

SURVEY REQUIREMENTS

Land (Boundary) Survey Requirements:

1. Boundary lines of all parcels comprising site giving length and bearing on each straight line: interior angles: radius, point of tangency, and length of curved lines, set iron pin (monument) at property corners where none exist: drive pin 18" into ground, mark with wood stake: state on drawings whether corners were found or set and describe each. **OR Surveyor shall request and include in their cost a Title Search which shall include but not limited to easements, parcel descriptions, existing legal description, rights-of-way, etc. Surveyor shall provide to CMU copies of all information obtained through the Title Search.**
2. Legal description, including measurements.
3. Identify jurisdiction and width of adjoining street and highways, width and how paved, identify landmarks.
4. Plotted location of structures on the property and on adjacent property within survey limits. Dimension perimeters in feet and decimal to the nearest .05 foot (as measured at grade level. State character and number of stories.
5. Fences and walls: describe, identify party walls and locate with respect to property lines.
6. Recorded or otherwise known easements and rights-of-way: state owner of right.
7. Possibilities of prescriptive rights-of-way and nature of each.

Topographical Survey Requirements: All lines of levels shall be checked by separate check level lines or on previous turning points or benchmarks.

8. Minimum of four permanent benchmarks shall be provided on the project site. Provide table of Benchmarks and Control Points with Northing / easting / Elevation / Description.
9. Contours at 1 foot intervals: error shall not exceed one-half contour intervals.
10. Spot elevations shall extend a minimum of 25 feet beyond the identified Survey Limits.
11. Spot elevations at each intersection of a 25 foot square grid covering the property.
12. Spot elevations at street intersections and at 25 feet on center on curb, sidewalks, and edge of paving including far side of paving. If elevations vary from established grades, state established grades also.
13. Plotted location of structure, man-made and natural features; floor elevations and elevations at each entrance of buildings on property. Parking areas and, if striped, the striping and the type (e.g. handicapped, motorcycle, regular, etc.) and improvements above and below ground.

14. Location, size, depth and pressure of water and gas mains, central steam, and other utilities serving or on the property.
15. Location of fire hydrants available to property and size of main serving each.
16. Location of electric and telephone services and characteristics of service available.
17. Location, size, depth and direction of flow of sanitary sewers, combination sewers, storm drains and culverts serving or on property; location of catch basins and manholes and inverts of pipe at each. If an off-set exists within a structure the surveyor shall accurately depict the off-set on their drawing and CAD file. Additionally the survey shall clearly identify and callout such off-sets to bring it to the attention of the engineers/designers.
18. Surveyor shall extend utility data collection to include the next downstream (and previous upstream) structure beyond the Survey Limits.
19. Name of operating authority of each utility. The surveyor shall secure record drawings from appropriate municipal agencies and local utility companies and show the locations of utilities on the drawing. All utilities reported on the drawing from existing plans are to be field verified (existence, location, and depth) or noted otherwise on the plans.
20. Location of test borings and the elevation of the tops of holes.
21. Trees of 4" and over (caliper 3' above ground) locate within 1' tolerance and give species.
22. Locate memorial trees within 1' tolerance, identify size (caliper 3' above ground), identify species, and provide the information on the memorial plaque. All memorial trees shall be located regardless of size.
23. Floor elevations of buildings within survey limits.
24. Because of the timing of the survey the Surveyor shall be required to return to the site after the snow has melted to obtain missing topographic information and update the drawing. The Surveyor shall also be required to return to the site to locate soil borings with ground elevation and update the drawing (s). These costs shall be included in the base price.

Drawing requirements:

25. Sheet size 24" x 36"
26. Drawing Scale 1" = 40'
27. Include legend of symbols and abbreviations used on the drawing
28. Locate north at top of sheet
29. Show North arrow and graphic scale
30. Horizontal and Vertical Control datum shall be as provided by Central Michigan University **OR Tie all elevations to a bench mark on USGS datum. If USGS datum is unavailable, a local datum may be established.**
31. Spot elevations on hard surfaces to nearest 0.05' or 1/2"
28. Elevations to nearest 0.10' or 1"

33. Contours shall accurately reflect the site conditions, include labels, and exist as **3D Polylines** with Z-coordinates compatible with Civil 3D 2009 design software. AEC-Contours will NOT be accepted.
34. Provide within the drawing on separate layers, the TIN Surface (i.e. the triangles), Boundary Lines, Break Lines / Fault Lines / Feature Lines, Points and Point Groups. The TIN shall incorporate such features as curbing, ramps, barrier-free curb ramps, stairs, steps, raised pads, walls, etc. It is the surveyor's responsibility to acquire enough spot elevations to accurately reflect such items in the TIN provided and to coordinate the level of TIN accuracy with CMU.
35. Buildings shall be labeled with exterior dimensions (as measured at ground level. Include gross square foot area of first floor.
36. Substantial, visible improvements (addition to buildings) such as billboards, signs, swimming pools, etc.
37. Survey shall be completed under the assumption that CMU will use the electronic files for use in design and preparation of construction documents. Survey consultant is responsible for Quality Assurance and Quality control of all electronic files to ensure accuracy of drawings prior to distributing files for our use in design.
38. The surveyor is responsible for providing an accurate and complete TIN Surface for the area being surveyed. If the TIN Surface provided to CMU is found to be inaccurate, incomplete, or unusable, the surveyor shall correct the surface until it is accurate, complete, and usable at no additional cost to CMU, unless a level of TIN accuracy was previously agreed upon prior to the field work.
39. Furnish one reproducible transparency and three prints of each drawing. The Surveyor shall sign and seal each drawing and shall state that to the best of the Surveyor's knowledge, information and belief, all information thereon is true and accurately shown.