INSTALLATION & MAINTENANCE NOTES
FOR POLYSAFE LEVEL CROSSINGS

Installation

Pre-Installation Preparation
It is essential that the following steps be undertaken to ensure a satisfactory installation.
1) Put trackwork to finished line, level and superelevation taking care to space the sleepers correctly, i.e. 600mm centres. Ensure that track gauge is correct and sleepers are square to the rails and track “twist” eliminated. Ballast to be level with the top of sleepers.
2) All rail fastenings must be firmly fixed.
3) There can be no rail joints over the length of the crossing and for a distance of 2 metres beyond on either side of the crossing.
4) There can be no rail anchors over the length of the crossing.
5) Where rail welds occur over the length of the crossing, all weld material must be removed from the profile of the rail and the rail ground down to section profile to allow seating of the internal and external wedges.
6) The rail must be cleaned so as to be free of all foreign material to ensure correct seating of the supporting wedges.
7) The following certified lifting tackle, which can be hired or purchased from Polysafe, should be used for lifting and installing Polysafe Crossings:-

Polysafe Lifting Devices
Manual Panel Lifting Device (Pair) Cat No: AMPLD
Panel Chain Lifting Device (Set) Cat No: APCLD
Kerb Chain Lifting Device (Set) Cat No: AKCLD

Installing Concrete Kerbs
Establish the centre line of the crossing and from that line determine the location of the concrete kerbs, ensuring that the siting of the concrete kerb joints is such that they do not fall in the road vehicular path. Prior to installation of the concrete kerbs, the sleeper positions must be checked after final tamping and alignment operations. The position of the end of the first concrete kerb in each run is established by marking out the proposed road line. Sleeper spacings are also set relative to this line; thus the end of the concrete kerb is 300mm outside the centre line of the last sleeper in the crossing.

On completion of the above Trackwork, the concrete kerb installation may proceed as follows:-

1) Excavate footings/trenches at both ends of the sleepers to a minimum width of 600mm and a minimum depth 530mm below top of rail for full length of crossing.

2) Fill the bottom of the trenches with Grade C40 Lean Mix Concrete to give a finished depth of 330mm below top of rail. Compact the Lean Mix with a mechanical plate rammer or similar. The top surface of this layer should be levelled smooth. The dimension of 330mm assumes the finished crossing is in the plane of the rails. If one or both sides of the crossings are required to be at a cant to the plane of the rails, the level should be adjusted accordingly and the concrete kerbs canted to suit, thus giving full bearing surface for external panels.

3) The first concrete kerb is lifted from its storage position using Polysafe lifting tackle and placed on the prepared foundation in the pre-determined position at the end of the crossing. The correct spacing of the concrete kerb from the rail is determined using the profile boards spacing gauges as follows:-
The concrete kerb is lowered until it is fractionally above the foundation and the two profile boards provided are placed across the rail head and the top of the concrete kerb with the toes of the profile boards fitting into the external web of the rail approximately in line with the ends of the concrete kerb. The concrete kerb is then gently maneuvered and lowered into its final position when the profile boards will fit snugly between the web of the rail and the inside face of the concrete kerb.

4) When lowered into position the concrete kerb height should be checked by spirit level from the railhead at each end and appropriate action must be taken to ensure that the beam rests in the same plane as the rail.

5) All remaining concrete kerbs on both sides of the crossing are then installed in the same way. Where different length concrete kerbs are involved in a particular crossing, they should be placed in their correct positions.

6) When all concrete kerbs have been placed, they should be suitably back filled behind to three-quarters of the beam depth. Prior to placing of this infill it is essential that any displacement of the concrete kerb is checked and corrected.

External Panels
External panels on one side of the crossing are then installed as follows: -
1) Two external wedges are placed in the external web of the rail so as to accept the nibs of the external panel. The rail must be clean and free from all foreign material. Wedges are slotted to fit around rail fixing clips.
2) The external panel is lifted with Polysafe lifting devices and positioned in the wedges and touching the adjacent panel unless it is the first to be installed, in which case it is positioned level with the end of the concrete kerb.
3) Using two crowbars positioned in the slots provided in the concrete kerbs, the weight of the panel is taken, bearing on a piece of timber to protect the top surface of the concrete kerb while the lifting device is removed.
4) The panel is then lowered into its final position; the crowbar must be withdrawn carefully using one of the slots provided.
5) The remaining external panels are then installed on one side of the crossing using the same procedure.
The external panels on the far side of the crossing are installed using the same procedure.

