



SAN ANGELO REGIONAL AIRPORT MATHIS FIELD

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Movement Area Driver's Training Information and Study Guide



TABLE OF CONTENTS

I.	INTRODUCTION	
	Purpose	1
	General Requirements	1
	Policy Statement.....	1
	Authority	2
	Procedures For Obtaining an Airport Driver's Endorsement.....	2
	Tenure of an Airport Driver's Endorsement.....	4
	Lost Airport ID.....	4
	Enforcement	4
	Airport Driver Endorsement Training.....	5
	Requirements for an Airport Driver's Endorsement.....	5
	Driving on the Air Operations Area.....	6
II.	AIR OPERATIONS AREA (AOA)	
	Movement Areas	7
	1. Runways	7
	2. Taxiways	9
	3. Terminal Ramp Markings.....	10
	4. Operating Speeds and Procedures	10
	5. Escorting	11
	Non Movement Areas.....	12
	1. Ramps	12
	2. Perimeter Roads	12
	3. Other	13
III.	DRIVING AT NIGHT	
	A. Airfield Lights.....	13
	B. Aircraft Lights	14
IV.	RADIO COMMUNICATIONS	
	A. Frequencies	14
	B. Procedure.....	15
	C. Tower Hours of Operations.....	15
	D. Terminology	16
	E. Basic Radio Rules.....	18
	F. Radio Failure.....	18
V.	POTENTIAL HAZARDS	
	A. Hazards to Aircraft	19
	B. Foreign Object Debris (FOD)	19
	C. Hazards to Drivers	19
	D. Noise.....	19
VI.	EMERGENCIES	20
VII.	SUMMARY	20
	APPENDIX A: Sign and Marking Plan/Airport Diagram.....	22
	APPENDIX B: Route Alpha and Route Bravo	23
	
	APPENDIX C: Light Gun Signals.....	24
	Driver Acknowledgement and Endorsement Certificate.....	25

San Angelo Regional Airport Movement Area Driver's Training Information and Study Guide

I. INTRODUCTION

Purpose

The purpose of this Airfield Safety Program is to provide training to all individuals who operate vehicles and/or equipment at the San Angelo Regional Airport. This study guide will supply the reader with the procedures necessary for safe vehicle operations on the **Air Operations Area (AOA)**, movement areas, and other restricted areas of the airport. The information in this study guide is extracted from appropriate Airfield Rules and Regulations, Federal Aviation Regulations and FAA Advisory Circulars.

General Requirements

Each individual whose job duties require them to traverse the movement areas of the San Angelo Regional Airport is required to obtain an Airport ID badge and pass the Movement Area Drivers Training, prior to operating any vehicle on the AOA.

Training includes:

- Computer Based Training – Watching a provided video and passing the associated test.
- Reading this study guide and signing the acknowledgement that you agree to follow the stated Rules and Regulations.
- Pass a practical exam proctored by another person qualified to drive in the Movement Area.
- Site Specific Airfield Familiarization (including marking, lights, and signs) will also be required annually, and is completed in a separate training.

Policy Statement

The goal of this program is safety through strict compliance with airfield regulations. Accomplishing this goal requires airlines, tenants, and other users of the airfield to work closely with the Airport to promote strict adherence to the Rules and Regulations pertaining to the airfield. AOA driving privileges will be limited to work-related areas during working hours only.

It is the responsibility of all authorized signatories prior to their badge holders' operating vehicles at the Airport to inform them of the Airport Driver's Endorsement Program and the necessity to obtain an Airport Driver's Endorsement from the Airport.

New badge holders will not be allowed to operate a vehicle on the movement areas unless accompanied by an experienced movement area driver who holds a valid Airport ID badge with the appropriate driver's endorsement, unless the new badge holder successfully completes the Airport Movement Area Driver Training. An enforcement program is in place to ensure compliance to these regulations. AOA and SIDA access Badges at the San Angelo Regional Airport are issued for 2 years at a time, however, AOA driving privileges are only valid for 12 consecutive calendar months at a time. If a driver does not complete recurrent training within the 12 consecutive calendar month time frame, the driver must undergo movement area driver training as an initial applicant to re-gain movement area driving privileges.

Additional goals of this program:

1. Provide training for new badge holders and refresher training for all current badge holders operating vehicles on the airfield;
2. Stress the importance of safety procedures to prevent an accidental personal injury and/or property damage.

Authority

A vehicle operator must have on file with the San Angelo Regional Airport a valid Airport Driver's Endorsement when operating a vehicle on the airfield. This Airport Driver's Endorsement will be kept in the badge holder's personnel file located in the Airport Administrative Offices.

Procedures for Obtaining an Airport Driver's Endorsement

1. Airport Driver's Endorsement Application
Applications and study materials for the Airport Driver's Endorsement Test may be obtained from your employer or the Airport Administration Office, located in the terminal building.
2. Airport Driver's Endorsement Process
 - a. The *San Angelo Regional Airport – Movement Area Driver's Training Information and Study Guide* will be mandatory reading material prior to administering the practical exam.

- b. Applicants must possess a valid state-issued driver's license prior to applying for the Airport Driver's Endorsement. **If the applicant's state-issued driver's license expires or is suspended for any reason, the applicant's airport driver's endorsement will no longer be honored at the airport until the applicant receives a new state-issued driver's license and presents it to the Airport Administration Office.**

3. Testing Responsibility

Airport Administration will be responsible for keeping a record of all movement area drivers training for 24 months, and issuing an airport Driver's Endorsement Certificate to all applicants who successfully complete the training.

4. Examination Content

The Computer based written examination will consist of multiple-choice questions. A score of 100% must be achieved in order to pass.

