

Thet Zaw Win 2011: Study on the Spiral Curve in Highways and Interchange Ramps. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Chavalek Vanichavetin, Ph.D. 71 pages.

Applying corresponding spiral curve in the horizontal alignment of highways not only creates aesthetic impression but also conforms to a natural path for the driver and makes minimum encroachment into the adjoining lane, provides a rational superelevation transition, accomplishes uniformity in speed and finally results in better and safer geometric design than using the normal circular curve.

The primary objective of this research is to recommend the appropriate guideline for spiral curve loop ramp design to be adopted in Myanmar. To realize the objective, the guidelines of AASHTO (2001), Iowa Department of Transportation and Texas Department of Transportation were reviewed and compared.

The secondary objective is to speed up the usual complicated way of working out spiral curve by using the Excel spreadsheet which was developed and shown to simplify the calculation procedure. This research was intended to be widely used in agencies in Myanmar which have been reluctant to use spiral curve because of the cost of the design software. Another purpose of using Excel in this research was, since Excel is not an expensive software and is also user-friendly and easy to learn, anyone who would like to adopt this design spreadsheet can easily modify it to the expected status when it is needed so that it can be used nationwide in the future. To satisfy this aim, the design spreadsheet of spiral curve was developed including related parameters, superelevation and widening using Microsoft Excel with the data from the existing intersection in Myanmar as a case study.

The comparison of the results of this study with the guidelines indicated that most of the AASHTO (2001) guidelines can be applied in the loop ramp design and it is recommended to be adopted as a future practice for loop ramp design in Myanmar. Also, the development outcome was the proposed loop ramp design with the easy-to-use, low cost, time saving Excel design spreadsheet that could be used in the design practice of the horizontal equal transition spiral curve.

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