STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
POSITION DUTY STATEMENT
PM-0924 (REV 01/2022)

CLASSIFICATION TITLE	OFFICE/BRANCH/SECTION	
Research Data Specialist III	HQ Asset Management	
WORKING TITLE	POSITION NUMBER	REVISION DATE
TAM & TAMS Business Intelligence & Geospatial Specialist	913-660-5770-918	01/29/2025

As a valued member of the Caltrans leadership team, you make it possible for the Department to provide a safe and reliable transportation network that serves all people and respects the environment.

GENERAL STATEMENT:

Under the general direction of the Office Chief, Asset Management Systems and Administration, a Staff Services Manger III, the incumbent is responsible for establishing and maintaining the framework and suite of business intelligence (BI) dashboards, visualizations, geospatial information system (GIS), and data products to support infrastructure investment decisions for assets, needs, projects and programs. The incumbent is the technical lead on website development of BI and GIS tools and development of scripts to automate data connections to these tools.

The incumbent is the technical lead for Transportation Asset Management Systems (TAMS) BI and GIS implementation covering data governance, data documentation, data quality, developing data standards and data publishing. The incumbent is the TAMS data custodian and develops and manages the TAMS data quality management plan and associated training and support to the TAMS help desk. The incumbent will support the development and implementation of Transportation Asset Management (TAM) and TAMS geospatial and GIS visualization and will collaborate on BI and GIS integrations. The incumbent works closely and collaboratively with a diverse set of internal and external transportation managers, staff, partners, and stakeholders in the development, implementation, and adoption of enterprise-level Asset Management BI and GIS policy, procedures, guidance, standards, and platforms in the department. The position requires the ability to work independently, meet deadlines on a regular basis, and work with all levels of staff in the Department.

CORE COMPETENCIES:
As a Research Data Specialist III, the incumbent is expected to become proficient in the following competencies as described below in order to successfully perform the essential functions of the job, while adhering to and promoting the Department's Mission, Vision, Values, Strategic Imperatives and Goals. Effective development of the identified Core Competencies fosters the advancement of the following Leadership Competencies: Change Commitment, Risk Appetite, Self-Development/Growth, Conflict Management, Relationship Building, Organizational Awareness, Communication, Strategic Perspective, and Results Driven.

- **Creativity and Innovation:** Thinks beyond the confines of traditional models to recognize opportunities, seek creative solutions and take intelligent risks. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Innovation, Integrity, Pride)

- **Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Strengthen Stewardship and Drive Efficiency - Equity, Innovation, Integrity)

- **Initiative:** Ability to identify what needs to be done and doing it before being asked or required by the situation. Seeks out others involved in a situation to learn their perspectives. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Innovation, Integrity, Pride)

- **Problem-solving and Decision-making :** Identifies problems and uses logical analysis to find information, understand causes, and evaluate and select or recommend best possible courses of action. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation)

- **Teamwork and Collaboration:** Sets team structure. Organizes, leads, and facilitates team activities. Promotes team cooperation and encourages participation. Capable of cross functionality and working well with others on a team to achieve personal goals, team goals, and organizational goals. Takes responsibility for individual actions in order to achieve consistent results. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation, Integrity)

- **Customer Focus:** Considers, prioritizes, and takes action on the needs of both internal and external customers. (Cultivate Excellence - Engagement, Innovation, Integrity)

- **Communication:** Expresses oneself clearly in all forms of communication. Gives feedback and is receptive to feedback received. Knows that listening is essential. Keeps others in the Division and other functional units informed as appropriate. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation, Integrity)

- **Conceptual Thinking:** Ability to find effective solutions to issues by taking the appropriate perspective (i.e., holistic, abstract, or theoretical). (Safety First, Cultivate Excellence, Enhance and Connect the Multimodal Transportation Network, Strengthen Stewardship and Drive Efficiency, Lead Climate Action, Advance Equity and Livability in all Communities - Engagement, Equity, Innovation, Integrity)

- **Business Acumen:** Ability to perform essential functions of position with insight, acuteness, and intelligence in the applicable areas of commerce and/or industry. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation, Integrity)

TYPICAL DUTIES:

Percentage Essential (E)/Marginal (M)[1]		Job Description
35%	E	**TAM BI and GIS Research, Analysis and Models:**