The practical exam will consist of driving on the movement area in a safe and proficient manner, correctly answering all questions asked by the examiner, and correctly complying with all directives given by ATCT or the examiner.

5. Exam Failures

Those individuals who fail the computer based written examination will be allowed to re-test until successfully passed. Those individuals who fail the practical exam will be instructed to again thoroughly study the information contained in the study guide. The person will then be allowed to retake the examination. Individuals will NOT be allowed to retake the practical exam more than 2 times within a 30 day period.

6. Issuance of an Airport Driver's Endorsement

If an applicant meets the requirements for an Airport Driver's Endorsement, the practical examiner (The Airport Director or his designee) will complete the Airport Driver's Endorsement form, and return it to the Airport Administration Office. After verifying possession of a valid state-issued driver's license the Airport Administration office will then issue the examiner and/or the applicant a copy of the Airport Driver's Endorsement certificate. The endorsement certificate will be kept on file with the Airport Administration Office. A driver may **only** access the airfield without escort once they receive their Driver's Endorsement Certificate.

Tenure of an Airport Driver's Endorsement

The Airport Driver's Endorsement will expire in 12 calendar months from the date of issuance or upon expiration or suspension of the applicant's state-issued driver's license.

Lost Airport ID

A driver who loses his/her Airport ID is responsible for reporting the loss immediately to the Airport Administration Office. A badge holder, who loses his/her badge and does not immediately report the loss to the Airport, is responsible for any misuse of the lost Airport ID badge. The person also will not be allowed to operate a vehicle on the airfield, or be in the AOA, until the original Airport ID badge is found or the replacement Airport ID is processed.

The Airport regularly conducts Airport ID badge audits to ensure program integrity.

Enforcement

1. Violations

Airport Administration personnel are authorized to conduct inspections and any violation found will be subjected to the Airport's stated consequences for non-compliance.

2. Severe Violations

Any driving violation or erratic operation of a severe nature or numerous violations as determined by the Airport (i.e. runway incursion, reckless driving or operating under the influence of alcohol or drugs) will result in immediate suspension of the Airport Driver's Endorsement and Airport ID.

3. Hearings

Upon request, a hearing with the Airport Director, or his/her designee, will be scheduled. A request for a hearing must be filed within 48 hours of the time of the offense.

Airport Driver's Endorsement Training

This Airport Driver's Endorsement Study Guide is designed as an aid in teaching correct and safe driving procedures for the Air Operations Area (AOA) and movement areas of San Angelo Regional Airport. It should be used to prepare for the written exam. After training is complete, it is recommended the study guide be kept readily available for future reference and review.

Requirements for the Airport Driver's Endorsement involves:

1. Reading the *Airport Driver's Endorsement Study Guide* and signing the acknowledgement;
2. A computer based written test based on the information presented in the computer based training;
3. Site specific training conducted by the airport administrator;
4. Provide the Airport Administration office with your current valid State-issued driver's license;
5. A "check-ride" practical exam with someone who hold a current Driver's Endorsed Certificate. During the check-ride, the examiner will ask the student to drive to several destinations, as well as ask questions from the Airport Driver's Endorsement Study Guide.

There are two classes of the Airport Driver's Endorsement:

Fully Endorsed - Authorizes the bearer to drive on the AOA, including movement areas (runways and taxiways), with proper clearance from the Air Traffic Control Tower (ATCT) or via CTAF when applicable.

Route Alpha + Route Bravo – Authorizes the bearer to drive on the AOA and in the movement area sections entitled “Route Alpha” and “Route Bravo” with proper clearance from the Air Traffic Control Tower (ATCT). Route Alpha is located on the north portion of the Terminal Ramp and extends to the US Customs ramp. Route Bravo is adjacent to the Terminal Ramp Secured Area and is the area at the Taxiway B and Taxiway D intersection. All other movement area driving is prohibited (Attachment B).

Vehicle requirements for driving on the Movement Areas of the AOA:

1. A two way radio with the following frequency for communicating with Ground Control on 121.9 MHz and Tower on 118.3 MHz;
2. A rotating beacon or strobe light on top of the vehicle.
3. All vehicles must be clearly marked with their respective agencies' logo or company name.






NOTE: Vehicles not meeting these requirements may be escorted by a vehicle that does meet the requirements.

Driving on the Air Operations Area (AOA)

An Airport Driver's Endorsement will authorize the bearer to drive beyond ramps and perimeter roads (non-movement areas) onto taxiways and runways (movement areas) once clearance has been obtained from the ATCT (Air Traffic Control Tower). At San Angelo Regional Airport, the request for clearance is directed to Ground Control on 121.9 MHz. *All communications should be conducted with Ground Control while on the movement areas, unless Ground Control requests that you switch over to Tower on 118.3 MHz.*

Driving a vehicle on the movement areas of an airport is considerably different than driving on normal roads and streets. There is significant responsibility associated with driving on an airport from personnel safety to high costs associated with vehicle and aircraft. Vehicles, like aircraft, move on or across the runways and taxiways under guidance from Ground Control using radios, and on occasions light gun signals, to communicate.

Light gun signals for Ground Vehicle Operators are as follows:

Color and Type of Signal	Movement of Vehicles, Equipment, and Personnel
Steady Green 	Cleared to cross, proceed, or go
Steady Red 	STOP
Flashing Red 	Clear the Runway/Taxiway
Flashing White 	Return the Starting Point
Alternate Red and Green 	Use EXTREME Caution!!!

A full page version of this chart is available in Appendix C of this packet.

Due to the high level of responsibility associated with driving a vehicle on the airport, ALL vehicle accidents and/or incidents need to be reported immediately to the Airport Administration. DO NOT MOVE any vehicle or aircraft involved in an accident on the AOA without permission from Airport Management.

