

Meckel Engineering & Surveying

QUALITY CONTROL

Quality control begins with good project organization. Clear instructions/Scope of Work and a meeting with the Idaho Transportation Department Project Manager, especially if it is on the project site, will ensure that our surveying team has complete understanding of the project.

Prior to beginning each project, we will perform the necessary research to provide a realistic estimate and a phase completion schedule to ITD. The PLS project manager will schedule the field and office personnel and make them aware of the target dates for completion of the project. We are very safety conscious and will discuss the possible safety issues with our personnel on the project. On surveying projects, the PLS will be on site to organize the survey crew(s) and supervise the work. Field survey procedures are used which insure that the GPS positions and conventional traverse closures are checked. When the field crew leaves the site to return to the office, they have made the closure checks and have verified the raw data in the field data collector.

As the work progresses, the project manager regularly tracks the progress of the work, the phase completion date(s) schedule, hours charged to the project and the budget to ensure that we are keeping to the schedule and within the cost estimate. We discuss the project internally and with the ITD project manager regularly to keep them informed on the project and any problems that are encountered or the need for changes of scope, if any. We update and analyze the costs on a weekly basis and complete progress reports, as required.

At stages in the project and when the field work has been completed, a work drawing is made for review. Errors are eliminated by self-checking field procedures, a review of office computations and a thorough map checking system. The PLS project manager will review all the field and office work before delivery to the Idaho Transportation Department.

Scott M. Rasor, PLS, will be the project manager, decision maker, surveyor in responsible charge and will be the contact with ITD for most of the surveys. Scott will be in the field to supervise the field work. John W. Howe, PLS, will coordinate the office research, computations, drafting and the deliverables.

FIRMS' EXPERIENCE AND QUALIFICATIONS

Meckel Engineering & Surveying was established in 1968 and is a privately owned Professional Engineering and Professional Land Surveying firm based in Coeur d' Alene, Idaho. Our team of professionals is dedicated to providing Professional Engineering and Professional Land Surveying services to a growing client base throughout the Inland Northwest region of the United States. Our existing client base varies in size and diversity from federal, state, county and city government agencies to private companies and individual private citizens.

Our survey staff consists of surveyors, draftspersons and a research specialist in the following categories: two (2) Professional Land Surveyors (PLS), one (1) Land Surveyor Intern (LSI), two (2) survey technicians, one of which is also draftsperson and one (1) research specialist. Their expertise lies in the areas of:

- Boundary and Cadastral (Land) Surveys
- Location and Topographic Surveys
- Construction Surveys
- GPS Surveys
- Surveys for aerial mapping

We use AutoCAD in the preparation of drawings. Our experience in land surveys includes everything from the research efforts to the initial contact with landowners for permission to trespass, the control survey to transfer Idaho State Plane Coordinate control to the site, to the completed certified drawings, corner records and reports.

Representative Projects:

Silverwood Stage, Cadastral, Boundary and Topographic Survey, Kootenai County, Idaho – Completed - 2014

Client: Idaho Transportation Department

This project was a dependent resurvey of seven (7) sections and a retracement of the existing right-of-way of U. S. Highway 95 for approximately 3.8 miles to recover existing right-of-way monuments as a basis

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for a highway improvement project and right-of-way acquisitions.

Research was conducted to obtain unrecorded surveys, recorded surveys, title reports and deeds for the ownerships which were affected by the right-of-way acquisitions. A secondary GPS control survey based on existing GPS control monuments was used to search for and recover existing corner monuments at section corners, quarter section corners, section subdivisional corners and selected property corners. The sections were subdivided into aliquot parts to determine ownership lines as needed. Monuments were set at the computed positions of lost right-of-way monuments.

A topographic and features survey was made to aid in the design of areas for frontage roads, an interchange and widening throughout the project limits.

Temporary staking was done to define existing and proposed right-of-way limits for right-of-way acquisition. A Record of Survey consisting of seven (7) sheets was recorded. One (1) Corner Perpetuation and Filing Record form was prepared and recorded by Meckel Engineering & Surveying with verification of an additional eighteen (18) Corner Perpetuation Records, which were recorded by other surveyors.

The deliverables included a CD with the AutoCAD Record of Survey drawing(s), Corner Perpetuation and Filing Records; point files, raw data files and copies of the field notes.

