STATE OF MONTANA
JOB DESCRIPTION

Montana state government is an equal opportunity employer. The State shall, upon request, provide reasonable accommodation to otherwise qualified individuals with disabilities.

Job Title: Photogrammetrist Specialist (II)

Position Number: 30002 **Location: Helena** **Department: MDT**

Division and Bureau: Engineering Division/ Highways Bureau

Section and Unit: Photogrammetry and Survey Section/Survey Unit

Job Overview: This position Photogrammetrist Specialist (II) for the Montana Department of Transportation Photogrammetry and Survey Section. The position is responsible for the collecting, analyzing, and interpretating the geographic information provided by control surveys, aerial photographs, and LiDAR. Position is also responsible for planning and performing photogrammetric processes to develop engineering design level 3D models including DEM (Digital Elevation Models), DSM (Digital Surface Models) and DTM (Digital Terrain Models) from aerial survey data. This position reports directly to the Photogrammetry and Survey Section Supervisor.

Essential Functions (Major Duties or Responsibilities):

Aerial Survey Data assimilation, orientation, bridging & aerial triangulation - 50%-

- Enters imagery into aerial survey software along with additional information regarding camera lens distortion, fiducial coordinates, photo control coordinates, photograph information, horizontal and vertical datum information.
- On the digital photogrammetric systems, performs interior, relative, and absolute orientation of stereoscopic instruments of the direct projection type or universal type.,
- Analyze interior orientation results and identify and resolve any ambiguities.
- Observes and measures photo control and pass points for each stereoscopic model and executes the aerial triangulation program for determining the mathematical relationship between the photogrammetric models and the ground.
- Reviews and analyzes aerial triangulation results for inconsistencies and/or problem areas and resolves any ambiguities to ensure bridging results meet project requirements for mapping accuracy, and other subsequent photogrammetric processes using photogrammetric knowledge, applying mathematical and statistical knowledge as it pertains to least squares adjustments.

Compilation of Aerial Survey Data - 20%

- Compiles planimetric and topographic map detail of difficult areas as exemplified by

extremely congested culture, precipitous terrain, heavy vegetative cover, and hidden areas, wherein extensive interpretation of aerial photography is required to create a 3D CADD design file to be used in Engineering and design operations.

- Reviews, edits and makes cartographic additions to aerial survey information captured in the design file to ensure accuracy and uniformity to MDT design Standards.
- Constructs and analyzes 3D models including DEM (Digital Elevation Models), DSM (Digital Surface Models) and DTM (Digital Terrain Models) from compiled aerial survey data.
- Combines data from multiple data sources including, terrestrial and Mobile, and airborne LiDAR, Static and Real Time Kinematic (RTK) Global Positioning Systems (GPS), photogrammetric systems used on manned and unmanned (UAS) aircraft, as well as a variety of new systems and technology as they emerge into the geospatial arena into a single 3D model per project specific design.
- Performs quality control checks of compiled aerial survey data to ensure adherence to MDT standards and accuracy of the final model to meet ASPRS (American Society for Photogrammetry and Remote sensing) for positional Accuracy Standards for Digital Geospatial Data.
- Converts final 3D surface models from the aerial survey software to the standard XML format for placement on PCMS (Project Content Management System).
- Produces final photo mosaics and geo referenced orthophotos and geo referenced photo mosaics.

Project Planning - 20%

- Coordinates with the Project Manager to identify project specific design, project mapping issues, mapping limits and accuracy requirements.
- Designs the individualized photo control plan and designs aerial flight plans to be used for acquisition of the aerial survey photography. This includes determining flight line locations; determine flying height, photographic endlap and sidelap which is necessary information to be used by the pilot and the aerial photographer.
- Inspects the final photography for quality and determines if the aerial photography is acceptable for aerial surveying and design mapping purposes.
- Directs the process of identifying and transferring photo control point information from flight plans to the final imagery and drafting a schematic for use in subsequent aerial survey operations.
- Compiles or directs the compilation of photo identification control point information and requests a field survey of these points to be used in the bridging operations.
- Verifies ROE's (Right of Entry) for the project have been obtained prior to surveying and review ROEs to identify any landowner related complaints and concerns.

Engineering Survey Review and Approval, Equipment Calibration - 10%

Level II

- Coordinates review of in-house and consultant surveys to ensure quality, consistency, efficiency, and compliance with standards and policies.
- Tests and analyzes new procedures and equipment and evaluates time efficient and cost-

effective aerial survey methods and procedures. Report findings and recommendations to management.

Supervision: The number of employees supervised is: 0

Physical and Environmental Demands:

- Extensive statewide travel (travel is estimated to range from 10% to 30% of the time)
- Lifting objects more than 30 lbs.
- Continual walking or standing and the ability to walk over uneven terrain or in water.
- Exposure to extreme weather conditions and high-speed traffic.
- Operation of motor vehicles, survey, and related equipment.

Knowledge, Skills and Abilities (Behaviors):

- Knowledge of stereoscopic instruments and photogrammetric applications; photo-identification of control and control planning; surveying practice related to photogrammetry; aerial survey contract preparation and administration.
- Working knowledge of the principles of photogrammetric engineering and surveying; map accuracy evaluation per ASPRS .

- Ability to effectively communicate in writing and verbally.
- Ability to prepare plans, specifications and estimates for large and complex aerial survey projects; plan, direct, and coordinate the work of others.
- Ability to analyze situations accurately and take effective action.
- Ability and skilled to dictate correspondence and prepare reports.

Minimum Qualifications (Education and Experience):

Certified Photogrammetrist per ASPRS requirements:

A professional who uses photogrammetric technology to extract measurements and make maps and interpret data from images. The Photogrammetrist is responsible for all phases of mapping and other mensuration requirements, which include planning and supervising survey activities for control, specifying photography or other imagery requirements, managing projects for mapping or other mensuration requirements and interpretation.

- Six years of experience in photogrammetry, three years of which were in a position of professional responsibility demonstrating professional knowledge and competence.
- References from four persons who are holding, or who have held, responsible positions in photogrammetry and have first-hand knowledge of the applicant's professional and personal qualifications.
- Declaration of compliance with the Code of Ethics of the ASPRS
- Successful completion of a written examination.

Certifications:

- Registration as a Montana Professional Land Surveyor (PLS) is optional.

Alternative qualifications include: Any combination of additional related work experience and education equivalent to the minimum qualifications.

Special Requirements:

☐	Fingerprint check	☒	Valid driver's license
☐	Background check	☐	Other; Describe.
035	Union Code		Safety Responsibilities

The specific statements shown in each section of this description are not intended to be all inclusive. They represent typical elements and criteria considered necessary to perform the job successfully.

Signatures

My signature below indicates the statements in the job description are accurate and complete.

Immediate Supervisor	**Title**	**Date**

Administrative Review	**Title**	**Date**

My signature below indicates that I have read this job description.

Employee	**Title**	**Date**

Human Resources Review

Job Code Title: Photogrammetrist 2 Job Code Number: D11102

My signature below indicates that Human Resources has reviewed this job description for completeness and has made the following determinations:

☐ FLSA Exempt	☒ FLSA Non-Exempt
☐ Telework Available	☒ Telework Not Available
☒ Classification Complete	☐ Organizational Chart attached.

Human Resources:

Signature	**Title**	**Date**