BANDIRMA NATURAL GAS COMBINED CYCLE POWER PLANT

EROSION AND SEDIMENTATION CONTROL PLAN

ENERJISA ENERJI URETIM A.S.

Sabanci Center
Kule 2, Kat 5
4. Levent 34330 Istanbul

2008

TABLE OF CONTENTS

1 PROJECT DESCRIPTION

ENERJISA Energy Generation Inc. is planning to establish “Bandirma Natural Gas Combined Cycle Power Plant” (NGCCPP) with an installed capacity of 930.75 MWe in Balikesir Province, Bandirma District, Sirincavus Village, and Hacialibey Location. Total annual energy generation will be approximately 7,300,000,000 kWh.

The Power Plant will be established on an area of 20 ha of a total 204 ha area. The ownership of the Project Site belongs to ENERJISA.

The natural gas to be used at the Plant as fuel will be supplied from Greece Natural Gas Main Transmission Line constructed by BOTAS. The line passes from 3 km south of the Project area.

Electricity is generated by means of gas turbine – generator sets and steam turbine - generator sets at the NGCCPP. The heat energy obtained by the combustion of natural gas within the gas turbines is converted into kinetic energy and the kinetic energy is converted into electricity by means of the generators.

The transfer of the heat generated by the combustion in the gas turbines to the water in the Heat Recovery Steam Generator leads to the generation of steam having high pressure and temperature values. The steam generated as a result of this recovery process is converted into electricity within the steam turbine – generator groups. The steam arising from the steam turbine is condensed and converted into water.

Indirect condensers work with heat exchange principle, the steam passes around the pipes where the cooling water passes and thus the steam is condensed. The condensed water accumulated at the lower section of the condensers is pumped back to the boiler for re-evaporation. The steam generated in the boiler is transferred to the steam turbine and cycle goes on. Cooling water system, water treatment system, pressurized air system etc. are auxiliary systems within the Plant.

The generated electricity will be given to TEIAS network by means of the 380 kV transmission line connecting the transformer center to the current electricity network. The electricity distribution will be done by TEIAS.

Health protection band of 10 m from the facility borders will be left and there will be no construction or work on this area.

It is planned that the lifetime of Bandirma NGCCPP will be about 25 years.

Below is the list of plant facilities:

1. Administrative and control building
2. Atelier and store building
3. Heat recovery system generator (2 units)
4. Pipe and cable canals
5. Turbine building (GTG)
6. Turbine building (SGT)
7. Amplifier transformers (3 units)

8. Natural gas pressure reducing station
9. Security building
10. Fire service station
11. Parking lot area
12. Switchyard

Location of the Project Site is presented in Annex 1. Annex 2 provides General Layout Plan for the Project.

2 SITE DESCRIPTION

Project Site is 3.5 km away from Sirincavus as air distance, about 3.5 km away from Hidirkoy as air distance in the east, and about 5.5 km away from Bezirci Village as air distance in the southeast.

The Power Plant will be established on an area of 20 ha. The site is accessible via Bandirma-Canakkale state highway and situated near the Marmara Sea. An access road of 6.5 km will connect the highway and the plant site.

The area where the plant will be located has steep slopes running to the shore. Therefore, during the site preparation activities, the site will be leveled from 170-180 m to 30 m above sea level. As a result of this leveling, a steep hillside (about 45% slope inclination) will be formed to the south, at the back of the Plant and a steep slope (about 45% slope inclination) will be formed between the site and the Sea. The leveling and excavation plan is provided in Annex 3.

The main vegetative cover of the site is composed of brushes. No trees are found at the site.

2.1 Precipitation

The most effective element in erosion is precipitation in strong rainfalls. According to the observation records of Bandirma Meteorological Station, total annual precipitation amount of the region is 703.7 mm, maximum monthly precipitation amount is 113.7 mm in December, and the minimum precipitation is 15.3 mm in August and the maximum daily precipitation amount is in October with 177.5 mm in 1975-2006.

Center of Balikesir receives 118 mm rain a year and Bandirma Province receives 137.5 mm rain a year. These high values are sufficient to develop erosion.

According to the rain water calculations performed for the design of drainage project, the amount of rain fall is 403 lt/sec/ha.

2.2 Soil Characteristics

In Balikesir region, as a result of erosion, 50.5% of the soil became very shallow (0-20 cm), 33 % of the soil became shallow (20-50 cm) in Balikesir Province. Therefore, 83.5 % of the soil is covered by shallow and very shallow soils.

According to the Geological and Geotechnical Survey Report prepared by Jeoaktif Ltd. in November 2007, the Project area is observed to consist of clay with gravel and sand belonging to the Neogene series.

The slope of the Project area varies between 1-80%.

There are no deformations in soil such as swelling and liquefaction. There are no risks of landslide, rock fall and avalanche in the site and its close surroundings.

In the EIA report prepared in March 2008, it is stated that, there are no problems such as settling, swelling, liquefaction or insufficient bearing capacity in accordance with the

laboratory results and SPT results, and for this reason, the examination area is classified as suitable for settlement.

As a result of morphologic, geological and geotechnical studies, it is observed that there is no land section unsuitable for construction within the Project area.

2.3 Water Bodies

The nearest creek to the project area is the Hotaci Creek 750 m to the east. On account of the flow direction of the respective creek is north-south directional, there is no any flood risk that would affect the Power Plant site concerned. Due to the low level of underground waters in the Project area and due to the permeable structure of the rocks, no liquefaction is expected.

The project site is right on the coast of the Marmara Sea. Project Location Map is given in Annex 1.

3 DESCRIPTION OF PROPOSED ACTIVITIES AFFECTING EROSION AND SEDIMENTATION

The area, where the plant will be located, has steep slopes running to the shore. Therefore, during the site preparation activities, the site will be leveled from 170-180 m to 30 m above sea level. As a result of this leveling, a steep hillside (about 45% slope inclination) will be formed to the south, at the back of the plant and a steep slope (about 45% slope inclination) will be formed between the site and the Sea.

At the stage of preparing the land, excavation will be required for the foundations, water and fuel pipelines of the buildings and units in the project area.

The excavation works will last 9 months. Approximately 400,000 m^3 of excavation in total will be performed in various depths on a closed area of 200,000 m^2 in total and the excavation material, which will not be used in back loading, will be used for the purpose of leveling within the project site. In average 2 m of top excavation soil will be removed. By calculation, about 640,000 tons of material will be excavated. The distance of excavated soil storing area is maximum 1,000 m from the locations where the operations will be performed. At the stage of the preparation of the land, the excavation material will be taken from the site by means of excavators and loaded into the trucks. Power plant excavation plan is given in Annex 3.

Around the site will be drainage channels constructed to prevent runoff and erosion. Drainage system inside the plant site and the landscaping activities will be undertaken by the Construction Contractor. A drainage system will also be constructed for the access road connecting the site and the village road.

The construction phase involves the removal of vegetation, the alteration of topography, and the covering of vegetated surfaces with impervious cover such as roads, driveways, and buildings. Erosion and sedimentation impacts are caused by the loss of vegetation, pollution of the runoff and alteration of topography due to construction activities.

These changes to the landscape may result in the erosion of soil and the sedimentation of water bodies as soil travels to water bodies in water runoff during storms at an increased velocity due to the lack of vegetative cover.

The following impacts are expected as a result of the activities for the realization of the Project:

- Eroded material may affect marine habitats and alter marine species' life cycle events by increasing turbidity, changing the water temperature, and changing the depth of the shoreline.

- Alteration of existing drainage patterns.

- Removal of trees and other vegetation may lead to erosion of soil on steep slopes.

- Oil and other chemicals on construction sites may cause non-point pollution that drains to water bodies during storm events.

- Nitrogen and phosphorus concentrations in surface water bodies can be raised by increased rain water runoff resulting in accelerated eutrophication and the proliferation of non-native aquatic plant species.

During excavation work soil stockpiles and the exposed excavation area have a large potential for the generation of silt-laden run-off. Such a discharge can have a severe impact on the flora and fauna of waterbodies. It is calculated that all the excavated material from the site preparation activities can be used for site leveling and filling activities. Therefore, all the excavated material will be spread within the site perimeters and the final ground will need protection against erosion.

Also during site preparation works, topsoil is to be removed and stored separately. The top soil and coarse soil will be stored separately as two lines of heaps next to each other.

Concrete mixing plants and/or cleaning of ready mix concrete lorries also have impact on environment. Water contaminated with cement is highly alkaline and can cause severe pollution. Effluent produced from the washing out of any concrete mixing plant or cleaning of ready mix concrete lorries also cause pollution if flows into any drain or watercourse.

Oil storage and oil replacement for equipments are also important issues since any spill or leak may find its way to drainage systems and cause soil/silt and water pollution.

The slope and the bank of the shoreline that will be partially demolished during the construction process is planned to be terraced for layout purposes. Erosion and surface runoff from the site to the shoreline can cause pollution.

During operation phase, erosion and sedimentation are caused by wind and precipitation. In this phase utmost attention will be given to reduce erosion and sedimentation through the methods explained in the following sections and to prevent contamination of soil and rain water.

4 PROPOSED CONTROL MEASURES

Specific control measures are required to prevent erosion and sedimentation during construction and operation of the Project. These measures are intended to:

- To control the quantity and quality of runoff.
- To prevent soil erosion and sedimentation resulting from site construction and development.
- To prevent the pollution of runoff from Project site.
- To protect natural resources including wildlife habitat.
- To protect other properties from damage that could be caused by erosion and sedimentation or the quantity or quality of runoff.

4.1 Control Measures

To ensure that all sources or soil erosion and sediment on the site are adequately controlled, the following strategies explained below will be employed to the extent possible and where practical:

- Minimization of the areas of disturbed soil

Natural vegetation will be retained, protected or supplemented to the extent practical. Site preparation activities such as grading and clearing will be limited to where they are absolutely necessary and consistent with the phasing plan and the daily schedule of construction activities.

- Maximization of the protection and on-site use of native vegetation

All vegetation not intended for removal will be protected by adequately marking, protectively wrapping and temporarily transplanting as necessary. Excavation equipment will not be placed in the base of an infiltration area during construction.

- Stabilization of excavated soil

The excavated soil will be stabilized with seeding, mulching or matting as soon as possible after disturbance. No ground disturbed as a result of site construction and development will be left as exposed bare soil. All areas exposed by construction, with the exception of finished building, structure, and pavement footprints, shall be decompacted (aerated) and covered with non-compacted topsoil, and will be subsequently planted with a combination of living vegetation such as grass, groundcovers, trees, and shrubs, and other landscaping materials such as mulch, loose rock, gravel or stone.

- Control of water at upslope site perimeters

Diversion structures and vegetated lines will be used to reduce the amount of water entering the site. Around the site will be drainage channels will be constructed to prevent runoff and erosion. The slopes will be stabilized by using vegetative covers or matting.

- Control of water on-site

On the site water will be controlled and kept to low velocities so that erosion is minimal. This may be achieved through immediate seeding, mulching and matting as well as the use of structural measures such as flumes. Drainage system inside the plant site and the landscaping activities will be undertaken by the Construction Contractor. A drainage system will also be constructed for the access road connecting the site and the highway to prevent runoff entering the adjacent agricultural fields. Access road drainage plans is provided in Annex 4 and rainwater drainage plans are provided in Annex 5. Sediment barriers such as straw bales and check dams will be used to collect sediment.

- Control of sediment on site

The amount of sediment produced from areas of disturbed soils will be reduced, and the sediment produced on site will be controlled through seeding and mulching and structural measures such as benches, berms, inlet protection, outlet protection and stabilized construction entrance.