The continuation of the work during 2012-2014 consisted of calculations and monumentation of the new right-of-way angle points and section line or property line intersections with the new right-of-way line.

A second Record of Survey recorded in 2014 with the Kootenai County Recorder consisted of eight (8) sheets.

U.S. Highway 95 Improvement Project, Chilco Stage and Frontage Roads – GPS Control, Cadastral and Boundary Survey, Kootenai County, Idaho – Completed - 2014

Client: Idaho Transportation Department

The project was a boundary survey in conjunction with a large highway improvement project. It includes right-of-way acquisitions on U.S.

Highway 95 in seven (7) sections North of Hayden, Kootenai County, Idaho.

Meckel Engineering & Surveying responsibilities were to provide research to obtain the survey plats, field notes, unrecorded surveys, recorded surveys, Corner Perpetuation and Filing Records and subdivision plats. A secondary GPS control survey, based on existing GPS control stations was made to tie the existing controlling corner monuments. The basis of coordinates and bearings was the Idaho State Plane Coordinate System. The project required the computation and monumentation of property lines at the intersection with the new right-of-way.

The GPS measurement equipment used was Trimble 4700, 4800 and 5700 systems. Conventional ground traverse procedures using Sokkia total stations were also used. All traverses began at GPS control points and were closed within acceptable tolerances.

The work items included review of deeds, PLS supervision, calculations, analysis of existing and new right-of-way boundary lines and a survey to set property corner monuments. A Record of Survey, consisting of six (6) sheets and Corner Perpetuation and Filing Records were recorded in 2014. The deliverables included a CD with the AutoCAD Record of Survey, Corner Perpetuation and Filing Records, point files, raw data files and copies of the field notes.

State Highway 97 and I-90 Overpass, Kootenai County, Idaho

Completed in 2014

Client: Idaho Transportation Department

This project was Boundary and Topographic survey in support of Engineering Design for replacement of Interstate Highway 90 (I-90) overpass at the Wolf Lodge Exit.

Meckel Engineering & Surveying responsibilities were to provide research to obtain the survey plats, field notes, unrecorded surveys, recorded surveys, Corner Perpetuation and Filing Records and subdivision plats. A GPS control survey, based on existing NGS control stations was made to tie the existing controlling corner monuments. The basis of coordinates and bearings was the Idaho State Plane

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Coordinate System. The project required the computation and monumentation of selected property lines at the intersection with the new right-of-way. The GPS measurement equipment used was Trimble 4700, 4800 and 5700 systems. Conventional ground traverse procedures using Sokkia total stations were also used. All traverses began at GPS control points and were closed within acceptable tolerances.

The work items included review of deeds, PLS supervision, calculations, analysis of existing and new right-of-way boundary lines and a survey to set property corner monuments.

The topographic and features survey data collection for existing highway surface features and overpass was performed in coordination with a contract traffic flagging contractor. This enabled for safe collection of data without stopping traffic.

Deliverables included topographic and features point data files in the ITD Micro Station format with Record of Survey and Corner Perpetuation and Filing Records. The deliverables also included a CD with the Auto CAD Record of Survey, Corner Perpetuation and Filing Records, point files, the raw data files and copies of the field notes.

I-90, Pinehurst Interstate R/W Boundaries Survey Shoshone County, Idaho – Completed - 2014

Client: Idaho Transportation Department

The project was an Interstate 90 Right-of-Way survey, between mileposts 45.0 – 46.0 (approximate equivalent stationing of 1186+00 – 1240+00). The tasks included research to obtain prior surveys of record and unrecorded, railroad right-of-way plans, assessor maps, deeds, rights-of-way plans for I-90, GLO notes and plats and Corner Perpetuation and Filing Record forms and survey records (recorded and unrecorded), the last deeds of record for the highway and for the adjacent land owners. A Primary Control Survey was performed to search for and tie controlling PLSS corner monuments as needed. Corner maintenance was made on controlling PLSS corner monuments, including rehabilitation or replacement of corner monuments, new bearing objects and updated Corner Perpetuation and Filing Record forms as required. All existing monuments, both right-of-way and private, found along the right-of-way were tied to control network. Approximately 30 right-of-way

monuments were searched for; however, very few were found.

