MAP ACCURACY REPORT
Countywide Imagery & DEM
Wright County

Data Contact Person:	Steve Jobe, LS	**Department:**	County Surveyor
Type of Mapping:	DEM (LiDAR) & Ortho	**Contractor:**	Merrick & Company
Independent Testing:	Mn/DOT Photo Unit	**Contract Delivery date:**	1 Dec. 2008

The purpose of this report is to independently test the horizontal and vertical accuracy of orthophotos and LiDAR derived digital elevation model data that was contracted for by Wright County. This project consisted of flights flown between the period of 23 April 2008 and 28 May 2008 for both aerial imagery acquisition and Light Detection and Ranging (LiDAR) and GPS/IMU technologies. The photographic operations were controlled using ground targets and by the GPS/IMU equipment onboard the aircraft. The specific equipment used for the combined aerial imagery collection was a Cessna 402C twin engine plane, a DACS medium format digital camera. For the aerial-triangulation and image production, SOCET SET & ORIMA software was used. The specific equipment used for the DEM acquisition was the same plane with a Leica Geosystems ALS50 laser scanner system. The post processing was accomplished by using Waypoint's GravNAV version 4.4, POSPac version 4.2 and proprietary software called MARS® software. The preflight mission was scheduled so that photography and LiDAR were collected simultaneously and flown at 6500 feet AGL. Merrick used two identically equipped planes each operating with different parameters, one used a scan rate of 25 Hertz and a pulse rate of 55,400 Hertz and the second plane used a scan rate of 38.1 Hertz with a pulse rate of 127,500 Hertz. The flights were controlled using Trimble 5700 GPS receivers on the ground and by Applanix 510 POS/AV GPS/IMU equipment in the aircraft. Merrick & Company eliminated that portion of the data set that did not come in contact with the ground surface. There was no additional file manipulation or filtering done by Wright County or Mn/DOT.

The vertical Datum used was the North American Vertical Datum of 1988 (NAVD 88) and the Horizontal Datum used was the North American Datum of 1983, NAD 83 (NSRS 2007), as reported by Merrick. The products were delivered in the Wright County Coordinate System. The Geoid model used was the GEOID 03 and the ellipsoid was calculated using GRS 1980. The Ortho and LiDAR portions of this project contain approximately 551,127 acres in area each.

ORTHOPHOTO & DEM

EAST BOUNDING COORDINATE: 93° 29' 27.63041" W. Long.
WEST BOUNDING COORDINATE: 94° 16' 56.82215" W. Long.
NORTH BOUNDING COORDINATE: 45° 26' 36.68955" N. Lat.
SOUTH BOUNDING COORDINATE: 44° 57' 46.87076" N. Lat.

Geodetic monumentation used to control this project was published by Mn/DOT and can be found in the geodetic database online at www.olmweb.dot.state.mn.us. Merrick & Company reported only post processing their data through the use of OPUS and did not use any published monumentation for this project. Ulteg, from Detroit Lakes, Minnesota was subcontracted by Merrick to perform ground surveys for this project. Ulteg reported using NAD 83 (1996 adj.) for their subcontract work. Mn/DOT's District 3 Surveys reported using the VRS system. At this particular time the VRS system is broadcasting its corrections in NAD 83 (1996 adj.) the horizontal difference between the two datums is approximately 0.04 feet.

Merrick & Company delivered the LiDAR and ortho-photos in LAS format, version 1.1 and in TIF with world files to the county; this is the data which was tested. Other product files were delivered but were not tested as part of this project. The tilling scheme maps for both products are included as part of electronic file package. The overall project area encompasses the entire county with flight strips extended to include a buffer zone and the Mississippi River banks on the north side of the county.

The vertical accuracy test done for the DEM portion of this project were a direct comparison of the field surveyed elevations and the elevations derived from Geopak TIN model created from the LiDAR data at the surveyed X,Y coordinates. The contract called for a 1m GSD as a deliverable product.

The horizontal accuracy test done on the orthophotos were a direct comparison of field surveyed features on the ground such as sidewalk intersections, to the closest pixel location that an experienced technician could find. There is a certain amount of personal bias involved in this type of testing, knowing this, when the operator selected a pixel that was outside of the norm, a second technician was asked to see if they could replicate the results. In review of the horizontal data sheet the user will see that there are a number of test points there were not used. There are two reasons for this; one is the points selected on the ground were not as distinctive as they should have been and second, the quality of the imagery is some areas is poor. The contract called for a 1" = 200 feet, 6" pixel size orthophoto to National Map Accuracy Standard (NMAS). The NMAS was and often is still used as the standard for testing hard copy or paper maps, where as digital data is tested against the current National Standard for Spatial Data Accuracy (NSSDA). The NSSDA for the horizontal (R) component or the combined X and Y coordinate for this project are:

Photo Identifiable Points	**$RMSE_r$**	**NSSDA (Horizontal)**
Urban Areas Only	0.99'	1.71' with 41 points

The test data was obtained by District 3 Survey personnel throughout the project area encompassing different ground cover types per the American Society for Photogrammetry and Remote Sensing (ASPRS) Guidelines for Vertical Accuracy Reporting for LiDAR Data, May 2004. The test data itself was collected by VRS – RTK methods for each cover type except the forested area where a total station was used. Each test point was collected twice to ensure that the independent test source was at least 3 times as accurate, however no statistics on the survey test points were developed as part of this project. When applying the test data to the elevation model produced the accuracy test results indicated below. The contract called for 15 cm or 0.49' $RMSE_z$ which computes to 0.96' at the 95% confidence level. District 3 Surveys selected test points that geographically represent the various cover types as well as the general layout of the county. No vertical calibration was performed as part of this project.

The National Standard for Spatial Data Accuracy (NSSDA) for the vertical (Z) component of the DEM by ground cover/type for this project is:

Ground Cover Type – Code	**$RMSE_z$**	**NSSDA (Vertical)**
Open Terrain – L1O	0.36'	0.71' with 39 points
Tall Weeds & Crops – L2T	0.53'	1.05' with 21 points
Brush Lands & Low Trees – L3B	0.61'	1.19' with 21 points *
Forested Areas with Canopy – L4F	0.35'	0.68' with 20 points
Urban Areas with Structures – L5U	0.34'	0.67' with 20 points
All Ground Cover	0.44'	0.87' with 121 points

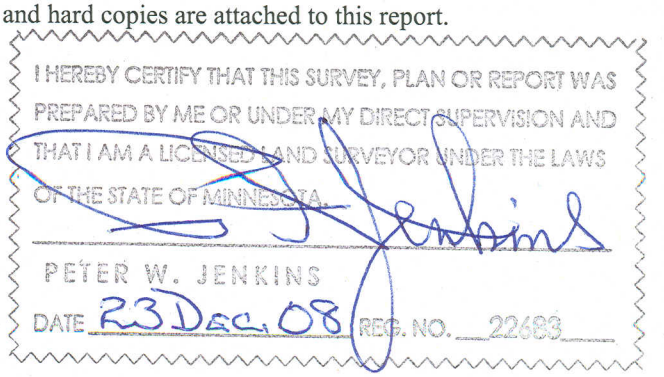
* Certain test points in these categories fell outside of the norm and were reported to the contractor for further inspection and review for data quality and processing procedures. The contractor provided me a response and is included in this report. Points 1006, 1008, 1012, 3001-3004, 4025 and 4026 were identified as points that required review. All points except 1006 were removed because they were at curb and gutter locations without break lines. Point 1006 fell in a grassy/brushy area and was deemed an appropriate test point location.

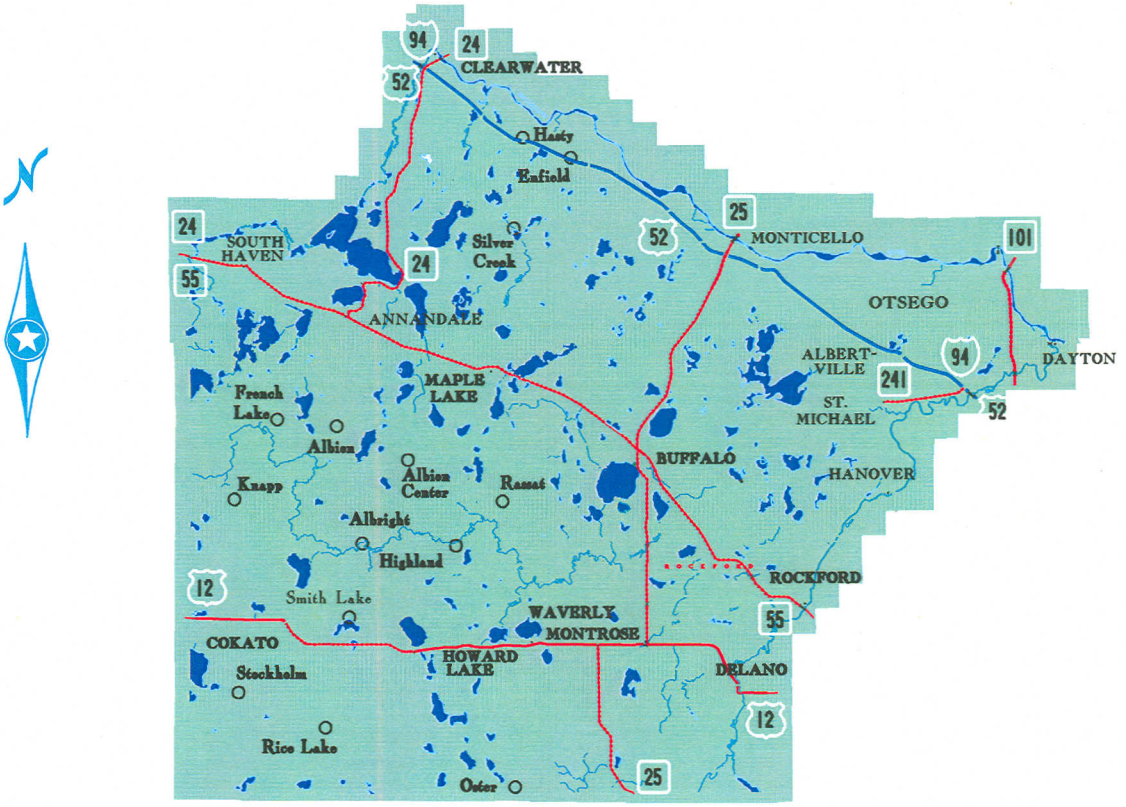
The horizontal accuracy of the DEM was not tested as part of this project due to the fact that the model does not contain distinct or well-defined topographical features but the expected horizontal accuracy as an industry guideline is 1/2000th of the flying height which calculates to 3.25 feet. The outcome of the vertical testing results suggests that the horizontal accuracy is of sufficient accuracy otherwise it could not support this type of vertical accuracies.

