



# Job Task Analysis

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<b>Employer:</b>	<b>Stanislaus County</b>
<b>Occupation:</b>	Surveyor
<b>Company Contact:</b>	Risk Management 1010 10 <sup>th</sup> Street Modesto, California 95354 (209) 525-5770
<b>Date:</b>	February 2011
<b>Analysis Provided By:</b>	Lyle Andersen, PT, CWCE Andersen Physical Therapy, Inc. 3500 Coffee Road, Suite 3 Modesto, California 95355 (209) 549-4626

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## **INTRODUCTION:**

A complete job description is available through Stanislaus County Human Resources. The environmental factors, physical and functional demands for this Job Task Analysis were documented by Andersen Physical Therapy, Inc. The methodology for documentation consisted of on-site visits, using various measuring devices such as dynamometers and scales, as well as observation and interviews with employees and managers. A detailed record was made of the physical and functional demands of the job in terms of force pounds, weight, frequency, height, distance, anthropometric measurements, stamina, and degrees of range of motion. The determination of the frequencies of functional activities is based on standards provided by the National Institute for Occupational Safety and Health (NIOSH) and the Work Practice Guide for Manual Lifting (U.S. Department of Commerce, National Technical Information Service).

The Job Task Analysis is organized as follows: General work description; safety requirements; equipment; environmental factors; and physical/functional demands.

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Chief Executive Office – Recruitment Unit  
P.O. Box 3404, Modesto, CA 95354

Phone (209) 525-6341 Fax (209) 525-4056

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Chief Executive Office – Risk Management Division  
1010 10<sup>th</sup> St., Ste 5900, Modesto, CA 95354

Phone (209) 525-5710 Fax (209) 525-5779

**GENERAL WORK DESCRIPTION:**

The frequency of the following activities may vary according to the physical requirements of the specific job tasks that the employee may be required to perform at random intervals.

Under the general supervision of the department manager, the Surveyor performs a variety of field and office engineering work in connection with the construction and maintenance of public works, trains, and supervises technical personnel as required.

**SPECIFIC DUTIES:** Available through the Human Resources Department at the County of Stanislaus.

<http://www.stancounty.com/riskmgmt/risk-dm-jta-class-sub-main.shtm>

**Safety Requirements:** All employees are required to observe company safety procedures and standards to insure individual and collective safety, in addition to avoiding unnecessary risk to oneself, co-workers, customers, and property.

**Equipment:**

- |   |                                    |
|---|------------------------------------|
| 1. Broom                                  | 14. Pruning Shears                 |
| 2. Calculator                             | 15. Radio ladder                   |
| 3. Cell phone                             | 16. Rake                           |
| 4. Copy machine                           | 17. Saws all                       |
| 5. Digging bar                            | 18. Scanner                        |
| 6. GPS survey units                       | 19. Shovel                         |
| 7. Hammer saw                             | 20. Telephone                      |
| 8. Hatchet                                | 21. Total station survey equipment |
| 9. Jack hammer                            | 22. Traffic cone                   |
| 10. Keyboard / computer / mouse / monitor | 23. Traffic sign                   |
| 11. Misc hand tools                       | 24. Tri-pod                        |
| 12. Post hole digger                      | 25. Vehicle                        |
| 13. Printer                               |                                    |

*All employees within the **Surveyor** position are required to provide physical assistance for all weight and frequency requirement needs of all job tasks in order to maintain a safe work environment. Employees must be physically capable of working in any of the job tasks within the **Surveyor** position.*

**ENVIRONMENTAL FACTORS**



**The following percentages are given in terms of an eight-hour workday:**

<b>Seldom</b> = 1% - 2%	<b>Frequent</b> = 34% - 66%
<b>Occasional</b> = 3% - 33%	<b>Constant</b> = 67% - 100%

	ENVIRONMENTAL FACTORS	MAXIMUM FREQUENCY
1.	Unprotected heights: .....	Not Applicable
2.	Being around moving machinery: traffic, heavy equipment .....	Occasional
3.	Exposure to marked changes in temperature and humidity: outside temperatures may seasonally vary between 28-110 degrees.....	Seldom
4.	Exposure to dust, fumes, smoke, gases, or other irritating substances (specify): blueprint ammonia, road dust .....	Seldom
5.	Driving: vehicle.....	Occasional
6.	Exposure to excessive noise:..... <i>Hearing protection is available</i>	Not Applicable
7.	Exposure to radiant or electrical energy:.....	Not Applicable
8.	Exposure to solvents or chemicals:..... <i>Refer to MSDS document.</i>	Not Applicable
9.	Exposure to slippery or uneven walking surfaces: sloped, underdeveloped ground.	Occasional
10.	Working below ground:.....	Not Applicable
11.	Unusual fatigue factors: .....	Not Applicable
12.	Working with explosives:.....	Not Applicable
13.	Excessive vibration: .....	Not Applicable
14.	Working with hands in water or other substance:..... <i>Hand protection is available</i>	Not Applicable
15.	Working proximity:.....Alone: Closely with others:	Frequent Frequent
16.	Working inside:.....	Constant
17.	Working outside: off-site inspection(s).....	Frequent

