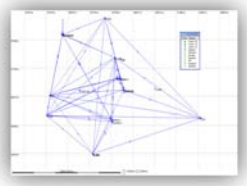
SURVEYING

SH 360/SH 180 (Division Street) Interchange – Arlington, TX

Multiple phases of TxDOT/City of Arlington project to redesign access roads to facilitate traffic for Cowboys Stadium in Arlington, Texas. Recovery, establishment, and densification of control using TxDOT surface coordinates, right-of-way monuments and structure locations, complete topographic survey from Randol Mill to Abram Street. Union Pacific Railroad facilities were located, along with visible drainage channels, culverts, flow-lines, etc. All permanent utility features were located and tied in. Three ROW parcels and four TXDOT easements were created. Phase I on this project began in January 2006 and the second phase ended in May 2008.



East Texas Star Project – Sabine, San Augustine, Angelina, Nacogdoches and Shelby Counties, TX

Project consisted of a request to delineate the boundaries of approximately 150,000 acres of mineral interests spread out over these five (5) counties. Initially, a precise control network was established over the 7,500 square mile project area to ensure the accurate coordination of these properties, and both NAD83 and NAD27 coordinates were derived for all points. All boundary surveys were tied accurately to permanent monuments making up this network and were conducted utilizing the Texas Coordinate System as defined in the Texas Natural Resources Code.

Railroad Quiet Zone Surveys – Arlington, TX

Topographic maps and 3-D triangular integrated network models for five railroad-crossing locations developed. Specific topographic elements made a part of the plan documents included complete railroad facilities (i.e.: signals, communication structures, etc.), drainage features, utilities and paved areas. All topographic data referenced the Right-of-Way limits.

Halloran Street/Geddes Avenue – Fort Worth, TX

Engineering Design Surveys for street improvements included extending geodetic controls based on the city's central network. As part of the survey, topographic data included utilities, structures, storm drain elements and location of Rights-of-Way along both alignments. Additional services consisted of obtaining geotechnical data for designing new reinforced concrete pavement surface.

Henderson to Forestburg Gathering Line - Montague County, TX

Project consisted of reconnaissance and route design, completing boundary and topographic surveys for an approximate 25-mile natural gas gathering line system. Using aerial images and a tentative route, JEA HydroTech worked with the land and right of way contractors, as well as the end client, to formulate and revise the route. Extensive boundary surveying was completed using current deeds, parent deeds, and original patent surveys. A full topographic survey was completed of the entire route and all creeks, structures, sizeable grade breaks, utilities, etc. were located. Exhibit plats with metes and bounds descriptions were prepared for the creation of the pipeline easements across each tract, as well as road profile exhibits for the purposes of procuring permits from TXDOT and the County of Montague for road bores. Construction alignments (plan and profile) were prepared and provided to the client and contractors for the installation of the pipeline. A web-based **GIS** was created to allow for real-time communication and progress updates, containing route, parcel, and pipeline data as well as aerial images, topographic overlays, etc.. After the completion of the "as-built" survey, the as-built information was included in the web-based **GIS**.

Fort Worth Transportation Authority – Park N Ride

This project consisted of completing title surveys on 11 tracts in Byers and McCart addition to the city of Fort Worth for the purpose of constructing a Park and Ride for the Fort Worth Transportation Authority. Title commitments were provided by the client/title company and were reviewed by an RPLS to determine if additional research was necessary. Fieldwork was completed and a title survey plat, along with a metes and bounds description, was prepared for each tract.

Masco True North - Denton County, TX

This project consisted of delineating a line of "true" astronomic north and projecting it into the Masco building for use in calibrating GPS gyro meters used in helicopter navigation. The client required that the line be accurate to within 30 arc seconds of astronomic north. Using the Leica RTK reference network and a proprietary technique that improves RTK accuracy known as a "static initialization", control monuments were set and observed. Once an azimuth was calculated, conventional equipment was used to set monuments delineating a line of astronomic north on the floor of the warehouse. This azimuth was independently verified using solar observations and was found to be well within tolerance. This line was then used to orient the foundation of the calibration structure. Once the structure was put in place, the calibration instrument itself was precisely oriented to astronomic north using conventional optical equipment. A detailed survey report, along with exhibits and statistical analysis, were delivered to the client. Surveying for this project started in April 2009 and was completed in September of 2009 as per client requirements.

W8 Loop Gathering Line – Dallas County, TX

Project consisted of completing boundary and topographic surveys, utility location (hydrovac "potholing") and routing in a 3.2 mile long congested corridor northeast of the DFW airport. Using aerial images and a tentative route, which included existing and new easements, JEA HydroTech worked with the land and right of way contractors, as well as the end client, to formulate and revise the route. Extensive boundary surveying was completed using current deeds, parent deeds, and original patent surveys. A full topographic survey was completed of the entire route and all creeks, structures, sizeable grade breaks, utilities, etc. were located. Extensive underground utilities were located using "radiodetection" locating equipment and verified Exhibit plats with metes and bounds descriptions were prepared for the creation of the new pipeline easements across certain tracts, as well as road profile exhibits for the purposes of procuring permits from TXDOT and the County of Dallas for road bores. Construction alignments (plan and profile) were prepared and provided to the client and contractors for the installation of the pipeline.