The incumbent will determine the scope and parameters of TAM BI and GIS research, analysis, development, and implementation using innovative methods for collecting, analyzing, implementing, reporting, and publishing of TAM BI and GIS data, solutions, models for transportation most complex challenges. The incumbent works with TAM data consumers and other stakeholders to maximize the value of collected data to ensures data collection efforts are not duplicated across multiple business areas. The incumbent TAM BI and GIS solutions and outcomes are used to advise department officials and state leaders in areas where programs or systems are being proposed or about existing programs with major impacts. The incumbent will work closely with the Geospatial Data Officer on data governance issues and with BI and GIS experts, and other business areas within Caltrans to learn about current and future needs, current tools being utilized, and explores, recommends, and implements new tools and models for analyzing and visualizing a variety of data to meet diverse TAM business needs. Ensure compliance with data governance practices, guidance, and standards.

The incumbent provides statewide TAM guidance on development, integration and management of department TAM BI and GIS solutions, TAMS database, and web applications. Duties include collecting, processing, validating, publishing BI and GIS dashboards and visualizations for asset, need, project, portfolio, and other data sets. The incumbent conducts the most complex analyses using various datasets and identifies new strategies or sources for collecting data and assessing patterns, analyzing past and present trends to forecast future impacts, and develops BI and GIS innovative solutions and models. The incumbent builds, maintains, and modifies TAM BI and GIS tools to effectively deliver information and data to stakeholders including Caltrans management and staff, legislators, partners, and the public for Asset Management.

This position will develop data and information including: working on software changes for tabular and geospatial data collection (for current tools and in TAMS), data quality, and training. This work includes data analysis, geospatial analysis, migration, and integration of data elements for assets and objectives for new and existing programs for use in TAMS.

30%	E	TAMS Enterprise BI and GIS Expert:

TAMS Enterprise BI and GIS Expert:
The incumbent leads development, implementation, and management of TAMS enterprise BI and GIS solutions and provides guidance to Districts, Headquarters Programs, and asset management experts. Duties include development of TAM and TAMS BI workflows, tools, models, custom applications, and management and implementation of TAM enterprise BI and GIS dashboards, visualizations, and web services.

The incumbent is the TAMS data custodian. Duties include developing, implementing, and managing TAMS data governance, policy, procedures, guidance, and standards including TAMS data documentation, data quality, BI and GIS publishing, and training. The incumbent manages TAMS BI and GIS data integration, migration, and implementation of statewide TAM data and provides direction to TAMS vendors during the TAMS implementation. The incumbent will assist in the design and testing of TAMS high-end applications and integration with existing BI and GIS dashboards and visualizations. The incumbent develops, implements, and manages the TAM and TAMS data quality management plan (DQMP), DQMP action plan, and strategies to improve data maturity models. The incumbent ensures complete data and system documentation such as, but not limited to, meta-data, data dictionaries, data flow diagrams, business rules, data quality management plans, and other data governance documents.

The Incumbent works with the responsible Business Data Steward to develop TAMS data quality management plan for data collection effort. The incumbent obtains and analyzes geospatial and tabular data sets, identifies and implement data mining and forensic technologies. The incumbent develops and manages TAMS data quality business rules for quality checks and/or data validation, and data processes for defect tracking and reporting. The incumbent develops and implements ongoing TAMS and BI and GIS training on appropriate workflows, data quality processes and provides TAMS help desk support. The incumbent works with the TAMS vendor to develop and provides ongoing management of TAMS data schema, data loading and transfers, data validation, and database administration including data backup, recovery, and data access. The incumbent develops technical BI and GIS products such as data validation scripts, extract-transform-load scripts, and data views or services and flags issues for the Business Data Steward relating to conflicting or inconsistent direction about database design, data definitions, data access, and data publishing. The incumbent ensures that data entered or loaded into agency systems adhere to established business rules for timeliness and accuracy and are consistent with field definitions and other standards assigned to the data items. The incumbent adhere to security protocols for managing and protecting sensitive or confidential data.

