

THRASHER

RECEIVED

2020 JUN 29 AM 9:50

WV PURCHASING
DIVISION



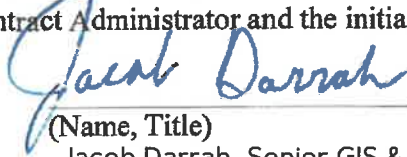
MAPPING SERVICES IN SOUTHERN WV

CRFQ 0313 DEP2000000038

Submitted by:
The Thrasher Group, Inc.
June 30, 2020

Original

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

 Senior GIS & Remote Sensing Manager

(Name, Title)

Jacob Darrah, Senior GIS & Remote Sensing Manager

(Printed Name and Title)

600 White Oaks Blvd | Bridgeport, WV 26330

(Address)

304-624-4108 | 304-624-7831

(Phone Number) / (Fax Number)

?@thethrashergroup.com

(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

The Thrasher Group, Inc.

(Company)

 Senior GIS & Remote Sensing Manager

(Authorized Signature) (Representative Name, Title)

Jacob Darrah, Senior GIS & Remote Sensing Manager

(Printed Name and Title of Authorized Representative)

June 30, 2020

(Date)

304-624-4108 | 304-624-7831

(Phone Number) (Fax Number)

**ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:**

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

The Thrasher Group, Inc.

Company



Authorized Signature

June 30, 2020

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: The Thrasher Group, Inc.

Authorized Signature: Jacal Darrak Date: June 25, 2020

State of West Virginia

County of Harrison, to-wit:

Taken, subscribed, and sworn to before me this 25 day of June, 2020

My Commission expires May 4, 2021.



NOTARY PUBLIC Caroline E Marion

June 30, 2020

Attn: Guy Nisbet
Department of Administration, Purchasing Division
2019 Washington St. E
Charleston, WV 25305

RE: WV DEP Mapping Services in Southern West Virginia

Dear members of the selection committee:

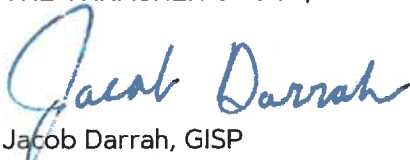
The Thrasher Group is pleased to present to the West Virginia Department of Environmental Protection (WVDEP) this proposal to perform mapping services throughout Southern West Virginia. We understand that aerial photography and orthophotography can provide governments with a wealth of information about the area they serve. Ensuring that data is accurate and up-to-date is a vital piece of that process. Thrasher has the knowledge, experience, and technology to provide the state of West Virginia with the information it needs for future infrastructure and development projects.

We recognize the importance for planners and designers to have the most current and accurate mapping and terrain data. Our team also realizes the need for that data to be in a format convenient for the end user. Our services will assist the WVDEP in planning and prioritizing future maintenance, design, and construction projects. As a company that prides itself on our West Virginia roots, we used our expertise as a way to help our communities. Since 2015, our mapping team has provided 42 counties in the state with accurate and affordable orthophotography, covering up to 70 million acres in a single year.

The enclosed information highlights the planes, drones, cameras, sensors, and personnel at Thrasher's disposal to meet your project specific topographical, LiDAR, and photogrammetric needs. Our team is eager to demonstrate our professional project delivery capabilities to your organization.

As you will see in this Statement of Qualifications, we have the right team and experience in West Virginia to complete this project. We look forward to the opportunity to answer any questions you may have and learning more about how Thrasher can meet your needs.

Sincerely,
THE THRASHER GROUP, INC.



Jacob Darrah, GISP
Senior GIS & Remote Sensing Manager



- > Geospatial
- > Utility Engineering
- > Architecture
- > Site Engineering
- > Environmental
- > Survey
- > Transportation
- > Construction Services

Main Point of Contact:

Jacob Darah, GISP
Senior GIS & Remote Sensing Manager
jdarrah@thethrashergroup.com
Cell: 304-815-2008
Office: 304-624-4108



8

OFFICES
in five states



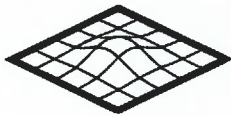
500+

EMPLOYEES



36

YEARS of
EXPERIENCE



GEOSPATIAL SERVICES

- > LiDAR Acquisition
- > LiDAR Calibration
- > LiDAR Classification
- > Aerial Topographic
- > Planimetric Mapping
- > Aerial Photography
- > Emergency Response
- > Terrain Modeling
- > Aerial Pipe Line Monitoring
- > Aerial Power Line Monitoring
- > Low Altitude Video
- > 3D Flythroughs
- > Airborne GPS
- > Orthophotos
- > Reprographics
- > Aero-Triangulation
- > Stockpile Volumes

Diverse services that grow communities.

