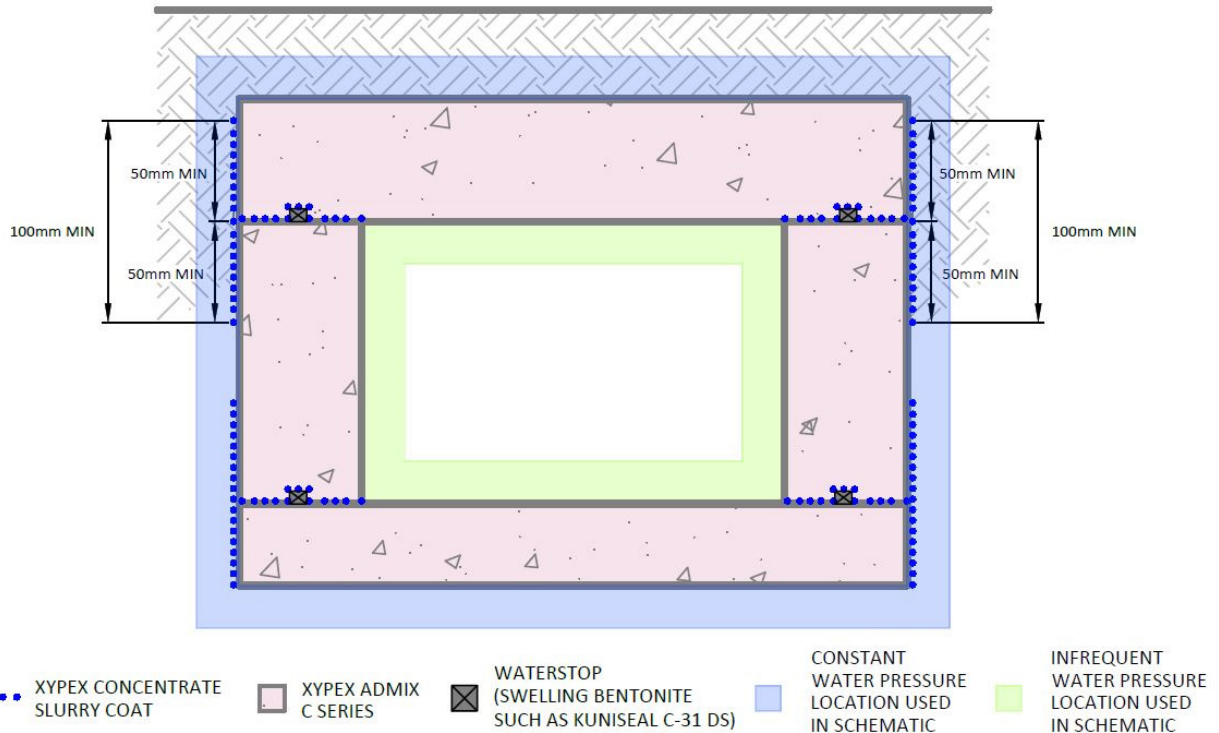


STANDARD CONSTRUCTION JOINT / COLD JOINT DETAILS

Tunnel/Service Tunnel

2018-11



General

This schematic details the products and procedures for the treatment of construction joints/cold joints in new concrete structures. **This detail is not applicable for movement joints, slip joints or expansion joints.** This detail uses two elements in addition to additives and coatings to waterproof the joints of the structure. The two protection measures used are *Xypex Concentrate* to ensure the joint can self-heal cracks/shrinkage movement up to 0.4mm static width, and Kuniseal C-31 DS (Kuniseal) as a high swelling moisture barrier/water stop.

This detail must be used in conjunction with the Xypex and other product data sheets and method statements.

Note: Schematic diagram shows Xypex application and waterstops, inclusion, type and position of waterstops are at the discretion of the designer. Expanding waterstops may be placed on Xypex after it has dried or before Xypex slurry application. Xypex slurry may only be applied over waterstop if approved by waterstop manufacturer.

Note: Keyways or keyed joint may be incorporated into the joint design at the discretion of the designer.

Note: Schematic drawing shows Xypex admix application. Specifier may consider the alternative use of Xypex dry shake (DS-series) or Xypex coatings, where applicable. Refer to Xypex standard specifications for more information.

Surface Preparation

1. Clean joint thoroughly. A surface texture of CSP-3 as per the International Concrete Repair Institute Guidelines, refer to Surface Profile Chips, must be achieved and should be achieved with a brush finish to the construction joint.
2. Repairs to cracks, honeycombing, air pockets, and defects are to be repaired as per Xypex Methodologies, refer separate method statements.

