Reclassification

Ministry

Transportation and Economic Corridors

Describe: Basic Job Details

Position

Position ID

Position Name (30 characters)

GIS Applications Specialist

Current Class

Requested Class

Technologies 6

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Organizational Structure

Division, Branch/Unit

CPGES, Planning and Program Management

☐ Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

Design: Identify Job Duties and Value

Changes Since Last Reviewed

Date yyyy-mm-dd

2025-02-18

Responsibilities Added:

Added a job outcome and activities for providing data to consultants working on TEC projects.

Responsibilities Removed:

Job Purpose and Organizational Context

Why the job exists:

This position supports maintaining safe and effective transportation systems by providing geographic information systems (GIS) services and expertise for Transportation and Economic Corridors (TEC).

The position provides technical expertise for TEC in the development and maintenance of GIS applications

and databases that support department employees in the effective delivery of policy, planning, engineering, maintenance, and programming.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1) Develop and maintain GIS applications that support TEC in the delivery of policy, planning, engineering, maintenance, and programming by:
- Working directly with subject matter experts in TEC to determine how best GIS applications can be used to support their outcomes and goals by conducting user-interviews, applying good practices of user-experience design, and leading the gathering of technical requirements that meets the needs of TEC staff.
- Applying technical expertise in transforming legacy systems into modern GIS applications using advanced GIS tools.
- Writing road maps, technical requirements, and maintenance plans in developing small to ministry-scale GIS applications.
- Using design thinking, product thinking, and system thinking to test the feasibility, viability, and usability of ideas when developing applications, and gathering feedback faster.
- Providing technical support and leadership in developing strategies for GIS applications and adoption within TEC by with presentations, engagement, and relationship-building with stakeholders.
- Developing customized training for using GIS applications such as ArcGIS Portal- Fieldmaps, Survey 123, etc.
- Maintaining and updating existing GIS applications, and integrating other non-GIS systems.

2) Maintain and publish TEC's GIS databases with the latest reliable data to enable data-driven decision-making within the department by:
- Supporting GIS databases with the latest field data collection that shows changes to the transportation network.
- Troubleshooting and preventing errors in GIS databases.
- Utilizing FME Form/Flow, Python programming, and ArcGIS Pro for data cleaning, updating, and transforming datasets.
- Publishing accurate, accessible, and up-to-date datasets to ArcGIS Portal, and ArcGIS Online.
- Actively collecting, reviewing, validating, creating, and managing datasets that support data-driven knowledge of the transportation network and enhance GIS applications.
- Communicating updates about TEC GIS datasets to relevant stakeholders.
- Writing metadata to published datasets and sharing data appropriately to relevant groups, and/or the public.
- Writing documents and applying best practices in creating, improving performance, and maintaining datasets.

3) Use new and current technologies, tools, techniques, and practices for GIS and data collection programs to optimize and enhance comprehension, decision-making, and resources by:
- Staying up-to-date on latest innovations for creating GIS applications and technological changes in data collection through formal and informal training, research, conferences, GIS communities of practice, and information sharing with colleagues and industry experts.
- Using advanced GIS analysis tools to support TEC.
- Creating prototype GIS products from new technologies that meets the business outcomes and helps in understanding of new technologies.
- Identifying, initiating, and prioritizing information system products and work flows to improve the work being carried out by the GIS unit and other business areas.
- Preparing specifications, terms of reference, and evaluating proposals for consultants to develop enhancements of applications and systems.
- Performing project or product management and developing system architecture recommendations for specialized scoped projects, including GIS application development and enhancements in the delivery of GIS.
- Recommending changes and assessing impacts on business processes and spatial data management.

4) Apply highly technical expertise and knowledge to ensure TEC's GIS Unit is a one-stop shop for all

GIS services by:
- Collaborating with other GIS specialists and subject matter experts from other ministries to identify new datasets that can enhance TEC's GIS databases and services.
- Helping in user-acceptance testing of new GIS technologies that the ministry may acquire.
- Undertaking new training to improve skill sets, thereby adding new GIS services and enhancing current services of TEC's GIS Unit.
- Developing external (application that requires access by external organization) and public facing application that can help TEC in their communication of projects, programs, and operations.
- Preparing interactive dashboards, static maps, and other data products (spreadsheets, shapefile etc.) as needed, by taking a lead role and working directly with TEC staff to determine their mapping needs.
- Developing custom tools using python, and FME that helps in operational efficiency, enhance analysis, and improve data governance.
- Delivering plots and maintaining the plotter(s) by loading paper, replacing ink cartridges, and ensuring sufficient supplies are available.

5) Support consultants working on TEC projects that need to use geospatial data by:
- Working with consultant to define the data they need.
- Identifying tools and processes for sending data, including large data sets, to consultants.
- Distributing data to consultants, which may consist of clipping raster, vector or CADD data.
- Ensuring that data is projected to the correct coordinate system for the project.
- Preparing, organizing, and managing data sharing agreements with consultants for 3rd party data.
- Coordinating with the Provincial Geospatial Centre on issues related to 3rd party data.
- Answering queries from consultants regarding the geospatial that is provided and available.

Problem Solving

Typical problems solved:

The general performance and type of problems encountered in this position are primarily determined by stakeholder's satisfaction in the data and information products they receive. The following problems may occur which the position must take action to rectify.

Information Management - data is a valuable asset that requires principles similar to other transportation asset life-cycle management processes. Problems may be encountered when hosting large data sets, tracking data, archiving old data, providing access to data, source of truth, etc. Verification and debugging are common activities used to determine the root cause of data problem and may require assistance from analysts and IT technologist. Maintaining a good information management system at it's source can help reduce these errors and problems.

