North American Society for Trenchless Technology
2007 No-Dig Conference & Exhibition

San Diego, California
April 15-20, 2007

Paper C-2-01

# SUSTAINABILITY ASSESSMENT MODEL (SAM) FOR UNDERGROUND CONSTRUCTION

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**ABSTRACT:** The concept of sustainable development was formed by the World Commission on Environmental and Development (WCED) in 1987. Sustainable development is relatively new and omnidisciplinary paradigm having recently received much attention throughout the global community. The concept of sustainable development has emerged as a viable alternative to ensure human prosperities in the future. It implies three bottom lines: 1) minimizing environmental impact; 2) maximizing economical benefit; and 3) minimizing adverse social-cultural impact. Currently, there is high demand for rehabilitation and new construction of underground infrastructure development in congested urban environments. This requires employing appropriate technologies such as trenchless technology in order to accomplish effective construction and reduction in environmental/social impacts. Trenchless technology has been applied in wider ranges of applications and has been accepted as a viable alternative to implement sustainability concepts in underground infrastructure development. This paper presents development of Sustainability Assessment Model (SAM). SAM is a cradle-to-grave process and a holistic evaluation tool assessing the level of sustainability in an underground infrastructure project. Sustainability factors are identified and classified to build a fundamental platform for the assessment tool and expand knowledge of sustainability. Topics discussed in the paper include: 1) survey and identification of sustainability factors; 2) structured development of SAM; and 3) practical application demonstrating SAM.