the help of current fuses, earthing and leakage switches. The contractor shall ensure the protection of the site against power failure. Alarm signals if needed for the protection of the site, shall be carried out by the contractor. The electricity supply facilities must be approved by a recognised inspection authority at the time of commencement of the work. An inspection report, without any adverse remarks, must be submitted to the engineer.

Site roads

The contractor shall bear the costs of laying and maintaining all access roads which may be necessary for the execution of work.

Sign plates within the site

The contractor shall only place his advertisements on a signboard. The location and the manner of placing will be jointly decided by the contractor and the engineer.

The signboards shall be installed entirely at the expense of the contractor. A drawing of the signboard (maximum 5 m²) must be first submitted to the engineer for approval. No other advertisements may be placed on the site.

Site information board

The contractor has to supply and install a site information board with information about the project at the beginning of the access road. A draft of the proposed signboard shall be submitted to the Engineer for approval prior to sending to printing.

Temporary fencing of the site

The contractor shall bear the cost of the delivery, installation, assembly, maintenance and insurance of the construction fencing around the entire site. The fencing of the site shall consist of mesh wire of up to at least 2 m height, supported on columns and bases.

The fencing plan must be submitted to the engineer for approval. He shall also approve the placement, locking system and type of them.

General matters

The contractor shall bear the cost of the following:

- Providing the engineer with all the required material, provisions and personnel for carrying out the inspections that the Engineer may deem necessary.
- Procuring all the special tools required for the execution of the work including cranes, landing stages, etc.
- The regular cleaning of access roads leading to the construction site, if soiled by the traffic to and from the site.

Cleaning up the site

After finishing the works the contractor has to immediately remove all temporary site installations. Waste and all surplus materials have to be dispatched.

Maintenance of the site

The contractor shall bear the cost of removing refuse, dirt and residual materials and cleaning of the site. The dirt etc. must be cleared away not later than the day after the same is generated.

In all cases, this shall be done:

- When the work relating to a particular assignment is completed in whole or in part;
- Where such removal is deemed necessary for preventing fire, and for ensuring safety in general;
- When the engineer first requests it;
- This item shall include the cleaning of the construction site and the surrounding area before making provisional delivery and during the work.

Burning of waste or surplus construction material is not allowed in any case.

Combustible refuse must be immediately stored in a container in the place designated for it.

If the contractor fails to carry out the above in time, the engineer may commission the cleaning work to another contractor. Twice the amount of the expenses will be retained from the amounts due to against the work done reports of contractor(s) who is/are in default.

The engineer shall, if the condition of the site requires the same, itself employ personnel to carry out the required cleaning work. The costs for it will be retained from the amounts due to against the work done reports, with a pro-rata distribution of the amounts for the work done reports submitted for the month in question by the contractors present on the site.

Personal protective equipment (PPE)

The wearing of protective equipment and/or clothing will be in conformance with applicable regulations. Only equipment complying with regulations or other applicable regulations/standards will be used. Equipment that has been altered in any way will not be worn on the work.

Welders are required to wear head protection (hard hats) during welding operations. Soft cap welding or cutting may be authorized only at the direction of the engineer.

All personnel are required to have the company logo and name displayed prominently on their hard hat. The name will be applied above the brim of the hat using block letters.

Hard hats are required to be worn at all times with the following exceptions:

- Lunch and break periods providing no work is in progress in immediate break area

Hard hats will not be altered in any way and must be worn with brim to the front, but not during welding.

Welders will wear dual eye protection while welding.

Safety glasses are required to be worn at all times with the following exceptions:

- In administration buildings (office work)
- During lunch and break periods (providing no work is in progress in immediate break area)
- In project offices
- When goggles are worn

Respiratory equipment will be selected on the basis of the hazards to which the worker will be exposed. Respiratory equipment will be used, stored and maintained in accordance with the manufacturer's requirements. Only approved respiratory protection equipment will be worn.

Approved hearing protection will be worn by all personnel in designated areas.

The contractor's HSE Manager is responsible for establishing areas under control of the construction group where hearing protection may be required to be worn. This includes the use of required protective equipment when operating equipment produces sound level above the 90dB (A) level.

Dress requirements

All personnel are required to wear appropriate clothing for the work being performed.

Shirts worn by personnel must have sleeves at least 4-inches (100 mm) in length. Knit shirts, sleeveless shirts, sleeves rolled up onto the ball of the shoulder and other such apparel or practices are prohibited.

People working near moving machinery must prevent clothing and body parts from being caught by the moving components.

Sturdy steel toe cap and full shank safety shoes or boots are required.

Maintenance of site security

The contractor shall bear all the risks associated with this contract, both for materials as well as for the work, until the provisional delivery of the work.

The cost of maintaining security at the construction site during the entire working period and the general measures concerning safety, hygiene, insurance, if necessary police protection as well, shall all be paid by the contractor.

Security

The main objective of the security service is to control the access into and out of the site. So, the contractor will provide the protection of property against fire and theft cases.

The system should act in a way that a minimal effort is required from the people to facilitate their access into or out of the site. That means, people should register always when they enter the site or when they leave it.

This includes area inside the jobsite perimeter fence(s), (both permanent and temporary) that are to be used for construction, laydown, storage and waste disposal purposes.

Responsibilities

Contractor site manager is responsible for the overall management of all activities on and around the project site including insuring the implementation of these procedures.

The contractor site security manager is responsible to provide direction and oversight to the site security subcontractor and to facilitate interface with local security and police officials for all activities associated with the project site.

Surveillance

Site lighting shall be installed by the contractor throughout the site areas and the perimeter of the jobsite in order to deter theft and enhance surveillance.

Security guards shall make scheduled and unscheduled tours inspections. The tour timing, sequence and routing will be coordinated by the construction manager and by the project security manager.

Daily log

The contractor shall maintain his own daily logbook. The logbook must never be removed from the site office during the work, be available anytime for the Engineer.

The logbook has to contain the following information per day:

- date
- weather
- deliveries of materials (type and quantity)
- description of the work (type and quantities)
- number and type of machines
- number and status of workers
- extraordinary incidents

The logbook must be actualised by the Contractor every working day and presented for signing by the engineer every week.

First aid and medical services

It will be the Contractor's policy to provide and maintain adequate first aid, medical services in the corresponding premises at the work site. External medical facilities will be used in the case of extreme emergencies.

First aid facilities: The Contractor shall provide and maintain an adequate size of first-aid facilities complete with standard equipment and supplies. Such facilities shall be easily accessible to all employees.

Emergency transportation: A job site ambulance will be available as immediate means of transportation to the nearest hospital.

Contractor will also prepare for the approval of the engineer, a list of external facilities to notify and request assistance in case of emergency.

Site layout

Before the contractor commences the work, he must mark out the work and place a sufficient number of height- and directional markings in order to define the relevant height and distances of the various work locations accurately. The reference points must be determined according to the fixed points located outside the construction site. Wherever the engineer deems it necessary in connection with the work, the contractor shall place poles, locating bars, plumbing guides, etc.

Use of suitable materials

While making his bid, the contractor shall keep in mind that the work is to be done at a partially contaminated site and tools and accessories suitable for such work will be required in order to carry out the work in the required time limits. In this connection, the contractor must also make all the necessary arrangements to enable the continuation of the work even after it has rained for long periods. The contractor must plan the laying and welding of the surface liner in so that the work does not get delayed and is scheduled so that operations are executed one after the other in periods in which such liner laying and welding work is possible.

Contradictory survey report

The contractor shall prepare a contradictory survey report. Everything that is not explicitly mentioned in this report will be assumed to be in good condition.

The survey report will be prepared with the help of descriptions and photographs that describe the property clearly before the commencement of work. The survey report shall only be legally valid if the same has been dated and signed by the interested parties.

The survey report has to be prepared in 1 original and 3 copies.