Aircraft, and ARFF vehicles responding to emergencies, always have the right-of-way before any vehicle. A car or truck is an obstacle to an aircraft or emergency vehicle. It is the vehicle operator's responsibility to maintain a safe distance from aircraft and emergency vehicles.

Speed limit on the ramp areas is 20 MPH.

II. AIR OPERATIONS AREA (AOA)

Everything inside the perimeter of the Airport is considered the Air Operations Area (AOA), except for the terminal ramp which is referred to as a SIDA (Secure Identification Display Area). Access to the AOA is through any number of vehicle gates. When you access a vehicle gate you are required to wait for the gate to close behind you before proceeding. The gate must close behind **each vehicle** unless you are escorting another vehicle or unless the vehicle behind you scans their AOA badge to gain access. Allowing another vehicle to enter the AOA behind you without the gate fully closing or without the person successfully scanning their badge is considered **“piggy-backing”**. **This is a violation of the Airport Security Plan (ASP)**. Anyone caught piggy-backing **will** be issued a security violation. All portions of the AOA are either designated as *Movement Areas* or as *Non-Movement Areas*. Movement Areas include runways and taxiways. Non-Movement Areas include aircraft parking ramps, airside roadways, and perimeter roads. Vehicles are prohibited from parking on the AOA except for in designated areas. Access to the AOA should be for an operational need only and should not be made strictly for the sake of convenience. Each area (Movement or Non-Movement) has certain rules for proper vehicle operation:

A. Movement Areas

Movement Areas are those areas that are specifically designed for the movement of aircraft and require ATCT clearance prior to operation. These are runways and taxiways. Drivers and vehicles operating in these areas must meet the requirements previously discussed in the Introduction. The movement area boundary is represented by a single solid yellow line followed by a single dashed yellow line.

1. Runways

San Angelo Regional Airport has three runways: “18-36”, “3-21”, and “9-27”. Runway “18-36” and “3-21” are primarily used by large air carrier

aircraft. Runway "9-27" is primarily used by smaller general aviation aircraft.

The runway that aircraft use to take-off and land is generally determined by wind direction. The runway that most closely aligns into the wind will be the "*active runway*". Vehicles should avoid driving on or across an active runway whenever possible, considering the potential dangers that are present. Due to their responsibilities, Aircraft Rescue and Fire Fighting (ARFF), FAA Tech Ops personnel, and Airport Operations and Maintenance personnel will occasionally find it necessary to drive on or across "active runways".

All runways are considered active at all times, unless closed via NOTAM. As stated earlier, differing types of aircraft use each runway.

When a vehicle is on a runway the runway is unusable for landing/take-off operations. A vehicle operating on a runway should proceed in a manner so that interruption of aircraft movement is minimal. Runway/taxiway incursions are the greatest disruption to smooth aircraft flow.

In an attempt to eliminate the risk of runway and taxiway incursions (driving onto a runway/taxiway without clearance from Ground Control), San Angelo Regional Airport requires drivers not to request clearance across any runway or taxiway unless it is operationally necessary. In other words, if a driver is able to take a public or perimeter road to reach their destination, thereby avoiding airfield driving, it should be done. This is regardless of the additional time that may be required to complete the trip. The immediate goal is to reduce vehicle traffic so that Ground Control may concentrate on air traffic. The long-term goal is to eliminate dangerous runway and taxiway incursions.

At times, a runway is closed for maintenance or construction purposes. To reach these closed areas, vehicles normally must cross or travel on **open** runways or taxiways. Therefore, it is critical to obtain Ground Control clearance prior to driving to these closed areas. Upon reaching the closed runway or taxiway, vehicles may travel on that runway or taxiway and its safety areas as they would a non-movement area. **You as a vehicle operator must ensure the surface is closed prior to operating within that area without getting clearance from ground control.**

a. Runway Markings and Signage

Refer to **Attachment A** for a complete description of runway markings and signage. A thorough understanding of all runway

markings and signage is required for safe vehicle operations on the airfield.

b. Runway Safety Areas

Each runway, depending on runway category, has an established Safety Area extending outward from the runway's centerline. Vehicles and personnel should remain clear of the Runway Safety Area unless permission has been granted by Ground Control to enter this area. Following are the Runway Safety Areas for the runways at San Angelo Regional Airport.

Runway Safety Area - Distance from Runway Centerline

<u>Runway</u>	<u>Distance</u>
"18-36"	250'
"3-21"	250'
"9-27"	150'

Runway Safety Area - Distance from Runway End

<u>Runway</u>	<u>Distance</u>
"18-36"	1,000'
"3-21"	1,000'
"9-27"	200'

When it is necessary to travel or work within a runway Safety Area, either the Airport Operations Department should close the runway or you must maintain radio contact with Ground Control on frequency 121.9, unless instructed otherwise by Ground Control. **Remember, even if your vehicle is off the runway or taxiway pavement, it is not necessarily clear of the Safety Area.**

2. Taxiways

Taxiways are areas used by aircraft to travel to and from the ramp and runway. Taxiways look similar to runways, but are usually not as wide and they have different markings. Only when authorized by Ground Control, vehicles may drive on taxiways. Vehicles must always yield the right-of-way to aircraft.

a. Taxiway Markings

Pavement markings on taxiways are yellow. Taxiway centerlines are a single solid yellow line. Where a taxiway pavement abuts pavement of different strength, the taxiway edge is marked with a solid double yellow line.

Taxiways also have painted hold-short lines just prior to reaching the intersection of a runway. Taxiways also have red and white runway hold-short signs adjacent to the painted hold-short lines.

