BOULDER CITY
MUNICIPAL AIRPORT

APPENDIX A

Glossary of Terms

Glossary of Terms

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specif c aviation subject.

AIR CARRIER: An operator which: (1) performs at least f ve round trips per week between two or more points and publishes f ight schedules which specify the times, days of the week, and places between which such f ights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certif ed in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for f ight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing conf guration at their maximum certif cated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specif ed national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of exis. ng and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulf llment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airf eld at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment def ning the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument f ight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR f ight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certif cated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specif c trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious f ow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR f ight plan within controlled airspace and principally during the en route phase of f ight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central f ow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categoriza. on of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR f ight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his f nal approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface def ned in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specif ed portion of the airf eld used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a f ight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATIC WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed f ight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a f xed point (as the observer's heading).

B

BASE LEG: A f ight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specif c airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of elimina. ng the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identif es suitable building area locations on the airport.

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specif ed national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

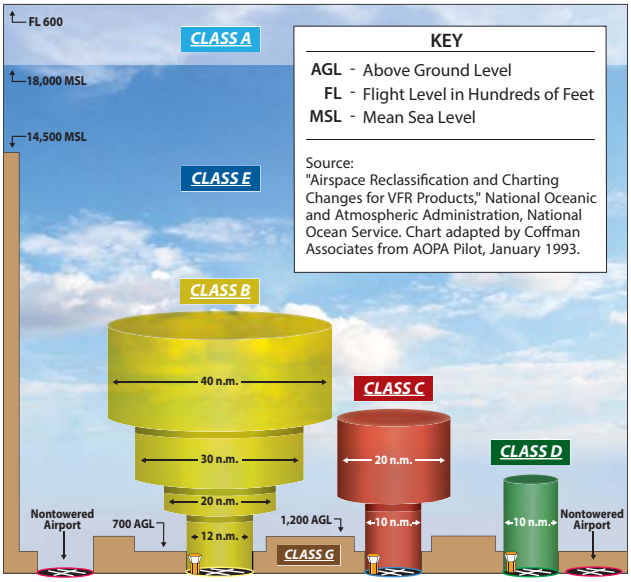
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 200 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specif ed above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when f ying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identif ed in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface def ned in FAR Part 77 that extends

from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an opera. ng airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of def ned dimensions within which air traffic control services are provided to instrument f ight rules (IFR) and visual f ight rules (VFR) f ights in accordance with the airspace classif cation. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including f ight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**:
  Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The conf guration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traff c control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a f ve nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and conf gured to encompass published instrument approach procedure. Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classif ed as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be conf gured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument f ight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classif ed as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended f ight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended f ight path of an aircraft.

CROSSWIND LEG: A f ight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT/ DECISION ALTITUDE: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.

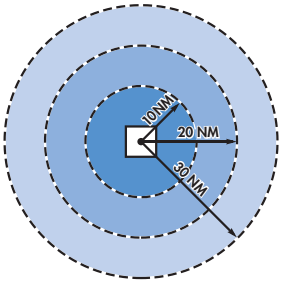
- **TAKEOFF DISTANCE AVAILABLE (TODA):** The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):** The runway plus stopway length declared available for the accelera. on and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA):** The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specif ed national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A f ight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specif ed form of development or activity, as well as any other legal rights in the property that may be specif ed in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would signif cantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the execu. ve departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A f ight path in the direction of landing along the extended runway centerline. The f nal approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A def ned area over which the f nal phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the f nal approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a signif cant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, f ight training, repair, and maintenance.

FLIGHT LEVEL: A measure of altitude used by aircraft f ying above 18,000 feet. Flight levels are indicated by three digits representing the pressure altitude in hundreds of feet. An airplane f ying at f ight level 360 is f ying at a pressure altitude of 36,000 feet. This is expressed as FL 360.

FLIGHT SERVICE STATION: An operations facility in the national f ight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-f ight and in-f ight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certif cate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 48 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classif cation in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircra. turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction-limiting surface def ned in FAR Part 77 that is specif ed as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specif c horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument f ight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of f ight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to def ne weather conditions and the type of f ight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specif c visibility and ceiling conditions that are less than the minimums specif ed for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specif ed airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certif ed takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from f ights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two f xed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest classif ca. on in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classif cation in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military f ight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The f ight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certif cates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction f nding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with f ight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircra. operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin f nal approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specif ed radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.
- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.
- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the f nal approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface def ned in FAR Part 77 that is specif ed as a rectangular surface longitudinally centered about a runway. The specif c dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve f ight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument f ight rules cancellations or departure/ landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits f ights over determined tracks within prescribed accuracy tolerances without the need to overf y ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A def ned rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially f ashing lights installed on the extended centerline of the runway usually in conjunc. on with an approach lighting system.

