City of DeBary, FL
Sidewalk Data Collection Services

Prepared by:
Data Transfer Solutions, LLC
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COVER LETTER
May 30, 2017

Mr. Matt Boerger AICP, LEED AP
Growth Management Director
City of DeBary
16 Columbia Rd
DeBary, FL 32713

Dear Mr. Boerger,

Data Transfer Solutions, LLC (DTS) is pleased to present our statement of qualifications to the City of DeBary. Formed in 2004, DTS is a transportation planning, engineering, GIS and asset management solutions company headquartered in Orlando, Florida with regional offices in San Antonio and Dallas, TX; Fort Collins, CO; Minden, NV; Portland, OR and Manchester, NH. DTS has compiled asset data for over 100 asset management projects including videolog applications, pavement condition surveys and roadway geometrics, signs, manholes, inlets, guardrails, fire hydrants, sidewalks, street lighting, signals, mailboxes, retaining walls, rumble strips, medians and pavement markings.

We appreciate the opportunity to submit this statement of qualifications and look forward to beginning a long-term relationship with the City of DeBary. DTS’ main point of contact for this response is Daniel Behnke, Director of Asset Management Operations, phone 407.382.5222, cell 407.375.3049 and email dbehnke@dtsgis.com.

Sincerely,

Data Transfer Solutions LLC

[Signature]

Allen Ibaugh, AICP, GISP
Chief Executive Officer
BACKGROUND INFORMATION

Data Transfer Solutions, LLC (DTS), a limited liability company founded in 2004, has been collecting sidewalk condition data and developing management plans for updating sidewalk databases since our inception. We have worked on several similar projects to the scope of services requested by the City of DeBary. DTS offers comprehensive experience and subject matter expertise in the fields of asset data collection, surveying, asset management, transportation planning and GIS.

DTS has multiple certified instructors of the Urban and Regional Information Systems Association (URISA) course on asset management and has taught this course at the National URISA Conference and for the FHWA and AASHTO GIS-for Transportation Symposium conferences (GIS-T) that focused on asset management planning, strategy and implementation.

The DTS team has extensive experience with automated data collection and processing pavement, asset and geometric data for DOT (state), city and county clients across the US in accordance with GASB 34 and MAP-21. These projects have surpassed 150,000 miles of mobile asset collection, processing and integration into a suite of web-based and GIS-centric databases. DTS has compiled asset data for over 100 asset management projects including videolog applications, pavement condition surveys and roadway geometrics, curb and gutter, signs, manholes, inlets, guardrail, fire hydrants, parking meters, sidewalks, street lighting, signals, mailboxes, retaining walls, rumble strips, medians and pavement markings. These projects have ranged in size from an agency as small as Balcones Heights, Texas to Colorado DOT which is in excess of 12,000 miles.

DTS’ pavement and ROW asset management clients include Orlando, FL; Lakeland, FL; Lynx Regional Bus Transportation Service; Seminole County, FL; West Palm Beach, FL; Miami-Dade Expressway, FL; Charlotte, NC; Virginia Beach, VA; Greenville, SC; Charleston, SC; Knoxville, TN; San Antonio, TX; Arlington, TX; Houston, TX; Ft Worth, TX; Austin, TX; Albuquerque, NM; Arizona DOT; Colorado DOT; Delaware DOT; New York State DOT; Rhode Island DOT; and Minnesota DOT.
SCOPE OF WORK

Methodology—Project Understanding and Approach:

Task 1—Project Management

As a national company, DTS has successfully completed asset management projects for entities of all sizes. DTS will provide acquisition, extraction and inspection services in conjunction with the sidewalk condition survey for the City of DeBary.

The sidewalk inventory will include location, width, condition, buffer, and material of all sidewalks on the public right of way and certain other routes as deemed relevant and appropriate.

DTS will utilize our project management website to house documents, schedules, and critical-path items. DTS has found this to be a useful tool for tracking and reporting on project status. In addition to the project management website, weekly or bi-weekly meetings are executed for the project duration. These meetings involve the client project manager and the DTS project manager, Daniel Behnke, PMP, AICP, GISP. These meetings are typically conducted for short durations to inform the client of project schedule, project team activities and any issues needing additional input. Additional project team update meetings are scheduled with staff on an as-needed basis.

DTS also provides monthly progress reports that reflect the status of work completed to date, work anticipated to be completed in the next reporting period, problems/obstacles identified during the period and outstanding issues. These reports are articulated in these meetings and subsequently attached to the project management website.

Task 2 Data Collection—Inventory of Sidewalks

DTS will begin the project by meeting with the City staff and City committees to discuss goals of the sidewalk inventory. DTS will work with the City to get an approved collection and extraction methodology before beginning collection of the roads in the survey. Next, DTS will mobilize one of our Mobile Asset Collection (MAC) vehicles to conduct a sidewalk inventory.

DTS will collect the necessary right-of-way imagery within the DeBary City Limits. This study area encompasses approximately up to 155 centerline miles of roads to be driven. DTS will utilize the GIS layers from the following website to determine the City Limits and roads within the City of DeBary to be collected: https://www.volusia.org/gis/download/Shapes.htm

All collected asset imagery will be provided in state plane coordinates while being collected in one continuous pass at posted highway speeds. DTS proposes to use its MAC vehicles equipped with four or more right-of-way cameras to perform the sidewalk inventory and capture other right-of-way (ROW) images for future uses. The ROW images can be used to assess condition for ratings on other above-ground infrastructure including but not limited to roadway signs, curb and gutter, manhole covers, valves, guardrail, light poles, signals, pavement markings and pavement striping.
DTS Mobile Asset Collection vehicles for right-of-way assets are equipped with:

- **High-Resolution right-of-way digital cameras** – Allied Vision GigE cameras with a frame rate of 15 images per second and 1936 x 1456 color resolution.


