

Surveying Engineering Department Ferris State University

SURE 110 – Fundamentals of Surveying
Spring 2006/07

Lab #3

PURPOSE: The purpose of this lab is to acquaint the student to the field and office operations involved in profile leveling. The student will not only perform the field observations, but will also draw the profile of the surveyed line.

EQUIPMENT: Automatic level, tripod, level rod, tape.

PROCEDURE:

1. The profile is to commence at the Southwest corner of the intersection of Ives and Oak and continue south along Ives until the driveway entrance to the HPE Building is reached.
2. Use the hydrant at the Northwest corner of Ives and Oak as the benchmark. Assume an elevation of 100.00'. Make sure to describe the benchmark in the level notes
3. Choose an appropriate line, for example the back of walk or top of curve, and observe the level rod at 50' intervals along the line. Located near the front of the sidewalk are stations that are painted on the concrete. Use this same stationing. When a point is not marked, measure the distance to where the marking should be and observe the rod at that point.
4. Observe the level rod at the intersection of your line with the centerline and edges of all driveways and roads. It will be necessary to obtain the stationing for those points as well. For this exercise, those stations need only be determined to the nearest foot. Describe these intermediate stations in your field notes.
5. Make sure that you carry differential levels along with the profile and be careful to observe the differential leveling observations are read to the appropriate degree of accuracy, i.e., readings to the nearest 0.01'. Profiles need only be recorded to the nearest 0.1'.
6. At the terminus of the profile, continue the differential leveling procedure back to the benchmark.
7. Reduce the field notes. Correct for any error. Construct a profile using a horizontal scale of 1"=100' and a vertical scale of 1"=10'. Also include on the profile a second profile in red at a scale of 1"=100'. Use a profile sheet for the drawing. Submit a standard

laboratory report.

8. This lab will take more than 1 class period to complete. When stopping in the middle, find an appropriate temporary bench mark that you can easily find and come back to in the next lab. Describe that temporary bench mark in the level notes. When you run the differential levels back to the original benchmark, make sure that you use the temporary bench marks as turning points.

- QUESTIONS:**
1. What is a profile?
 2. What is a cross section?
 3. Is there any check that can be employed to test and see if all of the math is correct throughout the profile? If yes, what is the check?