



**DEPARTMENT:** James City Service Authority/Engineering

**NATURE OF WORK:**

Performs specialized and advanced technical work maintaining complex and multilevel mapping systems, with the use of Geographic Information System (GIS) technology. Involves routine digital geographic information processing and analysis; applies skills to a variety of projects, programs, and assignments focused around development and maintenance of the water and sanitary sewer components of the James City County GIS. Work is performed under the general supervision of the JCSA Chief Engineer for Water.

**ESSENTIAL FUNCTIONS OF THE JOB:**

Develops, revises, and maintains a wide variety of GIS generated map layers and cartographic products; performs the research and data collection necessary to compile, code, query, edit, and prepare computer generated maps for dissemination to members of the JCSA staff and private industry.

Participates in the collection of global positioning system (GPS) data for the water and sanitary sewer systems and incorporates that data into the County GIS.

Trains and directs operators in the utilization of GPS and GIS equipment, including their administrative responsibilities of acquiring and entering infrastructure data into the County's GIS system.

Sets standards and objectives for work unit. Administers all program areas to include procedural and record keeping requirements.

Trains and coordinates work with additional JCSA GIS and ArcView users.

Furnishes technical assistance to the JCSA Chief Engineers and technical personnel with assignments related to hydraulic modeling of water and sanitary sewer systems.

Performs CADD assignments on an as-needed basis to develop drawings, maps, and standard details for JCSA projects, presentations, and reports.

Participates in all phases of infrastructure services, including technical oversight and computer applications; review of plans and specifications for compliance with rules, regulations, and standards; and receives and responds to technical questions from engineers, contractors, County personnel, and general public.

Participates in the collection of engineering data; performs engineering computations and analysis of collected data; makes recommendations; and assists in the preparation of technical studies and reports.

Manages the record drawings and filing systems.

Identifies and makes recommendations for revisions to JCSA Standards and Specifications.

Assists in coordinating the review of development plans with County departments and public agencies.

Performs work safely in accordance with departmental safety procedures and the County Safety Program. Operates equipment safely and reports any unsafe work condition or practice to supervisor.

Performs related work as required.

### **JOB LOCATION AND EQUIPMENT OPERATED:**

Duties are performed primarily in an office while occasionally driving County vehicles to sites and facilities located throughout the County. Operates computer hardware/software related to County/JCSA GIS (Arcview) and CADD (Auto CAD), and other routine office applications. Requires occasional walking, sometimes over rough terrain.

### **REQUIRED KNOWLEDGE, SKILL, AND ABILITIES:**

Thorough knowledge of Geographic Information Systems, including the methods and techniques of map research, compilation, digitizing, editing, and production.

Thorough knowledge of computers, plotters and other associated hardware, computerized databases and data files.

Considerable knowledge of computer-aided drafting and mapping techniques, uses, and procedures.

Knowledge of engineering, design, and construction methods, techniques, and procedures.

Knowledge of the mathematical calculations used in the engineering and utility field.

Knowledge of surveying and related computations.

Ability to use computer hardware and software for engineering, technical, administrative, and computer-aided drawing applications.

Ability to organize project assignments, to obtain and apply data, and to analyze and process such information.

Ability to coordinate work with others.

Ability to establish and maintain effective working relationships with coworkers, County officials, consultants, contractors, and the general public.

Ability to communicate effectively, both orally and in writing; ability to perform technical writing.

Ability to perform physical activity, including walking, climbing, stooping, bending, and occasional lifting.

### **MINIMUM QUALIFICATIONS:**

Bachelors Degree in Engineering, Geography, Cartography, GIS Studies, or related field, or Associates Degree supplemented by technical level courses in Cartography, GIS, or related field, and considerable related work experience which shall have included experience in GIS mapping; or any equivalent combination of training and experience which provides the above knowledge, skills, and abilities.

**NECESSARY SPECIAL QUALIFICATIONS:**

Must possess a valid Virginia drivers license and have an acceptable driving record based upon James City County's criteria.

Date: April 2004  
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# IDENTIFICATION OF GENERAL APTITUDES AND PHYSICAL REQUIREMENTS

Position Title GIS Analyst Position Number 507  
Department JCSA Division Engineering

The Americans with Disabilities Act requires that we identify the general aptitudes and physical requirements needed to perform the job listed above. Individuals who have the position must be able to perform all essential job functions unaided or with reasonable accommodation.

**I. Mental Abilities:** General learning ability. The ability to “catch on” or understand instructions and underlying principles.

- Ability to understand and follow oral instruction
- Ability to understand and follow written instruction
- Ability to guide and/or give instructions
- Ability to make decisions in accordance with established procedures and policies
- “ Not essential to job function

**II. Verbal Abilities:** Ability to understand meanings of words and ideas associated with them and to use them effectively. To comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. To present information or ideas clearly.