3. Terminal Ramp Markings

The most important marking on the Terminal Ramp is the Red “Secured Area” line. Anyone who enters into the “Secured Area” must possess a valid SJT SIDA badge. There is also a movement area boundary line that runs the entire length of the terminal ramp and general aviation ramp. On the boundary line, one of the lines is solid yellow, the other dashed yellow. Pavement on the dashed side is considered **movement area**, and everything on the solid side is considered **non-movement**.

4. Operating Speeds and Procedures

No person shall operate a motor vehicle on the AOA that may be considered overloaded or transporting more passengers than the vehicle was designed to carry. There must be a seat provided for each passenger. All local traffic laws apply within the AOA.

No person shall ride on the running board, stand up on the body of a moving vehicle, or ride with arms or legs protruding from the vehicle.

Except for aircraft handling and support vehicles, vehicles shall avoid passing between parked aircraft and terminal gates, and at no time shall pass nearer than **ten (10)** feet horizontal distance of any sections of a parked aircraft. Vehicles shall **never** driver under the wing or any part of an aircraft.

All vehicles shall be driven to pass to the rear of a taxiing aircraft. However, at no time will a vehicle be driven within **one-hundred (100)** feet of the exhaust of a jet when the engines are running.

All vehicle users should identify if an aircraft’s engines are running by looking at the flashing rotating beacon on the belly or top of an aircraft.

All vehicles operating on the AOA must be of sound mechanical condition. Each vehicle must be continuously inspected to ensure no liquids (oil, gas, etc.) are leaking from the vehicle onto the pavement.

Each driver shall ensure no debris (FOD) is brought onto the pavement areas by their vehicle. This includes mud, rocks, gravel, grass clippings, etc.

All vehicles must be clearly marked with their respective agencies' logo or company name.

All vehicles on the AOA should be chocked when parked or not in use.

Vehicles, other than those operated by the respective tenant, that are stopped near an aircraft boarding gate position must be attended at all times.

No disabled vehicle may be left unattended or abandoned on any part of the AOA.

Speed limits on ramps are **20 MPH**. All vehicles shall follow all posted speed limits on public roads or the Perimeter Road.

Texting while operating a motor vehicle inside of the AOA is prohibited.

5. Escorting

While in possession of an Airport Driver's Endorsement, the same escorting rules apply as a badged individual escorting a non-badged individual. A vehicle with a non-badged/Non Driver's Endorsed individual may be escorted behind a badged Driver's Endorsed vehicle on the airfield. The badged individual with a valid airports driver's endorsement will make radio calls for the vehicle they are escorting by calling to tower and adding the phrase "(Vehicle identification) plus one", or a numerical value of how many vehicles they are escorting. The individual with the valid airport driver's endorsement will be entirely responsible for whom they are escorting **AT ALL TIMES**. It is the badge holder's responsibility to escort the un-badged individual at all times while operating on the AOA.

B. Non-Movement Areas

Non-movement areas at San Angelo Regional Airport include the various aircraft parking ramps. A vehicle operator must possess a valid airport badge to drive in these areas. Permission from Ground Control is not required in these areas (Remember, if crossing movement areas is required to get to the non-movement area, contact with the Ground Control, and a valid driver's endorsement is required).

1. Ramps

This is where aircraft park and numerous vehicles operate (i.e. tugs, baggage carts, fuel trucks, maintenance vehicles, etc.) Since the ramp is such a busy area, use extreme caution at all times. The speed limit is **TWENTY (20) m.p.h.** Radio contact with Ground Control is *not* required when driving on the following ramp areas:

- a. Terminal Ramp (SIDA Area): Ramp area on the East side of the Terminal building. Its boundary is delineated by a solid red line with the words "Secure Area". Its boundary with the movement areas of the airfield is delineated by a one solid yellow line and one dashed yellow line with the dashed line on the taxiway side.
- b. General Aviation Ramp (AOA): Located on the West side of the airfield. Its boundary with the movement areas of the airfield is delineated by a one solid yellow line and one dashed yellow line with the dashed line on the taxiway side.
- c. US Customs Ramp (AOA): Located on the Northwest side of the airfield near the ARFF station. Its boundary with the movement areas of the airfield is delineated by a one solid yellow line and one dashed yellow line with the dashed line on the taxiway side.

2. Perimeter Road

The Perimeter Road circles the entire Airfield. The Perimeter Road does not require contact with Ground Control; however, all vehicles must stop at all taxiway intersections and give way to all aircraft and emergency vehicles. All vehicles shall follow all posted speed limits on the Perimeter Road.

3. Other

When portions of the airfield are closed via NOTAM, vehicles with an operational need may drive on that area without contacting Ground Control.

III. DRIVING AT NIGHT

A. Airfield Lights

Driving on the airfield at night requires careful attention. A person's "night vision" (ability to see in dim light) takes time to adjust from normal light conditions. If a person looks at a bright light during nighttime hours, vision is impaired for several minutes and will slowly return to normal. It is possible for one who has normal, clear vision in daylight to have blurred vision at night. In this case, the person should not drive on the movement area at night.

Lights on the movement areas are kept dim so that pilots and drivers have the best night vision possible. The lights positioned across the AOA can be very confusing to a driver; therefore, you must be familiar with the airfield. It is also helpful to have an airfield map on hand to check landmarks and taxiway/runway locations:

a. Runway Lighting

Runways are edged with white lights that are spaced every 200 feet along both sides of the runway.

The last 2,000 feet of each runway has amber edge lights. This is to warn pilots that the end of the runway is approaching.

b. Threshold Lights

Threshold lights at the end of each runway mark the beginning or end of the usable runway pavement. These lights are colored green on one side and red on the other. The green side indicates the beginning of the runway pavement or the displaced threshold, if located beyond the beginning of the runway pavement. The red side indicated the end of the usable runway pavement.

c. Taxiway Lights

Taxiways are edged with blue lights along both sides.

