

Container Anchoring Scheme

Batleyford Playing Fields

Introduction

The following document has been prepared to address the requirements of Condition 8 as stated on the Decision Notice for Application 2023/62/93783/E.

The decision notice, dated 29th January 2025, states;

“8. Development shall not commence until a scheme detailing a flood risk assessment and method statement (including plans and cross-sectional diagrams), specifically concerning prevention of floating of storage containers so as not to increase flood risk downstream, has been submitted to and approved in writing by the Local Planning Authority. Agreed measures shall be installed prior to the containers being brought into use and retained thereafter. Reason: This pre-commencement condition is necessary to ensure that adequate and sustainable systems of drainage are employed in accordance with LP27 of the Kirklees Local Plan and the requirements of the National Planning Policy.”

Flood Risk Assessment

As part of the planning submission a Flood Risk Assessment (“Updated Flood Risk Assessment (in response to EA Objections)”) was submitted. Within the FRA it stated;

“Neither the existing containers nor the proposed cabins are designed to be flood resistant. Both will flood if flood levels exceed the levels they are located at on the site. This reduces the risk associated with water pressure damage and the risk of these containers and cabins being transported by flood waters. To further mitigate the risk of these containers and cabins being transported during flood conditions, all the containers and cabins will be anchored to the ground.”

In addition, it also states;

“The proposed cabins and existing containers will also be flood resilient, allowing water in, so floodplain flows or storage will not be impacted. Compensatory floodplain storage is therefore not required in this case”

Design Mitigations

As such the containers will have designed openings (small diameter holes) included in the walls at low and high level to allow the inflow of flood water (and the exit of air respectively) to ensure the containers can freely accept rising flood water.

Therefore, the net buoyancy effect will be in the most part offset by the weight of the flood water within the container. To additionally restrain the containers, and account for potential differential between the internal and external water levels, a positive connection to concrete pads will be provided.

The containers are standard shipping containers and are equipped with standard ISO corner blocks for attachments. These points are used to secure fully laden containers in transit on the back of lorry beds and on the decks of freight ships, often stacked multiple containers high. Therefore, these points have adequate strength to resist the potential uplift and lateral forces that may be seen in a flood event on Batleyford Playing Fields.

2025-02-05 - Container Anchoring Scheme

Connection Points

To ensure a secure fit into the ISO Castings a standard proprietary fixing point will be used. The image below is a standard “Twist Lock Fixing Plate” (*Image 01*) which is used to ensure secure anchoring of ISO shipping containers to the ground with its robust 16mm thick base plate and four anchor holes (*Image 02*). The twist lock mechanism allows for quick installation and removal, providing both strength and efficiency. And allowing the containers to be maintained and replaced at the end of their life.



Image 01 – Proprietary Twist Lock Fixing Plate.

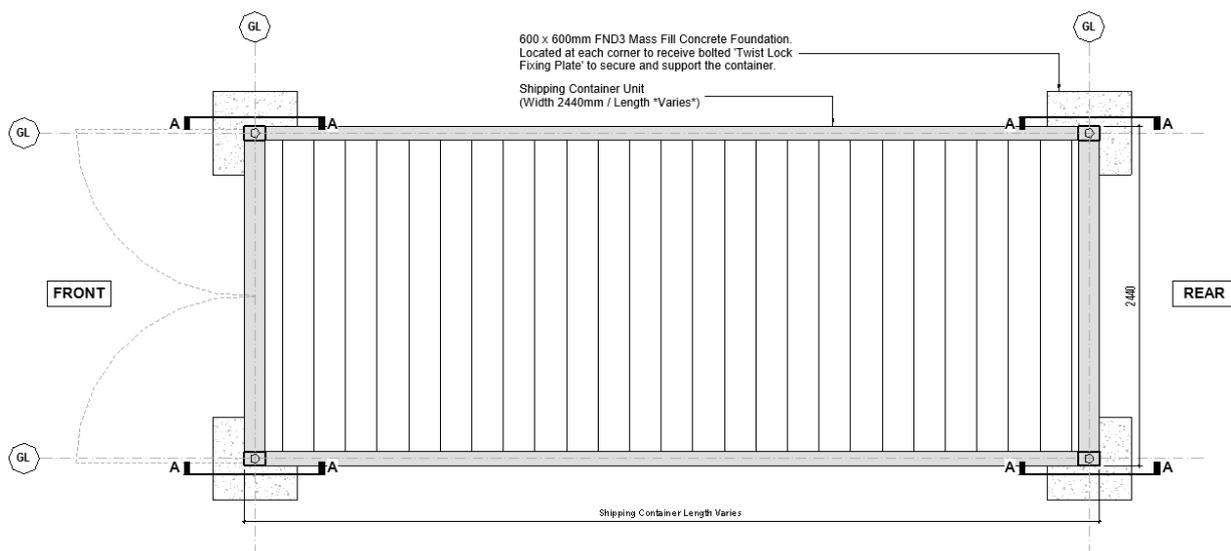


Image 02 – Twist Lock Fixing Plate & Container Detail.