THRASHER'S GOT IT.



	Description	Qty	Unit	Unit price	Total
1	Control Survey	600	hour	\$60	\$36,000
2	Topographic, Planimetric, and Check Surveying	1,800	hour	\$60	\$108,000
3	Topographic Mapping (0-25 Acres)	15	acre	\$135	\$2,025
4	Topographic Mapping (25-50 Acres)	30	acre	\$85	\$2,550
5	Topographic Mapping (50-100 Acres)	75	acre	\$42	\$3,150
6	Topographic Mapping (Over 100 Acres)	125	acre	\$21	\$2,625

A critical step in meeting your goals is first ensuring we understand them. Thrasher’s team has thoroughly reviewed the scope of work and is confident in our ability to deliver the highest-quality services for your mapping needs.



Scheduling:

Thrasher realizes the importance of establishing and maintaining project schedules. Time means money and making sure we help you spend your money wisely is our number one goal. Because of this, our team puts an emphasis on ensuring project timetables are met and communication is upheld throughout the process.

Thrasher has multiple drones, pilots, and processing computers at our disposal to answer your call. Our drone flight team and survey crew can travel from any of our four West Virginia office’s to capture the designated area. Capturing data for photogrammetry projects is just one step in the schedule. The post processing time when information is off loaded from cameras and sensors to computers is what becomes the critical path task. We can assure you from years working with various clients our in-house processing personnel can more than make up for any added time due to travel in the initial phase.

The Riegl scanner is one of our most efficient tools. It has over a quarter of a mile range, can achieve an altitude of 1,740 feet, and the ability to capture nearly a million points per second. It can capture more data more accurately in a single pass than nearly any other piece of equipment on the market.



Drones

- » (3) DJI Phantom 4 Pro
- » DJI Phantom 3 Pro
- » SenseFly EBEE – Fixed Wing
- » FireFly VTOL
- » (2) DJI Matrice 600
- » Vapor 55 Long Endurance Unmanned Helicopter

Cameras

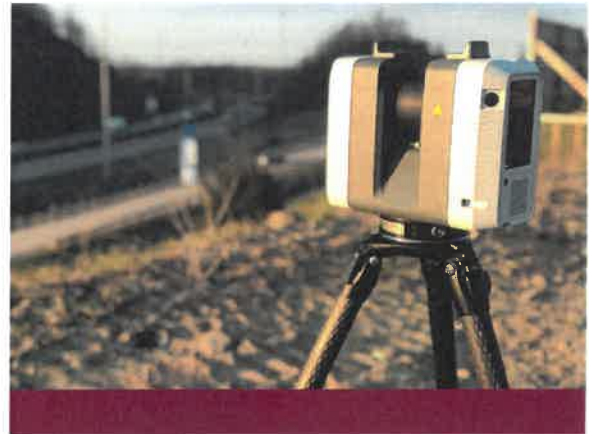
- » PhaseOne
- » iXU-150 Mapping Grade Camera
- » (2) Sony A7R-2 High Resolution Camera
- » Sony Alpha 600 High Resolution Camera
- » XT FLIR Camera
- » Zenmuse Z30-30x Zoom Camera
- » Zenmuse X5 High Resolution Camera

LiDAR

- » Riegl VUX-1 LR LiDAR Scanner
- » Equipped with Applanix APX-20 Inertial Measuring Unit

The Solution

Choosing the right team is vitally important, and Thrasher is equipped to handle any challenges that may arise. We are confident in our ability to produce accurate, efficient results for the WVDEP and lay the groundwork for successful future projects. We appreciate your thoughtful consideration of our proposal and hope to have the opportunity to work with you.