20%	E	BI and GIS Coordination, Communication, Partnerships, and Committees:

The incumbent is the TAM BI and GIS expert and works with a diverse set of disciplines including other BI and geospatial/GIS professionals, Information Technology managers and technical specialists, technology consultants, developers, executives, program staff, external agencies and Caltrans partners and stakeholders. Duties include writing technical and general documentation and reports, making presentations to management and other stakeholders, making informed recommendations regarding the direction and use of TAM and TAMS BI and GIS solutions, providing regular communication, and facilitation of TAMS and BI and GIS training as needed for their success.

The incumbent works closely and collaboratively with a diverse set of internal and external transportation officials, state, federal and local leaders, and transportation partners and stakeholders in the development, implementation and adoption of enterprise-level TAM BI and GIS strategic planning, policies, procedures, guidance, standards, and solutions in the department. The incumbent uses outcomes to advise department transportation leaders in areas where program BI and GIS activities, solutions, or systems are being proposed or about existing programs with a transportation impact. The incumbent supports the statewide interests of Caltrans through close active collaboration with District and Headquarters Program subject matter experts.

The incumbent is the TAMS Data Custodian, serves on statewide technical committees, assists the Enterprise Data Steward Committee, represents TAM on committee working groups in development of initiatives, and keeps the Enterprise and Business Data Steward informed about data quality issues and potential solutions. The incumbent develops enterprise strategies for data governance and management improvements. The incumbent participates and leads improvement teams regarding how data are defined, collected, maintained, classified, harmonized, shared, and used. The incumbent resolves cross business unit issues relating to sharing, reconciling, or integrating TAM data.

10%	E	Technical Development:

The incumbent performs the most complex and challenging software and web development using development languages such as VB.NET, Javascript, Python, SQL and HTML in support of the district's BI tools and other user applications. Applications will draw data from files, databases, and web (REST) services and Application Programming Interfaces (APIs). The incumbent provides full documentation within any code as well as in desk reference manual form.

5%	M	Program Support:

The incumbent will support the development and implementation TAM and TAMS within Caltrans. This position will assist in technical writing and communication supporting TAM.

[1]ESSENTIAL FUNCTIONS are the core duties of the position that cannot be reassigned.
 MARGINAL FUNCTIONS are the minor tasks of the position that can be assigned to others.

SUPERVISION OR GUIDANCE EXERCISED OVER OTHERS
This position does not supervise other employees. The position may act as lead for volunteers, student assistants, interns, and contractors and may provide guidance to teams working in or with the Asset Management Program. This position may also act on behalf of an absent Staff Services Manager III for a short duration.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS
KNOWLEDGE OF: Asset management principles. Departmental policies and procedures, State, federal and departmental regulations. Data analysis methods and techniques including gathering and collection of structured and unstructured data; trend analysis procedures; advanced mathematical techniques and descriptive statistical analysis techniques and methods; software to prepare summaries, reports, charts, and tables; practices required to ensure and maintain data security, including securely transmitting confidential data; experimental design procedures; current data analytics processes, including the utilization of business intelligence software programs; broad principles of algorithms, data structures, and data management; organizational analysis including data presentation and interpretation; principles and procedures of forecasting, and of research planning, design, methodology; benefit-cost analysis; application of computerized models to research data, statistical and other methods used in the analysis. Principles, concepts and terminology used in research, planning studies and investigations; design and implementation of research-related projects; principles and concepts applied in research and statistical settings; principles and concepts appropriate to data and research techniques and methodologies; operations research methods; survey methods and analytical techniques; complex database design and structure to understand and complete research projects and assignments;

advanced automated processes for capturing data and applying quality control procedures to design and implement complex research projects; and function as lead for complex large scale research projects. Time management techniques to provide for efficient prioritization and completion of projects and assignments; problem solving techniques and processes to facilitate the identification and resolution of issues related to the completion of work assignments; project management principles to design projects (e.g., define schedules, tasks, milestones, deliverables), monitor project progress, and conduct final project evaluation; current leadership techniques and their application to ensure effective oversight of project team members. Responsibilities defined in Deputy Directive 120 (DD-120); data governance roles and responsibilities as defined by CTDATA; CTDATA practices and data element standards including, but not limited to, meta-data, data dictionary, and data quality management plans; and of data security requirements and practices; and of who to contact within their District or Business Area for help with data governance or management issues.

