



## TABLE OF CONTENTS

<b>Chapter 1: Inventory</b> .....	1-1
Introduction.....	1-1
Inventory.....	1-1
Forecasts .....	1-1
Facility Requirements and Demand/Capacity Analysis.....	1-2
Airport Alternatives .....	1-2
Financial Feasibility Analysis and Facilities Implementation Plan.....	1-2
Airport Layout Plan .....	1-2
Background.....	1-2
Airport Location.....	1-3
Primary Airport Location .....	1-3
Airport History.....	1-4
Airport Management .....	1-5
Airport Role .....	1-5
National Role .....	1-6
Airport Activity.....	1-8
Airport Facilities.....	1-9
Airside Facilities .....	1-9
Runways .....	1-9
Runway Classification and Future Plans .....	1-12
Taxiways .....	1-12
Taxilanes.....	1-13
Pavement Condition.....	1-13
Visual and Navigation Aids.....	1-14
Meteorological Facilities.....	1-16
Regional and Local Airspace and Navigation .....	1-17
National Airspace System .....	1-18
Weather and Flight Rules .....	1-18
Airspace Classifications.....	1-19
Special Use Airspace .....	1-19
Air Traffic Service Areas and Aviation Communications.....	1-22
Navigational Aids .....	1-23
Part 77 Airspace Surfaces .....	1-24
Landside Facilities.....	1-26
Commercial Service Terminal Complex.....	1-26
Commercial Service Terminal Building .....	1-26
Terminal Arrival and Departure .....	1-27
Terminal Access and Parking .....	1-28
Cargo Facilities.....	1-29

Fixed Base Operators .....	1-29
General Aviation Businesses and Tenants .....	1-30
Apron Areas .....	1-30
Support Facilities.....	1-31
Airport Maintenance.....	1-31
Aircraft Rescue and Firefighting Facilities (ARFF).....	1-32
Fencing and Security .....	1-32
Rental Car Services .....	1-32
Utilities .....	1-33
Area Land Use .....	1-33
City of San Angelo Zoning .....	1-33
Comprehensive Plan.....	1-34
Lake Nasworthy Master Plan and Implementation Strategy.....	1-36
Environmental Inventory .....	1-37
Biological Resources .....	1-38
Cultural and Historic Resources .....	1-38
Wetlands .....	1-39
Floodplains and Surface Water .....	1-40
Air Quality .....	1-40
Socioeconomic Profile.....	1-41
Regional Information.....	1-41
Population .....	1-41
Employment .....	1-42
Income .....	1-43
Supporting Documents .....	1-44
<b>Chapter 2 – Forecasts</b> .....	2-1
Introduction.....	2-1
Forecast Rationale .....	2-1
Forecast Executive Summary.....	2-2
Summary of Commercial Aviation Forecast Findings.....	2-3
Summary of General Aviation Forecast Findings .....	2-3
Economic Base for Air Traffic .....	2-3
Socio-Economic Trends .....	2-3
Historical and Forecast Population .....	2-4
Household Income.....	2-4
Gross Regional Product/Gross Domestic Product.....	2-6
Labor Market Trends.....	2-7
2007 – 2017 Non-Farm Payrolls and Unemployment Rate.....	2-8
Regional Economic Overview.....	2-8
Major Employers .....	2-8
Economic Outlook .....	2-9
Commercial Passenger Industry Aviation Trends .....	2-9
Long-Term History (1978-2008).....	2-9
Airline Industry Transformation (2009 – Today) .....	2-10
Consolidation .....	2-15
The Future.....	2-16
FAA Forecast Summary: 2017 – 2037 .....	2-17
Air Service and Traffic Analysis.....	2-18
Regional Role and Catchment Area Analysis Overview .....	2-18

