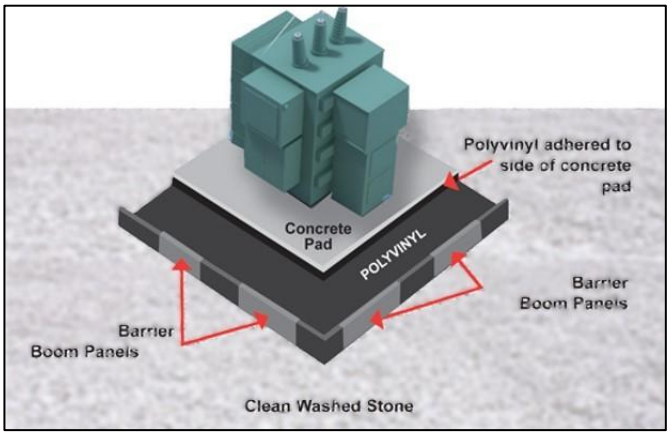
Diverse Environmental Solutions

POLYMER BUNDING SYSTEM
KIOSK & NON MPS KIOSK TRANSFORMERS ON BOX CULVERTS.



The following is a typical example of a kiosk bund designed to within a 3.6.x 3.6m site in line with Western Power install and design site specifications on a box culvert to hold a 315 kVa Transformer with an oil capacity of 615 Lts. These kiosk bunds can vary to suit the specific transformer and culvert size and capacity.

Reference:

- Western Power Design Kiosk Arrangement Installation Guide Section 4, Drawing DSM-4-06
- Polymer Filter Wall Manufacturing & Installation Procedures.
- AS 1940, AS1289.5.2.1
- “Barrier Boom” Product Data Sheet.

Bund Specifications

- Size and length of bund and barrier boom varies to suite customers and site specifications.
- Oil and effective capacity required depends on transformer and customer specifications.
- Drainage designed to exceeds the 100 Yr. storm event and/or customer requirements.

Kit Materials Supplied:

- **Impervious Liner Material:** XR3 or 850 TPU/PVC Thermoplastic Polyurethane Equivalent.
  - Outer Bund Wall and Liner as per attached drawing below.
  - Inner Liner skirt with flap for culvert.
- **Cushion Material:** A64 Non- Woven Geotextile upper and lower sections...
- **Culvert Sealing Batten:** Loc-line clips or batten fastening system to suite.
- **Sand Box and Rear Cover:** 20mm Nema Board or Cement Fibre to Drawing. (no timber materials)
- **Miscellaneous Equipment**: Tank Sika Sealant, Sand/Cement Mix, Concrete Fasteners.

Pre-Install Preparation:

The following should be verified with the civil contractors prior to installing cabling and culvert.

- Subgrade preparation and culvert install will be as per Western Power Kiosk Arrangement Installation Guide Section 4, Drawing DSM-4-06.
- Verify earthing and other cables, pipes or conduits to be a minimum 100mm below the Liner if within the bund area.
- Any penetrations through the bund floor need to be identified and notification given.
- Verify all cables will be grouped to allow penetration through the sandboxes and verified the correct length for connection to transformer prior to bund surface preparation completion.
- Verify the Culvert dimensions is as per the below drawing.
- For sites using existing culverts, after cables verified correct, surface area to be clear of stones, plants and any other sharp objects, then given a light compaction to restore level and subgrade preparation.

Inner Culvert Liner Install:

