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Chapter 23: Working Units Policy

Background:

Federal Lands Highway Bridge Office has been in process of converting to the Microstation V8 format and producing standards using uniform cell libraries and seed files. Up until the use of Microstation V8, different Working Units had been used to develop drawings to different scales.

Objective:

The objective of this plan is to develop a standard uniform procedure in developing drawings in the Microstation V8 format. This procedure includes the creation of new Microstation V8 files and the conversion of details and drawings that have been developed prior to Microstation V8 to the Microstation V8 format.

Findings:

A total of Seventeen states were contacted and surveyed on key elements in regards to Microstation V8 working units and resolution. In addition, the three Federal Lands Highway Offices were also contacted and surveyed on the same topics. Both Highway Design and Bridge Design groups were contacted during the survey. The following is a list of common findings:

- Most states have converted or are in process of converting to English Units
- Most states are using survey foot (Needs to be activated in units .def file to have available for use)
- Most states started out using Bentley Working Unit defaults when converted from Microstation V7 to Microstation V8.
- All States are maintaining as-built drawings
- In several states, Bridge Design offices maintained architectural units in their resolution working units for Microstation V8 while Highway Design offices maintained engineering units.



- Some Highway Design offices have either converted to architectural units or considered the conversion.
- Highway Design offices have found that resolution set at 1000 per foot is not enough resolution for cross sections. They have updated the resolution to 10000 per foot.
- It is not uncommon for a bridge design office to scale drawings from highway design offices for their details.

Other Findings:

The definition between a foot and a US survey foot is as follows;

1 foot = .3048000 m

1 survey foot = .3048006 m

The foot used by Microstation V8 as a default from the standard unit list is based on the foot definition, not the survey foot definition. This is the correct definition for most work outside of civil and surveying disciplines. If, however the data is based on geodetic survey measurements, using this default from the standard unit definitions list in Microstation will yield incorrect results on the order of 6 parts in a million. Therefore, survey foot must be used on details linked to mapping or highway details using an engineering scale, but not required for an architectural scaled detail like a bridge detail.