The tabulated test results, correspondence, related notes and hard copies are attached to this report.

Peter Jenkins, LS
Minnesota Department of Transportation
395 John Ireland Boulevard, MS 640
St. Paul, MN 55155

Phone: (651) 366-3457
e-mail: peter.jenkins@dot.state.mn.us





S. P. : Wright County LIDAR
COLLECTION DATE : 2008
LOCATION : WRIGHT COUNTY
MAPPING : LIDAR & ORTHO PHOTO
CONSULTANT MAPPING : YES
MAPPING COMPLETED : 12-24-08
ARCHIVE INFO : 651.366.3457
ARCHIVE TAPE : \ad\co\public\LM\PHOTO\ARC\ LIDAR\Wright Co

MAP DATUM

The vertical datum of the TIN file associated with this map is based on the North American Vertical Datum of 1988 (NAVD 88).

The horizontal datum of this map is based on Wright county coordinate system which is related to the Minnesota state plane coordinate system NAD 1983 (HARN 1996) adjustment south zone.

MAP ACCURACY

The vertical accuracy of the TIN file associated with this map has been tested using NSSDA (June 1998) methods and computes to 0.87 FT. based on 121 test elevations.

The horizontal accuracy of this ORTHO PHOTO has been tested using NSSDA (June 1998) methods and computes to 1.71 Feet based on 41 test points.

MEMORANDUM OF UNDERSTANDING
between
MINNESOTA DEPARTMENT OF TRANSPORTATION
and
WRIGHT COUNTY

WHEREAS, the Minnesota Department of Transportation (Mn/DOT) and Wright County wish to enter into agreement to exchange services with respect to County wide digital ortho-photo and LiDAR derived digital elevation model (DEM) in Wright County.

NOW, THEREFORE, Mn/DOT and Wright County state the following:

1. This Memorandum of Understanding (MOU) is not a binding agreement, and any binding obligation will be made with written, properly executed and approved agreements.

2. Wright County will provide Mn/DOT with a copy of the digital data that the county acquired in the spring of 2008 by Merrick and Company.

3. A meeting will be scheduled that include representative from Mn/DOT's Photogrammetric Unit, District 3 and Wright County to decide the number and location of survey shots that are necessary to adequately test the orthophotography. (approximately 120 vertical and 30 horizontal shots will be needed)

4. Mn/DOT will do the surveying and processing of these test shots and will be collected using the ASPRS Vertical Accuracy Reporting Guidelines.

5. A sample of Mn/DOT's Map Accuracy Report will be shown to Wright County for their approval.

6. Mn/DOT will do the accuracy testing and write a report detailing the outcome of the test shots. A copy of the report will be provided to Wright County in paper and PDF format.

7. The digital data provided by the County was developed pursuant to Minnesota Statutes §375.85. Mn/DOT is a licensee of such data only, and will have no ownership interest in the data. Pursuant to Minnesota Statutes §§375.86 and 13.37 (subd. 2), such data is classified as non-public "trade secret data". Mn/DOT will not disclose such data unless otherwise required by law or court order. Mn/DOT will be allowed to distribute a portion of the data set to a consultant should that consultant be under contract for programmatic purposes.

WRIGHT COUNTY

By: Steve Jobe
Steve Jobe
County Surveyor

Date: April 1, 2008

MINNESOTA DEPARTMENT OF TRANSPORTATION

By:
Peter Jenkins
Photogrammetric Engineer

Date: 15 April 2008

Mn/DOT Agreement No. 93393

CFMS Contract No. B20471

STATE OF MINNESOTA
JOINT POWERS AGREEMENT
FOR PROFESSIONAL/TECHNICAL SERVICES

Project Identification: Wright County LiDAR and Orthophoto Project

This Agreement is between the State of Minnesota, acting through its Commissioner of Transportation ("State") and Wright County ("Governmental Unit").

Recitals

1. Minnesota Statutes §15.061 authorizes State to engage such assistance as deemed necessary.
2. Minnesota Statutes §471.59 authorizes State and Governmental Unit to enter into this Agreement.
3. State is in need of the Governmental Unit to prepare a Request for Proposal (RFP) for LiDAR and Orthophoto acquisition flights. This project will have countywide coverage and the Governmental Unit will be seeking partners for support of this project. State will be providing partnership dollars and some in-kind services to include surveying (test shot collection), independent accuracy report and expertise (RFP selection committee).
4. Governmental Unit represents that it is duly qualified and agrees to perform all services described in this Agreement to the satisfaction of State.

Agreement

1 Term of Agreement; Survival of Terms; Incorporation of Exhibits

1.1 **Effective Date:** This Agreement will be effective on the date State obtains all required signatures under Minnesota Statutes Section §16C.05, subdivision 2.

1.2 **Expiration Date:** This Agreement will expire on **July 31, 2009**, or when all obligations have been satisfactorily fulfilled, whichever occurs first.

1.3 **Survival of Terms:** All clauses which impose obligations continuing in their nature and which must survive in order to give effect to their meaning will survive the expiration or termination of this Agreement, including, without limitation, the following clauses: 6. Liability; 7. State Audits; 8. Government Data Practices; 9. Intellectual Property Rights; and 10. Venue.

1.4 **Exhibits:** Exhibit A is attached and incorporated into this Agreement.

2 Scope of Work and Deliverables

This entire scope of work falls under Activity Code 1018

2.1 The Governmental Unit is planning to publish an RFP to do orthophotography and a LiDAR collection to create a Digital Elevation Model (DEM). State's cooperation in this multi-government partnership will assure State a copy of the complete data set that can be utilized by both State's Central Office and District 3. This data will be most valuable for pre-design, pre-engineering, hydraulic studies and mapping professionals. The total number of Control Sections covered partially or in whole is nine.

2.2 The Governmental Unit will provide the following services with respect to this Agreement:

- The creation and publication of the RFP in accordance with Minnesota State Statutes
- Establishment of the vendor selection committee – which will include one member designated by State
- Project Management – from acquisition through final delivery
- Invoice payment services to the selected vendor
- Data storage and dissemination
- Notification to State should there be an unsatisfactory response to the RFP

2.3 State will provide in-kind services to supplement this project by collecting test point data through its District 3 Surveys Office. The test point data will be within the vicinity of the Trunk Highway system throughout Wright County. State will also provide an accuracy report and test point analysis through its Photogrammetric Unit. Should the Governmental Unit require specific areas to be tested which fall outside the Trunk Highway vicinity; the Governmental Unit will collect that data and supply it to State's Photogrammetric Unit with a request that the data be included in the accuracy report.

2.4 In consideration of the monetary contribution and in-kind services provide by State, Governmental Unit will provide a license to certain data, and the DEM, as further specified in Article 9.

3 Payment

3.1 **Consideration.** State will pay for all services performed by Governmental Unit under this Agreement as follows:

3.1.1 **Compensation.** State will pay Governmental Unit on a Lump Sum basis for work performed prior to December 31, 2008.

3.1.2 **Total Obligation.** The total obligation of State for all compensation and reimbursements to Governmental Unit will be $25,000.00.

3.2 **Terms of Payment**

3.2.1 **Invoices.** State will promptly pay Governmental Unit after Governmental Unit presents an invoice for the services actually performed and State's Authorized Representative accepts the invoiced services. Governmental Unit will use the format set forth in Exhibit A when submitting Invoices. Invoices must be submitted timely and according to the following schedule:
Prior to March 31, 2009

3.2.2 **Retainage.** Under Minnesota Statutes Section §16C.08, subdivision 5(b), no more than 90% of the amount due under this Agreement may be paid until the final product of this Agreement has been reviewed by State's agency head. The balance due will be paid when State's agency head determines that Governmental Unit has satisfactorily fulfilled all the terms of this Agreement.

3.2.3 **Federal funds.** If federal funds are used Governmental Unit is responsible for compliance with all federal requirements imposed on these funds and accepts full financial responsibility for any requirements imposed by Governmental Unit's failure to comply with federal requirements.

4 Agreement Personnel

4.1 State's Authorized Representative will be:

Name: Ashley Duran, Contract Administrator
Address: Minnesota Department of Transportation
Consultant Services Section, Mail Stop 680
395 John Ireland Boulevard, St. Paul, Minnesota 55155-1899
Telephone: 651-366-4627
Fax: 651-366-4770
E-Mail: ashley.duran@dot.state.mn.us

State's Authorized Representative, or his/her successor, will monitor Governmental Unit's performance and has the authority to accept or reject the services provided under this Agreement.

4.2 State's Project Manager will be:

Name: Peter Jenkins, Photogrammetric Engineer
Address: Minnesota Department of Transportation
Office of Land Management, Mail Stop 640
395 John Ireland Boulevard, St. Paul, Minnesota 55155-1899
Telephone: 651-366-3457
Fax: 651-366-3425
E-Mail: peter.jenkins@dot.state.mn.us

State's Project Manager, or his/her successor, has the responsibility to monitor Governmental Unit's performance and progress. State's Project Manager will sign progress reports, review billing statements, make recommendations to State's Authorized Representative for acceptance of Governmental Unit's goods or services and make recommendations to State's Authorized Representative for certification for payment of each Invoice submitted for payment.

