

COUNTY OF SONOMA - JOB DEMANDS ANALYSIS

JOB CLASSIFICATION: WA Engineering Technician I (1043), II (1044), and III (1045)
DEPARTMENT: WA
PHYSICAL DEMAND STRENGTH RATING: Medium

DATE COMPLETED: February 2024
DIVISION: Engineering and Resource Planning

INSTRUCTIONS TO MEDICAL PROVIDERS COMPLETING THIS FORM:

Please use the “Medical Provider Use Only” columns to the right of each section and the “Medical Provider’s Comments & Signature” Section on the signature page to provide work restrictions by indicating whether there is some portion of each function that the employee can perform; designating whether each restriction is temporary or permanent; and, if restriction is temporary, stipulating the expected duration of work restriction(s). To finalize the form, please provide the name of the employee evaluated and additional comments, as appropriate, then sign and date where indicated.

FREQUENCY RATING:

Frequency	Percentage of time per shift	Repetition (# times per shift)	8 Hr Shift	9 Hr Shift	10 Hr Shift	12 Hr Shift
Never/Not Required (N)	n/a	n/a	n/a	n/a	n/a	n/a
Occasionally (O)	1 - 33%	1 – 100	0 - 2.5	0 - 3	0 - 3.5	0 – 4
Frequently (F)	34 - 66%	100 – 500	2.5 - 5.5	3 - 6	3.5 - 7	4 – 8
Continuously (C)	67 - 100%	500+	5.5 – 8	6 - 9	7 - 10	8 - 12

PART 1 - JOB DUTIES/FUNCTIONS:

A. Job Duty/Function	B. Job Duty #	C. Freq Rating	D. Equipment or tools used to perform (Describe)	E. Specialized Expertise, License, Certification Required? (Describe)	F. Essential or Non- Essential	Medical Provider Use Only: For each job duty/function, indicate in this column “Can Perform”, is “Temporarily Restricted” from performing, or is “Permanently Restricted” from performing.
While performing the following duties, employees in this position work in a typical office setting and in the field in all types of terrain and weather conditions, performing duties in both daylight and dark/dim conditions.						
Under supervision staff performs routine, minimally difficult, technical paraprofessional engineering office work, fieldwork, and/or surveying for water distribution, wastewater collection and treatment, and flood control projects in one or more of the following functional areas: 1) computer-aided design and drafting (CADD), construction inspection, administration, and management 2) operations and maintenance 3) surveying.	1	C	Computer, phone	N/A	E	
Drives county vehicles to offsite job sites, including rugged, remote, and off-road locations; inspects vehicles and reports any issues or damage.	2	F	Vehicle, phone	Valid CA Driver’s License	E	

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May work in close proximity to traffic and/or construction sites.	3	O	N/A	N/A	N	
Communicates by phone, in person, by email, or other written formats with departmental staff, members of the public, and public and private agencies; explains regulations, policies, and procedures; maintains a calm and professional demeanor.	4	F	Computer, phone	N/A	E	
Survey Eng. Techs: Serves in a variety of positions on a survey party; uses surveying instruments to determine points, lines, elevations, and distances for property, construction, triangulation, precise traverse, and topographic surveys; holds a graduated rod on specific points; accurately measures the distance between points using tape and plumb-bob; locates and removes buried survey monuments which includes walking while holding metal detectors, operating demolition jack hammers, shovels, and/or digging bars to break up dirt/asphalt covering survey monuments; prunes trees, cuts brush, and otherwise clears area from line of sight; may set up, adjust, clean, and care for survey instruments and GPS instruments; may operate level and transit; may make elementary field calculations and record survey notes; loads equipment onto trailer, secures, transports, and unloads equipment weighing up to 50lbs.	5	O	Tools for clearing brush such as chain saw and tree trimmers; surveying equipment including rod, tape, plumb-bob, construction stakes, digital level, theodolite, tripod, GPS receiver, metal detector, shovel, digging bar, demolition jack hammer; computer, vehicle, phone	N/A	E	
May perform field staking of project plans; uses sledgehammer to drive stakes or nails into ground or asphalt; carries bundles of stakes and hammer/driver weighing up to 30lbs over uneven, steep, and/or slippery surfaces.	6	O	Sledgehammer, driver, stakes, nails	N/A	N	
Assists with preparation of preliminary construction drawings and sketches; assists in the review of contracts, plans, and specifications; prepares maps of real property from legal descriptions, field survey notes, and other sources; plots cross sections, profiles, contours, and transit lines from field notes; computes land quantities by mathematical or mechanical means; makes tracings of maps or construction drawings; prepares blueprints and other copies of plans; assists in drafting construction plans from sketches and detailed instructions; uses CADD software.	7	F	CAAD, sketching tools, computer, phone	N/A	E	