Techniques, methodologies, principles and procedures of geographic information systems and linear referencing; expertise in ESRI suite of applications and specialized tools, including web publishing and custom applications development platforms; database design and management techniques; computer programming for geographic analysis and applications and associated documentation; workflow documentation; developing and providing training; developing presentation materials; concepts of and terms used in engineering and planning; the Department's post-mile system; the Department's Transportation System Network application and database; project management and application development methodologies and tools; Microsoft Outlook, Microsoft Office suite, and relational database management systems such as Oracle database (11g or greater) or PostGIS SQL; programming languages such as Javascript and Python; and web development utilizing application programming interfaces. Must have experience with tools necessary for analysis and presentation of complex transportation data, such as advanced spreadsheet functions, numerical analysis software, database systems, geographic information systems, scripting/programming languages, or other analytical tools.

ABILITY TO: Understand, describe, and report business area data governance issues to the Business Data Steward; understand and implement CTDATA practices and data element standards as well as data security best practices within the databases containing data for which they are identified as the custodian; read, write and communicate data in context, including an understanding of data sources, and the ability to describe the use case, application and resulting value; understand data quality concepts, to create, maintain and implement a data quality management plan, and to track and report data quality metrics; apply data quality best practices for their data collection or data entry task, including correcting errors.
Translate departmental policy into action programs and/or test the impact of policy changes; translate legislatively mandated program evaluation requirements into methodically rigorous study designs.
Conduct and interpret descriptive statistical analyses using appropriate software to test research hypotheses and to formulate conclusions and recommendations; analyze written and numerical data regarding general governmental problems; develop and evaluate alternatives, recommendations, solutions, and conclusions or approaches to research problems; query, mine, analyze, and manipulate data; design and validate studies and analyze the accuracy of data collected; analyze quantitative and qualitative data to reach sound conclusions and/or make recommendations; identify improvements and originate and develop new solutions which depart from traditional and existing patterns; reason logically and creatively and use a variety of analytical techniques to resolve or provide information regarding complex research and data problems; identify required data, information, materials, and resources needed to complete/perform a project; identify data needs of complex analyses and evaluate adequacy of existing data to meet these needs; design and test complex data base structures for storage and manipulation; access and process data located on large databases, servers, mainframes and/or desktop computers; analyze and evaluate the impact of programs, procedures, business processes, and/or policies; determine how a system or process works and how utilizing new inputs, operations, and environmental conditions would affect outcomes; develop procedures for collection and integration of data sources; function as a technical lead for complex projects to ensure timely completion; provide technical assistance to professional personnel; analyze and evaluate the impact of changes to existing programs, procedures, business processes, and/or policies; analyze situations accurately and take effective action at the appropriate time; present complex quantitative and qualitative data visually using charts, graphs, tables, and other appropriate methods in order to complete reports and/or develop presentations; design and implement advanced automated processes utilizing statistical software for capturing data and applying quality control procedures to design and implement research projects work on multiple projects and assignments simultaneously to finish assignments on time and within budget.

Research, gather, compile, and analyze structured and unstructured data; prepare research and statistical reports; adapt and apply formal research methods and principles to research problems; plan and carry out large scale research and data projects; prepare and present reports and data models; conduct and interpret descriptive and/or inferential statistical analyses using appropriate software to test research hypotheses and to formulate conclusions and recommendations; adapt and apply complex research methods and principles to research problems of an applied practical nature; design and conduct a complex research project and/or validating studies; conduct program evaluation studies including the systematic analysis of program requirements,

goals, and outcomes to ensure program effectiveness; develop documents related to data processing and analysis procedures for research projects and assignments to be used as a future resource; evaluate the adequacy and merit of proposed research and evaluation study designs and techniques; design and develop research methodologies required to ensure the collection and analysis of appropriate, meaningful, and unbiased data.

Manage a workload consisting of multiple projects and assignments; complete work under critical timelines to meet project objectives and deadlines; develop and prioritize short-range and long-range plans and schedules that coordinate with operating goals and objectives of the department.