4.3 Governmental Unit's Authorized Representative will be:

Name: Steve Jobe, County Surveyor
Address: Wright County Highway Department
1901 Highway 25 North, Buffalo, Minnesota 55313
Telephone: 763-682-7690
Fax: 763-682-7313
E-Mail: steve.jobe@co.wright.mn.us

5 Assignment, Amendments, Waiver and Contract Complete

5.1 **Assignment.** Governmental Unit may neither assign nor transfer any rights or obligations under this Agreement without the prior consent of State and a fully executed Assignment Agreement, executed and approved by the same parties who executed and approved this Agreement, or their successors in office.

5.2 **Amendments.** Any Amendment to this Agreement must be in writing and will not be effective until it has been executed and approved by the same parties who executed and approved the Original Agreement, or their successors in office.

5.3 **Waiver.** If State fails to enforce any provision of this Agreement, that failure does not waive the provision or its right to subsequently enforce it.

5.4 **Contract Complete.** This Agreement contains all prior negotiations and agreements between State and Governmental Unit. No other understanding regarding this Agreement, whether written or oral, may be used to bind either party.

6 Liability

6.1 Governmental Unit will indemnify, save and hold State, its agents and employees harmless from any claims or causes of action, including attorney's fees incurred by State, arising from the performance of this Agreement by Governmental Unit, it's agents or employees. This clause will not be construed to bar any legal remedies Governmental Unit may have for State's failure to fulfill its obligations under this Agreement.

7 State Audits

7.1 Under Minnesota Statutes §16C.05, subdivision 5, Governmental Unit's books, records, documents and accounting procedures and practices relevant to this Agreement are subject to examination by the State and/or the State Auditor or Legislative Auditor, as appropriate, for a minimum of six years from the end of this Agreement.

8 Government Data Practices

8.1 Governmental Unit and State must comply with the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, as it applies to all data provided by State under this Agreement, and as it applies to all data created, collected, received, stored, used, maintained or disseminated by Governmental Unit under this Agreement. The civil remedies of Minnesota Statutes §13.08 apply to the release of the data referred to in this clause by either Governmental Unit or State.

9 Intellectual Property Rights

9.1 **License to State**. Governmental Unit will grant to State a perpetual, irrevocable and royalty-free license to have and use the orthophotgraphy and lidar photos and data, DEM and other deliverables produced for the Governmental Unit under the terms of any and all contract(s) issued pursuant to the Request for Proposals referenced in Article 2.1.

9.2 **Representation.** Governmental Unit represents that it has the authority to provide such license to the State pursuant to Minnesota Statutes §375.85.

9.3 **Specific Enforcement**. Governmental Unit agrees that, as payment of damages would be an inadequate remedy, State will be entitled to specific enforcement of Governmental Unit's obligation to provide the data licensed under Article 9.1 if Governmental Unit breaches its obligation to deliver such licensed data.

10 Venue

10.1 Venue for all legal proceedings out of this Agreement, or its breach, must be in the appropriate state or federal court with competent jurisdiction in Ramsey County, Minnesota.

11 Termination; Suspension

11.1 **Termination.** State or the Commissioner of Administration may terminate this Agreement at any time, with or without cause, upon 30 days' written notice to Governmental Unit.

11.2 **Termination for Insufficient Funding**. State may immediately terminate this Agreement if it does not obtain funding from the Minnesota Legislature, or other funding source; or if funding cannot be continued at a level sufficient to allow for the payment of the services covered here. Termination must be by written or fax notice to Governmental Unit. State is not obligated to pay for any services that are provided after notice and effective date of termination. However, Governmental Unit will be entitled to payment, determined on a pro rata basis, for services satisfactorily performed to the extent that funds are available. State will not be assessed any penalty if the agreement is terminated because of the decision of the Minnesota Legislature, or other funding source, not to appropriate funds. State must provide Governmental Unit notice of the lack of funding within a reasonable time of State's receiving that notice.

11.3 **Suspension.** State may immediately suspend this Agreement in the event of a total or partial government shutdown due to failure to have an approved budget by the legal deadline. Work performed by Governmental Unit during a period of suspension will be deemed unauthorized and undertaken at risk of non-payment.

12 Immigration Status Certification

12.1 Pursuant to the Governor's Executive Order 08-01, if this Contract, including any extension options, is or could be in excess of $50,000.00, Contractor certifies that it and its subcontractor(s):

12.1.1 Comply with the Immigration Reform and Control Act of 1986 (U.S.C. 1101 et. seq.) in relation to all employees performing work in the United States and do not knowingly employ persons in violation of the United States' immigrations laws; and

12.1.2 By the date of the performance of services under this Contract, Contractor and its subcontractor(s) have implemented or are in the process of implementing the E-Verify program for all newly hired employees in the United States who will perform work on behalf of the State of Minnesota.

12.2 Contractor will obtain certifications of compliance with this section from all subcontractor(s) who will participate in the performance of this Contract. Subcontractor certifications will be maintained by Contractor and made available to State upon request. If Contractor or its subcontractor(s) are not in compliance with 12.1.1 or 12.1.2 above or have not begun or implemented the E-Verify program for all newly hired employees performing work under this Contract, State reserves the right to determine what action it may take, including, but not limited to, canceling the Contract and/or suspending or debarring the Contractor from state purchasing.

13 Additional Provisions

NONE

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STATE ENCUMBRANCE VERIFICATION
Individual certifies that funds have been encumbered as required by Minn. Stat. §16A.15 and §16C.05.

Signed: _____

Date: 11/12/08

CFMS Contract No. 132471

DEPARTMENT OF TRANSPORTATION

By: ORIGINAL SIGNED BY Michael A. Barnes
(with delegation authority)

Title: Division Director

Date: 11/13/08

GOVERNMENTAL UNIT
Governmental Unit certifies that the appropriate person(s) have executed the Agreement on behalf of Governmental Unit as required by applicable articles, bylaws or resolutions.

By: Elmer Euchelberg

Title: Board Chair

Date: 11/4/08

By: Richard W. Norman

Title: County Coordinator

Date: 11/4/08

COMMISSIONER OF ADMINISTRATION
As delegated to Materials Management Division

By: Lynn A. Kressig

Date: 11/21/08

*** INCLUDE A RESOLUTION APPROVING THIS AGREEMENT**

Wright County
Horizontal Accuracy Test

Point Number	Point Description	X From Survey	Y From Survey	X From Map	Difference in X	X-Difference Squared	Y From Map	Difference in Y	Y-Difference Squared	X-Diff. Sq. + Y-Diff. Sq.
2002	TSTPT	420726.777	136739.406	420726.580	0.197	0.039	136739.414	-0.008	0.000	0.039
2003	TSTPT	420719.041	136616.307	420719.650	-0.609	0.371	136616.967	-0.660	0.436	0.806
2004	TSTPT	420710.645	136469.808	420711.026	-0.381	0.145	136470.230	-0.422	0.178	0.323
2005	TSTPT	420379.352	136530.834	420379.428	-0.076	0.006	136531.241	-0.407	0.166	0.171
2006	TSTPT	420784.215	137148.876	420784.118	0.097	0.009	137148.004	0.872	0.760	0.770
2011	L5U	420757.318	135375.000	420755.796	1.522	2.316	135375.260	-0.260	0.068	2.384
1	FSA Tgt	423728.730	137972.840	423728.380	0.350	0.122	137971.870	0.970	0.941	1.063
1008	TSTPT	502173.395	170395.262	502173.428	-0.033	0.001	170396.007	-0.745	0.555	0.556
1009	TSTPT	502300.281	170179.193	502300.070	0.211	0.045	170179.815	-0.622	0.387	0.431
1010	TSTPT	502474.837	170180.889	502474.584	0.253	0.064	170181.346	-0.457	0.209	0.273
1011	TSTPT	502125.543	170147.093	502126.172	-0.629	0.396	170147.386	-0.293	0.086	0.481
1022	TSTPT	490732.324	133070.865	490732.320	0.004	0.000	133069.759	1.106	1.223	1.223
1023	TSTPT	490883.841	133079.198	490882.854	0.987	0.974	133077.951	1.247	1.555	2.529
1024	TSTPT	490823.269	132873.829	490822.559	0.710	0.504	132872.515	1.314	1.727	2.231
1025	TSTPT	490804.908	132740.020	490804.676	0.232	0.054	132739.215	0.805	0.648	0.702
1026	TSTPT	490713.009	132661.934	490712.154	0.855	0.731	132660.785	1.149	1.320	2.051
3001	TSTPT	519584.966	212028.380	519585.728	-0.762	0.581	212026.754	1.626	2.644	3.225
3004	TSTPT	519401.554	211961.856	519402.174	-0.620	0.384	211961.373	0.483	0.233	0.618
3005	TSTPT	519358.292	212151.313	519358.570	-0.278	0.077	212151.863	-0.550	0.303	0.380
5000	TSTPT	577549.727	208317.117	577549.592	0.135	0.018	208316.659	0.458	0.210	0.228
5001	TSTPT	577940.611	208315.125	577940.012	0.599	0.359	208315.281	-0.156	0.024	0.383
5002	TSTPT	554936.834	187693.218	554936.604	0.230	0.053	187693.380	-0.162	0.026	0.079
5003	TSTPT	553382.630	167149.765	553382.347	0.283	0.080	167149.786	-0.021	0.000	0.081
5005	TSTPT	524915.131	123534.181	524915.263	-0.132	0.017	123534.999	-0.818	0.669	0.687
5006	TSTPT	524881.914	123538.730	524882.800	-0.886	0.785	123538.450	0.280	0.078	0.863
5007	TSTPT	523753.490	123681.322	523754.180	-0.690	0.476	123680.968	0.354	0.125	0.601
5008	TSTPT	476748.840	132574.319	476748.847	-0.007	0.000	132574.045	0.274	0.075	0.075
5009	TSTPT	477612.545	132872.955	477612.006	0.539	0.291	132873.237	-0.282	0.080	0.370
5010	TSTPT	477597.056	132911.385	477596.571	0.485	0.235	132910.549	0.836	0.699	0.934
5011	TSTPT	450742.098	130021.983	450742.354	-0.256	0.066	130022.166	-0.183	0.033	0.099
5012	TSTPT	451243.572	129924.289	451243.275	0.297	0.088	129924.425	-0.136	0.018	0.107
5013	TSTPT	469426.509	191850.056	469427.201	-0.692	0.479	191849.540	0.516	0.266	0.745
5014	TSTPT	437180.538	203687.721	437180.586	-0.048	0.002	203686.976	0.745	0.555	0.557
5015	TSTPT	437205.407	204580.066	437206.128	-0.721	0.520	204579.402	0.664	0.441	0.961
5016	TSTPT	414574.539	215004.456	414575.955	-1.416	2.005	215004.356	0.100	0.010	2.015

