

September 17, 2019

Mr. William Banks, PE
Engineering Department
City of Franklin
109 Third Avenue South, Ste 133
Franklin, TN 37064

**RE: Survey Proposal with Mobile LiDAR
Church Street Improvements
Downtown Franklin, Williamson County, Tennessee**

Civil Infrastructure Associates, LLC (CIA) is pleased to submit this proposal to provide land surveying services for the Church Street Improvements Project. CIA had previously completed a survey along Church St in 2018 for a water service improvement project and this survey will expand on the previously completed survey but will not duplicate or update that project.

Scope of Work

CIA will provide the services for the proposed survey limits (including backyards where shown within the provided limits) as specifically set forth below:

Task 1 – Survey Project Management

This task will consist of project coordination and administration. This project will require coordination with the Client to provide updates, coordinate field work, and other activities to help the Client keep the project stakeholders generally informed of the progress of the project. This project will also require a level of coordination with area property owners.

Task 2 – Survey Project Control

This task will consist of expanding the project control from the previous survey to cover this project area. This includes establishing horizontal positions and tying to the previously completed survey vertically.

Task 3 – Topographic Survey Field Work and Drawing Production

A topographic plan will be prepared to show the existing site conditions and will include the following:

- Survey shall meet the Tennessee Standards of Practice for Topographic Surveys.
- 1-foot contours will be shown, and spot elevations will be included at key locations where the contours are insufficient to model the surface.
- Generally, the topographic survey will be based on features and elevations extracted from a point cloud along with ground survey measurements taken generally at a 25-ft spacing.
- Existing features will be primarily based on the point cloud and CAD features will be created from point cloud measurements to produce a typical CAD linework deliverable.
- Features not visible from the point cloud will be collected using ground survey measurements and gaps or shadows in the point cloud may be augmented by ground survey data if determined necessary.

- Topographic survey will include natural ground elevations and noticeable terrain breaks.
- Survey will include existing features including curbing, pavement, pads, vegetation, walks, walls, signs, etc. along with existing utilities and drainage features within the survey limits, location & name of adjoining streets, etc.
- All survey areas will include visible above-ground evidence of utilities, including overhead power and communication lines, light poles, guy wires, transformers, & substations.
- Underground utility locations will be based on observable evidence and markings provided from 811 location request.
- Topographic survey will include any storm structures encountered within the area plus the next upstream and next downstream structures found outside of the area. Storm structures will include top elevations, invert elevations, opening type & size, and pipe size & material if pipe is accessible from the structure.
- Survey will include the necessary research and cursory field search for existing property corner monuments to prepare property boundaries for reference but will not necessarily include a full Category I boundary survey of the properties within the survey limits.
- Topographic survey will be merged with existing Church St. survey completed in 2018.

Task 4 – Survey Project Management

This task will consist of project coordination and administration. This project will require coordination with the Client to provide updates, coordinate field work, and other activities to help the Client keep the project stakeholders generally informed of the progress of the project. This project will also require a level of coordination with area property owners.

Task 5 – Mobile LiDAR Collection

This task will be performed by a sub-consultant at a lump sum fee. This task consists of mobilization, collection and processing of LiDAR data. LiDAR deliverable includes a geo-reference point cloud in a .las format along with geo-referenced images. LiDAR data will be geo-referenced to site control surveyed by CIA. LiDAR data will only include the Church St and intersecting road corridors.

Services Not Included

Any other services, including but not limited to the following, were not included in this estimate:

- Construction Layout
- Subsurface Utility Exploration (SUE) not specifically described in Task 3
- Hydrographic Surveying

Additional Services

Any other services not specifically provided for in the above scope will be billed as additional services and performed at our then current hourly rates.

Schedule

CIA will work to prepare a final deliverable within 12 weeks of a notice to proceed. Survey schedule assumes



no delays with gaining access to the project site, or delays caused by uncontrollable weather events.

Deliverables

CIA will provide survey information for the Client to use for design in a final AutoCAD DWG format to include all planimetric and topographic feature data. Survey coordinates will be delivered in an excel compatible format and a LandXML will be created of the surface/DTM file for each location. A point cloud will be delivered in a .las file format. If the Client wishes for the survey drawing to be included in a plan set or bid documents, CIA will provide sealed drawings in a pdf format with hardcopies available upon request. It is the Client's responsibility to provide CIA with any preferred file naming conventions, project sheet borders, or other project specific requirements. We will also provide a TDOT format Right-of-way acquisition table complete with property data.

