

The purpose of this update is to revise or eliminate outdated information and practices.

The chapter was rearranged and updated to reflect current practice. The Slope Staking section was split into two (2) methods – The Pre-2019 Slope Staking section was added back into the manual as section 8.4 SLOPE STAKING (Backslope Method) and updated to reflect current practice. The current Slope Staking method was moved to section 8.5 SLOPE STAKING (Story Method) and updated to reflect current practice. The revisions and additions to Chapter 8 are as follows...

Page 8-1 – Contents

Moved Construction Control Points section to page 8-3 and updated to 8.1 CONSTRUCTION CONTROL POINTS

Moved Hub Lines section to page 8-3 and updated to 8.2 HUB LINES

Moved Temporary Right-of-Way Staking section to page 8-4 and updated to 8.3 TEMPORARY RIGHT OF WAY STAKING

Updated Slope Staking section to 8.4 SLOPE STAKING (Backslope Method) and moved to page 8-5

Added new section 8.5 SLOPE STAKING (Story Method) page 8-10

Moved Blue Top Staking section to page 8-15 and updated to 8.6 BLUE TOP STAKING

Moved Paving Hub Staking section to page 8-17 and updated to 8.7 PAVING HUB STAKING

Moved Undercut Volumes section to page 8-18 and updated to 8.8 UNDERCUT VOLUMES

Moved Pipe Staking section to page 8-18 and updated to 8.9 PIPE STAKING

Moved Bridge Staking section to page 8-23 and updated to 8.10 BRIDGE STAKING

Moved Public Land Survey System Corners section to page 8-34 and updated to 8.11 PUBLIC LANDS SURVEY SYSTEM (PLSS) CORNERS STAKING

Moved Right of Way and Property Corners section to page 8-37 and updated to 8.12 RIGHT OF WAY AND PROERTY CORNERS STAKING

Page 8-1 – List of Figures

Renamed Figure 8-1 Grade stake marking to Figure 8-1 Hub line grade stake marking

Renamed Figure 8-2 Temporary right of way lath to Figure 8-2 Temporary right of way lath marking

Renamed Figure 8-5 Slope stake calculation to Figure 8-5 Slope stake cut section

Updated and moved Figure 8-6 Slope stake marking to Figure 8-12 Slope stake marking (Story method)

Added new Figure 8-6 Slope stake marking (Backslope method)

Updated and moved Figure 8-7 Blue top locations to Figure 8-15 Blue top locations

Added new Figure 8-7 Slope stake fill section

Added new Figure 8-8 Slope stake marking (Backslope method)

Added new Figure 8-9 Slope staking X-section

Added new Figure 8-10 Slope definition

Added new Figure 8-11 Slope stake cut section

Added new Figure 8-13 Slope stake fill section

Added new Figure 8-14 Slope stake marking (Story method)

Added new Figure 8-16 Blue top quarter point

Added new Figure 8-17 Centerline reference points

Added new Figure 8-18 Offsets (Centerline reference points)

Added new Figure 8-19 Offsets at right angles (Centerline reference points)

Page 8-2 – List of Figures

Updated figure showing Pipe stake marking to Figure 8-20 Pipe stake marking
Updated figure showing bridge benchmarks to Figure 8-21 Permanent control points
Updated figure showing bridge centerline reference points to Figure 8-22 Centerline reference points
Updated figure showing bridge centerline point offsets to Figure 8-23 Offsets (Centerline reference points)
Updated figure showing abutment and bent reference points to Figure 8-24 Abutment and bent reference points
Updated figure showing abutment and bent offsets to Figure 8-25 Offsets (Bent and abutment)
Updated figure showing abutment and bent offsets on a skew to Figure 8-26 Offsets skewed (Bent and abutment)
Updated figure showing footing reference points to Figure 8-27 Footing reference points
Updated figure showing Offset stake, guard stake and lath layout to Figure 8-28 Offset stake, guard stake and lath layout
Updated figure showing Bent reference stake and Bent offset stake marking to Figure 8-29 Bent stake marking

Page 8-2 – Appendices

Added new Appendix A – SDDOT Monumentation Standards page A1

Page 8-3 – 8.1 CONSTRUCTION CONTROL POINTS

Renamed CONSTRUCTION CONTROL POINTS section on page 8-2 to 8.1 CONSTRUCTION CONTROL POINTS and moved to page 8-3.