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Uses engineering testing, drafting, and survey tools and equipment appropriate for assigned area; reaches forward, down, and across to operate equipment; monitors and remains alert to verbal and visual signs from other workers, and to equipment instruments and gauges to detect malfunctions and problems; inspects, calibrates, maintains, and performs basic repairs to tools and equipment; reports damage, wear, required repairs, maintenance, and need for replacements.	8	O	Testing, drafting, and survey tools/equipment	N/A	E	
Performs field, office, and computer-aided studies, including data collection from field equipment; researches properties, utility locations, and title company records; transcribes observed and computer data into standardized forms; maintains records; checks data, field sketches, field books, and calculations for accuracy; may prepare periodic and special reports based on findings from research, studies, and surveys; makes recommendations on findings.	9	O	Computer, phone	N/A	E	
Takes samples of materials from job sites, quarries, or mix plants for testing; runs field or laboratory tests such as compaction, sand equivalent, gradation, and moisture content on a variety of materials; obtains and processes water and wastewater samples from wells, surface water bodies, treatment plants, and sewer collection systems for laboratory analysis; cleans laboratory.	10	O	Computer, phone, sampling and laboratory equipment	N/A	E	
Makes simple engineering calculations; prepares a variety of charts and graphs; inputs data into computers and may perform simple calculations on computers.	11	F	Computer, phone, calculator	N/A	E	
Follows established safety practices and protocols for working at water diversion/production/transmission facilities and treatment plants, in confined spaces, in proximity to high-voltage, and moving vehicles and equipment; wears appropriate safety gear; reports on unsafe conditions.	12	C	Phone, PPE	N/A	E	
Inventories sewer usage and reads meters for determining sewer service charges.	13	O	Computer, phone	N/A	E	
Enters and retrieves data from electronic data processing systems; establishes and updates information; generates documents and correspondence; updates computer system files; prepares, reviews, and maintains forms, files, and other	14	F	Computer, phone, file boxes	N/A	E	

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necessary records.						
Participates in training to maintain and enhance knowledge and skills necessary to perform assigned duties.	15	O	Computer, phone	N/A	E	
Assists in inspecting various phases of construction in progress to ensure compliance with plans, specifications, and methods or materials being used; walks around jobsites, over uneven, steep, and slippery surfaces; may walk into and through waterways; provides feedback and recommendations as needed; reports status of work to supervisors and managers; performs emergency assessments of site, structure, and infrastructure conditions after natural disasters to identify and document safety concerns.	16	O	Computer, phone	N/A	E	
Engineering Technician II Duties (in addition to Eng Tech I)						
Prepares precision drawings of preliminary drawings for construction plans, plats, profiles, cross-sections, sewers, storm drainage, right-of-way, and topographic features using CADD.	17	F	Computer, phone, CADD software	N/A	E	
May serve as a technical resource for Engineering Technician I's and support staff.	18	O	Computer, phone	N/A	N	
Engineering Technician III Duties (in addition to Eng Tech I & II)						
Assists in structural design detailing; prepares contract specifications and drafts final plans; plans, designs, and prepares construction drawings, maps, and other agency materials as needed; determines bonding requirements.	19	C	Computer, phone	N/A	E	
Incumbents are expected to independently make computations, develop reports, and serve as a technical resource for less experienced WA Engineering Technicians I & II; may have lead level responsibilities for assigning, reviewing, and coordinating the work and training of a work crew, interns, paraprofessional, and clerical staff.	20	C	Computer, phone	N/A	E	
Survey Eng. Techs: May serve as a survey party chief; performs complex office surveying duties utilizing AutoCAD and various survey programs; prepares maps, diagrams, plats, and appraisal maps; prepares plats and legal descriptions of new and existing boundaries.	21	O	Computer, phone, surveying equipment	N/A	E	
Assists in the design and implementation of erosion control programs; performs storm runoff hydrologic calculations;	22	F	Computer, phone	N/A	E	

