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the future of drainage

ACO Climate Tunnel Slotted

For use in crossings installed flush with the surface.

The ACO Climate Tunnel with slotted upper surface is installed within the road structure, flush with the road surface. The channel system is certified to BS EN 1433 Load Class D 400. The advantages of this system are particularly apparent in difficult terrain conditions, such as where there are ditches on one or both sides of the road or if there are high groundwater levels.

The benefits for amphibians and small animals are easily explained: installation flush with the road surface permits minimum crossing distances, uncomplicated entrance areas at road verge level, optimum climatic conditions due to the ingress of water and air and, at the same time, optimum adaptation of tunnel temperature to ambient conditions.

Benefits

- Compatibility with solid top climate tunnels and entrances
- Slotted top regulates moisture and temperature
- Tunnel material unaffected by water flooding
- Crossing lengths reduced due to shallow installation
- Minimal coefficients of expansion permit precise installation without expansion joints.

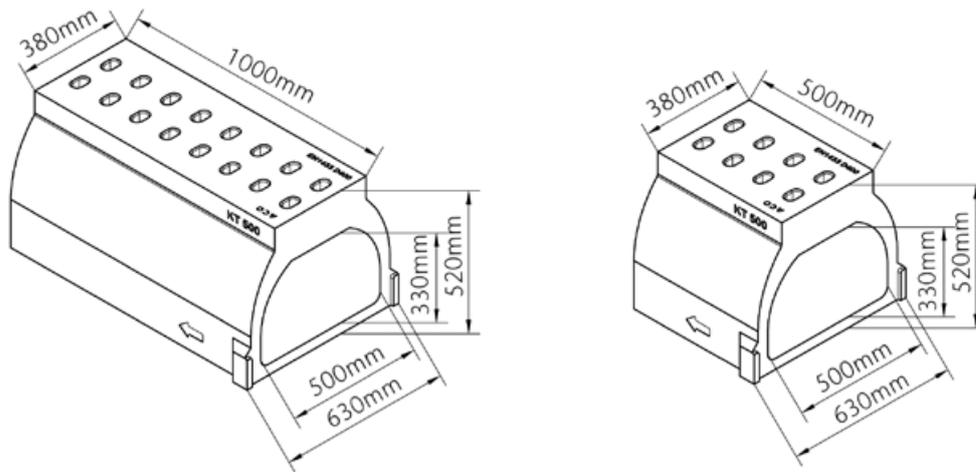


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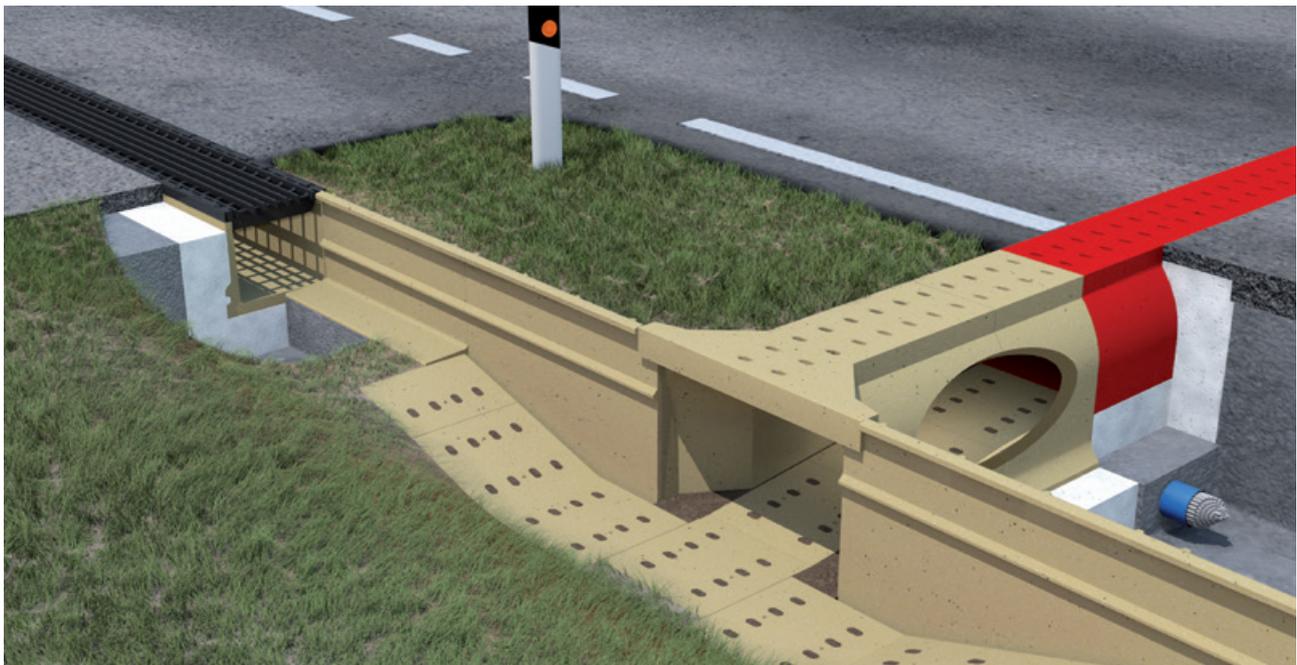
Applications

- Migratory paths across road systems
- Tunnels across roads, paths and verges

System Overview



Product Code	Description	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
ACO Climate Tunnel Slotted					
11120	Climate Tunnel Slotted	1000	580	520	257.50
11121	Climate Tunnel Slotted	500	580	520	130.50



Compatibility

ACO Climate Tunnels with slotted tops can be incorporated into tunnel crossing systems. The range includes solid top tunnels, stilt tunnels and tunnel entrances.