- Control of sediment at the down slope site perimeters

Off-site transport of all sediment produced on the construction site will be prevented by using vegetated lines, diversion structures, and stabilized construction entrances. Temporary grade stabilization structures slow down the velocity of water, making it non-erosive. Around the site will be drainage channels will be constructed to prevent runoff and erosion. The slopes will be stabilized by using vegetative covers or matting.

4.1.1 Drainage Channels

The area where the plant will be located has steep slopes running to the shore. Therefore, during the site preparation activities, the site will be leveled from 170-180 m to 30 m from sea level. As a result of this leveling, a steep hillside (about 45% slope inclination) will be formed to the south, at the back of the plant (Annex 3) and a steep slope (about 45% slope inclination) will be formed between the site and the Sea.

Around the site will be drainage channels will be constructed to prevent runoff and erosion. Drainage system inside the plant site and the landscaping activities will be undertaken by the Construction Contractor. Plans are provided in Annex 5. A drainage system will also be constructed for the access road connecting the site and the highway to prevent runoff entering the adjacent agricultural fields (Annex 4).

The drainage channels will be made for rain and surface water within the plant area. If the surface waters within the Power Plant take the oil contaminants inside their structure, they will be discharged upon treating the oil by separating process at the oil scraper traps.

According to the calculations performed for the design of 4.5-km access road drainage project, corrugated pipe having diameter of 600 mm will be used for drainage of rain water.

Apparently check dams and straw bales or any suitable method can be used as temporary sediment barriers in the drainage channels of the site. The method to be used will be employed by the Contractor depending on the need and applicability. Through maintenance and repair, these temporary measures can be used as permanent sediment barriers.

- Straw bales

Straw bales reduce the gradient of a ditch, slow the water, lower its ability to cause erosion, and allow sediment to settle out. When appropriately placed, a straw bale barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. An illustrative drawing of straw bales is provided in Annex 6.

- Rock Check dams

Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch. Sediment should be removed from behind the check dams when it has accumulated, to one half of the original height of the dam. Rock check dams are constructed from large aggregate for small drainage areas, similar to the Bandirma site. They can also be constructed from small riprap. An illustrative drawing of rock check dam is provided in Annex 6.

4.1.2 Vegetative Cover

Vegetative cover and its root system play an extremely important role in preventing erosion. Use of vegetative cover aims to:

- Shield the soil surface from the impact of falling rain drops;
- Reduce the velocity of runoff;
- Maintain the soil's capacity to absorb water, and
- Hold soil particles in place.

The vegetative soil removed during the construction phase of the Project will be used for the areas where the vegetation with landscape purposes is to be made.

In the areas outside the facility units and roads within the facility, green areas will be formed in the Bandirma NGCCPP as a first priority. By these green areas to be formed, the facility area will have a proper area quality with its environment visually.

The vegetation works to be made for these areas will be in accordance with the landscape planning principles. The vegetation works to be made during the operation of the Plant will be done by considering the area usage. These will be formed by the mixture of the shrubs and long bush groups that will not hinder the view particularly in the perimeter of the administrative buildings in order not to limit the usage within the Project area. The spatial property of the area is orientative in vegetation.

In the arrangement of the green areas, the climate, soil, insulation and irrigation, maintenance possibilities will be considered not only for aesthetic purposes but also for fire risks. Selection of needle types will lead to a visual richness in the sense of protecting the green structure also in winter.

At first stage, the vegetable soil will be readied for planting with the types that will adjust to the region by mixing fertilizers. Later on, the planting of the shrub type vegetables will help to ensure an effective cover. For the tree types, the types with low maintenance requirements and that will ensure the structure of the soil will be prioritized.

At the second phase, the adjustment of the plants to the soil is controlled and in case of positive results, the planting of the trees will start. The plant types to be used in landscaping will be selected from the domestic and foreign species that will adjust to the Bandirma District. In order to ensure the naturally aesthetic, easily maintained and economical landscaping, the integration of the above mentioned terms will be ensured.

- Matting

For the areas where vegetation is not possible or for areas where immediate erosion control is needed matting may be used.

Mattings of natural materials are used to cover the soil surface to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near the soil surface. Additionally, matting may be used to stabilize soils until vegetation is established. Mattings are commonly applied on short, steep slopes where erosion hazard is high and vegetation will be slow to establish. The choice of matting should be based on the size of area, side slopes, surface conditions such as hardness, moisture, weed growth, and availability of materials.

Use of matting will be employed by the Contractor depending on the need and applicability.

Drainage system inside the plant site and the landscaping activities will be undertaken by the Construction Contractor.

4.2 Contractor Responsibilities in Construction Period

The Construction Contractor will be responsible for taking all temporary and permanent appropriate measures for land drainage and erosion control. The Contractor is responsible for employing, to the satisfaction of ENERJISA, any erosion and sediment control measures in order to protect the Plant Site and Facilities, adjacent areas and bodies of water from pollution during construction activities.

Construction activities will be controlled to the extent possible to help limit erosion. Clearing, excavation and grading will be limited to areas necessary for construction. Areas outside the construction limits will be identified and clearly marked, and equipment operators will be instructed to avoid these areas.

The Contractor will conduct and schedule operations to minimize or avoid muddying and silting channels, drains and waters and implement good housekeeping measures.

In the event that the trenches remain open for an extended period, the Contractor will ensure trench integrity and employ such measures as temporary ditch breakers, silt fences, straw bales etc as deemed necessary. Allowance for water movement through the ditch breaker will be made by installing pipes through the ditch breaker or a perforated pipe along side the pipeline along the entire section of steep slope.

Crushed rock may be required as a permanent erosion control measure at locations where it is impossible to establish vegetation and with prior approval of ENERJISA.

The requirement for temporary erosion/stabilization techniques will be dependant upon the season. However, the Contractor is required to be prepared to provide all resources necessary to avoid incipient slope erosion and stabilization issues, regardless of season, in order to be prepared for unforeseen inclement weather.

Temporary and permanent erosion measures will be employed in accordance with the requirements of this ESC Plan and Project Drawings provided in Annex 5.

At completion of the work, debris will be cleaned and the worksite is restored to a condition at least equal to or better than prior to construction.

4.3 Control Measures in Operation Period

In the operation period, operation and maintenance procedures will be established to prevent erosion and sedimentation and pollution of rain water.

Facility operators will receive training and periodical refreshing trainings about the pollution control, spill control and good housekeeping.

Surface runoff will be directed around and away from cut-and-fill slopes and conveyed in channels. Dikes or ditches will be constructed at the top of slopes where significant drainage area contributes runoff to the slopes. Water intercepted by these facilities will be conveyed to a drainage channel. Open channels may be constructed at the bases of slopes and runoff will be conveyed to a sediment trap.

Site rain water drainage will be accomplished using a combination of open channel surface collection and catch basin/rain drains below ground. Oil-water separators will be used to collect oily-water and discharge rainwater to the regulatory limits.

Where required, at chemical or fuel unloading sites, secondary spill containment paving will be provided for environmental protection. Hazardous substances collected within these containments will be isolated for proper treatment and disposal according to the regulations. Rain water collected within hazardous material secondary containments will be retained by normally closed valved outlets.

Slope and channel erosion is controlled by implementing an effective combination of best management practices (BMPs).

Fuels, oils, solvents, and other toxic materials are properly stored and handled not to contaminate the soil or surface waters, enter the groundwater, or be placed where they may enter a live stream, channel, drain, or other water conveyance facility. Spills will be cleaned immediately and cleanup materials are properly disposed. Spills will not be washed into channels and drains.

Where required, at chemical or fuel unloading sites and pump house, secondary spill containment paving will be provided for environmental protection. Hazardous substances collected within these containments will be isolated for proper cleanup and disposal according to regulations. Rainwater collected within secondary containments will be retained by normally closed valved outlets. This rainwater will be routed to the rain drainage system in a manner consistent with regulations.

5 SCHEDULE OF PLANNED CONTROL MEASURES AND MONITORING

5.1 Erosion and Sedimentation Control Construction Sequence

The schedule for the construction of planned erosion and sedimentation control measures will be confirmed with the Contractor prior to the commencement of construction activities. Proposed erosion control construction sequence is as follows:

1. Installation of tree protection fencing
2. Installation of construction entrance, temporary diversion structures, sediment traps and/or any other measures practical and agreed on
3. Clearing and grading the site
4. Disposing excess soil of site to the area determined by the Municipality or Provincial Environmental Directorate.
5. All vegetative soil will be stored side by side with the excavated soil that will be used for filling.
6. Installation of rain water channels with inlet controls, sediment traps and/or oil-water separators
7. Stabilization of the graded areas with seeding, mulching or matting
8. Removing sediment trapped frequently
9. Maintaining temporary erosion and sedimentation control measures until the site is completely stabilized
10. Installation of all permanent erosion and sedimentation control devices
11. Back filling
12. Covering with vegetative soil and realization of landscaping plan

5.2 Erosion and Sedimentation Audits and Monitoring

5.2.1 Scheduled Audits for Construction Period

Periodic audits of rain water management structures or techniques will be conducted periodically by ENERJISA site representative. At a minimum, audits shall be conducted at the site during construction period are given below:

1. prior to commencement of land clearing activities,
2. after every rain event during construction,
3. periodically during construction,
4. at the completion of construction activities,
5. removal of any temporary control devices.

The auditor will note whether construction debris is being disposed of properly and whether other erosion and sediment control measures are required in addition to those in the Contractor’s plan.

5.2.2 Scheduled Audits for Operation Period

For the operation period, weekly periodic audits will be performed by ENERJISA to confirm that non-permitted discharges are not entering the rain water system.

Additional audits will be performed during periods of heavy rainfall. After primary storage tanks have been filled or emptied, secondary containment structures will also be checked for accumulations of water.

The presence of oil contamination in any accumulated rainwater will be determined by examining the surface of the water for a sheen or settled sediment.

If an oil sheen is not observed, accumulated rainwater will be drained from the containment. Otherwise, oil/water mixture will either be cleaned using absorbent pads or pumped directly into drums for disposal. After draining the containment, the drain valve will be closed to prevent inadvertent drainage.

Rain water catch basins and open channels will be cleaned if the collected deposits fill more than one-third of the depth. Site rain water drainage will be accomplished using a combination of open channel surface collection and catch basin/rain drains below ground.

Excessive shifting, settlement or heaving of the structures will be monitored. Inspection for pipe separation, breakage or crushing will take place after every major runoff event.

Erosion at the outlet of the drainage system will be monitored. This erosion can eventually undermine the outlet pipe.

On the construction site exceptional care should be taken during each individual repair or maintenance operation to prevent potential pollutants from becoming available to be washed into streams or conveyance systems. Temporary waste disposal receptacles will be provided and emptied as required.

5.2.3 Maintenance and Repairs for Construction Period

The Contractor will continuously maintain any control device installed so that it functions properly during construction and work suspensions. All inlet/outlet protection will be checked for maintenance and failure. Sediment will be removed and properly disposed of once it has accumulated to half the design of the trap. It will be made sure that the sediment will be removed from the devices after each rainfall.

Seeded areas will be inspected for failure and necessary repairs and re-seedings will be made.

Construction road surface will be inspected regularly to maintain in a condition to prevent sediment from leaving the site. The road will be top dressed with additional material when needed. Any accumulated sediment will be swept from the existing roadway.

The Contractor will be responsible for maintaining the Vehicle Tracking Control during the entire time that it is in use in the project.

All spills will be cleaned up immediately after discovery, or contained until appropriate cleanup and disposal methods can be employed.

Each concrete truck operator will be aware of the designated Concrete Washout Area. Waste materials must be removed and legally disposed of when it has accumulated to two-thirds of the wet storage capacity of the structure. All concrete washout areas will be clearly marked.

