Construction Method Statement For the Installation of the Proposed Treatment Plant at Zip World, Bethesda.

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1. Introduction

This Construction Method Statement has been prepared in support of a planning application for an 1800 Persons, Treatment Plant at Zip World, Penrhyn Quarry, Bethesda, Gwynedd, LL57 4YG.

A detailed description of the proposed treatment plant is provided in an attachment.

2. Parties Involved

- The planning application is being submitted by Cadnant Planning Ltd, 1 Connaught House, Riverside Business Park, Benarth Road, Conwy, LL32 8UB.
- The landowner is Penrhyn Quarry.
- The final choice of treatment plant is yet to be finalised.

3. Site Access

The access to the site will be from the existing vehicle access off the unnamed road, as shown in the below aerial map. The access will be the sole access to the site during the construction period and for the limited access required when the site is operational. No vehicle parking, loading or unloading will take place within the public domain.

All routes will be kept free of obstacles and trip hazards during the period of installation. On completion of the works, the access route will be made good from any damage caused by construction movement.
4. Deliveries

4.1. Off Loading

The purchaser may be responsible for off-loading at the nearest roadway to site that is suitable for heavy goods vehicles. A minimum height clearance of 16' 6" is required. If there are electrical cables overhead ensure there is a means of turning the power off. For off loading from a lorry mounted HIAB there needs to be a firm area for the stabilisers, the total width being a minimum of 15 feet.

If the nearest road access for a heavy goods vehicle is not adjacent to the site, it is the responsibility of the purchaser to arrange transport from the road to the site. If in doubt contact WPL as soon as possible with any queries. Inspect the unit for any damage to the base before placing on the ground and then inspect the sides. The unit should only be placed on level ground with no sharp stones, bricks etc. as they may damage the base of the unit.

The control panel and blowers should be stored in suitable conditions i.e. condensation free.

4.2. Extent of Supply

See the delivery note for full details.

The standard unit comes with the following:

A GRP tank or tanks incorporating the three sections

A blower kiosk with blower(s) and control panel fitted

Air hoses of 10m length

4.3. Electrical Equipment

All electrical equipment, including blowers must be stored in clean dry conditions until required for use. If the electrical equipment is fitted into the kiosk, some form of anti-condensation heater will be required if the unit is not to run immediately.
4.4. Bolts and Bolt Strips

Due to the settling of the joints during transportation, the bolts may become loose and need tightening. It is important that the bolt strips are not over tightened as this can cause leaks.

Tighten all bolts in the metal strips to 50 NM to ensure the foam is all compressed then tighten up to a final value of 60 NM.

Silo Bolts (with no metal strips) around the top of the unit should only be tightened to 30 NM

4.5. Lifting

DO NOT attempt to lift the unit if it contains water in any of the watertight sections. These sections are the primary, submerged aerated filter and humus settlement, and sand filter when applicable.

DO NOT walk on top of the units with muddy boots as this will scratch the surface.

Note: Units with extension, for inverts greater than 0.5m, turrets with covers are supplied separately and therefore the unit may collect rainwater.

Lifting eyes are provided around the top flange of the unit for the attachment of suitable strops of equal length. These should create an angle of no less than 60° to the top of the unit to avoid excessive loads on the sides of the structure.

When moving across rough ground great care should be taken to avoid increased loads due to sudden movement of the unit.

**WARNING:** Care should be taken when attaching lifting equipment as the surface of the unit becomes very slippery when wet.
5. **Plant Equipment**

Plant equipment would include but not be limited to the following:

- **Equipment and Primary Function.**
  - JCB Diggers - Trenching for cables.
  - Dump Trucks - Earth removal if required.
  - Vibrating Roller - Compacting access track (if in scope).
  - Telehandler (s) - Distributing materials.
  - Crane - Capable of lifting units in to place if required.
  - Fuel Bowser - Refuel plant as required.

6. **Process**

Introduction All installation procedures should be carried out observing the requirements of the Health and Safety at Work Act and involve good building practice.

Calculate the amount of backfill required. **THIS IS VERY IMPORTANT.** See Section 5.1, Step 7. A qualified civil engineer must be consulted to determine the correct grade of concrete. Lean mix or dry mix, concrete (typically minimum 12:1) must be used to backfill the excavation. However, prevailing local ground condition may override this requirement. If wet mix concrete is to be used, further consultations with a civil engineer may be required. Note: the pour cannot take place in a single operation. Contact WPL for further information.

