

Fig. 8: The results of test when $H/D = 5$

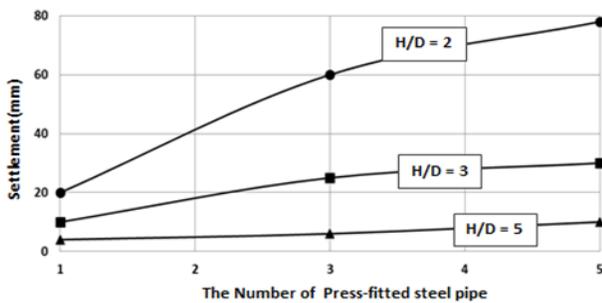


Fig. 9: Settlement according to the number of steel pipes

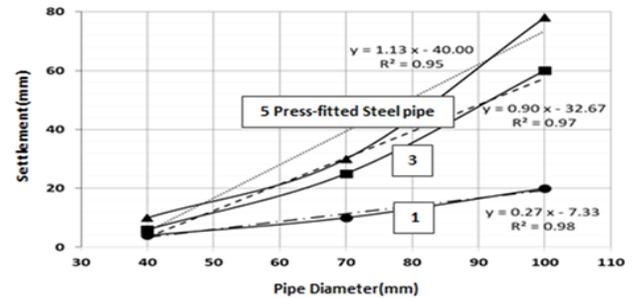


Fig. 10: Settlement according to pipe diameter

4. Conclusion

Underground structure construction using the non-open cut method under railway or highway has recently expanded in popularity. However, unsafe situations have also increased as non-open cut construction has become more popular.

The calibration chamber tests were conducted to study ground deformation characteristics according to the complex behavior of press-fitted steel pipes used for non-open cut method. The results from tests showed that as the number of steel pipe indentations increases, the increase in settlement decreases. The lower the H/D ratio, the more the number of press-fitted steel pipes and settlements were proportional. The higher the H/D ratio, the less the correlation between the number of press-fitted steel pipes and settlements. Also, as the number of press-fitted steel pipes increases, settlements occurred in proportion to the increase of the steel pipe diameter, and the smaller the number of press-fitted steel pipes, the less the correlation between the steel pipe diameter and settlements.

Therefore, the settlement due to the complex behavior of press-fitted steel pipes should be considered when using non-open cut method.

5. References

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