Communicate and present ideas and information effectively both orally and in writing to individuals and groups; write clear and concise studies and reports; establish and maintain cooperative relationships with others, and with stakeholders; communicate with internal and external stakeholders with diplomacy and tact, especially concerning difficult and sensitive issues; be objective and flexible to adapt to changes in priorities and work assignments; and gain and maintain the confidence and cooperation of others, collaborate, and work in multidisciplinary teams; consult with and advise administrators or other interested parties on a wide variety of subject-matter areas; recognize when issues, activities, and/or decisions need to be elevated to management; provide expert consultation on the feasibility impact or potential of a variety of operations, projects or proposals to the department and to other organizations; provide mentoring to staff; facilitate meetings and discussions in a manner that ensures participants remain focused on the intended topic and encourages active participation.

Independently and successfully perform complex research, development, implementation, documentation and analysis efforts centered around active transportation, asset management, complete streets deficiency modeling, handling of data (e.g., database design and operation) and custom application development involving various types of digital spatial data and techniques and methodologies associated with GIS, use of both Commercial and Open Source off the shelf (COTS) GIS tools (e.g. Environmental Systems Research Institute Inc. (ESRI) GIS software for both desktop and server environments as well as familiarity with CADD). The incumbent also will need to be equally able to use office automation tools such as ArcGIS desktop and server products, custom applications written in a variety of platforms and languages, prepare reports and present information publicly; communicate effectively, establish and maintain friendly and cooperative relations with those contacted, successfully follow direction and complete assignments, and keep the Office Chief informed and involved.

ANALYTICAL REQUIREMENTS: Analyze business needs to determine requirements. Analyze requirements to determine alternative solutions. Analyze alternative solutions to determine preferred solution. Analyze project management and application design and development methodologies and tools to improve efficiency and cost effectiveness. Analyze various spatial data sets using complex spatial techniques.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR
The TAMS Business Intelligence and Geospatial Specialist will perform BI and GIS analysis of asset, needs, project and portfolio impacting financial and performance information. The analysis performed and tools developed may affect billions of dollars of transportation investment decisions annually as well as local and regional partners. Advice and guidance provided to HQ and district managers and staff may affect positively or negatively the investments and performance targets.

PUBLIC AND INTERNAL CONTACTS
The TAMS Business Intelligence and Geospatial Specialist has contact with headquarters and district asset management staff, all levels of internal staff and external partners and stakeholders. Considerable time may be spent researching or answering questions by telephone or computer. Attendance, participation, and presentations at internal and external meetings, task forces and internal and external meetings may also be required.

This position has contacts with BI and GIS users, department officials and state leaders, and others in headquarters divisions and districts. There will be occasional contact with BI and GIS professionals from public agencies and the private sector to coordinate efforts and share experience and knowledge.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS
Must have the ability to work on a keyboard and video display terminal, have manual dexterity, sit for long periods, develop and maintain cooperative relationship and the ability to focus for long periods of time. Must be able to move laptop and related computer equipment between office and remote work sites. Some bending, stooping, kneeling and light lifting is required to operate specialized equipment used for data gathering. Must be able to multi-task, manage distractions, adapt to changes in priorities, and complete tasks or projects with short notice. Must deal effectively with pressure, maintain focus, and remain optimistic and persistent under adversity. Must be considerate and respond appropriately to the needs, feelings and capabilities of different people in different situations and be tactful and treat others with respect. Must remain alert in lengthy meetings to collect information. The incumbent must have the ability to develop and maintain cooperative working relationships, respond appropriately to difficult questions and situations, and display respect for others in all contact opportunities.

WORK ENVIRONMENT
Employee will work in a climate-controlled office under artificial light when in the office. However, because of periodic problems with the heating and air conditioning, the building temperature may fluctuate. The incumbent may be asked to telework for extended periods of time based on state requirements and will be requested to work in the office based on the business needs of the TAM office. Infrequent travel may be required to various districts statewide.

I have read, understand and can perform the duties listed above. (If you believe you may require reasonable accommodation, please discuss this with your hiring supervisor. If you are unsure whether you require reasonable accommodation, inform the hiring supervisor who will discuss your concerns with the Reasonable Accommodation Coordinator.)

EMPLOYEE (Print)

EMPLOYEE (Signature)	DATE

I have discussed the duties with, and provided a copy of this duty statement to the employee named above.

SUPERVISOR (Print)

SUPERVISOR (Signature)	DATE