

OKLAHOMA DEPARTMENT OF TRANSPORTATION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	OKLA.				

DESCRIPTION	REVISIONS	DATE

Oklahoma Department of Transportation

Date: April 16, 2008
 To: Mr. Larry D. Reser, Chief of Surveys

From: Gary S. Rhoads, Professional Land Surveyor

Subject: SWO 4432(1)- JP No. 21860(04) - SH 33 - Logan County
 Bridge over Cottonwood creek, Noble Street, and BNSF Railroad in Guthrie.

Historical Letter and Written Report

GENERAL:

Method of Survey:
 This survey was performed using a combination of aerial photogrammetry and conventional field methods to include Total Station, Static and Real Time Kinematic (RTK) Global Positioning System (GPS), Electronic and Differential leveling.

Units of Measurement - English (US Survey Foot)

Survey Began: January 8, 2009
 Survey Completed: April 16, 2009

Personnel on this survey:
 G. S. Rhoads, Professional Land Surveyor
 J. M. Whittenberg, Transportation Specialist III
 R. E. Huber, Transportation Specialist II
 C. S. Hinds, Transportation Specialist II
 J. G. Turner, Transportation Technician II

SURVEY ASSIGNMENT:

This survey was assigned to the El Reno crew by Mr. Kyle King, Transportation Survey Manager per Survey Scope and Special Provisions letter dated January 6, 2009.

PURPOSE OF SURVEY:

The purpose of this survey is to obtain adequate information for the design and construction of a new bridge over Cottonwood creek, Noble Street, and the BNSF Railroad, and widening of the existing roadway.

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SURVEY LIMITS:

This survey began at 19th Street in Guthrie and extends east to US 77.

ALIGNMENT:

A: Main Survey
 The Centerline of Survey was reestablished along the existing centerline of the SH 33 as shown on the FAP No. F-256(14) Plans. These plans stop at 18th Street. At this point the alignment was established along the centerline of Noble Avenue as depicted in SWO 2788(1) Survey (1969), Field Book No. 1.
 Note: Plans could not be found that covered the entire project. F-256(14)(As-Built 1972) Plans encompass a portion of the first two blocks, and the WPGM 256-B (1936) Bridge Plans cover an area along Noble Avenue, from 5th Street to 2nd Street.

B: Burlington Northern Santa Fe Ry. Co., originally Atchison Topeka & Santa Fe Ry. Co.
 The Centerline is as shown on the Right of Way Map, Orlando to Waterloo, M.P. 332 to M.P. 365 (1911) and as depicted on the A.T. & S.F. Ry. Co. Station Map-Tracks & Structures, for Guthrie, dated August 31, 1946.

Previous Surveys & Projects relevant to this project:
 Atchison Topeka & Santa Fe Ry. Co. Right of Way Map, Orlando to Waterloo, M.P. 332 to M.P. 365 (1911) and the A.T. & S.F. Ry. Co. Station Map-Tracks & Structures, for Guthrie, dated August 31, 1946.

FAP No. F-256 A, B, C, SH 33, Logan County, Plans, (1930).

U.S. Works Program G. C. Proj. No. W.P.G.M. 256-B Rdy. & Overpass, S.H. 33 Plans (1936).

SWO 2124(1), Logan County, SH 33, from Junction of SH 33 & US 77 in Guthrie East on SH 33 to Pine Street, Gaines H. Stout, Engineer Plans & Survey, Survey Completed May, 1956.

SWO 2788(1), F-256(15) PE, SH 33 Relocation, Logan County, from approximately 2 miles west of Guthrie on existing SH 33 northeasterly and east on Noble Avenue to 16th Street in Guthrie, J. P. Andrews, Location Engineer, Survey Completed January, 1969.

SWO 2791(1), F-256(15) PE, SH 33, Logan County, Gar Creek Bridge Survey, approximately 5 miles west of Guthrie, J. P. Andrews, Location Engineer, Survey Completed January, 1968.

SWO 2791(1), F-256(15) PE, SH 33, Logan County, Horizontal Controls, J. P. Andrews, Location Engineer, Survey Completed January, 1969.
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Previous Surveys & Projects relevant to this project - Continued:

FAP No. F-256(14), SH 33, Logan County, Grading & Surfacing Plans, (As-Built 1972).

Survey Plat, by Judd Grayson Vick Everett, JGVE, Inc., of Oklahoma City, Oklahoma, in Guthrie, Logan County. Survey encompasses the area around the old Atchison, Topeka and Santa Fe Railroad Station, from the north line of Vilas Avenue to the south line of Noble Avenue, from 10 feet to 20 feet east of the centerline of Track 19 to the existing east right of way line. Survey was revised on November 14, 1990.

Topographic Survey Plat, by Smith - Roberts and Associates, Inc., of Oklahoma City, Oklahoma, in Guthrie, Logan County. Survey also encompasses the area around the old Atchison, Topeka and Santa Fe Railroad Station, from the north line of Vilas Avenue to the south line of Noble Avenue, from the centerline of Track 19 to the existing east right of way line. Survey was dated September 14, 1994.