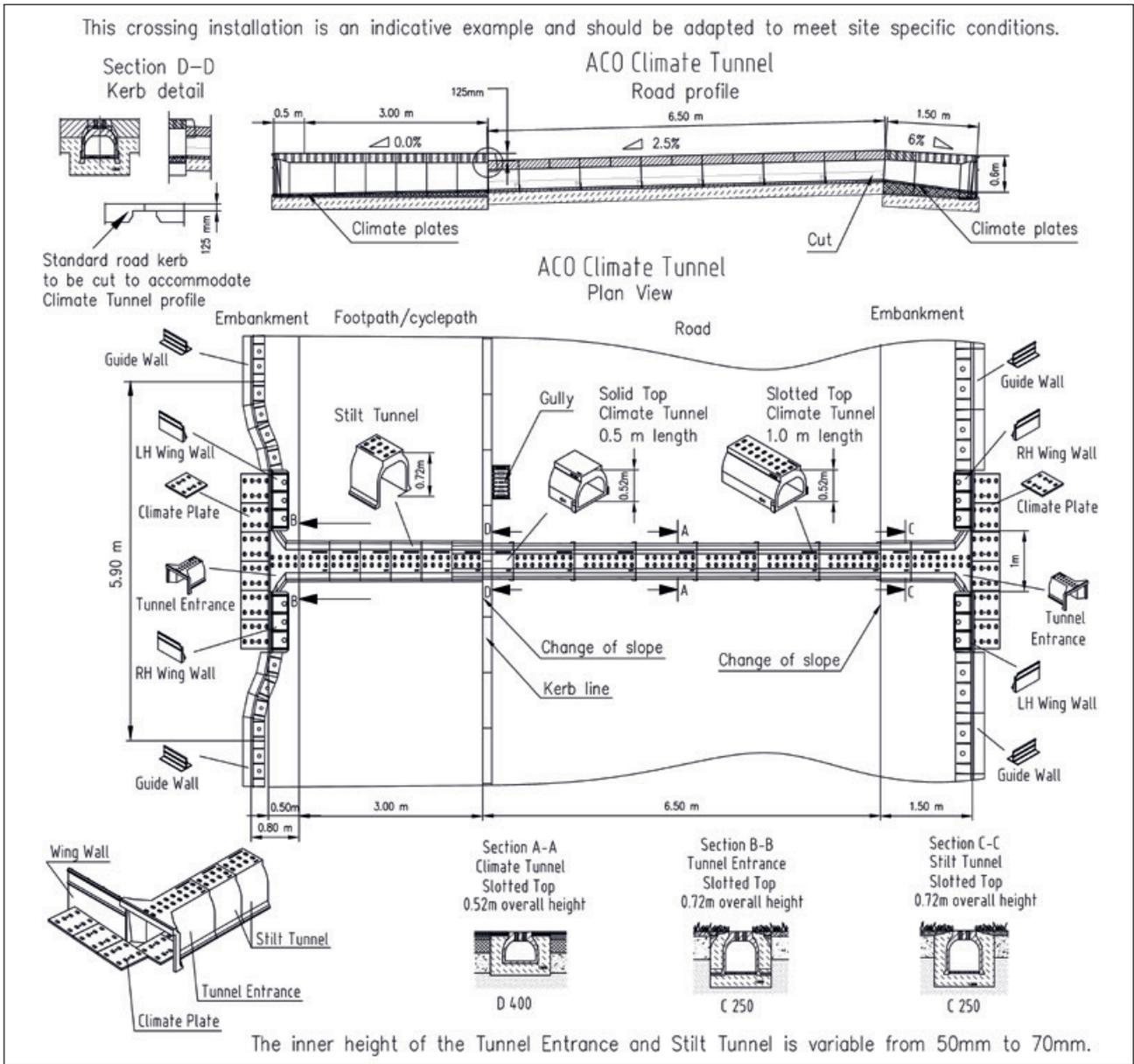
The versatility of the system allows the tunnels to be installed at road height and transitioning between roads, pedestrian areas and verges.

Minimum crossing distances

In comparison with all other forms of tunnel crossing system, the ACO Climate Tunnel achieves the shortest possible crossing distance. The tunnel surface is aligned with the surface of the roadway or verges as appropriate to the gradients of the road. The floor of the tunnel exit is 480mm below the upper edge of the verge/roadway. Installation of the system can be shown to reduce crossing distances in comparison to other forms of tunnel.