- **Distance Measuring Instrument (DMI) BEI 5000 Pulse Incremental Encoder** – allows for collection of high-resolution images at posted highway speeds.

- **GPS Equipment** – used for mapping the location of the vehicle, heading information and positional tagging of images; 2 positional units, 1 differential unit.

- **Acquisition Server** – Windows 7 Ultimate with Qcorei 7, 8GB RAM, (8) 2TB disk drives – onboard servers for storing data (LiDAR, Profiler, GPS, DMI and IMU data) and processing images.

The MAC images and data collected will be defined in the data element delivery structure utilized by the the City. **The DTS MAC system collects all right-of-way images, IMU and DMI data concurrently.** DTS will also provide digital images of all streets and roadways collected in a format compatible with Esri ArcGIS. These images are clipped at a distance of approximately 12 feet and saved as industry-standard JPEGs. Our proposed solution involves the collection of images and subsequent processing of those images within a 24 hour time period. DTS relocates the images to an on-site server at the end of the collection day and then processes the images overnight for complete coverage checks. Right-of-way photographs will be collected approximately every 12 feet or more frequently and will provide image coverage along the roadway for ROW assets.
Image Quality – DTS will collect imagery during daylight hours only, with no rain, smoke, fog or snow visibility obstructions. DTS uses automatic shutter adjustments to allow for on-the-fly image brightening or darkening to avoid poor image quality from sunlight, overcast or shadows. Any road segment that exhibits low image quality due to lighting will be recollected.

GPS – Satellite signal reception will be monitored during the calibration cycle and the project collection. Any collection run that does not maintain a minimum of 4 satellite signals will be recollected. Project accuracies cannot be maintained with less than 4 satellite signals during collection. All road segments with less than 4 satellite signals during collection will be recollected until a minimum of 4 satellite signals are obtained. It should be noted that additional GPS base stations may be required in urban canyon areas or areas of low GPS reception.

Collection Coverage - DTS utilizes the GPS location of each image collected to create a GPS track of the collection route. These GPS tracks are then compared to the project collection routes shape file in an Esri GIS format to verify all routes have been collected and collection coverage is complete. MAC imagery is collected at intervals of ten to fifteen feet to ensure complete coverage and overlap of roadside features.
Task 3 Sidewalk Inventory

The sidewalk inventory and assessment process typically includes the following phases: collection, inspection, and reporting.

Sidewalk Inspection

DTS uses its Mobile Asset Collection (MAC) vehicles to collect right-of-way asset inventories. The vehicles capture images at an interval of approximately 10 to 15 feet for both forward and oblique-facing directions and are geo-referenced to each road segment.
Sample MAC Images of Sidewalks

DTS will work with the City to determine the exact attributes for a sidewalk inventory but typically includes the following attributes for sidewalks which is a linear feature within the GIS and is delivered in a file geodatabase.

- AssetID
- Location (Line representing sidewalk location)
- Location (Street Name asset located on)
- Photo Image Link
- Physical Condition Rating
  - Good = sidewalk is level with no uprooting or cracking
  - Fair = sidewalk has minimal uprooting or cracking
  - Poor = sidewalk has major uprooting or cracking and poses a hazard to pedestrians
- Comments
- Length
- Width
- Buffer
- Material Type
Sidewalk Inspection Methodology

DTS’ extraction team will import the digital images into the extraction and attribution software (EarthShaper™) and proceed through each photo to identify the required assets on the photos. DTS staff will use the image that best represents the sidewalk to locate it geographically. DTS will evaluate multiple images that depict a particular asset feature and our staff will use the one that is the closest to the camera when the image was taken. This method increases the visibility of the asset and allows for a more accurate visual assessment. This also produces the best positional (coordinate) accuracy for that asset. DTS will inventory each sidewalk with a unique ID number, the starting and ending point, as well as any required intermediate points to create the linear shape of each sidewalk.

DTS utilizes its own EarthShaper software to perform feature extraction and attribution of asset data. Since EarthShaper incorporates the use of modern GIS and database technologies, assets can be identified and mapped spatially as points, lines or polygons and the attributes are entered at the same time. The EarthShaper software is capable of accommodating ANY asset/attribute combination through a configurable data model. This model can be set up specifically for the City’s data models and is 100% Esri-integrated to streamline the data capture process into a GIS. The software also enables a high level of “workflow process continuity” by “fusing” the capabilities of the external sensors and GIS and database technologies in a singular system. This allows the DTS team to fully leverage the
capabilities of each component in the most efficient manner possible and results in a high level of data quality, integrity and consistency.

Our proprietary EarthShaper software gives DTS a distinct advantage over competitive software packages because it removes the “black box” portion of asset rating. All assets can be viewed and edited through this workflow, resulting in a more accurate product for the City. It also adds another element to the QA/QC process, allowing for more accurate data review and confirmation through a streamlined data reduction workflow.

DTS has designed the EarthShaper asset data extraction software by optimizing the performance of visualization/QC of the roadway condition and inventory data. Moreover, the EarthShaper application allows for efficient data creation through the use of simple point, line and polygon vector tools. Users can also assign condition inventory ratings to data inside of EarthShaper.
Task 4 Final Report for Sidewalk Condition

DTS will provide the City a final report based on the City’s sidewalk network condition evaluation. The final report can be used for reporting budget needs or shortfalls to boards, councils and committees. DTS has performed this task for many municipal government staff members on past projects and is well-versed in presenting relevant information to local officials and constituents that support the proposed budget requests.

DTS will deliver a final GIS file geodatabase containing all collected data.

FEES:

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<th>Task</th>
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Fee Total $ 19,890.00