At the end of Construction, all concrete waste will be removed from the site and legally disposed of at an approved waste site.

Dust control techniques will be used to limit the transport of the airborne pollutants. However, water or slurry used to control dust will be retained on the site and not be allowed to run directly into watercourses or rainwater conveyance systems.

5.2.4 Maintenance and Repairs for Operation Period

All bare or eroded areas will be repaired and re-seeded as practical. Undesirable species of vegetation will be removed or controlled to prevent damage to the primary vegetation. Most vegetated areas designed to carry water will be mowed at least twice a year. The mowing prevents the channel from restricting water flow and it encourages a thick erosion resistant stand.

Roads and parking areas may require periodic top dressing with new gravel. Seeded areas adjacent to the roads and parking areas should be checked periodically to insure that a vigorous stand of vegetation is maintained. Roadside ditches and other drainage structures should be checked regularly to insure that they do not become clogged with silt or other debris.

Prior to each rain/storm the erosion control system shall be inspected and deficiencies corrected.

After each rain/storm, silt and debris shall be removed and the basins pumped dry. Only clean water from the basins can be pumped to the rain drains (filter material may be used.)

After each rain/storm, the performance of the erosion control system shall be evaluated and revised and repaired as necessary.

Maintenance and repair of machinery and equipment will be confined to areas specifically designated for that purpose. These areas will be located and designed so that oils, gasoline, grease, solvents and other potential pollutants cannot be washed directly into receiving streams, and rainwater drainage systems. Maintenance areas should be inspected and cleaned daily.

Waste collection areas will be kept neat and orderly to the extent possible. Trash cans will have lids and dumpsters will have covers to prevent rainwater from entering. Waste will not be allowed to overflow its container or accumulate for excessively long periods of time. Trash collection points will be located where they will least likely be affected by concentrated rainwater runoff.

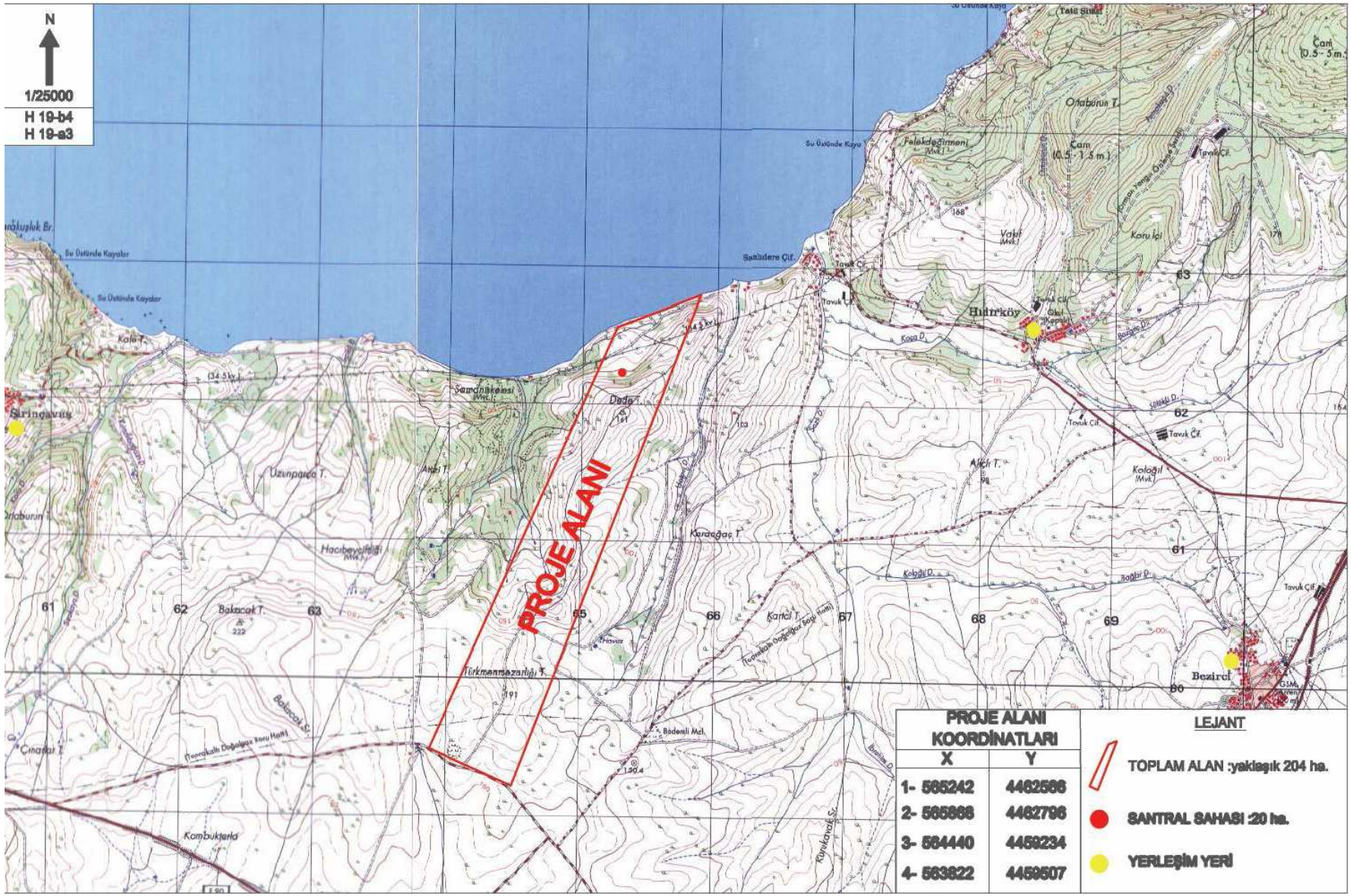
Special areas will be designated for washing vehicles. These areas will be located where the wash water will spread out and evaporate or infiltrate directly into the ground, or where the runoff can be collected in a temporary holding or seepage basin. Wash areas will have gravel bases to minimize mud generation.

Sites where chemicals, cements, solvents, paints, or other potential water pollutants are to be stored, will be isolated in areas where they will not cause runoff pollution. Toxic chemicals and materials, such as pesticides, paints, and acids, will be stored according to manufacturers' guidelines. Overuse will be avoided and great care will be taken to prevent accidental spillage.

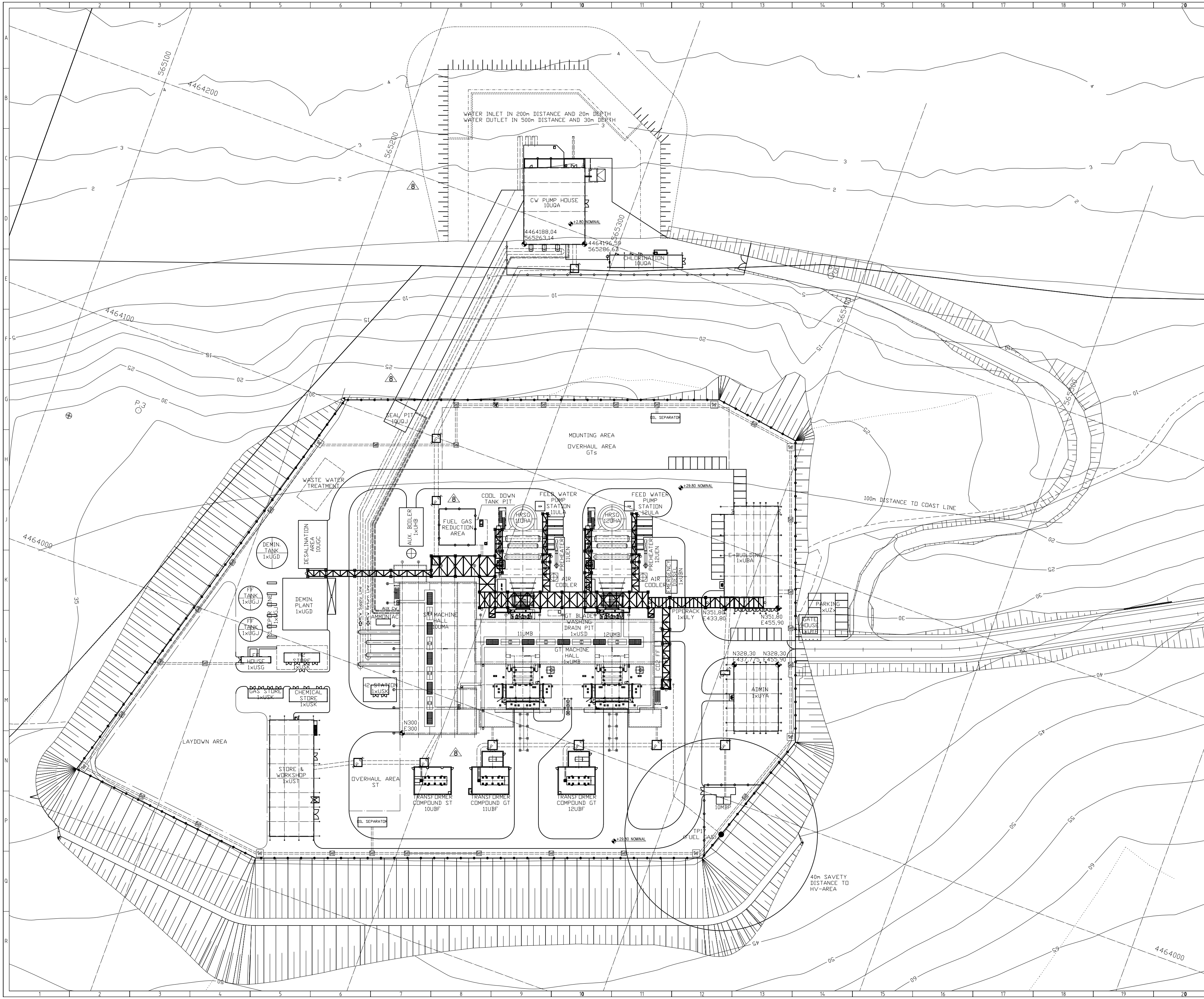
Containers will never be washed in or near flowing streams or rainwater conveyance systems. Groundwater resources will be protected from leaching by placing a plastic mat, tar paper, or other impervious materials on any areas where toxic liquids are to be opened and stored.

