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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE STANDARD

SAE J2583

ISSUED JUN2002

Issued 2002-06

Directional Drilling Planning and Mapping Nomenclature

1. ***Scope—***This SAE Standard applies to planning and mapping various types of information associated with directional boring/drilling machines. This type of planning and mapping information is typically used with horizontal earthboring machines as defined by SAE J2022.

1.1 **Purpose—**This is a compilation of terms and definitions commonly associated with the planning and mapping of underground pipe and utility installation by using horizontal earthboring machines.

2. ***References***

2.1 **Applicable Publication—**The following publication(s) forms a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J2022—Classification, Nomenclature, and Specification Definitions for Horizontal Earthboring Machines

2.2 **Related Publication—**The following publication is provided for information purposes only and is not a required part of this specification.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J2520—Classification, Nomenclature, and Specification Definitions for Directional Boring Tracking Equipment

3. ***Definitions***

3.1 **Bore Path—**The planned, pilot or installed route of the drilling from entry point to exit point.

3.1.1 PLANNED PATH—The planned location for the bore.

3.1.2 INSTALLED PATH—The centerline of the completed bore.

3.1.3 PILOT BORE PATH—The centerline location of the pilot bore.

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3.2 Bore Path Length—The distance from the entry point to the exit point along the actual bore path.

3.3 Depth—The vertical distance from the surface to the transmitter.

3.4 Height—The vertical dimension above or below a horizontal reference plane.

3.5 Elevation —The vertical dimension above/below sea level.

3.6 Heading—The azimuth or direction in the horizontal plane relative to true or magnetic north.

3.7 Pilot Bore—The initial hole created by the forward progress of the tool head.

3.8 Deviation—The distance offset from the planned path to the pilot bore or the installed path.

3.9 Left and Right Steering Indicator—Display indicating amount of left/right steering required to proceed on the intended path to a target point given in degrees, distance or means of steering indication.

3.10 Survey Path Distance—Horizontal distance measured along the reference line to the point of interest.

3.11 Bore Path Distance—The distance from the entry point to the point of interest along the actual bore path.

3.12 Reference Line—A predetermined line or set of surface characteristics used to measure and document the location of the planned path, actual bore or installed path.

3.13 Running Line—The line on the ground surface along the planned bore path.

3.14 Path Reference Line—A line along the path used to measure and document the location of the intended, pilot, actual bore or installed path.

3.15 (Job) Site Reference Line—A line or set of surface features along the ground surface against which the horizontal path (distance) is measured.

3.16 Geographic Reference Line—A line at a defined elevation and heading starting at a defined longitude and latitude.

3.17 Polyline—A series of lines and/or curves.

3.18 Ground Reference Line—A polyline on the ground surface that is along the path that vertical measurements are taken from.

3.19 Topography—The configuration of the ground surface including changes in elevation and the position of natural and man-made features.

3.20 Features—Aboveground objects that are points of interest i.e., highways, railroads, rivers, buildings, etc.

3.21 Ground Plane—The plane of the topography where the drill rig is positioned.

3.22 Entry Pit—A hole dug at the point of pilot-bore-entry into the ground plane.

3.23 Entry Point—The point at which the drill pipe enters the ground plane.

3.24 Entry Angle—The angle between the drill pipe and the ground plane with the machine in the operating or working position.

3.25 Entry Pitch —The pitch at which the drill pipe enters the ground plane.

3.26 Entry Heading—The azimuth or direction of the drill pipe in the horizontal plane relative to true or magnetic north at the entry point.

3.27 Entry Pit Offset—The distance from the tip of the tool head to the entry point, with the first drill pipe fully retracted. If the tool head is above the surface with the first rod fully retracted, this distance is negative. If the drill head is below the surface with the first rod fully retracted, it is a positive value. The entry point offset is either added or subtracted from the first rod length.

3.28 Connection Start Point—The first target point where the bore path is usable.

3.29 Connection End Point—The last target point where the bore path is usable.

3.30 Target Points—Defined points along the planned path.

3.31 Intersecting Utility/Obstacle—A buried utility or obstacle that crosses the planned, pilot or installed path.

3.32 Non-Intersecting Utility/Obstacle—A buried utility or obstacle that does not cross the planned, pilot or installed path.

3.33 Utility/Obstacle Diameter—The outside dimensions of the intersecting or non-intersecting pre-existing utility/obstacle.

3.34 Minimum Clearance Zone—The envelope around the pre-existing utility/obstacle that defines the zone that the pilot bore, back-ream and installed product should not intrude.

3.35 Allowable Planned Path Variance—In the planning process the defined maximum variance of the planned path.

3.36 Minimum Cover—Minimum amount of ground cover required over the product being installed.

3.37 Maximum Cover—Maximum amount of ground cover required over the product being installed.

3.38 Easement/Right of Way Zone—The width of the approved envelope in which the planned bore, pilot bore and installed product can be placed.

3.39 Obstacles—Non-utility in-ground items, i.e. concrete pillars, boulders, etc.

3.40 Drill Pipe—Individual component used to connect the drill rig to the tool head, transmitter housing or reamer.

NOTE— the terms drill stem and drill rod are frequently used interchangeably.

3.41 Drill String—The combined assembly of components including but not limited to drill pipe, tool head and/or transmitter housing connected to the drill rig.

3.42 Diameter of Drill Pipe—Minimum outside diameter of drill pipe excluding tool joint ends.

3.43 Length of Drill Pipe—Nominal (made-up) length of drill pipe.

3.44 Minimum Bend Radius—The calculated bend limit of the specified drill string or installed product during the boring operation.

3.45 Desired Bend Radius—Preferred bend radius for the drill string and product during the drilling operation.

3.46 Product—The item or bundle of items being installed, i.e., pipes, cables etc.

3.47 Maximum Tension—The maximum allowable force applied to the product during the pull-back operation as specified by the manufacturer or utility.

3.48 Bundle Diameter—The largest outside transverse dimension of the installed product or product bundle.

3.49 Color Code—The APWA color-coding standard for buried utilities.

3.50 Grade —Inclination measurements expressed in either degrees or percent.

3.51 Exit Pit—A hole dug at the point of the pilot bore exit.

3.52 Exit Point—The point at which the drill pipe exits the ground plane or enters the exit pit in a subsurface termination.

3.53 Exit Angle—Angle between the drill pipe and the ground plate at the exit point.

3.54 Exit Pitch—The pitch at which the drill pipe exits the ground plane.

3.55 Exit Heading—The azimuth or direction of the drill pipe in the horizontal plane relative to true or magnetic north at the exit point.

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