**Indiana University**
**GIS AutoCAD Drawing Procedure**

**Introduction**

**AutoCAD Data Collection:**

A. All AutoCAD data must adhere to the requirements and standards listed in this document.

B. The contractor shall consult with the Project or Team Leader to ensure the data collected meets the specifications of Indiana University. The AutoCAD drawing shall be delivered on CD-ROM or DVD to Project or Team Leader for Quality Assurance (QA), and the University will have two weeks to QA the data. The contractor will have two weeks to make any corrections and produce the final deliverable.

C. The contractor shall provide a document (in Excel format) that lists all layers developed or updated for the task. All data collection should conform to Field Collection grade digitizing/conversion collection procedures as specified by the task or project as a whole. See below.

**Projected Coordinate System**

All datasets will be delivered in the proper State Plane for the respective campus. The west zone will be used for Bloomington (IUB) and Gary (IUN). The east zone will be used for Richmond (IUE), Kokomo (IUK), South Bend (IUSB), New Albany (IUSE), Columbus (IUPUC), and Indianapolis (IUPUI). A minimum of 3 temporary benchmarks are required for all campuses except IUB.

Use of the established IU Control Network is required for IUB. The IU Control Network is referenced to Indiana State Plane Coordinate System (NAD 83) (2011) – feet units for Bloomington (IUB) campus. The IU Control Network reference drawing with relevant data is available upon request at the VPCPF Consultants & Contractors page for the (IUB) campus. A minimum of 3 IU control points are required to be referenced for each project or survey on IUB campus. State elevation datum on each drawing, using NAV88 (US survey feet) using Geoid 12A and reference location ID of each control point used, if applicable.

**Data Quality**

Positional Accuracy – accuracy assessment of the data  
Horizontal Accuracy Report  
Vertical Accuracy Report (if applicable)  
Equipment Information – list of all and a short citation of each  
Publication Date  
Spatial Reference  
Horizontal Coordinate System  
Vertical Coordinate System (if applicable) – vertical datum information  
Datum Name  
Distance Units

**Data Integrity**

Data accuracy standards for all deliverables will be in accordance with those set forth in the section entitled ‘Data Collection Procedures’. All deliverables should include an accuracy report. The contractor shall employ appropriate QA/QC standards to ensure that data is topologically correct, accurate and complete (to include):

- No erroneous overshoots, undershoots, dangles or intersections in the line work.
Point and line features will be snapped together where appropriate to support networks. For example; do not break linear features for labeling or aesthetic purposes.

- Line features should be continuous. Point features should be digitized as points, using attribute block symbols with insertion points in the center of the block/feature.
- No sliver polygons.
- Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer.
- Geometric network connectivity must be maintained for utility networks.

**Data Collection Procedures**

All data collection must include an accuracy statement at the 90% or higher confidence interval. Accuracy statements will include the method of determination, preferably from a recognized standard such as the National Standard for Spatial Data Accuracy (NSSDA).

**Field Collection**

When field data collection is stipulated in the contract, the contractor shall utilize conventional or other methods to gain the highest accuracies possible, such as a Total Station or Global Positioning System (GPS) in accordance with the applicable Geospatial Positioning Accuracy Standards published by the Federal Geographic Data Committee (FGDC).

One foot contour intervals, with appropriate spot elevations on paving or other hard surfaces such as concrete pads, building corners, finished floor elevations, steps top and bottom of walls and curbs shall be to the nearest .01 foot.

Existing site features such as walls, fences, asphalt pavement, gravel, sign, and outcroppings, trees indicating type, size, and canopy, shrubs and other significant vegetation shall be to the nearest 0.10 foot.

Mean elevation of water in any excavation, well, or nearby body of water.

Location of flood plain and flood level of streams or adjacent bodies of water.

GPS data giving the location of utility lines will be captured at a minimum of every 50 feet of straight line, and at each turn, bend or change in elevation of the line, and will be processed as a line feature. GPS data on the location of utility features and points should be captured using the centroid of the feature, unless signal obstruction or access prohibits. If unable to gain points, they will be collected at a uniform distance and direction from the centroid and the offset captured in the metadata for that feature. Polygon features will be collected at every vertex of the feature, and processed as a polygon.

All survey grade data collected shall be provided to Indiana University in a digital format, with an attached Survey Report identifying the survey method used, equipment list, calibration documentation, survey layout, description of control points, control diagrams, quality control report and field survey data.

Use of Indiana University established control points are required. A digital Survey Control Database will be produced for all survey control points established under this contract, including the horizontal and vertical order and coordinate location of each point.

Where digitizing/conversion is stipulated in the contract, the contractor shall digitize/convert features from designated sources (including remotely sensed data, hardcopy scans and vector data) to support various GIS applications.

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