Page 8-3 – 8.2 HUB LINES

Renamed HUB LINES section on page 8-2 to 8.2 HUB LINES and moved to page 8-3.
Renamed Figure 8-1 Grade stake marking on page 8-2 to Figure 8-1 Hub line grade stake marking and moved to page 8-3.

Page 8-4 – 8.3 TEMPORARY RIGHT OF WAY STAKING

Renamed TEMPORARY RIGHT-OF-WAY STAKING section on page 8-3 to 8.3 TEMPORARY RIGHT OF WAY STAKING and moved to page 8-4.
Renamed Figure 8-2 Temporary right of way lath on page 8-3 to Figure 8-2 Temporary right of way lath marking and moved to page 8-4.

Page 8-5 – 8.4 SLOPE STAKING (Backslope Method)

Added pre-2019 slope staking method back into chapter and renamed to 8.4 SLOPE STAKING (Backslope Method).
Added 8.4.1 Slope staking accuracy tolerances
Updated slope staking terminology to 8.4.2 Slope staking terminology

Page 8-6 – 8.4 SLOPE STAKING (Backslope Method)

Moved Figure 8-3 Slope staking X-section from page 8-5 to page 8-6.
Updated slope definition to 8.4.3 Slope definition

Page 8-7 – 8.4 SLOPE STAKING (Backslope Method)

Moved Figure 8-4 Slope definition from page 8-5 to page 8-7.

Updated calculating slope stake to 8.4.4 Slope stake calculations (cut section) Renamed Figure 8-5 Slope stake calculation on page 8-6 to Figure 8-5 Slope stake cut section and move to page 8-7.

Updated marking slope stake to 8.4.5 Slope stake marking (cut section)

Page 8-8 – 8.4 SLOPE STAKING (Backslope Method)

Updated Figure 8-6 Slope stake marking on page 8-6 to Figure 8-12 Slope stake marking (Story method) and move to page 8-13.

Added new Figure 8-6 Slope stake marking (Backslope method)

Added 8.4.6 Slope stake calculation (fill section)

Page 8-9 – 8.4 SLOPE STAKING (Backslope Method)

Added new Figure 8-7 Slope stake fill section

Added 8.4.7 Slope stake marking (fill section)

Added new Figure 8-8 Slope stake marking (Backslope method)

Page 8-10 – 8.5 SLOPE STAKING (Story Method)

Moved SLOPE STAKING section (pages 8-4 to 8-7) to pages 8-10 to 8-14 and renamed SLOPE STAKING (Story Method).

Added 8.10.1 Slope staking accuracy tolerances

Updated slope staking terminology to 8.5.2 Slope staking terminology.

Page 8-11 – 8.5 SLOPE STAKING (Story Method)

Added new Figure 8-9 Slope staking X-section

Updated slope definition to 8.5.3 Slope definition

Page 8-12 – 8.5 SLOPE STAKING (Story Method)

Added new Figure 8-10 Slope definition

Updated calculating slope stake to 8.5.4 Slope stake calculations (cut section)

Added new Figure 8-11 Slope stake cut section

Updated marking slope stake to 8.5.5 Slope stake marking (cut section)

Page 8-13 – 8.5 SLOPE STAKING (Story Method)

Updated and moved Figure 8-6 Slope stake marking to Figure 8-12 Slope stake marking (Story method)

Added 8.5.6 Slope stake calculation (fill section)

Page 8-14 – 8.5 SLOPE STAKING (Story Method)

Added new Figure 8-13 Slope stake fill section

Added 8.5.7 Slope stake marking (fill section)

Added new Figure 8-14 Slope stake marking (Story method)