RUNWAY DESIGN CODE: A code signif ying the design standards to which the runway is to be built.

RUNWAY END IDENTIFICATION LIGHTING (REIL): Two synchronized f ashing lights, one on each side of the runway threshold, which provide rapid and positive identif cation of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY REFERENCE CODE: A code signifying the current operational capabilities of a runway and associated taxiway.

RUNWAY SAFETY AREA (RSA): A def ned surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point f ve feet above the runway centerline to any point f ve feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identif es and def nes the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transi. on between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRCRAFT: An aircraft that has a maximum certif ed takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of def ned dimensions identif ed by a surface area wherein activities must be conf ned because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classif cations include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with def ned vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument f ight rule (IFR) traffic and to identify for visual f ight rule (VFR) traffic where these activities are conducted.
- **PROHIBITED AREA**: Designated airspace within which the f ight of aircraft is prohibited.
- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the f ight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA:** Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard f ight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees of the f nal approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA):
See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA):
See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A def ned path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY DESIGN GROUP: A classif cation of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance.

TAXIWAY SAFETY AREA (TSA): A def ned surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published f ight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

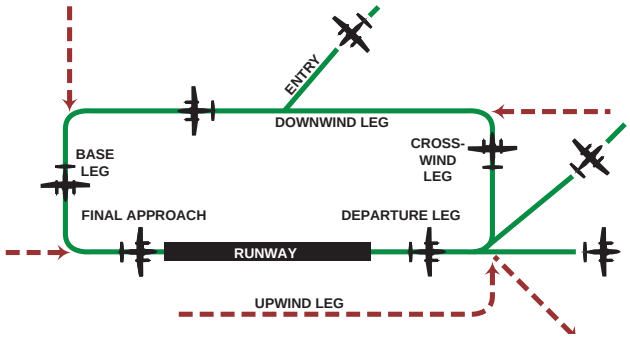
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The f rst 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic f ow that is prescribed for aircra. landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and f nal approach.



U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM):
A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

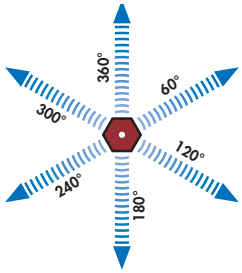
UPWIND LEG: A f ight path parallel to the landing runway in the direction of landing. See "traffic pattern."

V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identif es itself by Morse Code and may have an additional voice identif cation feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A naviga. on aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.



VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is def ned by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR f ight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/ white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting f ight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of f ight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specif c visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of f ight.

Abbreviations

AC: advisory circular

ADF: automatic direction f nder

ADG: airplane design group

AFSS: automated f ight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced f ashers (CAT I conf guration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced f ashers (CAT II conf guration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircra. rescue and f re f ghting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automatic weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: f xed base operator

FY: f scal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument f ight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOM: compass locator at outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory commi. ee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

RRC: Runway Reference Code

RDC: Runway Design Code

REIL: runway end identif cation lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplif ed short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TDG: Taxiway Design Group

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual f ight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

BOULDER CITY
MUNICIPAL AIRPORT

APPENDIX B

Airport Layout Plan

Appendix B
AIRPORT LAYOUT PLANS

As part of this Master Plan, the Federal Aviation Administration (FAA) requires the development of several technical drawings detailing specific parts of Boulder City Municipal Airport and its environs. The technical drawings are collectively referred to as the Airport Layout Plan (ALP) set. These drawings were created on a computer-aided drafting (CAD) system and serve as the official depiction of the current and planned condition of the airport. These drawings will be delivered to the FAA and Nevada Department of Transportation – Aviation Planning Section (NDOT) for their review. These entities will critique the drawings from a technical perspective to be sure all applicable regulations are met. Ultimately, the FAA will approve the ALP drawing set.

The five primary functions of the ALP that define its purpose are:

1) An approved plan is necessary for the airport to receive financial assistance under the terms of the *Airport and Airway Improvement Act of 1982* (AIP), as amended, and to be able to receive specific Passenger Facility Charge funding. An airport must keep its ALP current and follow that plan, since those are grant assurance requirements of the AIP and previous airport development programs, including the 1970 Airport Development Aid Program (ADAP) and Federal Aid Airports Program (FAAP) of 1946, as amended. While ALPs are not required for airports other than those developed with assistance under the aforementioned federal programs, the same guidance can be applied to all airports.

2) An ALP creates a blueprint for airport development by depicting proposed facility improvements. The ALP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements and is consistent with airport and community land use plans.

3) The ALP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.

4) The approved ALP enables the airport sponsor and the FAA to plan for facility improvements at the airport. It also allows the FAA to anticipate budgetary and procedural needs. The approved ALP will also allow the FAA to protect the airspace required for facility or approach procedure improvements.

5) The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.

