

5.18 Survey/Engineer Technician

POSITION TITLE	Survey/Engineer Technician
REPORTS TO	District Engineer
FLSA	Non-Exempt
SALARY	Pay Level 14
DATE CREATED	February 24, 2010
DATE LAST REVISED	January 8, 2020

POSITION SUMMARY

The purpose of the position and primary responsibilities. Briefly describe the major purpose or objective of the job. Simply stated, what are we attempting to accomplish in this position?

Provide topographic surveying, construction staking, and drafting and design for District projects, researches survey documents, prepares legal descriptions, assists with design and inspection of construction.

SUPERVISION AND ORGANIZATIONAL RELATIONSHIPS

The chart below lists specific supervisory responsibilities and organizational relationships.

Duties	YES OR NO	# OF FULL TIME EMPLOYEES
Supervise other employees	No	N/A
Instructs other employees in methods or procedures needed to carry out their job (how to carry-out their assigned duties)	No	N/A
Makes work assignments for others	No	N/A
Makes hiring and pay decisions	No	N/A
Recommends disciplinary action	No	N/A
Provide information to peers that they must carefully consider before making a decision	Yes	4
Provide information to supervisors/managers that they must carefully consider before making a decision	Yes	3

ESSENTIAL DUTIES

A list of essential duties which are the primary reasons why the position exists.

Essential Duties: Those duties that make up at least 5% of your time. Please provide enough detail so that someone who may not be familiar with the job will have a clear understanding of what it is that the job accomplishes.

Decisions Required: List the decisions the position makes to carry out the essential duties.

Frequency: Indicate how often does the incumbent perform each duty – D = daily, W = weekly, M = monthly, Q = quarterly, A = annually, or O = occasionally.

Percent of Time: Estimate how much of time is spent on each task. The percentages of all duties should equal 100% over a one-year period of time.

Required Response Time: Indicate how quickly the incumbent must respond to the task. This may be the time it takes to complete the task from start to end. This may be listed in minutes, hours, or days.

List of Essential Duties	Decisions Required	Frequency	% of Time Spent	Required Response Time
1. Perform topographical surveys using GPS or Total Station with data collector; maintains records on survey parameters and control; make computations and process survey data using data collector and computer.	Adequacy of data to achieve design needs. Reliability of field referenced points and monuments. Equipment and signal reliability.	W	20	5-10 days
2. Perform construction staking indicating stationing, line, grade, and slopes and prepare staking notes.	Location and adequacy of staking to facilitate construction.	M	20	2 days
3. Read and interpret maps, surveys, plans, and legal descriptions. Research rights-of-ways, easements, and horizontal and vertical control data for surveys. Prepare legal descriptions for rights-of-way and easements.	Suitability of data for survey needs. Identifying potential discrepancies in data. Best method of legal description.	M	10	2 days

4. Import electronic survey data to Computer Aided Drafting and Design (CADD) system; draft base and construction drawings for road, traffic and drainage plans; develop surface models; and collecting utility location information and conducting preliminary coordination with utilities.	Data and features to generate best surface model. Layout parameters to create best preliminary alignments or profiles.	W	15	5-10 days
5. Assist in developing engineering designs of road, bridge, and drainage projects, including preparing horizontal alignments, profiles grading, and drainage.	Design elements that consider criteria, safety, and other parameters. Adequacy of information for design.	M	15	5-10 days
6. Conducts inspections and prepares inspection reports of roadway, drainage, and related improvements associated with development, permits (approaches, utilities, and other right-of-way work) and contracted construction projects for compliance with District Standards, plans, specifications, and permit conditions.	Work and materials comply with plans, specifications, and/or standards.	W	15	1 day
7. Comply with federal, state, and district policies, procedures, and regulations	Field practices meet safety procedures.	D	5	N/A

ON-CALL REQUIREMENTS

If the position is required to be on-call or take on-call shifts, please indicate any requirements or additional responsibilities that the incumbent is responsible for during the on-call shift.

List of On-Call Duties	Decisions Required	Frequency	% of Time Spent	Required Response Time (minutes)
None				

REQUIRED KNOWLEDGE AND SKILLS

This section identifies the types of knowledge and skill needed to perform the job at the entry level. List those required and not what might necessarily be acquired after being in the position for a number of years.

