

**MINETA SAN JOSE INTERNATIONAL AIRPORT
GIS DATA SUBMITTAL SPECIFICATION**

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	INTRODUCTION	2
1.1	Purpose	2
1.2	Scope	2
1.3	Reference Documents	2
2.0	REQUIREMENTS FOR GIS DATA SUBMITTALS	3
2.1	Submittal Milestones	3
2.2	File Formats	3
2.3	Data Standards	3
	2.3.1 Graphic Spatial Feature Layering	4
	2.3.2 Feature Data Attributes	4
	2.3.3 Custom Airport Coordinate Grid System	4
2.4	Metadata	5
2.5	Media and Compression	5
2.6	Quality Control & Quality Assurance (QC/QA)	5
2.7	Conditional Contract Payment Clause	5



Document No:	Revision Letter						Last Revision Date
SJC-ACM-AIMS-2030	A						July 28, 2003

1.0 INTRODUCTION

The following introductory sections (scope, purpose, and reference documents) will help the reader understand this technical document and its overall relationship to Mineta San José International (SJC) Airport Configuration Management (ACM) and Airport Integrated Mapping System (AIMS). This document is part of the overall SJC-ACM-AIMS-2001 Electronic Data Submittals Specifications Document, which contains additional introductory information such as background, acronyms, definitions, and a related documentation listing. This -2030 document was prepared by the Carter & Burgess (C&B) Consulting Team. If you have any questions, please call Lysée Moyaert of SJC at (408) 501-7712, or David Tamir or Behzad Mohammadi of C&B at (818) 784-7585.

1.1 Purpose

This technical document establishes the specification for Geographic Information System (GIS) data submittals to SJC. This specification is necessary to ensure efficient Electronic Data Interchange (EDI) between SJC and its consultants, contractors, and local, state, and federal government agencies including city, police, FBI, state DOT, FAA, and TSA. The purpose of this document is to provide basic submittal instructions for GIS deliverables produced and submitted by SJC's consultants and contractors. GIS data from sources external to SJC provides an important complement to the GIS data created by airport staff or converted from the airport's CADD and surveying data. Since the ultimate destination of all of this data is the SJC-AIMS spatial data repository, a central warehouse for spatial and attribute data that has been designed based on GIS principles, data submitted to the airport in a GIS format is closer to its final state and therefore will require less conversion work by SJC staff or their contractors. This goal will only be achieved however if GIS data is submitted in a consistent form. Therefore, this specification is designed to enforce commonality amongst data required throughout the lifecycle of SJC's airport facilities. GIS data submittals are critical to supporting the airport's infrastructure throughout its lifecycle beginning with planning, design and construction, and extending through operations and maintenance, until eventual refurbishment or demolition and remediation of the site.

1.2 Scope

This specification addresses geospatial elements (i.e. points, lines, polygons) stored in GIS data files, as well as the attributes that describe these elements and any relevant metadata which describes the geographic and attribute data itself. This specification applies to planning, environmental (including noise), signage, facility asset inventory, electromagnetic compatibility, and condition assessment projects which involve data submittals to SJC, composed of both spatial graphic maps and data attributes related to the airport assets/features depicted on these maps. Such projects include, but not limited to, master plan updates, planning studies, Exhibit-A updates, environmental assessments and impact studies, environmental contamination monitoring well inventories, Part-150 noise contour studies, noise complaint reporting, signage inventories and design, property and space use inventories, various equipment type inventories, telecommunication closet and duct-bank inventories, antennae electromagnetic wireless spectrum inventories, facility condition inspections (e.g., carpeting, painting, ceiling tiles, lighting, fixtures, HVAC, FIDS monitors, roofing, airfield pavement, roadways, fences, etc).

Document No:	Revision Letter						Last Revision Date
SJC-ACM-AIMS-2030	A						July 28, 2003

1.3 Reference Documents

The following documents are referenced herein:

SJC-ACM-AIMS-2001	Electronic Data Submittal Specifications
SJC-ACM-AIMS-2300	GIS Data Standard
SJC-ACM-AIMS-2600	Metadata Standard
SJC-ACM-AIMS-3230	GIS Data Standard Compliance QC/QA Procedures

2.0 REQUIREMENTS FOR GIS DATA SUBMITTALS

This specification applies to planning, environmental (including noise), signage, facility asset inventory, electromagnetic compatibility, and condition assessment projects which involve data submittals to SJC, composed of both spatial graphic maps and data attributes related to the airport assets/features depicted on these maps. The following are requirements which apply to such GIS data submittals. These requirements address submittal milestones, file formats, data standards, metadata, media and compression, QC/QA, and conditional contract payment clause.

2.1 Submittal Milestones

GIS data shall be submitted to SJC for review in a phased manner, with submittal milestones occurring at 65% (rough draft), 95% (draft), and 100% (final submittal). Each of these phased GIS data submittals shall be distributed to the corresponding SJC Project Manager, and to the AIMS Manager, for EDI standards compliance testing.