Fee and Expenses

CIA will perform the above described services based on standard hourly rates. Field surveying can vary depending site conditions and access to areas to be surveyed. Please budget the following estimated amount to complete the requested survey using standard ground surveying techniques:

Estimated Budget **\$ 85,760.00**

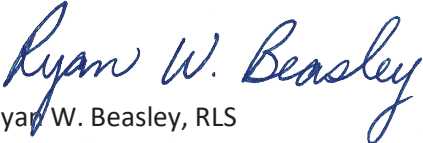
Hourly fees will be invoiced upon completion of services performed. Payment will be due within 25 days of your approval of the invoice.

This project may benefit from remote mapping methods such as aerial photogrammetry or LiDAR combined with ground survey; however, the obstructed areas may require too much ground survey supplement for these methods to be cost effective. Prior to field work alternative solutions will be explored and the most cost-effective solution will be used with cost savings passed on to the client.

Closure

We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Regards,
CIVIL INFRASTRUCTURE ASSOCIATES, LLC


Ryan W. Beasley, RLS
Survey Manager

attachments: Survey Limits
Fee Estimate

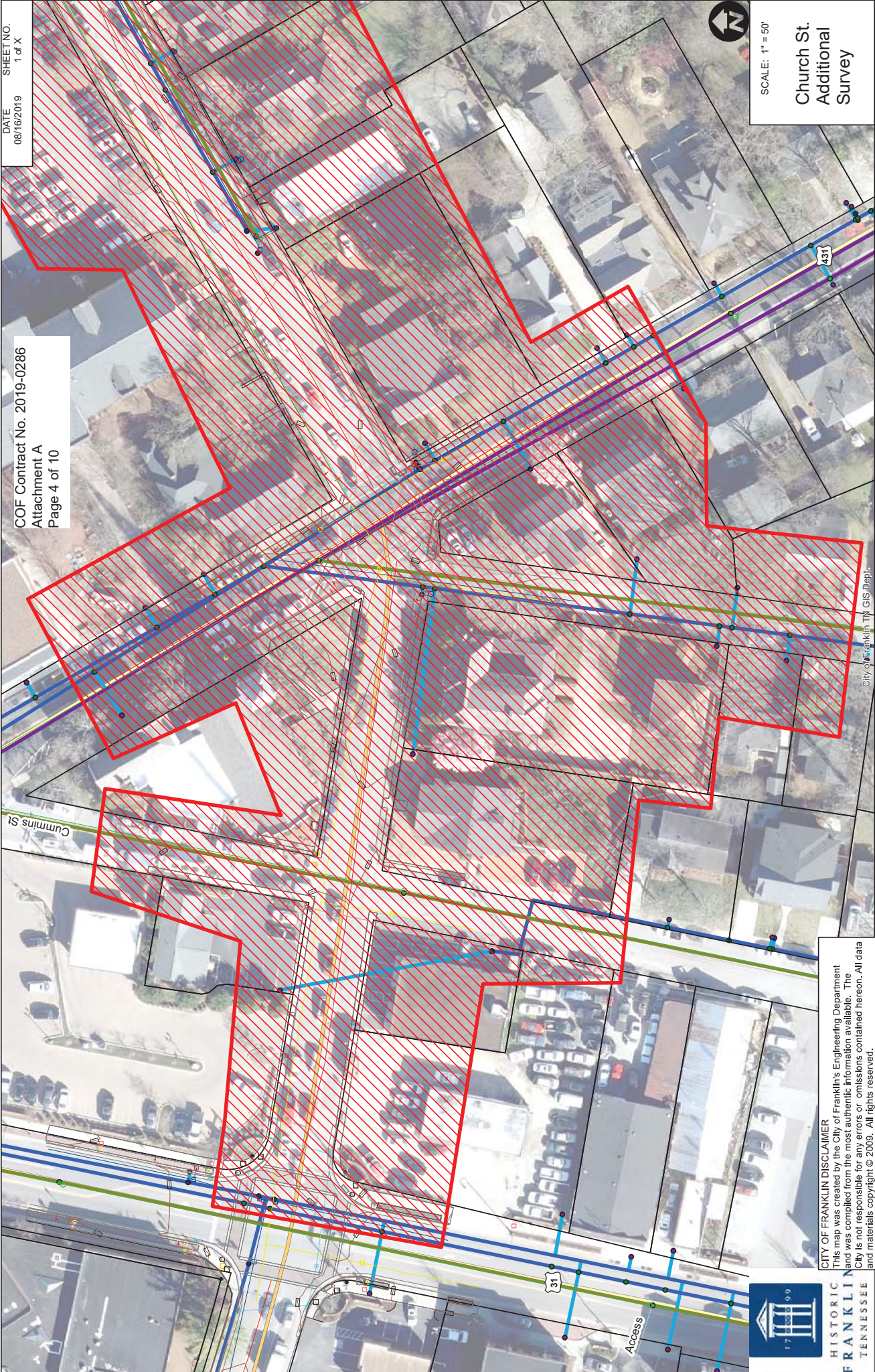


DATE: 08/16/2019
SHEET NO. 1 of X

COF Contract No. 2019-0286
Attachment A
Page 4 of 10

SCALE: 1" = 50'

Church St. Additional Survey



City of Franklin, TN GIS Dept.

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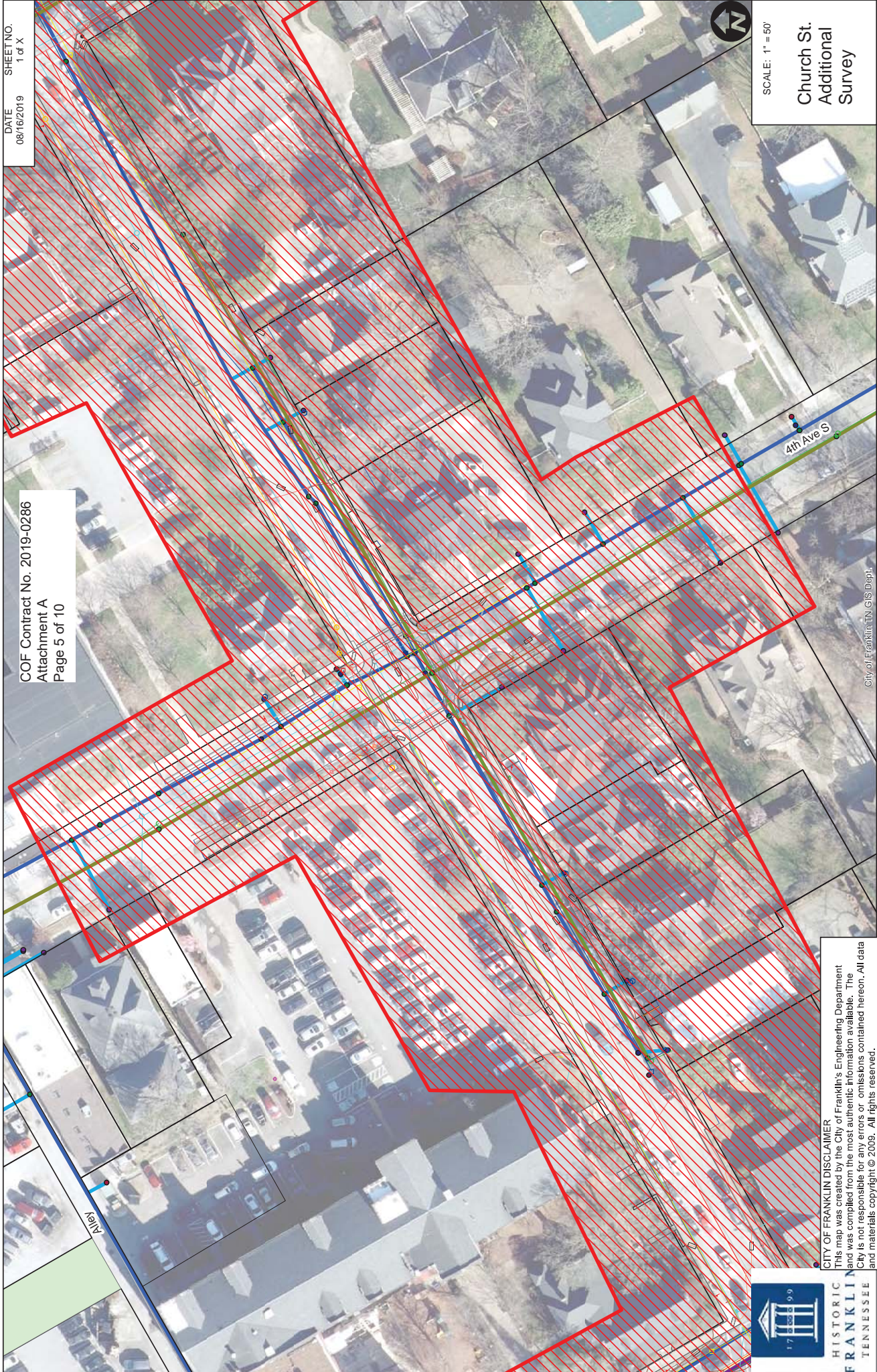
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SCALE: 1" = 50'

