# FINAL PROJECT: TOPOGRAPHIC SURVEY – DATA COLLECTION & MAP REQUIREMENTS

**Objectives**

* 1. Perform a topographic survey of the area surrounding the traverse measured during Lab #7.
  2. Use a robotic total station to measure horizontal angles, horizontal distances, and height differences.
  3. Apply the concepts and methods of topographic mapping.
  4. Practice the skills used in topographic mapping.
  5. Construct field notes appropriate to topographic mapping.
  6. Produce a topographic map of the area.

**PART 1 – TOPOGRAPHIC SURVEY DATA COLLECTION**

**Instructions**

* 1. Prepare your field book for recording data as shown in the following example.
  2. Instrument set-up:
     1. Set up the instrument on one of the control points.
     2. Write the following information in your field book (see field book example):
        + Instrument station point number
        + Backsight point number (any control point in the traverse may be backsighted)
        + Instrument height (HI)
        + Prism height (HR)
     3. Enter the appropriate information into the total station.
        + Temperature
        + Pressure
        + Instrument Height\*
        + Prism Height\*

**\*Note: For this lab the instrument height and prism height will be entered into the total station and recorded in the field book as measured.**

* + 1. Backsight the chosen control point by sighting the point.
    2. Use at least two separate instrument stations during the course of your data collection.

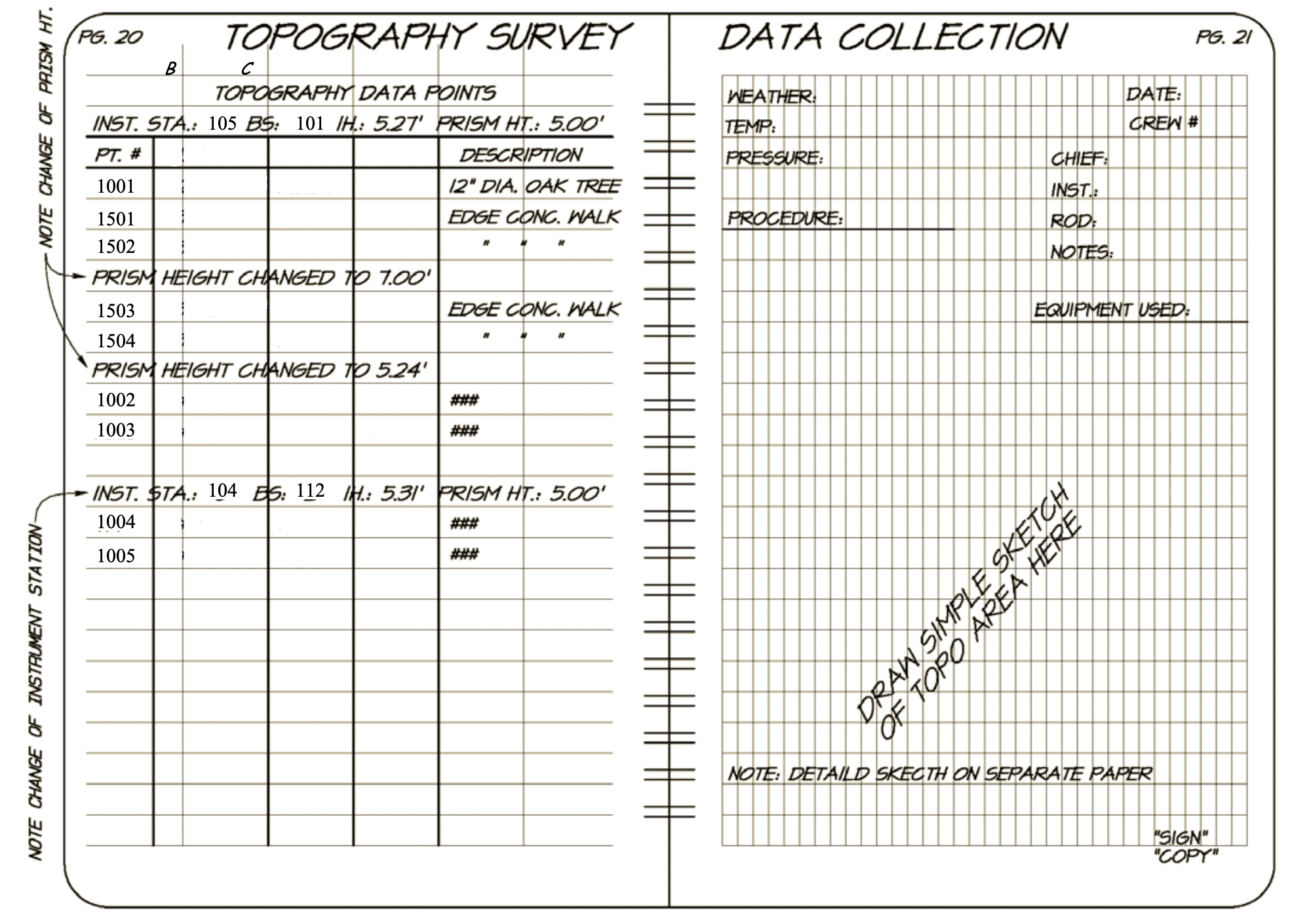
**\*\*IMPORTANT!!! Be sure to write the instrument height, prism height, instrument station point # and backsight point # in your field book for every new setup, even if you set up on the same control point\*\***