It should be noted that the FAA requires that any planned changes to the airfield (i.e., runway and taxiway system) be represented on the drawings. A landside configuration is also depicted on the drawings, but the FAA recognizes that landside development is much more fluid and often dependent upon specific developer needs. Thus, an updated drawing set is not typically necessary for future landside alterations, provided they do not impact planned airside facilities and land use designations.

AIRPORT LAYOUT PLAN SET

The ALP set includes several technical drawings which depict various aspects of the current and future layout of the airport. The following is a description of the ALP drawings included with this Master Plan.

DATA SHEET

The Data Sheet provides existing and ultimate conditions for the airport as they relate to the runways, taxiways, navigational aids, and wind data tabulations.

AIRPORT LAYOUT DRAWING

An official Airport Layout Drawing (ALD) has been developed for Boulder City Municipal Airport. The ALD graphically presents the existing and ultimate airport layout. The ALD includes such elements as the physical airport features, location of airfield facilities (i.e., runways, taxiways, navigational aids), and existing aviation development. Also presented on the ALD are the runway safety areas, airport property boundary, and revenue support areas.

The computerized plan provides detailed information on existing and future facility layouts on multiple layers that permit the user to focus on any section of the airport at a desired scale. The plan can be used as base information for design and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The ALD is used by the FAA to determine funding eligibility for future capital projects.

TERMINAL AREA DRAWING

The Terminal Area Drawing is a larger scale plan view drawing of existing and planned aprons, buildings, hangars, parking lots, and other landside facilities.

AIRPORT AIRSPACE DRAWINGS

Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, was established for use by local authorities to control the height of objects near airports. The Part 77 Airspace Drawing is a graphic depiction of this regulatory criterion. The Airspace Drawing is a tool to aid local authorities in determining if proposed development could present a hazard to aircraft using the airport. It can be a critical tool for the airport sponsor's use in reviewing proposed development in the vicinity of the airport and for establishing locally enforceable height and hazard zoning regulations.

The Airspace Drawing assigns three-dimensional imaginary surfaces associated with the airport. These imaginary surfaces emanate from the runway centerline(s) and are dimensioned according to the visibility minimums associated with the approach to the runway end and size of aircraft to operate on the runway. The Part 77 imaginary surfaces include the primary surface, horizontal surface, approach surface, transitional surface, and conical surface.

Penetrations to the Part 77 surfaces are considered obstructions to the airport airspace. Further analysis by the FAA, through an aeronautical survey, is necessary to determine if any obstructions are hazards to air navigation. It should be noted that the Part 77 drawings are based on ultimate planning recommendations and not necessarily existing conditions.

APPROACH SURFACE PROFILE DRAWINGS

The Approach Surface Profile Drawings present the entirety of the Part 77 approach surface to the end of each runway. It also depicts the runway centerline profile with elevations. This drawing provides profile details that the Airspace Drawings do not.

The Approach Surface Profile Drawings include identified penetrations to the approach surface. Penetrations to the approach surface are considered obstructions. The FAA will determine if any obstructions are also hazards which require mitigation. The FAA utilizes other design criteria such as the threshold siting surface (TSS) and various surfaces defined in FAA Order 8260.3B, *Terminal Instrument Procedures* (TERPS), to determine if an obstruction is a hazard.

If an obstruction is a hazard, the FAA can take many steps to protect air navigation. The mitigation options range from the airport owner removing the hazard to installing obstruction lighting, to the FAA adjusting the instrument approach minimums.

The drawing set includes the following approach surface drawings:

- Approach profile drawings for each runway end
- Inner portion of the approach surface drawings for each runway end

AIRPORT LAND USE DRAWING

The objective of the Airport Land Use Drawing is to coordinate uses of the airport property in a manner compatible with the functional design of the airport facility. Airport land use planning is important for orderly development and efficient use of available space. There are two primary considerations for airport land use planning. These are to secure those areas essential to the safe and efficient operation of the airport and to determine compatible land uses for the balance of the property which would be most advantageous to the airport and community. In essence, this drawing depicts the suggested highest and best potential uses for airport property.

The Airport Land Use Drawing presents generalized proposed uses of property for the future. The on-airport land uses on this drawing become the official FAA acceptance of current and future land uses. The map also depicts the existing and ultimate noise exposure limits set at the 65 Yearly Day-Night Average Sound Level (DNL).

AIRPORT PROPERTY MAP

The Airport Property Map provides information on property under airport control and is, therefore, subject to FAA grant assurances. The various recorded deeds that make up the airport property are listed in tabular format. The primary purpose of the drawing is to provide information for analyzing the current and future aeronautical use of land acquired with federal funds.

DEPARTURE SURFACE DRAWINGS

The Departure Surface Drawing provides detailed analysis of the existing and ultimate departure surface for each corresponding runway end. A composite profile of the extended ground line is depicted. Obstructions are shown where appropriate.

