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| **Project TIP No.:** | | Click or tap here to enter text. | | **Mission ID:** | | Click or tap here to enter text. |
| **County:** | Click or tap here to enter text. | | |  | | |
| **Engineer of Record:** | | | Click or tap here to enter text. | |  | |

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| 1PH2 Compile Aerial Photography and Mapping | | | | | | | | |
|  | | | | | | | | |
| **AA #** | **1** | **Review of Controlled Aerial Photography** | | | | **Yes** | **No** | **N/A** |
|  | 1.1 | **Preflight Verification** | | | | | | |
|  | 1.1.1 | Verify that Project Limits have been submitted for request project | | | |  |  |  |
|  | 1.1.2 | Create Flight Plan and Panel Plan for request project area | | | |  |  |  |
|  | 1.1.3 | Verify that all required files are geospatially located correctly | | | |  |  |  |
|  | 1.1.4 | Verify that the planned forward overlap meets minimum requirements | | | |  |  |  |
|  | 1.1.5 | Verify that the planned side overlap meets minimum requirements | | | |  |  |  |
|  | 1.1.6 | Verify that the planned photo coverage meets minimum requirements | | | |  |  |  |
|  | 1.1.7 | Verify that all planned flight line altitudes allow for ample clearance above obstacles (towers, mountain terrain in west, etc.) | | | |  |  |  |
|  | 1.1.8 | Verify that the ***Flight map*** contains accurate information | | | |  |  |  |
|  | 1.1.9 | Verify that the approximate coordinate file contains accurate information | | | |  |  |  |
|  | 1.1.10 | Verify that the ***Panel plan*** contains accurate information | | | |  |  |  |
|  | 1.1.11 | Verify that all pre-flight files have been created and are named correctly | | | |  |  |  |
|  | 1.1.12 | Submit request to Location & Survey Unit for control | | | |  |  |  |
|  | 1.1.13 | Verify that control panels have been placed on the ground | | | |  |  |  |
|  | 1.1.14 | Submit requisition to Unit Head for approval to fly from Chief Engineer | | | |  |  |  |
|  | 1.1.16 | Submit request to Aerial Photographers to schedule mission | | | |  |  |  |
|  | 1.1.17 | Verify with Division of Aviation about scheduled missions | | | |  |  |  |
|  | 1.1.18 | Verification of any airspace restrictions (Military or TFRs) | | | |  |  |  |
|  | 1.1.19 | Verification of weather conditions | | | |  |  |  |
|  | 1.2 | **Postflight Verification** | | | | | | |
|  | 1.2.1 | Verify that the post processed imagery is complete and accurate | | | |  |  |  |
|  | 1.2.2 | Verify that the post processed imagery is radiometry consistent and cleared of any blurriness | | | |  |  |  |
|  | 1.2.3 | Verify that all exposures are free of vignetting due to excessive rolling | | | |  |  |  |
|  | 1.2.4 | Verify that the number of planned exposures matches the number of actuals acquired exposures | | | |  |  |  |
|  | 1.2.5 | Verify that the post processed GNSS-IMU data is complete and accurate | | | |  |  |  |
|  | 1.2.6 | Create the ImageStation photogrammetric manager files and import data | | | |  |  |  |
|  | 1.2.7 | Verify that all required files have been created and are named correctly | | | |  |  |  |
|  | 1.2.8 | Verify that all required files have been place in the correct locations | | | |  |  |  |
|  | 1.2.9 | Verify that mission data has been updated in PRISM and MAD | | | |  |  |  |
|  | 1.2.10 | Send notification that project has been flown and ready for use | | | |  |  |  |
|  | 1.2.11 | Verify that the ImageStation photogrammetric manager files are complete and contain accurate information | | | |  |  |  |
|  | 1.2.12 | Verify that the ground surveyed control panels are visible in the imagery | | | |  |  |  |