**FUNCTIONAL ACTIVITIES**



The frequency of the following activities may vary according to the physical requirements of the specific job tasks the employee may be required to perform at random intervals.

**PHYSICAL AND FUNCTIONAL REQUIREMENTS**

<b><u>FREQUENCY DEFINITIONS</u></b>	<b><u>SELDOM</u></b>	<b><u>OCCASIONAL</u></b>	<b><u>FREQUENT</u></b>	<b><u>CONSTANT</u></b>
Percent of the Day	1-2%	3-33%	34-66%	67-100%
Material Handling	1-4 Reps	5-32 Reps	33-250 Reps	251-2,000 Reps
Non Material Handling	1-4 Reps	5-32 Reps	33-250 Reps	251-2,000 Reps
Repetitive & Static Work	1-50 Reps	51-250 Reps	251-1,000 Reps	1,001-20,000 Reps

1.) **PUSH**: *Pushing activities may require use of the back in conjunction with leg and arm musculature.*

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>0-10 pounds:</b>	Occasional
<b>11-25 pounds:</b>	Seldom
<b>26-35 pounds:</b>	Seldom
<b>36-100 pounds:</b>	Not Required
<b>Maximum Force: 35 Pounds</b>	

*Assistive Devices:* One person assistance is available with forces greater than 35 pounds.

*Comments:* Pushing is utilized with activities such as retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. door, survey paraphernalia). The employee exerts up to 35 pounds of force in a horizontal plane from waist to shoulder height of a distance up to 5 feet when performing job tasks (e.g. open/close door, file, drawer; placement storage of survey equipment to/from storage rack.). *Pushing is the preferred method of moving carts.*

2.) **PULL**: *Pulling activities may require use of the back in conjunction with leg and arm musculature.*

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>0-10 pounds:</b>	Occasional
<b>11-25 pounds:</b>	Seldom
<b>26-35 pounds:</b>	Seldom
<b>36-100 pounds:</b>	Not Required
<b>Maximum Force: 35 Pounds</b>	

*Assistive Devices:* One person assistance is available with forces greater than 35 pounds.

*Comments:* Pulling is utilized with activities such as retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. door, survey paraphernalia). The employee exerts up to 35 pounds of force in a horizontal plane from waist to shoulder height of a distance up to 5 feet when performing job tasks (e.g. open/close gate, cart, door, file, drawer; placement storage of store survey equipment to/from storage rack).

3.) **STAND-UP LIFT:** *Lifting weighted objects between floor and waist height.*

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>0-10 pounds:</b>	Occasional
<b>11-25 pounds:</b>	Occasional
<b>26-35 pounds:</b>	Seldom
<b>36-50 pounds:</b>	Seldom
<b>51-75 pounds:</b>	Seldom
<b>76-100 pounds:</b>	Seldom

**Maximum Force:** **80** Pounds

**Assistive Devices:** One person assistance is available with weights greater than 80 pounds.

**Comments:** A stand-up lift is utilized with activities such as retrieving, returning, storing, transporting equipment and supplies (e.g. documents, files, and survey paraphernalia). The employee lifts items weighing between < 1 pound and 80 pounds when performing job tasks (e.g. up to 20-pound tripod, up to 15-pound total-station unit, EPS unit components, hand tools, monument well, bucket of asphalt, 80-pound jack hammer, 10 inches PVC couple, 10 inches survey staff, 25-pound digging bar, 30-pound portable 12-volt battery). *Safe lifting is performed by utilizing a posture of partial squatting and a straight back.*

4.) **LEVEL LIFT:** *Lifting weighted objects from between waist and chest height level for a maximum horizontal distance of up to four feet.*

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>0-10 pounds:</b>	Frequent
<b>11-25 pounds:</b>	Occasional
<b>26-35 pounds:</b>	Seldom
<b>36-50 pounds:</b>	Seldom
<b>51-75 pounds:</b>	Seldom
<b>76-100 pounds:</b>	Seldom

