

20B-73

Methods for Reviewing Digital Deliverables Content Design Manual Chapter 20 Project Automation

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This section refers to methods that may be used for reviewing each of the engineering content review criteria called out in <u>20B-72</u>. 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).
- 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.
- 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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NEW New.