Approximately 15 private property corner monuments were searched for. The Union Pacific Railroad right-of-way was determined and calculations and field survey ties made to establish the senior right-of-way lines and the limits of highway encroachment easement over railroad right-of-way.

Computations to determine correct positions for selected controlling corner monuments were made. Deliverables included an electronic and hard copy of the recorded Record of Survey, scanned copies of field notes and any other pertinent data.

Elder Road / Idaho Road

GPS Control Survey, Location of Specific Physical Features, Cadastral and Boundary Survey – Kootenai County, Idaho – Completed in 2012

Client: Idaho Transportation Department

Meckel Engineering & Surveying provided all research and surveying services for a 43 acre purchase of part of the Snyder property in Section 12, T48N, R6W for a wetland mitigation parcel to be transferred to the Coeur d'Alene Tribe. The survey involved a GPS Control survey, location of specific physical features, a retracement of part of the Idaho-Washington State line, the subdivision of a complicated fractional section and recovery of monuments on the Elder Road Project F.A.P. S-5725(1). A three (3) page Record of Survey and eight (8) Corner Perpetuation and Filing Records were recorded with the Kootenai County Recorder.

RESOURCES AVAILABLE

The Meckel Engineering & Surveying office is located at:

7600 N. Government Way, Suite 3
Coeur d'Alene, ID 83815
208-667-4638

We have continued to upgrade office and field equipment to provide our clients with the most efficient and proven technological advances available

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in the engineering and surveying industry. We have two dual frequency Trimble GPS systems capable of Real Time Kinematics (RTK) and static surveying. We use Trimble Geomatic office software to upload, download and process field data.

The office and field operations are interfaced with high resolution computers. All of our equipment is compatible, state-of-the-art for rapid and accurate collection and transfer of field data to the office. Field data is electronically transferred, stored and backed up to the Wide Area Network (WAN) to provide instant and efficient access to all working on a project.

Our Computer-Aided Design software(s) are used to interpret and analyze data toward the preparation of accurate surveys. We use only the latest editions of computer software to meet these needs. Current equipment and software enables our CADD staff to create clear and concise drawings necessary to communicate the survey data to our clients.

KEY PERSONNEL

Organizational Chart: The Organizational Chart is attached to this submittal. It shows the anticipated role that each individual team member will provide.

The Surveying Department consists of two (2) Professional Land Surveyors, one (1) Land Surveyor Intern (LSI), two (2) survey technicians, one of which is an experienced draftsman and one (1) research specialist. As President/Chief of Surveying, Scott M. Rasor, P.L.S. (Idaho) has over 36 years experience, John W. Howe, P.L.S. (Idaho) has over 50 years of experience.

Scott M. Rasor, P.L.S. – President/Chief of Survey/Operating Manager: Scott has 20 years of experience with this firm and is responsible for all survey-related services, including the AutoCAD support staff. His office management responsibilities include estimating, scope definition, proposal writing, negotiations and assuming the lead role by overseeing and maintaining production, providing technical guidance, and quality assurance. Survey services include boundary and topographic surveys; expert witness, subdivision design, platting and staking; PLSS cadastral retracement surveys; ALTA/ACSM Land Title surveys; Hazardous Site surveys; surface and underground mining surveys. He has an Associates

degree in Surveying/Drafting from North Idaho College, Coeur d'Alene and is a licensed Professional Land Surveyor in Idaho, Montana and Washington. Representative examples of his experience include:

- ***Idaho Transportation Department, Highway 95 Improvement Project, Silverwood Stage***
Scott was the surveyor in responsible charge. The project was a dependent resurvey of seven (7) sections and a retracement of the existing right of way of Highway 95 for approximately 3.8 miles to recover existing right of way monuments as a basis for a Highway improvement project and right of way acquisitions.
- ***Idaho Transportation Department, Ramsey Road Right-of-Way Monumentation:*** GPS control and verification of positions of the right-of-way monuments on an interchange project.
- ***Connecting Idaho Partners (CIP), U.S. Highway 95 - Topographic Survey:*** This project consisted of Topographic Survey data collection for road design purposes.
- ***Idaho Transportation Department, Highway 95 Improvement Surveys – Worley to Setters:*** Boundary and Cadastral PLSS Surveys for dependent retracement and subdivision of 8 sections.
- ***Idaho Transportation Department, Highway 95 Improvement Surveys – Setters to Bellgrove:*** Boundary and Cadastral PLSS Surveys for dependent retracement and subdivision of 12 sections.
- ***Idaho Transportation Department, KT-139 Materials Source Boundary Survey:*** The survey involved retracement of State Highway 3 right-of-way lines and the subdivision of Section 6, Township 48 North, Range 1 West, Boise Meridian, Kootenai County, Idaho