Church St. Additional Survey



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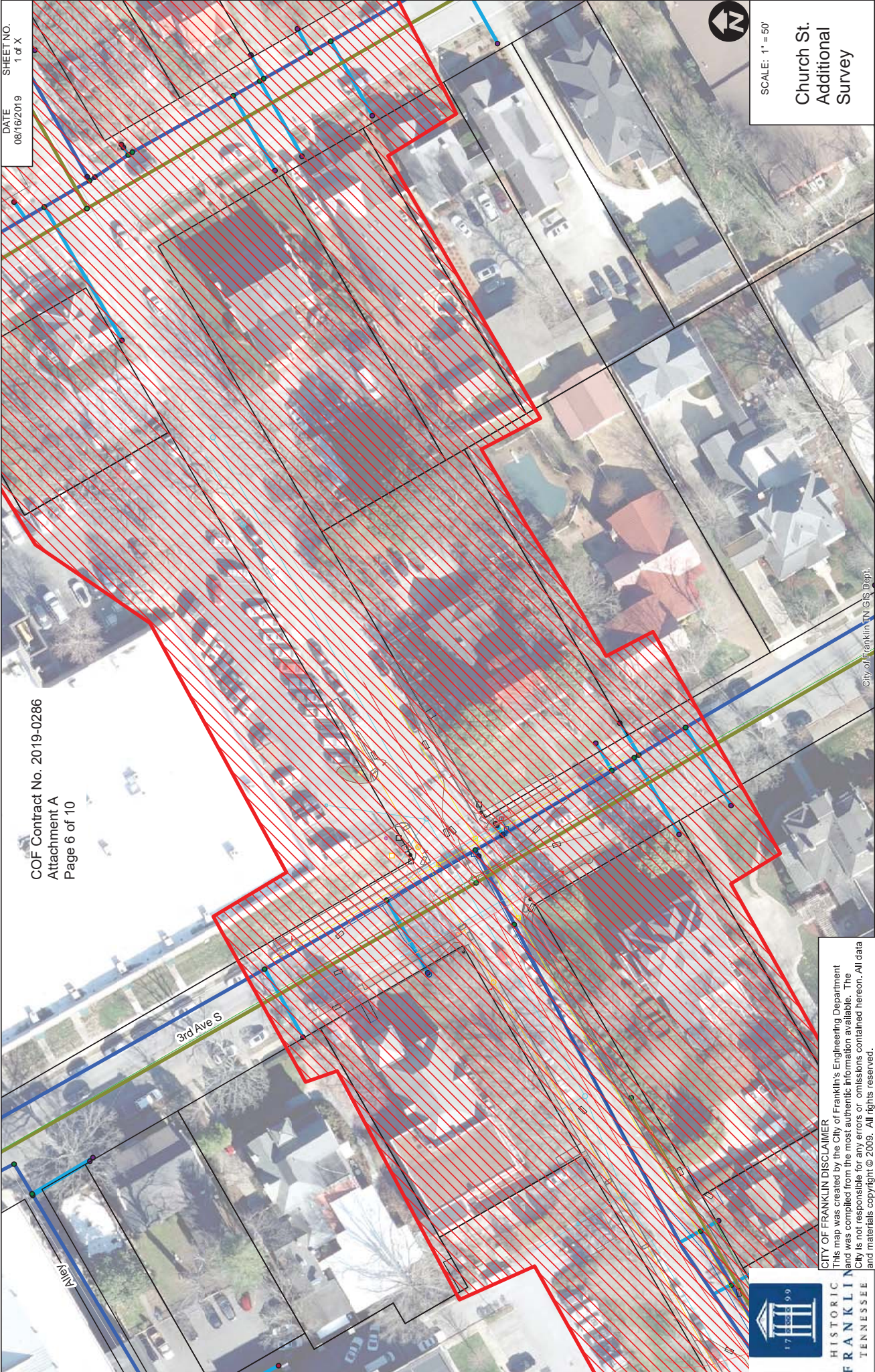
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SCALE: 1" = 50'