* 1. Data collection:
     1. The rod person sets the prism up on the point or feature to be measured
     2. The instrument person makes a measurement to the prism and the following information is recorded in the field book:
        + Point I.D. Note: Begin point number with Section (i.e. Section 6 starts at 6000)
        + Point description
  2. Make a detailed sketch of the area to be mapped and label the point number on the sketch for each cultural measurement taken or, you may use the aerial photo provided.
  3. See [**Appendix C**](#_APPENDIX_C:__1) **and** [**Appendix**](#_APPENDIX_G:_) **F** for instrument set-up instructions.

**Key Points to Remember**

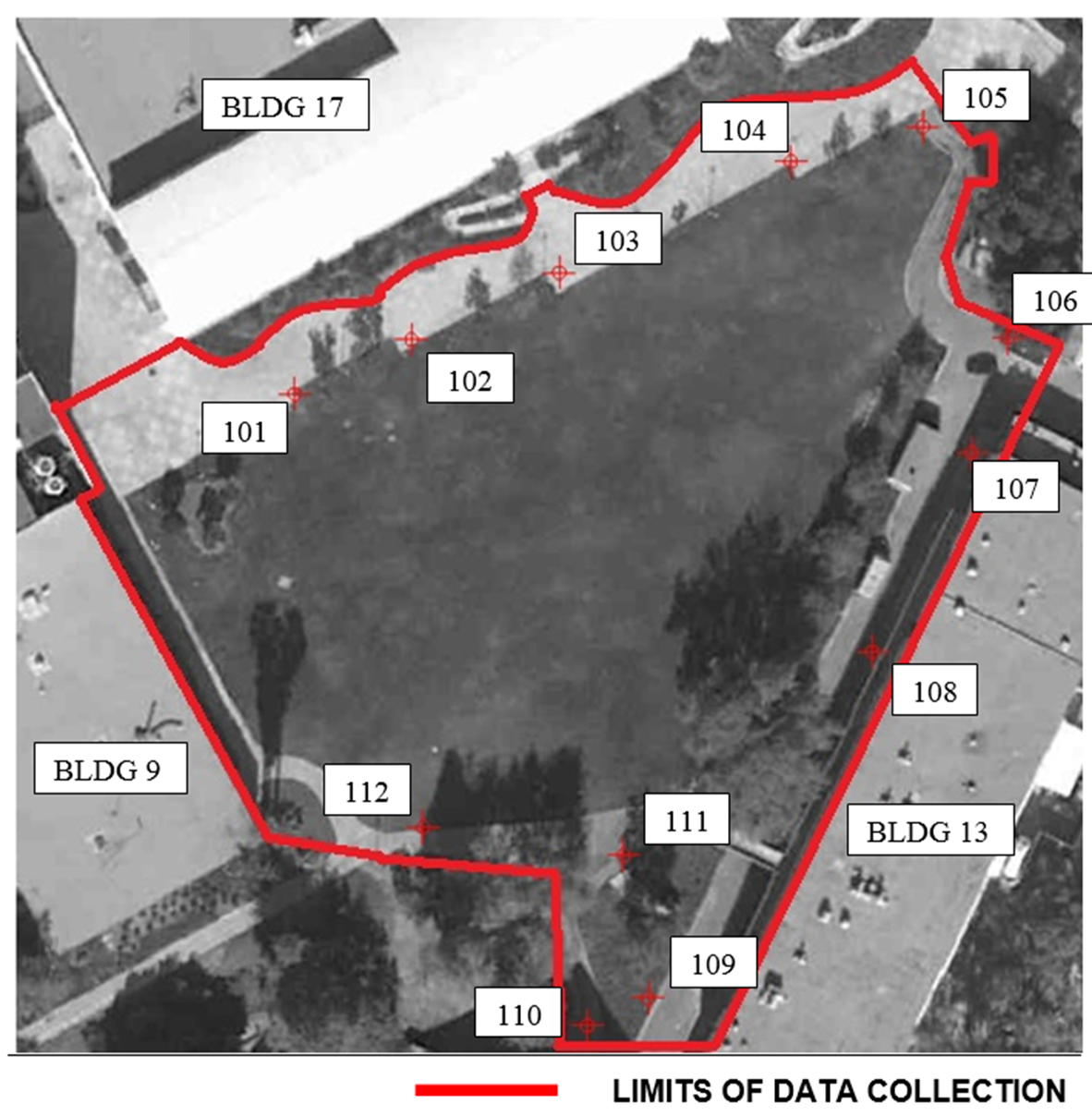
* **Any control point can be used as your instrument station or backsight as long as the coordinates & elevation are known.**
* **The prism can be raised if necessary, to make a particular measurement as long as the new rod height is changed in the instrument and recorded in the field book for that measurement.**
* **Be sure to write the instrument height, prism height, instrument station point # and backsight point # in your field book for every new setup, even if you set up on the same control point.**
* **If using abbreviations, keep record of their definitions.**

