

TRANSFORMER PAD XR-5[®] LINER INSTALLATION PROCEDURES

I. MATERIALS

The secondary oil containment liner shall be a coated high strength hydrocarbon resistant material manufactured in the USA, such as XR-5[®] 8130 or XR-5[®] 8138 material by Seaman Corporation. This material shall be supplied and factory fabricated into panels by Lange Containment Systems, Inc (1-800-446-4898).

II. LINER STORAGE

The fabricated liner panels shall be accordion folded, rolled and banded on a wooden pallet. Prior to shipping, the panels shall be covered with a plastic water repellent stretch wrap. Upon arrival at the project, the product is to be unloaded with a forklift type piece of equipment with a 5,000 pound minimum capacity. The fabricated panels are to be stored in a centrally located area close to the transformer for field deployment. The pallets are not to be stacked as they are unloaded. In the event of long-term storage on-site, it may be necessary to cover the product with an opaque, water-proof material such as visqueen to protect from exposure.

III. SITE CONDITIONS

The liner installation will not commence until the substrate has been inspected and approved by a Lange Containment Systems representative. Surfaces to be lined shall be well compacted, smooth and free of all sharp, angular rocks, vegetation and stubble. A suitable soil sterilant should be applied when indicated. It shall be the responsibility of the general contractor to re-prepare and maintain the sub grade in the event of rain.

The General Contractor and Owner shall be notified immediately in the event of a sub-standard condition that may exist. As a general guideline; the installed geomembrane liner is a direct reflection of the sub grade it is placed upon.

Anchor trenching (if applicable) must be complete prior to liner placement.

IV. LAYOUT

Liner panels, geotextile (if applicable) and the prefabricated accessories (including custom corner units, pipe/conduit shrouds and mechanical attachment components) shall be installed per the approved secondary containment drawing(s) submitted to the Owner. Lange Containment's lead installer shall determine the panel lay-out sequence to facilitate and expedite the installation process. Over-all field coordination is the key so the liner scope of work will not conflict or interfere with other operations and schedules.

V. PANEL INSTALLATION

Prior to the seaming operation, the lead installer shall review seaming materials and procedures. Safety equipment will be distributed and discussed. Mechanical attachment will be laid out for anchor placement by the crew. All surfaces that receive geosynthetics must be complete prior to liner placement (see Section III).

Once the panels are placed, seaming shall begin by either a tracking hot air seamer or hand-held hot air seamer (where appropriate). The seaming crews shall overlap the material ± 6 " and construct a minimum 2" wide fully bonded seam (if machine welded) without wrinkles or voids. If wrinkles (fish-mouths) occur, they will be cut and patched accordingly. The patch shall extend beyond the problem area a minimum of 4" in all directions.

Factory fabricated flashing corners and pipe/conduit shrouds to be installed where indicated on the project drawing. The installation shall take place under the supervision of Lange Containment's lead installer for the project.

Panel installation shall only be performed under reasonably calm conditions with ambient temperatures in excess of 40 degrees F. Liner installation is possible in colder climates with the aid of heaters, however production is considerably slower. Liner installation should not be attempted during precipitation.

VI. TESTING

The field seams will be tested by the air-lance method per ASTM Method D4437. This test consists of directing a flow of pressurized air, regulated at 40 - 50 psi through a 3/16 inch orifice at the field seam interface. The air lance wand shall be held 4" away and perpendicular to the edge of the seam. Where visual or audible signs occur, which indicate un-bonded areas, the area will be repaired.

VII. FINAL INSPECTION

At the conclusion of the project, the lead installer shall conduct a final walk through with all parties involved. A certification will be issued stating that all work performed is in accordance with project specifications and in compliance with all industry standards and guidelines.

All trash and debris shall be removed at the conclusion of the project.