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estimates quantities of materials; produces erosion plans.						
Construction Management Engineering Technicians I, II, & III):						
Primarily works in the field at jobsites, standing and walking the majority of the shift.	23	C	phone	N/A	E	
May enter permit and non-permit confined spaces (<i>e.g., pipes, manhole, storm drain</i>); operates handheld device to monitor air during confined space entry.	24	F	PPE	SCBA Certified	N	
Dependent on the project, may be required to conduct material testing using various equipment up to 35lbs (<i>e.g., nuclear gauge</i>)	25	F	PPE	N/A	E	

PART 2: PHYSICAL DEMANDS

Activity	Examples of Duties/Functions Requiring Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY: Permanently Restricted
1 Sitting (e.g., driving, using phone, computer)	All	F			
2 Walking	All	F			
3 Running	N/A	N			
4 Standing	All	F			
5 Bending-Neck (e.g., computer work, mapping, drawing)	5-11, 13, 14, 16	F			
6 Bending-Waist	5-10, 13, 14, 16	O			
7 Squatting (e.g., when conducting inspections)	5, 6, 10, 16	O			
8 Climbing (e.g., when conducting inspections)	16	O			
9 Kneeling (e.g., when conducting inspections; taking samples at job sites/bodies of water)	10, 16	O			
10 Crawling (e.g., when conducting inspections; crawling into pipes)	16, 24	O			
11 Twisting (neck) (e.g., driving; using phone, computer)	All	F			
12 Twisting (waist)	All	F			
13 Repetitive Hand Use (e.g., computer work)	5-7, 9-11, 13, 14, 17, 19	F			
14 Simple Grasping-Right Hand (e.g., using light survey equipment such as tape and plumb bob, using drawing/mapping/drafting tools)	All	F			
15 Simple Grasping-Left Hand (e.g., using light survey equipment such as tape and plumb bob, using drawing/mapping/drafting tools)	All	F			
16 Power Grasping-Right Hand (e.g., lifting pipes, opening gates, clearing brush on survey team)	5, 6	O			
17 Power Grasping-Left Hand (e.g., lifting pipes, opening gates, clearing brush on survey team)	5, 6	O			
18 Fine Manipulation-Right Hand (e.g., when preparing drawings, tracings, and maps)	7, 10, 17, 19, 21	O			
19 Fine Manipulation-Left Hand (e.g., when preparing drawings, tracings, and maps)	7, 10, 17, 19, 21	O			
20 Pushing and Pulling (right hand) (e.g., opening gates, maneuvering file boxes and cabinets)	5, 6, 14	F			
21 Pushing and Pulling (left hand) (e.g., opening gates, maneuvering file boxes and cabinets)	5, 6, 14	F			
22 Reaching (above shoulder level) (e.g., clearing brush on a survey team)	5, 6, 8, 10, 14, 16	F			
23 Reaching (below shoulder level) (e.g., clearing brush on a survey team)	5, 6, 8, 10, 14, 16	F			
24 Lifting-up to 10 lbs. (e.g., using various office equipment, drawing/mapping/drafting equipment, light survey equipment such as tape and plumb bob)	All	F			
25 Lifting-11-25 lbs. (e.g., GPS receiver, power tools for cutting brush)	5, 6, 25	F			
26 Lifting-26-50 lbs. (e.g., accumulation of equipment that may be carried on survey party, demolition jack hammer)	5, 6, 25	O			
27 Lifting 51-75 lbs.	N/A	N			
28 Lifting 76-100 lbs.	N/A	N			