ALP DISCLAIMER

The preparation of the ALP set has been supported, in part, through financial assistance from the FAA through the Airport Improvement Program (AIP). The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of the Master Plan does not in any way constitute a commitment on the part of the FAA to participate in any development depicted on the ALP drawings, nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with appropriate public laws.

The ALP drawing set has been developed in accordance with accepted FAA standards.

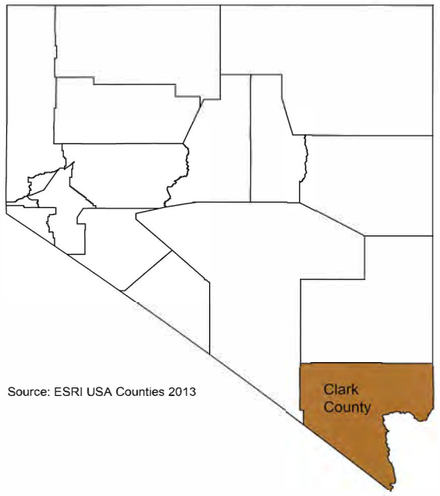
AIRPORT LAYOUT PLANS

for the

BOULDER CITY MUNICIPAL AIRPORT

Boulder City, Nevada

Prepared for
Boulder City, Nevada



Source: ESRI USA Counties 2013

DRAWING INDEX

LOCATION MAP

VICINITY MAP

FOR APPROVAL BY

9.20.18
DATE:

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982 AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

TITLE SHEET

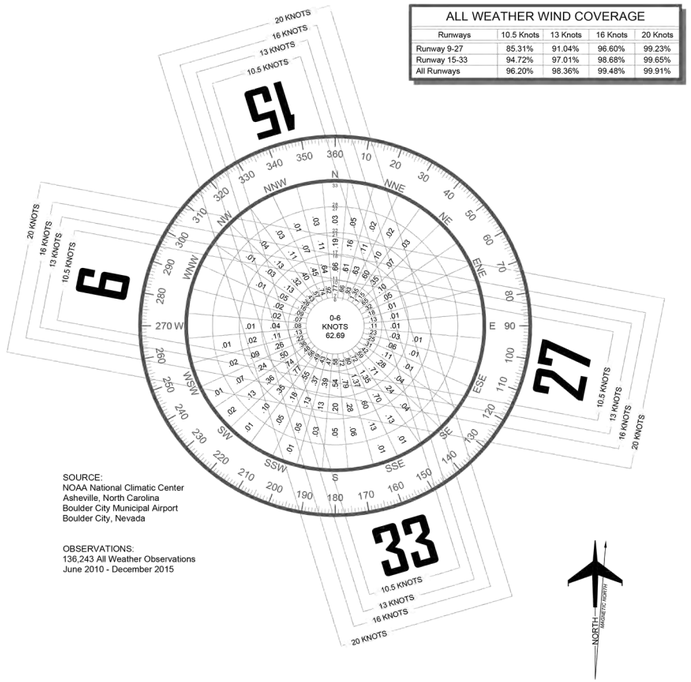
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 1 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 9-27	85.31%	91.04%	96.60%	99.23%
Runway 15-33	94.72%	97.01%	98.68%	99.65%
All Runways	96.20%	98.36%	99.48%	99.91%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Boulder City Municipal Airport
Boulder City, Nevada

OBSERVATIONS:
136,243 All Weather Observations
June 2010 - December 2015

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
0° 6' West (January 2018)