Blue Reflectors can be used in cases where Taxiway lights are too cumbersome to install. These reflectors are small vertical posts with blue reflective markers near the top.

B. Aircraft Lights

Aircraft operating on the AOA have various lights for identification and safety purposes. Having these lights makes it easier for the Air Traffic Control Tower (Ground Control) and other aircraft to see them in the air and on the ground.

Like runways and taxiways, aircraft may only be visible by their lights. A driver will need to be alert to "see" and identify an aircraft's position solely by light at night or in low-visibility conditions.

All aircraft have standard colored position lights so that it is easy to identify one side or end of the aircraft from the other. The color of light and corresponding locations are:

- RED - Left wing tip
- GREEN - Right wing tip
- WHITE - Tail
- FLASHING - Top or bottom of aircraft, either red or white

By knowing these lights, a driver can tell which way an aircraft is moving. An old pilot's memory aid is "Red on Right is Wrong". This means that if the red light is on the right side, the aircraft is returning, or coming at you.

Also, if an aircraft's rotating beacon is on, it generally means the engines are running, about to be started, or the aircraft is about to move.

IV. RADIO COMMUNICATIONS

A. Frequencies

For a vehicle to travel on the movement areas, it must have two-way radio capabilities with the following frequency:

121.9 MHz (Ground Control)

Aircraft moving on the ramps and taxiways use this frequency. Vehicles use this same frequency when traveling on the movement areas, unless instructed otherwise by ground control.

For a vehicle that is authorized by San Angelo Regional Airport to drive on runways, it must be equipped with a radio that is capable of two-way radio communications with the Tower, in addition to Ground Control. The frequency for the Tower is **118.3**. Use this frequency during the hours of 9:00 p.m. and 7:00 a.m. when Ground Control ATCT is closed or only when instructed to do so by Ground Control.

B. Procedure

Ground Control must be contacted before a vehicle may:

- Enter the movement areas;
- Leave a location or change destinations once in a movement area;
- Cross a taxiway or runway, or travel on a taxiway or runway.

When requesting clearance to operate on the movement area, radio contact procedures must include in the following order:

1. Who you are calling; ("Mathis Ground...")
2. Who you are; (...Contractor 88...)
3. Where you are; (...On the GA (General Aviation) Ramp..)
4. Your request; (...Request to proceed on to Taxiway Bravo).

Always acknowledge and repeat instruction issued to you by Ground Control. This ensures you have the correct instructions and also puts you on record as having heard the exact instructions issued by the controller (transmissions are recorded by the ATCT).

Whenever you are called by Ground Control, immediately answer the call. If you receive a call on another radio at the same time you are called by Ground Control, always answer Ground Control first.

When you leave the movement area, you should report to Ground Control that you are "off all movement areas".

When escorting equipment on or across a movement area, you should make sure that Ground Control is aware of the type and number of vehicles that you will be escorting.

C. Tower Hours of Operation

The San Angelo Airport Control Tower is operational between 7:00 a.m. and 9:00 p.m. During times when the tower is operational, vehicles requiring access onto the movement area must request clearance from Ground Control on frequency 121.9 MHz.

Although the Control Tower is closed between 9:00 p.m. and 7:00 a.m., this does not prohibit aircraft from arriving and departing. Air traffic throughout the night is quite common. Therefore, it is imperative that vehicle operators be especially careful and aware of other vehicles and aircraft moving about the airport during times when the Control Tower is closed. During the time when the Control Tower is closed, the airport is considered to be "Pilot-Controlled".

Vehicles requiring access onto a movement area when the Control Tower is closed must still have an operable two-way radio to announce their intentions on the Common

Traffic Advisory Frequency (CTAF), which is 118.3 MHz. Note that this is the same as Tower frequency when the Control Tower is open. While on the movement area, this frequency must be monitored in the event that an aircraft is planning to land or take off. Pilots are recommended to announce his/her intentions on the CTAF when arriving or departing, however, this is not required. It is required for you as a pedestrian or vehicle operator to announce your intentions on the radio at all times, including nighttime. Once your vehicle has exited and is clear of the movement area, announce that you have cleared the movement area on the CTAF.

CTAF must be contacted during closed hours of 9:00 p.m. and 7:00 a.m. before a vehicle may:

- Enter the movement areas;
- Leave a location or change destinations once in a movement area;
- Cross a taxiway or runway, or travel on a taxiway or runway.

When requesting clearance, over CTAF, to operate on the movement area, radio contact procedures must include in the following order:

1. Who you are calling; ("Mathis Traffic...")
2. Who you are; (...Contractor 88...)
3. Where you are; (...On the GA Ramp..)
4. Your movement; (...Will be operating on Taxiway Bravo)
5. Repeat who you are calling; ("Mathis Traffic")

D. Terminology

Because certain letters in the English language have similar sounds, especially when transmitted over a radio, the aviation industry has evolved a standard language to be used by the aviation community. It is important that drivers, controllers, and pilots speak clearly and use this standard letter and number pronunciation when speaking.

1. Number Pronunciation (used for runway identification):

0-zee-ro	5-fife
1-one	6-six
2-two	7-sev-en
3-tree	8-eight
4-four	9-nin-er

Runways are to be referred to by each of its numbers. For example, runway 18 is pronounced "Runway one-eight", not "Runway eighteen". If the runway is marked one through 9, the 0 is omitted from its identification. For example, runway 3 is pronounced "Runway Three", not "Runway zero-Three".