ANNEX 1
PROJECT LOCATION

PROJECT LOCATION



ANNEX 2
PROJECT LAYOUT


WATER INLET IN 200m DISTANCE AND 20m DEPTH
WATER OUTLET IN 500m DISTANCE AND 30m DEPTH
CW PUMP HOUSE
10UQA
4464188,04
565263,14
4464196,59
565286,63
CHLORINATION
10UQA
SEAL PIT
10UQJ
MOUNTING AREA
OVERHAUL AREA
GTs
OIL SEPARATOR
WASTE WATER
TREATMENT
100m DISTANCE TO COAST LINE
COOL DOWN
TANK PIT
FEED WATER
PUMP
STATION
11ULA
FEED WATER
PUMP
STATION
12ULA
HRSG
11UHA
HRSG
12UHA
AUX. BOILER
1xUHB
FUEL GAS
REDUCTION
AREA
PREHEATER
11UEN
PREHEATER
12UEN
AIR
COOLER
EMERGENCY
DIESEL
1xUBN
E-BUILDING
1xUBA
DESALINATION
AREA
10UGC
DEMIN.
TANK
1xUGD
DEMIN.
PLANT
1xUGD
FF
TANK
1xUGJ
PIPERACK
1xULY
N351,80
E433,80
N351,80
E455,90
PARKING
xUZx
GATE
HOUSE
1xUYA
ST MACHINE
HALL
10UMA
GT BLADE
WASHING
DRAIN PIT
1xUSD
11UMB
12UMB
GT MACHINE
HALL
1xUMB
N328,30
E437,75
N328,30
E455,90
ADMIN
1xUYA
H2 STATION
1xUSK
GAS STORE
1xUSK
CHEMICAL
STORE
1xUSK
N300
E300
LAYDOWN AREA
STORE &
WORKSHOP
1xUST
OVERHAUL AREA
ST
TRANSFORMER
COMPOUND ST
10UBF
TRANSFORMER
COMPOUND GT
11UBF
TRANSFORMER
COMPOUND GT
12UBF
10MBP
TP1
FUEL GAS
40m SAVETY
DISTANCE TO
HV-AREA
+29,80 NOMINAL
+2,80 NOMINAL
565100
565200
565300
565400
565500
4464000
4464100
4464200
Plant North
20°
0 5 10 20 30 40 50m
M 1:500

PLANT ±0.00 = +30.00 ABOVE SEA LEVEL
CW PUMP HOUSE = +3.00 ABOVE SEA LEVEL

AUSGABE ISSUE	BESCHREIBUNG / DESCRIPTION	DATUM / DATE	ERSTELLT PREPARED	GEPRÜFT CHECKED	FREIGEGEBEN APPROVED
06	UPDATED	17.09.2008	CNO	Weber	Weber
07	ADMIN BUILDING SHIFTED, CW OUTFALL NEW	26.09.2008	CNO	Weber	Weber
08	PUMP HOUSE, PULL PITS, OUTFALL CHANNEL	16.10.2008	CNO	Weber	Webr
04	MACHINE HALL UPDATED, TERMINAL POINT 17 ADDED	17.07.2008	CNO	Weber	weber
05	10MBP ADDED	25.07.2008	GruberBe	Weber	Weber

ENERJISA

KUNDE / PURCHASER: ENERJISA
ANLAGE / PLANT: BANDIRMA CCPP
AUFTRAG / ORDER: EK60.0001
REFER TO PROTECTION NOTICE ISO 16016
ISO 128/EUROPE

A-TEC POWER PLANT SYSTEMS AG
MITSUBISHI HEAVY INDUSTRIES, LTD.

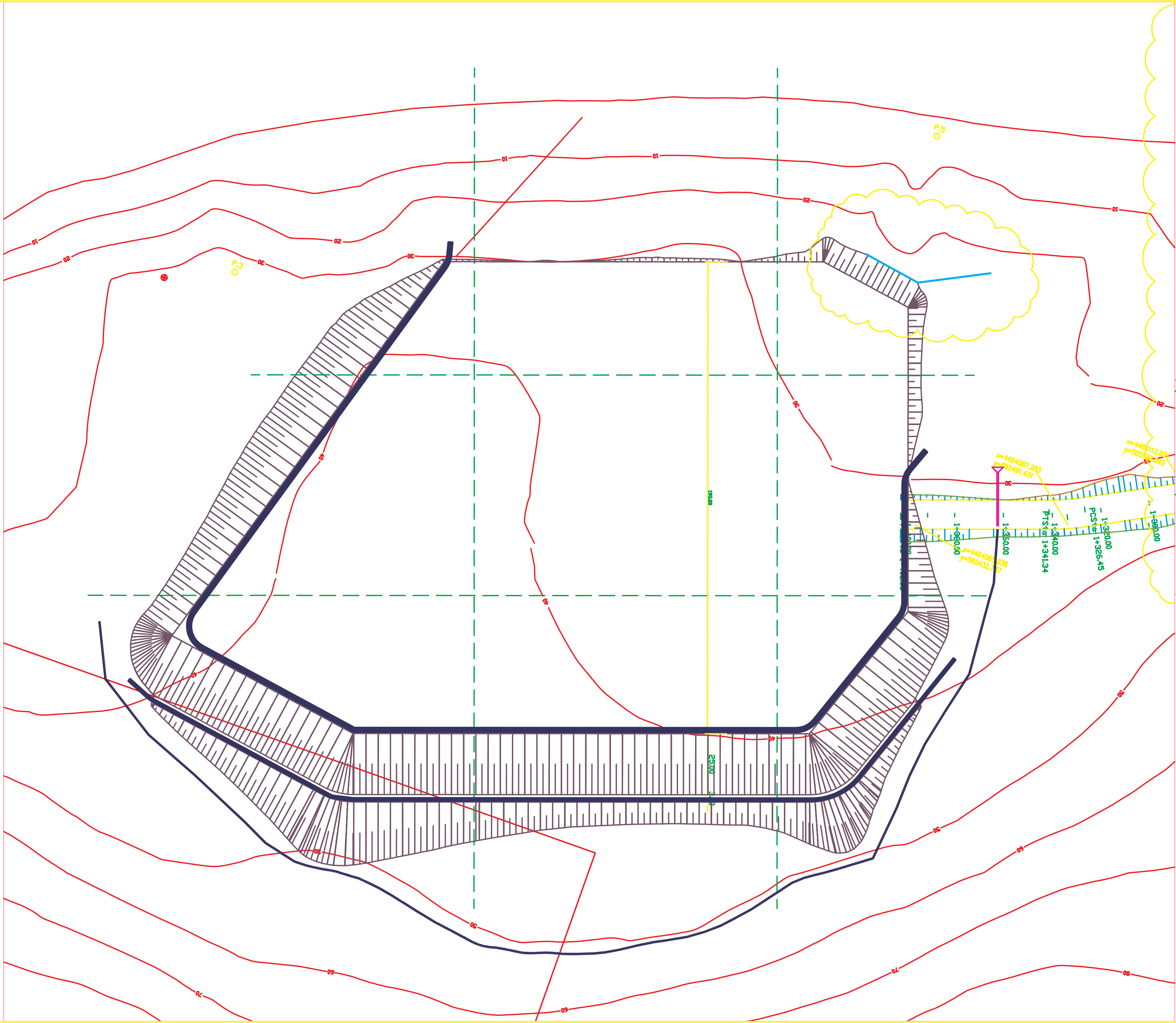
	DATUM / DATE	NAME / NAME
GEZ. / DRAWN	27.05.2008	CNO
GEPR. / CHECKED	27.05.2008	Weber
GES. / APPROVED	27.05.2008	Weber

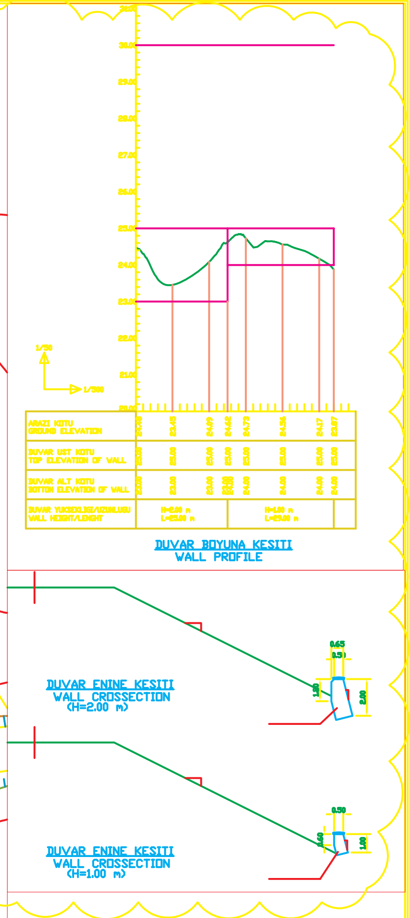
MASSSTAB / SCALE: 1:500

GENERAL LAYOUT
LAYOUT
± 0.00

KKS / DCC: 10Mxx&MLD
ZEICHN.NR-AUSGABE/DWG.NO-REV.: BAN1_DGH1102_08
SHEET / OF SHEETS: 01/01

ANNEX 3
POWER PLANT AREA EXCAVATION PLAN





LEGEND

SONDAJ NUMARASI

REV.	ACIKLAMA / DESCRIPTION	TARIH/DATE	KONTROL/CHECKED
B			
A	GOSTERILEN YERDE/REVISED AS SHOWN	30.06.2008	D.A.OZKAN
0	ONAY IÇIN / FOR APPROVAL	06.06.2008	D.A.OZKAN

prokon Mühendislik ve Müşavirlik A.Ş.

RESIM	ISIM/NAME	IMZA/SIGNATURE	TARIH/DATE	OLCEK/SCALE	NORM/SIZE
YAPAN/DESIGN	D.A.OZKAN		06.06.2008	1/500 1/100 1/50	A0
CIZEN/DRAWN	Y.GOKTEN		06.06.2008		
KONTROL/CHECKED	D.A.OZKAN		06.06.2008		

ENERJISA

ENERJİSA ENERJİ ÜRETİM A.Ş.

BANDIRMA DOGALGAZ TERMIK SANTRALI
BANDIRMA NATURAL GAS THERMAL POWER PLANT

SANTRAL ALANI HAFRIYAT PLANI
POWER PLANT AREA EXCAVATION PLAN

RESIM NO/DRAWING NUMBER : BAN1 - 020 - 0001 SHEET 1 / 1 — REV. A

PROKON NO/PROKON NUMBER : 722-20-AH-001

ANNEX 4
ACCESS ROAD DRAINAGE PLAN

ENERJİSA BANDIRMA NATURAL GAS THERMAL POWER PLANT
ACCESS ROAD DRAINAGE PROJECT REPORT

1.0 SCOPE

Access road total length of L=6480 m is connected with Çanakkale-Bandırma road of TCK. This road to be built for access natural gas thermal power plant which is power of 960 MW. Road drainage is determined according to this report criteria. Arrangement of this report and calculations is done according to declared appendix below.

Appendix:1 – Drainage basin areas
Appendix:2 – Precipitation-intensity-period-repetition curves of Turkey
Appendix:3 – Runoff coefficients
Appendix:4 – Corrugated pipe loss of pressure table

For drainage calculations, take into consideration declared criterias below.

- Precipitation basin areas is measured from Appendix 1: General Layout
- Precipitation intensity is considered n=50 year t=15 minutes which is taken from Appendix 2.
- Runoff coefficient is selected 0.30 from Appendix 3.
- Corrugated pipe is used for rain water passing from upstream to downstream. Corrugated pipe loss of pressure value is selected from Appendix 4.

According this, calculations are presented below.

2.0 RAIN WATER CALCULATIONS

Basin calculation:
n=50 year (repetition period=50 year)
t=15 minute
Bandırma meteorological precipitation values are used. (Appendix:2)
Accordingly:
i = 145 mm/hour = 2.42 mm/minute
q =166.7 x i = 166.7 x 2.42 = 403 lt/second/hectare

Q = q x F x c, Flows are calculated with this formula.

c runoff coefficient is selected 0.30. Rain water basin areas are given in Appendix 1.

Manning Formula is used for pipe diameter calculation.

