

## MEMO

**TO:** Bidders **DATE:** 12/20/2024

**FROM:** Pape-Dawson Engineers **PROJECT NO.:** 13115-03

**CC:**

**RE:** Sonora-Unit 2  
Topographic Survey Specifications

Existing Ground Topography has been obtained by Pape-Dawson either by field LiDAR or On the Ground topo. The specifications and standards used by PD are as follows:

### LiDAR

All points will be shot twice as two different points (not averaged). First occupation will be 180 epochs and described as GT (ground truthing), second occupation will be done immediately after the first, losing and re-acquiring signal lock between each and will be 15 epochs and described as CHK (previous Pt. No.). For example: "531 AT S60D", "532 CHK 531" or "551 GT S60D", "552 CHK 551". THE ELEVATIONS FOR THESE 2 POINTS MUST BE WITHIN 0.10' OF EACH OTHER. IF NOT, SHOOT ALTERNATING 180 EPOCH SHOTS AND 15 EPOCH CHECK SHOTS UNTIL 2 POINTS' ELEVATIONS ARE WITHIN 0.10' OF EACH OTHER (ANY TWO OF ALL OF THE POINTS SHOT WITH AT LEAST ONE BEING 180 EPOCH)

### On the ground topo work

All survey control is observed three times, accumulating an average X,Y, and Z coordinate. First and second round observations will be 180 epochs back-to-back. (Losing and re-acquiring signal lock between the first and second observations.) Third observation will be for 180 epochs with at least two hours of separation between the first and second observations.

All control is then leveled using a conventional survey level.

All natural ground observations are individually walked and occupied for 15 epochs.

Control checks are taken in the morning, before and after lunch and at the end of days, each occupied for 15 epochs. This is done every day the survey crew is on site.

PDOP's have to be under 4.0, the tolerances set at 0.10' for vertical and horizontal shots. Anything above this is disregarded and reobserved.

Pape-Dawson will not consider or review contractors topo unless it has been obtained by the same specifications and standards. Topo collected by a GPS unit attached to a moving vehicle is not considered accurate enough for quantity disputes. Any requests to compare topo collected not to the above specifications will need to be paid for by the requesting contractor or will require an additional service request from the clients/owner.