Glossary

As-Applied: Represents the current state of the field as work progresses. The As-Applied surface typically transitions from matching the original surface to matching the design surface as earthworks are completed. Also referred to as As-Built.

Backslope (Batter): The sloping sides of a drain or channel that transition from the surrounding ground surface to the drain invert.

Baud Rate: The speed at which data is transmitted over a serial communication link, measured in bits per second (bps). Both communicating devices must use the same baud rate to communicate successfully.

Benchmark: A surveyed location with a known position and elevation used as a reference for calibration and verification. Also referred to as a Control Point.

Bi-directional Error: A consistent but opposite vertical error that occurs when travelling in opposite directions. This can often be corrected by adjusting the system look-ahead time.

Blade Shift: The vertical or lateral adjustment of an implement blade, performed either manually by the operator or automatically by the machine-control system.

Borrow Pit: An excavation created by removing material for use elsewhere within a project.

Bulking: The process of performing the largest cuts and fills before completing final grading. Bulking prioritises productivity over final accuracy.

Burning: The process of embedding a design element into an existing surface.

Button Press: Selecting an on-screen control using the touchscreen. Also referred to as tapping.

Com Port (Serial Port): A hardware communication interface used to exchange serial data between devices. COM ports may be physical connectors or virtual ports created by USB-to-Serial adapters or internal hardware.

Control Surface: The reference surface used by the machine-control system to determine the required implement position. This may be an existing terrain surface, a design surface or an As-Applied surface, depending on the operation being performed.

Cross Slope: The slope perpendicular to the primary direction of travel. Cross slope is used to define the side-to-side inclination of a surface.

CSV (Comma Separated Values): A text-based file format used to store tabular data. CSV files can be opened using spreadsheet applications or text editors.

Cut Area: A region where material must be removed to achieve the target surface.

Cut/Fill Map: A colour-coded map showing the difference between the original surface and the design surface.

Cut/Fill Ratio: The ratio between the volume of material excavated and the volume required after placement and compaction. For example, a cut/fill ratio of 1.2 indicates that 1.2 m^3 of excavated material is required to produce 1.0 m^3 of compacted fill.

DEM (Digital Elevation Model): See Digital Elevation Model.

Design Surface: A digital model representing the intended finished terrain after earthworks have been completed.

Detent: A John Deere hydraulic control mode that enables iGrade™ to accept remote control commands from an external system such as T3RRA software.

Digital Elevation Model (DEM): A digital representation of terrain elevations across an area. DEMs are used for surveying, design and machine-control applications.

Dynamic Blade Limit: A T3RRA feature that limits cutting below the As-Applied surface to help prevent over-cutting and maintain the intended design.

Feather: To gradually blend one surface or design into another, creating a smooth transition.

Fill Area: A region where material must be added to achieve the target surface.

Finishing: Final grading passes performed to achieve the target design elevation and surface quality.

Geo-referenced: Describes data or imagery that includes geographic coordinates, allowing it to be accurately positioned on the Earth's surface.

GNSS (Global Navigation Satellite System): The collective term for satellite positioning systems including GPS, GLONASS, Galileo and BeiDou. Modern receivers typically use multiple constellations simultaneously to improve positioning accuracy.

GPS (Global Positioning System): The United States satellite navigation system. Within this manual, the term GPS is commonly used to refer to GNSS positioning unless otherwise stated.

Grade: The required elevation or slope at a particular location relative to the design surface.

Haul: The process of transporting excavated material from one location to another.

Heading: The direction in which the machine is travelling or pointing, typically expressed in degrees relative to north.

Implementation: The process of constructing the designed terrain by moving material to match the target surface.

Importing/Exporting Dirt: Importing refers to bringing material into a project area from elsewhere. Exporting refers to removing material from the project area for use or disposal elsewhere.

Land Forming: The process of reshaping terrain using curved or variable surfaces to improve drainage, irrigation or productivity.

Land Levelling: The process of reshaping terrain using predominantly planar surfaces to improve irrigation or drainage.

Look-Ahead: A control parameter that predicts machine movement and commands hydraulic adjustments slightly in advance to improve grading performance and reduce control error.

Machine Control: The combination of hardware and software used to automatically or semi-automatically position an implement according to a target design.

NMEA (National Marine Electronics Association): A communications standard commonly used to exchange GNSS and navigation data between devices.

On-Grade: The condition where the implement cutting edge is at the required elevation to achieve the target design.

Original Surface: The surveyed or imported terrain model representing the field before earthworks begin.

Pixel: The smallest element of a raster surface. Pixel size determines the resolution and level of detail represented by the surface.

Primary Slope / Secondary Slope: The primary slope is the dominant direction of fall across a surface. The secondary slope (or cross slope) is perpendicular to the primary slope.

Project File: A proprietary T3RRA project file containing survey, design and project information. T3RRA project files use the `.tci` file extension.

Raster: A grid-based data structure consisting of regularly spaced cells (pixels), each containing an elevation value.

Remote Control: A control mode that allows an external device, such as T3RRA software, to send hydraulic control commands to a compatible machine-control system.

RTK (Real-Time Kinematic): A high-accuracy GNSS positioning technique that uses correction data from a base station or network to achieve centimetre-level positioning accuracy.

Settle (Shrink): The reduction in soil volume that occurs after material has been placed and compacted.

Slope: A measure of the rate of elevation change across a surface. Within T3RRA software, positive slope values represent downhill gradients.

Stockpile: A temporary pile of excavated material intended for later use.

Surface: A digital representation of terrain. Surfaces are typically created from survey points or raster elevation data and are used for design, guidance and machine control.

Survey Point: A recorded position containing horizontal coordinates (X, Y) and elevation (Z). Collections of survey points are used to generate terrain surfaces.

TCM (Terrain Compensation Module): A John Deere sensor integrated into StarFire™ receivers that measures machine attitude to improve positioning and cross-slope accuracy.

Time-out: A condition where communication is terminated because a device or application fails to respond within an expected period.

Topography: The physical shape and surface characteristics of an area of land.

Topsoiling: The placement of a layer of topsoil over a finished surface to restore fertile material following earthworks.

Washboarding: Repetitive vertical oscillation of an implement that produces a corrugated surface resembling a traditional washboard.

Zeroing: The process of calibrating measured elevations to the physical cutting edge of the implement. Zeroing compensates for GPS antenna offsets, implement geometry, machine setup and differences between surveying and implementation, ensuring displayed elevations accurately represent the cutting edge position.