Survey Equipment

- GNSS Trimble
 - » 44 - R10
 - » 65 - R8
 - » 8 - GEO 7000 Series
- Trimble Robotic Total Stations
 - » 1 - VX imaging
 - » 5 - S6
 - » 3 - S3
- 65+ Conventional 2"/5" Total Stations
- 3 - Precise Digital Levels with Invar Rods
- 2 - Hydrographic Systems
- 30+ Workstations with Civil3D and/or Bentley
- Topcon GNSS Receivers
 - » 12 - HiperVR
 - » 26 - GR-5

Survey / CADD Software & Equipment

- » 60 CADD Stations
- » InRoads Software
- » Microstation
- » AutoCAD Civil 3D 2019
- » Large Format Plotters and Scanners
- » Trimble Business Center
- » Trimble Realworks
- » Trimble Access Sync
- » VR Cardinal Photogrammetric & LiDAR
- » ESRI ArcGIS
- » 3D CADD work stations
- » LiDAR and mapping software
- » PIX4D
- » Blue Sky Pipeline Management



SURVEY AND MAPPING SERVICES

Thrasher employs one of the largest survey departments in the Mid-Atlantic region and offers a wide range of land surveying and related services for federal, state, and private clients. We are committed to evolving our techniques and equipment to best serve our clients and their growing needs.

At Thrasher, we are able to provide both surveying and engineering services which provide a distinct advantage over survey-only companies. The combination of these two services provide our surveyors with a better understanding of what engineers and architects require to develop an appropriate design for different types of projects. Our field and survey personnel offer extensive experience, certified training, and flexibility to meet our clients' unique project schedules.

Route Location Surveys:

- > Transmission Lines
- > Natural Gas Pipelines
- > Wind Turbine
- > Roadway, Railway, and Rec Trails

GPS Surveys:

- > Geodetic Control Networks
- > Ground Control for Aerial Mapping
- > Telecommunications
- > FAA 1A and 2C Letters

General Survey Services:

- > Large-Scale Boundary Work
- > Topographic Survey and Mapping
- > ALTA/ACSM Survey and Mapping
- > Lake and River Soundings
- > Accident Reconstruction Survey & Mapping
- > Drug-free Zone Mapping
- > Expert Witness Testimony
- > Construction Layout
- > Permanent Project GPS Base Stations
- > Building Control and Layout
- > Road/Bridge Alignment and Staking
- > Sewer/Water/Pipeline
- > Site Layout
- > Quality Assurance Surveying
- > Volume/Quantity Surveys
- > As-Built Surveys

Coal and Energy Surveys:

- > Pre and Post Mining Blast Surveys
- > Water Quality Monitoring Plan
- > Construction Layout
- > Emergency Control Survey/Plans



REMOTE SENSING

Thrasher is fully licensed with the Federal Aviation Authority to fly unmanned aerial systems, or UAS. In addition to our full survey and GIS departments, we offer our clients the most cutting edge aerial imagery for mapping, monitoring, and site updates. The use of remote sensing technology has allowed us to deliver the most accurate and up-to-date project information to our clients.

UAS can accomplish tasks in less time and with fewer safety hazards than traditional ground-based methods. Thrasher utilizes both fixed-wing and multi-rotor Unmanned Aerial Systems to meet the needs of a diverse range of projects. At Thrasher, we work with our clients to ensure that their vision is met.

Remote Sensing Services:

- > Mapping
- > Videography
- > Pre- and Post-Construction Documentation
- > Construction Progress Analysis
- > Building Inspection
- > Mixed Reality Imagery
- > LIDAR
- > Thermal Imagry

Remote Sensing Markets:

- > Municipal
- > Energy
- > Telecommunications
- > Real Estate
- > Transportation
- > Emergency Services
- > Environmental
- > Architecture



**Federal Aviation
Administration**
Approved Section 333





GIS MAPPING AND SOFTWARE DEVELOPMENT

Geographical Information System (GIS) software allows users to analyze, process, and visualize information to assist in solving problems and making sound business decisions. To be effective, a system must be practical in capability and cost. The team at Thrasher utilizes commercially available software and also develops custom GIS software to provide workable tools that are user friendly for resolving everyday issues.