Before the provisional delivery, the prepared survey report will be revised again contradictorily. The delivery can only be made if the Contractor and the counter-party sign the survey report again by the way of approval and such survey report must mention that no damage has been caused or the damage if any, has been repaired to the satisfaction of all concerned.

Effort for the above described activities has to be included in the unit price for the following items. Extra payment for the activities under item 1 is excluded,

2 Hazardous Waste Storage Building

Architecture

The building will be open on one side for direct access to the different storage areas by forklift trucks. Double wing wire mesh metal gates prevent access outside official opening hours. Areas above the gates between the gates and up to the roof will be equipped with fixed wire mesh to allow free air flow but prevent animal or other unwanted visitor access.

After defining the arrangement of the different storage sections, taking into account the maximum height for the planned shelving and minimum width of aisles in order for the forklift to manoeuvre safely, the overall dimensions of the building are calculated to be as follows:

- Length x width: 23.20 m x 13.35 m
- Height inside the building: 5.40 m – 6,86 m
- Max. height outside (ridge of roof): 7.25 m
- Total surface inside the building net (without walls): 270.6 m²

The provisioned rooms are:

No.	Name of Provisioned Room	Surface [m ²]
1	Storage Room 1	73.00
2	Storage Room 2	73.00
3	Storage Room 3	73.00
4	Reception Area	73.00

Structure works

The resistance structure shall have the following constituent elements:

- reinforced concrete foundation with continuous compression flanges;
- reinforced concrete frames disposed in two orthogonal directions
- reinforced concrete floor at a 0.05m level (rubble work) with insulation at the lower part;
- reinforced concrete floor over the ground floor;
- reinforced concrete lintels.

2.1 Earthworks

The earthworks include mechanical and manual digging, filling and compacting. According to the structural static, the foundation of the building will be made on a ballast layer – 1m thick on a surface of 23.20 x 13.35 m.

2.1.1 Mechanical excavation with excavator, in soil with natural humidity

- excavation to dimensions/levels mentioned in the Detailed Design drawings;
- loading soil in the transportation vehicle;
- transport and unloading of soil inside the landfill area as requested by the Engineer;

2.1.2 Backfilling and compaction of soil

- execution of backfilling with soil around foundations and building according to the detailed structural design and the technical specifications;

- compaction in successive layers including watering of successive layers;

2.1.3 Hardcore layer of ballast or compacted gravel

- material supply in order to execute the hardcore layer of ballast or gravel and transport to work place with appropriate transport means;
- hardcore layer execution in thickness and dimensions, according to the detailed structural design, technical specifications;
- compaction of successive layers with vibrant plate including watering in successive layers;

2.1.4 Nylon water barrier

- material supply in order to execute a water barrier on top of the ballast or gravel and transport to work place with appropriate transport means;
- Installation according to the requirements of the producer

2.2 Concrete works, formworks, reinforcement

Concrete C12/15 (B200) for the infrastructure and superstructure. The reinforcement shall be of steel concrete OB 37 placed in the foundations, superstructure and floor plate.

2.2.1 Reinforced concrete class C12/15 (B200)

- supply of concrete class and volume specified in the detailed structural design, technical specifications, including transport;
- verifying reinforcement bars before pouring the concrete;
- performing infrastructure by concrete casting and transport with crane/concrete pump to works area, according to the design;
- watering or cover protecting of the concrete to ensure a normal strengthening;
- verifying the works execution.

2.2.2 Formwork for concrete in foundations, made of 8 mm plywood

- formwork supply for the work execution;
- formwork transport with mechanical/manual means to the place of work;
- formwork pegging, pegging and fixing with cross ties, setting in position, to distances and positions indicated in the Detailed Structural Design;
- checking the works execution;
- formwork removal and cleaning.

2.2.3 Vertical formwork for concrete for columns made of reusable panels

- formwork supply for the works execution;
- formwork transport with mechanical/manual means to the works site;
- formwork pegging, pegging and fixing with crossties, setting in position, to distances and positions indicated in the Detailed Structural Design;
- verifying the works execution;
- formwork removal and cleaning.

2.2.4 Horizontal ceiling formwork

- formwork incl. floor prop, floor centre and fixing material supply for the works execution;
- formwork transport with mechanical/manual means to the area of works;
- formwork pegging, pegging and fixing with crossties, setting in position, to distances and positions indicated in the detailed structural design;
- verifying the works execution;
- formwork removal and cleaning

2.2.5 OB37 reinforcements bars mounted in foundations

- OB37 type reinforcement bars supply, according to the bill of reinforcement of the detail design, including transport;
- reinforcement transport with mechanical/manual means to the area of the works;
- cutting the reinforcements bars into dimensions as specified in the detailed structural design;
- installing reinforcement, according to details and structural design;
- removal of excess materials;
- verifying the works execution.

2.2.6 OB37 type reinforcement bars mounted in the superstructure

- supply of OB37 type reinforcement bars, according to the reinforcement lists (bending schedules), including plastic spacers, transport and storage on site;
- reinforcement bars transport with mechanical/manual means to the installation area;
- cutting and bending of the reinforcement bars to the dimensions specified in the Detailed Design;
- installing of the reinforcement and support, according to the details and reinforcement plans;
- joining by welding, in special cases, according to the detailed structural design;
- cleaning of work site and removal of excess materials and transport to the authorised depositing area;
- verifying the works execution.

2.2.7 The interior walls

Shall be executed of high-quality hollow concrete blocks 200 x 400 x 200mm (Width x Length x Height) and plaster M50 Z or equivalent

- walls setting out;
- supply of bricks, reinforcement materials (bolts, metal anchors, reinforcement steel bars) including mortar according to design drawings;
- execution of masonry according to the plans and details, concrete lintels and beams included;
- execution, assembling and maintaining of scaffolds, if necessary;
- horizontal and vertical transport and handling of the materials;
- cleaning of the work site , horizontal and vertical transport of the remaining residues;
- verifying the quality of the materials and the works execution.

2.2.8 The exterior walls

Shall be executed of high-quality hollow concrete blocks 300 x 400 x 200mm (Width x Length x Height) and plaster M50 Z or equivalent

- walls setting out;
- supply of bricks, reinforcement materials (bolts, metal anchors, reinforcement steel bars) including mortar according to design drawings;
- execution of masonry according to the plans and details, concrete lintels and beams included;
- execution, assembling and maintaining of scaffolds, if necessary;
- horizontal and vertical transport and handling of the materials;
- cleaning of the work site, horizontal and vertical transport of the remaining residues;
- verifying the quality of the materials and the works execution.

2.2.9 Exterior plastering

Executed with 2cm thickness on walls and ceilings with M25T type plastering mortar

- preparation of the surfaces to be plastered by brushing and cleaning of the supporting layer;
- manufacturing, mounting and maintaining of the scaffold or work platform;
- preparing the materials necessary for plastering;
- plastering of the areas indicated in plans;
- horizontal and vertical transport and handling of the materials;
- cleaning and transport of the materials from the work site;
- checking of the quality of the materials and the works execution

2.2.10 Exterior painting

Specification

Paint should follow the following requirements:

- totally impermeable by rain.
- vapour-permeable to allow breathing of the structural element
- highly elastic to ensure crack-bridging.
- strong bonding to the substrate and excellent coverage

Works include

- preparation of the surfaces to be painted by brushing and cleaning of support layer;
- manufacturing, mounting and maintaining the scaffold or work platform;
- masking of neighbored zones
- painting with paint, as specified above, two layers
- horizontal and vertical transport and handling of the materials;
- cleaning and transport of the materials from the work site;
- check of the quality of the materials and the works execution.

2.3 Gates for the building

Iron gates with wire mesh (15 x 15 cm) will be fixed on the walls. Frame will be produced from galvanized steel pipes Ø 75 mm and plastic coated wire mesh inside.