During the course of installation the **following** will be required: Normal construction equipment and plant. Concrete for base. This MUST be designed to support the unit for normal operation. Adequate supply of water to fill unit – Note a water bowser will be required, as filling via a tap will take an excessive period of time. Pumping equipment where necessary.
N.B. Installing in an excavation that allows water to enter (i.e. is not dry) requires special advice. Water table and flood conditions are typical examples that will cause problems during installation. It may also affect the operation of the plant. Again, specialist advice must be taken in these conditions.

Venting - All sewage treatment processes produce waste gasses and this can give rise to unpleasant odours. To avoid problems it is important that a high level vent is available close to the plant for venting. This vent may be from the inlet or outlet of the plant, but the inlet is preferred.

6.1. Installation of Unit.

Step 1 Excavate to tank dimensions (see GA Drawings) with minimum of 150mm clearance all round and under base of unit. Allow adequate clearance for all pipes and any other connectors to the unit. Note: Dimensions are detailed on the GA Drawing for each individual plant which is sent to the customer with confirmation of order. If this has been lost, please contact WPL for another copy.

Step 2 Cast the concrete base; ensure that the slab is designed to support the unit in its normal operation (i.e. full of water). The base must be level and to the correct height to suit the invert level of HiPAF inlet. Allow for initial set before positioning the unit.

Step 3 Excavation must be kept dry during the installation and until the concrete has cured.

Step 4 Ensure the surface of the concrete base is free of water; stones etc. and lower the unit into correct position to suit pipe connections. Check the levels.

Step 5 Stabilise unit in excavation, taking care not to cause distortion of the unit. Fit temporary covers over all pipe connections.

Step 6 Commence filling unit with water into all sections to a level of 500mm. Fill ALL Sections with water UNIT 500 mm (0.5m)
Step 7 Commence back filling with lean mix- (Mix ratio to be determined by a qualified civil engineer). The back fill must be evenly placed around the unit at all times and worked by hand up to a maximum level of 400mm above the base.

NOTE: The base of the humus tank is approximately 455mm higher than the preceding tank section(s). WPL advise that concrete blocks and appropriate shims are placed on the slab to support this section during back filling.

DO NOT USE VIBRATING POKERS

The water level in all sections must be increased and be kept at a level of 300mm above the top of the backfill, until final pour after step 8.

Step 8 When the backfill is approximately 0.5m below the lowest underground connections, pipe connections should be made. Remove lifting eye nuts and bolts and replace with green silo bolts supplied. Also provide for a hose draw chamber, (consisting of a brick/block work chamber with removable access cover circa 300mm, square by 300mm deep) to allow access to hose tails, servicing ducts for the air lines and future cable connections to the unit via bulkhead connectors. If not factory fitted, fit bulkhead connections through tank top or extensions with the orientation to suit the site.

Step 9 Continue to fill with water and backfill to the rim of the tank.

See Appendix II for directions where the invert depth is greater than 500mm.

Step 10 Leave unit full of water.

N.B. See Appendix I for Kiosk Slab Dimensions and type of kiosk supplied

6.2 Local Ground Conditions

The local ground conditions must be taken into account when installing the unit. The amount of concrete backfill used must be sufficient to overcome the effects from up thrust of ground water. The unit is
designed with internal non return valves in the primary tank to relieve any ground water pressure and thus damage, when the primary tank is desludged.

The concrete slab must be swept clean of any debris to ensure the non return valve does not become blocked

The concrete backfill must be designed to stop the water table pressure damaging the tank. A qualified engineer must be consulted to determine the civil design.

6.8 Installation of Kiosk

Step 1 Lay a concrete slab, sized to suit the kiosk (see Appendix I), above the adjacent surface water level (and the flood plain) to avoid surface water ingress. Provision for servicing ducts for air lines, cables and mains power should be made.
Step 2 Lay the ducting from kiosk to the unit, mains supply and any pumping chambers or sand filter.
Step 3 When the concrete slab has fully cured secure kiosk to the slab and seal to the concrete with mastic.

6.9 Connections to Kiosk

Step 1 The air hoses will have been delivered laying on top of the filter section of the unit. Feed the hoses down the duct and connect to the bulkhead connectors on the side of the unit. Jubilee clips are secured either to a blower or in the delivery envelope. Cut the air lines to length to allow connection to the blower in the kiosk, ensuring that there are no kinks or sharp bends in the lines. It should be noted that the pipe becomes warm during operation, softens and may deform at sharp bends. Note : If the distance from the blower to the kiosk is over 10m, it is recommend that the air hose is increased in diameter to account for the pressure loss of the excess distance-Consult WPL for further advice.