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2007
Delivery: December 2008

Wright County
Horizontal Accuracy Test

Point Number	Point Description	X From Survey	Y From Survey	X From Map	Difference in X	X-Difference Squared	Y From Map	Difference in Y	Y-Difference Squared	X-Diff. Sq. + Y-Diff. Sq.
5017	TSTPT	414556.991	215036.048	414558.396	-1.405	1.974	215035.874	0.174	0.030	2.004
5018	TSTPT	456949.506	258735.104	456948.976	0.530	0.281	258736.935	-1.831	3.353	3.633
5019	TSTPT	457202.653	258666.011	457201.701	0.952	0.906	258667.697	-1.686	2.843	3.749
2	FSA Tgt	421780.220	181336.932	421780.066	0.154	0.024	181337.422	-0.490	0.240	0.264
3	FSA Tgt	468617.954	208459.029	468617.233	0.721	0.520	208458.445	0.584	0.341	0.861
4	FSA Tgt	504214.544	181859.619	504214.327	0.217	0.047	181860.389	-0.770	0.593	0.640

Sum	40.194
Average	0.980
RMSEr	0.990
NSSDA	1.714

Pilot Area

41 Total Number of Points

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2007
Delivery: December 2008

Wright County
Vertical Accuracy Test

Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1	L1O	1007.628	1007.587	0.041	0.002
1018	L1O	965.465	965.930	-0.465	0.216
1019	L1O	965.408	965.754	-0.346	0.119
1020	L1O	963.869	964.618	-0.749	0.562
1021	L1O	963.351	964.129	-0.778	0.606
1022	L1O	965.424	965.633	-0.209	0.044
2002	L1O	1052.642	1052.846	-0.204	0.041
2003	L1O	1053.513	1053.884	-0.371	0.137
2004	L1O	1056.634	1057.044	-0.410	0.168
2005	L1O	1050.752	1050.944	-0.192	0.037
2006	L1O	1054.044	1054.179	-0.134	0.018
2012	L1O	1059.087	1059.420	-0.333	0.111
2013	L1O	1058.720	1059.344	-0.624	0.390
2014	L1O	1061.044	1061.150	-0.106	0.011
2015	L1O	1060.579	1061.158	-0.579	0.335
2016	L1O	1059.932	1060.538	-0.606	0.368
3012	L1O	962.641	963.106	-0.465	0.216
3013	L1O	961.205	961.705	-0.500	0.250
3014	L1O	962.196	962.327	-0.130	0.017
3015	L1O	964.487	965.078	-0.591	0.349
3016	L1O	964.875	965.115	-0.240	0.057
4007	L1O	994.818	995.101	-0.283	0.080
4008	L1O	993.480	993.685	-0.204	0.042
4009	L1O	993.243	993.633	-0.390	0.152
4010	L1O	993.186	993.472	-0.286	0.082
4011	L1O	994.146	994.314	-0.168	0.028
1023	L2T	980.572	981.067	-0.495	0.245
1024	L2T	980.086	980.792	-0.706	0.499
1025	L2T	981.468	982.008	-0.540	0.292
1026	L2T	980.816	981.559	-0.743	0.551
1027	L2T	981.172	981.728	-0.556	0.309
2017	L2T	1075.958	1076.575	-0.617	0.381
2018	L2T	1075.528	1075.661	-0.133	0.018
2019	L2T	1075.648	1076.045	-0.397	0.158
2020	L2T	1076.228	1076.679	-0.450	0.203
2021	L2T	1077.370	1077.772	-0.402	0.161
3006	L2T	969.165	969.790	-0.625	0.391
3007	L2T	968.288	968.960	-0.672	0.452
3008	L2T	967.812	968.552	-0.740	0.548
3009	L2T	966.945	967.589	-0.644	0.414
3010	L2T	967.518	968.158	-0.640	0.410
3011	L2T	968.327	968.930	-0.603	0.364
4012	L2T	960.688	961.026	-0.337	0.114
4013	L2T	962.034	962.389	-0.355	0.126
4014	L2T	961.734	962.181	-0.447	0.200
4015	L2T	954.344	954.657	-0.313	0.098
4016	L2T	955.623	955.967	-0.344	0.118
1002	L3B	968.342	968.407	-0.065	0.004
1003	L3B	972.655	973.457	-0.802	0.643
1004	L3B	972.094	972.619	-0.525	0.275

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

1005	L3B	968.421	968.483	-0.062	0.004
1006	L3B	970.323	971.429	-1.106	1.223
1007	L3B	971.802	972.655	-0.853	0.727
2022	L3B	1074.673	1075.228	-0.555	0.308
2023	L3B	1073.684	1074.146	-0.462	0.214
2024	L3B	1079.794	1080.149	-0.355	0.126
2025	L3B	1075.049	1075.761	-0.712	0.507
2026	L3B	1073.241	1073.663	-0.422	0.178
3022	L3B	933.513	934.249	-0.736	0.542
3023	L3B	935.102	935.589	-0.487	0.237
3024	L3B	932.569	933.164	-0.595	0.354
3025	L3B	934.420	935.014	-0.594	0.353
3026	L3B	933.701	934.523	-0.822	0.675
4002	L3B	931.563	931.895	-0.332	0.110
4003	L3B	930.950	931.551	-0.601	0.362
4004	L3B	932.349	932.448	-0.099	0.010
4005	L3B	932.796	932.971	-0.175	0.031
4006	L3B	930.856	931.776	-0.920	0.846
1030	L4F	981.811	981.566	0.245	0.060
1031	L4F	977.948	978.090	-0.142	0.020
1032	L4F	976.149	976.018	0.131	0.017
1033	L4F	975.516	975.057	0.459	0.211
1034	L4F	973.306	973.093	0.213	0.045
2029	L4F	1063.307	1062.660	0.647	0.419
2030	L4F	1062.519	1062.271	0.248	0.062
2031	L4F	1061.814	1061.479	0.336	0.113
2032	L4F	1058.096	1057.861	0.235	0.055
2033	L4F	1058.407	1058.295	0.112	0.013
3029	L4F	943.051	942.838	0.213	0.046
3030	L4F	942.990	943.097	-0.106	0.011
3031	L4F	942.908	943.309	-0.401	0.161
3032	L4F	938.654	938.960	-0.306	0.094
3033	L4F	938.121	938.417	-0.296	0.087
4032	L4F	995.678	996.004	-0.326	0.106
4033	L4F	996.275	995.996	0.279	0.078
4034	L4F	994.457	994.619	-0.162	0.026
4035	L4F	994.100	994.940	-0.840	0.705
4036	L4F	994.920	995.253	-0.333	0.111
1013	L5U	921.269	921.606	-0.337	0.113
1014	L5U	923.041	923.139	-0.098	0.010
1015	L5U	924.333	924.360	-0.027	0.001
1016	L5U	928.037	927.396	0.641	0.411
1017	L5U	931.397	931.503	-0.106	0.011
2007	L5U	1047.959	1048.281	-0.322	0.103
2008	L5U	1045.744	1046.154	-0.410	0.168
2009	L5U	1045.777	1046.186	-0.409	0.167
2010	L5U	1059.018	1059.497	-0.479	0.230
2011	L5U	1059.531	1060.003	-0.472	0.223
3017	L5U	933.970	934.232	-0.262	0.068
3018	L5U	931.219	931.371	-0.152	0.023
3019	L5U	932.156	932.631	-0.475	0.225
3020	L5U	935.497	936.133	-0.636	0.404

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

3021	L5U	934.251	934.543	-0.292	0.085
4017	L5U	995.826	995.560	0.266	0.071
4018	L5U	998.054	998.179	-0.125	0.016
4019	L5U	996.823	996.901	-0.078	0.006
4020	L5U	998.285	998.269	0.016	0.000
4021	L5U	997.223	997.324	-0.101	0.010
1009	PTP	928.437	928.793	-0.356	0.126
1010	PTP	937.755	938.174	-0.419	0.175
1011	PTP	923.117	923.471	-0.354	0.125
4022	PTP	996.377	996.700	-0.323	0.104
4023	PTP	996.849	997.106	-0.257	0.066
4024	PTP	997.555	997.532	0.023	0.001
2	FSA	1066.157	1066.218	-0.061	0.004
3	FSA	1083.746	1083.772	-0.026	0.001
4	FSA	1020.268	1020.478	-0.210	0.044
5	FSA	963.853	963.601	0.252	0.063
6	FSA	938.963	938.924	0.039	0.002
601	FSA	994.025	993.974	0.051	0.003
602	FSA	962.180	962.347	-0.167	0.028

Pilot Area

Total Number of Points =	121	Sum	23.744
User-Defined Tolerance =	0.960	Average	0.196
Chi Square Test :		RMSEz	0.443
		NSSDA	0.868