Page 8-15 – 8.6 BLUE TOP STAKING

Updated and moved Figure 8-7 Blue top locations page 8-7 to Figure 8-15 Blue top locations page 8-15

Page 8-16 – 8.6 BLUE TOP STAKING

Added new Figure 8-16 Blue top quarter point
Added 8.6.1 Blue top accuracy tolerances
Added 8.6.2 Robotic total station
Added 8.6.3 GPS (GNSS)

Page 8-18 – 8.9 PIPE STAKING

Added 8.9.1 Pipe staking accuracy tolerances

Page 8-19 – 8.9 PIPE STAKING

Updated a. General to 8.9.1 DOT214
Updated b. Reference Stakes to 8.9.3 Centerline reference points.

Page 8-20 – 8.9 PIPE STAKING

Added new Figure 8-17 Centerline reference points
Added 8.9.4 Centerline reference point offsets

Page 8-21 – 8.9 PIPE STAKING

Added new Figure 8-18 Offsets (Centerline reference points)

Page 8-22 – 8.9 PIPE STAKING

Added new Figure 8-19 Offsets at right angles (Centerline reference points)

Page 8-23 – 8.9 PIPE STAKING

Updated figure showing Pipe stake marking page 8-10 to Figure 8-20 Pipe stake marking and move to page 8-23.

Page 8-23 – 8.10 BRIDGE STAKING

Updated Benchmarks page 8-15 to 8.10.1 Bridge survey control requirements moved to page 8-23.

Page 8-24 – 8.10 BRIDGE STAKING

Updated figure showing benchmark placement page 8-15 to Figure 8-21 Permanent control points and move to page 8-24.
Added 8.10.2 Bridge survey control accuracy tolerances
Added 8.10.3 Critical substructures (abutments/sill caps, bents, piers, shafts, etc.) horizontal and vertical accuracy tolerances.
Added 8.10.4 Wingwalls & retaining structures horizontal and vertical accuracy tolerances.
Added 8.10.5 Pipes & storm sewers horizontal and vertical accuracy tolerances.
Added 8.10.6 Slope stakes (grade catch) & earthwork fill horizontal and vertical accuracy tolerances.

Page 8-25 – 8.10 BRIDGE STAKING

Added 8.10.7 Bridge approach blue tops horizontal and vertical accuracy tolerances.

Updated a. General page 8-10 to 8.10.8 Staking notes and moved to page 8-25.

Updated b. Reference Stakes to 8.10.9 Centerline reference points and moved to page 8-25.

Page 8-27 – 8.10 BRIDGE STAKING

Updated figure showing bridge reference points to Figure 8-22 Centerline reference points.

Page 8-28 – 8.10 BRIDGE STAKING

Added 8.10.10 Centerline reference point offsets

Updated figure showing bridge reference point offset to Figure 8-23 Offsets (Centerline reference points).

Page 8-29 – BRIDGE STAKING

Updated abutment and bent centerline reference points to 8.10.11 Centerline abutment and bent reference points.

Updated figure showing reference points for abutment and bent to Figure 8-24 Abutment and bent reference points.

Page 8-30 – BRIDGE STAKING

Added 8.10.12 Centerline abutment and bent reference point offsets.

Updated figure showing abutment and bent reference point offsets to Figure 8-25 Offsets (Bent and abutment).

Page 8-31 – BRIDGE STAKING

Updated figure shown abutment and bent reference points and offsets on a skew to Figure 8-26 Offsets skewed (Bent and abutment).

Page 8-32 – BRIDGE STAKING

Updated figure showing reference points for footing to Figure 8-27 Footing reference points.

Page 8-33 – BRIDGE STAKING

Update figure showing reference point, guard stake and lath layout to Figure 8-28 Offset stake, guard stake and lath layout.

Updated figure showing bent reference stake and bent offset stake marking to Figure 8-29 Bent stake marking.

Page A1 – SDDOT Monumentation Standards

Added new appendix providing right of way, Public Lands Survey System and property corner standards.