The dimensions for the gates:

No	Section	Type of door	Door Dimensions [Width x Height] in m	Piece
1	Storage room 1	Double wing	2,70 x 3,75	2
2	Storage room 2		2,70 x 3,75	2
3	Storage room 3		2,70 x 3,75	2
4	Reception area		2,70 x 3,75	2

Supply and installation including.

- Measurement of the wall apertures;

- Checking of the fixing points: bolts, anchors, fasteners;
- Supply, correct levelling and pre-installation of the doors according to the technical specifications and detailed design;
- Supply of the materials for installation and accessories (ironmongery);
- Definitive installation of the doors, including accessories;
- Painting with oil paint of the metal frames;
- Protection of the joinery until completion of the works;
- Horizontal and vertical handling and transport of the materials;
- Verifying of the quality of the material and works execution.

2.4 Roofing with corrugated metal panel

Delivery and installation of manufactured metal sheeting, galvanized including metallic support structure, fixing with self-drilling screws. Declination of the roof is 10°.

2.4.1 Roof truss

The roof construction of steel consists of beams and purlins (160mm) as specified in the drawings including

- Supply of metal profiles and installation material
- Fixing the panels;
- Horizontal and vertical transport and handling of materials with suitable lifting gear;
- Primer-coating and painting of metallic assemblies
- Cleaning the work site and vertical and horizontal transport of the residues;
- Verifying of the material quality and works execution.

2.4.2 Single Layer Roof Panels

The construction works has to be implemented, as described in the detailed drawings including

- Supply the metal panels, of materials for assembling (metal profiles, self-drilling screws), cutting to specific sizes, according to Detailed Design;
- Supply and installation of metal structural profiles;
- Fixing the panels;
- Horizontal and vertical transport and handling of materials;
- Cleaning the work site and vertical and horizontal transport of the residues;
- Verifying of the material quality and works execution.

Technical specifications

- Coverage Widths: 610mm
- Rib Spacing: 67mm on centre
- Rib Height: 12mm
- Panel Attachment: Exposed

or equivalent

Fastening System

- Gauges: 29 (standard); 26 (optional)
- Finishes: Smooth (standard)

- Coatings: Galvalume Plus®, Signature® 200 or equivalent. Equivalent products need to be approved by the Engineer.

Production of the sheets according to the following norms:

American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

ASTM International (ASTM): www.astm.org:

ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.

ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

ASTM A 240 – Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

ASTM C 518 - Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics.

ASTM D 1622 - Apparent Density of Rigid Cellular Plastics.

ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

2.4.3 Rainwater Pipes

The construction works has to be implemented with Ø100 mm halfpipes made of galvanized sheet metal, thickness 0.5 mm. The pipes shall be installed along the front- and backside of the building.

- Supply of the materials necessary to execute the works: rainwater pipes made of galvanized metal sheet, fasteners etc.
- Putting into correct position and fixing;
- Horizontal and vertical transport and handling of the materials;
- Connection to the rainwater down pipe
- Cleaning of the work site and horizontal and vertical transport of the remaining residues;
- Verifying the quality of the materials and the works execution.

2.4.4 Rainwater Down Pipe

The construction works has to be implemented, as described in the detailed drawings with Ø100 mm pipes made of galvanized sheet metal, thickness 0.5 mm. Including the supply and installation.

- Supply of the materials necessary to execute the works: rainwater pipes made of galvanized metal sheet, fasteners etc. according to the technical specifications and detailed design;
- Putting into correct position and fixing;
- Horizontal and vertical transport and handling of the materials;
- Cleaning of the work site and horizontal and vertical transport of the remaining residues;
- Verifying the quality of the materials and the works execution.

2.5 Floors

2.5.1 Polished cement screed

including support layer and skirting or coved skirting executed with smoothed M100T type plastering mortar.

- supply of the materials necessary for work execution, according to the technical specifications and detailed design;
- checking the existing support layer, execution of the levelling screed;
- execution of floor made of polished or rolled cement screed, according to the details and technical specifications;
- execution of the skirting or coved skirting by smoothed cement mortar;
- horizontal and vertical transport and handling of the materials;
- cleaning and transport of the excess materials from the work site;
- checking the quality of the materials and the works execution of the polished cement screed.

2.5.2 Epoxy Paint Floor

Supply and installation of a two-component epoxy including the following requirements

- supply of the materials necessary for work execution
- cleaning of the floor before painting
- removing all oil and other contamination on the floor which could decrease the adhesion of the Epoxy paint
- cleaning and transport of the excess materials from the work site;
- Installation of the paint considering all requirements of the producer
- Considering all H&S measure required by the producer

Technical specification

- Two- component epoxy paint (resin and hardener)
- Total thickness of both layer 1.5mm
- Colour: clear
- High chemical and physical resistance

2.6 Electrical installation

The construction works has to be implemented, as described in the detailed drawings.

The power supply cable steel wired armoured 4x16mm² cable from the reception area of the landfill has to be connected to the distribution board in the HWISF building.

2.6.1 Distribution board and circuit breakers

Distribution boards and circuit breakers	Unit	Quantity
3 phase 8 way distribution board	pp	1,00
1 phase 2 way distribution board	pp	1,00
POLYESTER PANEL IP-65	pp	1,00
OUTDOOR distribution board (W.P.)	pp	1,00
3x125A MCCB	pp	2,00
2x63A RCD Ith:300Ma	pp	1,00
4x63A RCD Ith:300Ma	pp	1,00
1X6/10/20A 10kA MCB Type, BS, 240/415V	pp	8,00
3X16/20A 10kA MCB Type, BS, 240/415V	pp	1,00
Central earthing for metering room earthing cable 1x70mm ²	m	25,00
DOL starter	pp	1,00

2.6.2 Cable tray installations

Cable tray installations	Unit	Quantity
Cable tray A=200mm, h=40mm, e=2mm, hot dip galvanization, appendix IX	pp	30,00
Cable ladder A=200mm, h=50mm, e=2mm, e=2mm, hot dip galvanization, appendix IX	pp	2,50
Cable Tray 90 dec. Connection component A=200, e=2mm, Hot dip galvanization, appendix IX	pp	2,00
Cable Tray Jointing Component L=250mm e=2mm, e=2mm, Hot dip galvanization, appendix IX	pp	50,00
Cable tray carrier L=260mm e=2mm, e=2mm, hot dip galvanization, appendix IX	pp	25,00
Cable tray ceiling fixing component, e=2mm, hot dip galvanization, appendix IX	pp	50,00
Cable tray threaded rod M8 L=500mm, M8,	pp	50,00

Cable tray installations	Unit	Quantity
e=2mm, hot dip galvanization, appendix IX		
M8 hex nut, e=2mm, hot dip galvanization, appendix IX	pp	100,00
Screw set M8, e=2mm, hot dip galvanization, appendix IX	pp	148,00
Non drill anchors, e=2mm, hot dip galvanization, appendix IX	pp	50,00

2.6.3 Canal excavation & cable installations

Canal excavation & cable installations	Unit	Quantity
3" PVC conduit pipe	pp	100,00
canal excavation, laying cables and refilling	m	100,00
3x70+35mm ² 0,6/1kV PVC, insulated, armoured, multicore cable installation (Cu/pvc/swa/pvc)	m	3,00
4x16mm ² 0,6/1kV PVC, insulated, armoured, multicore cable installation (Cu/pvc/swa/pvc)	m	30,00
5x2.5 mm ² 0,6/1kV PVC insulated, multicore cable installation (Cu/pvc/NYY)	m	30,00
1x6 mm ² 300/500V PVC insulated, single core cable installation (NYA/Cu)	m	50,00
3x2,5 mm ² 300/500V PVC, insulated, multicore, flexibel cable installation (Cu)	m	60,00

2.6.4 Other equipment

Other equipment	Unit	Quantity
70mm copper cable LUG	pp	8,00
10A, one gang-one way, double pole, water proof IP65 switch	pp	4,00
Socket outlet 1x13A, BS standards, 230V, WP IP65	pp	5,00
Socket outlet 3x16A three phase, water proof, IP 65	pp	1,00

2.6.5 Luminaries and Installations

2.6.5.1 Outdoor Lighting mounted at the entrance of the building

Supply and installation of industrial type LED outdoor lights incl. all necessary additional components.