Devon Energy – Pate A, Unit, Project - Shelby County, TX

Project consisted of a complex boundary retracement in East Texas involving over 3000 acres. Analyzed deeds and other documents from current ownership back to the original patent. Project required reestablishing the original corners on seven (7) original surveys in the project area. Original survey corner locations were determined and included in the final boundary analysis. An overlap in property descriptions was identified, investigated on the round, and dealt with according to Texas property law. A geodetic quality network control survey with permanent monumentation was created for this project.

Sewer, Water and Drainage Systems Improvements - Fort Worth, TX

As an approved provider of Survey Services for the City of Fort Worth, we have recently handled the stakeout of approximately 9000 feet of water line improvements and 3600 feet of sewer line improvements and 3400 feet of storm drainage in the Fort Worth Medical District. For this project, we worked under the direction of Kevin Hansen, Survey Superintendent for the City of Fort Worth, and also maintained direct communication with the superintendent of the construction firm to ensure that everyone's exact needs were met.

City of Arlington Control Network Update – Arlington, TX

The City of Arlington retained JEA HydroTech to establish new coordinates for the city's monumentation based on the 2007 adjustments to the NAD27 and NAD83 1986 system. To accomplish this task, a combination of GPS/GNSS techniques was employed. As a first step, a static observation network consisting of four National Geodetic Survey (NGS) monuments and five City of Arlington monuments were observed. This data was then processed and adjusted using the NAD83 (2007) adjustment. In addition, static data from three local CORS sites were collected, processed and adjusted with the five City of Arlington monuments. Geodetic transformations were calculated between each of the three NAD83 adjustments, and also the NAD27 datum, making it possible to transform GPS/GNSS data between each of these coordinate systems. In our final process, we observed Network RTK data at each of the city's Control Monuments, being GPS compatible, and using data obtained from the Network RTK system known as SmartNet. Special techniques were utilized to insure the desired level of accuracy for establishing control monumentation. Such techniques consisted of using dual setups repeated over at least 2 days and at different times of the day to achieve a greater level of accuracy when compared to the original static observations that were in effect in the early 1990's when the network was created. Our survey department completed the process of observing 144 monuments; both existing and new, as well as creating a detailed report with data sheets and coordinate lists.

Bowie Municipal Airport – Bowie, TX

Construction staking services provided to B & B Solvent and Jordan Paving for apron, taxiway, storm drain improvements and the new construction of a hanger and taxiway at Bowie Municipal Airport. Project consisted of staking offsets for 500' of storm drain along with staking offsets and slope staking for sub-grade for the apron and taxiways, and new hanger pad. Building corners were set for a new hanger and final sub-grade blue tops provided for the apron and taxiways. After paving was completed, locations were set for the tie-down anchors; the taxiway stripping was performed and as-builts for asphalt quantities were prepared.

3-D modeling, centerline alignments and profile alignments were used to generate grade calculations and staking data.

Topographic Design Surveying - Water Main Replacements – Grand Prairie, TX

Project consisted of Topographic Survey for Engineering Design relating to the replacement of about 15,000 feet of Public Utilities (i.e.: Water Mains, Sanitary Sewer Systems, Storm Drains) for the City of Grand Prairie.

Possum Kingdom Lake, Palo Pinto County TX

A corporate body known as Patterson PKL Partnership LLC made arrangements to purchase from the Brazos River Authority a vast area of land at Possum Kingdom Lake occupied by approximately 1500 leaseholders, and convey to those leaseholders the properties occupied by them in fee simple. Some of those leaseholds were created as long ago as the 1940's as primitive cottage lots, but in the intervening years massive changes had occurred and some lots now included dwellings and other improvements to a value of several million dollars. As one of the Land Surveying firms approved to perform the improvement surveys to facilitate the transfer of these lots to the various leaseholders, JEA HydroTech completed the extremely detailed survey of approximately 125 lots, similar to an ALTA/ACSM type survey, and also assisted several other Land Surveying firms in meeting their obligations to their clients in a timely manner.

Terrell Municipal Airport – Terrell, TX

Construction staking services provided to Orval Hall Excavating for apron and storm drain improvements at Terrell Municipal Airport. Project consisted of staking offsets for 2000' of storm drain; staking offsets for sub-grade; setting sub-grade blue tops; and, lime treated blue tops for a four-acre apron addition. One mile of new cyclone and barbed wire fence was also staked out.

3-D modeling, centerline alignments and profile alignments were used to generate grade calculations and staking data. .

FM 51 Bridge Replacement at Flatt Creek – Cook County, TX

Construction staking services provided to Orval Hall Excavating for approximately 2,500' of roadway re-grade and pavement for TxDOT project. Very tight horizontal and vertical control was also provided for the construction of a 300' bridge. All offsets were set for the bridge using the most care, then double and triple checked. Numerous benchmarks set which were tied in by using Leica digital levels. This project was performed in two phases, both of while still under traffic which made for very strict safety standards.

3-D modeling, centerline alignments and profile alignments were used to generate grade calculations and staking data.