**Maximum Force:** **80** Pounds

**Assistive Devices:** One person assistance is available with weights greater than 80 pounds.

**Comments:** A level lift is utilized with activities such as retrieving, returning, storing, moving, and/or transporting equipment and supplies (e.g. documents, files, survey paraphernalia). The employee lifts items weighing between < 1 pound and 80 pounds when performing job tasks (e.g. up to 10-pound stack of files, binders, plans; miscellaneous paper documents; reference material; up to 20-pound tripod; up to 15-pound total-station unit; EPS unit components, hand tools, monument well, bucket of asphalt, 80-pound jack hammer, 10 inches PVC couple, 10 inches survey staff, 25-pound digging bar, 30-pound portable 12-volt battery).

5.) **WEIGHT CARRY:** *Carrying weighted objects between waist and chest height beyond a distance of four feet.*

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>0-10 pounds:</b>	Frequent
<b>11-25 pounds:</b>	Occasional
<b>26-35 pounds:</b>	Seldom
<b>36-50 pounds:</b>	Seldom
<b>51-75 pounds:</b>	Seldom
<b>76-100 pounds:</b>	Seldom

**Maximum Force:** **80** Pounds

**Assistive Devices:** One person assistance is available with weights greater than 80 pounds.

**Comments:** Weight carry is utilized with activities such as retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. documents, files, survey paraphernalia). The employee carries items weighing between < 1 pound and 80 pounds when performing job tasks (e.g. up to 10-pound stack of files, binders, plans; miscellaneous paper documents; reference material; up to 20-pound tripod; up to 15-pound total-station unit, EPS unit components, hand tools, monument well, bucket of asphalt, 80-pound jack hammer, 10 inches PVC couple, 10 inches survey staff, 25-pound digging bar, 30-pound portable 12 volt battery).

6.) **OVERHEAD LIFT/PULL DOWN:** *Lifting weighted object from/to chest and overhead height level.***MAXIMUM REQUIREMENT**

0-10 pounds: Seldom

11-100 pounds: Not Required

**Maximum Force:** 10 Pounds

**Assistive Devices:** A vertical ladder, step ladder or step stool is available to bring items to eye or shoulder level.

**Comments:** Overhead lift/pull down is utilized with activities such as retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. survey paraphernalia, safety sign, survey staff). *Variables to overhead reaching will be the employee's height and anthropometric reach.*

7.) **OVERHEAD REACH:****MAXIMUM FREQUENCY:** Seldom

**Comments:** Overhead reach is required to perform job tasks. (i.e. adjust and position equipment stored on elevated truck racks). *A ladder (appropriate height) or step stool may be utilized to bring items to eye or shoulder level. Variables to overhead reaching will be the employee's height and anthropometric reach.*

8.) **FORWARD REACH:****MAXIMUM FREQUENCY:** Frequent

**Comments:** Forward reach is performed to a distance of 28 inches when retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. push/pull, open/close door; desktop work; drive vehicle; load/unload equipment; survey staff placement, hand tool work, spray paint, jack hammer; setup/take down cone, sign, and tripod survey equipment). *The degree of elbow extension required for reaching will vary according to the employee's anthropometric reach.*

9.) **STOOP:****MAXIMUM FREQUENCY:** Seldom

**Comments:** Stooping is performed when retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. file; utilize storage; load/unload vehicle; walk under fencing, brush, trees, and other natural vegetation). *Variable to stooping will be the employee's height. Stooping of the head, trunk and knees can be minimized or avoided by substituting alternate positions of squatting, kneeling or bending when performing job tasks.*

10.) **SQUAT:** *(Unloaded)***MAXIMUM FREQUENCY:** Seldom

**Comments:** Squatting is required when retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. utilize storage; load/unload vehicle; travel under fencing, brush, trees, and other natural vegetation; reach inside ground hole). *Squatting may be minimized or avoided by substituting alternate positions of bending or kneeling. Partial squatting is a preferred lifting posture.*

**11.) FORWARD BEND:****MAXIMUM  
FREQUENCY:** Frequent

*Comments:* Bending forward at the waist is performed when retrieving, returning, storing, adjusting, moving, and/or transporting equipment and supplies (e.g. utilize storage, load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer, setup/take down cone, sign, and tripod survey equipment; locate monument). Maximum forward trunk flexion required is 60 degrees. *Employee may minimize or avoid excessive forward bending of the trunk up to 80 degrees by using alternate positions of bending at the hips, kneeling, half kneeling, stooping, sitting or squatting.*

**12.) TWIST:****MAXIMUM  
FREQUENCY:** Occasional

*Comments:* Twisting at the waist is required to perform job tasks (e.g. drive vehicle, load/unload equipment, survey staff placement, hand tool work, spray paint; setup/take down survey equipment; worksite surveillance). *Twisting at the waist may be minimized by turning the whole body, including the feet and working from a swivel office chair.*

**13.) TURN:****MAXIMUM  
FREQUENCY:** Occasional

*Comments:* Turning is required to perform job tasks (e.g. load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer, setup/take down survey equipment; worksite surveillance).