Source: NOAA
https://www.ngdc.noaa.gov/geomag-web/#declination

RUNWAY DATA

RUNWAY DATA	RUNWAY 9-27				RUNWAY 15-33			
	EXISTING		ULTIMATE		EXISTING (To Be Closed)		ULTIMATE (Relocated)	
	9	27	9	27	15	33	15	33
DESIGN AIRCRAFT	B-II-2		B-II-2		A-I-1A		B-II-2	
APPROACH REFERENCE CODE	B/II/VISUAL		B/III/5000; D/II/5000		B/II/VISUAL		B/III/VISUAL; D/II/VISUAL	
DEPARTURE REFERENCE CODE	B-II		B/III, D/II		A-I		B/III, D/II	
RUNWAY DESIGN CODE	B/II/VISUAL		B/II/5000		A/I/VISUAL		B/II/VISUAL	
PERCENT WIND COVERAGE PER ARC CROSSWIND COMPONENT	90.78%		90.78%		94.63%		94.63%	
14 CFR PART 77 CATEGORY	20:1	20:1	20:1	34:1	20:1	20:1	20:1	20:1
APPROACH VISIBILITY MINIMUMS	Visual	Visual	Visual	1 Mile	Visual	Visual	Visual	Visual
APPROACH TYPE	Visual	Visual	Visual	Nonprecision	Visual	Visual	Visual	Visual
TYPE OF AERONAUTICAL SURVEY REQUIRED FOR APPROACH	NVG	NVG	NVG	VG	NVG	NVG	NVG	NVG
THRESHOLD SITING SURFACE	20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1
DEPARTURE SURFACE	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A
CRITICAL AIRCRAFT	Beechcraft King Air 350i		Cessna Citation Encore 560		Socata TBM 700		Beechcraft King Air 350i	
WINGSPAN OF DESIGN AIRCRAFT	57'-11"		54'-10"		41'-7"		57'-11"	
UNDERCARRIAGE WIDTH OF DESIGN AIRCRAFT	17'-2"		18'-8 13/16"		14'-7"		17'-2"	
TAIL HEIGHT OF DESIGN AIRCRAFT	14'-4"		15'-2"		14'-4"		14'-4"	
APPROACH SPEED (KNOTS) OF DESIGN AIRCRAFT	93		108		80		93	
MAXIMUM CERTIFIED TAKEOFF WEIGHT (LBS) OF DESIGN AIRCRAFT	15,000		16,630		6,579		15,000	
RUNWAY DIMENSIONS	4802' x 75'		6100' x 75'		3850' x 75'		5000' x 75'	
RUNWAY BEARING (TRUE)	99.31°	279.31°	99.31°	279.31°	165.01°	345.01°	165.01°	345.01°
RUNWAY END ELEVATION (MSL)	2108.4'	2137.7'	2108.0'	2139.0'	2203.1'	2098.7'	2170.0'	2100.0'
RUNWAY THRESHOLD DISPLACEMENT	N/A	N/A	N/A	300'	N/A	N/A	N/A	N/A
DISPLACED THRESHOLD ELEVATION (MSL)	N/A	N/A	N/A	2137.7'	N/A	N/A	N/A	N/A
RUNWAY TOUCHDOWN ZONE ELEVATION (MSL)	2130.1'	2137.7'	2123.7'	2137.7'	2203.1'	2179.5'	2170.0'	2130.6'
RUNWAY HIGH POINT ELEVATION (MSL)	2137.7'		2139.0'		2203.1'		2170.0'	
RUNWAY LOW POINT ELEVATION (MSL)	2108.4'		2108.0'		2098.7'		2100.0'	
RUNWAY EFFECTIVE GRADIENT (MAXIMUM)	0.6%		0.5%		2.7%		1.4%	
RUNWAY LINE OF SIGHT REQUIREMENT MET	TBD		TBD		TBD		TBD	
PAVEMENT DESIGN STRENGTH (in thousand lbs.)	12.5 (S)		30 (S)		12.5 (S)		15 (S)	
STRENGTH BY PCN	Not Available		Not Available		Not Available		Not Available	
RUNWAY SURFACE MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
RUNWAY PAVEMENT SURFACE TREATMENT	None		None		None		None	
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END (STANDARD)	300'	300'	300'	300'	240'	240'	300'	300'
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END (ACTUAL)	300'	300'	300'	300'	240'	240'	300'	300'
RUNWAY SAFETY AREA WIDTH	150'		150'		120'		150'	
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END (STANDARD)	300'	300'	300'	300'	240'	240'	300'	300'
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END (ACTUAL)	300'	300'	300'	300'	240'	240'	300'	300'
RUNWAY OBJECT FREE AREA WIDTH	500'		500'		400'		500'	
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END (STANDARD)	200'	200'	200'	200'	200'	200'	200'	200'
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END (ACTUAL)	200'	200'	300'	300'	200'	200'	200'	200'
RUNWAY OBSTACLE FREE ZONE WIDTH	400'		400'		400'		400'	
RUNWAY PROTECTION ZONE	500'x700'x1000' (9) 500'x700'x1000' (27)		500'x700'x1000' (9) 500'x700'x1000' (27)		500'x700'x1000' (15) 500'x700'x1000' (33)		500'x700'x1000' (15) 500'x700'x1000' (33)	
DISTANCE FROM RUNWAY CENTERLINE TO HOLD BARS AND SIGNS	230' & 275' (200' Standard)		230' & 275' (200' Standard)		197' - 200' (200' Standard)		200'	
RUNWAY MARKING	Nonprecision	Nonprecision	Nonprecision	Nonprecision	Basic	Basic	Basic	Basic
RUNWAY CL TO PARALLEL TAXIWAY CL	240'		300'		240'		300'	
RUNWAY LIGHTING	MIRL		MIRL		MIRL		MIRL	
TAXIWAY DESIGN GROUP	TDG2		TDG2		TDG1A		TDG2	
TAXIWAY WIDTH	35'		35'		35' and 50' (25' Standard)		35'	
TAXIWAY SURFACE MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
TAXIWAY OBJECT FREE AREA WIDTH	131'		131'		89'		131'	
TAXIWAY SAFETY AREA WIDTH	79'		79'		49'		79'	
TAXIWAY WING TIP CLEARANCE	26'		26'		20'		26'	
TAXIWAY CENTERLINE TO FIXED OR MOVEABLE OBJECT	65.5'		65.5'		44.5'		65.5'	
TAXIWAY SHOULDER WIDTH	15'		15'		10'		15'	
TAXIWAY EDGE SAFETY MARGIN	7.5'		7.5'		5'		7.5'	
TAXILANE OBJECT FREE AREA WIDTH	115'		115'		79'		115'	
TAXILANE CENTERLINE TO FIXED OR MOVEABLE OBJECT	57.5'		57.5'		39.5'		57.5'	
TAXIWAY MARKING	Centerline		Centerline		Centerline		Centerline	
TAXIWAY LIGHTING	MITL		MITL		MITL		MITL	
RUNWAY INSTRUMENT NAVIGATIONAL AIDS	None		GPS (27)		None		None	
RUNWAY VISUAL AIDS	Airport Beacon PAPI-2 (9,27) REIL (9,27), MIRL Lighted Wind Cones Segmented Circle		Airport Beacon PAPI-4 (9,27) REIL (9,27), MIRL Lighted Wind Cones Segmented Circle		Airport Beacon PAPI-2 (33) REIL (15,33), MIRL Lighted Wind Cones		Airport Beacon PAPI-2 (15,33) REIL (15,33), MIRL Lighted Wind Cones	