Q=V*A

V=1/n * R^(2/3) * J^(1/2)

V=velocity

A=pipe area

n=Manning coefficient (0.008 for corrugated pipes)

R=Hydraulic radius

J=Pipe slope

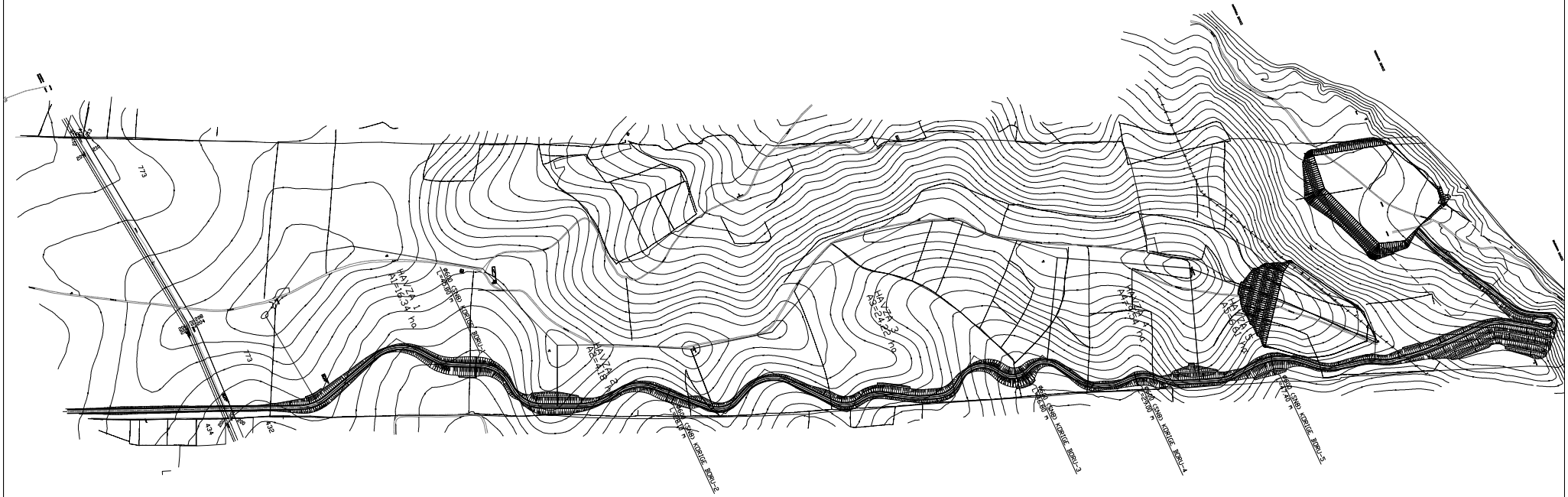
Occupancy rate is supplied maximum 0.90 for selection of pipe diameter.

Rain water calculation is given in Table 1.

Corrugated pipe is used for collected of basin rain water. Pipe km values are given in below.

Corrugated pipe no	Road km	Pipe slope
Corrugated pipe 1, Ø600 mm	Road 2 Km=1+190.00	i=(143.75-140.25)/45.80=0.076
Corrugated pipe 2, Ø600 mm	Road 2 Km=1+705.00	i=(141.30-135.00)/28.10=0.224
Corrugated pipe 3, Ø600 mm	Road 2 Km=2+645.00	i=(86.90-82.15)/46.80=0.101
Corrugated pipe 4, Ø600 mm	Road 2 Km=2+940.00	i=(87.80-81.80)/29.00=0.207
Corrugated pipe 5, Ø600 mm	Road 3 Km=0+280.00	i=(89.50-77.40)/47.40=0.255

APPENDIX 1: DRAINAGE BASIN AREAS



C				
B				
A				
E	ONAY İÇİN / FOR APPROVAL	13.10.2008		BAŞBAKAN
NO.	AÇIKLAMA / DESCRIPTION			ONAYLAYAN/APPROVAL

ÇİZEN / DRAWN		13.10.2008		
KONTROL EDEN / CHECKED		13.10.2008	1/10000	1.740
ONAYLAYAN / APPROVED		13.10.2008		

ENERJİ

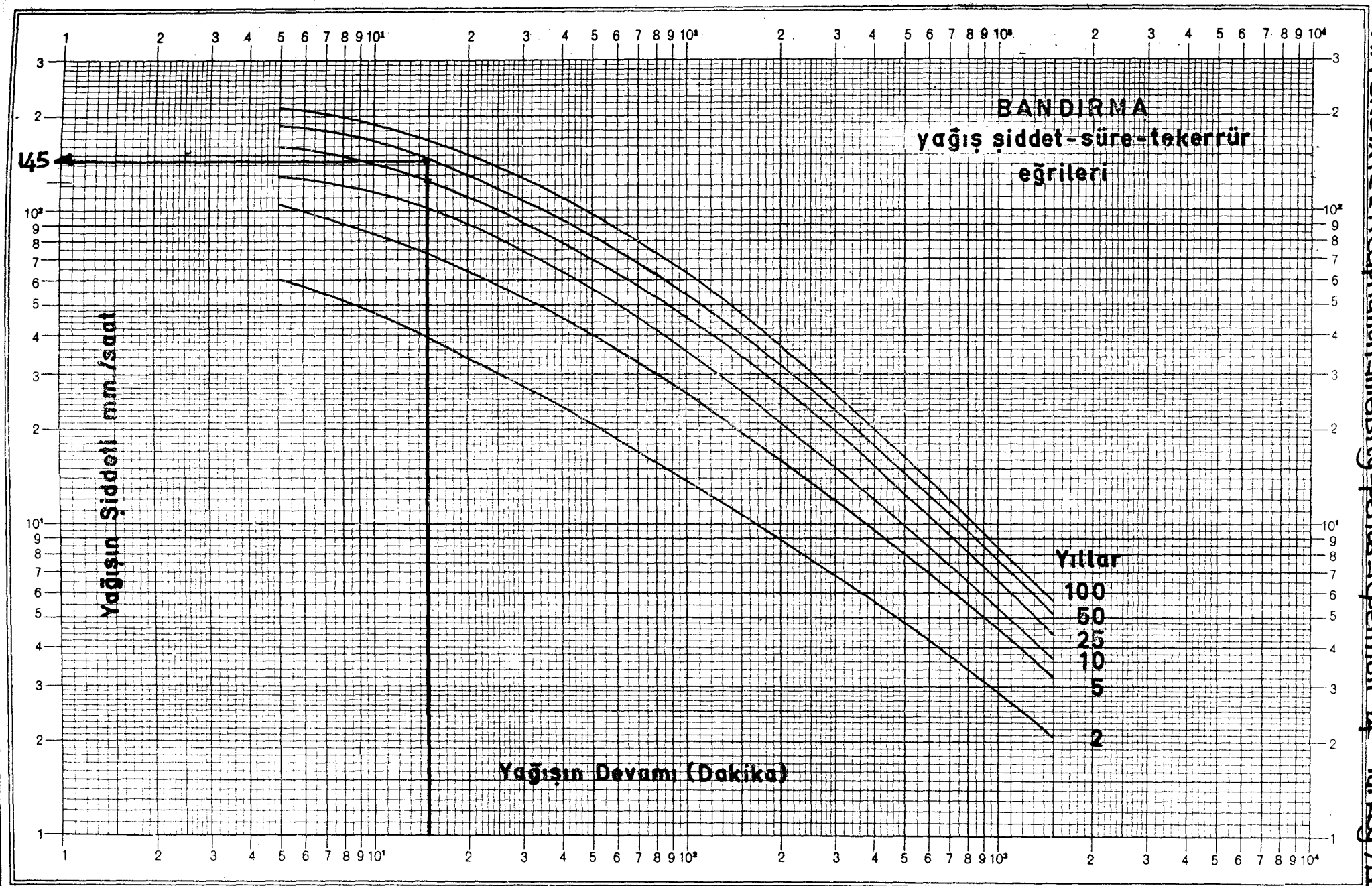
ENERJİSA ENERJİ ÜRETİM A.Ş.

BANDIRMA DOĞALGAZ TERMİK SANTRALİ
BANDIRMA NATURAL GAS THERMAL POWER PLANT

ULAŞIM YOLU (1-2-3)
HAVZA PLAN

REVİZYON / DRAWING NUMBER						
PROKON NO/PROKON NUMBER :	722-00-AY-...					

APPENDIX:2 - Precipitation-intensity-period-repetition of Turkey /Bandırma



Logar. Teilung / Division 1-300 u. 1-10000 Einheit / Unité 62,5 mm

Ed. Aerni-Leuch, Bern, Nr. 551

Appendix 3 _ Runoff Coefficients

Tablo: 12. ψ - Akış katsayısı tablosu

Çatılarda	ψ = 0,90-0,95
Asfalt yollarda	= 0.85-0,90
Derzleri tabiî ve sun'î taş kaplamalarda	= 0,7 -0,9
Derzleri normal bırakılan taş kaplamalarda	= 0,5 -0.7
Şose ve mozaik kaplamada	= 0,4 -0,6
Silindirlenmiş çakıl yollarda	= 0,15-0,3
İşlenmemiş ve iksasız toprak zeminde	= 0,1 -0,25
Parklarda ve bahçelerde	= 0,05-0,2
Şehirlerin çok sık evli bölgelerinde	= 0,7 -0,9
Sık binalı yerlerde ve ortaları bahçeli bina bloklarında	= 0,5 -0,7
Büyük boşlukları bulunan şehir bölgelerinde	= 0,25-0,6
Küçük bahçeli evlerde	= 0,25-0,5
İstasyon civarındaki boşluklarda, spor yerlerinde	= 0,1 -0,3
Parklarda, bahçelerde ve tarlalarda	= 0,05-0,25
Kanallara su veren ormanlıklarda	= 0,01-0,30

Şehirlerin inşa durumu belli ise (ψ) katsayısı aşağıdaki kıymetlere göre bulunur :

Çatılarda	ψ = 0,65-0.95
Asfalt ve beton gibi su sızdırmayan yollarda	= 0,70-0.90
Yüzleri kaplanmış fakat derzlerinden su sızdıran avlularda	= 0,5 -0.60
Şosalarda	= 0,5
Toprak yollarda	= 0,25
Parklarda ve bahçelerde	= 0,05-0,25

Münih'te eski şehir bölgeleri için ψ = 0,8 ve çevresi binalı bloklarda ψ = 0,5, bahçeli evler bölgesinde ψ = 0,3 alınmış ve iyi sonuçlar elde edilmiştir.

- yağış alanı
zen yağış sula-
yrı ayrı tesbit
bağlı olarak şu

***Tablo 6.3.2-** Dizayn PE Kanalizasyon Borusu Basınç Kayıp Çizelgesi (MANNING Formülü İle Hesaplanmıştır. n=0.008 mm; Dolu akış)*