|  | 1.2.13 | Verify that actual forward overlap met minimum requirements | | | |  |  |  |
|  | 1.2.14 | Verify that actual side overlap met minimum requirements | | | |  |  |  |
|  | 1.2.15 | Verify that actual full photo coverage met minimum requirements | | | |  |  |  |
|  | 1.2.16 | Verify that mission data has been updated in PRISM and MAD | | | |  |  |  |
|  | 1.2.17 | Send notification that project has been approved | | | |  |  |  |
|  | 1.2.18 | Send notification to L&S that panels can be removed | | | |  |  |  |
|  |  |  | | | |  |  |  |
| **AA #** | **2** | **Review of Photogrammetric Mapping Supporting Files** | | | | **Yes** | **No** | **N/A** |
|  | 2.1 | | **Verification of Aerotriangulation** | | | | | |
|  | 2.1.1 | | Verify that all files have been created and are named correctly | | |  |  |  |
|  | 2.1.2 | | Verify that submitted data is formatted correctly | | |  |  |  |
|  | 2.1.3 | | Verify that submitted data can be opened in applicable software | | |  |  |  |
|  | 2.2 | | **Review ImageStation Aerotriangulation (ISAT) files** | | | | | |
|  | 2.2.1 | | Review that the image points were measured manually at the Von Gruber locations | | |  |  |  |
|  | 2.2.2 | | Review that all control points were measured on all imagery | | |  |  |  |
|  | 2.2.3 | | Review that the correct surveyed control data was used | | |  |  |  |
|  | 2.2.4 | | Review that the correct GNSS-IMU data was used | | |  |  |  |
|  | 2.2.5 | | Review that the data was processed with correct weights and settings | | |  |  |  |
|  | 2.2.6 | | Review that submitted statistics summary can be reproduced | | |  |  |  |
|  | 2.3 | | **Verification of supporting Aerotriangulation Excel Files** | | | | | |
|  | 2.3.1 | | Verify AT Control Point Statistics Excel File | |  | |  |  |
|  | 2.3.2 | | Verify AT Check Point Statistics Excel File (If Applicable) | |  | |  |  |
|  | 2.3.3 | | Verify AT Standard Deviation Statistics Excel File | |  | |  |  |
|  | 2.3.4 | | Verify Aerotriangulation Exterior Orientation Data Excel File | |  | |  |  |
|  | 2.3.5 | | Verify Photogrammetric Aerotriangulation Results Sheet | |  | |  |  |
|  | 2.3.6 | | Verify Aerotriangulation Point Data Excel File | |  | |  |  |
|  | 2.4 | | **Verification of the Aerotriangulation Report** | | | | | |
|  | 2.4.1 | | Verify all required information has been included in report | |  | |  |  |
|  | 2.4.1.1 | | Cover Sheet | |  | |  |  |
|  | 2.4.1.2 | | Table of Contents | |  | |  |  |
|  | 2.4.1.3 | | Project Overview | |  | |  |  |
|  | 2.4.1.4 | | List of Deliverable Files | |  | |  |  |
|  | 2.4.1.5 | | Technical Narrative | |  | |  |  |
|  | 2.4.1.6 | | Project Flight and Control Map | |  | |  |  |
|  | 2.4.1.7 | | Project Area Detailed Map | |  | |  |  |
|  | 2.4.1.8 | | Image Acquisition Information | |  | |  |  |
|  | 2.4.1.9 | | Aerotriangulation Software | |  | |  |  |
|  | 2.4.1.10 | | AT Weights | |  | |  |  |
|  | 2.4.1.11 | | RMS Summary Statistics for Check Points (If Applicable) | |  | |  |  |
|  | 2.4.1.12 | | RMS Summary Statistics for Control | |  | |  |  |
|  | 2.4.1.13 | | RMS Summary Statistics for Exterior Orientation (If Applicable) | |  | |  |  |
|  | 2.4.1.14 | | Key Adjustment Statistics and Point Type Counts | |  | |  |  |
|  | 2.4.1.15 | | Standard Deviation Statistics Summary | |  | |  |  |
|  | 2.4.1.16 | | GNSS Shift Corrections (When Applicable) | |  | |  |  |
|  | 2.4.1.17 | | Photogrammetric Aerotriangulation Results | |  | |  |  |
|  | 2.4.1.18 | | Ground Surveyed Control Report | |  | |  |  |
|  | 2.4.1.19 | | PLS Certification | |  | |  |  |