Socket:	E40
Light color:	daylight white
Voltage:	230 volts
Average service life:	40,000 h
Cover:	clear glass
Type of current:	AC
Power consumption:	28.00 watts
Lumen:	2470 lm
Light output:	88 lm / W
Color temperature:	5500 Kelvin
Average life:	40,000 hours
Color rendering index:	Ra 82

IP65, protection class

2.6.5.2 Indoor Lighting

Supply and installation of industrial type LED indoor lights incl. all necessary additional components.

Power consumption (at 100%)	40W
Luminous flux in lumens in operation	3800
IP class	IP-65
Color temperature	4000K
Clear or opal optics	
Glare (UGR)	<20
Temperature range	-25 ° C to + 40 ° C
Color rendering index (Ra)	at least 70
Lumen maintenance (light decrease to 70%)	L70> 50,000 hours at 23 ° C
Input voltage	90 - 246V AC, 127 - 370V DC, 47 - 63Hz
Driver efficiency (typ.)	90%
Power factor	> 0.95 / 230V at 100% power consumption
Surge protection according to EN 61547	
Power supply waterproof permanent connection	

2.6.5.3 On – off switch 1P 250V 10A

Supply and installation on-off switch 10A, One Gang-One Way, Double Pole, Water Proof IP65 Switch, inclusive support, plate delivered, mounted, connected and checked.

2.6.5.4 Sockets

Supply and installation of sockets socket outlet 1x13A, BS standards, 230V, WP IP65 and socket outlet 3x16A three phase, water proof, IP 65, inclusive support, plate delivered, mounted and connected, checked.

2.6.5.5 Industrial waterproof socket 16 A

Supply and installation of industrial waterproof socket 16 A, 220 / 415 V 3Ph+N+PE, suitable for surface installation, with protective cover, colour standard, inclusive support IP 65 delivered, mounted and connected, checked.

	Switch On-Off	Socket 230V/16A	Socket 415V/16A
Storage Room 1	1	1	
Storage Room 2	1	1	
Storage Room 3	1	1	
Reception area	1	2	1

2.6.6 Earthing and Other Protections

The construction works has to be implemented as described in the detailed drawings. The following earthing regulations are to be considered thereby generally.

The electrodes shall be located so that it can be protected from accidental mechanical injury and erosion; for that purpose the contractor shall bury them in an appropriate depth (1,5m).

Earthing rods

The earthing rods are modular electrodes inserted by means of pneumatic or electrical hammer in order to reach the depth layers with a relatively lower specific resistance. The electrodes shall be inserted to a depth determined according to the function of the soil quality. The rods shall be composed of connected sections with removable joints. The minimal total length shall be 1,5m.

The rods shall be made of copper plated steel and have a minimal diameter of 19 mm.

The rods shall be an industrialized product. The auxiliary accessories shall come from the same manufacturer's plant like the rods.

The earthing rods shall be inserted into section after section and each shall be at least 1.5m long. The first section shall be inserted with a special drill point. The rod shall be equipped with a special hardening hat protecting so that it shall not change its shape in the course of the insertion.

The connection of the earthing connector to the rod shall be performed by means of an original connection device.

The number and location of the electrodes shall be according to the drawings. Unless it is specified different, the distance between the electrodes shall be at least twice the length of the longest electrode and in any case not less than 2 m.

If the designed electrodes not provide the resistance required in the contract documents, additional electrodes shall be inserted until the required resistance obtained.

The Earthing Conductors

The earthing conductor shall be continuous along its whole length and entirely made of the same material. The connections between the sections of the earthing conductors shall consist of appropriate screws equipped with spring rings or pressure connectors. The contact areas shall be prepared in such a way to ensure the total electrical contact delivered, mounted and connected, checked incl. all necessary additional components.

Protection of the earthing conductor

Whenever there shall be a risk of mechanical injury, the earthing conductor shall be protected by means of an appropriate protective pipe.

The earthing conductor shall be protected at its outlet from the building down to its connection to the earthing electrode, by means of an appropriate protective pipe.

The protection of the electrode

For the protection of the electrode and its detection, the quality control of the connection and one inspection manhole shall be installed at the head of the electrode.

Marking and addressing

The location of a earthing electrode shall be indicated in a clear way on the top cover of the inspection manhole at the head of the electrode, in yellow-green.

Corrosion-proof protection

The connection plates of the earthing electrodes shall be coated with corrosion-proof paint to protect them from corrosion. The same rule shall be applied for the disconnectable connection places. Upon completion of the painting, the connection spot shall be wrapped up with a yellow-green plastic tape.

Potential Equilibrium

All the metallic services installed in the building shall be connected to an appropriate bus-bar. It shall be allowed to install a certain number of bus-bars in a single installation. They shall be connected to one bridging ring with electrical continuity.

2.6.7 Fire Detection System

General

The fire alarm contractor shall be responsible for supply, installation, commissioning and servicing of an analogue fire detection and alarm system.

The fire alarm contractor shall have an adequate number of staff trained and experienced in the design, installation, commissioning and servicing of analogue fire detection and alarm systems. The fire alarm contractor shall have a minimum of 3 years of experience in installing, commissioning and servicing fire detection and alarm systems.

The fire detection system shall consist of

- Fire detection central, 6 Zone
- Fire detection central siren, 230V, 110dB, 1,800 MHz
- Fire detection central manual buton, BS standards, 230V
- Smoke detector

The Fire Detection System shall be designed, supplied and installed by the Fire Alarm Contractor according to the Structural Scheme on the detail drawing. The Fire detection central has to be installed in the office building of the landfill. The smoke detector has to be installed as a network. The smoke detector shall comply fully with the British and European Standards and/or other nominated rules and regulations:

2.6.8 Emergency shower

Emergency showers (safety showers. To have a foot operated eye wash (11.5 liter/min) and pull handle operated shower (75 liter/min), made of stainless steel

All Items are including:

- Putting into correct position and fixing;
- Horizontal, vertical transport and handling of the materials;
- Cleaning of the work site, horizontal and vertical transport of the remaining residues;
- Verifying the quality of the materials and the works execution.

The Items has to be delivered, mounted and connected, checked incl. all necessary additional components.

2.6.9 Domestic Water piping and Piping Accessories

2.6.9.1 Water pipe and installation

A Ø25mm HDPE – pipe between the emergency shower and the water tank at the landfill reception area shall be installed outside the building to support the water safety shower units including:

- Delivery of pipe and all installation materials to the site
- Putting the pipe and all related items into correct position and fixing;
- Pipe connection with the water tank and the shower
- Delivery and Installation of 2 manual valves at both ends of the pipe
- Verifying the quality of the materials and the works execution.

The items have to be delivered, mounted and connected, checked incl. all necessary additional components.

2.6.9.2 Pipe trench

For water supply pipe between the water tank at the landfill office and the emergency shower

Size is (Depth x Width) 60x30 cm

The earthworks include mechanical, manual excavation, filling and compacting

Manual excavation executed in soil with natural humidity

- Manual digging according to the dimensions and levels mentioned in the design;

- Loading/transport of soil with wheelbarrow, transport to the intermediary deposit;
- Loading soil in the transport vehicle;
- Transport/unloading of the soil to authorized dumping area;
- Verifying the works execution.

Backfilling and compaction of soil

- Supply and transport of proper backfilling material without stones;
- Execution of backfilling with soil around foundations and building according to the detailed structural design and the general technical specifications;
- Compaction in successive layers including watering of successive layers;
- Verifying the works execution.