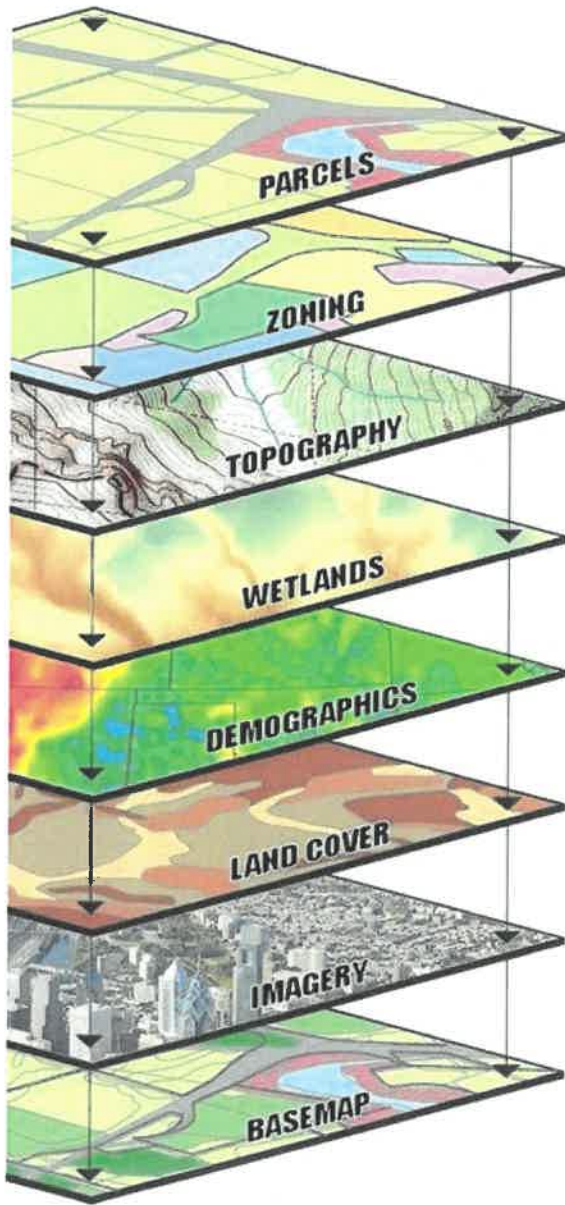
Clients ranging from small public utilities all the way through large, metropolitan areas have benefited from our total approach to GIS, including in-house survey and field verification personnel. Thrasher's commitment to training and on-going technical support gives our clients peace-of-mind that they are getting the most out of their GIS and/or software investment.

Software Development Services and Applications:

- > Custom GIS Software
- > GIS Software for E911 Data Collection
- > Maintenance of Commercially Available Software
- > Natural Resource Management and Mapping including Environmental Studies for the Oil and Gas Industry and Land and Timber Management

GIS Mapping Services:

- > Metro GIS for Government Infrastructure, Planning and Zoning, Public Works, Law Enforcement, and Tax Mapping
- > Public Utility Mapping including Water, Wastewater, and Storm Water
- > GIS Marketing Analysis
- > Legal Displays and Depositions
- > Realty Location Analysis and Timber Management



Photogrammetry provides a wealth of information, so ensuring the vast amount of data collected is accurate and up-to-date is vital. Achieving the best quality requires a dedicated team of professionals that cares enough to understand your project goals. Thrasher's experience working with a wide variety of clients - including transportation clients - allows us to recognize that each project is unique and approach each project individually. This has earned us a reputation for providing efficient solutions that meet project goals, and we look forward to working with the WVDEP.

Capture strategy

Our experience has revealed clients often have difficulty deciding between the various options associated with photogrammetric services. Rest assured, Thrasher can guide you through each decision and provide the best capture strategy to help you achieve success. If your objective is planning for a new road that is a few miles long, 6cm pixel resolution can be achieved using fixed wing aircraft and will generate 2ft contours. If you need millimeter accuracy to design an intersection, one of our eight drones can be deployed to meet your need. Thrasher has the capabilities to attack challenges with multiple aerial spatial solutions.

The Challenges

Coordination among the information provided by the survey team and flight team is crucial to the usability and reliability of the final maps and models. For a successful outcome, it is necessary to take multiple survey readings of the same location on different days and at different times of the day. Today's technology necessitates this practice because of the ever-changing position of satellites sending data to triangulate northing and easting values. Thrasher understands the significance of the details necessary to produce accurate results and implements best practices by averaging these numbers from multiple readings, thereby decreasing variability. This leads to what crews refer to as "tight controls".