|  | 2.5 | | **Compare the data in the supporting files to the corresponding tables in the Aerotriangulation Report** | | | | | |
|  | 2.5.1 | | RMS Summary Statistics for Check Points (If Applicable) | |  | |  |  |
|  | 2.5.2 | | RMS Summary Statistics for Control | |  | |  |  |
|  | 2.5.3 | | RMS Summary Statistics for Exterior Orientation (If Applicable) | |  | |  |  |
|  | 2.5.4 | | Key Adjustment Statistics and Point Type Counts | |  | |  |  |
|  | 2.5.5 | | Standard Deviation Statistics Summary | |  | |  |  |
|  | 2.5.4 | | GNSS Shift Corrections (If Applicable) | |  | |  |  |
|  | 2.5.5 | | Photogrammetric Aerotriangulation Results Summary Data | |  | |  |  |
|  |  | |  | |  | |  |  |
| **AA #** | **3** | | **Review of Large-Scale Photogrammetric Mapping** | | **Yes** | | **No** | **N/A** |
|  | 3.1 | | **Digital Data Verification** | | | | | |
|  | 3.1.1 | | Verify that the submitted CADD files are named correctly | |  | |  |  |
|  | 3.1.2 | | Verify that the submitted CADD files are correctly geospatially located | |  | |  |  |
|  | 3.1.3 | | Verify that the submitted CADD files are in the requested file format | |  | |  |  |
|  | 3.1.4 | | Verify that the submitted CADD files are 3D and contains both planimetric and topographic data. | |  | |  |  |
|  | 3.1.5 | | Verify that the submitted CADD file’s features are ByLevel line styles | |  | |  |  |
|  | 3.1.6 | | Verify that the submitted CADD file’s features have the correct element template attached | |  | |  |  |
|  | 3.1.7 | | Verify that the submitted CADD file’s annotation scale is set correctly | |  | |  |  |
|  | 3.1.8 | | Verify that the submitted CADD file’s annotation scale is applied to all features, cells, and text | |  | |  |  |
|  | 3.2 | | **Compilation Feature Review** | | | | | |
|  | 3.2.1 | | Review that the mapping, both planimetric and topographic data, extends beyond supplied project boundary the specified distance indicated in the Scope of Work (SOW) | |  | |  |  |
|  | 3.2.2 | | Review that the mapping, both planimetric and topographic data, ties to adjoining mapping (if required) | |  | |  |  |
|  | 3.2.3 | | Review the mapping to ensure that all the required features were accurately captured and labeled (if required) according the NCDOT mapping specifications | |  | |  |  |
|  | 3.2.4 | | Review the mapping to ensure that non-required features have not been collected | |  | |  |  |
|  | 3.2.5 | | Review the mapping to ensure that features do not extend inside of structures, and no dangles and overshoots are present | |  | |  |  |
|  | 3.2.6 | | Review the mapping to ensure that all non-surface area outline features are collected as closed shapes | |  | |  |  |
|  | 3.2.7 | | Review the mapping to ensure that all obscured areas are closed shapes and labeled correctly | |  | |  |  |
|  | 3.2.8 | | Review the mapping to ensure that inaccurate LiDAR data has been removed and replaced with manually collected Digital Terrain Model (DTM) points at the correct spacing |  | | |  |  |
|  | 3.2.9 | | Review the mapping to ensure that LiDAR data has been cleared from breaklines, buildings, road surfaces, pools, double line streams, and bodies of water |  | | |  |  |
|  | 3.2.10 | | Review the mapping to ensure that breaklines have been placed around planimetric features to represent the ground |  | | |  |  |
|  | 3.2.11 | | Review the mapping to ensure that all features used in the surface generation have been collected on the ground |  | | |  |  |
|  | 3.3 | | **Surface Model Verification (**includes photogrammetric elevation data with comprehensive break lines. May include obscured area delineation boundaries. Does not include ground surveyed data) | | | | | |