3 Shed for gas cylinders and aerosol containment

Characteristics

A gas cylinders and aerosols containment store will be constructed outside of the main HWISF building for UN Class 2 waste materials. It will have a size of around 10m² and a height of 2.4m. The roof will be a single metal sheet. All sides are closed with a fixed mesh wire construction including a lockable door of mesh wire.

3.1 Mechanical excavation with excavator, in soil with natural humidity

- excavation to dimensions/levels mentioned in the Detailed Design drawings;
- loading soil in the transportation vehicle;
- transport and unloading of soil inside the landfill area as requested by the Engineer;

3.2 Backfilling and compaction of soil

- execution of backfilling with soil around foundations and building according to the detailed structural design and the technical specifications;
- compaction in successive layers including watering of successive layers;

3.3 Reinforced concrete class C12/15 (B200)

- supply of concrete class and volume specified in the detailed structural design, technical specifications, including transport;
- verifying reinforcement bars before pouring the concrete;
- performing infrastructure by concrete casting and transport with crane/concrete pump to works area, according to the design;
- watering or cover protecting of the concrete to ensure a normal strengthening;

- verifying the works execution.

3.4 Formwork for concrete in foundations, made of 8 mm plywood

- formwork supply for the work execution;
- formwork transport with mechanical/manual means to the place of work;
- formwork pegging, pegging and fixing with cross ties, setting in position, to distances and positions indicated in the Detailed Structural Design;
- checking the works execution;
- formwork removal and cleaning.

3.5 Steel Columns

Supply and installation of IPE steel profiles according to the detail drawings including

- Measurement of the wall apertures;
- Checking of the fixing points: bolts, anchors, fasteners;
- Supply of the materials for installation and accessories (ironmongery);
- Installation of the doors, including accessories;
- Painting with oil paint of the metal frames;
- Protection of the joinery until completion of the works;
- Horizontal and vertical handling and transport of the materials;
- Verifying of the quality of the material and works execution.

3.6 Side walls and gate of wire mesh

Supply and installation of a frame produced from galvanized steel pipes Ø 75 mm and plastic coated wire mesh (15 x 15cm) inside. The frame will be fixed at the strip foundation, the IPE pillars and the roof construction.

Front side will be equipped with a two wing-gate of 2 x 2,0m x 1,0m with wire mesh (15 x 15 cm) including

- Measurement of the wall apertures;
- Checking of the fixing points: bolts, anchors, fasteners;
- Supply of the materials for installation and accessories (ironmongery);
- Installation of the doors, including accessories;
- Painting with oil paint of the metal frames;
- Protection of the joinery until completion of the works;
- Horizontal and vertical handling and transport of the materials;
- Verifying of the quality of the material and works execution.

3.7 Roof truss

The roof construction of steel consists of beams and purlins (160mm) as specified in the drawings including

- Supply of metal profiles and installation material
- Fixing the panels;
- Horizontal and vertical transport and handling of materials with suitable lifting gear;
- Primer-coating and painting of metallic assemblies
- Cleaning the work site and vertical and horizontal transport of the residues;

- Verifying of the material quality and works execution.

3.8 Single Layer Roof Panels

The construction works has to be implemented, as described in the detailed drawings

Delivery and installation of manufactured metal sheeting, galvanized including metallic support structure, fixing with self-drilling screws. Declination of the single- pitch roof is 10°.

Further requirements described in item 2.4.2 have to be considered.

3.9 Rainwater Pipe

The construction works has to be implemented with Ø50 mm halfpipes made of galvanized sheet metal, thickness 0.5 mm. The pipe shall be installed along the backside of the shed.

- Supply of the materials necessary to execute the works: rainwater pipes made of galvanized metal sheet, fasteners etc.
- Putting into correct position and fixing;
- Horizontal and vertical transport and handling of the materials;
- Connection to the rainwater down pipe
- Cleaning of the work site and horizontal and vertical transport of the remaining residues;
- Verifying the quality of the materials and the works execution.

3.10 Rainwater Down Pipe

The construction works has to be implemented with Ø50 mm pipes made of galvanized sheet metal, thickness 0.5 mm. Including the supply and installation.

- Supply of the materials necessary to execute the works: rainwater pipes made of galvanized metal sheet, fasteners etc. according to the technical specifications and detailed design;
- Putting into correct position and fixing;
- Horizontal and vertical transport and handling of the materials;
- Connection to the rainwater ditch around the site
- Cleaning of the work site and horizontal and vertical transport of the remaining residues;
- Verifying the quality of the materials and the works execution.

4 Spillage collection system

Characteristics

Along the floor at the front side of the facility there will be a traversable gutter. The gutter has to be connected with the concrete floor on both sides of the gutter.

The gutter itself is connected to a containment tank with a capacity of 1,100liter.

The container has to be resistant to chemicals and has no overflow outlet, though shall have an inspection and clean-out opening on top. The containment will be placed besides the HWISF building.

4.1 Covered gutter

Requirements:

- Load class: D 400 according to DIN 19580 / EN1433
- with inside gradient and include of outlet construction,
- including all earthworks, foundation and connections
- The gutter has to be covered with a lockable grid of cast iron.
- The grid must be removable for maintenance.
- Three sets of keys for removing the grid must be included.

The rate is per m of installed gutter, measured will be on the surface of the grid.

4.2 Prefabricated spillage containment

The spillage containment shall be made of PEHD, chemical resistant and lockable.

The total capacity of the separator: min. 1,100 l

Manhole cover nominal size: 600 mm

The rate is per set including

- Supply and installation of the containment
- All earth works
- Sand bedding
- Levelling
- Connection with the spillage gutter

5 Maneuvering Area

Characteristics

For the waste delivery trucks access and manoeuvrability, it is proposed that the area in front of the HWISF be prepared as a gravel platform. The recommended size is

- Length x width: 23.20 m x 15.00 m
- Total surface: 348 m²

5.1 Cut and fill

This specification applies to excavation of soil for preparing the manoeuvring area.

Works consist of:

- marking the area where the excavation will be executed;
- excavation of soil, loading, transport and unloading within the landfill as advised by the Engineer
- levelling and compacting of the bed and the slopes after digging;
- surveying the excavated profile according to the design;

5.2 Base layer

This specification applies to the supply and laying materials for the sub-base layer. The price is also to be applied for the necessary quantity for shaping profile (equalization layer), if necessary.

Material requirements:

Graded crushed stones for sub-base

Thickness of layer:

0.40m

Grading after compaction

Sieve (mm)	% by weight passing	
	0/40	0/40
75	-	100
63	-	95-100
50	100	85-100
37.5	90-100	75-95
28	75-95	60-87
20	60-90	50-80

10	35-75	30-67
6.3	25-63	23-58
2	15-45	13-40
1	8-35	7-32
0.425	4-23	4-20
0.075	0-12	0-10

Requirements on compaction

- Dry density
- Average dry density: min 96% MDD
- No result below 94% MDD
- Specific gravity (oven dry)
- Average dry density: min 80% of S.G.
- No result below 80% of S.G.
- No movement under steel wheeled roller of at least 5000kg per metre width of roll
- Compaction moisture content: between 80 and 105% CMC

Works description

- marking the filling area;
- compaction of the filling area;
- supplying of filling soil according to the requirements.
- laying soil in successive layers and their compaction;
- supply and transport to the site of water for compaction;
- execution of joining steps;
- finishing of platform and slopes surface;
- verification of designed profile;
- verification of filling quality;
- loading, unloading and transport of soil from cuttings.

Payment per m² of finalized layer.

5.3 Top layer

This specification applies to the supply and laying materials for the top layer.

Material requirements:

Graded crushed stones for sub-base

Thickness of layer:

0.03m

Works description

- marking the filling area;
- supplying of filling soil according to the requirements.

- laying soil in successive layers and their compaction;
- execution of joining steps;
- verification of designed profile;

Payment per m² of finalized layer.

