

T3RRA



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As-Applied: The field's current state as work progresses, also called As-Built. As earthworks are completed, the As-Applied surface typically changes from matching the original surface to matching the design surface.

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

Baud Rate: Serial-link data transmission speed, measured in bits per second (bps). Successful communication requires both devices to use the same baud rate.

Benchmark: A surveyed location whose known position and elevation provide a reference for calibration and verification. Also called a Control Point.

Bi-directional Error: A consistent vertical error that reverses when travel direction reverses. Adjusting system look-ahead time can often correct it.

Blade Shift: Vertical or lateral adjustment of an implement blade, made manually by the operator or automatically by the machine-control system.

Borrow Pit: An excavation left by removing material for use elsewhere in a project.

Bulking: Performing the largest cuts and fills before final grading, with productivity taking priority over final accuracy.

Burning: Embedding a design element in an existing surface.

Button Press: Selecting an on-screen control with the touchscreen; also called tapping.

Com Port (Serial Port): A hardware interface for exchanging serial data between devices. A COM port can be a physical connector or a virtual port created by a USB-to-Serial adapter or internal hardware.

Control Surface: The reference surface from which the machine-control system determines the required implement position. Depending on the operation, this can be an existing terrain surface, a design surface or an As-Applied surface.

Cross Slope: Slope perpendicular to the main direction of travel, defining a surface's side-to-side inclination.

CSV (Comma Separated Values): A text-based format for tabular data that spreadsheet applications and text editors can open.

Cut Area: An area where reaching the target surface requires material removal.

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

Cut/Fill Ratio: The ratio of excavated material volume to the volume required after placement and compaction. A ratio of 1.2, for example, means 1.2 m³ of excavated material is needed to produce 1.0 m³ of compacted fill.

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

Design Surface: A digital model of the intended finished terrain after earthworks.

Detent: A John Deere hydraulic control mode in which iGrade™ can accept remote control commands from an external system such as T3RRA software.

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

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

Feather: Gradually blending a surface or design into another to make a smooth transition.

Fill Area: An area where reaching the target surface requires material addition.

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

Geo-referenced: Data or imagery containing geographic coordinates so it can be positioned accurately on the Earth's surface.

GNSS (Global Navigation Satellite System): The collective name for satellite positioning systems, including GPS, GLONASS, Galileo and BeiDou. Modern receivers typically improve positioning accuracy by using several constellations at once.

GPS (Global Positioning System): The United States satellite navigation system. Unless stated otherwise, this manual commonly uses GPS to mean GNSS positioning.

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

Haul: Transporting excavated material between locations.

Heading: The direction the machine points or travels, typically given in degrees relative to north.

Implementation: Constructing the designed terrain by moving material to match the target surface.

Importing/Exporting Dirt: Importing brings material into a project area from elsewhere. Exporting removes material from the project area for use or disposal elsewhere.

Land Forming: Reshaping terrain with curved or variable surfaces to improve drainage, irrigation or productivity.

Land Levelling: Reshaping terrain with predominantly planar surfaces to improve irrigation or drainage.

Look-Ahead: A control parameter that predicts machine movement and commands hydraulic adjustments slightly in advance, improving grading performance and reducing control error.

Machine Control: Hardware and software that automatically or semi-automatically position an implement according to a target design.

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

On-Grade: The state in which the implement cutting edge is at the elevation required to achieve the target design.

Original Surface: The surveyed or imported terrain model of the field before earthworks start.

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

Primary Slope / Secondary Slope: Primary slope is the dominant direction of fall across a surface. Secondary slope, also called cross slope, is perpendicular to primary slope.

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

Raster: A grid of regularly spaced cells (pixels), each holding an elevation value.

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

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

Settle (Shrink): The decrease in soil volume after material is placed and compacted.

Slope: The rate of elevation change across a surface. In T3RRA software, positive slope values mean downhill gradients.

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

Surface: A digital terrain representation, typically built from survey points or raster elevation data, for design, guidance and machine control.

Survey Point: A recorded position with horizontal coordinates (X, Y) and elevation (Z). Sets of survey points generate terrain surfaces.

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

Time-out: Communication termination because a device or application does not respond within the expected period.

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

Topsoiling: Placing a topsoil layer over a finished surface to restore fertile material after earthworks.

Washboarding: Repeated vertical implement oscillation that creates a corrugated surface like a traditional washboard.

Zeroing: Calibrating measured elevations to the implement's physical cutting edge. This compensates for GPS antenna offsets, implement geometry, machine setup and differences between surveying and implementation so displayed elevations accurately represent the cutting edge position.