Church St. Additional Survey

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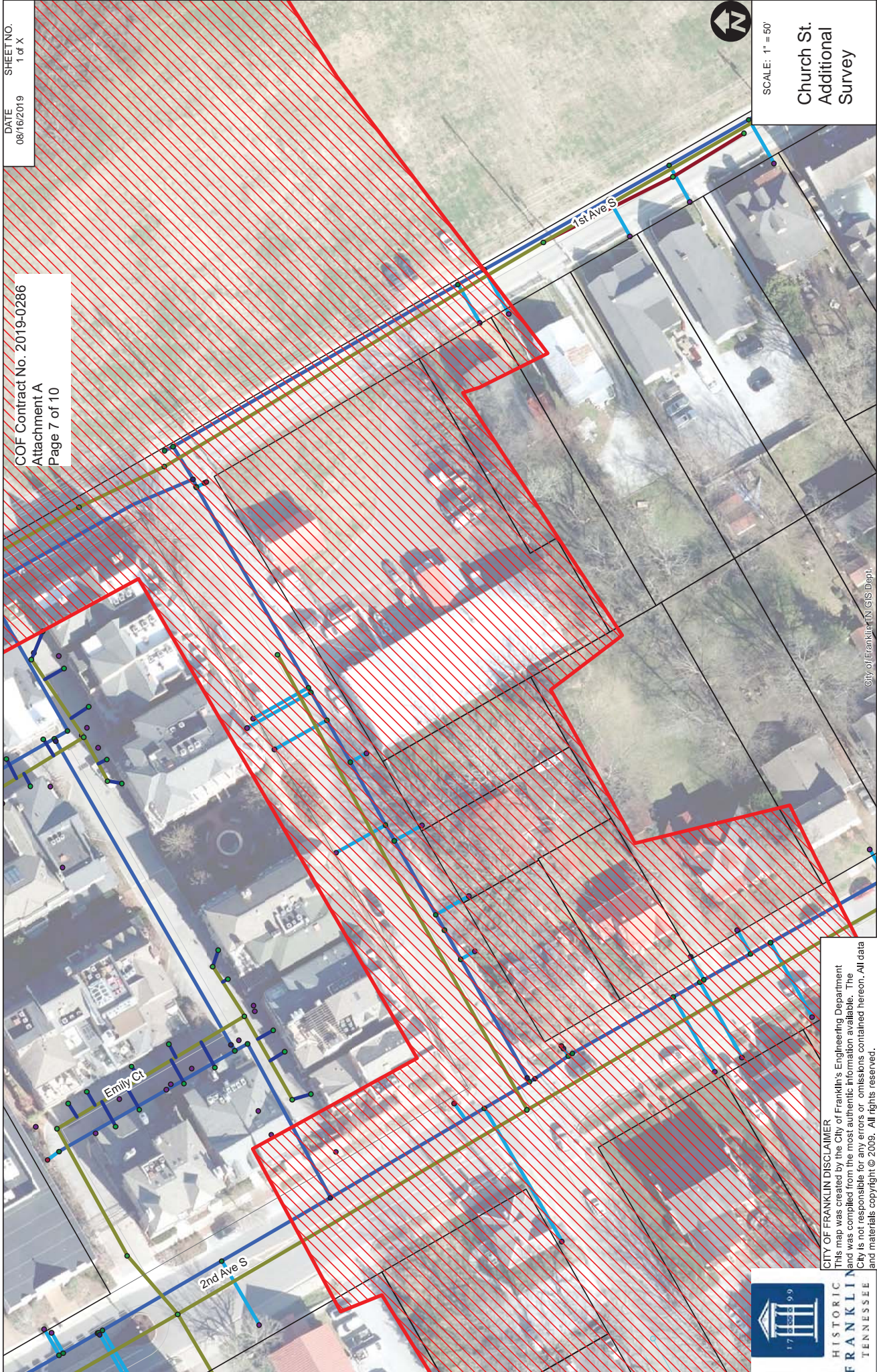
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SCALE: 1" = 50'