Activity	Examples of Duties/Functions Requiring Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY: Permanently Restricted
29 Lifting 100 + lbs.	N/A	N			
30 Carrying 0-10 lbs. (e.g., using various office equipment, drawing/mapping/drafting equipment, light survey equipment such as tape and plumb bob)	All	F			
31 Carrying 11-25 lbs. (e.g., GPS instruments, power tools for cutting brush)	5, 6, 25	O			
32 Carrying 26-50 lbs. (e.g., accumulation of equipment that may be carried on a survey party, demolition jack hammer)	5, 6, 25	O			
33 Carrying 51-75 lbs.	N/A	N			
34 Carrying 76-100 lbs.	N/A	N			

PART 3: SENSORY REQUIREMENTS

Activity	Examples of Duties/Functions Requiring Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Functional vision, normal or corrected (e.g., driving, using computer)	All	C			
2 Functional color vision, normal or corrected (e.g., determining color coded writing on construction/engineering drawings)	6-8, 10, 12, 17, 19, 21	F			
3 Functional night vision, normal or corrected	16	O			
4 Functional hearing, normal or corrected (i.e., ensuring that tools and equipment are functioning properly, listening for audio alarms, communicating with work crews, co-workers, supervisors, other agencies, public)	All	C			
5 A sense of smell or taste (e.g., sensing fumes, vapors, leaks)	3, 8, 10, 12, 16, 23	F			

PART 4: COMPREHENSION LEVEL

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Follow Oral Instructions	C			
2 Follow Written Instructions	C			
3 Required to sustain concentration	F			

PART 5: NATURE OF TASKS

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Follow set procedures	C			
2 Organize own work	F			
3 Able to ask questions or request assistance when needed	C			
4 Required to make decisions independently	F			
5 Required to train and/or lead other staff	O			
6 Required to direct other staff (e.g. planning, goal setting, performance) (Eng. Tech III Only) (e.g., may be in charge of directing interns)	O			

PART 6: WORK PACE

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Tightly scheduled and rapid pace of work activities at high volume	F			
2 Meet time sensitive deadlines	F			
3 Long and/or irregular hours (e.g., in emergency situations)	O			
4 Limited/unpredictable opportunity for breaks (e.g., in emergency situations)	O			
5 Required to perform on-call or emergency work	O			

PART 7: COMPLEXITY/VARIABILITY

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Variable and unpredictable workflow	O			
2 Attention divided by issues requiring multi-tasking	F			
3 Work requires precise attention to detail	C			
4 Use of judgment in routine matters	F			
5 Requires use of judgment in adapting procedures from one task to another	F			
6 Possible legal ramifications associated with work activities or work product	O			

PART 8: INTERACTIONS WITH OTHERS

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Works with others (e.g., co-workers, other departments/agencies, public)	C			
2 Interactions limited to giving/receiving information	F			
3 Interactions exceed giving/receiving information (e.g., advises, persuades, justifies)	O			
4 Interactions occur under circumstances of emotional stress	O			

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
5 Risk of confrontation with violent or assaultive clients or customers	O			

PART 9: ENVIRONMENTAL FACTORS/WORKING CONDITIONS:

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
1 Work Inside	F			
2 Work Outside	F			
3 Extreme Heat (above 100 degrees)	O			
4 Extreme Cold (below 32 degrees)	O			
5 Excessive Noise (must raise voice to be heard)	O			
6 Vibration (e.g., jack hammer, hammer drill, chainsaw, etc.)	O			
7 Dust, Vapors, Fumes, Smoke	O			
8 Silica, asbestos, etc. (e.g., silica beads used as filter for wells, asbestos pipes (acp pipe)) Construction Management Eng. Techs Only	O			
9 Solvents (e.g., gas, turpentine, etc.)	O			
10 Grease, oils	O			
11 Acidic, Caustic Solutions	O			
12 Pesticides	N			
13 Explosives (e.g., dynamite, bomb, etc.)	N			
14 Cleaning supplies, abrasives	O			
15 Other Chemicals (e.g. drugs and other contraband)	N			
16 Human Blood, Body Tissues, or Fluids	O			
17 Human Wastes (e.g., may work with sewer pipes)	O			
18 Animal Blood, Body Tissues, or Fluids	O			
19 Animal Wastes (e.g., may work with sewer pipes)	O			
20 Biological Toxins (e.g., poison ivy, poison oak, anthrax, etc.)	O			
21 Insect Bites (e.g., ticks, mosquitos, spiders, etc.)	O			
22 Biomedical Waste	N			
23 Ionizing Radiation (e.g., using nuclear gauges to conduct soil compaction tests)	O			
24 Non-Ionizing Radiation	N			
25 Electrical Energy	O			
26 Walking on uneven, slippery, or rough surfaces	O			
27 Proximity to moving mechanical parts (e.g., equipment, machinery)	O			
28 Proximity to moving vehicles or objects	O			
29 Heights (e.g., ladders, step ladders)	O			
30 Contact with water, other liquids, humid conditions - not weather related	O			
31 Work Below Ground: (e.g., pipes, excavation, trench, etc.)	O			
32 Potential exposure to airborne infectious diseases (e.g. clinics, labs, corrections)	N			
33 Operates non-commercial motor vehicles (cars, trucks)	F			
34 Operates commercial vehicles – CDL Class _____ Endorsements _____	N			
35 Operates passenger van to transport clients, inmates, etc. (e.g., Operations Eng. Techs may drive a tour of passengers around)	O			

Activity	FREQUENCY RATING Never, Occasional; Frequent, or Constant	MEDICAL Can Perform	PROVIDER Temporarily Restricted	USE ONLY Permanently Restricted
36 Pulls non-commercial trailers or equipment	N			
37 Operates heavy equipment	N			
38 Other:	N/A			

PART 10: MEDICAL SCREENING, SURVEILLANCE AND VACCINATION REQUIREMENTS:

Please check each of the medical screening, surveillance, and vaccination requirements that apply to the position, and indicate if the requirement applies pre-employment/pre-placement only, or whether there are additional requirements after hire.

Medical Screening, Surveillance or Vaccination	Pre-Hire	Post-Hire	Frequency (one time, annual, etc.)
1 Audiometric Testing	X		
2 DOT Commercial Driver Drug and Alcohol Screening			
3 DOT Commercial Driver Physical Exam			
4 Respirator Physical Exam (Construction Management only)	X	X	annually
5 Respirator Questionnaire – Short			
6 Respirator Questionnaire – Standard (Construction Management only)	X	X	annually
7 Blood lead level			
8 Hazardous Waste/Emergency Worker physical			
9 Heavy metal screens (mercury, lead, arsenic)			
10 HINT Hearing Noise Sensitivity Testing			
11 Tuberculosis skin test			
12 Vaccine: MMR			
13 Vaccine: Hepatitis B		X	offered
14 Vaccine: Influenza			
15 Vaccine: Meningococcal			
16 Vaccine: Pneumococcal			
17 Vaccine: Rabies			
18 Vaccine: Rabies Titer			
19 Vaccine: Tdap			
20 Vaccine: Chickenpox			

PART 11: ADDITIONAL INFORMATION, PICTURES, ETC.

Equipment	Weight	Frequency
Graduated Rod, Tape, Plumb-Bob, Metal Detector, Construction Stakes, Digital Level, Theodolite, Tripod, GPS Receiver, Shovel, Tree Trimmers	Up to 10 lbs.	0
Digging Bar, Chain Saw	11 – 25 lbs.	0
Demolition Jack Hammer, Nuclear Gauge	26 – 50 lbs.	0
Bundle of Construction Stakes	Up to 30 lbs.	0
Materials Testing Equipment (<i>e.g., nuclear gauge</i>)	Up to 35 lbs.	0
Sledgehammer	10 lbs.	0