Step 2 Electrical Connections
6.5. PIPE WORK, DUCTS AND SAMPLE CHAMBERS

Pipe Work

Gradient. It must be ensured that there is a sufficient fall (gradient) from the dwelling to the invert level of the inlet pipe, normally 0.5m below top lip of the unit. A fall between 1:40 and 1:100 is usually required to give a self-scouring velocity that prevents blockages in the pipes.

Venting. The plant must be vented via the inlet or outlet; a rotary disk with two holes is fitted to the top of both the inlet and outlet dip pipe assembly. Re-position the disk as required, leaving open the connection that is to provide the vent.

6.6. Ducts and Hose Draw Chambers

Ducts are required for all hose and electrical cable connections between the kiosk and the various sections of the unit. Ducts may also be required between where units are built in more than one section. At the unit end of the ducts a 'Hose Draw Chamber' is required to enable the connections to be made to the unit. The Hose Draw Chamber should be at least 300mm square and of a suitable depth to suit the connections (consisting of a brick/block work chamber with removable access cover circa 300mm square by 300mm deep). Ducts to the kiosk should run uphill if possible to avoid flooding the kiosk with surface water. The kiosk base should be above the surrounding ground level to avoid flooding.

6.7. Sample chamber

Positioning - This should be close to the outlet from the plant to provide a point at which the EA can take a sample.

Dimensions - The sample chamber should incorporate a large enough drop to allow a sample container to be filled with the treated discharge.
6.10. Electrical Installation

Due to the variance of the sites and installation configurations it is not feasible to state a specific installation configuration to suit all sites. Therefore it is important that the electrical installation is performed by a qualified electrician in accordance with the 16th or later edition of the I.E.E. regulations, with appropriate current protection devices for the site configuration.
The supply to the HiPAF should have a dedicated circuit incorporating isolation and protection devices to the regulation requirements of the Institute of Electrical Engineers. An earth leakage circuit breaker is recommended and should be incorporated into the supply to the HiPAF unit (a device with a 30mA maximum trip current is recommended).
N.B. The wiring diagram is in the electrical control panel inside the kiosk. If it is missing or lost please contact WPL for another copy.

6.11. Three Phase connection

When the 3-phase supply is switched on ensure the correct rotation of the blowers, as incorrect rotation will cause damage if run for more than a brief check. This check must be done with the all airlines disconnected from the blowers.

IMPORTANT NOTE: IF THE THREE PHASE IS NOT CORRECTLY CONNECTED SERIOUS DAMAGE CAN OCCUR. SHOULD A POWER FAILURE OCCUR ISOLATE THE SUPPLY TO THE UNIT. WHEN POWER IS RECONNECTED ENSURE THE PHASES AND ROTATION ARE CORRECT.

7. Waste

The potential waste generated during the construction process will primarily be related to packaging, and will include:

- The pallets that the treatment plants are packaged on. These will be either wood crates, or cardboard boxes. These will be removed from the site on a regular basis. If they arrive on wooden pallets – then these will be returned to the manufacturers. If they arrive packaged in cardboard boxes, then these will be removed from site on a regular
basis, either through a hired skip, or through trips to the local recycling station.

- Packing materials for various components, such as screws, cabling, and mounting frames. Any non-recyclable waste will be stored in a skip for regular removal to an appropriate landfill.

- Food waste from workers. Personal rubbish will be collected along with non-recyclable packaging materials, for recycling.

- The site involves some minor ground works. Excavated soil will be used for backfilling activities on or around the site.

8. Security

The site compound is surrounded by a security fence which was erected prior to the construction phase of the Zip World Visitors Center, thus ensuring the site is secure during this phase. A Health and Safety board identifying potential hazards will be updated daily, with all visitors required to sign in and adhere to on-site Health and Safety practices. All personnel working on site will be required to wear a high visibility vest or jacket, steel cap boots, and a hard hat as well as any other activity-specific safety wear.

9. Storage

No long-term on-site storage is required as the HGVs and other vehicles will provide materials at regular intervals throughout construction period as construction progresses, rather than being delivered all in one go.

10. Noise Management

Contractors will be required to conform to the construction noise code of practice BS 5228. Construction and decommissioning works shall be undertaken between 0800 and 1800 Monday to Friday, and 0800 to
1300 on Saturdays, with no works to be undertaken outside of those hours. Noise levels during construction and decommissioning will not exceed an LAeq, T noise level of 65 dB 1-metre from the façade of any occupied residential dwelling.

11. Air Quality and Dust Management

Given the nature of the site, we do not anticipate any significant dust issues to arise.