Internal Panels
The internal panels are then installed as follows: -
1) Two bottom internal wedges are placed in position to receive the nibs of the first internal panel. Wedges are slotted to fit around rail fixing clips.
2) The panel is lifted using a Polysafe lifting device and is swung into a position directly over the two wedges.
3) One end of the panel is then gently nosed onto the bearing surface of the bottom internal wedge on one side.
4) With the panel in this position the other end of it will just rest on the head of the opposite rail. The lifting tools are then removed. Using a crowbar the panel is levered against the rail until it drops into position; use of an angle plate ensures that the crowbar does not damage the panel. Alternatively, use a large rubber paviors mallet to gently persuade panel into position. This is a better option especially with Polymer Panels.
5) A 600mm long internal top wedge is fed along the top of the panel toes, one side at a time. A crowbar can be used if necessary to ease the panel away from the rail. It is advisable to lubricate the top internal wedge with soap or similar to ease installation.
6) Finally check that the internal panel lines up with the end of the crossing. A crowbar can be used for adjustment.
7) Subsequent internal panels are then installed in a like manner. All panels are fitted with connecting sockets on both sides for fitting securing devices.

Securing devices

Securing devices are delivered with all fixing clips and bolts to suit the type of sleeper fitted.

Two number sleepers beyond each end of the crossing should be set at 600 Centres. Securing devices should be fitted as follows: -

1) Position both internal and external-securing brackets in line with the fixing bolts in the end panels of the crossing.
2) Mark position with chalk to give positions for placing clips.
3) Dig out ballast at these positions and fit clips under sleepers.
4) Replace securing brackets and bolt to clips – do not tighten.
5) Bolt and tighten securing brackets to crossing end panels.
6) Tighten clips to securing brackets.
7) Replace ballast.

At any stage of the installation should any component not appear to be properly seated then that component should be removed and the fault corrected. This applies particularly to internal and external panels, which should seat firmly and not rock when walked on after placement. Rocking generally indicates the wedges have not seated correctly into place due to debris or the kerbs have not been levelled and positioned correctly. Also small pieces of ballast can infiltrate the installation process and cause panels not to seat correctly.

Should the crossing be over multiple railway tracks, then each track is installed as if it were a separate crossing. The area between concrete kerbs of adjacent track crossings is filled with a Grade C40 concrete mix to within 40mm of the road level, the latter space being topped up with road surfacing material.

The crossing is then ready for placing of the road surfacing material. This should be to the correct profile up to the top of the back of the concrete kerbs. Road markings are applied to specification.

Road traffic should not be permitted on the crossing until all road surfacing is in position, so that the back faces of the concrete kerbs are protected.

Crossing maintenance

The maintenance of Polysafe Level Crossings varies and is dependent on the configurations and workload of the crossing.
1) Light duty “B” roads and pedestrian crossings
Check crossing yearly and if any movement release securing bracket bolts, push panels tight together and re-tighten clips (clips are slotted for this purpose).
2) Heavy duty “A” roads, skewed crossings and high load crossings
Check crossing for movement at 6 monthly intervals and repeat, as Number 1 if needed.
Yearly – remove an internal panel in the road traffic line to check rubber supporting wedges. If necessary replace wedges in this area.
The above is a guide for general maintenance work but many Polysafe Crossings will require no maintenance for long periods.

Removal of crossing for track maintenance purposes
1) Unbolt and remove securing devices – leave clips in position.
2) Remove top internal wedges using large screwdriver. Ease panel to one side using crowbars. It is advisable to use an angle iron strip to protect panel. This especially applies to Polymer Panels.
3) Remove internal panels with Polysafe lifting device.
4) Remove external panels by barring each panel sideways until sufficient room is obtained to insert lifting devices. Then lift and at the same time rotate the rear of panel upwards and lift clear.
5) It is also possible to remove individual panels only. In the case of internal panels, remove the top wedges up to and including the panel to be removed. For external panels raise the rear of the panel with two crowbars in the concrete kerb slots until it is possible to position the lifting device and raise the panel clear.
6) Before re-installing the panels, the rails and all bearing surfaces on the panels and concrete kerbs should be brushed clean and the rubber wedges should be washed to remove any dirt and foreign material. Any of the wedges showing signs of damage or deformation should be replaced.

Weights

Panels weigh approximately 250kg each.
Kerbs Weigh:-

4.8m	1.116 Tonnes
4.2m	0.972 Tonnes
3.6m	0.828 Tonnes
2.4m	0.554 Tonnes
1.8m	0.411 Tonnes
1.2m	0.274 Tonnes

Disposal of crossing components

All Panels both Polymer and Concrete and Kerbs should be disposed of using normal skips and classed as normal Concrete Material waste.
For details of all Polysafe Stock Components for replacement purposes, please see our Form QA 3/3.