

Photogrammetry Mapping SOP

Texas Drone Company · DJI Mavic 3E · v1.0

Section 1 — Pre-flight prep

SD card & connectivity

1. Format SD card or verify storage. Camera settings → "..." → Format Memory Card. Storage visible top-right of screen.
2. Turn on hotspot before opening DJI app. Leave the hotspot menu open — the controller connects to internet faster this way.

Camera settings

Setting	Value
Photo format	JPEG
Dewarping	OFF — must be disabled
Camera mode	Auto

“ Confirm dewarping is OFF before every mapping mission.

Section 2 — Map creation in DJI

1. Tap the Library button (bottom-left of DJI screen). Shows all saved maps sorted by distance from current location.
2. Tap "+" to create a new map → select "Area Route."
3. Use your finger to place boundary points around the full property. Push the boundary slightly beyond the property edges — ensures complete site capture.
4. Tap the checkmark. The app generates the flight plan and calculates path, photo count, and estimated flight time.
5. Select your aircraft.

“ Always push boundary slightly past the property edges. It is far better to capture slightly too much than to miss the edge and need a re-fly.

Section 3 — Flight parameters

Parameter	Value
Altitude	300–400 ft AGL
Front overlap	80% (same flight line)
Side overlap	70% (between lines)
Speed (normal)	30–33 mph
Speed (low light)	20–25 mph (shutter < 1/500s)
Photo mode	Timed interval — always

Speed rule

- Default speed is 30–33 mph. Only reduce if shutter speed drops below 1/500s.
- In low light: reduce to 20–25 mph or slower.

Course angle

- Course angle sets the direction of flight lines. The green lines in the app simulate the full flight path.
- Adjust to align flight lines with the longest axis of the site — reduces total flight time.
- Top-left of screen shows area size, estimated flight time, and photo count. Review before launching.

Crosshatch pattern — when to use

- A second pass flown at 90° to the original course angle.
- Use for complex sites with tight corridors between buildings or areas where a single pass may miss vertical faces.
- ☐ Duplicate the map in the app, change course angle by 90°, fly as a separate second mission.

“ Always use Timed interval photo mode — this is the Texas Drone Company standard for all mapping missions.

Section 4 — RTK setup

“ Do not launch until RTK confirms "RTK data in use" and std dev has settled.

1. Confirm controller is connected to hotspot with internet. Leave hotspot menu open — it connects faster that way.
2. Open the RTK tab in DJI. Enable "RTK Positioning" and "Maintain positioning accuracy mode" — both sliders ON.
3. Select mount point: choose the closest RTKUSA base station to your site. Reference: rtkusa.com.
4. Watch the standard deviation drop toward 0. Wait for it to settle before proceeding.
5. Confirm status reads: **"RTK Connected. RTK data in use."**
6. Verify satellite count is adequate. Low satellite count = poor geolocation hold. Do not launch.

Bookmark rtkusa.com — knowing your nearest base station ahead of time saves significant setup time on site.

Section 5 — Launch & in-flight

1. Take off manually. Do not press play from the ground — fly to the start point by hand.
2. Climb to mission altitude manually. Once at altitude and clear of all obstructions, press play to begin the automated mission.
3. Monitor telemetry throughout: battery %, signal strength, GPS/RTK quality.
4. Plan battery swaps before 30%. For battery swap procedures, refer to Section 5.
5. Maintain VLOS and scan for manned aircraft. Yield right of way at all times.
6. After landing, verify image count matches the expected count shown in the app before packing up.

“ Battery swap mid-mission: pause the mission, swap the battery, then resume from the last point.

Section 6 — Deliverables & file naming

File naming convention

YYYY_MM_DD - Client Name - Job Site

e.g.

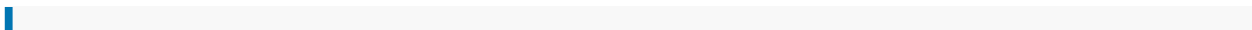
2025_06_14 - Hensley Construction - Fort Worth Logistics Park

Deliverable summary

Deliverable	Format
Unprocessed imagery (all mission photos)	Full resolution
QGIS data check	No gaps · RTK confirmed

Pre-handoff checklist

- ☐ Image count matches expected count from app.
- ☐ RTK was confirmed active ("RTK data in use") for the entire mission.
- ☐ Boundary was pushed past property edges — full site captured.
- ☐ QGIS verification complete — no gaps in coverage, RTK positioning confirmed throughout flight.
- ☐ Imagery reviewed for gaps or blurring before handoff.
- ☐ Files named: YYYY_MM_DD - Client Name - Job Site.
- ☐ Data backed up before leaving site.
- ☐ Do not deliver without first verifying in QGIS — no gaps in coverage and RTK positioning confirmed throughout flight.



Questions on site? Call your lead pilot before improvising. A quick call is faster than a re-fly.

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