2. Phonetic Alphabet (used for taxiways and aircraft/vehicle call signs):

A=Alpha	N=November
B=Bravo	O=Oscar
C=Charlie	P=Papa
D=Delta	Q=Quebec
E=Echo	R=Romeo
F=Foxtro	S=Sierra
G=Golf	T=Tango
H=Hotel	U=Uniform
I=India	V=Victor
J=Juliet	W=Whiskey
K=Kilo	X=X-ray
L=Lima	Y=Yankee
M=Mike	Z=Zulu

3. Aviation Phraseology:

PHRASE	DEFINITION
Acknowledge	Let me know you have received and understand this message
Advise Intentions	State your plans
Affirmative	Yes
Confirm	My version is... is that correct?
Correction	I made a mistake
Go Ahead	State your request
Hold	Stop where you are
Hold Short Of	Proceed to, but stop before you get to the
Negative	No or permission not granted, or that is not correct
Proceed	You are authorized to begin or continue moving
Read Back	Repeat the instructions you have
Roger	I have received all of your last transmission
Say Again	Repeat what you just said
Standby	Wait...I will get back to you
Unable	I can't do it
Verify	Request confirmation of instructions or transmit correct info
Wilco	I have received your message, understand, and will comply

E. Basic Radio Rules

1. Listen before you transmit
2. Think before you speak. (Know what you want to say before pressing the microphone key).
3. To assure clarity, hold the microphone about one inch from your lips. After pressing the microphone, a slight pause (1-2 seconds) is necessary to ensure your first word is transmitted.
4. Keep calls brief and as to-the-point as possible.
5. Acknowledge and repeat **all** hold-short and clearance instructions received from Ground Control (be sure to include vehicle identity with acknowledgment).
6. Regardless of traffic volume and frequency congestion, never hesitate to ask for clarification if uncertain of any Ground Control instructions.

F. Radio Failure

You should always check the working condition of your vehicle's radio before going onto the AOA movement areas. If the vehicle is already on the movement area when the radio fails, you should:

1. Clear the runway or taxiway;
2. If possible, Contact the Tower via cell phone, 325-223-6026 for instructions;
3. If cell phone is unavailable, face the vehicle toward the Tower;
4. Flash the headlights to get the Tower's attention.
- 5. Never cross a runway without clearance from ATCT.**

The Tower will either use light signals (Pictured in Appendix C) to give instructions to you, or make arrangements for a radio-equipped vehicle to guide you back to the ramp.

Tower light signals communicate the following:

- Steady Green - Cleared to cross, proceed, go.
- Steady Red - Stop.
- Flashing Red - Clear the taxiway/runway.
- Flashing White - Return to starting point of the airport.
- Alternating Red & Green - General warning signal, exercise extreme caution.

(Note: Flashing Green is not used and should be disregarded if observed)

V. POTENTIAL HAZARDS

A. Hazards to Aircraft

Runways "3-21" are precision instrument runways, which mean they have special equipment capable of guiding pilots to a safe landing in poor weather conditions.

The areas surrounding the glide slope antenna and localizer antenna are considered "critical areas". A vehicle moving near the equipment will disrupt the signals sent to landing aircraft and give incorrect information to the pilot. To stay out of the critical area, a vehicle should not move within a 250-foot radius of the antennas without permission from Ground Control.

B. Foreign Object Debris (FOD)

Foreign object debris (FOD) is the airport term for trash or debris on the airfield. FOD poses a serious danger as it can seriously damage aircraft engines and propellers. Vehicle drivers, when operating on the AOA, can be very helpful by constantly looking for and picking up stones, loose pavement, metal parts, paper and other trash. It is also required that each driver ensures their vehicle will not deposit FOD onto the airfield. This is done by keeping a vehicle clean and securing any loose items that may fall out or off of the vehicle.

Vehicles driving from an unpaved surface onto paved areas may unintentionally create FOD by tracking mud, dirt and stones on the tires. To best avoid this, drive close to the edge of the shoulder immediately after moving from an unpaved to a paved area. If you generate FOD you must pick it up or notify airport administrative personnel immediately to ensure the FOD does not become a hazard to aircraft.

C. Hazards To Drivers

Aircraft engines are the greatest hazard to a vehicle driver. A jet engine sucks outside air into the front end, compresses it, and blasts the air out the back end of the engine. The suction is strong enough to pull rocks, loose equipment, and even people into the engine. The blast from the exhaust is strong enough to blow over vehicles.

Propeller engines are also hazardous. Not only is the blast from the propeller dangerous, the blades themselves act like a high speed saw. During the day, running propellers are difficult to see and at night, nearly impossible to see.

D. Noise

The airport by nature generates a significant amount of noise. Noise presents two problems for drivers: First, it is difficult to hear a warning from another person or

vehicle, and second, your hearing could be damaged if some sort of ear protection is not used. Remember to use ear protection when working in the vicinity of an aircraft.

VI. EMERGENCIES

As a vehicle driver on the AOA, you will need to be aware, at all times, of any emergency that is happening, or any situations that could become emergencies.

A vehicle emergency can be anything from a driver being lost on the movement area, to a collision with an aircraft or another vehicle. If you are involved in an accident or incident, contact Ground Control immediately. By doing so, Ground Control will keep traffic clear of your location and call for necessary assistance.

When an emergency is occurring on the airfield, Ground Control will announce it over the radio and instruct aircraft and vehicles to use caution; and, if necessary, direct them clear of the area of the emergency. Drivers should not leave their positions to "help" at the site of an emergency unless instructed to do so. Personnel who are specially trained to deal with airfield emergencies will respond to the site within minutes. Extra vehicles and people will only cause confusion.

Remember to always yield the right-of-way to emergency vehicles.