RUNWAY END COORDINATES (NAD 83)

RUNWAY	LATITUDE	LONGITUDE	ELEVATION
EXISTING RUNWAY 9	N 35° 56' 50.86"	W 114° 52' 08.51"	2108.4'
ULTIMATE RUNWAY 9	N 35° 56' 52.52"	W 114° 52' 20.46"	2108.0'
EXISTING RUNWAY 27	N 35° 56' 42.83"	W 114° 51' 10.94"	2137.7'
ULTIMATE RUNWAY 27	N 35° 56' 42.33"	W 114° 51' 07.35"	2139.0'
ULTIMATE RUNWAY 27 DISPLACED THRESHOLD	N 35° 56' 42.83"	W 114° 51' 10.94"	2157.7'
EXISTING RUNWAY 15	N 35° 57' 13.66"	W 114° 51' 48.41"	2203.1'
ULTIMATE RUNWAY 15	N 35° 57' 13.71"	W 114° 52' 00.58"	2170.0'
EXISTING RUNWAY 33	N 35° 56' 36.81"	W 114° 51' 36.63"	2098.7'
ULTIMATE RUNWAY 33	N 35° 56' 25.86"	W 114° 51' 45.29"	2100.0'

OFZ PENETRATION TABLE

ID	DESCRIPTION	REMEDIATION
	TBD	

TBD - TO BE DETERMINED

THRESHOLD SITING SURFACE OBJECT PENETRATIONS

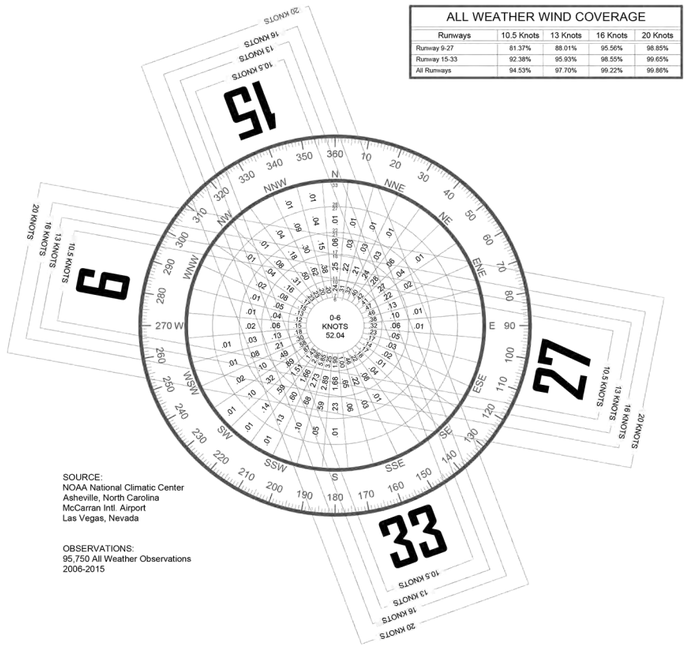
NO.	OBJECT	PENETRATION	REMEDIATION
	SEE SHEETS 10, 11, 13, AND 14 FOR THRESHOLD SITING OBSTRUCTIONS.		

