CORS - A Step Towards Modernizing GNSS Survey in Mauritius

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SUMMARY

In today's world, GNSS equipment are improving the accuracy of three-dimensional data collection, but the equipment mostly used are expensive, time consuming, and often not user friendly. For these reasons, a new survey technique has been created; the Continuously Operating Reference Station.

The objective of this project is to compare accuracy, time expenditure and cost, including labour, equipment and travel costs, of the conventional GNSS Trimble R12 equipment and the CORS, from Sokkia. Comparing accuracy, cost and time expenditure will provide information on whether the CORS is a suitable replacement for the conventional GNSS survey technique. To investigate this task, a control station, labeled S2, was established in Telfair. The said control station was ideally located between two ground control points established by the Ministry of Housing and Land Use Planning, namely GPS 125, St. Pierre and GPS 127, Ebene. Using the Trimble R12 equipment, the control station, S2, was surveyed by making use of the static survey facility. Both ground control points were used in the static survey. Then, the same control station was surveyed using the CORS. GPS 125, St. Pierre and GPS 127, Ebene were read and used for localization purposes.

According to the results obtained, the divergence between final coordinates obtained after post processing the static survey in the Trimble Business Data Centre and the coordinates obtained after carrying out the localization process from the data collected using the CORS, is only of 18mm. The resultant of 18mm is calculated from 2mm divergence in Easting readings and 18mm Northing reading. As for the elevation discrepancy, only 7mm was observed between the two systems.

Concerning the time expenditure, it was found that the Trimble R12 consumed more time than the CORS. The Trimble R12 consumed 145 minutes whereas the CORS consumed only 51 minutes to

end up with the final coordinates.

With regards to the cost, it was deduced that the Trimble R12 costs Rs 3,128,241.50 compared to Rs 345,000 for the CORS. The CORS costs around 9 times less than a conventional GNSS equipment.