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1	L1O	1007.628	1007.587	0.041	0.002
1018	L1O	965.465	965.930	-0.465	0.216
1019	L1O	965.408	965.754	-0.346	0.119
1020	L1O	963.869	964.618	-0.749	0.562
1021	L1O	963.351	964.129	-0.778	0.606
1022	L1O	965.424	965.633	-0.209	0.044
2002	L1O	1052.642	1052.846	-0.204	0.041
2003	L1O	1053.513	1053.884	-0.371	0.137
2004	L1O	1056.634	1057.044	-0.410	0.168
2005	L1O	1050.752	1050.944	-0.192	0.037
2006	L1O	1054.044	1054.179	-0.134	0.018
2012	L1O	1059.087	1059.420	-0.333	0.111
2013	L1O	1058.720	1059.344	-0.624	0.390
2014	L1O	1061.044	1061.150	-0.106	0.011
2015	L1O	1060.579	1061.158	-0.579	0.335
2016	L1O	1059.932	1060.538	-0.606	0.368
3012	L1O	962.641	963.106	-0.465	0.216
3013	L1O	961.205	961.705	-0.500	0.250
3014	L1O	962.196	962.327	-0.130	0.017
3015	L1O	964.487	965.078	-0.591	0.349
3016	L1O	964.875	965.115	-0.240	0.057
4007	L1O	994.818	995.101	-0.283	0.080
4008	L1O	993.480	993.685	-0.204	0.042
4009	L1O	993.243	993.633	-0.390	0.152
4010	L1O	993.186	993.472	-0.286	0.082
4011	L1O	994.146	994.314	-0.168	0.028
1009	PTP	928.437	928.793	-0.356	0.127
1010	PTP	937.755	938.174	-0.419	0.175
1011	PTP	923.117	923.471	-0.354	0.125
4022	PTP	996.377	996.700	-0.323	0.104
4023	PTP	996.849	997.106	-0.257	0.066
4024	PTP	997.555	997.532	0.023	0.001
2	FSA	1066.157	1066.218	-0.061	0.004
3	FSA	1083.746	1083.772	-0.026	0.001
4	FSA	1020.268	1020.478	-0.210	0.044
5	FSA	963.853	963.601	0.252	0.063
6	FSA	938.963	938.924	0.039	0.002
601	FSA	994.025	993.974	0.051	0.003
602	FSA	962.180	962.347	-0.167	0.028

Pilot Area			
Total Number of Points =	39	Sum	5.181
User-Defined Tolerance =	0.960	Average	0.133
Chi Square Test :		RMSEz	0.36
		NSSDA	0.71

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1023	L2T	980.572	981.067	-0.495	0.245
1024	L2T	980.086	980.792	-0.706	0.499
1025	L2T	981.468	982.008	-0.540	0.292
1026	L2T	980.816	981.559	-0.743	0.551
1027	L2T	981.172	981.728	-0.556	0.309
2017	L2T	1075.958	1076.575	-0.617	0.381
2018	L2T	1075.528	1075.661	-0.133	0.018
2019	L2T	1075.648	1076.045	-0.397	0.158
2020	L2T	1076.228	1076.679	-0.450	0.203
2021	L2T	1077.370	1077.772	-0.402	0.161
3006	L2T	969.165	969.790	-0.625	0.391
3007	L2T	968.288	968.960	-0.672	0.452
3008	L2T	967.812	968.552	-0.740	0.548
3009	L2T	966.945	967.589	-0.644	0.414
3010	L2T	967.518	968.158	-0.640	0.410
3011	L2T	968.327	968.930	-0.603	0.364
4012	L2T	960.688	961.026	-0.337	0.114
4013	L2T	962.034	962.389	-0.355	0.126
4014	L2T	961.734	962.181	-0.447	0.200
4015	L2T	954.344	954.657	-0.313	0.098
4016	L2T	955.623	955.967	-0.344	0.118

Pilot Area		Sum	6.050
Total Number of Points =	21	Average	0.288
User-Defined Tolerance =	0.960	RMSEz	0.537
Chi Square Test :		NSSDA	1.052

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1002	L3B	968.342	968.407	-0.065	0.004
1003	L3B	972.655	973.457	-0.802	0.643
1004	L3B	972.094	972.619	-0.525	0.275
1005	L3B	968.421	968.483	-0.062	0.004
1006	L3B	970.323	971.429	-1.106	1.223
1007	L3B	971.802	972.655	-0.853	0.727
2022	L3B	1074.673	1075.228	-0.555	0.308
2023	L3B	1073.684	1074.146	-0.462	0.214
2024	L3B	1079.794	1080.149	-0.355	0.126
2025	L3B	1075.049	1075.761	-0.712	0.507
2026	L3B	1073.241	1073.663	-0.422	0.178
3022	L3B	933.513	934.249	-0.736	0.542
3023	L3B	935.102	935.589	-0.487	0.237
3024	L3B	932.569	933.164	-0.595	0.354
3025	L3B	934.420	935.014	-0.594	0.353
3026	L3B	933.701	934.523	-0.822	0.675
4002	L3B	931.563	931.895	-0.332	0.110
4003	L3B	930.950	931.551	-0.601	0.362
4004	L3B	932.349	932.448	-0.099	0.010
4005	L3B	932.796	932.971	-0.175	0.031
4006	L3B	930.856	931.776	-0.920	0.846

Pilot Area		Sum	7.728
Total Number of Points =	21	Average	0.368
User-Defined Tolerance =	0.960	RMSEz	0.607
Chi Square Test :		NSSDA	1.189

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

Wright County
Vertical Accuracy Test

Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1030	L4F	981.811	981.566	0.245	0.060
1031	L4F	977.948	978.090	-0.142	0.020
1032	L4F	976.149	976.018	0.131	0.017
1033	L4F	975.516	975.057	0.459	0.211
1034	L4F	973.306	973.093	0.213	0.045
2029	L4F	1063.307	1062.660	0.647	0.419
2030	L4F	1062.519	1062.271	0.248	0.062
2031	L4F	1061.814	1061.479	0.336	0.113
2032	L4F	1058.096	1057.861	0.235	0.055
2033	L4F	1058.407	1058.295	0.112	0.013
3029	L4F	943.051	942.838	0.213	0.046
3030	L4F	942.990	943.097	-0.106	0.011
3031	L4F	942.908	943.309	-0.401	0.161
3032	L4F	938.654	938.960	-0.306	0.094
3033	L4F	938.121	938.417	-0.296	0.087
4032	L4F	995.678	996.004	-0.326	0.106
4033	L4F	996.275	995.996	0.279	0.078
4034	L4F	994.457	994.619	-0.162	0.026
4035	L4F	994.100	994.940	-0.840	0.705
4036	L4F	994.920	995.253	-0.333	0.111

Pilot Area

Total Number of Points =	20	Sum	2.439
User-Defined Tolerance =	0.960	Average	0.122
Chi Square Test :		RMSEz	0.349
		NSSDA	0.684

