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MICROSEGMENTS™ – CORROSION RESISTANT PRECAST SEGMENTS FOR USE IN SEWER TUNNEL CONSTRUCTION

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ABSTRACT: One-pass precast segmental linings are slowly replacing pipe jacking for tunnel diameters down to 2.0m. The one-pass lining is generally favored, as longer distances can be driven without shafts and more precise steering can be achieved for tunnels with varying radii.

To date an integrated PVC or HDPE membrane has been installed as a secondary lining in sewage pipes and collectors in order to ensure corrosion resistance. As, for logistical reasons, this secondary lining cannot be installed simultaneously as excavation proceeds in small diameter tunnels, these works must be carried out sequentially, thereby extending construction time.

Microsegments™ are standardized segments, available in 250mm increments from 2000mm to 3500mm internal diameters. A ring consists of 6 trapezoidal segments, assembled to form a circular universal ring, with which tunnel radii down to 100m can be negotiated. The segments are connected together via plastic dowels and steel pins, and can be supplied with or without an EPDM gasket. In order to protect from corrosion by aggressive sewage or waste water as well as their gases, a patented version of the segment is available with an integrated glass fiber reinforced inner liner cast into the intrados of the segment. An epoxy-resin coating applied to the segment extrados after casting offers optimum protection against aggressive ground water and optimizes the finishing of freshly de-moulded segments.

With this standardization process, existing segment design and pre-fabricated moulds, the planning phase of a project can be minimized. The segments can be produced under license by local pre-cast manufacturers or construction companies.