ELECTRONIC AIRPORT NAVAID OWNERSHIP

NAVAID	OWNER
BEACON	Boulder City Municipality (Airport)
AWOS-3	Boulder City Municipality (Airport)
MIRL	Boulder City Municipality (Airport)
VGSI	State of Nevada
REIL	Boulder City Municipality (Airport)

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 9-27	81.37%	88.01%	95.56%	98.85%
Runway 15-33	92.38%	95.93%	98.55%	99.65%
All Runways	94.53%	97.70%	99.22%	99.86%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
McCarran Intl. Airport
Las Vegas, Nevada

OBSERVATIONS:
95,750 All Weather Observations
2006-2015

DECLARED DISTANCE

DECLARED DISTANCE	RUNWAY 9-27				RUNWAY 15-33			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
	9	27	9	27	15	33	15	33
TAKE-OFF RUN AVAILABLE	4802'	4802'	5800'	6100'	3850'	3850'	5000'	5000'
TAKE-OFF DISTANCE AVAILABLE	4802'	4802'	6100'	6100'	3850'	3850'	5000'	5000'
ACCELERATE STOP DISTANCE AVAILABLE	4802'	4802'	5940'	6100'	3850'	3850'	5000'	5000'
LANDING DISTANCE AVAILABLE	4802'	4802'	5940'	5800'	3850'	3850'	5000'	5000'

LINE OF SIGHT OBSTRUCTIONS

LOCATION	OBSTRUCTION	ACTION
RUNWAYS MEET LINE OF SIGHT REQUIREMENTS		

EXISTING MODIFICATIONS TO FAA DESIGN STANDARDS

AIRSPACE CASE NO.	APPROVAL DATE	DESCRIPTION
NONE REQUIRED		

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS

NONSTANDARD CONDITION	APPLICABLE DESIGN STANDARD	STANDARD	ULTIMATE	ACTION
140' RUNWAY OBJECT FREE AREA LENGTH BEYOND 27 END	RWY OBJECT FREE AREA STANDARDS FOR ARC B-II	300'	140'	DISPLACE RUNWAY 27 THRESHOLD 300'
140' RUNWAY SAFETY AREA LENGTH BEYOND 27 END	RWY SAFETY AREA STANDARDS FOR ARC B-II	300'	140'	DISPLACE RUNWAY 27 THRESHOLD 300'
140' RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND 27 END	RWY OBSTACLE FREE ZONE STANDARDS FOR ARC B-II	200'	140'	DISPLACE RUNWAY 27 THRESHOLD 300'

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

AIRPORT DATA SHEET

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 2 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	N/A	AIRPORT ROTATING BEACON
		AVIGATION EASEMENT
BRL		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
		CRITICAL AREA
		AIRPORT PAVEMENT
		FENCE LINE
		HOLD MARKING
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ		RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	TOFA	TAXIWAY OBJECT FREE AREA
TSA	TSA	TAXIWAY SAFETY AREA
		TIE-DOWNS
		TAXIWAY/TAXILANE CENTERLINES
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		WINDSOCK
		TOPOGRAPHIC CONTOURS
		VEGETATION

PACS SACS STATIONS

DESIGNATION	PERMANENT IDENTIFIER	LATITUDE	LONGITUDE
NONE			

NO PAC OR SAC STATIONS AT THIS AIRPORT

OFZ PENETRATION TABLE

ID	DESCRIPTION	REMEDIATION
A	GROUND PENETRATES BY = 3'	GRADE TERRAIN

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA DATASHEET http://webdatasheet.faa.gov/, FAA AIRPORT MASTER RECORD FORM 5010,AND THE FAA AIRPORT FACILITY DIRECTORY http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/.
3. ULTIMATE ELEVATIONS, COORDINATES, AND BEARINGS ESTIMATED FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
5. NO PRIMARY AIRPORT CONTROL STATIONS (PACS) OR SECONDARY CONTROL STATIONS (SACS) WITHIN THE VICINITY OF BOULDER CITY AIRPORT.
6. SECTION CORNERS LOCATIONS FROM THE BUREAU OF LAND MANAGEMENT.
7. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
8. RUNWAY INTERSECTION ELEVATIONS ESTIMATED FROM US GEOLOGICAL SURVEY 2013, NED n33w105, 1/3 arc-second.
9. NO ATCT AT BOULDER CITY AIRPORT, NO LINE OF SIGHT STUDY AVAILABLE.
10. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR THRESHOLD SITING SURFACE PENETRATIONS.
11. SEE TERMINAL AREA DRAWING, SHEETS 4 AND 5 OF 17 FOR LANDSIDE DIMENSIONAL DETAILS.