EĞİM	Dd	174	mm	235	mm	292	mm	346	mm	407	mm	520	mm										
	Di	150	mm	200	mm	250	mm	300	mm	350	mm	450	mm	600	mm	700	mm	800	mm	900	mm	1000	mm
1:	J	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v	Q	v
	m/m	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s
10	0,10000	78,3	4,43	168,5	5,36	305,6	6,23	496,9	7,03	749,5	7,79	1.465,0	9,21	3.155,1	11,16	4.759,3	12,37	6.795,0	13,52	9.302,4	14,62	12.320,1	15,69
15	0,06667	63,9	3,62	137,6	4,38	249,5	5,08	405,7	5,74	612,0	6,36	1.196,2	7,52	2.546,2	9,11	3.885,9	10,10	5.548,1	11,04	7.595,4	11,94	10.059,3	12,81
20	0,05000	55,3	3,13	119,2	3,79	216,1	4,40	351,4	4,97	530,0	5,51	1.035,9	6,51	2.231,0	7,89	3.365,3	8,74	4.804,8	9,56	6.577,8	10,34	8.711,6	11,09
25	0,04000	49,5	2,80	106,6	3,39	193,3	3,94	314,3	4,45	474,1	4,93	926,6	5,83	1.995,0	7,06	3.010,0	7,82	4.297,5	8,55	5.883,3	9,25	7.791,9	9,92
30	0,03333	45,2	2,6	97,3	3,10	176,4	3,59	286,9	4,06	432,7	4,50	845,8	5,32	1.821,6	6,44	2.747,8	7,14	3.923,1	7,80	5.370,7	8,44	7.113,0	9,06
35	0,02857	41,8	2,37	90,1	2,87	163,3	3,33	265,6	3,76	400,6	4,16	783,1	4,92	1.686,5	5,96	2.543,9	6,61	3.632,1	7,23	4.972,3	7,82	6.585,4	8,38
40	0,02500	39,1	2,21	84,3	2,68	152,8	3,11	248,5	3,51	374,8	3,90	732,5	4,61	1.577,6	5,58	2.379,6	6,18	3.397,5	6,76	4.651,2	7,31	6.160,0	7,84
45	0,02222	36,9	2,09	79,4	2,53	144,1	2,93	234,2	3,31	353,3	3,67	690,6	4,34	1.487,3	5,26	2.243,5	5,83	3.203,2	6,37	4.385,2	6,89	5.807,7	7,39
50	0,02000	35,0	1,98	75,4	2,40	136,7	2,78	222,2	3,14	335,2	3,48	655,2	4,12	1.411,0	4,99	2.128,4	5,53	3.038,8	6,05	4.160,1	6,54	5.509,7	7,02
60	0,01667	31,9	1,81	68,8	2,19	124,8	2,54	202,9	2,87	306,0	3,18	598,1	3,76	1.288,1	4,56	1.943,0	5,05	2.774,0	5,52	3.797,7	5,97	5.029,7	6,40
70	0,01429	29,6	1,67	63,7	2,03	115,5	2,35	187,8	2,66	283,3	2,94	553,7	3,48	1.192,5	4,22	1.798,8	4,67	2.568,3	5,11	3.516,0	5,53	4.656,6	5,93
80	0,01250	27,7	1,57	59,6	1,90	108,0	2,20	175,7	2,49	265,0	2,75	518,0	3,26	1.115,5	3,95	1.682,7	4,37	2.402,4	4,78	3.288,9	5,17	4.355,8	5,55
90	0,01111	26,1	1,48	56,2	1,79	101,9	2,08	165,6	2,34	249,8	2,60	488,3	3,07	1.051,7	3,72	1.586,4	4,12	2.265,0	4,51	3.100,8	4,87	4.106,7	5,23
100	0,01000	24,7	1,40	53,3	1,70	96,6	1,97	157,1	2,22	237,0	2,46	463,3	2,91	997,7	3,53	1.505,0	3,91	2.148,8	4,27	2.941,7	4,62	3.896,0	4,96
125	0,00800	22,1	1,25	47,7	1,52	86,4	1,76	140,5	1,99	212,0	2,20	414,4	2,61	892,4	3,16	1.346,1	3,50	1.921,9	3,82	2.361,1	4,14	3.484,6	4,44
150	0,00667	20,2	1,14	43,5	1,39	78,9	1,61	128,3	1,82	193,5	2,01	378,3	2,38	814,7	2,88	1.228,8	3,19	1.754,5	3,49	2.401,9	3,78	3.181,0	4,05
175	0,00571	18,7	1,06	40,3	1,28	73,0	1,49	118,8	1,68	179,2	1,86	350,2	2,20	754,2	2,67	1.137,7	2,96	1.624,3	3,23	2.223,7	3,50	2.945,1	3,75
200	0,00500	17,5	0,99	37,7	1,20	68,3	1,39	111,1	1,57	167,6	1,74	327,6	2,06	705,5	2,50	1.064,2	2,77	1.519,4	3,02	2.080,1	3,27	2.754,9	3,51
225	0,00444	16,5	0,93	35,5	1,13	64,4	1,31	104,8	1,48	158,0	1,64	308,9	1,94	665,2	2,35	1.003,3	2,61	1.432,5	2,85	1.961,1	3,08	2.597,3	3,31
250	0,00400	15,7	0,89	33,7	1,07	61,1	1,25	99,4	1,41	149,9	1,56	293,0	1,84	631,0	2,23	951,9	2,47	1.359,0	2,70	1.860,5	2,92	2.464,0	3,14
275	0,00364	14,9	0,84	32,1	1,02	58,3	1,19	94,8	1,34	142,9	1,49	279,4	1,76	601,7	2,13	907,6	2,36	1.295,7	2,58	1.773,9	2,79	2.349,3	2,99
300	0,00333	14,3	0,81	30,8	0,98	55,8	1,14	90,7	1,28	136,8	1,42	267,5	1,68	576,0	2,04	868,9	2,26	1.240,6	2,47	1.698,4	2,67	2.249,3	2,86
325	0,00308	13,7	0,78	29,6	0,94	53,6	1,09	87,2	1,23	131,5	1,37	257,0	1,62	553,4	1,96	834,8	2,17	1.191,9	2,37	1.631,7	2,57	2.161,1	2,75
350	0,00286	13,2	0,75	28,5	0,91	51,7	1,05	84,0	1,19	126,7	1,32	247,6	1,56	533,3	1,89	804,5	2,09	1.148,6	2,29	1.572,4	2,47	2.082,5	2,65
375	0,00267	12,8	0,72	27,5	0,88	49,9	1,02	81,1	1,15	122,4	1,27	239,2	1,50	515,2	1,82	777,2	2,02	1.109,6	2,21	1.519,1	2,39	2.011,9	2,56
400	0,00250	12,4	0,70	26,6	0,85	48,3	0,98	78,6	1,11	118,5	1,23	231,6	1,46	498,9	1,76	752,5	1,96	1.074,4	2,14	1.470,8	2,31	1.948,0	2,48
425	0,00235	12,0	0,68	25,9	0,82	46,9	0,95	76,2	1,08	115,0	1,20	224,7	1,41	484,0	1,71	730,0	1,90	1.042,3	2,07	1.426,9	2,24	1.889,8	2,41
450	0,00222	11,7	0,66	25,1	0,80	45,6	0,93	74,1	1,05	111,7	1,16	218,4	1,37	470,3	1,66	709,5	1,84	1.012,9	2,02	1.386,7	2,18	1.836,6	2,34
475	0,00211	11,4	0,64	24,5	0,78	44,3	0,90	72,1	1,02	108,8	1,13	212,6	1,34	457,8	1,62	690,5	1,79	985,9	1,96	1.349,7	2,12	1.787,6	2,28
500	0,00200	11,1	0,63	23,8	0,76	43,2	0,88	70,3	0,99	106,0	1,10	207,2	1,30	446,2	1,58	673,1	1,75	961,0	1,91	1.315,6	2,07	1.742,3	2,22
550	0,00182	10,6	0,60	22,7	0,72	41,2	0,84	67,0	0,95	101,1	1,05	197,5	1,24	425,4	1,50	641,7	1,67	916,2	1,82	1.254,3	1,97	1.661,2	2,12
600	0,00167	10,1	0,57	21,8	0,69	39,4	0,80	64,1	0,91	96,8	1,01	189,1	1,19	407,3	1,44	614,4	1,60	877,2	1,75	1.200,9	1,89	1.590,5	2,03
650	0,00154	9,7	0,55	20,9	0,67	37,9	0,77	61,6	0,87	93,0	0,97	181,7	1,14	391,3	1,38	590,3	1,53	842,8	1,68	1.153,8	1,81	1.528,1	1,95
700	0,00143	9,4	0,53	20,1	0,64	36,5	0,74	59,4	0,84	89,6	0,93	175,1	1,10	377,1	1,33	568,8	1,48	812,2	1,62	1.111,8	1,75	1.472,5	1,87
750	0,00133	9,0	0,51	19,5	0,62	35,3	0,72	57,4	0,81	86,5	0,90	169,2	1,06	364,3	1,29	549,6	1,43	784,6	1,56	1.074,1	1,69	1.422,6	1,81
800	0,00125	8,7	0,50	18,8	0,60	34,2	0,70	55,6	0,79	83,8	0,87	163,8	1,03	352,8	1,25	532,1	1,38	759,7	1,51	1.040,0	1,63	1.377,4	1,75
850	0,00118	8,5	0,48	18,3	0,58	33,1	0,68	53,9	0,76	81,3	0,85	158,9	1,00	342,2	1,21	516,2	1,34	737,0	1,47	1.009,0	1,59	1.336,3	1,70
900	0,00111	8,2	0,47	17,8	0,57	32,2	0,66	52,4	0,74	79,0	0,82	154,4	0,97	332,6	1,18	501,7	1,30	716,3	1,42	980,6	1,54	1.298,7	1,65
950	0,00105	8,0	0,45	17,3	0,55	31,4	0,64	51,0	0,72	76,9	0,80	150,3	0,95	323,7	1,14	488,3	1,27	697,1	1,39	954,4	1,50	1.264,0	1,61
1000	0,00100	7,8	0,44	16,9	0,54	30,6	0,62	49,7	0,70	75,0	0,78	146,5	0,92	315,5	1,12	475,9	1,24	679,5	1,35	930,2	1,46	1.232,0	1,57
1100	0,00091	7,5	0,42	16,1	0,51	29,1	0,59	47,4	0,67	71,5	0,74	139,7	0,88	300,8	1,06	453,8	1,18	647,9	1,29	886,9	1,39	1.174,7	1,50
1200	0,00083	7,1	0,40	15,4	0,49	27,9	0,57	45,4	0,64	68,4	0,71	133,7	0,84	288,0	1,02	434,5	1,13	620,3	1,23	849,2	1,33	1.124,7	1,43
1300	0,00077	6,9	0,39	14,8	0,47	26,8	0,55	43,6	0,62	65,7	0,68	128,5	0,81	276,7	0,98	417,4	1,08	596,0	1,19	815,9	1,28	1.080,5	1,38
1400	0,00071	6,6	0,37	14,2	0,45	25,8	0,53	42,0	0,59	63,3	0,66	123,8	0,78	266,7	0,94	402,2	1,05	574,3	1,14	786,2	1,24	1.041,2	1,33
1500	0,00067	6,4	0,36	13,8	0,44	25,0	0,51	40,6	0,57	61,2	0,64	119,6	0,75	257,6	0,91	388,6	1,01	554,8	1,10	759,5	1,19	1.005,9	1,28
1600	0,00063	6,2	0,35	13,3	0,42	24,2	0,49	39,3	0,56	59,3	0,62	115,8	0,73	249,4	0,88	376,3	0,98	537,2	1,07	735,4	1,16	974,0	1,24

Tablo 6.3.2- HDPE Kanalizasyon Borusu Basınç Kayıp Çizelgesi (MANNING Formülü İle Hesaplanmıştır. n=0.008 mm; Dolu akış)

ANNEX 5
RAIN WATER DRAINAGE PLAN

REV.	ACIKLAMA / DESCRIPTION	TARIH/DATE	KONTROL/CHECKED

ENERJİSA — Ceyhun Atif Kansu Cad. Ehlibeyt Mah. Ata Plaza 100 / 13 Balgat / ANKARA +90 (312) 583-40-00 www.enerjisa.com.tr

