

**HISTORICAL LETTER AND WRITTEN REPORT
SWO 4600(1)-J/P17671(34)-U.S. 270 - Dewey County**

OKLAHOMA DEPARTMENT OF TRANSPORTATION
SURVEY DIVISION
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February 3, 2011

To: Mr. Larry D. Reser, PLS, Chief of Surveys
From: Kelly J. Henderson, Professional Land Surveyor
Subject: SWO 4600(1) - J/P 17671(34) - US 270 from approximately 2.0 miles northwest of the east S.H. 51 Junction, southeast approximately 8.0 miles - Dewey County

HISTORICAL LETTER AND WRITTEN REPORT

I. GENERAL

Survey Began: May 16, 2011
Survey Completed: February 3, 2011

The measurement unit for this project is the U.S. Survey Feet.

II. SURVEY ASSIGNMENT

This survey was assigned to Lemke Land Surveying, Inc. (LLS) under Engineering Contract Number 1332-A. A survey packet was delivered to LLS containing Survey Special Provisions with Attachments. The alignment was to be tied to FAP No. 281-C (2) plans, FAP No. 281-B, U.S.W.P. No. WPH 281 "A" plans, SAP N. 834(1) Part 2 plans, and SWO 1536(1) survey.

III. PURPOSE OF THE SURVEY

The purpose of the survey is to develop plans to construct a 4-lane, divided facility.

IV. SURVEY LIMITS

The mainline survey began on U.S. 270 at EM-64 Section Line and extended southeast to NS-238 Section Line. A connection survey began on S.H. 51 at the centerline of U.S. 270 and extended east 2,000 feet.

V. ALIGNMENT

The centerline alignment for U.S. 270 was previously established under FAP No. 281-C (2) plans, FAP No. 281-B plans and U.S.W.P. No. W.P.H. 281 "A" plans. The centerline was re-established on the ground using a combination of old existing right-of-way markers and drainage structures. After evaluating the field evidence and conferring with ODOT, it was clear an additional PI was needed at Station 354+83.236. The resulting PI produces an angle of 837°14'14.01".

The centerline alignment for S.H. 51 was previously established under SWO 1536(1) survey and shown on SAP No. 834(1) Part 2 plans. The

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centerline was re-established on the ground using a combination of old existing right-of-way markers and drainage structures.

VI. STATIONING

U.S. 270 Main Survey: As directed by ODOT, a station value of P.O.T. Sta. 100+00.00 was assigned to the Beginning of Survey (EM-64 Section Line) and stationing increased southeast from this point, field measured distance, to the End of Survey without equation, except with existing surveys and plans.

S.H. 51 Connection Survey: As directed by the Special Provisions, a station value of P.O.T. Sta. 10+00.00 was assigned to the Beginning of Survey (Centerline of present U.S. 270) and stationing increased east from this point, field measured distance, to the End of Survey without equation, except with existing surveys and plans.

VII. HORIZONTAL CONTROL

A. Horizontal control for this survey was established by static GPS observations to the project site control and NGS CORS stations with reference observations to local NGS stations. The primary control stations were OKSF, OKCL, and OKFR. Coordinates shown on this survey are NGS Oklahoma State Plane Coordinate System NAD83(CORS96) Lambert Projection North Zone. The distances and coordinates shown on this survey are in U.S. Survey Feet. All angles and bearings are shown in degrees, minutes, and seconds.

B. Primary control for this survey was established following ODOT Survey Division Standards. Control points were established using a minimum of 6 hour static GPS sessions.

C. Secondary control points were established by multiple observations using RTK and utilizing the Primary Control Points for base station set-ups.

VIII. VERTICAL CONTROL

A. Vertical control for this survey was taken from existing NGS benchmark elevations. A level loop was performed holding to the NGS CANADIAN benchmark and tying into the NGS 5112 benchmark. ODOT monuments D-22-455, D-22-456, and D-22-457 were established with additional benchmarks set as needed to meet ODOT Standards for the minimum distance between control points.

B. Level datum for this survey is NGS NAVD 88.

C. All Control Leveling for this project was done using Differential leveling techniques.

D. Benchmarks from FAP No. 281-C (2), FAP No. 281-B, U.S.W.P. No. WPH 281 "A", SAP N. 834(1) Part 2 plans, or SWO 1536(1) survey were not found. A search for additional benchmarks beyond the project limits was made, but no other benchmarks were found to be existing.

E. Benchmarks established or used on this survey are within the accuracy requirements of NGS Third Order standards as a minimum.

F. A BENCHMARKS AND CHECK LEVELS list was placed in the .DGN file and a hardcopy submitted with the completed survey showing the benchmark number, the differences of each run between benchmarks, and the elevation and full description of each benchmark.

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IX. PHOTO CONTROLS

Aerial control targets were established by multiple observations using RTK and utilizing the Primary Control Points for base station set-ups. Differential leveling runs were made to many of the aerial targets for vertical accuracy verification.

X. TOPOGRAPHY AND DTM

Observable surface feature information was collected and compiled into a traditional design topographic survey and included items such as drainage structures, utility structures, building structures, underground utility markings and observable utility evidence, bridges, roadway, mailboxes, fencing, etc. Ground surface contours were generated at a 1-foot contour interval. Topographic information was collected in an area covering, as a minimum, the area delineated in the Survey Special Provisions. The surface area was mapped using aerial photography and total station ground surveying techniques and surface point/break-line methodology. A Digital Terrain Model (DTM) was generated and provided by Dewberry. The model was analyzed, and a final edit made of areas where the automated computer process left misleading information (such as open bridge faces, manmade inverts such as a sewer manhole, manmade peaks such as an elevated manhole or utility riser, etc.) Areas obscured by vegetation were mapped using RTK and total station ground surveying techniques and added to the model.

XI. LAND TIES:

Land ties for this survey consisted of the establishment of the corners of the following Sections:
T-19-N, R-16-W, I.M.: Section 36
T-19-N, R-15-W, I.M.: Section 31
T-19-N, R-15-W, I.M.: Sections 4, 5, 6, 8, 9, 15, 16, 22, 23, 26, 27, 35, and 36.

A search was made at all corner locations for any trace of the original monuments and/or accessories. The following is a detailed explanation of how each corner was re-established:

T-19-N, R-16-W

- NW Corner of Section 36 - Found and accepted a P.K. Nail set in asphalt pavement using OCCRs filed in 2010, 2002, and 1986. The reference monuments were also found and verified.
- N/4 Corner of Section 36 - Found and accepted a Railroad Spike set in asphalt pavement using OCCRs filed in 2002 and 1986. Some of the reference monuments were also found and verified.
- NE Corner of Section 36 - Found and accepted a #3 Bar using OCCRs filed in 2010, 2002, and 1985. Some of the reference monuments were also found and verified.