**Field Book Example**

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**\*\*Use a separate 8.5” X 11” paper to draw a detail sketch of the topographic features (Curbs (top of curb at curb face), walks, trees, utilities (water valves, meter vaults, fire hydrants, etc.) and structures. This is required because it will be helpful for drafting existing cultural after the contour map is created\*\***

**Topographic Data Collection Mapping Limits**



**PART 2 – TOPOGRAPHIC SURVEY MAP REQUIREMENTS**

* 1. Scale: The map shall be drawn to scale (use a standard engineers scale, i.e. 1” = 30’)
  2. Topographical features to be measured:
     + - Curbs (top of curb at curb face)
       - Walks
       - Trees
       - Utilities (water valves, meter vaults, fire hydrants, etc.)
       - Structures
       - Ground shots (adequate to define 1’ contours)
  3. Map shall include the following:
     1. Title Block: located at the lower right corner of the map. Title block shall include the following information (You can choose to create your own title block or use the instructor provided title block):
        + Map Title
        + Location of survey
        + Date of survey
        + Survey by: *Crew number & members*
        + Class name, semester & year
        + Sheet # of # sheets
     2. Legend
     3. North arrow
     4. Map scale (written and graphical)
     5. Benchmark & Temporary Benchmark Information (written descriptions)
     6. Topography features labeled (i.e. walks, tree sizes, utilities, etc.)
     7. Key elevations labeled (walks, top of curbs, ground shots, etc.)
     8. Symbols (for trees, utilities, etc.)
     9. 1 foot contours with labels
     10. Traverse measured in previous labs (**ask your instructor if required**)
         + Label points with point number, adjusted coordinates, elevation & description
         + Label lines with adjusted bearings and distances

**\*\*For Field Data Entry & Map Preparation Instructions, see the following video available on** [**LinkedIn**](http://www.lynda.com) **Learning titled "AutoCAD Civil 3D: Topographic and Boundary Survey". This video will provide the basic steps needed to process the data for your final project. All students have access to** [**LinkedIn**](http://www.lynda.com) **Learning through MyCPP.**

**The sections of the course that you will need to watch are titled: Introduction, Getting Started and Creating TIN Surfaces.**