Immersed Tube Tunnel Technology: Heritage and Future

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In the world of heavy construction there are many structures that take shape right in front of our eyes; a bridge or perhaps a building are easily seen as they are constructed. However, there are structures that are far more stealth in their construction methods which begs to ask the age old question, “How do they do that?” Tunnels are a prime example of work unseen until the day they are open to traffic. One form of tunneling that peaks most people’s interest is the immersed tube tunnel. Just how do you connect water tight boxes in a chain together, some nearly the size of a football field and as tall as a three story building, in waters as deep as 100ft, performing this task literally in the blind. The construction of immersed tube tunnels is not a new concept, but an application in tunneling design that has been in widespread use for well over 100 years. Today, the number of immersed tube tunnels that have been built worldwide well exceed 150 with the majority being constructed for road and railway. Our discussion will touch on the history of the immersed tube, past, present and future. The evolution of the tube tunnel from the first one built in the US, The Shirley Gut siphon built in 1884 in Boston Massachusetts, to the world’s first floating tunnel being considered in Norway across the Sognefjord will be reviewed. Also discussed will be the techniques used to design, plan and build immersed tubes – answering the “how do they do that” question. The discussion will reference examples from many of the great immersed tube tunnels built to date while focusing on the only Immersed Tube Tunnel currently being constructed in North America, the 2nd Mid-Town Tunnel in Norfolk Virginia.

Andy Uniacke has been employed with Kiewit since 1980 after graduating with an engineering degree from Utica College. Andy has been involved in some of the most critically planned and challenging projects including the $350 million CTA Blueline Douglas Branch Project, our $250 million Queensboro Bridge Project and the I-93 Fast 14 where he performed in a similar capacity as the Design Coordinator.