John W. Howe, P.L.S. – Project Manager (Office): John W. Howe, P.L.S., is the Survey Manager for Meckel Engineering & Surveying in Coeur d'Alene and specializes in boundary and topographic surveys. John has 22 years experience with this firm and is a licensed Land Surveyor in Idaho.

Representative examples of his experience include:

- ***Idaho Transportation Department, Highway 95 Improvement Project, Silverwood Stage***
Assistant Project Manager (office) under PLS in charge. The project was a dependent resurvey of

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seven (7) sections and a retracement of the existing right of way of Highway 95 for approximately 3.8 miles to recover existing right of way monuments as a basis for a Highway improvement project and right of way acquisitions.

- *Idaho Transportation Department, Highway 95 Improvement Surveys – Worley to Setters:* Assistant Project Manager (office) under PLS in charge. Boundary and Cadastral PLSS Surveys for dependent retracement and subdivision of 8 sections.
- *Idaho Transportation Department, Highway 95 Improvement Surveys – Setters to Bellgrove:* Assistant Project Manager (office) under PLS in charge. Boundary and Cadastral PLSS Surveys for dependent retracement and subdivision of 12 sections.

References

- John Vaudreuil, PE – Idaho Transportation Department – 208-772-1248
- Matthew D. Wilson, PLS – Idaho Transportation Department – 208 – 772-1248
- Gale Dahlman, PLS – Retired Idaho Transportation Department – 208-772-5955
- Mark Feldman – North Wind Construction – 208-791-3355
- Charles M. Dodson, Attorney at Law – 208-664-1577
- Patrick Day, Private Land Owner – 209-532-3307

UNDERSTANDING OF SERVICE REQUIREMENTS

Surveying Project Approach

Meckel Engineering & Surveying continually work with strict deadlines as members of project teams who depend on each others work being completed on time. Our project approach typically includes the following tasks but these tasks may be eliminated or expanded upon based on the specific project needs. The elements of land surveys are:

- Contact with the Client: Establish a clear understanding of the scope of work, expectations and schedule
- Research: Obtain existing survey control data from City files, NGS, data sheets, County Recorder and County Surveyor, Meckel files and other sources;

research to obtain prior recorded surveys and Corner Perpetuation Records and deeds, title commitments, unrecorded surveys and transportation maps

- Obtain permission to trespass, if necessary, send out form letters and respond to written comments or phone calls
- On-site pre-survey meeting with the Client
- Organize flagging personnel and equipment
- Safety meeting
- Reconnaissance and corner monument search
- Field Survey: the field survey will locate and tie Idaho State Plane Coordinate, survey control, public land survey corner monuments, bench marks, property corner monuments, improvements (such as fences which are on or near the description lines) and encroachments either way across the lines
- Set permanent control monuments
- Instrument/Data Collection: Conventional and or GPS instruments will be used depending upon the conditions and requirements of each project. The electronic data collection is accomplished by Range and/or Trimble data collectors, which are downloaded into the office computer system daily.
- Calculations and Analysis: The existing corner monument positions are verified and boundary corner positions are determined
- P.L.S. review
- Preliminary Drawing and Findings: A meeting with the Land Surveyor/Project Manager can be held to discuss the boundary issues, if any and review the preliminary drawings
- Set monuments
- P.L.S. review and certification
- Final Documents: Prepare and submit the final survey documents and electronic files incorporating review comments and stamped Record of Survey and Corner Perpetuation and Filing Records forms.
- Provide legal description(s) and additional services as required.

Our company offers distinct and substantive qualifications for the projects including:

- ✓ A team of proven professionals
- ✓ Extensive resources and state-of-the-art equipment and technology

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- ✓ Experience and familiarity with the area
- ✓ We are responsive and committed to providing excellence