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

THRASHER

Jacob Darrah, GISP
Senior GIS &
Remote Sensing Manager

Craig Fry, CP
Senior Aerial Mapping Manager

Aaron Rawe, PS
Senior Survey Manager

SOUTHERN SURVEY CREW

Scott Whitlock
Andy Stull
Jacob Dix
Richard Edwards
Christopher Connard
Mikey Brown
Issac Freshour

Senior GIS & Remote Sensing Manager | The Thrasher Group, Inc.



Jacob Darrah has more than a decade of experience as a GIS professional. During this time, Jacob has been involved with projects spanning the entire Mid-Atlantic region. In his current role as the Senior GIS Manager for The Thrasher Group, he is involved in every facet of his clients' projects, including data management, geodatabase creation, crew management, and development of new job-site processes. His keen understanding of the GIS world and ability to quickly complete projects have earned him a host of repeat clients.

Education

Bachelor of Science,
Environmental Protection
West Virginia University

Registrations

Certified Geographic
Information Systems
Professional:
> [REDACTED]

Experience

Tyler County Courthouse Laser Scanning As-Built

Role: Project Manager

- > Tyler County, WV

Morgantown Ruby Hazel Amphitheater - Laser Scanning As-Built

Role: Project Manager

- > Monongalia County, WV

Confidential Client - Pipeline Slip Inspection 30 miles of pipeline ROW. Processed Contours and Orthophotography for Slip Inspection and Repair

Role: GIS Manager

- > Barbour County, WV

Tyler County Assessor - Assessor GIS Website Oversaw Creation of Assessor GIS Website Which Included Aerial Photography, Parcel Data, and Functional Widgets

Role: GIS Manager

- > Tyler County, WV

Confidential Client - Well Pad Countours, Orthophotography, & Planimetric - Oversaw Drone Flight On Well Pad

Role: GIS Manager

- > Doddridge County, WV

City of Sistersville - Municipality GIS Website - Aerial Photography, Parcel Data, Voting Ward Information, and Functional Widgets

Role: GIS Manager

- > Tyler County, WV

Confidential Client - Well Pad Laser Scanning on Over 15 well pads. Deliverables included Asbuilt Drawings, Recap Files, and PDFs

Role: GIS Manager

- > WV

AARON RAWE, PS

Senior Survey Manager | The Thrasher Group, Inc.



Education

Associates of Science,
Surveying Technology
Glenville State College

Registrations

Professional Surveyor:

- > West Virginia [REDACTED]

Affiliations

- > West Virginia Society of Professional Surveyors

Aaron Rawe, PS serves as a Survey Project Manager for Thrasher working out of the Bridgeport office. Mr. Rawe's experience covers various aspects of surveying, including routing, as-builts, preliminary, construction stakeout and boundary of construction management. Mr. Rawe is experienced both in the field and orchestrating projects behind the scenes. Aaron brings over six years of pipeline and asset management experience to the team.

As part of his management role, Mr. Rawe also meets with project stakeholders, area residents, local utility companies, and the project engineers to ensure that schedules are being met and to regularly update all parties on construction status. Additionally, Mr. Rawe is progressively responsible for the coordination of field crews, data collection, site layouts, ALTA surveys, subsidence and topographic surveys.

Mr. Rawe also assists in the management of the Mapping Department here at Thrasher. He is responsible for the coordination between photogrammetrist and field crews in helping determine the placement of photo targets and items to be located for photo control. He helps process and QA, QC all data coming in from the field before delivering it to the photogrammetrist to use for the air trig of the projects.

Experience

Metro Towers Topo, Control and Property Location Surveys

Role: Survey Manager
> Monongalia County, WV

Boy Scouts Welcome Center 200 Acre Site Survey, Topographic, and Utility Surveys

Role: Survey Manager
> Fayette County, WV

Ruby Memorial Hospital Building and Utility Location Surveys

Role: Survey Manager
> Monongalia County, WV

WVDEP- Camden Slips

Role: Survey Manager
> Lewis County, WV

Ruby Memorial Hospital Building, Topographic and Utility Location Surveys

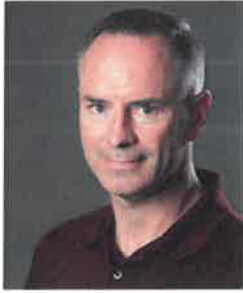
Role: Survey Manager
> Monongalia County, WV

Morgantown Transfer Station- Topographic and Construction Layout

Role: Field Surveyor
> Monongalia County, WV

CRAIG FRY, CP

Senior Aerial Mapping Manager | The Thrasher Group, Inc.