|  | 3.3.1 | | Verification that the surface model was create using the correct Surface Model Graphic Extraction Filter: “ORD Photo Basemapping Filter Group” |  | | |  |  |
|  | 3.3.2 | | Verification that the surface model adequately represents the ground by reviewing contours |  | | |  |  |
|  | 3.3.3 | | Verification that there are no crossing breaklines and duplicate points in the surface model |  | | |  |  |
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| **AA #** | **4** | **Review of Digital Imagery** | **Yes** | **No** | **N/A** |
|  | 4.1 | **M- Digital Mosaic** (Orthorectified imagery using best available elevation data and Post Processed Airborne GNSS-IMU data. May or may not use Aerial Triangulation Exterior Orientation [ATEO].) |  |  |  |
|  | 4.2 | **OP- Orthophoto** (Orthorectified imagery using updated elevation data and Aerial Triangulation Exterior Orientation. |  |  |  |
|  | 4.3 | **Imagery Review** | | | |
|  | 4.3.1 | Imagery and all supporting files are named correctly |  |  |  |
|  | 4.3.2 | Imagery has correct pixel size/Ground Sample Distance (GSD) |  |  |  |
|  | 4.3.3 | Imagery has full coverage |  |  |  |
|  | 4.3.4 | Imagery is geospatially located correctly |  |  |  |
|  | 4.3.5 | Imagery has correct file format and compression |  |  |  |
|  | 4.3.6 | Horizontal accuracy of Imagery |  |  |  |
|  | 4.3.7 | Alignment of transportation features |  |  |  |
|  | 4.3.8 | Anomalies have been corrected |  |  |  |
|  | 4.3.9 | Photo corrected areas have been identified |  |  |  |
|  | 4.3.10 | Tone matching of Imagery |  |  |  |
|  | 4.3.11 | Placement of seamlines |  |  |  |
|  | 4.3.12 | Verify file is one window in top view |  |  |  |
|  | 4.3.13 | Any miscellaneous items |  |  |  |
|  |  |  |  |  |  |
| **AA #** | **5** | **Review of Airborne Survey Report** | **Yes** | **No** | **N/A** |
|  | 5.1 | **Verification of the Airborne Survey Report** | | | |
|  | 5.1.1 | All applicable fields have the appropriate information |  |  |  |
|  | 5.1.2 | List of Deliverables are complete and named correctly |  |  |  |
|  | 5.1.3 | All applicable maps have corrected and complete data |  |  |  |
|  | 5.1.4 | Ground Surveyed Control data is included |  |  |  |
|  | 5.1.5 | Aerotriangulation results data is included |  |  |  |
|  | 5.1.6 | Report has been signed and sealed |  |  |  |
|  | 5.2 | **Delivery of Data** | | | |
|  | 5.2.1 | Transmittal of Mapping Product |  |  |  |
|  | 5.2.2 | DocuSign of transmittal of Mapping Product |  |  |  |
|  | 5.2.3 | Email notification of transmittal of Mapping Product |  |  |  |
|  |  |  |  |  |  |
| **AA #** | **6** | **Engineer of Record Compliance with Use of Proprietary Products** | **Yes** | **No** | **N/A** |
|  | 6.1 | **The Engineer of Record has complied with NCGS § 133-3 and NCDOT policy number F.25.0101 regarding the use of proprietary products** |  |  |  |
|  |  |  |  |  |  |
| **AA #** | **Additional Actions (AA) if necessary** | | | | |
|  | Click or tap here to enter text. | | | | |

This checklist may not be comprehensive for every project.  It is the responsibility of the reviewer to ensure that an adequate review is performed.

“As the signed reviewer below, I have reviewed the deliverables for consistency with this checklist and confirm that all applicable items have been satisfactorily completed and additional items not listed in the checklist are also appropriate and complete.”

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| QA Reviewer (Name): | Click or tap here to enter text. | | Date: | | Click or tap here to enter text. |
|  |  | | |  |  |
| QA Reviewer (Signature): | |  | | | |