Hanson Cement, Padeswood Works

Application for variation to EPR permit BL1096

BFS Appendix 6 – BFS Trial Procedure

Amendment no.	Action	Amended/ Reviewed by	Date
1	Initiated	Kiln Engineer	28/04/2022
2	Revised	Kiln Engineer	14/07/2022

Introduction:

The purpose of this procedure is to provide guidance to the operations department on how BFS is stored, loaded and processed through the kiln system for the BFS trial

Responsibilities:

Issuing manager/ Supervisor – to provide guidance to operations team and supervise activity as necessary. To ensure that health, safety, and environmental considerations are explained and understood by the operations team and to provide adequate training on this procedure and ensure it is correctly followed.

Operations team – to follow the procedure and observe all health, safety and environmental considerations. Anomalies and deviations will be addressed in accordance with the risk assessment.

Procedural detail:

Purpose of trial:

The purpose of the blast furnace slag (BFS) trial is to reduce carbon dioxide (CO_2) emissions. The addition of 5t an hour of BFS to the cooler translates to an estimated carbon dioxide reduction of 39kg CO_2/t of clinker. Based on kiln production of 2650t clinker per day, the addition of 5tph of BFS is a clinker production increase of 4.5% with no additional CO_2 emissions. By contrast, without BFS, increasing clinker production by 5tph would translate to an additional 108 tonnes of CO_2 per day.

Material storage:

BFS will be stored in the covered shed to the west of the MBM silo (see appendix figure 1). This designated storage space will remain appropriately covered and the walking floor articulated lorries are to discharge the BFS into this designated area in accordance with their risk assessment.

Material loading:

The material will be loaded by a process operative/ contractor using the current site telehandler. The smallest bucket size to be used on the telehandler is 1t. The material will be loaded and transported up the straight concrete road, turning right behind the cooler filter where it can be

unloaded into the GGBS conveyor system loading hopper (see appendix figure 2). The material feed rate will be up to 5tph and with the minimum buckets size this means a maximum of 5 loading movements per hour.

The blast furnace slag has an approximate moisture content of 18% and as such a decreased likelihood of becoming airborne. Control measures to prevent this further are:

- Correct loading/ unloading techniques from telehandler operator
- Dust covers on all conveyors (see appendix figure 3)
- Increased road sweeper and bowser movements on haul roads
- Feed system will be monitored by the operator loading the BFS
- CCTV feed of the conveyor belts on the burner platform are in CCR

Material feed rate:

The BFS weigh feeder is controlled with a manual hydraulic level on conveyor 441BC01 (see appendix figure 4). This will be set up during the commissioning phase at the beginning of the trial, and configured for the density of actual material being fed. The hydraulic control on the weigh feeder belt will adjust the speed of the weigh feeder. This will initially be set up and configured by the installation company.

Once the weigh feeder is set for the desired hourly throughput the system of conveyors is then started and stopped by the kiln controller from the CCR.

The material from the loaded hopper travels through the conveyor system 441BC01 to 441BC07. After 441BC07 the material is put into a hopper on the burner platform level and the material then moves through the sluice 441RF09 and into the cooler, onto the static grate.

The system is designed to run continuously throughout normal kiln operation.

Trial parameters:

The trial objective is to feed the BFS at 5tph for 2 months. Overall consumption of BFS is approximately 7500t.

Initially during the commissioning process, setpoints will be marked on the control system that indicate how to achieve 1tph – 5tph. Once these have been set and indicated, the initial stages of the trial will feed 1tph of BFS to the cooler, and clinker quality will be monitored closely for 48 hours. Providing there is no detriment to the clinker quality or the subsequent cement quality, the dosing will be increased in 1tph increments until the feed rate reaches its maximum of 5tph.

In line with the trial the feed system will have the necessary improvements made to it, including the installation of rotation monitors and a blocked chute alarm on the receiving hopper. These indications will be fed back to the CCR to allow the controller to stop the system if there is an

issue. These devices can only be fitted upon commissioning, after observing material transfer to establish the most appropriate locations for the devices.