Craig has 23 years of experience in geospatial technologies. He is an expert in photogrammetry, UAV Mapping, and Remote Sensing. Craig has experience with the following UAS Platforms: DJI M600 Pro, Pulse Aerospace Vapor 55 and DJI Phantom. Sensors include: Reigl VUX-1LR (LiDAR Sensor), Phase One iXU 150 (mapping grade camera), Sony A7r (high resolution camera), Zenmuse X5 (high resolution camera), and the Zenmuse XT2 (thermal camera). Software expertise includes: VrOne/VrTwo, Global Mapper, Pix4D, Map Pilot, and DJI's suite of applications.

Education

Bachelor of Science,
Geography
Pennsylvania State
University

Registrations

- > ASPRS Certified Photogrammetrist
- > FAA License Number:
[REDACTED]

Experience

2016 Countywide

Orthophotography & LiDAR

Role: Photogrammetrist/UAV Pilot
> Doddridge County, WV

CNX DTI Storage Lease Mapping

Role: Photogrammetrist/UAV Pilot
> Ritchie, Gilmer, Doddridge,
Lewis, & Harrison Counties, WV

2016 Countywide

Orthophotography & LiDAR

Role: Photogrammetrist/UAV Pilot
> Ohio County, WV

2014 Northern WV & Southwestern PA

Orthophotography & LiDAR

Role: Photogrammetrist/UAV Pilot
> Statewide, WV & PA

WVDEP Stereo 3D Drone Mapping UAS Technology to Produce Site Mapping of a Reclamation Project

Role: Photogrammetrist/UAV Pilot
> Northern WV

CNX Gas Stereo 3D Mapping UAS Technology to Produce As- Built Mapping of Well Pad

Role: Photogrammetrist/UAV Pilot
> Southern PA

DAC Energy Stereo 3D Drone Mapping

Role: Photogrammetrist/UAV Pilot
Used UAS technology to produce
As-Built mapping of a well pad.
> Southern PA

I-70 Bridge Replacement Extreme High Resolution Imagery and Detail Mapping for WVDOH - LiDAR, Imagery, 50 Scale, and 2 Foot Contours