Air Service at the Airport .....	2-12
O&D Market.....	2-26
Air Traffic Activity Trends .....	2-28
Enplaned Passengers.....	2-28
Commercial Aircraft Operations .....	2-29
Aircraft Fleet Mix: Passenger Aircraft Operations.....	2-30
Passenger Air Traffic Activity Forecasts.....	2-31
2018 Forecast Review.....	2-31
Long-term Forecast Review .....	2-31
Historical Trend Analysis .....	2-32
FAA Forecast Sources and Scenarios .....	2-33
FAA Aerospace Forecasts.....	2-33
2017 FAA Terminal Area Forecast (TAF).....	2-33
Market Share Analysis .....	2-34
Regression Analysis Projections .....	2-35
Selection of the Preferred Forecast Range.....	2-36
Alternative, Unconstrained Enplaned Passenger Forecast.....	2-37
Passenger Aircraft Operations & Fleet Mix Forecast.....	2-38
Airline Fleet Mix .....	2-39
Passenger Airline Operations .....	2-41
Summary .....	2-41
Other Commercial Activity (Non-Passenger Air Taxi) .....	2-42
Operations.....	2-42
Commercial Forecast Summary.....	2-43
Based Aircraft Forecast .....	2-44
Introduction.....	2-44
Based Aircraft at the National Level .....	2-46
Based Aircraft at San Angelo Regional Airport (SJT) .....	2-46
SJT Based Aircraft Forecast Methodologies and Analysis .....	2-48
SJT Based Aircraft Fleet Mix.....	2-50
General Aviation Annual Operations Forecasts .....	2-52
Introduction.....	2-53
General Aviation Operations at the National Level .....	2-54
General Aviation Annual Operations at SJT .....	2-55
SJT General Aviation Operations Forecast Methodologies and Analysis .....	2-55
Local (Civil) Operations Forecast .....	2-55
Intinerant Operations Forecast .....	2-57
General Aviation Operations Forecasts Summary .....	2-59
Business Jet Operations .....	2-59
Introduction.....	2-60
Business Jet Activity at SJT Today .....	2-60
Military Operations.....	2-63
Proposed Forecast.....	2-63
Critical Design Aircraft.....	2-64
Annual Instrument Approaches .....	2-64
Forecast Summary .....	2-65
<b>Chapter 3 – Demand/Capacity Analysis &amp; Facility Requirements .....</b>	<b>3-1</b>
Introduction.....	3-1
Demand/Capacity Analysis.....	3-1

Introduction and Background.....	3-1
Airfield Capacity .....	3-2
Airfield Layout and Runway Use.....	3-2
Meteorological Conditions.....	3-5
Navigational Aids.....	3-5
Based Aircraft Operational Fleet Mix .....	3-6
Touch-and-Go Operations.....	3-6
Demand Capacity Estimate .....	3-6
Forecast Aircraft Operations Demand versus Capacity.....	3-8
Demand Capacity Summary .....	3-9
Airport Design Standards.....	3-10
Critical Aircraft.....	3-10
Airport Reference Code (ARC) .....	3-11
Runway Design Code (RDC).....	3-11
Taxiway Design Group (TDG).....	3-12
Airside Requirements .....	3-12
Runway Requirements .....	3-12
Runway Width .....	3-12
Runway Length: Takeoff and Landing Distance .....	3-13
Runway Designation.....	3-14
Runway Strength.....	3-15
Runway Orientation and Wind Coverage.....	3-15
Runway Thresholds .....	3-15
Runway Protective Surfaces.....	3-17
Runway Safety Area .....	3-17
Runway Object Free Area (ROFA).....	3-18
Runway Protection Zones.....	3-18
Runway Incursion Mitigation.....	3-20
Taxiway Requirements.....	3-21
Taxiway Width.....	3-22
Taxiway Safety Area (TSA)/Taxiway Object Free Area (TOFA).....	3-22
Run-Up Areas.....	3-22
Problematic Taxiway Geometry.....	3-22
Direct Access from an Apron to a Runway.....	3-22
High Energy Intersections.....	3-22
Use of a Runway as a Taxiway .....	3-23
Taxiway Nomenclature .....	3-23
Airfield Pavement .....	3-23
Airfield Marking, Lighting, & Signage .....	3-23
Markings.....	3-23
Lighting .....	3-24
Signage.....	3-24
Navigational Aids (NAVAIDS) & Weather Observation Equipment.....	3-24
Navigational Aids .....	3-24
Weather Observation Equipment .....	3-24
Terminal Area and Landside Requirements .....	3-24
Terminal Area Requirements .....	3-24
Aircraft Parking Positions .....	3-25
Passenger Check-in/Bag Drop.....	3-26