Example 1: Tunnel diameter \varnothing 1.00m, 1.00m cover, gradient 1:1.5 = 4.50m reduction in distance using the Climate Tunnel system.

Example 2: Tunnel diameter \varnothing 1.50m at foot of gradient, 5m embankment height, gradient 1:1.5 = 13.50m reduction in crossing distance using the Climate Tunnel system.



The slotted ACO Climate Tunnel is installed flush with the carriageway, cycle path or verges and adjusted to suit any relevant gradients. The system can be installed in existing roadways by closing one lane at a time. The installation trench has a maximum width of 1000mm and depth of 700mm. The Climate Tunnel system is bedded in concrete in accordance with good practice and the adjacent road surfaces are then repaired.



Protection of amphibians

Smooth, non-absorbent surfaces with minimal thermal conductivity form an ideal contact area for amphibians. ACO Climate Tunnels are manufactured without using metal reinforcement, eliminating the possibility of disorientation to animals arising from distortion of magnetic fields.

Optimally designed slotted openings at surface level permit the ingress of rainwater, thus not only serving the moisture needs particularly of younger amphibians, but also creating a thermal effect, helping the crossing temperature to approximate closely to ambient temperatures. The airflow in crossings often presents problems in closed systems due to "central dryness" inside the tunnel. The slots in the ACO Climate Tunnel form numerous air-inlet openings so that airflow is minimised and vital moisture is retained. Surveys have shown that this system is effective in use.

Tips on laying tunnels

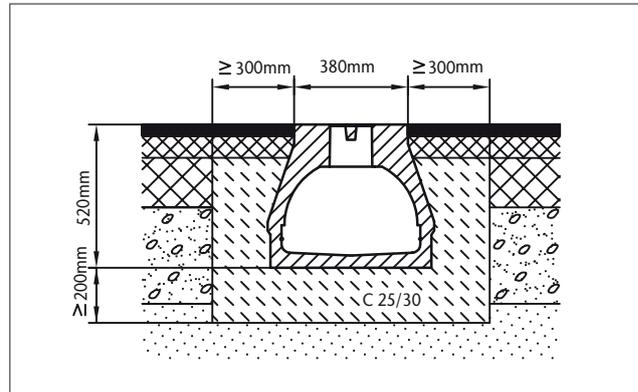
ACO Climate Tunnels are available with or without ventilation slots. This description of installation flush with the surface is for tunnels with ventilation slots. The upper surface of the tunnel sits flush with the upper surface of the carriageway. Bevelled cutting of tunnel elements (by the customer or on site) is required to suit changes in gradient within the length of the tunnel.

Climate tunnels are laid so that they extend outside the road surface into the verge areas. The tunnel elements are installed flush with the tunnel and at the same level at both ends. These are installed in the course of concreting work.

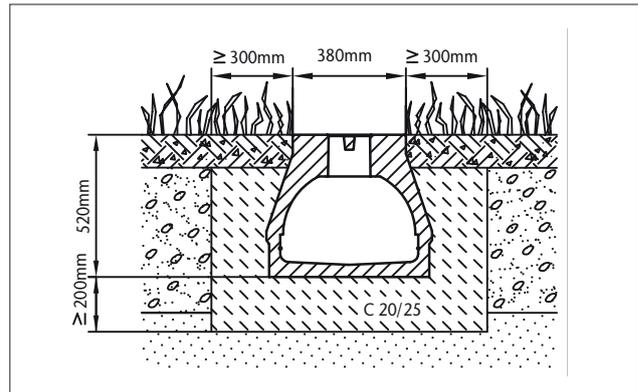
The combined length should extend through the width of the road safety verges (normally 1.50m from the edge of the roadway).

The following should also be taken into account:

- Siting of the guide wall.
- The use of closed elements where specially required. Please refer to the details of our Climate Tunnel Solid Top or to our Design Services Department for further details.



Roadway installation detail



Verge installation detail

Installation

STEP 1

When carriageway asphaltting is completed, cut the road surface out to a width of 1000mm or to suit the width of the digger bucket or other special requirements. For installation flush with the road surface, excavate the trench for the foundation to a depth of approx. 700mm. Lay a C 25/30 concrete footing of approx. 200mm thickness and compact onto a load-bearing foundation. Position the tunnel and entrance elements on this concrete footing to the correct line and level. Lay the individual elements so that they butt tight up against each other.

STEP 2

Fill the voids on each side of the tunnel with C 25/30 concrete and compact evenly in layers on both sides. The final top level of the concrete will depend on such factors as the thickness of the asphalt binding and top courses. The top of the concrete should be approx. 100mm below the upper surface of the tunnel.

STEP 3

Next, repair the roadway surface either side of the tunnel, preferably by pouring asphalt. If rolled asphalt is used, do not roll over the line of the channel. Take care to ensure that the space is not overfilled or underfilled. The Climate Tunnel system can also be installed before the top course is laid. Care should be taken to ensure an even height at the join between the surface of the tunnel and the top course and that there are also expansion joints at the edge of the concrete surround.

STEP 4

Lay a gravel bed in the verge areas before and after the tunnel. Clean any residual concrete and/or asphalt from the floor of the climate tunnel.

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