

PREFACE TO ELEVENTH EDITION

Trenchless techniques offer an intelligent alternative and smart solution to subsurface construction challenges. These being a state-of-art cost fixation becomes a challenging affair. Schedule of Rates for Constriction Contracts Employing Trenchless Technology is the right tool for techno-commercial evaluation of any project that requires Trenchless Applications. Since 2002, IndSTT has been publishing such schedule of rates on a regular basis, and now it is proudly presenting the eleventh edition of this important publication to serve the Indian trenchless industry.

This edition is being released during the NoDig India Show 2018 that has the theme of 'Advancing Trenchless Standardisation'. Unit rates of work items play an important role in standardisation process as they are linked to certain specifications that are standardized for certain scope of operations and their measurement modes. This schedule of rates provides both of these for the set of approved Trenchless Techniques and their support activities.

During the show the next revision of the Codes of Practice for five techniques are being released. The respective rates, as have been evaluated after the impact of such revisions are being covered in edition of the Schedule of Rates. This edition also covers the new items, standardized since the tenth edition. These include the process of Subsurface Utility Engineering, a vital support service essential for any new installation process. It also includes items for Machine Wound Spiral Lining technique. For both of these items new codes of practice are being released concurrently.

We thank the trenchless construction industry for having their faith in this book reposed till now, and hope to have its countenance for this edition. We also would like to invite the stakeholders to continue providing their inputs for inclusion of new items and alterations in current coverage to suit the changing needs of the industry.

A handwritten signature in black ink, appearing to read 'Dr. P.R. Swarup'.

Dr. P.R. Swarup

Chairman

Indian Society for Trenchless Technology

FOREWORD

It is our honoured privilege to present the eleventh edition of Trenchless Schedule of Rates (SoR) titled Schedule of Rates for Construction Contracts employing Trenchless Technology 2019. This edition covers the revised rates of different approved trenchless items as in force from the date of this publication. All the rates as stipulated in the tenth edition now stand superseded with the rates published in this edition. Though the specifications, for most of the items have been retained similar but for few items the specifications have been altered to bring those in tune with current requirements and developments. Readers referring to multiple SoRs for projects spanning beyond the specific year of currency should check the specifications to avoid confusion later.

The readership base of this publication has been increasing over the years as more and more project owners, and professionals are now migrating to trenchless and the SoR is the first gateway to this technology available to them. If we analyse the subsurface construction industry in India, we can notice two sets of organizations and people. One, that is using the SoR and other, that is not. The first set regularly uses the SoR whenever needed. The second set, due to various reasons as discussed later do not use the SoRs and faces difficulties in their operations. It is our pleasure to highlight here that the first set is growing fast whereas the second set is shrinking gradually.

IndSTT has published various editions of SoR in India since 2002 with tenth edition of the trenchless SoR being released by IndSTT in 2017. All these years, these editions have been some of the main Indian trenchless publications instrumental in standardizing the trenchless rate evaluation system. Core of this standardisation lies in the fact that these SoRs, apart from suggesting the unit rates, provide specifications and mode of measurement for each approved technique as well. These two inputs help in defining the technical envelop of actual work extent, or the technically defined benchmarked boundaries, one can expect if he uses the stipulations of this book in his projects. This benchmark, in turn assists all service providers that includes, consultants, contractors, equipment suppliers, and material suppliers, in standardizing the work components while offering their wares. This, associated with market competition, helps the employers in maturing their projects with the lowest costs of such works through competitive bidding contained by the published unit rates. In addition, these specifications, measurement mode, and published rates are a great help in dispute mitigation for additional or extra items, not envisaged during project planning, designing, or bidding. All the ten editions, published up to 2017, have been quite successful in this direction and assisted all stakeholders falling in the first set by using the SoRs and reaping the maximum benefits from the approved trenchless techniques. These SoRs have also worked as change agents enabling more and more construction industry stakeholders to initiate working in Trenchless Industry and moving from second set to the first.

Project owners and service providers, falling in second set who are yet to employ these schedules, are on losing streak, both financially as well as on the project outputs. In their cases, whenever a project work involving Trenchless Techniques is proposed to be executed, either it is avoided, or executed with confused technocommercial process. For proper financial prudence, a project specific scope of work and its cost must be identified and analyzed but due to various factors such analysis fails. Due to large variations in the identified scope of works, or materials proposed to be installed, or output desired, each analysis employing different Trenchless technique produces a different working costs. Even analysis for projects proposed to be executed through same technique, fails to provide uniform costs due to their state-of-art nature and also employment of non-standard analysis methodologies or inputs. This leads to different costs for similar activities, leading to a state of confusion for such project owners and service providers. Net result in many of such cases is the stiff resistance in adoption of trenchless in project execution activities and many a times, leading to forced continuance of open cut method usage. This means loss of resources and subsurface space in such subsurface construction projects wherein the trenchless could have provided a more intelligent and smart solution and a better output. Leave aside the

normal works, the extra items or non-scheduled works, where there are no benchmarks available, pose a larger challenge as there the analysis can be disputed by anyone at anytime.