Explosive Detections System (EDS) Baggage Screening .....	3-27
Outbound Baggage .....	3-28
Passenger Security Screening .....	3-28
Holdrooms and Boarding Gates .....	3-29
Concessions .....	3-29
Inbound Baggage Makeup and Baggage Claim .....	3-30
Restrooms .....	3-31
Circulation .....	3-31
Office Space .....	3-31
Second Commercial Service Airline .....	3-32
Landside Requirements .....	3-33
Cargo Facilities .....	3-33
Fuel Facilities .....	3-34
Access and Parking .....	3-35
Airfield Perimeter Fencing, Gates, and Security .....	3-37
General Aviation Requirements .....	3-39
Aircraft Storage .....	3-39
Aircraft Hangars .....	3-39
Aircraft Parking Aprons .....	3-43
Fixed Base Operator (FBO)/Flight Schools .....	3-44
SASO and Other GA Tenants .....	3-45
GA Access & Parking Facilities .....	3-46
Access Road .....	3-46
Vehicle Parking .....	3-46
Support Facility Requirements .....	3-46
Airport Maintenance .....	3-46
Air Traffic Control Tower .....	3-47
Airport Rescue & Fire Fighting (ARFF) .....	3-47
Electrical Vault/Utilities .....	3-47
Facility Requirement Summary .....	3-48
<b>Chapter 4: Alternatives</b> .....	4-1
Analysis .....	4-1
Airside Alternatives .....	4-1
Objectives .....	4-1
Alternatives Elements .....	4-2
Primary Elements .....	4-2
Secondary Elements .....	4-2
Projects Found on All Alternatives .....	4-2
Runway 3-21 and Runway 18-36 Intersection .....	4-2
Runway 9-27 Decommissioning and Conversion to Taxiway .....	4-3
Removal of Pavement on Runway 18 End and Runway 36 End Extension .....	4-3
Demolish Taxiway A .....	4-3
Taxiway Renaming .....	4-3
Runway 18-36 PAPI Relocation .....	4-3
Wind Cone and Segmented Circle Relocation .....	4-3
Airside Alternatives .....	4-3
Airside Alternative 1 – No Action .....	4-3
Airside Alternative 2 – Reducing Cost .....	4-4
Airside Alternative 3 – Maximize Runway Length .....	4-4