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

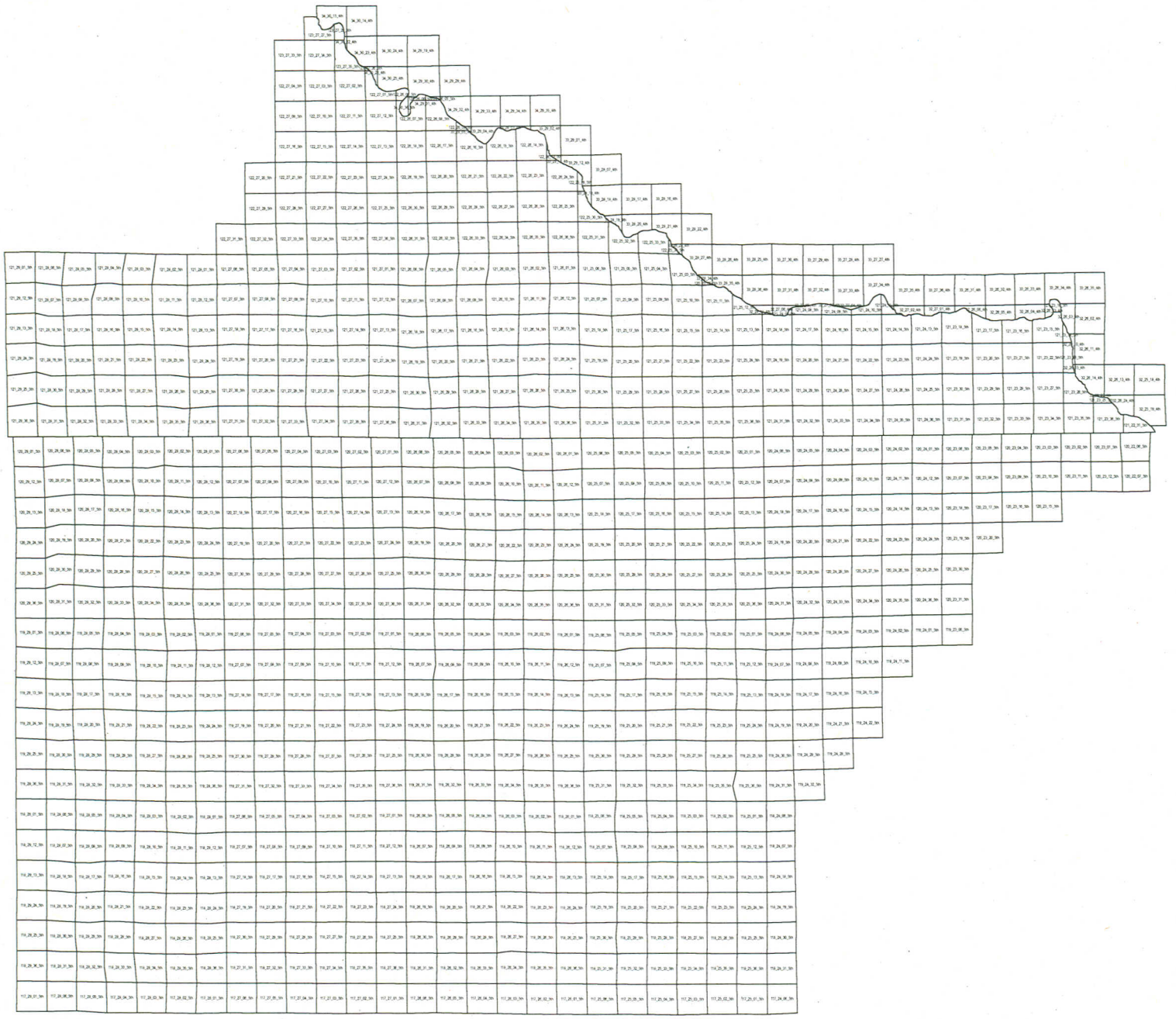
Wright County
Vertical Accuracy Test

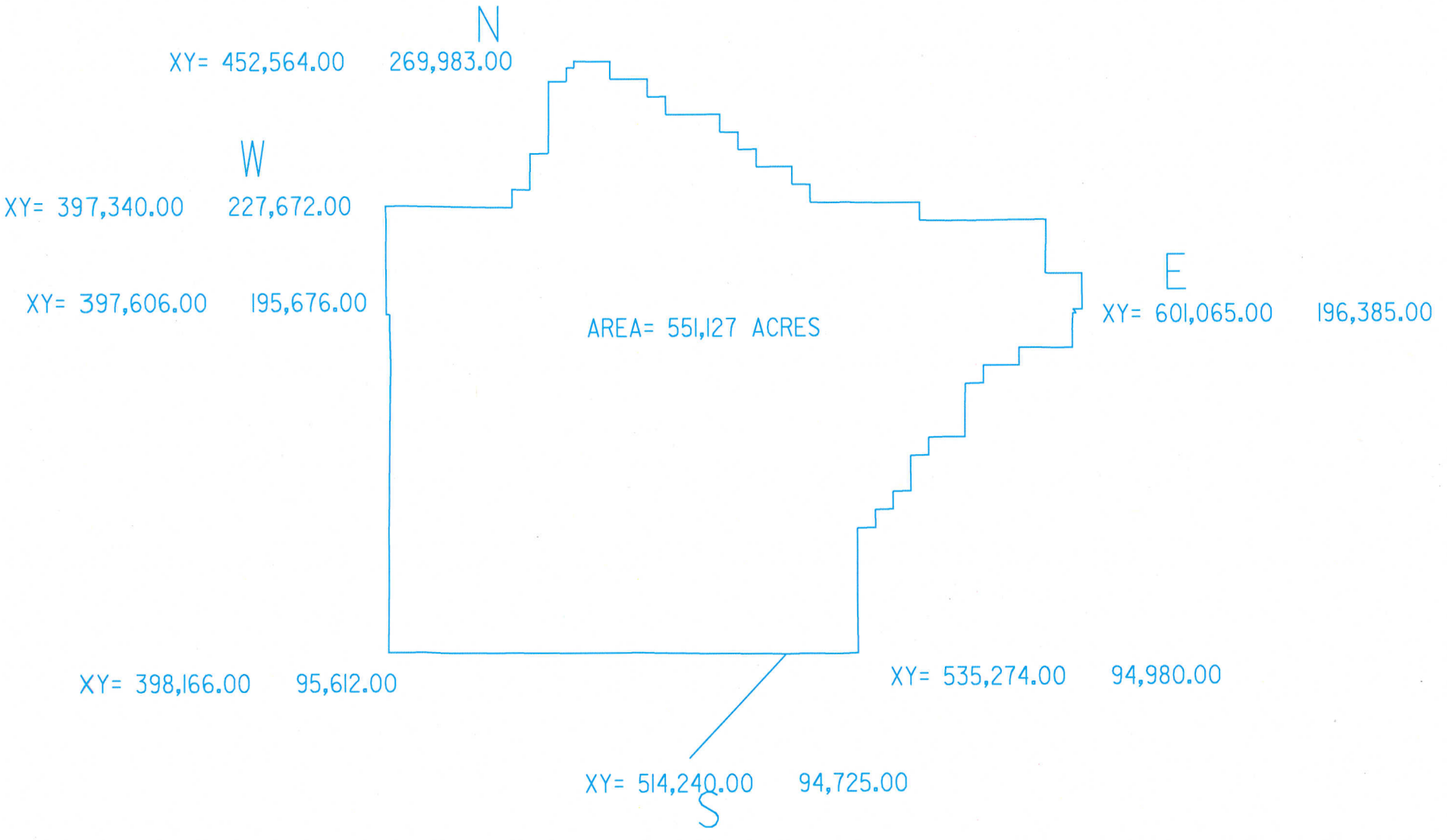
Point Number	Point Description	Z (Survey)	Z (Map)	Difference in Z	Z-Difference Squared
1013	L5U	921.269	921.606	-0.337	0.113
1014	L5U	923.041	923.139	-0.098	0.010
1015	L5U	924.333	924.360	-0.027	0.001
1016	L5U	928.037	927.396	0.641	0.411
1017	L5U	931.397	931.503	-0.106	0.011
2007	L5U	1047.959	1048.281	-0.322	0.103
2008	L5U	1045.744	1046.154	-0.410	0.168
2009	L5U	1045.777	1046.186	-0.409	0.167
2010	L5U	1059.018	1059.497	-0.479	0.230
2011	L5U	1059.531	1060.003	-0.472	0.223
3017	L5U	933.970	934.232	-0.262	0.068
3018	L5U	931.219	931.371	-0.152	0.023
3019	L5U	932.156	932.631	-0.475	0.225
3020	L5U	935.497	936.133	-0.636	0.404
3021	L5U	934.251	934.543	-0.292	0.085
4017	L5U	995.826	995.560	0.266	0.071
4018	L5U	998.054	998.179	-0.125	0.016
4019	L5U	996.823	996.901	-0.078	0.006
4020	L5U	998.285	998.269	0.016	0.000
4021	L5U	997.223	997.324	-0.101	0.010

Pilot Area		Sum	2.346
Total Number of Points =	20	Average	0.117
User-Defined Tolerance =	0.960	RMSEz	0.342
Chi Square Test :		NSSDA	0.671

Contractor: Merrick Co.
Owner: Wright County
Independent Tester: Mn/DOT

Aerial Collection: Spring 2008
Delivery: December 2008

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Wright County LatLong

452636.68955,-940405.27163,North,1,,,
451428.18981,-932927.63041,East,2,,,
445749.14225,-934449.44083,Southeast,3,,,
445746.87076,-934941.96511,South,4,,,
445753.22488,-941636.24895,Southwest,5,,,
451421.12580,-941650.89307,West,6,,,
451936.99927,-941656.82215,Northwest,7,,,

From: "Steve Jobe" <Steve.Jobe@co.wright.mn.us>
To: "Michael Pooler" <Michael.Pooler@co.wright.mn.us>, "Mike Minnick" <Mike.Minnick@co.wright.mn.us>, "Steve Jobe" <Steve.Jobe@co.wright.mn.us>, <Peter.Jenkins@dot.state.mn.us>
Date: 1/3/2008 5:08:28 PM
Subject: Wright County Consultant Selection Team

Item Type: Appointment
Start Date: Tuesday, 5 Feb 2008, 09:00:00am (Central Standard Time)
Duration: 7 Hours, 30 Mins
Place: Wright County Surveyor Department - Front Conf. Rm.

Thank you for agreeing to serve on the Consultant Selection Team for the Wright County 2008 Aerial Photography and LIDAR Project.

I figured 9:00 am gives Pete some time to get to Buffalo. Hopefully we have enough time to complete our work before the end of the day.

Steve

Steven A. Jobe, LS
Wright County Surveyor
1901 Hwy 25 North
Buffalo, MN 55313
(763) 682-7690 ph
(763) 682-7313 fax
steve.jobe@co.wright.mn.us

From: Kevin Metz
To: Peter Jenkins
Date: 1/16/2008 1:46:58 PM
Subject: Re: Wright County LiDAR & Ortho RFP

Pete,
I have spoken with Steve Jobe and Tim Paul about this project, and we would like to partner. District 3 will provide the test shots. Hopefully, everyone will benefit from our combined efforts.
Thanks,
Kevin

Kevin J Metz
MNDOT District 3
Principal Land Surveyor
7694 Ind. Park Road
Baxter MN 56425
ph. 218-828-5761
fax 218-828-5814

>>> Peter Jenkins 1/15/2008 10:34 AM >>>
Kevin:
I got a call from Steve Jobe (Wright County) about helping them out on their RFP and possibly partnering with accuracy testing. This would require about 120 vertical test shots and 30-40 horizontal test shots throughout the county. Steve or the contractor would do the initial control and targeting work. Your guys would collect the test shots and I will write the Map Accuracy Report and communicate with Steve. The county plans on flying this spring and the data would need to be collected in two groups (pilot area & remainder of county) some time between July and November.

Are you interested in partnering? The County is planning a DEM at the 1.5' contour accurate level and a 6" pixel, color orthophoto.
Pete

PS: The Crow Wing project is almost done, delivery should occur some time in late January or early February.

Peter W. Jenkins, LS
Photogrammetric Unit Supervisor
Minnesota Department of Transportation
395 John Ireland Boulevard, MS 640
St. Paul, MN 55155-1899

Phone: 651.366.3457
peter.jenkins@dot.state.mn.us

CC: Bryan Silgjord; Calvin Puttbrese; Steve Jobe; Tim Paul

From: "Steve Jobe" <Steve.Jobe@co.wright.mn.us>
To: <Peter.Jenkins@dot.state.mn.us>
Date: 2/1/2008 7:34:02 PM
Subject: Wright County RFP Selection Process

Hi Pete,

Attached is the information the rest of the Team is using to review the Proposals. The last page contains the Selection Form I would like filled out for each proposal.

We have 6 proposals to review Tuesday, February 5th, 2008 at 9:00 AM. We will meet at my office at the Wright County Public Works building on the North edge of Buffalo (I believe you have been here once before).

See you then and thank you for helping.

Steve

Steven A. Jobe, LS
Wright County Surveyor
1901 Hwy 25 North
Buffalo, MN 55313
(763) 682-7690 ph
(763) 682-7313 fax
steve.jobe@co.wright.mn.us

Selection Process

Instructions

Please read the following to become familiar with the process which will be used to select the best contractor for this project. The Proposal Content shall be in the format as outlined on the next page. Thank you for participating on the Wright County Consultant Selection Team.