Knowledge: refers to the possession of concepts and information gained through experience, training and/or education and can be measured through testing.

Skills: refers to the proficiency, which can be demonstrated and are typically manual in nature and/or can be measured through testing.

Duty #	Knowledge & Skills
2-6	Read and interpret construction plans, plats, legal descriptions and site plans.
1,2,	Operate standard surveying equipment including global positioning systems (GPS), level and electronic total station.
1-5	Operate a computer and surveying and engineering software applications including Computer Aided Design and Drafting (CADD) and survey data collector software.
1-4	Land surveying and construction staking principles, practices, and techniques.
5,6	Knowledge of design and construction of roadways, drainage, and related appurtenances.
1-3, & 5	Mathematical calculations used in survey work.
3	Writing legal descriptions for right-of-way, property, and easements.
All	Safety regulations and procedures.

EDUCATION REQUIREMENTS

What minimum level of education is needed to satisfactorily perform the job at entry level? Check the level that applies.

Education Level	Check if Required
Less than High School Diploma or equivalent (G.E.D.) (ability to read, write, and follow directions)	
High School Diploma or equivalent (G.E.D.)	X
Up to one year of specialized or technical training beyond high school	
Associate degree (A.S., A.A.) or two-year technical certificate	
Bachelor's Degree	
Other (explain)	

EXPERIENCE REQUIREMENTS

What minimum level of experience is needed to satisfactorily perform the job at entry level?

Specific Experience Required	Number of Years
Topographic surveying, construction staking, and design and drafting (CADD) of roadway, drainage, and related features or any equivalent combination of experience and training which provides the required knowledge, skills, and abilities.	four (4)

SPECIAL REQUIREMENTS

List any registrations, certifications or licenses that are required to hold the position. Be specific and do not abbreviate words or use acronyms.

Valid Idaho driver’s license
Certified Traffic Control Flagger

MACHINES, TOOLS AND EQUIPMENT

List any machines, tools or equipment used in the work and show the frequency and time spent using each. The machines, tools and equipment must refer to the Essential Duties previously listed above.

Duty #	Machines, Tools & Equipment	Frequency/Time
1-6	Personal computer, including CADD Software.	Daily/4 hours
1,2,	Survey equipment including level, Global Positioning System (GPS), data collectors, level, and electronic total station.	Daily/4 hours
1,2,7	Hand tools	Monthly/8 hours

DECISION MAKING AND JUDGEMENT

Describe three types of important decisions and judgments this positions makes regularly and independently in the performance of duties. Additionally, for what work does the position make the final decision? Provide examples. Lastly, does this position have authority to commit the organization to a course of action? Provide examples.

Adequacy and accuracy of survey data and construction staking is sufficient to meet the District’s needs for design, analysis, and construction for each project.
Legal descriptions, plats, survey records, and monuments referenced are sufficient for the topographic design surveys being performed.
Construction on development projects and District construction contracts comply with the plans, specifications, permits or standards.

PHYSICAL ACTIVITIES/REQUIREMENTS

This section defines the physical activities and requirements that are absolutely necessary to be able to do in order to perform the job. Please list the frequency and the importance of each of the physical requirements listed in this section. These physical activities/requirements will help in ensuring the Canyon Highway District No. 4 remains in compliance with the Americans with Disabilities Act.

Frequency How frequently is the activity performed?	Importance How important is the activity in accomplishing the job's purpose?
0 – Never	0 – Not important
1 – Annually	1 – Somewhat important
2 – Quarterly (at least 3 per year)	2 – Very Important
3 – Monthly (at least 8 per year)	3 – Extremely Important
4 – Weekly (at least 3 per month)	
5 – Daily (at least 3 per week)	