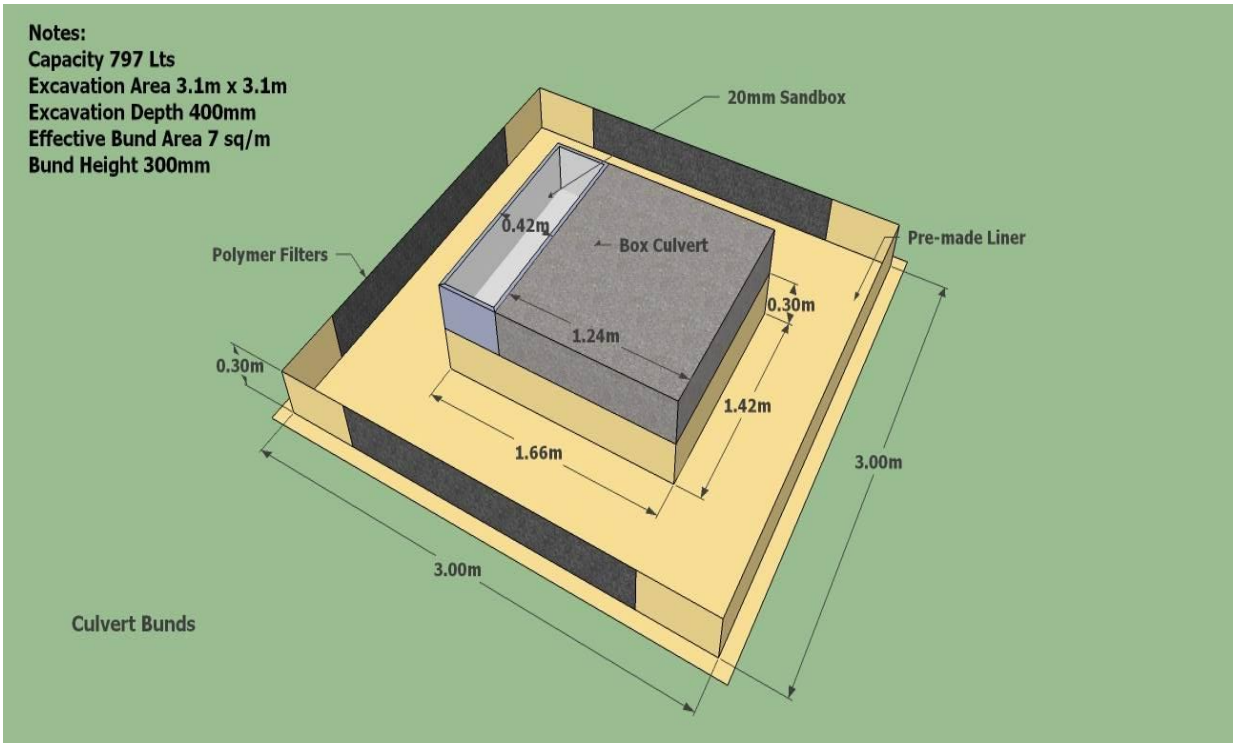
- Sandbox is installed over or around the cables and fixed into position and sealed against the Culvert level with the top with Tank SikaFlex.
- If the cables are verified in position and correct length, the sandbox can be filled with packing sand and capped around the cables with 50mm of concrete.
- The culvert end cover is also fixed into position at the non- cable end and sealed as above.
- The Inner liner is placed as follows
    - Without transformer, the inner liner should only be placed over the sandbox and culvert just prior to the transformer is being installed. This liner should be folded up and secured for protection until the outer bund is installed. If Polymer Bund representative is on site and with prior arrangement the inner and outer liner can be fitted or manufactured as one complete unit.
    - With the transformer in place, the liner should be installed while the transformer is isolated and with the metal cable cover box removed. This can be achieved by cutting the Inner Culvert Liner along the line under the flap marked for this purpose and wrapping around the culvert and sandbox ensuring the join is positioned at the non- cable end. This liner should be folded up and secured for protection until the outer bund is installed by bund Specialist. If polymer bund representative is on site and with prior arrangement the inner and outer liner can be fitted as one complete unit.
    - The liner needs to be secured in position to the culvert and sandbox and should be done during install of the outer bund liner by the polymer bund specialist and before the transformer is live as access to the sandbox area is required.
    - If the outer liner is to be installed with the transformer live, then the inner liners around the sandbox will need to be positioned correctly and sealed. Discuss with bund specialists first.