Award and Acceptance

The award of contract shall be based on, but not limited to, the factors of price, delivery date, the County's experience with the products proposed, the County's evaluation of the Contractor's ability to provide the services to the County in terms of its requirements as called for in the specifications, the general reputation and experience of the Contractor, the nature and extent of company data furnished with this proposal or furnished upon request by the County at any time prior to award, the financial responsibility of the Contractor, the County's prior knowledge of and experience with the Contractor's past performance, and the size and location of the Contractor's facilities.

Selection Team

A "Consultant Selection Team" shall review and evaluate all proposals received by the deadline. The selection team may schedule interviews with some Contractors prior to the selection. The selection team shall select the firm that they believe will supply the County with the best and most complete effort. Selection will be based on the proposals and subsequent interviews, if needed. A 100 point scale shall be used to create the final recommendation. The proposals will be evaluated based on the following criteria:

- 10 points - Completeness of proposal / Expressed understanding of the RFP requirement
- 35 points - Qualifications, experience and demonstrated performance for projects of similar type, size and complexity
- 20 points – Project approach, schedule and resources for providing deliverables
- 35 points – Proposal Cost

Proposal Content and Evaluation Criteria

Proposals must address each section listed below and be submitted in the format outlined below:

A one-page cover letter which bears the signature of an authorized representative of the Respondent and designates by name not more than two individuals authorized to negotiate and sign an agreement with the County on behalf of the Respondent.

Completed Statement of Ownership Form.

A. **Business Organization:** State the full name and address of your organization and, if applicable, the branch office that will perform or assist in performing the work hereunder. Indicate whether you operate as an individual, partnership or corporation; if as a corporation, include the state in which you are incorporated. Briefly describe business history, operations, products, organization, key staff involved in this project and their relevant experience.

B. **Technical Approach, Methodology, Time Frame, and Deliverables Provided:** State in succinct terms your understanding of the problem presented by this RFP. Include a narrative description as to how the Respondent proposes to do their work in order to complete the tasks listed in the "scope of work" section of this RFP and deliver the required products. **List any exceptions taken to this RFP in a separate section**. Proposed progress reporting should be included along with a schedule of key milestones. Include number of proposed control points, the proposed cell size, estimated file size of final deliverable and other information that aid the County in determining the quality of your approach and the level of effort required of the County.

C. **Prior Experience:** Proposals should include, in this section, 2 previous examples of qualifying experience. This section should include project descriptions (including population and size of area), costs, and starting and completion dates of projects successfully completed. Also, the name, address, and phone number of the responsible official of the client organization who may be contacted. Include information on the experience of sub-contractors as it relates to their role in meeting the requirements of this RFP.

D. **Sample of Products on CD:** The County requests samples of the deliverable products requested in this RFP from past projects by Respondent. Samples should be clearly labeled as to product type and should be representative of the specifications of the requested deliverables.

E. **Listing of Subcontractors:** Respondents will list all subcontractors that they are proposing to use on this project and their qualifications.

F. **Listing of Equipment and Software:** List equipment and software that will be used in this project.

G. **Cost Proposal:** Please detail the cost for each of the items identified in the Scope of Work section of this proposal. A form is attached to this RFP as Exhibit B for this express purpose. This form shall be submitted in **a separate sealed envelope** with your firm's proposal. Please note that the item listed as **Alternate #1: County provided basic ground control and pre-marking,** should be reflected as a cost savings and may or may not be included in the final scope.

SELECTION FORM

Contractor Name: _____

Date: _____

Selection Team Member: _____ _____
(Print) **(Signature)**

Criteria	Points	Points Assigned
Completeness of Proposal/Expressed Understanding of the RFP:	10	
Qualifications, Experience and Demonstrated Performance for Projects of Similar Type, Size and Complexity:	35	
Project Approach, Schedule and Resources for Providing Deliverables:	20	
Cost:	35	
		Total Points

From: "Steve Jobe" <Steve.Jobe@co.wright.mn.us>
To: <Peter.Jenkins@dot.state.mn.us>
Date: 2/13/2008 10:54:12 AM
Subject: Wright County Board Approval

Pete,

On Tuesday, February 12, 2008, the Wright County Board approved our recommendation to hire Merrick and Company from Aurora, Colorado for our 2008 Aerial Photography and LiDAR Project.

Attached is the handout of the presentation to the Board. Bob Swanson from Aero-Metrics Inc was in attendance and was provided a copy of the handout.

Tuesday afternoon, I called Gary Outlaw from Merrick to inform him they were selected. We will proceed with preparing the final contract language in time for the February 26th Board meeting. Our attorney is currently reviewing Merrick's general contract language.

I will keep you abreast of the progress and will move forward with the MOU, probably after we have a signed contract with Merrick. Is this a correct idea?

Steve

2008 AERIAL PHOTOGRAPHY AND LIDAR PROJECT

Wright County, Minnesota
February 12, 2008 Board Meeting

Presented by:
Steven A. Jobe, County Surveyor

Wright County received six (6) Proposals from Aerial Photography and LiDAR companies by the deadline of 2:00 PM CST on January 30, 2008.

A Selection Team met on February 5, 2008 to evaluate and score the proposals. The Selection Team consisted of Steve Jobe (County Surveyor), Peter Jenkins (Head of the Photogrammetric Unit at MN/DOT), Mike Minnick (Senior Survey Technician) and Mike Pooler (Senior GIS Specialist).

The proposals were evaluated and scored on the following criteria:

- 10 points - Completeness of proposal / Expressed understanding of the RFP requirement
- 35 points - Qualifications, experience and demonstrated performance for projects of similar type, size and complexity
- 20 points – Project approach, schedule and resources for providing deliverables

After the proposals were scored based on technical merit (above), the cost score was applied.

- 35 points – Proposal Cost

Aero-Metric, Inc	$ 467,748.00
Ayres Associates	$ 699,073.43
Fugro Horizons, Inc	$ 374,200.00
Merrick and Company	$ 425,985.23
Optimal Geomatics, Inc	$ 920,259.00
Sanborn Map Company, Inc	$ 745,911.00

Subsequent phone interviews were conducted with two firms to verify information. Based on all the information gathered, the Selection Committee recommends to the Board the preferred candidate **Merrick and Company** from Aurora Colorado.

Technical Score
(before considering cost)

Criteria	Points	Steve Jobe	Peter Jenkins	Mike Minnick	Mike Pooler	Total Points	
Completeness of Proposal/Understanding RFP	**10**	7	5	8	4		
Qualifications and Experience	**35**	29	35	32	26		
Project Approach, Schedule and Resources	**20**	15	17	17	12		
Cost	**35**						
Aero-Metric, Inc	**100**	51	57	57	42	**207**	5th
Completeness of Proposal/Understanding RFP	**10**	8	4	8	7		
Qualifications and Experience	**35**	29	32	30	30		
Project Approach, Schedule and Resources	**20**	16	17	17	15		
Cost	**35**						
Ayres Associates	**100**	53	53	55	52	**213**	3rd
Completeness of Proposal/Understanding RFP	**10**	5	5	9	6		
Qualifications and Experience	**35**	28	31	30	26		
Project Approach, Schedule and Resources	**20**	16	16	16	16		
Cost	**35**						
Fugro Horizons, Inc	**100**	49	52	55	48	**204**	6th
Completeness of Proposal/Understanding RFP	**10**	9	4	9	9		
Qualifications and Experience	**35**	29	34	34	31		
Project Approach, Schedule and Resources	**20**	17	16	19	18		
Cost	**35**						
Merrick	**100**	55	54	62	58	**229**	1st
Completeness of Proposal/Understanding RFP	**10**	8	7	9	6		
Qualifications and Experience	**35**	32	35	30	28		
Project Approach, Schedule and Resources	**20**	15	16	17	14		
Cost	**35**						
Optimal Geomatics, Inc	**100**	55	58	56	48	**217**	2nd
Completeness of Proposal/Understanding RFP	**10**	2	7	8	4		
Qualifications and Experience	**35**	31	25	30	32		
Project Approach, Schedule and Resources	**20**	18	16	18	19		
Cost	**35**						
Sanborn	**100**	51	48	56	55	**210**	4th

Total Score
(Technical and Cost)

Criteria	Points	Steve Jobe	Peter Jenkins	Mike Minnick	Mike Pooler	Total Points	
Completeness of Proposal/Understanding RFP	**10**	7	5	8	4		
Qualifications and Experience	**35**	29	35	32	26		
Project Approach, Schedule and Resources	**20**	15	17	17	12		
Cost	**35**	29	29	29	29		
Aero-Metric, Inc	**100**	80	86	86	71	**323**	3rd
Completeness of Proposal/Understanding RFP	**10**	8	4	8	7		
Qualifications and Experience	**35**	29	32	30	30		
Project Approach, Schedule and Resources	**20**	16	17	17	15		
Cost	**35**	14.25	14.25	14.25	14.25		
Ayres Associates	**100**	67.25	67.25	69.25	66.25	**270**	4th
Completeness of Proposal/Understanding RFP	**10**	5	5	9	6		
Qualifications and Experience	**35**	28	31	30	26		
Project Approach, Schedule and Resources	**20**	16	16	16	16		
Cost	**35**	35	35	35	35		
Fugro Horizons, Inc	**100**	84	87	90	83	**344**	2nd
Completeness of Proposal/Understanding RFP	**10**	9	4	9	9		
Qualifications and Experience	**35**	29	34	34	31		
Project Approach, Schedule and Resources	**20**	17	16	19	18		
Cost	**35**	31.75	31.75	31.75	31.75		
Merrick	**100**	86.75	85.75	93.75	89.75	**356**	1st
Completeness of Proposal/Understanding RFP	**10**	8	7	9	6		
Qualifications and Experience	**35**	32	35	30	28		
Project Approach, Schedule and Resources	**20**	15	16	17	14		
Cost	**35**	1	1	1	1		
Optimal Geomatics, Inc	**100**	56	59	57	49	**221**	6th
Completeness of Proposal/Understanding RFP	**10**	2	7	8	4		
Qualifications and Experience	**35**	31	25	30	32		
Project Approach, Schedule and Resources	**20**	18	16	18	19		
Cost	**35**	11.25	11.25	11.25	11.25		
Sanborn	**100**	62.25	59.25	67.25	66.25	**255**	5th

From: "Steve Jobe" <Steve.Jobe@co.wright.mn.us>
To: "Michael Pooler" <Michael.Pooler@co.wright.mn.us>, "Mike Minnick" <Mike.Minnick@co.wright.mn.us>, "Steve Jobe" <Steve.Jobe@co.wright.mn.us>, <Peter.Jenkins@dot.state.mn.us>
Date: 3/17/2008 6:28:14 PM
Subject: Wright County Kick Off Meeting

Item Type: Appointment
Start Date: Wednesday, 26 Mar 2008, 01:30:00am (Central Daylight Time)
Duration: 2 Hours
Place: Wright County

Gentlemen,

It looks like we will have a kick off meeting with Merrick on Wednesday, March 26th from 1:30 PM to 3:30 PM CDT. I wanted to have you save this date and time. More information will be forwarded to you as it becomes available.