Physical Activity	Frequency	Importance
Climbing: Ascending or descending ladders, stairs, scaffolding, ramps, poles and the like, using feet and legs and/or hands and arms. Body agility is emphasized. This factor is important if the amount and kind of climbing required exceeds that required for ordinary locomotion.	3	2
Balancing: Maintaining body equilibrium to prevent falling when walking, standing or crouching on narrow, slippery or erratically moving surfaces. This factor is important if the amount and kind of balancing exceeds that needed for ordinary locomotion and maintenance of body equilibrium.	4	2
Stooping: Bending body downward and forward by bending spine at the waist. This factor is important if it occurs to a considerable degree and requires full use of the lower extremities and back muscles.	4	3
Kneeling: Bending legs at knee to come to a rest on knee or knees.	3	2
Crouching: Bending the body downward and forward by bending leg and spine.	4	3
Crawling: Moving about on hands and knees or hands and feet.	0	0
Reaching: Extending hand(s) and arm(s) in any direction.	4	2
Standing: Particularly for sustained periods of time.	4	2
Walking: Moving about on foot to accomplish tasks, particularly for long distances.	4	2

Pushing: Using upper extremities to press against something with steady force in order to thrust forward, downward or outward.	2	1
Pulling: Using upper extremities to exert force in order to draw, drag, haul or tug objects in a sustained motion.	2	1
Lifting: Raising objects from a lower to a higher position or moving objects horizontally from position-to-position. This factor is important if it occurs to be a considerable degree and requires the substantial use of the upper extremities and back muscles.	5	2
Fingering: Picking, pinching, typing or otherwise working, primarily with fingers rather than with the whole hand or arm as in handling.	5	3
Grasping: Applying pressure to an object with the fingers or palm.	5	3
Feeling: Perceiving attributes of objects, such as size, shape, temperature or texture by touching the skin, particularly that of fingertips.	1	1
Talking: Expressing or exchanging ideas by means of the spoken work. Those activities in which they must convey detailed or important spoken instructions to other workers accurately, loudly, or quickly.	4	2
Hearing: Perceiving the nature of sounds with no less than a 4db loss @ 500 Hz, 1,000 Hz and 2,000 Hz with or without correction. Ability to receive detailed information through oral communication, and to make fine discriminations in sound, such as when making fine adjustments on machined parts.	4	2
Seeing: The ability to perceive the nature of objects by the eye. Seeing is important for hazardous jobs where defective seeing would result in injury and also jobs where special and minute accuracy, inspecting and sorting exist. A high degree of visual efficiency, placing intense and continuous demands on the eyes by moving machinery and other objects are also considered important. Other important factors of seeing are acuity (near and far), depth perception (three-dimensional vision), accommodation (adjustment of lens of eye to bring an object into sharp focus), field of vision (area that can be seen up and	5	3

down or to the right or left while eyes are fixed on a given point) and color vision (ability to identify and distinguish colors).		
Repetitive Motions: Substantial repetitive movements (motions) of the wrists, hands, and/or fingers.	5	3

WORKING CONDITIONS

The working conditions section defines the physical environment this position is subjected to while performing job duties. This section does not apply to conditions like an old office building but only those factors that have to do with the job itself. In this section, please place an X by the condition that applies and one under the frequency that is most appropriate. The condition should be unique to your job and not generally applicable to all employees with the organization. Please note, there is a choice for “Does Not Apply,” if most of your work is in an office setting.

Condition	Less than 25% of the time	25-50% of the time	More than 50% of the time
Hazardous physical conditions (mechanical parts, electrical currents, vibration, etc.)	X		
Atmospheric Conditions (fumes, odors, dusts, gases, poor ventilation)	X		
Hazardous materials (chemicals, blood and other body fluids, etc.)	X		
Extreme temperatures		X	
Inadequate lighting	X		
Work space restricts movement	X		
Intense noise	X		
Travel	X		
Environmental (disruptive people, imminent danger, threatening environment)	X		
High-traffic areas (automobile traffic)		X	

CAREER PATH

Defines the Pay Steps within the position classification, and the minimum requirements for movement between steps. The Supervisor will draft a memo to the Director requesting approval to move an employee between steps. The memo will provide specific details describing the employee’s accomplishments meeting the various qualifications for movement.

All new employees will enter at Step 1 until they qualify for movement to a higher step. Existing employees may be placed higher than Step 1 for lateral

transfers or promotions provided that they meet all of the qualifications for the higher Step.