Report all vehicle accidents and incidents that occur on the AOA **IMMEDIATELY** to Airport Management. **DO NOT MOVE** any vehicle or aircraft that is involved in an accident in the AOA without permission from Airport Management. If a vehicle is involved in an accident with an aircraft and damage is not visible, the aircraft could still have serious damage that makes it unsafe for flight. Failure to report a vehicle accident with an aircraft could potentially lead to loss of life, and lead to civil and criminal penalties.

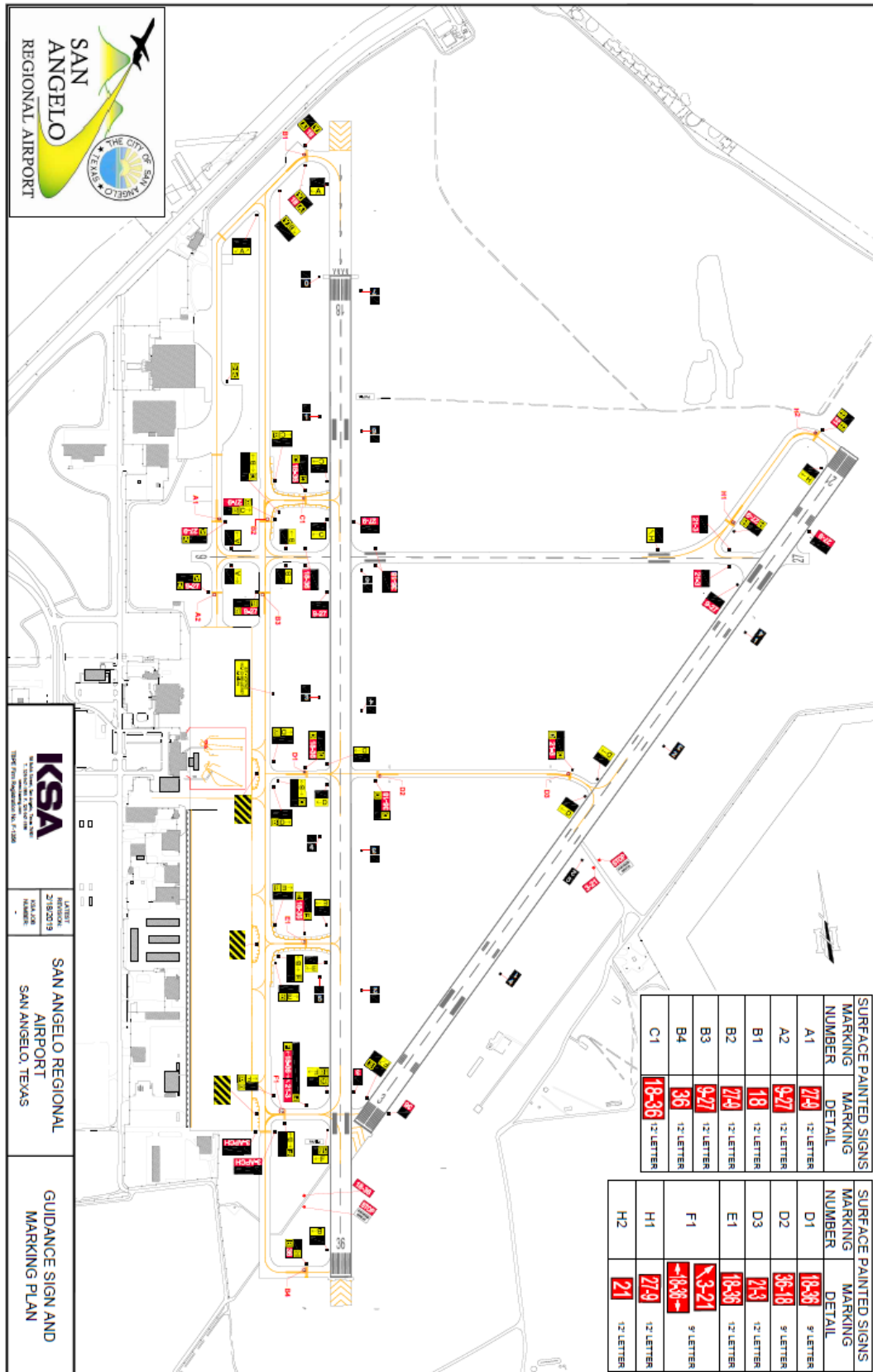
During severe weather, the airport prohibits fueling when lightning is detected within 10 miles of the Airport. Once lightning is no longer detected within 10 miles of the airport, and after fifteen minutes has passed, operations may resume as normal. **It is the responsibility of each employee at the airport to ensure their own safety under any of the lightning conditions.**