Church St. Additional Survey



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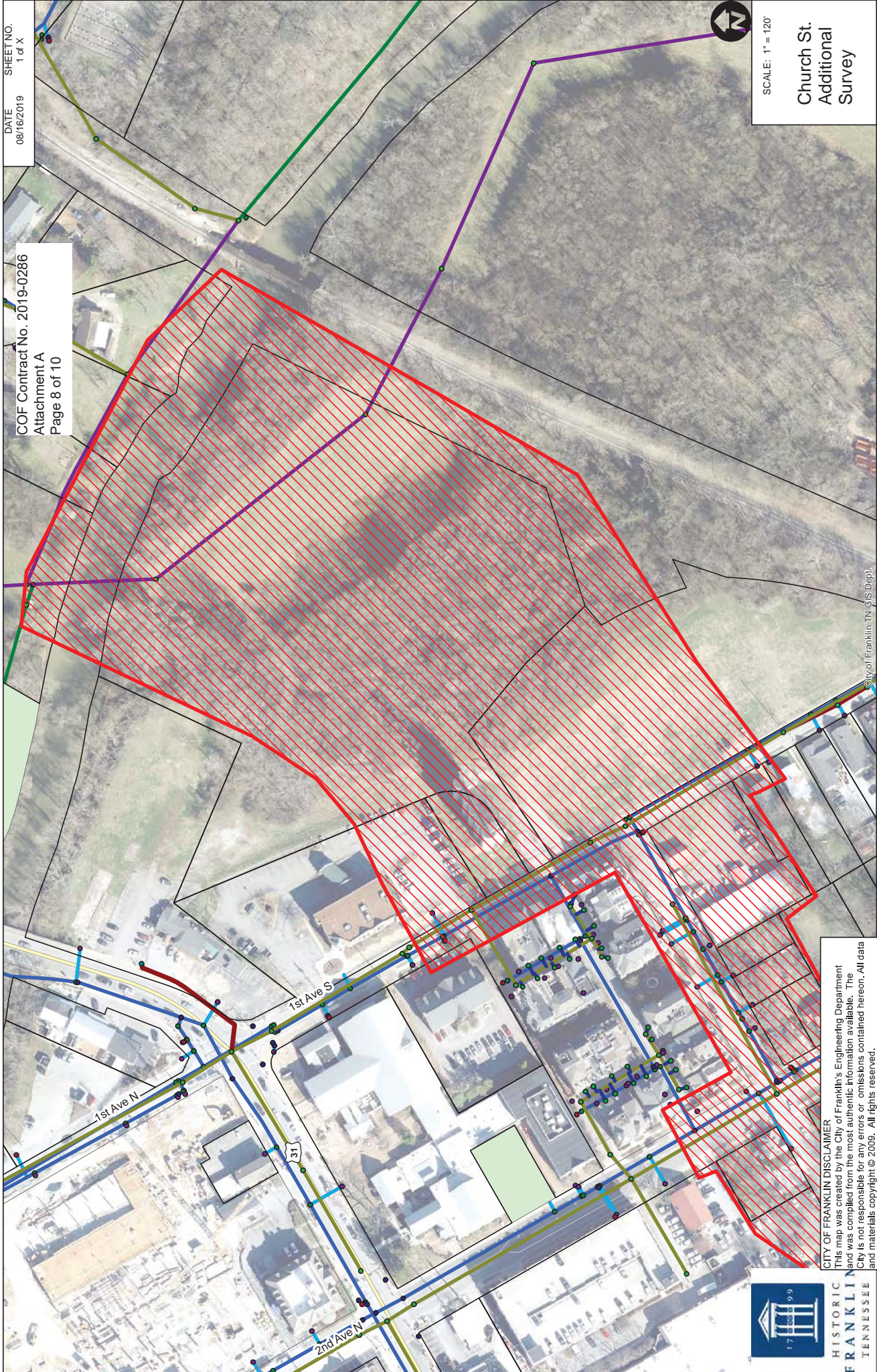
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SCALE: 1" = 120'