Accuracy - stakeholders are concerned about the accuracy of data, whether it is representative for the work they are undertaking or it is properly located on the network within a certain tolerance. Proper calibration of equipment or computer system issues can lead to accuracy problems or gaps and may need to be traced back to the source. This requires cooperation from data stewards across the department which may be outside the incumbent's management and control.

Client Management - Clients requesting GIS applications may have unrealistic expectations that need to be managed. Workflows around defining project expectations and roles, project intake, and project management can help with managing client expectations.

Types of guidance available for problem solving:

Guidance for problem solving is found through collaborative relationships such as with Alberta Geospatial Services in Technology and Innovation, the Provincial Geospatial Centre in Environment and Protected Areas, other GIS teams in the Government of Alberta, and subject matter experts in Transportation and Economic Corridors. Additionally, guidance can be sought from other staff in the GIS unit. Finally, experts in the private sector and academia may also provide guidance, such as for issues related to specialized GIS technology and applications.

Direct or indirect impacts of decisions:

The impact of decisions related to this position are ministry wide due to its responsibility for current,

accurate, and complete data contained within enterprise systems and applications such as the Transportation Infrastructure Management System, document management, and others alike. Results support policy, planning, and operational functions; as well as managers, engineers, planners, policy makers, and technologists within the ministry, other government ministries, and private and public entities.

Key Relationships

Major stakeholders and purpose of interactions:

Transportation and Economic Corridors Divisions and Branches - within the scope of geographic information management, providing input into principles, practices, guidelines, standards and protocols associated with business workflows related to data collection and upkeep of geographic information system. Supporting staff through the collection of information products that drive understanding, decision making and innovation. Interacting within the transportation and information management context to create innovative ideas and solutions and to broaden the knowledge base.

Technology and Innovation's Alberta Geospatial Services - through monitoring technical, data, and application architecture standards and jointly make recommendations. Developing geo-information pilot projects (research and development) through assisting in research and development, and transportation and information contracts.

Environment and Protected Areas' Provincial Geospatial Centre - through acquiring and setting standards for geo-spatial and remote sensing contracts, by reviewing and accepting deliverables that impact the department, other Ministries, and the public users (e.g.; satellite imagery, aerial photography, map base products, etc.).

GeoDiscover - administering and providing updates to information products related to transportation for government's open data portal.

GIS Community - Collaborating on committees, other GIS programs, geospatial/geomatics companies and industry regarding collection, information sharing, technology trends and standards regarding information management and data gathering systems.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Diploma (2 year)	Science	Other	Other

If other, specify:

Diploma or degree related to Geographic Information Systems (GIS)

Job-specific experience, technical competencies, certification and/or training:

Requires a two-year diploma and 6 years of related experience in GIS or a degree and 4 years of related experience in GIS.

Requires working knowledge of:
- GIS software;
- GIS business cycle (database modelling/desing, gathering, analysis, and output); and
- GIS applications design and development.

This position also requires:
- Excellent communication skills;
- Ability to build and maintain strong client relationships;
- Ability to work independently and as a team member;
- Ability to work within a multidisciplinary team; and
- Time management and organization skills.

The following analytical skills, knowledge, and abilities are an asset in this position:
- Computer-aided design software (Microstation and AutoCAD).

- Computer programming (e.g., Arcade Expression, SQL, and Python scripting).
- The functionality and operation of geospatial information systems, such as the Transportation Infrastructure Management System (TIMS) and the Alberta Geospatial Portal, and the data it contains.
- Interpreting data models and good data management to ensure that data is being entered correctly and that new situations are correctly interpreted.
- The Alberta Township System (ATS) and cadastral mapping.
- Photogrammetry, remote sensing (aerial, satellite, and ground based), and positioning and navigation (GPS, GNSS, etc.) systems.
- Knowledge of highway and bridge design, construction practices, and department procedures.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job
Build Collaborative Environments	○ ◉ ○ ○ ○	Facilitates open communication and leverages team skill: • Leverages skills and knowledge of others • Genuinely values and learns from others • Facilitates open and respectful conflict resolution • Recognizes and appreciates others	The position must work with department staff and consultants with a variety of knowledge and expertise to leverage their skills and abilities to achieve outcomes. The specialist must ensure there is open communication between all partners.
Creative Problem Solving	○ ◉ ○ ○ ○	Focuses on continuous improvement and increasing breadth of insight: • Asks questions to understand a problem • Looks for new ways to improve results and activities • Explores different work methods and what made projects successful; shares learning • Collects breadth of data and perspectives to make choices	The position creates and implements GIS solutions that allows business users across the department to understand, visualize, and analyze geo-information.
Develop Networks	○ ◉ ○ ○ ○	Works on maintaining close relations with all stakeholders: • Identifies key stakeholder relationships • Has contact with range of interested parties • Actively incorporates needs of a broader group • Influences others through communication techniques	This position coordinates geospatial information needs across the department, across ministries and through industry to effectively manage and disseminate information and support other's GIS needs.

| Systems Thinking | ○ ◉ ○ ○ ○ | Considers inter-relationships and emerging trends to attain goals:
• Seeks insight on implications of different options
• Analyzes long-term outcomes, focus on goals and values
• Identifies unintended consequences | This position effectively understands geospatial needs across the department to properly validate and disseminate geo-spatial information to support various business functions and processes. |

Benchmarks

List 1-2 potential comparable Government of Alberta: Benchmark

Assign

The signatures below indicate that all parties have read and agree that the job description accurately reflects the work assigned and required in the organization.