2.2 File Formats

Acceptable file formats for GIS data submittals to SJC include both Intergraph GeoMedia 5 (.mdb), and ESRI ArcGIS 8 (.shp). GIS data files comprise of both graphic spatial features and attribute database tables. Geomedia stores both these data types in a single GeoMedia Access Warehouse file, which is a Microsoft Access database file (.mdb). ArcGIS stores both these data types in a single ESRI Shape-file. File names for all GIS files shall adhere to the naming convention detailed in document SJC-ACM-AIMS-2300, *GIS Data Standard*.

2.3 Data Standards

GIS data submittals shall adhere to the data standards set forth in document SJC-ACM-AIMS-2300, *GIS Data Standard*. The GIS data standard addresses in detail graphic spatial feature layering, required data attributes, and adherence to SJC's custom airport coordinate grid system.

2.3.1 Graphic Spatial Feature Layering

Geographic spatial features of the same type (i.e. roads, runways, rivers, etc.) should be grouped onto separate and distinct layers per SJC-ACM-AIMS-2300, *GIS Data Standard*. The layering standard is based on the U.S. CADD/GIS Technology Center's Spatial Data Standards for Facilities, Infrastructure and the Environment (SDSFIE) Version 2.22 with airport specific

Document No:	Revision Letter						Last Revision Date
SJC-ACM-AIMS-2030	A						July 28, 2003

enhancements from the GeoSpatial One-Stop Initiative and FAA electronic Airport Layout Plan (eALP) standards.

2.3.2 Feature Data Attributes

Much of the power of GIS is the ability to connect virtual representations of spatial features to information relevant to those features. This is done with the use of data attribute. Attributes can contain Primary Key identifiers (IDs) and Foreign Key IDs to provide relational links to other attribute data tables containing descriptive information and metadata. While the number and content of attributes will vary greatly, depending on the source and use of the data, a minimal set of attribute are required to allow the data to be used by SJC. Following are the minimum attributes required in any GIS data set submitted to the airport:

- Primary Key – an unintelligent (meaning no meaningful codes or descriptive text are embedded in the characters of this field) unique identifier. Numeric characters (i.e. 0-9) should be used although any field length is allowed.
- Feature Name / Code – a text string that indicates the name by which each feature is commonly referred (i.e., Main Street, Door 212-A, Runway 30R/12L, etc.)

Note: Further minimum attributes will be defined once the AIMS Data Repository has been designed and implemented (anticipated in 2004). This specification and the SJC-ACM-AIMS-2300, GIS Data Standard, will be revised at that time to include additional required attributes.

2.3.3 Custom Airport Coordinate Grid System

Airport Grid refers to the definition of a custom coordinate system used for all SJC spatial data. The detailed definition of 'Airport Grid', which can be found in SJC-ACM-AIMS-2400 *Survey Data Standard*, covers the coordinate system, horizontal and vertical datum, and units of measurement that should be used. Following is a brief overview of these definitions.

- The Airport Grid coordinate system has on origin at the northing and easting coordinates of 6127023.6025, 1933807.3459 in the California State Plane Coordinate System – Zone 3
- Units are U.S. Survey Feet
- Airport Grid lines are parallel and perpendicular to the airport's primary runway (30L/12R). North- South lines are rotated 40.311° to the left of True North.
- The Vertical Datum is NAD83
- The Horizontal Datum is NAVD88

2.4 **Metadata**

GIS submittals shall include a metadata file describing the submitted GIS file(s). The metadata file shall comply with the appropriate metadata standard details specified in document SJC-ACM-AIMS-2600, *Metadata Standard*. A metadata template in Microsoft Excel format is available by request. The completed metadata template shall be included on the same media along with the electronic data file itself. Each electronic GIS file submitted to SJC requires a separate corresponding metadata file. Moreover, metadata shall be included within the GIS attributes database file pertaining to each GIS feature, per SJC-ACM-AIMS-2600.

Document No:	Revision Letter						Last Revision Date
SJC-ACM-AIMS-2030	A						July 28, 2003

2.5 Media and Compression

Electronic documentation submittals are to be written to a Recordable Compact Disc (CD-R). Files are to be placed on the CD-R uncompressed, and delivered in a standard jewel case. Both the CD-R and case must be labeled appropriately, listing project name, submitted data type(s), submittal date, submitting data developer organization, and point of contact information.

2.6 Quality Control & Quality Assurance (QC/QA)

QC/QA of GIS data deliverables shall employ the procedures set forth in document SJC-ACM-AIMS-3230, *GIS Data Standards Compliance QC/QA Procedures*. QC/QA shall be performed by the developer of the GIS data. Acceptance QA will also be performed by SJC or its authorized representative.

2.7 Conditional Contract Payment Clause

SJC shall perform QA testing throughout the submittal process. The consultant/contractor shall receive a pass/fail notification from the AIMS Manager per submittal. The purpose of multiple QA testing is to minimize the possibility of errors and costly re-work at the end of any given project. SJC's ultimate goal is to ensure that the final deliverable conforms at the time of final submittal.

Should the consultant/contractor fail the QA testing of the 100% Submittal (final draft) deliverables, they will receive two more opportunities to correct errors. Failure to comply with SJC's published Standards and Submittal requirements shall result in a penalty on the consultant/contractor. This penalty shall be defined by the project agreement/contract.