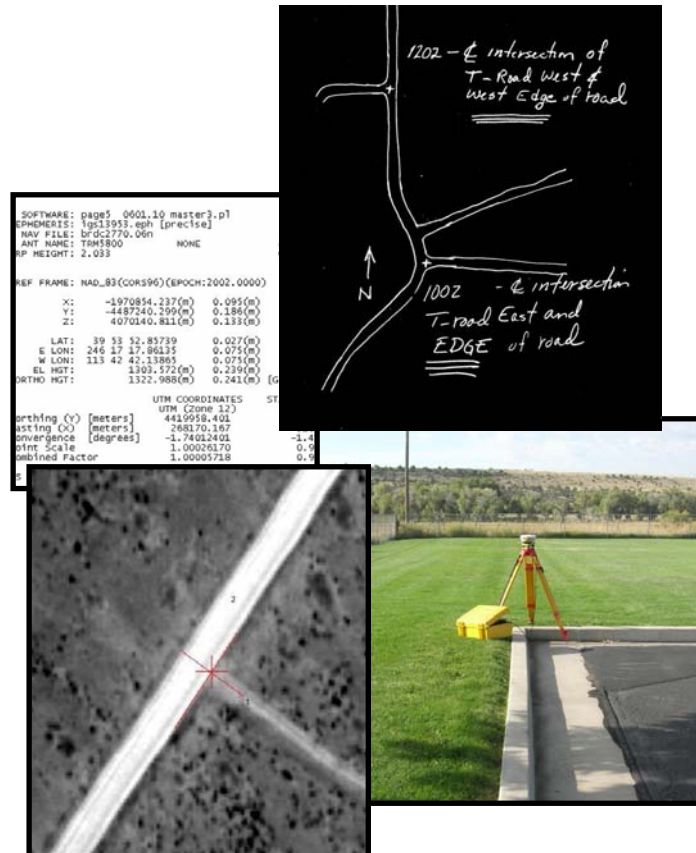# Acquiring Control for Inspection: NAIP Control Point Requirements

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Contents

NAIP Control Point Requirements

This document outlines APFO requirements for acquiring photo identifiable control points to be used for inspecting NAIP 1-meter resolution imagery. These requirements *may* also apply to acquiring control for inspecting higher resolution imagery datasets.

1. Control station selection preferences.
    A. The control points shall be easily identifiable from the air with no potential blockage from trees, buildings, shadows, or other natural or man-made structures.
    B. Where possible use permanent linear or point structures or features such as sidewalk intersections or small concrete pads. Where possible, use features with distinct angles, such as right angle sidewalk intersections. This will allow for continued use of control points in subsequent years.
    C. Do not use features that are too small to see on 1-meter resolution imagery; for example, a fire hydrant may not work. Also, do not use features that are too large to distinguish a specific location from, such as the centerline of a 6 lane road intersection.
    D. Ensure high contrast between the surveyed object/location and surrounding area such as a concrete road intersection surrounded with asphalt or grass.

Well-Defined Points – NSSDA Appendix 3-C: A well-defined point represents a feature for which the horizontal position is known to a high degree of accuracy and position with respect to the geodetic datum. For the purpose of accuracy testing, well-defined points must be easily visible or recoverable on the ground, on the independent source of higher accuracy, and on the product itself.

2. Where possible, select points in areas relatively easy to get to, with regards to travel time and difficulty of access.

3. If preferred control point locations are provided, select points within one mile, if possible or practical, of the suggested control point location. State or County personnel may be aware of a more appropriate location. The main objective is to acquire a good distribution of points that can be easily identified on the imagery and on the ground.

4. Use existing monument points if acceptable; however, they must be easily photo identifiable on 1-meter resolution imagery, and meet all of the requirements listed within this document.

5. Naming Convention: APFO suggests that control point and associated supplemental data be supplied in the format outlined in Appendix A.

6. All control points are to be processed using the OPUS (National Geodetic Survey Online Positioning User Service) or other reliable system in order to verify and deliver the known accuracy of each point.

7. Suggested Deliverable Products:

a. OPUS Report (or other reliable reporting system) – Control should be horizontally accurate to 30-cm or better, which should be verified by the OPUS Report.
b. Observation Sheet should include a detailed description of the control point (template attached as Appendix B)
c. Site digital photos or other visual or descriptive station information. Photos should be provided from three look directions (N, S, E, W and close-up preferred) at a *minimum*, and should have the GPS survey equipment in view so that the surrounding environment is recorded with respect to the point location being collected. Photos should be taken during daylight hours.
  i. Digital photos should be 100-500k in file size.
  ii. Examples are shown below:

Examples of Control Point Locations Shown on 1m Resolution Imagery:
Below are examples of photo identifiable control points on 1-meter resolution imagery at a variety of scales. The examples are for display purposes only.
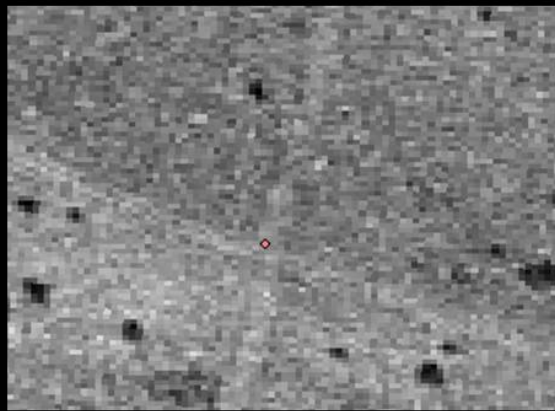

Corner Corral Fence

Corner Sidewalk & Grass

N Edge Cattle Guard

C/L Trail Crossing

Appendix A – File Naming and Formatting

The following graphic outlines the basic format for control point storage. It is suggested that newly acquired control points be delivered in this format. Supplemental data (sketches, photos, OPUS reports, etc.) that are provided as separate files should reference the POINT_ID1 name in the file and/or folder names. Suggested naming convention for POINT_ID1:

  stnnn   state postal code abbreviation and county FIPS
  nnn   control point number within that particular County   (1-999)
  yyyy   calendar year
Example: az013_005_2007   (Maricopa County, Point #5, Year 2007)

These points and supplemental data will then be loaded into an Oracle table for functionality with automated storage and inspection routines. Attachment A has been provided as a separate file, and is a "ready to populate" table (including field descriptions) meeting the specifications shown below.

Appendix B – Example GPS Observation Sheet

Control Station			
Station Name	control_az013_003_2007	**State** Arizona	**County** Maricopa
Contacts Name	John Smith	**Contacts Phone**	(801)555-1212
Source Agency	Arizona State Cartographer's Office	**Date**	06/01/07

Rover Receiver			
Type	Trimble	**Model** 5800	
Serial Number	4621114914	**Antenna Type** 5800	**Antenna Height** 4.29 sft

Monument Description and Comments
South east corner of church parking lot. Right on the SE corner of the curb where meets the parking lot pavement. The antenna height is measured from the parking lot pavement.