Steve

Steven A. Jobe, LS
Wright County Surveyor
1901 Hwy 25 North
Buffalo, MN 55313
(763) 682-7690 ph
(763) 682-7313 fax
steve.jobe@co.wright.mn.us

From: Blaine McKeever
To: Steve Jobe
Date: 4/25/2008 4:52:20 PM
Subject: Re: Request to set CORS

Steve,
These sites have been collecting since the 21st, and they all seem to be functioning nominally. Please note that, due to storage constraints, the data is only available for 8 days after it's collected. Please download the relevant files as soon as possible after the flights. I'll leave them running until you tell me otherwise.
Good luck,
-Blaine

Blaine W. McKeever
Information Technology Specialist
Mn/DoT Office of Land Management
Phone: (651)-366-3478
Fax: (651)-366-3450
blaine.mckeever@dot.state.mn.us

>>> "Steve Jobe" <Steve.Jobe@co.wright.mn.us> 4/21/2008 9:46 AM >>>
Blaine,

This is a request to set the following CORS stations to a 1 second epoch collection rate beginning Wednesday, April 23, 2008.

Arden Hills (ArdH)
Cambridge (Camb)
Golden Valley (GoVy)
Hollywood (Hywd)
Litchfield (Ltcf)
Milaca (Mlca)
Mn/ROAD (MnRd)
St. Cloud (StCl)

Wright County has hired Merrick and Company of Colorado to acquire aerial photography and LiDAR. Merrick plans to begin operations by Wednesday at 9:00 AM. The project will take roughly 10 days of flying. I will notify you when they are done so the collection rate can be set back to normal.

Let me know if you have any questions or need any additional information from me.

Thank you for your help.

Steve

Steven A. Jobe, LS
Wright County Surveyor
1901 Hwy 25 North
Buffalo, MN 55313
(763) 682-7690 ph
(763) 682-7313 fax
steve.jobe@co.wright.mn.us

CC: Doug Jacoby; Peter Jenkins; Roger Hanson

From: "Steve Jobe" <Steve.Jobe@co.wright.mn.us>
To: <Peter.Jenkins@dot.state.mn.us>
Date: 7/10/2008 2:39:17 PM
Subject: Wright County Prototype Area

Pete,

Attached are two maps of the Prototype Area. We picked the city of Cokato in the southwest part of Wright County. It includes sections 27, 28, 33 and 34, Twp 119, Rng 28.

Let me know if you have any questions or concerns.

By the way, if you want to use our interactive map to see things up close, here is the link:
http://156.99.28.84/website/cxfree/CXviewer.htm?authorization=cxuser:cxuser

Steve

Steven A. Jobe, LS
Wright County Surveyor
1901 Hwy 25 North
Buffalo, MN 55313
(763) 682-7690 ph
(763) 682-7313 fax
steve.jobe@co.wright.mn.us

From: Adam Smith
To: Peter Jenkins
Date: 8/22/2008 11:50:04 AM
Subject: Wright County Pilot Data

Pete,

I took an initial look at the Wright county data today and noticed some text in the first topo AutoCad .dxf file (topo_119_28_27_5th.dxf). The other three did not have this same text and I viewed them all the same way in Microstation. You might want to have this checked out? Otherwise, the photography looked pretty good.

I'll give you some more feed back after testing is complete.

Adam

From: Mike Lalla
To: Jenkins, Peter
Date: 8/26/2008 11:27:59 AM
Subject: Wright County photography

Pete, I took a look at the Wright County photography. There is good color balance between the red, green, and blue color spectrums. The contrast could maybe be increased just a little but overall I think it looks pretty good.
Mike

CC: Smith, Adam

From: Kevin Metz
To: Peter Jenkins
Date: 8/28/2008 8:21:01 AM
Subject: Wright County Pilot

Pete,
Here are the files for Wright County.

Kevin J Metz
MNDOT District 3
Principal Land Surveyor
7694 Ind. Park Road
Baxter MN 56425
ph. 218-828-5761
fax 218-828-5814

From: Adam Smith
To: Peter Jenkins
Date: 12/1/2008 11:15:06 AM
Subject: Wright County Imagery

Hey Pete,

I just finished testing the horizontal for Wright County. The final NSSDA value is 1.76 feet. I thought the imagery had nice color and was sharp with the exception of some lake areas. There seemed to be some pixelation and blurring around some of the water bodies. A good example if you wanted to take a look would be the North-East part of Buffalo Lake in Buffalo. I didn't take a lot of time looking through the imagery, but what I saw while testing looked real good.

Thanks,

Adam

From: "Doug Jacoby" <Doug.Jacoby@merrick.com>
To: "Peter Jenkins" <Peter.Jenkins@dot.state.mn.us>
Date: 12/2/2008 6:09:07 PM
Subject: RE: Wright County Ortho & LiDAR Project

Hi Pete,

Just want to confirm the elevation on Point 1006. You have an elevation of 907.32, and I believe it to be 970.32 based off of the result of 1.11'. Assuming this is a typo, we can replicate your results.

Point 1006 is under dense grass / brush.

Point 3005 appears to be at the bottom of a curb, and we don't have a LiDAR shot nearby. The TIN of the LiDAR intersecting the control point is causing the result.

Screenshots from the digital ortho imagery are attached for reference.

It appears that our surface easily meets the accuracy requirements. Should you have any further questions, please let me know.

Best regards,

Doug Jacoby, CMS, GISP
Director of Projects / Project Manager
Merrick & Company
GeoSpatial Solutions
303-353-3903
303-521-6522 Cell

-----Original Message-----
From: Peter Jenkins [mailto:Peter.Jenkins@dot.state.mn.us]
Sent: Tuesday, December 02, 2008 1:02 PM
To: Doug Jacoby
Cc: steve.jobe@co.wright.mn.us
Subject: Wright County Ortho & LiDAR Project

Doug:
Here are the results that Mn/DOT has performed on the Wright County Data Set -

Horizontal:

41 points tested, RMSE = 0.990 , NSSDA 95% Confidence Level = 1.714

Vertical:

130 points tested, RMSE = 0.45, NSSDA 95% Confidence Level = 0.88

There were only two points in the vertical test that gave use concerns and I was wondering if you could take a look at them and possibly comment.

Point No. 1006, X = 496928.541, Y = 161782.203, Z = 907.32

DEM Elevation = 971.43 for a difference of 1.11'

Point No. 3005, X = 519358.292, Y = 212151.313, Z = 969.59
DEM Elevation = 970.57 for a difference of 0.98'

Thank you
Pete

Peter W. Jenkins, LS
Photogrammetric Unit Supervisor
Minnesota Department of Transportation
395 John Ireland Boulevard, MS 640
St. Paul, MN 55155-1899

Phone: 651.366.3457
peter.jenkins@dot.state.mn.us

-----Original Message-----

CC: <steve.jobe@co.wright.mn.us>, "Doug Jacoby" <Doug.Jacoby@merrick.com>

APPENDIX A

NMAS Equivalent Contour Interval	NSSDA RMSE(z)	NSSDA Accuracy (z)	Required Accuracy for Reference Data for "Tested to Meet"
0.5	0.15 ft or 4.60 cm	0.30 ft or 9.10 cm	0.10 ft
1	0.30 ft or 9.25 cm	0.60 ft or 18.2 cm	0.20 ft
2	0.61 ft or 18.5 cm	1.19 ft or 36.3 cm	0.40 ft
4	1.22 ft or 37.0 cm	2.38 ft or 72.6 cm	0.79 ft
5	1.52 ft or 46.3 cm	2.98 ft or 90.8 cm	0.99 ft
10	3.04 ft or 92.7 cm	5.96 ft or 181.6 cm	1.98 ft

Table 1 Comparison of NMAS/NSSDA Vertical Accuracy

NMAS Mp Scale	NMAS CMAS 90%	NSSDA RMSE(r)	NSSDA Accuracy (r) 95% confidence level
1" = 100' or 1:1, 200	3.33 ft	2.20 ft or 67.0 cm	3.80 ft or 1.159 m
1" = 200' or 1: 2, 400	6.67 ft	4.39 ft or 1.339 m	7.60 ft or 2.318m
1" = 400' or 1: 4, 800	13.33 ft	8.79 ft or 2.678 m	15.21 ft or 4.635 m
1" = 500' or 1: 6,000	16.67 ft	10.98 ft or 3.348 m	19.01 ft or 5.794 m
1: = 1000' or 1: 12, 000	33.33 ft	21.97 ft or 6.695 m	38.02 ft or 11.588 m
1" = 2000' or 1: 24, 000*	40.00 ft	26.36 ft or 8.035m	45.62 ft or 13.906 m

Table 2 Comparison of NMAS/NSSDA Horizontal Accuracy