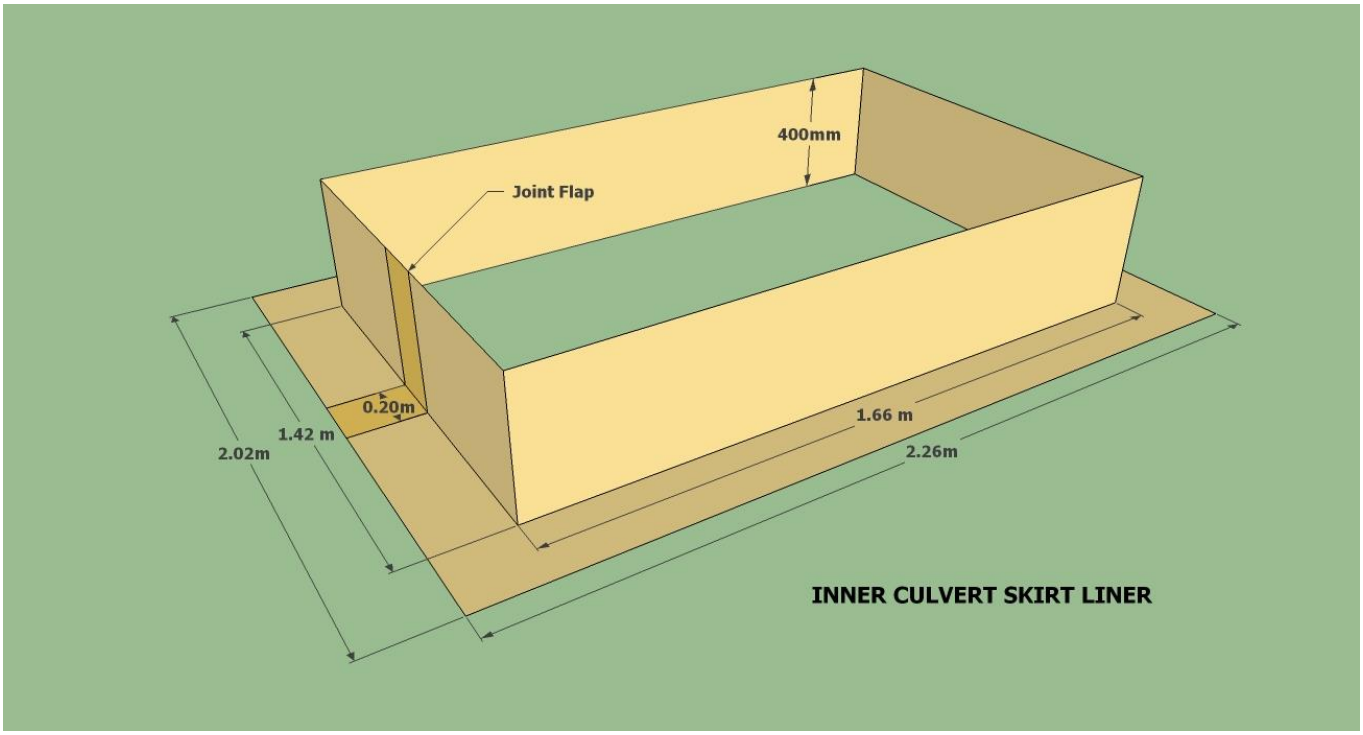
Outer Liner Bund Installation:

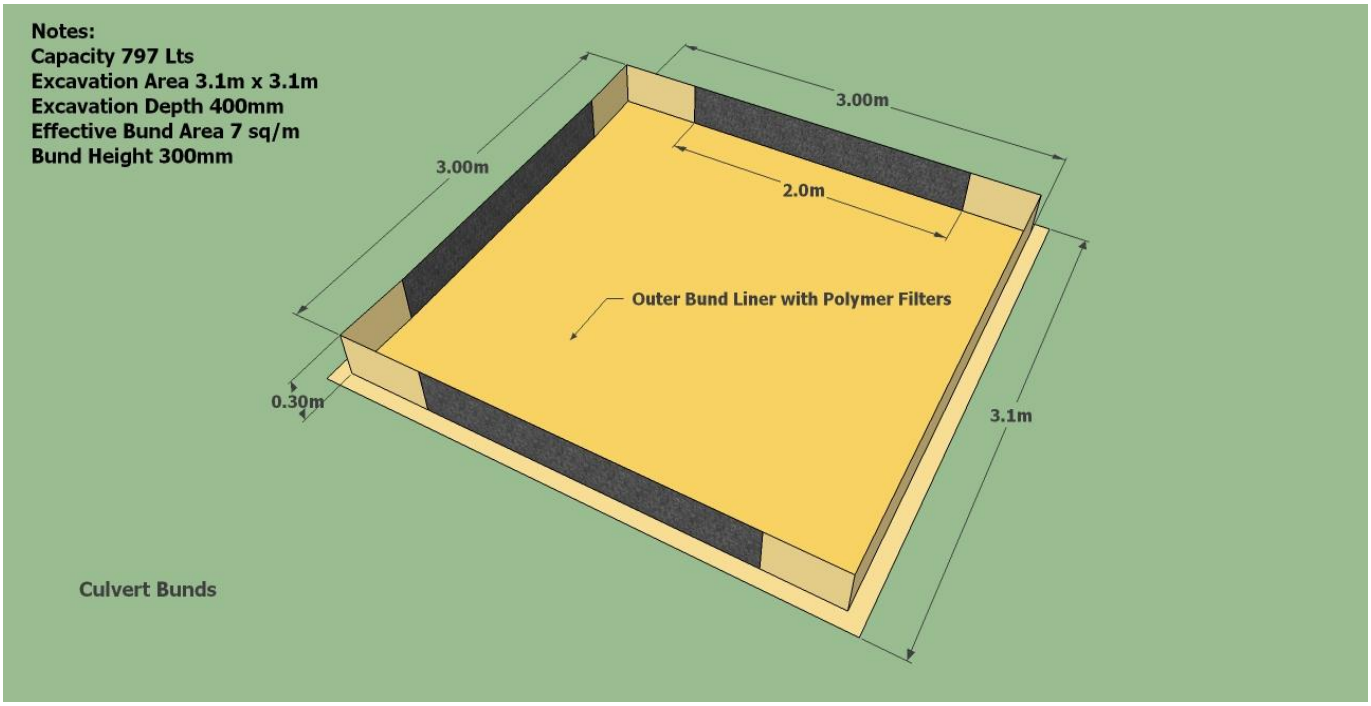
This procedure will be done with a recommended polymer bund specialist as follows

- Verify with Civil contractor stone size, equipment and permits ready.
- All other work should be completed, drainage levels correct and subsurface re-compacted if necessary, to ensure a minimal disturbance of the subsurface area prior to bund floor being installed.
- The liner cushion floor is installed with overlaps of a min 100mm at the joints.
- The Inner Liner boot is secured and sealed to the top edge of the culvert using Wedge Fastener Battens or HDPE batters with special double-sided butyl backing tape.
- The outer liner is cut at the centre to position over the transformer and into position.
- The inner and outer liners are positioned to overlap the flaps and the outer bund positioned as required.
- All welding surfaces are cleaned and welded, verifying by pick test.
- The welds are sealed as a secondary measure with a special butyl tape along with any penetrations.
- Inner cushion in cut and positioned with 100mm overlaps.
- The temporary support frames and cover are placed around the outer wall liner holding the wall in position.
- The sand boxes verified filled with brickies sand to 50mm from the top and capped.
- The bund is backfilled with Bluestone to the level of the bund wall with the temporary support frames then removed.
- A further minimum of 100mm of Bluestone or another stone top fill is applied to the surface up to the top of the culvert. (No Timber Fill)

Note: It is possible to install the complete bund without the transformer in position however the area und the sandbox should be left clear of enough bluestone to allow the Metal cable cover to be positioned.




400mm
Joint Flap
0.20m
1.42 m
2.02m
1.66 m
2.26m
INNER CULVERT SKIRT LINER


Notes:
Capacity 797 Lts
Excavation Area 3.1m x 3.1m
Excavation Depth 400mm
Effective Bund Area 7 sq/m
Bund Height 300mm
3.00m
3.00m
2.0m
Outer Bund Liner with Polymer Filters
0.30m
3.1m
Culvert Bunds

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Single Box Culvert Transformer Polymer Bund