STATIONING:

Main Survey
 A Station value of 1511+39.00 was equated to the POT Station at the Centerline of Noble Street and the Section line between Sections 7 and 8, T-16-N, R-2-W, 1.M., as shown in SWO 2788(1) FAP No. F-256(15) Survey Alignment Book No. 1, Page 21, completed January, 1969. This is also as shown on the Guthrie City Work Map per same SWO 2788(1) FAP No. F-256(15) revised January 24, 1969.

HORIZONTAL CONTROL:

Horizontal control for this survey is based on the National Geodetic Survey=s (NGS) Oklahoma State Plane Coordinate System of 1983(2007), North Zone. The distances and coordinates on this survey are in US Survey Feet. All angles and bearings shown are in degrees, minutes and seconds. Static GPS Data obtained from the following locations was used to perform a Static Survey:

- NGS GPS Continuously Operating Reference Station (CORS) AOKDT*
- NGS GPS Continuously Operating Reference Station (CORS) AOKPR*
- NGS GPS Continuously Operating Reference Station (CORS) AOKTE*
- ODOT Control Monument No. L-42-403 established by Perry Crew under SWO 4003(1)
- ODOT Control Monument No. L-42-496 established by El Reno Crew under SWO 4432(1)
- ODOT Control Monument No. L-42-497 established by El Reno Crew under SWO 4432(1)
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HORIZONTAL CONTROL - Continued:

The Static & RTK GPS observations were observed with a Leica GPS System 500. Coordinates were checked by comparing them to the results of the two hour static sessions that were emailed to the NGS Online Positioning User Service (OPUS) Website. Secondary Control for this survey was established by double occupying all secondary points from alternate Primary Control Points established in the Static Survey.

VERTICAL CONTROL:

Vertical control for this survey is NGS North American Vertical Datum 1988 (NAVD88). A double run digital differential level line was started from a Third Order, Oklahoma Highway Department (OHD) Standard Brass Monument, L-42-17, established in 1968 per SWO 2791(1), F-256(15) PE, Gar Creek Bridge Survey, approximately 5 miles west of Guthrie, SH 33, Logan County, as shown in Level Book 1, page 39. Said benchmark was established on a level line between a United States Geological Survey (USGS) Monument, described as a standard cap Stamped 7/321065 ADJ 1903* and riveted on top of a 3 1/2" Iron Pipe and the following United States Coast & Geodetic Survey (USC & GS) Monuments, K 144 and L 144, described as standard brass caps set vertically in the west wall of the Atchison, Topeka and Santa Fe Railway Station and the north wall of the Federal Building in Guthrie, respectively. The published difference between the NAVD29 datum and the NAVD88 datum is 0.41 feet for the monuments in Guthrie. Therefore the established elevation of the OHD Monument L-42-17 was raised 0.41 feet to the NAVD88 datum. Therefore beginning at said OHD Monument L-42-17, described as being 2746 feet east and 1914 feet north of the southwest corner of Section 7, T-16-N, R-2-W, 1M., approximately 1.2 miles west of Guthrie along the old SH 33, and continued northeasterly along the old SH 33 and the present SH 33 approximately 2.5 miles to said USC & GS Monument L 144, described as being 16.7 feet west of the northeast corner of said Federal Building, 3.3 feet east of the east side of the north entrance door, 3.2 feet west of the west side of a window, and 4.4 feet above the sidewalk. The closure was 0.02 foot in this run of approximately 2.5 miles. The allowable difference of a third order run of this distance would be 0.08 Foot. Said levels were continued 0.6 mile west to said USC & GS Monument K 144, described as being 5.5 feet north of the northwest corner of the ticket office, 1.8 feet south of the south side of a window and 4.2 feet above the sidewalk. The closure was 0.02 foot in this run of approximately 0.6 mile. The allowable difference of a third order run of this distance would be 0.04 Foot.

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PHOTO CONTROLS:

A total of 33 Photo Control Targets were established on this project. Profile shots were taken along the centerline of SH 33, crossing streets and top of rail shots along the BNSF railroad for the entire project as per specifications. Additional shots were taken at intervals along said railroad on top of the west end of the railroad ties as instructed for the extent of the cross flight. A separate Aerial ALG file with the coordinates and elevations and an Aerial DGN file of these have been archived on the ODOT Mainframe Computer. A total of 37 OSSDA points were collected throughout the length of the project. These points were taken to verify the aerial photography.

OKLAHOMA DEPARTMENT OF TRANSPORTATION SURVEY DIVISION			
PLS	GSR		
DRAWN	JMW		
CHECKED			
APPROVED			
CREW	El Reno	SWO <u> 4432 </u> (1)	PROJECT NO. <u> 21860(04) </u> SHEET NO. <u> S002 </u>

SURVEY DATA SHEET