

| OKLAHOMA DEPARTMENT OF TRANSPORTATION | | | | | |
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| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
| | OKLA. | | | | |
| DESCRIPTION | | REVISION | DATE | | |
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Oklahoma Department of Transportation (405) 521-2621
Survey Division

Date

To: Mr. Larry D. Rezac, PLS, Chief of Surveys

From: Shaw Smith, Professional Land Surveyor

Subject: SWO 4823(1) - J/P 28941(04) - U.S. 177 - Lincoln County
Bridge over Brush Creek, 0.71 mile North of the Pottawatomie County Line.

I. GENERAL:

Survey Began: September 25, 2012
Survey Completed: September 24, 2013

The measurement unit for this project was the U.S. Survey Foot.

II. SURVEY ASSIGNMENT:

This survey was assigned to Lemke Land Surveying, Inc. (LLS) under Engineering Contract Number 1394-F.

III. PURPOSE OF SURVEY:

The purpose of this survey was to furnish sufficient data to develop plans to construct a new bridge over Brush Creek south of Jacktown.

IV. SURVEY LIMITS:

This survey began at Sta. 335+00.000 and extended north to Sta. 375+00.000 as shown on SWO 2167(1) survey and FAS No. S-251 (10) S plans (approximate centerline length = 0.76 mile).

V. ALIGNMENT:

As directed by the Special Provisions, the Centerline of Survey was re-established along and identical to the Centerline of present U.S. 177. The alignment was re-established using historical geometric information as shown in FAS No. S-251 (10) S plans along with the existing bridge.

VI. STATIONING:

As directed by the Special Provisions, stationing was taken from SWO 2167(1) survey and FAS No. S-251 (10) S plans. Stationing was re-established using the section/quarter section lines and the existing bridge.

VII. HORIZONTAL CONTROL:

Horizontal control for this survey was established by static GPS observations to the project site control using NGS CORS stations processed in a fully constrained least squares network adjustment. These points were occupied multiple times using a minimum of 6 hour static GPS sessions. The primary control stations were OKAO, OKMA, OKPR and NGS JACK. Coordinates shown on this survey are NGS Oklahoma State Plane Coordinate System NAD83(2011) Lambert Projection South 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. Secondary control points were established by multiple observations using RTK and by Robotic Total Stations.

VIII. VERTICAL CONTROL:

- A Vertical control for this survey is NAVD88.
- B Site control elevations were established by holding an existing benchmark from FAS No. S-251 (10) S plans, running through the project limits and an additional existing benchmark from FAS No. S-251 (10) S plans and tying to an existing benchmark from FAS No. 251 (6)(7) S plans. Differential leveling techniques were used to establish elevations for the survey vertical control.
- C A benchmark list depicting newly established benchmarks as well as the results of the leveling has been placed on the Survey Data Sheets.

IX. PHOTO CONTROLS:

No Photo Controls were used on this project.

X. TOPOGRAPHY AND DTM:

Topographic data was collected by conventional field methods.

DTM data was collected out to 200 feet right and left of Centerline of Survey from the Beginning of Survey to Sta. 350+00; thence, 500 feet right and left of Centerline of Survey from Sta. 350+00 to Sta. 360+00; thence, 200 feet right and left of Centerline of Survey from Sta. 360+00 to the End of Survey.

XI. LAND TIES:

- A Complete land tie information was obtained by conventional field methods as per the Survey Special Provisions within the following sections or partial sections:
In T-12-N, R-3-E, I.M., Section 32 and 33.
The following is a detailed explanation of how each corner was re-established:

NW Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar as shown on corner record filed by Billie D. Schooley, PLS 1068.

N/4 Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar as shown on corner record filed by Billie D. Schooley, PLS 1068.

NE Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted mag nail as shown on corner record filed by Charles F. Cahill, PLS 1095.

W/4 Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar as shown on corner record filed by Charles Reed, PLS 1660.

E/4 Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted PK nail as shown on corner record filed by Billy Gene Knight, PLS 1244.

SW Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted 1" crimped pipe as shown on corner record filed by Charles Reed, PLS 1660.

S/4 Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted #4 rebar as shown on corner record filed by Billy Gene Knight, PLS 1244.

SE Corner of Section 32, T-12-N, R-3-E, I.M.
Found and accepted railroad spike. This monument appears to be in the same location as shown on corner record filed by Billy Gene Knight, PLS 1244.

N/4 Corner of Section 33, T-12-N, R-3-E, I.M.
Found and accepted #4 rebar. This monument fits well with surrounding collateral evidence. There was no corner record on file.

NE Corner of Section 33, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar. This monument appears to be in the same location as shown on corner record filed by Charles F. Cahill, PLS 1095. Also found 80d nail 12.3' south of corner. Monument shown on corner record filed by Larry G. Fox, PLS 434 was found lying in a ditch on the side of the road.

E/4 Corner of Section 33, T-12-N, R-3-E, I.M.
Found and accepted #4 rebar. This monument appears to be in the same location as shown on corner record filed by Larry G. Fox, PLS 434.

S/4 Corner of Section 33, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar as shown on corner record filed by Charles Reed, PLS 1660.

SE Corner of Section 33, T-12-N, R-3-E, I.M.
Found and accepted #3 rebar. This monument appears to be in the same location as shown on corner record filed by Larry G. Fox, PLS 434.

- B All property divisions, including existing right-of-way lines, adjacent to and/or crossing the Survey Centerline throughout the project limits were computed mathematically based upon the best available information.

XII. EXISTING RIGHT OF WAY:

The right of way along U.S. 177 was re-established from the existing plans, right of way documents, and right of way occupation.

XIII. UTILITIES:

CALL OKIE was contacted on September 17, 2013 with Order No. 13091712491802. Utilities notified according to the CALL OKIE ticket are Canadian Valley Electric and McCloud Telephone Company. All utilities marked, along with any overhead lines, are depicted in the submitted digital file.

XIV. ENVIRONMENTAL CONCERNS:

There is no visible evidence of any environmental concerns nor has there been any environmental concerns identified within the limits of the project.

XV. DRAINAGE:

Drainage areas for all drains crossing the Survey Centerline were taken from USGS quad maps that have been scanned into a Microstation Design File.

There is evidence that the creek encompasses the entire bridge. This area is part of the Quappaw Creek Watershed Project which could affect flooding.

XVI. SURVEY DATA SHEETS:

Survey Data Sheets were submitted in the form of a Microstation Design File as per GDOT Survey Division Standards. These were incorporated into a set of design drawings and are in substantial conformity with the ODOT Survey Division Standards for Survey Data Sheets.

| OKLAHOMA DEPARTMENT OF TRANSPORTATION SURVEY DIVISION | | | |
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| PLS | SS | | |
| DRAWN | SK | | |
| CHECKED | SS | | |
| APPROVED | SS | | |
| CREW | P7, BB | SWO 4823 (11) | PROJECT NO. 28941(04) SHEET NO. 5-2 |