## 1. Speaking/Talking:

- Answering telephone, radio, or switchboard
- Communicating with County officials
- Communicating with general public
- Communicating with vendors
- Communicating with supervisors and/or with other employees
- Communicating with others \_\_\_\_\_
- \_\_\_\_\_
- “ Not essential to job function

## 2. Hearing/Listening:

- For communication with County officials, public, vendors, supervisors and/or other employees
- “ Not essential to job function

## 3. Reading: (ability to read and understand text)

- Essential to job function
- “ Not essential to job function

**III. Numerical:** Ability to perform arithmetic operations quickly and accurately.

- ⋮ Ability to mentally perform accurate two digit calculations
- ⋮ Ability to perform accurate calculations aided by a calculator, adding machine or measurement device

**IV. Spatial Abilities:** Ability to comprehend forms in space and understand relationships of plane and solid objects. May be used in such tasks as blue print reading and in solving geometry problems. Frequently described as the ability to “visualize” objects of two or three dimensions, or to think visually of geometric forms.

- ⋮ Essential function
- “ Not essential function

**V. Motor Coordination:** Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and quickly.

1. **Manual Dexterity:** Ability to move the hands easily and skillfully. To work with the hands in placing and turning motions.

- |                      |  |
|----------------------|--|
| ⋮ Use telephone      | ⋮ Manipulate computer keyboard and mouse |
| “ Use switchboard    | “ Use postage machine                    |
| “ Use radio/console  | “ Use hand tools                         |
| ⋮ Use a calculator   | “ Use power tools                        |
| ⋮ Use a copy machine | ⋮ Other: <u>Digitizer, plotter</u>       |
| ⋮ Use a fax machine  | “ Not essential to job function          |

2. **Finger Dexterity:** Ability to move the fingers and manipulate small objects with the fingers rapidly or accurately. For example: electrical wiring.

- ⋮ Essential to job function
- ‘ Not essential to job function

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VI. Physical Demands:**

1. **Strength:** The quality, state or property of being strong. The power to withstand strain, force or stress.

Please check (U) in appropriate boxes below.

Ability to manipulate materials and/or equipment (lbs)							Frequency of Manipulation		
	5!	5-10	10-15	15-25	25-50	50%	Occasionally	Frequently	Continuously
<b>Lift</b>			<b>U</b>				<b>U</b>		
<b>Push/Pull</b>									
<b>Hold/Carry</b>			<b>U</b>				<b>U</b>		

Manipulation done from: : ground to waist " waist level : waist to shoulder " above shoulder  
(Check all that apply)

Not essential to job function: " Lift : Push/Pull " Hold/Carry (Check all that apply)

2. **Climbing:** To move up or mount by using the hands or feet.

<u>Ladders</u>	<u>Stairways</u>	<u>Steps</u>
" Step stool	" 1 flight	" 1-2
" 8' to 10' step ladder	" 2 flights	" 2-3
" Extension ladder	" 3 or more flights	" 3-4
" Other _____	" Other _____	" Other _____
" Not essential to job function	" Not essential to job function	" Not essential to job function

3. **Ability to Stand, Sit, Walk, and Run:**

Please check (U) in appropriate boxes below.

	Duration (hours/day)						Occasionally	Frequently	Continuously
	0-1	1-3	3-5	5-7	7-9	9%			
<b>Stand</b>		<b>U</b>						<b>U</b>	
<b>Sit</b>		<b>U</b>						<b>U</b>	
<b>Walk</b>	<b>U</b>						<b>U</b>		
<b>Run</b>									

If walking or running, over what type of terrain? : flat " rough " both

Not essential to job function: " Stand " Sit " Walk : Run (Check all that apply)

**4. Stooping, Kneeling, Crouching, and /or Crawling:**

To bend forward or down from the middle of the waist or the middle of the back, to bend downwards, to lower oneself and/or to move freely on hands and knees.

**Daily Amounts**

: 0-5x           " 5-20x           " 20-50x           " 50+x  
 " Other \_\_\_\_\_           " Not essential to job function

**5. Reaching, Handling, Fingering, and/or Feeling:**

To stretch out, extend, or put forth a bodily part. To touch or grasp something, by extending or stretching. To touch, lift, hold or operate with the hands.

**Daily Amounts**

" 0-5x           " 5-20x           : 20-50x           " 50+x  
 " Other \_\_\_\_\_           " Not essential to job function

**6. Seeing: To perceive or comprehend by the sense of sight.**

Essential to job function: These characteristics are necessary (Check all that apply)

- " Peripheral vision
- " Night vision
- : Focus (distinctness or clarity)
- : Color perception (discriminate between colors)
- : Depth perception (determine distance relationship between objects)

**VII. Driving: The ability to transfer or convey in a vehicle.**

<u>Transmission</u>	<u>Standard</u>	<u>Automatic</u>	<u>Multi-Gears</u>
Car	"	:	"
Van	"	"	"
Small Truck	"	"	"
Medium Truck	"	"	"
Large Truck	"	"	"
Truck w/Equipment	"	"	"
Heavy Bus Equipment	"	"	"
Not essential to job function	"	"	"
Other (list) _____			

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