**14.) KNEEL:****MAXIMUM  
FREQUENCY:** Seldom

*Comments:* Kneeling is required to perform job tasks (e.g. hand digging to recover/set monument and/or survey marker). *Kneeling may be minimized or avoided by substituting alternate positions of bending, squatting, or half kneeling.*

**15.) CRAWL:****MAXIMUM  
FREQUENCY:** Not Required

*Comments:* Crawling is not required to perform job tasks.

**16.) STAIR CLIMB:****MAXIMUM  
FREQUENCY:** Not Required

*Comments:* Stair climb is not required to perform job tasks. Public buildings offer elevators.

17.) **LADDER CLIMB:**

**MAXIMUM  
FREQUENCY:** Occasional

*Comments:* Ladder climbing is required to perform job tasks. (e.g. climb in/out of truck bed/cab up to 42 inches in height). Variables to overhead climbing will vary according to the employee's height and anthropometric reach.

18.) **WALK:**

**MAXIMUM  
FREQUENCY:** Frequent

*Comments:* Walking is performed when retrieving, returning, storing, moving, and/or transporting equipment and supplies (e.g. to/from meetings with collaborating agencies and/or colleagues; off-site job tasks, load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer; setup/take down cone, sign, and tripod survey equipment; worksite surveillance). Walking length varies between 3 feet and 500+ feet depending on job task.

19.) **SIT:**

**MAXIMUM  
FREQUENCY:** Constant

*Comments:* Sitting is performed for a maximum of 120-minute intervals when performing job tasks (e.g. desktop work; interview; drive vehicle; meetings with collaborating agencies and/or colleagues).

20.) **STAND: (Static)**

**MAXIMUM  
FREQUENCY:** Occasional

*Comments:* Static standing is performed for a maximum of 30-minute intervals when performing job tasks (e.g. survey work; meetings with collaborating agencies and/or colleagues; operate business machine, load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer; setup/take down, sign and tripod survey equipment; worksite surveillance).

21.) **BALANCE:**

**MAXIMUM  
FREQUENCY:** Frequent

*Comments:* Adequate balance is required for safe walking, standing, climbing, reaching and lifting.





22.) **HAND/FOOT CONTROL:**

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>HAND:</b>	
<b>Right:</b>	Occasional
<b>Left:</b>	Occasional
<b>Both:</b>	Occasional
<b>Either:</b>	Not Required
<b>FOOT:</b>	
<b>Right:</b>	Occasional
<b>Left:</b>	Seldom
<b>Both:</b>	Not Required
<b>Either:</b>	Not Required

*Comments:* Hand controls are utilized to operate equipment (e.g. vehicle, survey equipment, jack hammer) when adjusting controls (e.g. drive vehicle, survey). Foot controls are utilized to operate equipment (e.g. vehicle).

23.) **UPPER AND LOWER EXTREMITY COORDINATION:**

<b><u>MAXIMUM REQUIREMENT</u></b>	
<b>Simple Grasp:</b>	Frequent
<b>Firm Grasp:</b>	Occasional
<b>Fine Manipulation:</b>	Frequent
<b>Eye/Hand Coordination:</b>	Frequent
<b>Hand/Foot Coordination:</b>	Occasional

*Comments:* Grasping and coordination activities are performed when operating/retrieving, returning, storing, adjusting, moving, and/or transporting equipment, controls, and supplies (e.g. business machine; vehicle, load/unload equipment, survey staff placement, hand tool work, spray paint, jack hammer; cone, sign, and tripod survey equipment; desktop work, miscellaneous office equipment and survey components).

**Simple grasping** is utilized to perform job tasks (e.g. lift and manipulate objects weighing less than 5 pounds; file; handle document, binder; operate business machine; drive vehicle, load/unload equipment, survey staff placement, spray paint).