STEP 1

Training 1	<ul style="list-style-type: none"> • CHD4: First Aid/AED • ICRMP: District Personnel Policy Review • ICRMP: District Vehicle Use Policy Review • ICRMP: District Driver Safety Courses • Flagger Certification
Skills 1	<ul style="list-style-type: none"> • Demonstrated oral and written communications skills. • Treating the public and staff with diplomacy and tact. • Utilize surveying equipment including GPS, total stations, and data collector in completing surveys. • Export design data/points from CADD to data collector for construction staking. • Set construction stakes indicating stationing, line, grade, and slopes/catch points. • Import electronic survey data to Computer Aided Drafting and Design (CADD) system and • Proficiency with general surveying, surveying equipment, surveying rules/codes, and general software applications. • Cut brush and small trees to clear line for instrument sighting. • Research, read and interpret maps, surveys, plans, and legal descriptions. • Flag and direct traffic, when required.
Time 1	Complete all training, acquire all listed skills and serve 1 year in Step 1

STEP 2

Training 2	<p>Maintain all training certifications required in Step 1 plus the following:</p> <ul style="list-style-type: none"> • ICRMP: Harassment Courses • ICRMP: Ethics in Government • ICRMP: Public Records Law • NSPS Certified Survey Technician (CS) Level I or equivalent
Skills 2	<p>All Step 1 requirements plus the following:</p> <ul style="list-style-type: none"> • Gathering of horizontal and vertical control data for topography surveys and construction surveys. • Reduce field and level notes, make computations, prepare staking notes, and process survey data using data collector and computer.

	<ul style="list-style-type: none"> • Draft base and construction drawings to produce road, traffic and drainage plans. • Develop existing surface models in CADD for design. • Review right-of-way permit applications for compliance with District Standards, Coordinate right-of-way work between District projects and other permits. •
Time 2	<p>Complete all training, acquire all listed skills and serve 3 years in Step 2</p> <ul style="list-style-type: none"> • The time requirement will be waived for prior experience once training and skills levels are satisfactory.

STEP 3

Training 3	<p>Maintain all training certifications required in Step 2 plus the following:</p> <ul style="list-style-type: none"> • At least 2 courses, seminars, webinars and/or podcasts approved by supervisor • NSPS Certified Survey Technician (CS) Level II or equivalent
Skills 3	<p>All Step 2 requirements plus the following:</p> <ul style="list-style-type: none"> • Prepare legal descriptions for rights-of-way and easements required for public roads. • Develop preliminary alignments and profiles for design. • Collect utility location information and conducts preliminary coordination with utilities on potential construction impacts. • Inspection development and construction projects for compliance with Districts standards, specifications, plans, and contracts.
Time 3	<p>Complete all training, acquire all listed skills and serve 3 years in Step 3</p> <ul style="list-style-type: none"> • The time requirement will be waived for prior experience once training and skills levels are satisfactory.

STEP 4

Training 4	<p>Maintain all training certifications required in Step 3 plus the following:</p> <ul style="list-style-type: none"> • PRIMA: Cyber Threats • At least 2 courses, seminars, webinars and/or podcasts approved by supervisor • NSPS Certified Survey Technician (CS) Level III or equivalent
Skills 4	<p>All Step 3 requirements plus the following:</p> <ul style="list-style-type: none"> • Direct others in performing topographical surveys and construction staking.

	<ul style="list-style-type: none"> • Prepare draft documents for rights-of-way and easements required for public roads. Model roadway corridors with surface models, develop cut/fill limits, and estimate surfacing and earthwork quantities. • Develop engineering design layouts of road, bridge, and drainage construction projects and activities. • Operate autonomously as the Survey Technician.
Time 4	<p>Complete all training, acquire all listed skills and serve 3 years in Step 4</p> <ul style="list-style-type: none"> • The time requirement will be waived for prior experience once training and skills levels are satisfactory.

STEP 5

Training 5	<p>Maintain all training certifications required in Step 4 plus the following:</p> <ul style="list-style-type: none"> • At least 2 courses, seminars, webinars and/or podcasts approved by supervisor • NSPS Certified Survey Technician (CS) Level IV, Associates Degree or 2-year certification program in surveying technology or related field, or equivalent.
Skills 5	Application of the skills received in the training noted above
Time 5	Complete all training, acquire all listed skills and serve 3 at least years in Step 4

STEP 6 (“acting” appointment in excess of 90 days)

Training 6	N/A
Skills 6	Fulfill all of the obligations of the vacant position being filled
Time 6	N/A