5.4 Concrete ditch for surface water

The ditch will be installed along the manoeuvring area to avoid water entering the storage area and to collect water from the manoeuvring area. The ditch ends in the water ditch along the access road of the landfill.

Supply and installation of a trapezoidal surface water ditch of concrete with nominal reinforcement, thickness 0.20m.

Size:	width (bottom)	1.00m
	height	1.00m
	Gradient of the ditch walls	1:1

Additional Requirements:

- Soil excavation and profiling, levelling and refilling. Surplus soil has to be levelled beside the ditch
- Supply and installation of embedding
- Connection to the ditch along the landfill access road

The ditch has to be covered by a reinforced concrete plate along the gate

- Length : 5.0m
- Minimum load: 30 tons
- Additional costs for the cover plate has to be included in the unit price of the ditch

Surplus materials and machines have to be removed after completion of the work

The rate for this item is m length of constructed ditch.

5.5 Permanent traffic, warn and information signs

This specification applies to installing traffic signs on the access road and the reception area.

Traffic signs have to be designed according the local traffic regulations.

Warn and information signs will have a maximum size of 1.0 x 1.2m

Works consist of:

- supply and setting-up of the equipment, signals, fittings and all the necessary materials and ancillaries
- weatherproof style
- foundation works

6 weeks before the work starts, the Engineer will provide a list of the signs with size and content (text and pictographs) and the proposed position.

Payment will be per complete set (pcs.) of sign.

6 Fence

A metallic fence made up of panels having the length 2.5 m and height 2 m was designed to surround the HWISF. The closing of the fence shall be performed with a net wire STNB, 4mm in diameter. The anticorrosive insulation of the fence shall be made by applying a base coat with red lead "green" oil paint.

The rate is per m fence constructed according to the following requirements:

6.1 Earthwork

(In soil with natural humidity)

- manual digging according to the dimensions and levels mentioned in the design;
- lateral soil stockpile;
- soil backfilling and compacting after setting up of foundation for the poles kerb
- compaction in successive layers including watering.
- disposal of surplus excavated material ;
- transport/unloading soil to authorized dumping area;
- verifying the works execution.

6.2 Foundation

Simple concrete class C12/15 (B200) – T3-T32.5/0-15 shall be cast in the foundation for the fencing post below ground.

- Supply and installation of concrete foundation, size 400 mm x 400 mm x 600 mm, class C12/15 Foundation molten (see before), setting up and levelling out.

6.3 Metallic elements

Fence poles

- supply of steel pipe pole Ø 60 x 5 mm, 2025 mm in length;
- mechanical and manual transport
- poles have to be introduced in the foundation pipe, levelled and welded in whole periphery;
- all necessary equipment and connections have to be included
- verifying the works execution.

Welded net panels Ø 4 /50/200 mm 2420 mm in length and 2000 mm in height

- supply of welded net panels according to the necessary dimensions;
- mechanic transport of welded net panels to intermediary deposit;
- manual transport of the welded net panels to work place;
- welding of panels to the metallic poles;
- checking the works execution.

6.4 Industrial Gate

The gate has to be built simultaneously with the construction of the fence. It will be placed at the main entrance of the landfill.

Width: 2 x 3.90m two-wing, profile steel frame

Height: 2.0m

Two on-site fabricated foundations, all materials and works included

Size: Length: 1300mm/550mm

Width: 1300mm/550mm

Height: 800mm

5 keys for suitable for all gates must be delivered.

The gate will be paid per set of complete gate

7 Equipment

7.1 Pallet Shelf with Collection tank

Prepared for euro- or industrial pallets, large bundles up to 1000 l, laying or standing barrels have to be stored secure. Screwless construction for a fast and simple assembly with additionally available splash guard walls for each level.

- According to the requirements of the Water Resources Act
- Collection tank certified for inflammable, easily inflammable and high-inflammable liquids of the water endangerment classes WGK 1-3
- Collection tanks made from 3 mm steel sheet (S235JR), leakproof welded and galvanized
- Galvanized support frames, barrel rests and gratings
- Tie - bars powder-coated (blue), adjustable in height in 50mm distances
- Load per level up to 3,000 kg
- At any time extendable with barrel rests and grids
- Basic shelf has to be any time expandable
- Screwless construction and provided with a easily understandable assembly instruction

Dimensions of the shelving unit:

Total width (mm)	2,930
Width of storage level (mm)	2,650
Depth of storage level (mm)	1,100
Height(mm)	4,000

Dimensions tray:

Width(mm)	2,650
Depth(mm)	1,300

Height(mm)	280
Gross collection	604
Storage capacity: euro pallets	9

The parts has to be delivered, mounted, connected and checked incl. all necessary additional components.

7.2 Euro Pallets

The pallet described as a Euro block pallet is the 800mm x 1200mm European pool pallet.

This pallet is a standardized block pallet.

Dimensions

Length:	1200mm
Width:	800mm
Height:	170mm

The Euro Pallets has to be delivered, stored and checked incl. all necessary additional components.

7.3 Barrels and Bins

7.3.1 Plastic Barrels 200l with lid

Plastic Barrel 200l with lit out of PE

- Barrels needs UN- & ADR Certification
- Plastic Barrels are equipped with locking collar as protection against burying or contamination of the contents
- Plastic Barrel equipped with a big size opening for simple and fast filling

Dimensions:

- Ø x H (mm) 590x950
- Weight (empty) max. 10kg
- Material: PE

The plastic Barrels have to be delivered, stored and checked incl. all necessary additional components.

7.3.2 Fluorescent lighting tubes collecting box

Storage and transport system for fluorescent lighting tubes.

- Sturdy construction made of steel sheeting
- Hot-dip galvanized (EN ISO 1461)
- 100 mm ground leeway for pick-up by pallet- or fork-lift truck
- Stacking corners with crane eyes
- Can be stacked
- Lockable
- With galvanized door and lid

Capacity:

approx.	1100	strips	Ø 25 mm
approx.	500	strips	Ø 37 mm

Finish:

- Spray painted:
- Orange RAL 2000

Dimensions:

Length: 2100mm

Width: 770mm

Height: 975mm

The fluorescent lighting tubes collecting box has to be delivered, stored and checked incl. all necessary additional components.

7.3.3 Collecting Box used lead acid batteries

Storage and transport system for used lead acid batteries. For transport in accordance with ADR 4.1.4.1 P801a.

- PE plastic high density (HDPE)
- Widely acid-proof,
- Can be loaded up to 1 t, stacked up to 3 t
- Optimal for transporting old batteries (Rh 2807)
- Stackable and safe for transport
- Equipped with three runners

Dimensions:

Length: 1200mm

Width: 800mm

Height: 170mm

The collecting box has to be delivered, stored and checked incl. all necessary additional components.

7.3.4 Storage Box with lid for used lead acid batteries

For a clean and safe storage of the old vehicle batteries, has to be also approved for transport in accordance with ADR 4.1.4.1 P801a.

- Two ventilation openings
- A galvanised steel base frame for stable positioning
- All fittings are stainless steel
- Inserted wooden grate forms, a plain base surface
- Prevent unauthorised access, the lid has to be locked

Dimensions

Length: 1200mm

Width: 1000mm

Height: 760mm

The storage box has to be delivered, stored and checked incl. all necessary additional components

7.3.5 Collecting Tank HZW Liquids 400 I

Storage and transport container for inflammable liquids without a sump pallet (e.g. waste oil of unknown origin, solvents, thinners and many more, previously classed as AI, AII, AIII and B). The integrated forklift pallet enables an easy and safe transport. An integrated funnel with a dirt sieve and a fixed installed suction pipe with tanker coupling simplify filling and emptying.