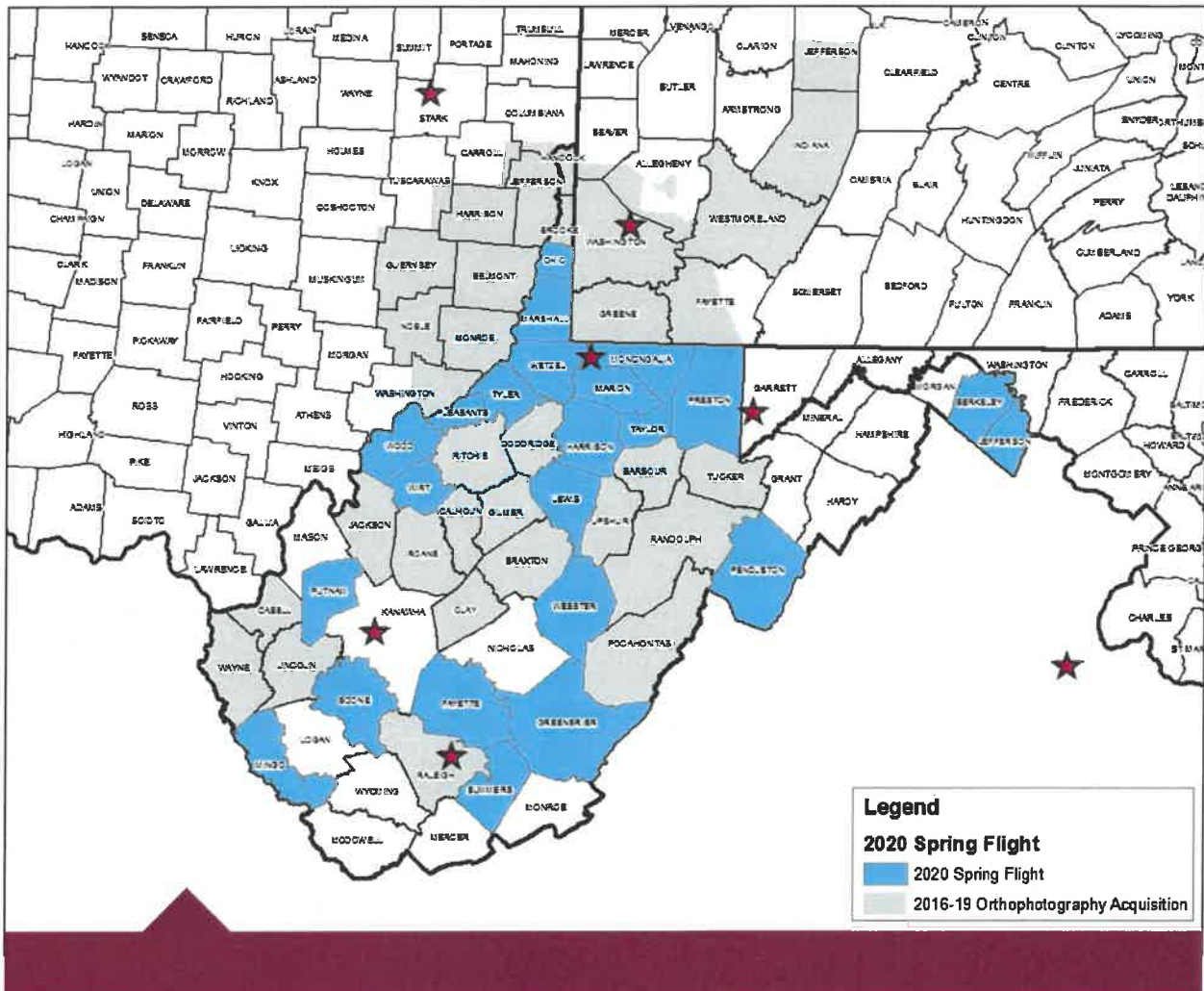
Role: Project Manager
> Ohio County, WV

Kenova to Pritchard Bypass

Role: Project Manager
> Nicholas County, WV

Corridor H L&W Enterprises, 50 Scale 1 Foot Contours, 230 Acres

Role: Project Manager
> Grant County, WV



Annual Spring Flights

Date: 2011-2020 (Present)

The Thrasher Group’s geospatial team has been providing leaf-off aerial orthophotography to large areas of West Virginia, Ohio, and Pennsylvania since 2011. This service is essential for the ability to create engineering-grade maps for a variety of disciplines and clients, including energy clients, towns and municipalities, and private entities.

Performing these annual flights gives Thrasher a log of information on-hand to provide to our clients. Each year, this team covers an average of roughly 70 million acres during this flight.

Thrasher completed about 70 million acres of Orthographic Mapping at 4" resolution blocks



Drone LiDAR Rockhouse Creek Slip Client: WVDEP

The West Virginia Department of Environmental Protection hired Thrasher to assist with LiDAR mapping after a slip at Rockhouse Creek as part of a refuse reclamation project.

The slip made the site dangerous to be on and prevented the use of traditional on-the-ground survey. Instead, the Thrasher team used the Riegl VUX-1 Long Range LiDAR Sensor equipped to a DJI M600 Pro UAV – the highest quality technology available – to fly the site and collect the data needed.

