

REQUIREMENTS FOR SURVEY INFORMATION

General Requirements

1. All survey work performed on or for The Ohio State University shall be in Ohio State Plane South, NAD83(86), NAVD88 Datum and submitted to the Facilities Operations and Development Survey Group (Campus Surveyor)
2. Cadastral (survey) entities.
 - a. Property Lines: Locate and dimension all property lines and show bearings of same. Include parcel Id's and ownership of same.
 - b. Easements: Clearly and fully describe and delineate all rights, restrictions, easement locations, etc. on or adjacent to the proposed site.
 - c. Right-of-Ways: Clearly and fully describe and delineate all right-of-ways on or adjacent to the proposed site.
3. Utilities: Show and delineate all above and below ground utility routes, and note ownership of same when not owned and maintained by The Ohio State University. Show locations of all utility features such as: utility poles, hydrants, valves, sewer structures, manholes, junction/pull boxes, transformers, switch gear, control boxes, pedestals, meters, regulators, irrigation features, etc.
Items with special requirements:
 - a. Pipes: (i.e. water, chilled water, etc.) Indicate size and where applicable denote invert elevation, direction of flow and pressure, and top of pipe elevation (if accessible).
 - b. Manholes: Provide the location and elevation of the center of the manhole lid, and elevation of the manhole rim. Provide an elevation at the bottom of the structure plus invert elevations and directions for all pipes entering/exiting the manhole. Provide the structures internal dimensions relative to the access hole, construction material and an estimate of the current condition.
 - c. Electric and Data Communications: Show the size of the duct bank and the conduit configuration. Indicate by means of a section cut or detail which conduits are in use and which are spares, and provide duct bank/conduit elevation (if accessible).
 - d. Tunnels: Indicate internal dimensions, construction material and type. Provide locations of all vents, pipe drops and access points.
4. Topography:
 - a. Bench Marks: Permanent bench marks shall be provided on adjacent structures for future use.
 - b. Spot Grades: Spots grades shall be furnished, as needed, to supplement elevations recorded on topographic features to provide a density of points that are no greater than twenty-five (25) feet apart.
 - c. Contours: A contour map is to be provided at one (1) foot contour intervals with an index contour interval of five (5) feet, unless otherwise noted. All breaks and obstructions shall be provided and accounted for within the contour map.
 - d. Digital Elevation Model: A DEM of points used to create the contour map shall be provided in AutoCAD format. Points shall be grouped onto individual layers according to type.

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5. Topographic features: Show and delineate all natural and man-made features, on and adjacent to the proposed site, as to provide the most accurate depiction of the current site conditions.
Items with special requirements:
 - a. Buildings: Show all building corners and wall planes where they intersect the ground (foot print), and indicate all overhangs and cantilevers (roof print).
 - b. Hardscapes: Show and indicate the extents and material types of all hard surfaces to include; roads, drives, curbs, walls, walks, etc.
 - c. Signage: Indication location, type and verbiage of all signage on or adjacent to the proposed site.
 - d. Paint Markings: show and indicate the location and extents of all paint markings on or adjacent to the proposed site to include; road striping, cross-walks, parking lot lines, etc.
 - e. Vegetation: Show and depict through symbols all trees, shrubs, planting beds, mulch beds and lawn areas. Where trees or shrubs are planted in mass, delineate the extents of the vegetation and label the area as appropriate.
6. Drafting: Electronic drawings shall be prepared and provided at a scale of 1:1 and submitted in AutoCAD format, to include any and all xref's, plot styles and fonts. A hard copy print/plot shall accompany the electronic version and should be provided at a scale of 1" = 40'.
 - a. Electronic and hardcopy drawings should include: a north arrow, title of drawing, symbol legend, name and address of Owner and Surveyor, date, revision designation, scale of drawing and legal title of property.
7. Seal: Affix seal of the Registered Professional Surveyor responsible, and provide signature on all hardcopy plots.

Coordination of Underground Utilities Recording during Construction:

1. Prior to the installation, uncovering or work to any utility (new or existing), the contractor/construction management liaison shall notify the Campus Surveyor of the proposed work, to include type of utility and scope. Provide notification within one (1) business day prior to excavation.
2. After notification, the contractor/construction management liaison shall provide the Campus Surveyor access to the utility and ensure that the appropriate data collection (survey) has been completed prior to covering the utility. Failure to provide for the appropriate data collection (survey) the contractor may be responsible for the uncovering/excavation of the utility so that its proper location and attributes can be recorded by the Campus Surveyor or his/her representative. Documentation by the contractor/construction management liaison in-lieu of the Campus Surveyor will not be accepted, unless information is provided as indicated below.

Use of Consultants/Private Survey Companies to Perform Underground Utilities Recording

Other than contacting the Campus Surveyor to record the underground utilities installed or encountered during the construction as described as above, projects with significant impacts to university owned and operated utilities; shall include funding for Consultants/Private Survey Companies to perform construction survey work. The scope of the survey work shall be approved by the University Engineer prior to completion of schematic design. All work will be completed within the guidelines identified below.

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1. All survey work (utility, topographic, etc.) performed by consultants shall meet all general requirements, listed above. However, due to the unique nature of new utilities the following shall also be required:
 - a. Pipes & Conduits: Shots shall be taken along the centerline at the top of the pipe/conduit with the size and material type noted. Collect points where there is a vertical and/or horizontal change in grade/direction, change in size, configuration or material. Points should also be collected at all valves and fittings. Shots shall be taken at no less than forty (40) feet apart on long uninterrupted runs.
 - b. Sewer Pipes: Sewer pipes are treated like pipes & conduits, except inverts are taken inside the structures.
 - c. Vaults/Structures: The structure rim and floor elevations are shot and the pipe inverts are then referenced to the rim. All utility vaults/structures are shot prior to backfill, to include the top and outermost edges/corners.
2. Completed surveys shall be submitted to the Facilities Operations and Development Survey group (Campus Surveyor) as-well-as the appropriate Project Manager or requesting Architect/Engineer (A/E) firm for review. Deliverables shall include an electronic drawing in AutoCAD format, including a layering standard approved by the Campus Surveyor, as well as a hardcopy plot/print. Survey deliverables shall indicate all control points and bench marks used with their corresponding N,E,Z coordinates. An ASCII text file of the collected points shall be provided, as-well-as any field notes (to include sketches and Station Recovery Notes), along with a copy/description of any surveying codes that have not been translated from their original raw data format.
3. Surveys performed by consultants/private survey companies will carry the same notification process as described under "Coordination of Underground Utilities Recording during Construction", listed above. The Campus Surveyor shall be given the opportunity to inspect all new and existing facilities and perform additional data collection at his/her discretion.
4. S.U.E – Any buried utility/facility on the Ohio State Campus that is to be exposed through non-invasive (or any other means) will carry the same notification process as described under "Coordination of Underground Utilities Recording during Construction", listed above.
5. Data collection performed by consultants/private survey companies, without properly notifying the Campus Surveyor, may not be accepted and may result in re-exposing the utility/facility.

END OF APPENDIX E