Design: explosion shock-proof

Made of stainless steel

Dimensions

Length:	960mm
Width:	960mm
Height:	3100mm

The collecting tanks have to be delivered, stored and checked incl. all necessary additional components

7.3.6 Collecting Tank HZW Liquids 980 I

Storage and transport container for inflammable liquids without a sump pallet (e.g. waste oil of unknown origin, solvents, thinners and many more, previously classed as AI, AII, AIII and B). The integrated forklift pallet enables an easy and safe transport. An integrated funnel with a dirt sieve and a fixed installed suction pipe with tanker coupling simplify filling and emptying.

Design: explosion shock-proof

Made of stainless steel

Dimensions:

Length:	1210mm
Width:	1210mm
Height:	3000mm

The collecting tanks have to be delivered, stored and checked incl. all necessary additional components

7.3.7 Special HZW Collecting Boxes

Use for the international transport of solids and paste-like substances according to the ADR/RID/IMDG codes, packing groups I, II and III. Volume 800l

Design:

- IBC according to the standard "DIN 30741-1"
- Sturdy steel construction
- Reinforced edging
- Max. density 1.5 kg/l
- Walls 2 mm, floor 2.5 mm
- Through fork sleeves
- Suitable for pick-up by pallet-, fork-lift truck or crane
- Document pocket

- Robust stacking corners with crane eyes
- Can be stacked (3 units)
- 2 lid fasteners, lockable
- Lid: spring-assisted and with a seal
- Automatic lid lock in 270° position
- Lid support in 70° position

Finish:

- Hot-dip galvanized (EN ISO 1461)
- Additional painted finish (external) according to your choice of the RAL colour code chart

The HZW collecting boxes has to be delivered, stored and checked incl. all necessary additional components

7.3.8 Mobil Box 170I

with a stable design which enables clean and safe storage of hazardous solid goods belonging to the packing groups II or III and has also been approved for the transport according to the ADR, RID and IMDG codes. The container (blue), with a capacity of 170 l and lid (coloured) has to be easy to handle, even when the container is full. The specially shaped lid enables storage in 2-layers. Up to 8 boxes has to be stacked safely on a Euro pallet. The beading in the container wall enables emptying with a rotary forklift.

The mobile box has to be particularly suitable for the following applications:

- Collection container for waste and materials such as oil binding agents, paint residues, etc.
- Collection container for inflammable and polluting substances

Dimensions:

Length: 1200mm

Width: 1200mm

Height: 890mm

The Mobil Boxes have to be delivered, stored and checked incl. all necessary additional components

7.3.9 Mobil Box 250I

with a stable design which enables clean and safe storage of hazardous solid goods belonging to packing groups II or III and has also been approved for the transport according to the ADR, RID and IMDG codes. The container (blue), with a capacity of 250 l and lid (coloured) has to be easy to handle, even when the container is full. The specially shaped lid enables storage in 2-layers. Up to 8 boxes has to be stacked safely on a Euro pallet. The beading in the container wall enables emptying with a rotary forklift.

The mobile box has to be particularly suitable for the following applications:

- Collection container for waste and materials such as oil binding agents, paint residues, etc.
- Collection container for inflammable and polluting substances

Dimensions:

Length:	1200mm
Width:	1200mm
Height:	890mm

The Mobil Boxes has to be delivered, stored and checked incl. all necessary additional components

7.4 Personnel Protection Equipment

7.4.1 Coveralls

Cotton coveralls to protect industrial workers from the danger of flash fire and explosion.

- Tough, 9-oz material is sewn throughout with FR thread.
- Heavy-duty, two-way, quick-release brass zipper.
- Bi-swing pleated back offers a full range of motion and an elasticized waist band allows a secure fit that won't restrict movement.
- Adjustable sleeve cuffs accommodate the wearing of gloves and flared leg cuffs make donning easy.
- Two patch breast pockets (left pocket includes a safety flap), two hip pockets (left pocket includes a heavy-duty snap closure), two swing pockets with internal pass-throughs and a tool pocket on the right leg.
- In different sizes, depend on the size of the co-workers.

Colour: Orange

The coveralls has to be delivered, stored and checked incl. all necessary additional components.

7.4.2 Safety footwear

- Working boot with toe cap
- Steel toe cap
- Energy absorbing heel
- Oil-, gasoline and acid resistant sole
- Anti-static
- Size 40-48 according to the size of the co-workers.

The safety footwear has to be delivered, stored and checked incl. all necessary additional components.

7.4.3 Safety gloves

Double-Dipped PVC Glove, coated with a blend of high-quality plasticizers and PVC compound.

- Provides resistance to basic liquids and mild chemicals.
- Double-dipped sandy finish ensures a nonslip grip in wet or dry conditions.
- Features Actifresh®, is an antibacterial agent that promotes freshness and hygiene.
- Washable.
- With a 10" gauntlet, 12" gauntlet, 14" gauntlet, or 18" gauntlet cuff.

In different sizes, depend on the size of the co-workers.

The Safety gloves have to be delivered, stored and checked incl. all necessary additional components.

7.4.4 Helmets

Safety helmet for basic head protection.

- Polyethylene shell, four-point adjustable Press-Lock suspension, replaceable padded sweatband and accessory slots.
- Di-electric

Size: 56 – 62

Colour: Red

The Safety helmets have to be delivered, stored and checked incl. all necessary additional components.

7.4.5 PPE Safety Kit

The safety kit that has to store the personal protection equipment for one person:

- Dust mask, half-face size
- Dust mask filter A2/B2/E2/K1/P3
- Tightly sealing safety goggles
- 1 pair of chemically-resistant safety gloves
- Light chemically-resistant overalls
- 1 pair of pull-over boots with sole reinforcement
- Eye rinsing bottle, sterile (500 ml)

Two sets of operator's instructions and spare part catalogue covering the entire unit shall be furnished with the machine. All information is required in English.

The PPE Safety Kits has to be delivered, stored and checked incl. all necessary additional components.

7.4.6 Safety Box

The Safety box has to store material to absorb any liquid escape such as oil, pesticides and other liquid chemicals in case of an accident.

The universal emergency set contains:

- 20 mats of absorber material
- 2 booms of absorber material
- 2 hoses of absorber material
- 1 disposal bag of absorber material

Two sets of operator's instructions and spare part catalogue covering the entire unit shall be furnished with the machine. All information is required in English.

The Safety Box has to be delivered, stored and checked incl. all necessary additional components.

7.4.7 HZW binding agent

Universal chemical binder. For the quick and safe chemical absorption of different types of chemicals and oil if an accident occurs:

- Grain size: approx. 0,5 - 4 mm

- Package: max. 100 l, approx. 20 kg per bag
- Two sets of operator's instructions shall be furnished with the agent. All information is required in English.

The HZW binding agent has to be delivered on Euro pallets, stored and checked incl. all necessary additional components.

7.4.8 HZW emergency box

Has to be ready for fast, safe response to the chemical emergencies. Each kit includes all the necessary supplies to contain safely and clean up oils, acids, caustics, solvents, and toxic spills.

Protection material for four persons:

- Prepared for larger incident response.
- Contents are stored conveniently in a 95-gallon poly overpack drum.
- 1 Overpack Drum,
- 95 Gallons
- 100 Universal Pads,
- 17 x 19"4 Universal Booms,
- 5" x 10'1 Pipe Wrap Kit
- 2 Hazardous Waste Labels
- 1 Nonsparking Shovel
- 1 Polyurethane Drain Seal,
- 36 x 36"1 Qt. Acid Neutralizer
- 1 Qt. Caustic Neutralizer
- 4 Coveralls with Hood and Booties
- 4 Nitrile Gloves
- 4 Safety Goggles
- 4 Disposal Bags

Two sets of operator's instructions and spare part catalogue covering the entire unit shall be furnished with the m box. All information is required in English.

The Emergency Box has to be delivered, stored and checked incl. all necessary additional components.

