
Methods for Reviewing Digital Deliverables Content

Design Manual
Chapter 20
Project Automation
Originally Issued: 09-07-17

This section refers to methods that may be used for reviewing each of the engineering content review criteria called out in [20B-72](#). General steps are outlined below and more detailed instructions are given in the corresponding videos. Review methods involve the use of the following software:

- MicroStation & Geopak SS4 (Native), and
- Trimble Business Center – Heavy Construction Edition (TBC-HCE).

Geometric File Review

Visual Methods

1. Import plan PDFs into TBC-HCE and clip, scale, and georeference (requires software license).
2. Import Geometry from LandXML file into TBC-HCE.
3. Visually check for differences from plan sheets and geometry.
 - Record locations of discrepancies and review in native software to determine source of discrepancy.

Visually comparing geometry & Plan PDFs in TBC: [VisualGeometryReview](#)

Numerical Review Methods

1. In native software run a horizontal alignment report on the geometry.
2. In TBC-HCE select the alignment to check and run an Alignment Geometry Report.
3. Compare two reports for differences.
 - Check Northings/Eastings/Stationing of key points.
 - Check VPI elevations and grades in reports for discrepancies.

Importing & reviewing geometry in Native software: [ImportXML](#)

Importing & reviewing geometry in TBC-HCE: [ReportGeometryReview](#)

Terrain Model File Review

Visual Review Methods

1. Import LandXML surface into MicroStation ([ImportXMLTerrain](#)).
2. Visualize terrain as contours with the appropriate major and minor intervals.
3. Reference in geometry DGN file for station/offset information.
4. Visually inspect terrain model for abnormalities and record location(s) to check in XS view.
 - a. Create XS of proposed terrain model against the proposed XS from plan sheets.

- b. Use level overrides to make terrain model more visual.
- c. Compare plan set XS against the terrain model.

Visually reviewing terrain models in native software: [TerrainReview](#)

Numerical Review Methods

1. Reference appropriate files into MicroStation to review surfaces in cross section views.
2. Visually analyze differences between XS elements & proposed TRN terrain model every 50 feet.
3. Use temporary dimension lines to aide in quick checks.
 - Slope values.
 - Distances between points.
4. Every 1000 feet check elevations of TRN by snapping and checking shown elevation against mathematical number based on profile & template.

Reviewing terrain by XS in native software: [XsReview](#)

1. Import into TBC-HCE:
 - Geometry
 - Terrain models (LandXML format) to be reviewed
2. Run Station-Elev-Offset report (license required) along centerline of terrain model at prescribed interval.
3. Open geometry DGN in MicroStation.
 - Run horizontal geometry report on alignment.
4. Compare results of both reports in Excel, adjusting as needed.

Comparing terrain model elevations to Profile elevation using TBC and native software:
[SurfaceMathReview](#)

Three Dimensional CADD File Review

Visual Review Methods

1. Open 3D breakline file.
2. Reference in geometry file & corresponding terrain files.
3. Apply overrides to terrain model and visualize as breaklines, triangles, or contours.
4. Visually check for deviations in the break lines in reviewed CADD file and the corresponding terrain model.

Numerical Review Methods

1. Open 3D breakline file.
2. Reference in geometry file.
3. Snap to review elements and record Northing, Easting, and elevation at required locations.
4. Calculate Northing, Easting, and elevation of spot locations based on alignment data (H&V).
5. Compare results.

Reviewing Break lines in Native software: [BreaklineReview](#)

Chronology of Changes to Design Manual Section:

020B-073 Methods for Reviewing Digital Deliverables Content

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