

Investor: BESTER GENERATION, UNITED KINGDOM LTD., Suite 163,
2 Lansdowne Road, Mayfair W1J 6HL, London, UK

Construction site: Bryn Lane, Wrexham, North Wales, UK

Document:

Technical Report for Foundation Plan

CO Civil Objects
IO Engineering Objects

BASIC DESIGN

Process packages:

CO Civil Objects
IO Engineering Objects

IDN: **16-02-16-000.00.002** Technical report for Foundation plan

REVISION	DATE	DESCRIPTION	PREPARED BY	REVIEWED BY	APPROVED BY

Prepared by:	Ing. Radim Sikora	18.7.2016	Document number: 1613-COGD-002	Issue: 0	Page: 1/3
Reviewed by:	Ing. Josef Novotný	18.7.2016			
Approved by:	Ing. Radim Sikora	18.7.2016			

The submitted documents define the manner and the depth of founding for individual civil objects. The documents are divided into three main units - objects CO 10 Fuel Storage Hall, SO 20 Boiler House and CO 22 Turbine-Machine Room.

The pad foundations was chosen based on the results and conclusions of geological survey (prepared by Geotechnics in July 2016 under Project Number PN163467). Given the amount of the Made Ground and depth of the founding of each of the structures, the foundation bottom in the ground soil shall be of glacial clays of solid to firm consistency.

Given the amount of tension in the foundation bottom and the depth of founding of partial structures which is given by the character of the structure of the foundation blocks, the foundation bottom in the soil will be of sufficient carrying capacity for the required loading.

No depth founding will be used – no piles will be used!!

Main reinforced structures are designed to be made from C25/30 XC3 and C30/37 XC3 concrete class according to EN 206-1. The foundations shall be reinforced with concreting steel of 10 505 quality according to EN 13670.

±0,000 is for all objects CO 10 Fuel Storage Hall, SO 20 Boiler House and CO 22 Turbine-Machine Room set at FFL 30,700m.

According to geological survey there are anthropogenic Made Ground to the depth of 0,5 – 1,0m under the current ground level. Underneath there are glacial clays of solid to firm consistency. Only in the area of borehole BH05 (hl 2,2m) there is a larger depth of Made Ground. In case the Made Ground are present in greater depth than the depth of the foundation bottom, the Made Ground would be substituted with compacted gravel layer. Glacial clay is present up to the level of approx. 20,5m under the ground level according to nearest depth probe, its consistency improves with the rising depth from solid to firm.

According to the information from the probes, the level of the underground water is in the span of 7,15-15,0 m. Underground water is compressive and would rise to the level of 0,1 - 8,3 m under the ground level. According to the foundation structures designed so far, the underground water shall not be affected by the ground works.

There is methane present in the soil at the construction site. Its concentration is according to BS8485:2015 at levels which do not require any safety measures. Nevertheless, under the level of the floor concrete slab there will be a layer designed in every object to allow for the higher concentration of the gas to be dispersed (gravel-sand layer with inserted derange piping with outfall outside of the object).

Under the foundation plate, there is a sliding layer designed made from protective geotextile and 2x insulating foil.

CO 10 Fuel Storage Hall

The founding of the object shall be done using reinforced concrete strip foundations from the level of rough landscaping (from level of -0,400m) to the depth of -1,8m. There is a reinforced concrete buttress wall designed on this strip foundations to the level of +5,0m, where a steel part of the fuel storage hall structure will be anchored.

At the western parts of the strip foundations, there are reinforced concrete shanks for anchoring of the pipeline bridge steel structure.

A reinforced concrete sump and foundation for receiving, feeding and conveying of the fuel are part of the fuel storage hall.

CO 20 Boiler House

	ALEF BRNO, spol. s r.o. Smetanova 3, 602 00 Brno IČO: 469 81 594	Document number: 1613-COGD-002	Issue: 0	Page: 2/3
---	---	--	--------------------	---------------------

Founding of the object is done by a system of reinforced concrete pad foundations from the level of rough landscaping works (from the level of -0,400m) to the level of foundation bottom -1,8m and in the western part of the object there are reinforced concrete pad foundations designed with the foundation bottom at the level of -2,4m.

A reinforced concrete foundation for a boiler forms part of the boiler room. Its detailed description is provided in a separate part of the technical report (Foundation Under the Boiler - FT 20.01). The foundation for the boiler is designed as a reinforced concrete foundation basin with its foundation bottom at the level of -3,0m.

CO 22 Turbine-Machine Room

Founding of the object is done by a system of reinforced concrete pad foundations from the level of rough landscaping works (from the level of -0,400m) to the level of foundation bottom -1,8m.

A foundation for turbogenerator made of a protective reinforced concrete basin in which a reinforced concrete foundation for a turbine, generator and a transmission forms part of the object. There is an anti-vibration insulation based on rubber designed between the foundation for the turbo-set and the protective basin to suppress undesirable vibrations into the underbed and other parts of the building. Furthermore, there will be a reinforced concrete foundation sump for condenser concreted to this foundation. The foundation bottom of the foundation for both the condenser and the turbo-set is at the level of -3,5m.

Remaining foundations

These include the foundations of the pipe rack, foundation of the stack, conveyors etc. The deepest of the foundations shall be the stack foundation of which the level of foundation bottom is -4,2m (26,300m a.s.l.).