Application Of Kuniseal

1. Clean the exposed face of the concrete joint by water blasting, hosing, wet sponge or the like. Ensure that sufficient moisture is present to activate the self-adhesive sheath and re-wet with fine mist spray as required during application. Wet Kuniseal C-31 DS prior to installation. **DO NOT** peel off the covering hydro-bag, Kuniseal is covered with an adhesive sheath/hydro-bag.
2. Install Kuniseal on the joint alignment, preferably central to the joint as per details. Ensure a minimum clear concrete cover of 30mm will be achieved. Press Kuniseal firmly in place and into the concrete substrate to promote adhesion. Ensure Kuniseal will align with other joints and applications of Kuniseal. Ensure ends of Kuniseal fully abut and are sealed by firmly pressing together. Temporary support Kuniseal in place until adhesive has affixed.

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Mixing For Xypex Concentrate Slurry

1. Mix *Xypex Concentrate* powder with clean water to a creamy consistency in the following proportions:

Brush Single Coat Application

0.65 - 0.8 kg/m² Mix 5 parts powder to 2 parts

Spray Single Coat Application

0.65 - 0.8 kg/m² Mix 5 parts powder to 3 parts

Do not mix more dry powder than can be applied in 20 minutes. Allow mixture to stand and start to harden, then re-agitate. If the mix starts to harden, stir briefly to maintain fluid. DO NOT add extra water.

Coating Application

1. The concrete surface must be wetted down with water to place the concrete substrate in a saturated surface dry (SSD) condition immediately prior to the application of *Xypex Concentrate*. If the surface dries out after initial water application, it must be re-wetted using a fine mist spray of clean water. Remove excess water before application such that there is no glistening water on the surface.
2. For fresh concrete, the period between 24 hours and 72 hours is the optimum time to apply *Xypex Concentrate* as the concrete is still 'green' and requires very little pre wetting.
3. Apply *Xypex Concentrate* slurry coat over the Kuniseal and concrete construction/cold joint using a semi-stiff nylon bristle brush or specialised spray equipment. When applying *Xypex Concentrate* to concrete, ensure the slurry penetrates and fills any minor defects such as cracks/pores/voids. Application by stiff bristle brush must use a circular or 'figure 8' brush stroke motion to create a non-uniform pattern. The application and this required method is to ensure no weak plane in the coating is developed, creates a consistent/uniform application of the slurry and achieves an appropriate slurry thickness and roughness. Slurry coating must be uniformly applied with an approximate thickness of 1.25 mm.
4. If applicable, cure *Xypex Concentrate* coating as soon as the coating has set to the point where it will not be damaged by a fine mist spray of clean water (about 2-4 hours after application depending on the weather conditions). Cure the applied coating with a fine mist spray of clean water at least 3 times a day for 2-3 days if required. Alternatively conduct second pour of concrete prior to coat drying.
5. Where internal/surface coating is indicated refer to *Xypex Concentrate* Coating Method Statement and data sheet for application procedures.

Note:

1. The *Xypex Concentrate* must not be applied under rainy conditions or when ambient temperature is below 4°C. Avoid application of the Xypex coating in hot and windy conditions as the coating may dry out prematurely. Recommended to not install in temperatures > 30°C.
2. Where formwork prevents the application of *Xypex Concentrate* by brush or spray, moisten the concrete surface. Mix *Xypex Concentrate*, 6 parts powder to 1 part clean water, as a dry pac, mix for 10 to 15 seconds. Lumps should be present in the mixture. Refer to data sheet, and sprinkle from top of formwork onto the concrete approximately 1.5 to 2mm thickness.
3. The information presented is in addition to Xypex product data sheets and is not meant to replace these or any other installation guides but rather is meant to give a general description of the installation practices and procedures surrounding the use of Xypex products for waterproofing and protecting concrete and while normally provide an acceptable final appearance they are not meant as aesthetic finishes. Refer to Safety Data Sheets for safety information, applicators need to use all products and equipment in line with manufacturers and industry requirements.
4. The use of Xypex products promote self-healing of static cracks up to 0.4mm width. Pending the design of the structure, designed allowable crack width, concrete selection, concrete placement, curing procedures and quality of workmanship undertaken. Cracking may occur or present post construction. The client/contractor or the like, should be aware that cracking may occur post construction which is due to the factors as indicated above. These factors are not in the control of Xypex. Post construction cracking should be monitored and repairs conducted, where required, in accordance with Xypex methodologies.
5. Kuniseal must not be installed in standing water or allowed to absorb water and swell. Kuniseal should not be left exposed for prolonged period prior to concrete placement above.
6. For severe chemical or aggressive environments consult Xypex Australia representatives for compatibility information and approval. Kuniseal bentonite waterstop should be substituted for hydrophilic rubber/acrylic waterstop or similar when subject to severe chemical attack. All products are to be selected to the manufacturers conditions and used in accordance with manufacturers documentation.