VII. SUMMARY

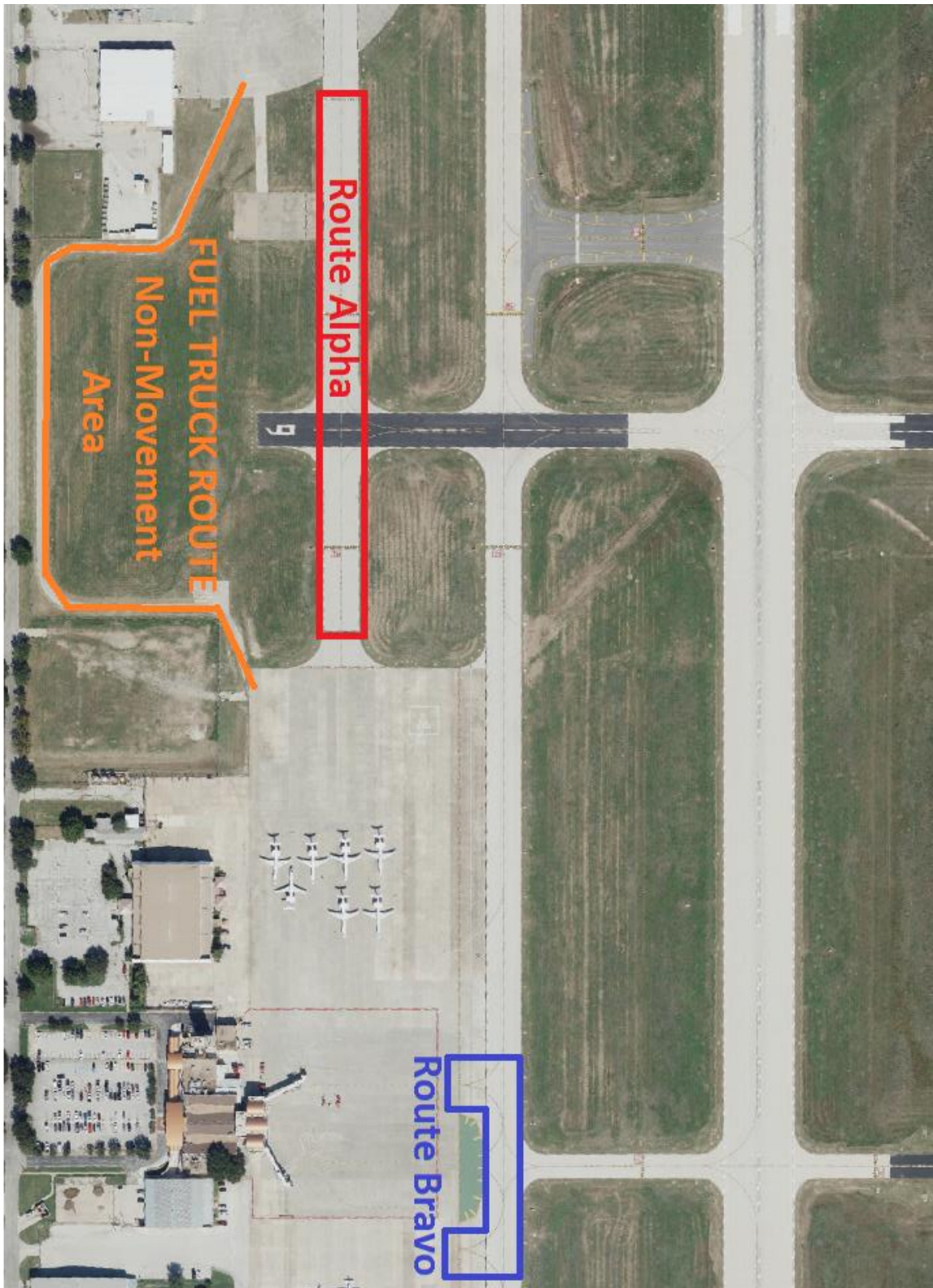
- A "hold-line" marks the boundary between a runway and taxiway. Vehicles must call Ground Control before crossing a hold line.
- Runway markings are white.
- Runway edge lights are white.
- Taxiway markings are yellow.

- Taxiway edge lights are blue.
- An aircraft always has the right-of-way over a vehicle.
- Aircraft have a red light on the left wing, green light on the right wing, white light on the tail, and a red or white rotating light on top and sometimes on the bottom of the aircraft.
- A vehicle traveling on the movement area or in the safety areas must be in contact with Ground Control on 121.9 MHz, unless either instructed otherwise by Ground Control or a properly equipped vehicle is escorting that vehicle.
- When calling Ground Control, you must communicate:
 1. Who you are calling;
 2. Who you are;
 3. Where you are;
 4. Your request/destination.
- Always repeat "hold short" and clearance instructions received from Ground Control.
- Standard pronunciation and terminology must be used when speaking on the radio.
- If anything goes wrong with your vehicle while on the AOA movement area, or if you need to stop the vehicle for any reason, call Ground Control immediately.
- If you don't understand an instruction given to you by Ground Control, *never* hesitate to ask for clarification.





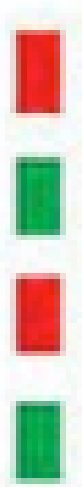
Attachment A – Sign and Marking Plan



Attachment B – “Route Alpha” and “Route Bravo”



APPENDIX C : Light Gun Signals

<p>Color and Type of Signal</p>	<p>Movement of Vehicles, Equipment, and Personnel</p>
<p>Steady Green</p> 	<p>Cleared to cross, proceed, or go</p>
<p>Steady Red</p> 	<p>STOP</p>
<p>Flashing Red</p> 	<p>Clear the Runway/Taxiway</p>
<p>Flashing White</p> 	<p>Return the Starting Point</p>
<p>Alternate Red and Green</p> 	<p>Use EXTREME Caution!!!</p>



SAN ANGELO REGIONAL AIRPORT MATHIS FIELD

8618 Terminal Circle, Suite 101 • San Angelo, Texas 76904 • 325-659-6409 • Fax 657-0050

SAN ANGELO REGIONAL AIRPORT:

Driver's Endorsement

To be completed by the applicant prior to the practical exam

I have read the San Angelo Regional Airport Movement Area Drivers Training Information Study Guide. I understand and will comply with the procedures, regulations, and directives issued by the Federal Aviation Administration as well as the procedures and training I have received through the San Angelo Regional Airport Movement Area Drivers Training Information and Study Guide.

Name: _____

Signature: _____

Date: _____

To be completed by Airport Administration

Airport Driver's Endorsement Certificate

Certificate Holder: _____

Date: _____

Airport Official Endorsing: _____