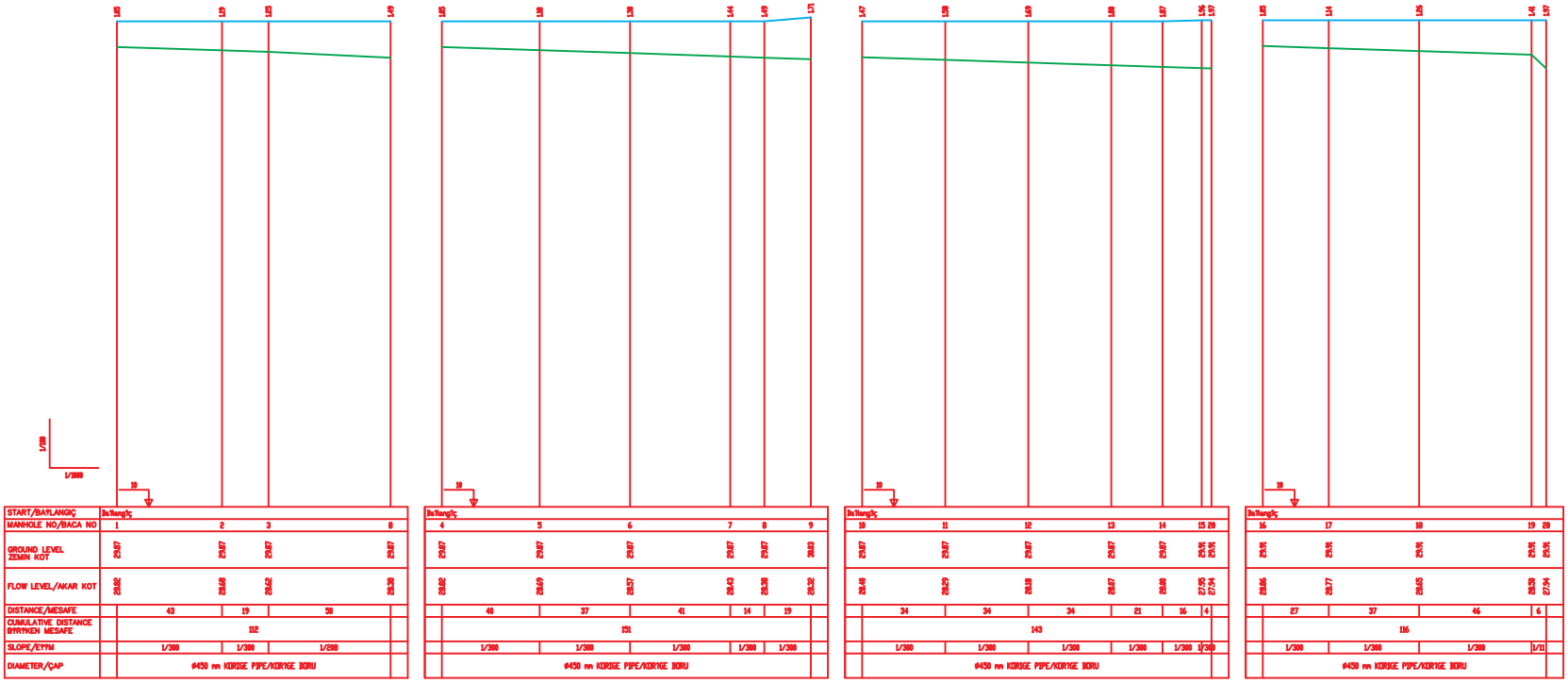
RESIM	ISIM/NAME	IMZA/SIGNATURE	TARIH/DATE	OLCEK/SCALE	NORM/SIZE
YAPAN/DESIGN	M.KARAAGAC		23.11.2008	1/500	A0
CIZEN/DRAWN	F.GULMEZ		23.11.2008		
KONTROL/CHECKED	M.KARAAGAC		23.11.2008		

ENERJİ ÜRETİM A.Ş.

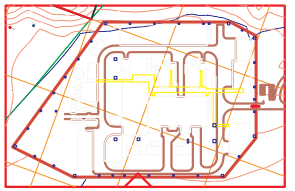
BANDIRMA DOGALGAZ KOMBİNE ÇEVRİM SANTRALI
BANDIRMA CCPP PROJECT

BANDIRMA DGKÇS DRENAJ PLANI
BANDIRMA CCPP DRAINAGE LAYOUT

RESIM NO/DRAWING NUMBER : - - REV.



A/M	REVISION/MODIFICATION	DATUM/DATE	NAME	GEPR./CHECK	GES./APPR.
00	FOR APPROVAL	08.09.2008	I.O	A.B	Y.T
01					
02					
03					
04					
05					



SITE NORTH

KEY PLAN

ENERJİSA

ENERJISA

BANDIRMA 1

ORDER NR,

REFER TO PROTECTION NOTICE ISO 16016

ISO 128 / EUROPE

	DATUM / DATE	NAME / NAME
GEZ. / DRAWN	08.09.2008	I.OZER
GEPR. / CHECKED	08.09.2008	A.BAYRAM
GES. / APPROVED	08.09.2008	Y.TONGUC

MASSSTAB / SCALE 1/100

DOS DOC 1xUZx&CLD

A-TEC PPS POWER PLANT SYSTEMS AG

MITSUBISHI HEAVY INDUSTRIES, LTD.

KALEMCİ YAPI ENDÜSTRİ VE TİCARET A.Ş.

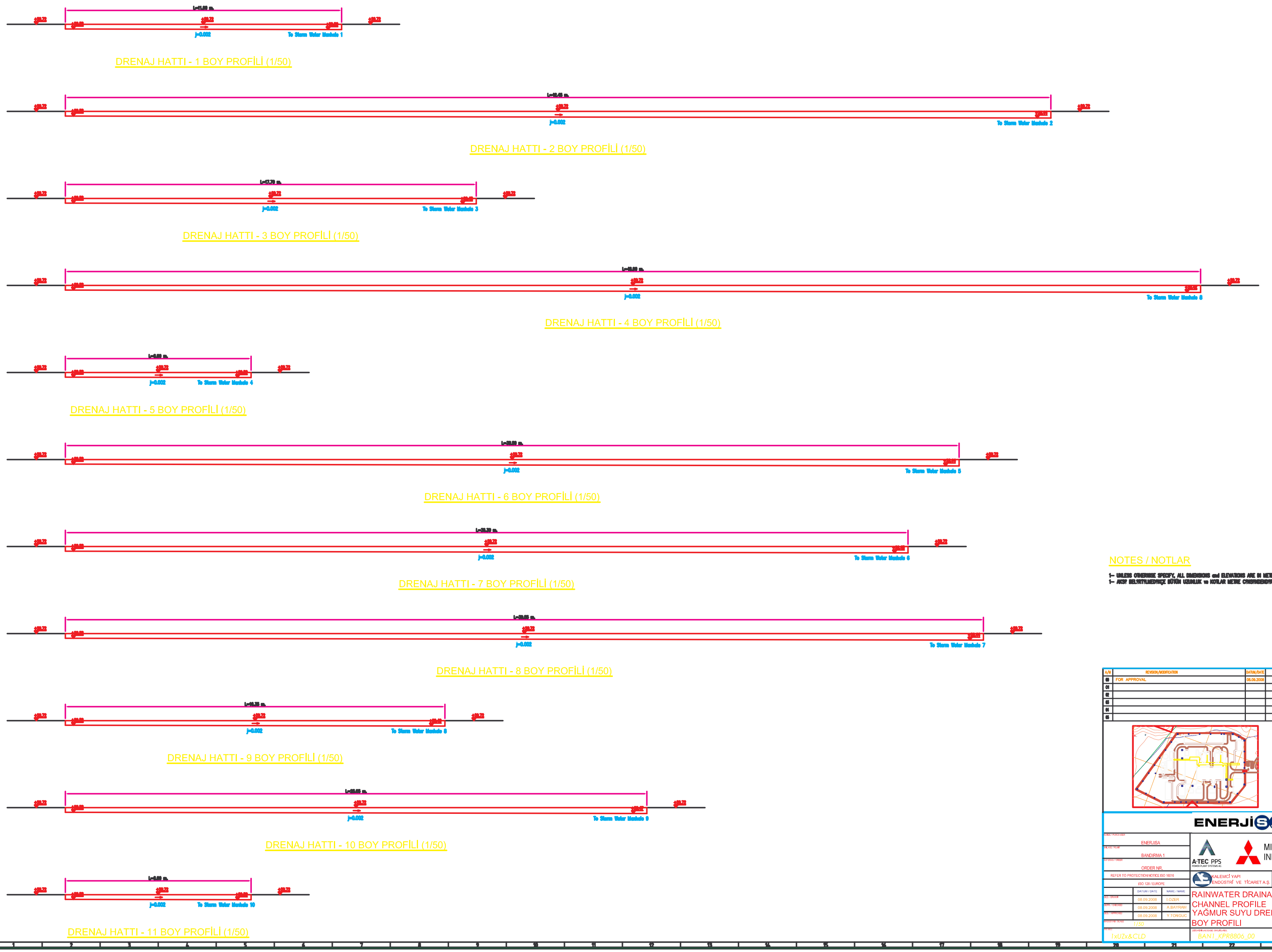
BROMER BOILER

RAINWATER SYSTEM PROFILE

YAĞMUR SUYU ŞEBEKE BOY PROFILI

ZEICHNUNGSNUMMER / DRAWING NO. BAN1_KPR8805_00

SHEET / OF SHEETS 1/1



NOTES / NOTLAR

1- UNLESS OTHERWISE SPECIFY, ALL DIMENSIONS and ELEVATIONS ARE IN METER.
1- AKSİ BELİRTİLMEDİKÇE BÜTÜN UZUNLUK ve KOTLAR METRE CİNSİNDENDİR.

A/M	REVISION/MODIFICATION	DATUM/DATE	NAME	GEPR./CHECK	GES./APPR.
00	FOR APPROVAL	08.09.2008	I.O	A.B	Y.T
01					
02					
03					
04					
05					

SITE NORTH

KEY PLAN

ENERJİSA

KUNDE / PURCHASER: ENERJISA
ANLAGE / PLANT: BANDIRMA 1
AUFTRAG / ORDER: ORDER NR.

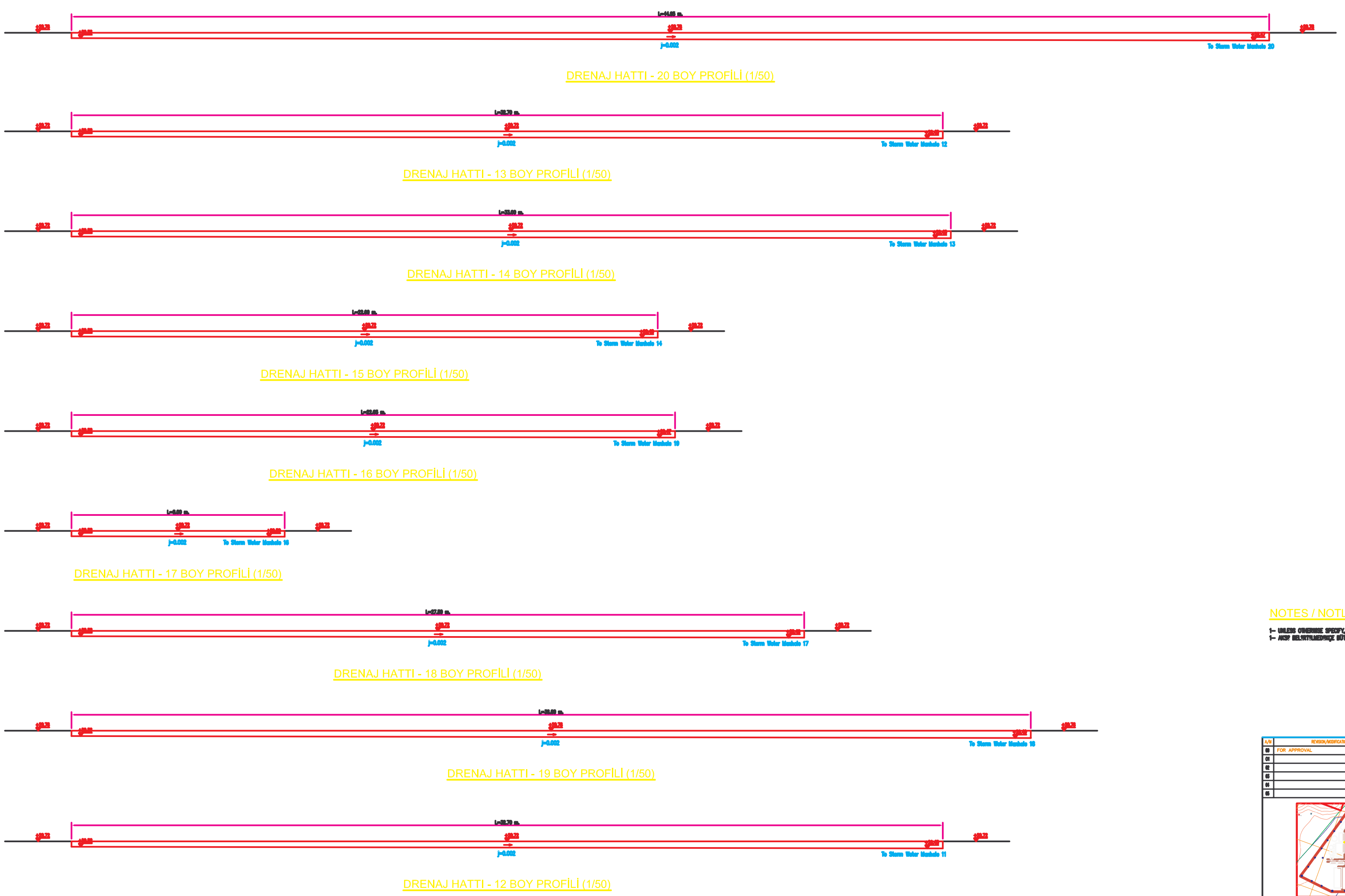
REFER TO PROTECTION NOTICE ISO 16016
ISO 128 / EUROPE

