iCON Total Station & GPS Project Setup Notes

Control / Field setup / Files / Coordinate verification

Use these guidelines when preparing a project for layout with a Leica iCON total station or GPS/GNSS unit. Confirm project requirements and usable control before mobilizing.

01 PROJECT CONTROL

Control establishes the relationship between the instrument and the project. Confirm that points are identifiable, stable, accessible, and supplied in the intended project coordinate system.

Total Station

Control points should be available throughout the work area so the operator can set up the total station and maintain line of sight to both the control points and the layout area.

On larger work areas, having additional control points available gives the operator more flexibility when moving between setup locations. On a rectangular deck, control near each corner can be a practical starting point, with additional points helpful on longer decks.

GPS / GNSS

A site **localization** relates GNSS measurements to the project coordinate system. Use stable, occupiable ground points (such as pins or scribed marks) that the rover can measure directly; wall-mounted sticker targets and prisms are not suitable for this workflow.

Where practical, distribute control around the work area rather than clustering it in one location. Include extra points for redundancy, maintain clear sky visibility, and avoid nearby structures that can obstruct or reflect satellite signals. Review localization results and perform an independent check before layout.

> **Working beyond the control envelope:** Layout outside the area bounded by localization points needs additional verification. Use nearby control or independent checks when the required tolerance warrants it.

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GPS above grade: GNSS requires adequate sky visibility and is not restricted to ground-level work. Suitability depends on horizontal/vertical accuracy requirements, project control, and the environment. For obstructed or elevated work, verify performance or use a total station.

02 PROJECT FILES

The iCON tablet supports the same three core file categories for either instrument. Provide coordinated, current versions of each applicable file.

1 Control Points

.CSV or .TXT

Typically provided by the surveyor. Please provide the project control points in a .CSV or .TXT file.

2 Drawings / Linework

.DWG or .DXF

Include the project grid and only the linework needed for field layout (for example, structural, piping, or HVAC references). Remove unnecessary hatches, annotations, and details. Large or complex files can slow the tablet; the original ~10,000 KB guideline is a practical warning, not a universal file-size limit. DWG files may convert to DXF on import.

3 Layout Points

.CSV or .TXT

Use for items with defined point locations, such as anchor bolts. If a point file is unavailable, coordinate with the layout team; some work can be performed directly from appropriate linework.

03 COORDINATE SYSTEMS

Survey, GC, and trade/BIM files may use different coordinate systems. Before layout, confirm that control points, linework, and layout points overlay correctly and use the intended units, horizontal orientation, and elevations.

If the files do not align, stop and have the responsible survey/BIM team resolve the discrepancy before field layout.

> **Before starting layout:** Back-check a known point or grid location to confirm the control aligns with the physical building.