Here the challenge for all such stakeholders is reducing opportunities of open cut approach. More the networks are developed, lesser the subsurface space available for trenching. The question facing all is that how long can such approach continue and conventional construction methods remain mainstay looking at the already over-populated subsurface space today? It is expected that sooner than later, these projects are going to be executed by trenchless, weather the owners likes those or not. The ones who do not wakeup to this fact and accept natural choice of trenchless, are going to face non-standardized quotes with little or no justification of the quoted rates whenever they are forced to deploy Trenchless in their works. In such cases their working with such rates becomes fait accompli with no technical evaluation methodologies in their defence. The only way out left for them is to embark upon the commercial negotiations. Such negotiations always leave a feeling that they are paying much more than the justified amounts for the works. At the same time the service providers feel that they have received less than the just due, as they had to quote rates with no benchmarking yardstick, and no bottom line in the commercial negotiations. Both situations develop into a major impediment in the smooth execution of subsurface projects for such project owners.

It is fortunate the more and more stakeholders are switching from being the set two members to set one. In 2002, when there were no schedules, IndSTT realisedrealised the impediment and to overcome that it released the first schedule covering six new installation techniques which were some of the most used techniques of those times. That Schedule of Rate was helpful in construction projects employing Trenchless as the rates suggested gave a benchmark to evaluate the quotes and certain level of standardization was brought in the markets through its use.

With refinement in technology and introduction of newer technology in rehabilitation and renewal sector next editions were released in following years to meet the market requirements and aspirations. These editions were published to cover some of such developments and revise the previous rates wherever prices had changed upwards or downwards due to increase of input costs or indigenization or reduction of the input costs as the case may be. The current edition has been structured into four sections, General, New Installations, Rehabilitation, and Renewal. Some of the work scopes of the earlier editions have been redefined to rationalize the working systems. For an example GPR item has been altered to Subsurface Utility Engineering to address the latest approach of locating, mapping, and designating of existing subsurface utilities. Earlier item was just conducting GPR survey but there was no coverage of mapping and quality levels leading to unverified maps of subsurface utilities. It is expected that this will reduce the damages to existing subsurface networks through the knowledge of their existing locations or the quality levels of such information. Another example is the introduction of Machine Wound Spiral Lining item. Earlier such item was not attempted on regular basis, but with advent of rehabilitation projects several utility owners are now using this technique the item is becoming a necessity rather than an experimental activity. To meet the requirement a new set of rates are proposed in the eleventh schedule. Attempt is to bring the standardization to the maximum possible levels.

There is, however, a word of caution for the use of the schedule. All the rates proposed in the schedule are suggestive only and are worked out on a particular set of end conditions like mobilization and demobilization, shapes and lengths of pipelines and their present situations for rehabilitation and like wise as stipulated in the schedule. Any change in such conditions would lead to change in the unit rate. For an example while rehabilitating a pipeline by slip lining method straight lengths play a vital role. Longer the straight length lesser the insertion pits, leading to lower pit costs, shorter the straight lengths more insertion pits leading to a higher project cost.

Machine Wound Spiral Lining rates for any specific project, therefore, will depend on the shape and profile of the host pipe. The rates presented in the schedule are the common profile with straight lengths. They must be used more of a guiding values rather than the exact project costs. For broader estimates these

rates would hold good but for finer evaluations or execution costing a detailed rate analysis must be conducted. Another factor impacting the rate analysis is the quantum of works. It would be appropriate to mention that for larger projects, Mobilization & De-mobilization cost components shall have a lesser impact on unit rates compared to shorter lengths or smaller projects. However for works to be executed in foul conditions like in running or choked sewers, drains, filthy water logged area, corrosive environment and restricted areas like defence territories, fire hazard areas like refineries etc. would require higher costs.

With several subsurface construction missions on the ascent, we hope, this schedule of rates will go a long way in advancing the standardization of Trenchless Technology in the nation building and produce substantial savings for stakeholders. IndSTT will be releasing the next edition in 2019 and invites the readers to provide their feedback and comments. Stakeholders are also invited to propose more techniques for evaluation & inclusion in the next schedules in due course.

With warmest regards,



Prof. (Dr.) Niranjan Swarup

Director General

Indian Society for Trenchless Technology