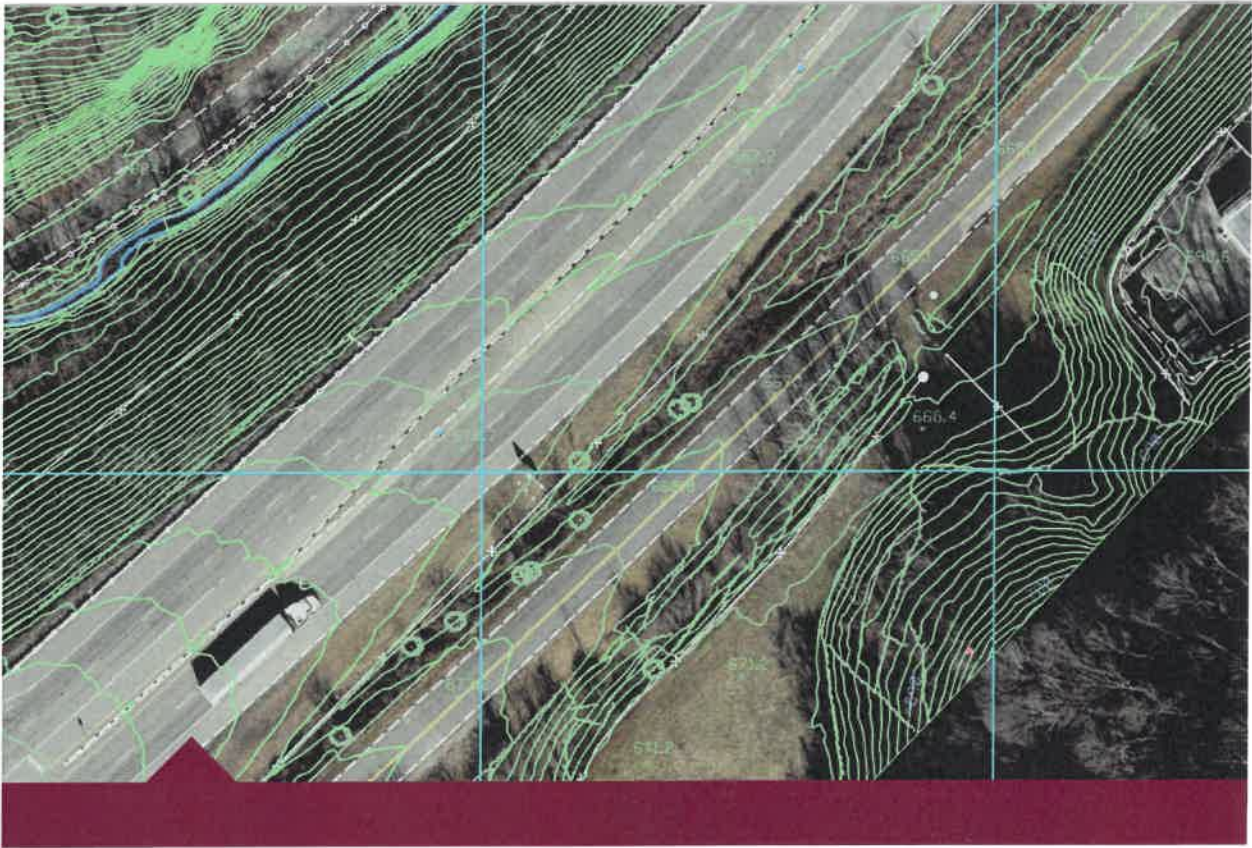
The vast amount of data gathered allowed Thrasher to prepare an accurate survey of the project area that could be used in engineering plans to repair the slip.



Pipeline Slip Drone LiDAR Flight Confidential Client

A pipeline in Ripley, WV experienced a major slip in March 2020. Thrasher's crew was sent to the project site to provide quick and reliable drone LiDAR flight services.

Tree cover in the area made the survey process difficult, requiring Thrasher to use the Reigl VUX-1 Long Range LiDAR Sensor on a DJI Matric600 Pro UAV for the highest quality data possible, rather than a traditional drone flight. This response allowed Thrasher to provide an accurate survey of the slip. The detailed information collected was vital for the client's engineering staff to develop a plan to repair the slip.



Kenova to Pritchard

Client: WVDOH

Thrasher was hired by the West Virginia Division of Highways to perform engineering grade mapping near Huntington, WV. The 11 miles captured was used for design of a new highway bypass. Thrasher utilized 11ppsm LiDAR and 6cm imagery used to produce 2 foot contours, planimetric maps and orthometric photos.

This project was in addition to the existing engineering and design work already started. Thrasher performed various survey and mapping services such as property research, locating all underground utilities and drainage, collecting orthophotos and LiDAR data of the ground, and supplying planimetric mapping of the project area in Wayne County.



Corridor H

Client: WVDOH & L&W Enterprises

The Corridor H project consisted of developing construction drawings and right-of-way documents for 2.3 miles of four-lane divided highway which included three bridges.

Thrasher provided engineering, design, erosion and sediment control, survey and photogrammetry for this design-build project. Our team was able to work with Trumbull and Triad, who provided geotechnical services, to successfully execute this project.

Thrasher's photogrammetry personnel coordinated the mapping efforts for approximately 230 acres of this project in order to produce 1-foot contours. The team edited the final mapping and managed the orthophoto production for the duration of the project. Our personnel also provided project management, client relations, aerotriangulation of imagery, editing and QA/QC.



**A NEW PERSPECTIVE
CAN MAKE ALL THE DIFFERENCE**

THRASHER