Fixing to the Foundation

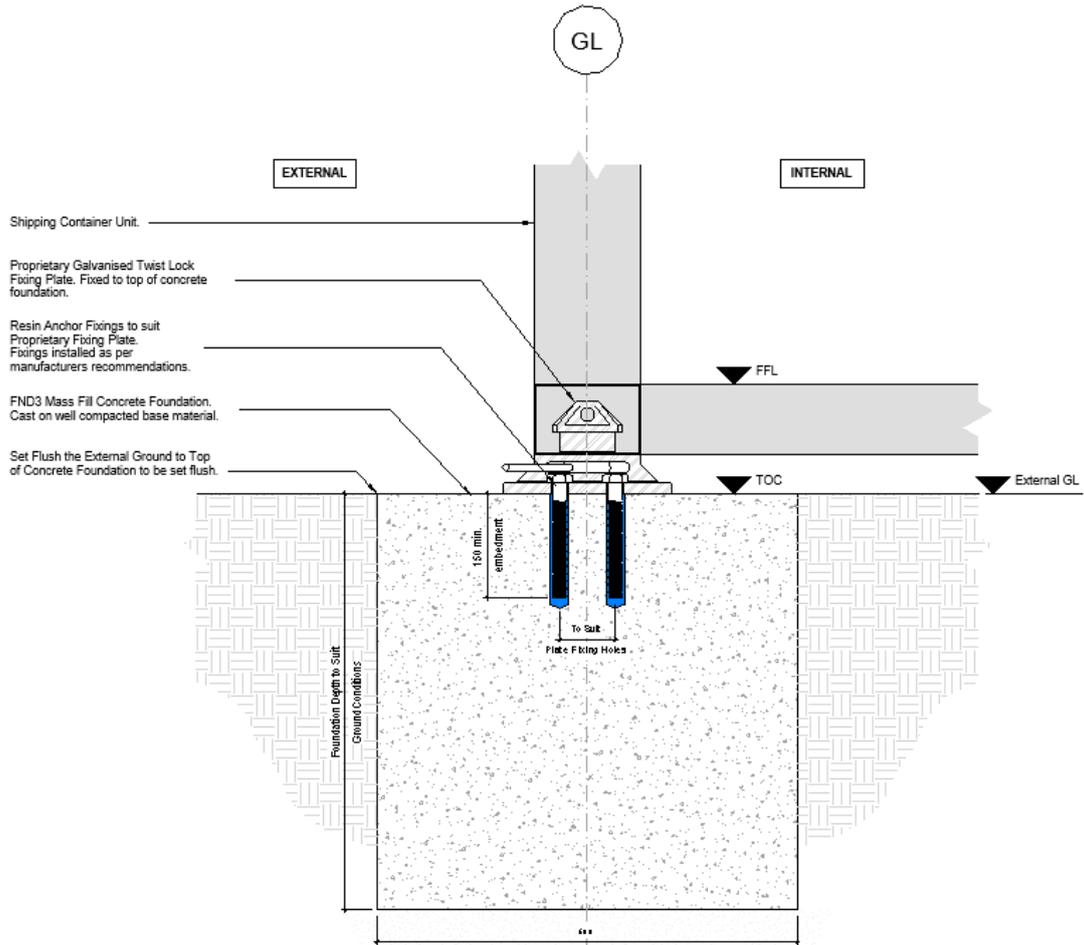
The connection points will be provided at all four corners of each container. The proprietary Twist Lock Fixing Plates have 4No. bolt holes in which resin anchors will be installed to securely fix the container to concrete pads. The concrete pads top of concrete and external ground level will be set flush. Each pad will be a minimum of 500mm thick; however, depth may increase to suit ground conditions encountered on site.

The images below show a plan of a typical container with four corner anchor points, and a typical cross-sectional detail of the bolting of the fixing plate into the concrete pad.



Plan View of Shipping Container / Foundations
1:15

2025-02-05 - Container Anchoring Scheme



Section A - A Container and Foundation Fixing Detail

1 : 5

2025-02-05 - Container Anchoring Scheme

Existing Condition

It is worth noting that the site is currently occupied by several shipping containers under previous consent. These containers do not have the formed holes to allow free flow of flood waters and are not positively anchored to the ground as this was not required under the previous consent.

In recent months the site has flooded to approximately 5.0m above normal river level. This is shown in the image below as the flood waters were receding.



In this instance it has been seen that the existing containers, without the design mitigations proposed under this scheme, have remained in place and have not been disturbed by the flood waters encroaching on the site.

Conclusion

Recent flood events have shown that the existing containers were not dislodged or moved in a significant flood event, despite not being positively anchored or specifically modified to accept flood water flows.

The design proposal to be implemented under this permission is to provide fixity by bolting into mass concrete pads to provide additional weight and resistance to upwards and lateral forces. The fixings proposed are specifically designed for the anchoring of shipping containers and therefore provide a robust and appropriate method of restraint.

The containers will also be modified to accept the flow of flood water into them, reducing significantly the potential uplift and lateral effects of floor water levels on the containers.

The inclusion of the proposed design mitigations (inclusions of holes in the unit sides, and the anchoring into concrete pads) are therefore considered to be an appropriate design response to the requests of the condition and an improvement on the current arrangements on the site.