7.4.9 First Aid box DIN13169

Lockable, wall-mounted cabinet

- Wall cabinet
- Can be locked with security lock
- With 3 insertable shelves
- Shelf heights can be adjusted in 10 mm steps
- Baked powder spray finish
- Labelling

For use in industrial facilities

Two sets of operator's instructions and spare part catalogue covering the entire unit shall be furnished with the machine. All information is required in English

The First Aid Box has to be delivered, installed and checked incl. all necessary additional components.

7.5 Transport and operation equipment

7.5.1 Forklift 3 t

Forklift 3t, diesel-powered - emission control as standard according to the EU industrial standards for the floor trucks.

- Load rating rang 3.0 tons
- Fork lift boom up to 4.5m/ Triplex
- Accessory equipment and different control systems
- Diesel engine
- Driver's seat
- Elastically tyres as standard,
- As standard: emission control, soot filter

Technical data:

Construction	Four wheel counterbalanced
Operator type	Seated
Power source	Diesel
Load Capacity	3,000kg
Boom	Tele free view
Build height	Max. 3,00m
Lift height	Approx. 4,50
Free Lift	100mm
Forks	1,20m
Front Wheels	2 x Super Elastic
Rear Wheels	2 x Super Elastic
Extension	3. Valve complete
Equipment	Lattice Load Protector Sideshift Half cabin Working lights

One manufacturer's standard tool kit and lubrication gun shall be furnished with the machine.

Manufacturer's standard colour is sufficient.

Two sets of operator's instructions, workshop repair manual and lubrication chart, spare part catalogue covering the entire machine shall be furnished with the machine. All information is required in English.

The contractor shall provide wear and tear parts for a working period of approximately 12 months. Mainly, filters, gaskets, hydraulic hoses, electric fuses and bulbs.

The Forklift has to be delivered on site and checked incl. all necessary additional components.

7.5.2 Hand Forklift 2 t

The hand forklift has to be prepared in industry standard and needs a lifting power of 2500 kg and a fork length of 1150mm to transport palettes. Furthermore, it is a glutton of work for professional long-term workers. It has to be equipped with robust and smooth running polyurethane- rollers that simplify daily work shifts.

- High quality powder coating
- High quality hydraulic pump
- Pressure control valve to guarantee a long lifetime
- Strengthened drawbar
- Regulated lifting due to hand lever
- Roller to ensure easy lifting of palettes
- Joint with lubricating nipple

Technical data:

Construction	Transpallet
Capacity	2,000kg
Build height	850mm
Lift height	200mm
Width	520mm
Fork length	1150mm
Front Wheels	4 x PU
Rear Wheels	2 x PU
Weight	Approx. 55 Kg

Manufacturer's standard colour is sufficient.

Two sets of operator's instructions, workshop repair manual and lubrication chart. Spare part catalogue covering the entire machine shall be furnished with the machine. All information is required in English.

The Hand Forklift has to be delivered on site and checked incl. all necessary additional components.

7.5.3 Hand Barrel Lift

Barrel lift with an independent axle and automatic height balance for particularly safe drum pick-up and easy transport.

Two sets of operator's instructions and spare part catalogue covering the entire lift shall be furnished with the unit. All information is required in English.

The Hand barrel lift has to be delivered on site and checked incl. all necessary additional components.

7.5.4 Pushcart 200 Kg

Pushcart made of steel, powder-coats, RAL 5010

With safety handles and profile tires

- Air tyre carrying
- Capacity 200 kg
- Dimensions approximately 120 x 50 x 53 cm (H x B x T)
- Weight approx. 9.6 kg shovel 38 x 20 cm

The pushcart has to be delivered on site and checked incl. all necessary additional components.

7.5.5 Oil filter press

The crusher should flatten the filter to about 1/5th of its original size and eliminates minimum 90% of the refuse oil. Oil shall be separated from the metal and disposed of into your chosen storage.

- 100% air operated
- Pressure regulator and air moisture separator
- Complies with EPA mandated environmental standards
- Operates clean and efficiently
- Single-control valve operation
- Welded steel plate construction
- Crushing pressure around 20,000 lbs

The filter press has to be delivered on site and checked incl. all necessary additional components.

Two sets of operator's instructions shall be included. All information is required in English.

7.5.6 Aerosol can disposal system

for safely and efficiently disposal of aerosol cans. By pressing of a handle, a non-sparking puncture pin pierces the dome of the can and disperses to the receiving drum. After processing cans it should be left empty steel can that's recyclable with other scrap steel. All residual liquids have to be collected safely in the drum, with the combination Filter threading directly to the 20 mm bung of the drum. The filter has to meet air quality and emissions standards by filtering volatile organic compounds.

- For mini, standard and jumbo aerosol cans.
- including ground wire to prevent static build-up.
- The slide bar on can chamber has to be equipped with a lock to provide tamper resistance.
- The entire unit should be coated for easy cleaning.
- Carbon filter
-
- Capacity of carbon filter sufficient for 1500 cans.
- Angled pin ensures a clean puncture every time.
- Two-piece combination colourimetric filter captures odours and potentially harmful VOCs.

The aerosol can disposal system has to be delivered on site and checked incl. all necessary additional components. Two sets of operator's instructions shall be included. All information is required in English.

7.6 Fire Protection Equipment

7.6.1 50 Kg Mobile fire extinguisher

Mobile fire extinguisher with 50 kg of extinguishing agent means in the versions ABC powder.

- Universally usable
- High performance
- Mobility
- Easily refillable
- Fire rating: A,B;C
- Amount of agent: 50 Kg
- Hose: 5m
- Temperature range: -20 C / + 50 C
- Total weight max. 100 Kg

All used extinguishing agents have been proven to be harmless within the framework of the legally required toxicological and hygienic tests.

Two sets of operator's instructions and spare part catalogue covering the entire unit shall be furnished with the fire extinguisher

All information is required in English.

The fire extinguisher has to be delivered on site and checked incl. all necessary additional components.

7.6.2 6 Kg Fire drencher

Fire extinguisher with 6 kg of extinguishing agent means in the versions ABC powder.

- Universally usable.
- High performance.
- Easily refillable.

Fire rating: A,B;C

Amount of agent: 6 Kg

Temperature range: -20 C / + 50 C

Total weight: max. 11 Kg

Two sets of operator's instructions, workshop repair manual and spare part catalogue covering the entire unit shall be furnished with the fire extinguisher

All information is required in English

The fire extinguisher has to be delivered on site, mounted and checked incl. all necessary additional components.

7.6.3 Chemical bonding agent

Packaging filling materials made of lightweight fire-proof minerals

An equivalent absorption agent for the packaging of hazardous goods will be used for the safe packing of dangerous materials. It has to be able to take up hazardous fluids six times of the own weight. It has to be lightweight, designed as an absorbent agent, works flexibly and shock-absorbing, according to the ADR Regulations.

- Fireproofed packaging material
- Shock absorbing packaging material
- Universally usable for hazardous goods
- grain size from 1 – 16 mm

The HZW binding agent has to be delivered on Euro pallets, stored and checked incl. all necessary additional components.

7.7 Equipment for reception area (Furniture)

Furniture to be supplied for the offices of the office building

- 1 desk of 1.8 x 0.6m, colour: specified by the engineer with powder coated steel frame and a plate of coated formica (both sides)
- 1 office chair, colour: specified by the engineer, with height adjustment, safety against overturning, load depending braking safety double rollers, cushioning of textile, armrests.
- 1 steel rack 1.950 x 950 x 400mm (HxWxD), with 4 shelves, colour: specified by the engineer
- 1 cupboard of steel, 1.950 x 950 x 400mm (HxWxD), with 4 shelves, security cylinder lock with 3 keys, colour: specified by the engineer
- 3 laboratory and waste sorting tables 0.6 x 0.8m, table plate covered with a galvanized sheet

All the furniture has to be delivered according to the requirements of the Engineer, based on a data sheet delivered by the contractor.

The rate for this item is given per set. The rate shall cover all expenses and charges to perform the supply.