Church St. Additional Survey



City of Franklin TN (GIS Dept.)

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SURVEY SCOPE & FEE ESTIMATE
2019 Church St Improvements
 City of Franklin, Tennessee
 Contract No. _____

SUMMARY TOTALS		Total Hours	Fee
TOTALS ACTUAL ==>	572.0	\$	85,760

FEE	TOTAL HOURS	PM/RLS	Survey Crew	Senior Technician	Lump Sum - Subconsultant
PERCENT OF TIME ==>	100%	27.62%	33.22%	39.16%	
TOTAL HOURS ==>	572.0	158.0	190.0	224.0	
Task 1.0 Pre-Survey Preparation	18.0	18.0			
Task 2.0 - Project Control	38.0	8.0	30.0		
Task 3.0 - Fieldwork & Production	452.0	92.0	160.0	200.0	
Task 4.0 - Project Management	64.0	40.0		24.0	
Task 5.0 - LIDAR Collection					\$8,470.0
TOTAL COST==>	\$	85,760	\$	22,400	\$
					8,470

Project Level Scope & Labor - Breakdown

Task Number	DESCRIPTION	TOTAL HOURS	PM/RLS	Survey Crew	Survey/CAD Technician
	Boundary & Topographic Survey - BUDGET	572.0	158.0	190.0	224.0
1.0	Pre-Survey Research & Reconnaissance				
1.1	Research and review record deeds and plats for properties and adjoiners as well as utilities and adjoining roadway plans	12.0	12.0		
1.2	Submit 811 Utility Location Requests	6.0	6.0		
2.0	Establish Horizontal & Vertical Control				
2.1	Establish Survey Control for the project with NAD83 TNSPC Horizontal & NAVD88 Vertical values.	38.0	8.0	30.0	
3.0	Survey Fieldwork & Production Scope:				
3.1	Boundary References: Recon/Recover/Locate existing property boundary evidence for the subject parcels and/or adjoining or nearby parcels; resolve property boundary fronts & sides based on evidence and record deed information obtained.	150.0	60.0	90.0	
3.2	Topographic Survey: Collect existing features including curbing, pavement, pads, vegetation, walks, walls, signs, etc. along with existing utilities and drainage features within the survey limits, and existing ground elevation data at intervals sufficient to produce 1' contours.	70.0		70.0	
3.3	Survey Map/Plat: Process survey data and produce an AutoCAD base map of the Topographic Survey in accordance with the Standards of Practice of the Tennessee State Board of Examiners for Land Surveyors. Prepare ROW acquisition table.	232.0	32.0		200.0
4.0	Management & Coordination				
4.1	Coordinations with Client and Area Property Owners	8.0	8.0		
4.2	Quality Control	48.0	24.0		24.0
4.3	Project Management	8.0	8.0		
5	Mobile LiDAR Collections				
5.1	Sub-consultant for Mobile LiDAR Collections Lump Sum Fee	\$8,470.0			

Notes:

Full topographic survey shall extend to faces of buildings and front yards within the survey limits as provided by the City of Franklin and will exclude but be merged with previous survey data collected for the 2018 Church St. survey project. Limits will exclude the river from top of bank to top of bank. Limits were provided by the City of Franklin in pdf format. Utility locations will be based on observable evidence and markings provided from 811 location request. Proposal includes deliverable of a Point Cloud resulting from the Mobile LiDAR. Existing conditions will be extracted from the point cloud to create CAD features and field survey will be included to ensure a complete data set for any features not visible from the scan.

Schedule:

Please allow 12 complete weeks for project delivery from written notice to proceed.