Airside Alternative 4 – Planning for Future Expansion .....	4-4
Associated Projects .....	4-5
Alternative Evaluation Criteria .....	4-6
Best Planning Tenants.....	4-6
Operational Performance.....	4-6
Environmental Implications .....	4-6
Financial Feasibility .....	4-7
Alternative Evaluation Summary.....	4-7
Evaluation Criteria Descriptions and Analysis .....	4-7
Evaluation Scoring.....	4-7
Preferred Airside Alternatives.....	4-9
Landside Alternatives.....	4-9
Airport Land Use and Activity Areas .....	4-10
Land Use Development Areas.....	4-10
Airfield Operations .....	4-11
Aviation Development.....	4-11
Commercial Aviation Activity Area (CA) .....	4-11
Aviation Business/Industrial (BI) .....	4-12
General Aviation (GA).....	4-12
Air Cargo (C).....	4-12
Non-Aviation Development.....	4-12
Non-Aeronautical Support (NA) .....	4-12
Airport Compatible Development.....	4-13
Restricted Development .....	4-13
Existing Easement (E).....	4-13
RPZ Easement.....	4-13
Existing Development Constraints.....	4-13
Landside Alternatives Evaluation Criteria .....	4-13
Best Planning Tenets .....	4-14
Operational Performance.....	4-14
Environmental Implications .....	4-14
Financial Impacts .....	4-14
Landside Alternatives.....	4-14
Commercial Aviation .....	4-16
Business Aviation/Industrial.....	4-16
General Aviation.....	4-16
Airport Support Facilities .....	4-16
Commercial Aviation Landside Alternatives.....	4-16
Commercial Terminal Building Improvement/Expansion.....	4-16
Commercial Terminal Area – Auto Parking and Hangar Redevelopment.....	4-19
Commercial Terminal Area – Rental Car Quick Turn Around Facility .....	4-23
Commercial Terminal Area – Air Cargo Development .....	4-26
Business Aviation/Industrial Landside Alternatives .....	4-29
Aviation Business/Industrial Aviation Hangar Development.....	4-29
Governmental, Non-Aviation, and Aeronautical Support.....	4-34
Airport Compatible Development.....	4-34
General Aviation Development Area Alternatives.....	4-36
Airport Support Facilities Development Alternatives.....	4-39
Air Traffic Control Tower Site Selection .....	4-39

Consolidated Aviation Fuel Farm Development Site Alternatives.....	4-40
General Aviation Self-Service Fueling Facility .....	4-41
Ultimate Commercial Development .....	4-42
Landside Alternatives Summary.....	4-45
<b>Chapter 5: Recommended Development Concept and Financial Analysis</b> ....	5-1
Recommended Development Concept.....	5-1
Airside Development.....	5-2
Runway 18-36.....	5-2
Runway 3-21 .....	5-2
Runway 9-27 .....	5-2
Taxiway Improvements .....	5-2
Taxilane Improvements.....	5-3
Apron Improvements .....	5-3
Landside Development .....	5-3
General Aviation.....	5-3
Aviation Business/Industrial.....	5-3
Commercial Aviation .....	5-3
Air Cargo .....	5-4
Governmental .....	5-4
Support Facilities.....	5-4
Recommended Development Concept Phasing.....	5-4
Short-Term Improvements .....	5-4
Conversion of Runway 9-27 to a taxiway .....	5-4
Apron Improvements.....	5-4
Meeting current hangar development needs.....	5-5
Expansion of commercial service terminal parking.....	5-5
Self-serve fuel facility .....	5-6
Mid-Term Improvements .....	5-6
Runway improvements necessary to meet FAA design standards.....	5-6
Relocation of ILS to Runway 18-36 .....	5-6
Midfield development.....	5-7
Additional hangar development.....	5-7
Commercial Service Terminal Expansion .....	5-7
Support Facilities.....	5-7
Long-Term Improvements .....	5-7
Financial Plan .....	5-8
Financial Structure Overview.....	5-9
Federal Grant Assurances .....	5-9
Revenue Use .....	5-9
Self-sufficiency .....	5-10
Capital Program Funding Sources .....	5-10
FAA Grants.....	5-10
Texas Department of Transportation (TxDOT) Funds.....	5-11
Third-Party Funds.....	5-11
Local Funds .....	5-12
Cares Act Funds .....	5-12
Operating Expenses .....	5-13
Operating Revenues .....	5-14
Airport Cash Flow and Capital Funding.....	5-15

Passenger Facility Charges (PFCs).....	5-15
Additional Revenue Opportunities .....	5-15
New Hangar Lease Revenues .....	5-15
Auto Parking .....	5-16
Rental Car Customer Facility Charge (CFC).....	5-18
Fuel Farm Revenues .....	5-20
City Investment and Long-Term Debt.....	5-22
Summary .....	5-22

Appendix A: FAA Forecast Approval Letter .....	A1
Appendix B: ACRP Report 79 Results .....	B1
Appendix C: Airport Real Estate Development Strategy.....	C1
Appendix D: Airport Layout Plan Drawing Set.....	D1