

**HSIP 2012 GLENN HIGHWAY AND MULDOON ROAD
INTERCHANGE IMPROVEMENTS
DESIGN TOPOGRAPHIC SURVEY
PROJECT No. 54713**

SURVEY REPORT

HORIZONTAL CONTROL

Horizontal Control for this survey is based upon Anchorage Bowl 2000 Adjustment coordinates as shown on the Survey Control Sheet for Project No. 55659, Glenn Highway Path Rehabilitation: Muldoon Road to North Birchwood, dated April 2012, provided by ADOT&PF.

The following monuments were recovered in good condition:

- ADOT&PF GPS Control Point 553
- Existing Right of Way, Cadastral and Property Corners 701 to 717

The C1/4 of Section 12 and the CS 1/16th were searched for but were not found.

Secondary Survey Control Points 1, 2, 3 and 4, consisting of 5/8" x 30" rebar with a 2" ALCAP, were established.

Additional Temporary Control Points 401 to 407, Mag Spikes or 8" Spikes, were set.

Positions were established for all points using static GPS methods. GPS observations were made using Javad Triumph-1 dual frequency GPS receivers mounted on Dutch Hills or fiberglass tripods and centered over the point using Leica GDF122 tribrachs. The antenna ARP height was measured in feet and meters both before and after the observation. The receiver number, antenna height, start/stop time and monument description were recorded in the field book for each occupation.

At least 2 digital photographs were taken of each monument recovered or set.

Trimble Business Center software was used to process the GPS baselines and to adjust the network using a simultaneous least squares adjustment constrained to the record position of Point No. 553 per the ADOT&PF Survey Control Sheet for Project No. 55659, Glenn Highway Path Rehabilitation: Muldoon Road to North Birchwood, dated April 2012.

VERTICAL CONTROL

The Vertical Datum is the Municipality of Anchorage (M.O.A.) Vertical Datum 1972 N.G.S. Adjustment. The Basis of Vertical Control is M.O.A. Bench Mark "GAAB 10", Elevation = 252.18 feet. Project elevations were established by differential level loops run with a Leica DNA10 digital level. A peg test was performed and the instrument was adjusted prior to running the first level loop. Differential level loops were run through GPS Control Point 553, Secondary Control Points 1, 2, 3 and 4, Temporary Control Points 401 to 407, water valve

cases 5960, 5961, 6961, 6962 and storm drain field inlet 5510. Two digital photographs were taken of the MOA Bench Mark, GAAB "10".

DATA COLLECTION

The design topographic survey was completed with a Leica TCRA 1105 Total Station using electronic data collection methods. The total station was calibrated in the field using the Leica software calibration routine before any field work began. The surveyed area is as shown on the exhibits below. All existing improvements and drainage structures within the survey limits were located and mapped, except that only the edge of the pavement of the northbound and southbound lanes of the Glenn Highway was located, shots were not taken on centerline or the paved surface. Invert elevations, pipe material, diameter, structure type, and apparent flow direction were recorded in the field book. Underground utility locates were requested. ADOT&PF responded to the utility locate request saying that they do not perform locates for design surveys. Some existing paint marks and pin flags on the hightower lines were verified but nothing new was added. A 36" underground water line runs through the area and was drawn based on the location of surveyed water valves and AWWU asbuilt drawings. Sufficient ground, hard surface and break line points were measured to create a Triangulated Irregular Network (TIN) surface that accurately represents the existing ground surface. Horizontal and vertical check shots, into the backsight and at least one other additional control point, were taken before and after data collection activity. The check shots were evaluated in the field and in the office at the end of each day.

DRAFTING

Drawings were produced using AutoCAD Civil 3D, version 2012 and the "ADOT Central Region SCD-SCS" template. Symbols and text are annotative and are at the scale (1" = 50') of the drawing. A TIN surface, named "Glenn & Muldoon", was created and is capable of generating 1 foot contours, except on the paved surfaces of the northbound and southbound lanes of the Glenn Highway. Monument symbols for survey control points and property corners, with pre-code descriptors, are by Point Style and are not inserted blocks. Entities in model space have color and line type by layer. The Survey Control Diagram drawing was purged prior to submittal. Only unused survey layers were purged from the Topographic Survey drawing.

RIGHT-OF-WAY

The Right of Way was computed based on the position of recovered cadastral and property corner monuments using the dimensions shown on:

- the Right of Way Map for Alaska Project F-042-1(1) Boniface Road to Gate1, Fort Richardson, recorded as Plat No. 81-246
- Warranty Deed recorded September 23, 1971 in Book 435, at Page 288, Anchorage Recording District
- the recorded plats for the surrounding subdivisions

There were no major discrepancies between recovered corners and the recorded documents.