**Firm grasping** is utilized to perform job tasks (e.g. lift and handle objects weighing 5 pounds or greater; load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer; setup/take down cone, sign, and tripod survey equipment).

**Fine manipulation** is utilized to perform job tasks (e.g. keyboard, mouse; handwrite, sort, file, page turn; survey instrument adjustment).

**Eye/hand coordination** is utilized to perform job tasks (e.g. keyboard, mouse; handwrite, sort, file, page turn; drive vehicle; survey instrument placement and adjustment).

**Hand/foot coordination** is utilized to perform job tasks (e.g. drive vehicle).

*Depending on individual hand dominance, one hand may be used more frequently than the other when performing job tasks.*

24.) **CERVICAL (NECK) MOVEMENT:**

	<b><u>MAXIMUM REQUIREMENT</u></b>
<b>Static Neutral Position:</b>	Frequent
<b>Flexing:</b>	Frequent
<b>Rotating:</b>	Frequent
<b>Extending:</b>	Seldom

*Comments:* Neck movement is required when performing job tasks (e.g. survey and desktop work; meetings; drive vehicle, load/unload equipment, survey staff placement, hand tool work, spray paint, operate jack hammer; setup/take down cone, sign, and tripod survey equipment; locate monument; worksite surveillance ). *Participation in the observation of the work environment allows for safe working conditions. Full cervical range of motion is required to safely perform the job tasks.*

{End of Report}



# Stanislaus County

## JOB TASK ANALYSIS SUMMARY

<b><u>FREQUENCY DEFINITIONS</u></b>	<b><u>SELDOM</u></b>	<b><u>OCCASIONAL</u></b>	<b><u>FREQUENT</u></b>	<b><u>CONSTANT</u></b>
Percent of the Day	1-2%	3-33%	34-66%	67-100%
Material Handling	1-4 Reps	5-32 Reps	33-250 Reps	251-2,000 Reps
Non Material Handling	1-4 Reps	5-32 Reps	33-250 Reps	251-2,000 Reps
Repetitive & Static Work	1-50 Reps	51-250 Reps	251-1,000 Reps	1,001-20,000 Reps

The following is a summary of the physical demands of the Job Task Analysis that were obtained for the position of:

### SURVEYOR

Functional Activities	Maximum Requirements	Functional Activities	Maximum Requirements
<i>Push (Force)</i> <sup>1</sup>	35 pounds	<i>Stair Climb</i>	Not Required
<i>Pull (Force)</i> <sup>1</sup>	35 pounds	<i>Ladder Climb</i> <sup>1</sup>	Occasional
<i>Stand Up Lift</i> <sup>1</sup>	80 pounds	<i>Walk</i> <sup>1</sup>	Frequent
<i>Level Lift</i> <sup>1</sup>	80 pounds	<i>Sit</i> <sup>1</sup>	Constant
<i>Weight Carry</i> <sup>1</sup>	80 pounds	<i>Stand (Static)</i> <sup>1</sup>	Occasional
<i>Overhead Lift/Pull Down</i>	10 pounds	<i>Balance</i> <sup>1</sup>	Frequent
<i>Overhead Reach</i>	Seldom	<i>Hand Control</i> <sup>1</sup>	Occasional
<i>Forward Reach</i> <sup>1</sup>	Frequent	<i>Foot Control</i> <sup>1</sup>	Occasional
<i>Stoop</i> <sup>1</sup>	Seldom	<i>Simple Grasp</i> <sup>1</sup>	Frequent
<i>Squat (Unloaded)</i>	Seldom	<i>Firm Grasp</i> <sup>1</sup>	Occasional
<i>Forward Bend</i> <sup>1</sup>	Frequent	<i>Fine Manipulation</i> <sup>1</sup>	Frequent
<i>Twist</i> <sup>1</sup>	Occasional	<i>Eye/Hand Coordination</i> <sup>1</sup>	Frequent
<i>Turn</i> <sup>1</sup>	Occasional	<i>Hand/Foot Coordination</i> <sup>1</sup>	Occasional
<i>Kneel</i> <sup>1</sup>	Seldom	<i>Cervical (neck) Movement</i> <sup>1</sup>	Frequent
<i>Crawl</i>	Not Required		

<sup>1</sup> The critical demands of the job.

*Lyle Andersen, PT*

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 Lyle Andersen, PT, CWCE  
 Preparer Signature

Date: \_\_\_\_\_

\_\_\_\_\_  
 Contact Person  
 Title

Date: \_\_\_\_\_

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 Contact Person  
 Title

Date: \_\_\_\_\_

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Date: \_\_\_\_\_