Appendix:

Figure 1: Storage shed for the BFS material

Figure 2: Route for material transfer from shed to loading point

Figure 3: BFS loading hopper and conveying system into cooler building

Figure 4: Weigh feeder adjusting point and weight indication screen

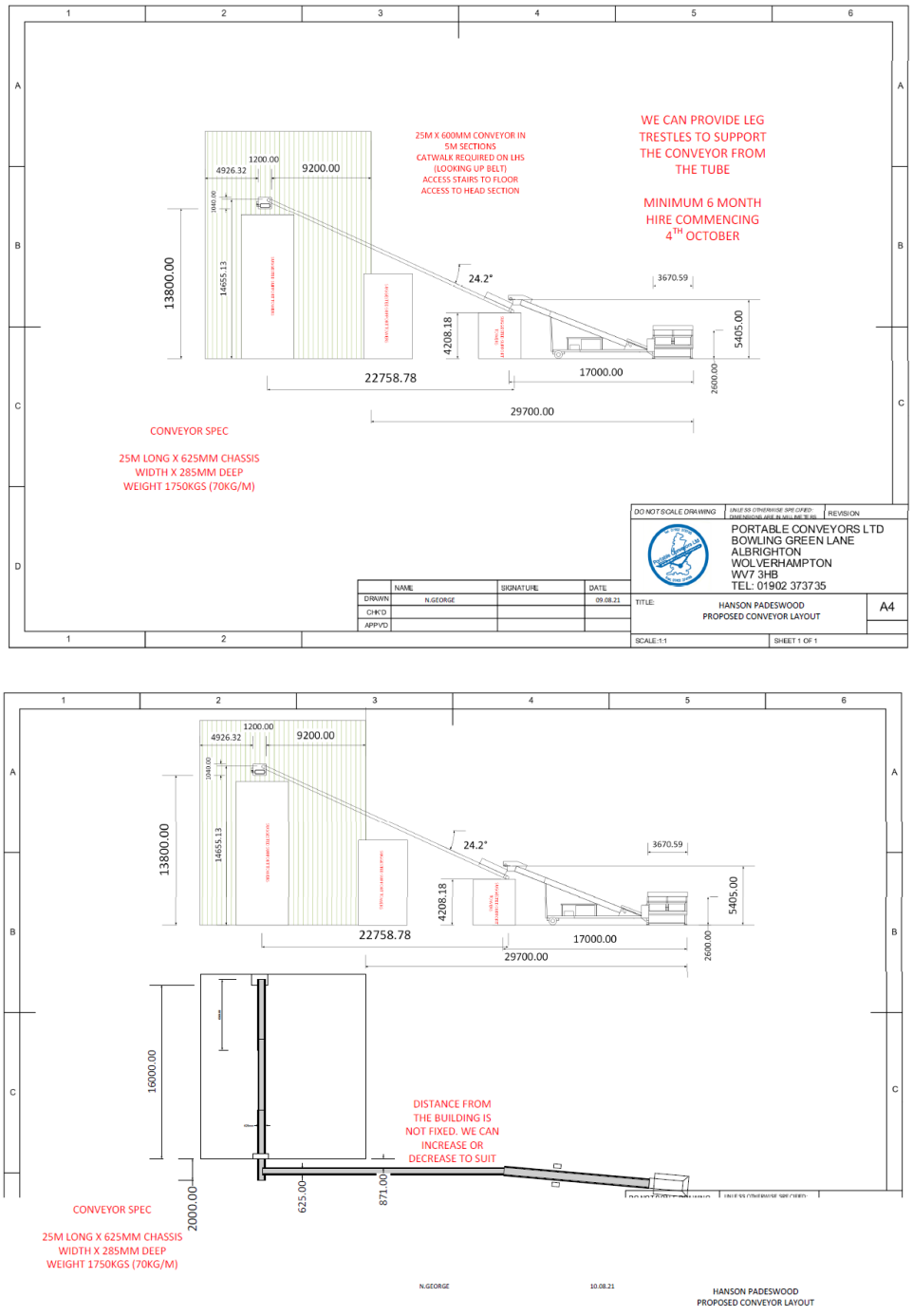

Figure 6: Drawings demonstrating conveyor system detail