A·TEC PPS POWER PLANT SYSTEMS AG
MITSUBISHI HEAVY INDUSTRIES, LTD.
KALEMCİ YAPI ENDÜSTRİ VE TİCARET A.Ş.
PROMER

	DATUM / DATE	NAME / NAME
GEZ. / DRAWN	08.09.2008	I.OZER
GEPR. / CHECKED	08.09.2008	A.BAYRAM
GES. / APPROVED	08.09.2008	Y.TONGUC
MASSSTAB / SCALE	1/50	

RAINWATER DRAINAGE CHANNEL PROFILE
YAĞMUR SUYU DRENAJ KANALI BOY PROFILI

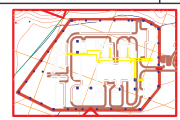
1xUZx&CLD
BAN1_KPR8806_00
SHEET / OF SHEETS: 1/2



NOTES / NOTLAR

1- UNLESS OTHERWISE SPECIFY, ALL DIMENSIONS and ELEVATIONS ARE IN METER.
1- AKSİ BELİRTİLMEDİKÇE BÜTÜN UZUNLUK ve KOTLAR METRE CİNSİNDENDİR.

A/M	REVISION/MODIFICATION	DATUM/DATE	NAME	GEPR./CHECK	GES./APPR.
00	FOR APPROVAL	08.09.2008	I.O	A.B	Y.T
01					
02					
03					
04					
05					



SITE NORTH

KEY PLAN

ENERJİSA

KUNDE / PURCHASER: ENERJISA
ANLAGE / PLANT: BANDIRMA 1
AUFTRAG / ORDER: ORDER NR.
REFER TO PROTECTION NOTICE ISO 16016
ISO 128 / EUROPE

A·TEC PPS POWER PLANT SYSTEMS AG — MITSUBISHI HEAVY INDUSTRIES, LTD.

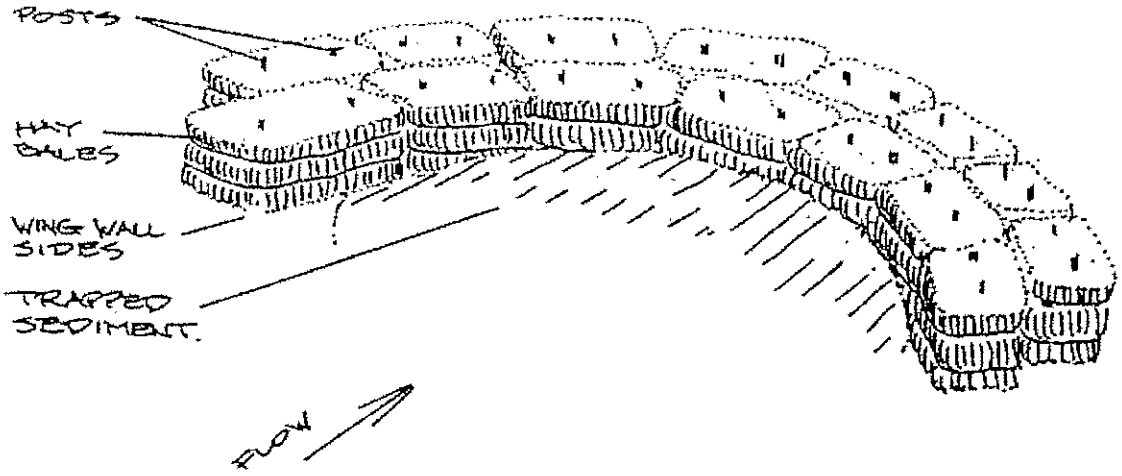
KALEMCİ YAPI ENDÜSTRİ VE TİCARET A.Ş. — PROMER

	DATUM / DATE	NAME / NAME
GEZ. / DRAWN	08.09.2008	I.OZER
GEPR. / CHECKED	08.09.2008	A.BAYRAM
GES. / APPROVED	08.09.2008	Y.TONGUC
MASSSTAB / SCALE	1/50	

RAINWATER DRAINAGE CHANNEL PROFILE
YAĞMUR SUYU DRENAJ KANALI BOY PROFILI

KKS / DCC: 1xUZx&CLD
ZEICHNUNG-AUSGABE / DWG-NO.-REV.: BAN1_KPR8806_00
SHEET / OF SHEETS: 2/2

ANNEX 6
STRAW BALES AND ROCK CHECK DAM


POSTS
HAY BALES
WING WALL SIDES
TRAPPED SEDIMENT
FLOW

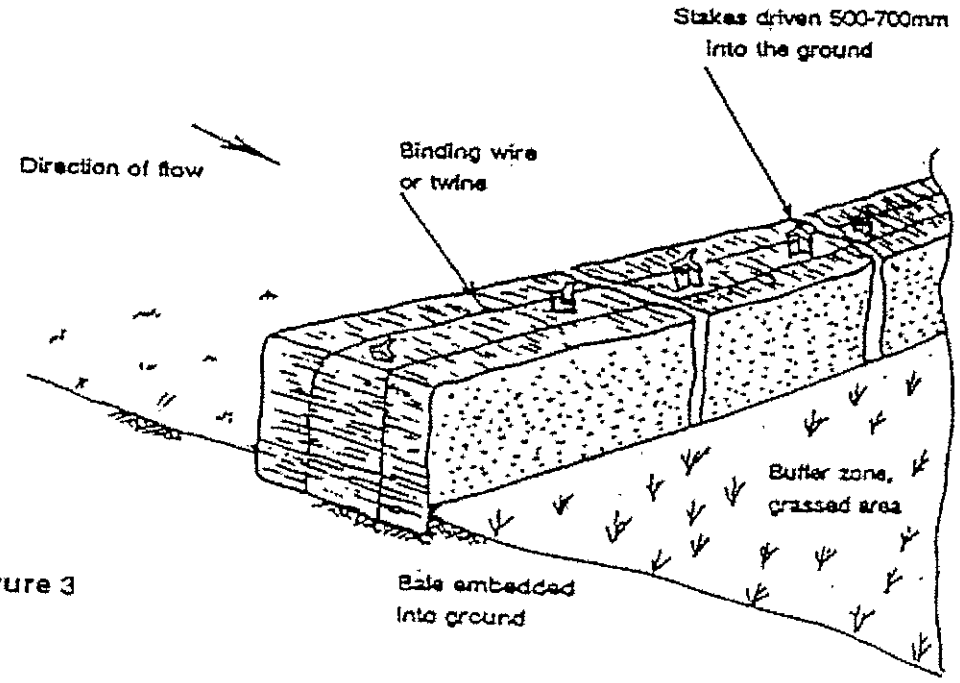

Stakes driven 500-700mm into the ground
Direction of flow
Binding wire or twine
Buffer zone, grassed area
Bale embedded into ground

Figure 3

Spacing Between Check Dams

L = The distance such that points A and B are of equal elevation

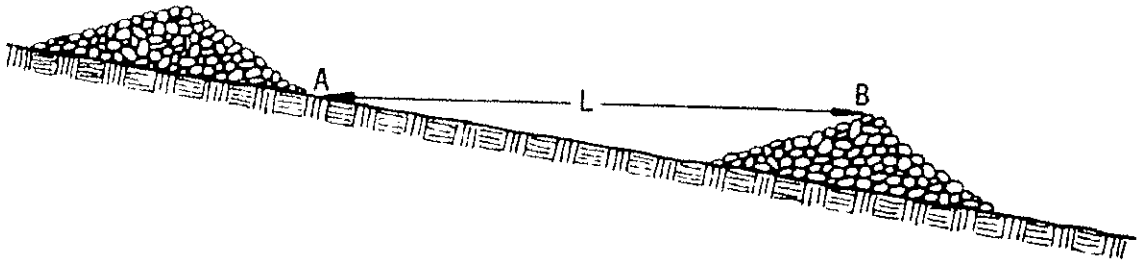


Figure 1

Height Of Check Dams

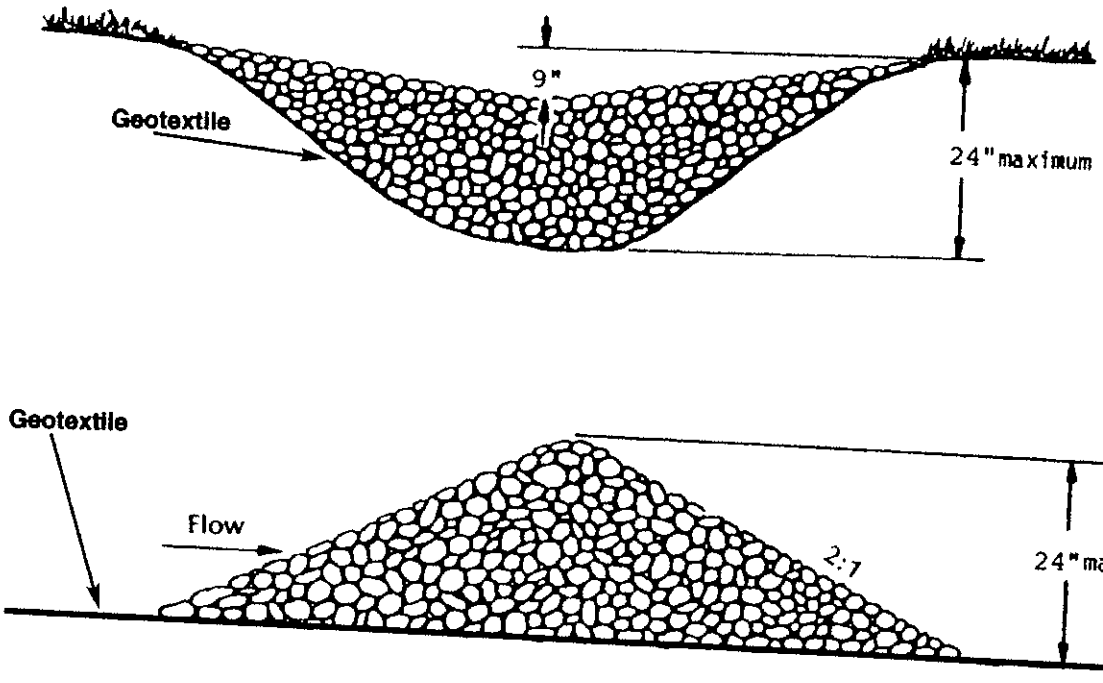


Figure 2


01.11.2008 15:11


06.11.2008 13:30