AIRPORT DATA

OWNER: City of Boulder City	NPIAS SERVICE LEVEL: Primary, CS	
CITY: Boulder City, Nevada	STATE SERVICE ROLE: Primary, CS	
COUNTY: Clark		

BOULDER CITY MUNICIPAL AIRPORT (BVU)		EXISTING	ULTIMATE
AIRPORT REFERENCE CODE		B-II	B-II
CRITICAL AIRCRAFT		Beechcraft King Air 350i	Cessna Citation Encore 560
AIRPORT ELEVATION		2203.1' MSL	2170.0' MSL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		101.6° July	101.6° July
AIRPORT REFERENCE POINT (NAD 83)	Latitude	35° 56' 50.58" N	35° 56' 48.49" N
	Longitude	114° 51' 40.97" W	114° 51' 47.97" W
AIRPORT INSTRUMENT APPROACH		NONE	LPV (27)
AIRPORT and TERMINAL NAVIGATIONAL AIDS		Airport Beacon PAPI-2 (9,27,33) REIL (9,27,15,33)	Airport Beacon PAPI-4 (9,27), PAPI-2 (15,33) REIL (9,27,15,33)
MISCELLANEOUS FACILITIES		AWOS-III Lighted Wind Cones Segmented Circle MIRL, MITL CTAF/UNICOM	AWOS-III Lighted Wind Cones Segmented Circle MIRL, MITL CTAF/UNICOM

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
1	Conventional Hangar	2192.5'
2	Office Building	2170.9'
3	Conventional Hangar	2194.5'
4	Conventional Hangar	2196.0'
5	Executive Hangar	2190.8'
6	Conventional Hangar	2201.3'
7	Shuttle Park	2183.1'
8	Air Tour Terminal Facility	2212.5'
9	Executive Hangar	2192.9
10	Airport Admin Bldg/FBO	2196.0'
11	Executive Hangar	2196.6'
12	Linear Box Hangars	2188.0'
13	Linear Box Hangars	2190.3'
14	Linear Box Hangars	2189.7'
15	Linear Box Hangars	2194.0'
16	Linear Box Hangars	2194.1'
17	Linear Box Hangars	2194.2'
18	Linear Box Hangars	2196.8'
19	Linear Box Hangars	2196.6'
20	Linear Box Hangars	2193.9'
21	Linear Box Hangars	2188.2'
22	Linear Box Hangars	2187.8'
23	Linear Box Hangars	2188.8'
24	Linear Box Hangars	2189.4'
25	Linear Box Hangars	2193.3'
26	Linear Box Hangars	2189.6'
27	Linear Box Hangars	2188.7'
28	Linear Box Hangars	2186.3'
29	Executive Hangar	2189.2'
30	Executive Hangar	2187.5'

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
31	Port-A-Port	2178.7'
32	Port-A-Port	2178.7'
33	Port-A-Port	2178.7'
34	Port-A-Port	2178.7'
35	Port-A-Port	2178.7'
36	Port-A-Port	2178.7'
37	Port-A-Port	2178.7'
38	Port-A-Port	2178.7'
39	Port-A-Port	2178.7'
40	Port-A-Port	2178.7'
41	Port-A-Port	2178.7'
42	Port-A-Port	2178.7'
43	Port-A-Port	2178.7'
44	Port-A-Port	2178.7'
45	Port-A-Port	2178.7'
46	Linear Box Hangars	2184.5'
47	T-Hangars	2180.5'
48	T-Hangars	2180.5'
49	Executive Hangar	2189.9'
50	Self-Service Fuel Island	
51	Fuel Farm	2175.8'
52	Linear Box Hangars	2187.1'
53	Linear Box Hangars	2187.5'
54	Linear Box Hangars	2188.3'
55	Linear Box Hangars	2188.3'
56	Automated Weather Observation System (AWOS)	UNK
57	Segmented Circle/Lighted Windsock	UNK
58	Beacon	UNIK

UNK- Unknown

ULTIMATE AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (AGL)
101	ATCT POTENTIAL SITES	103'
102	AWOS	TBD
103	Segmented Circle/Lighted Windsock	TBD
104	Executive Box Hangar	31'
105	Executive Box Hangar	31'
106	Executive Box Hangar	31'
107	Executive Box Hangar	31'
108	Executive Box Hangar	31'
109	Executive Box Hangar	31'
110	Executive Box Hangar	31'
111	Executive Box Hangar	31'
112	Executive Box Hangar	31'
113	Executive Box Hangar	31'
114	Executive Box Hangar	31'
115	Potential ARFF Sites	31'
116	Wash Rack	TBD
117	Conventional Hangar	33'
118	FBO	33'
119	Maintenance Area	33'

TBD - To Be Determined

FAA APPROVAL STAMP

Approved conditionally October 4, 2018
Subject to comments contained in our letter dated: 10-4-2018
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By: [signature]
Manager / Assistant Manager – Phoenix/ADO

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

Source: NOAA
https://www.ngdc.noaa.gov/geomag-web/#declination

0 400 800
SCALE IN FEET

FOR APPROVAL BY

[signature] 9.20.18
DATE:

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT

AIRPORT LAYOUT DRAWING

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 3 OF 17

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Airport Consultants
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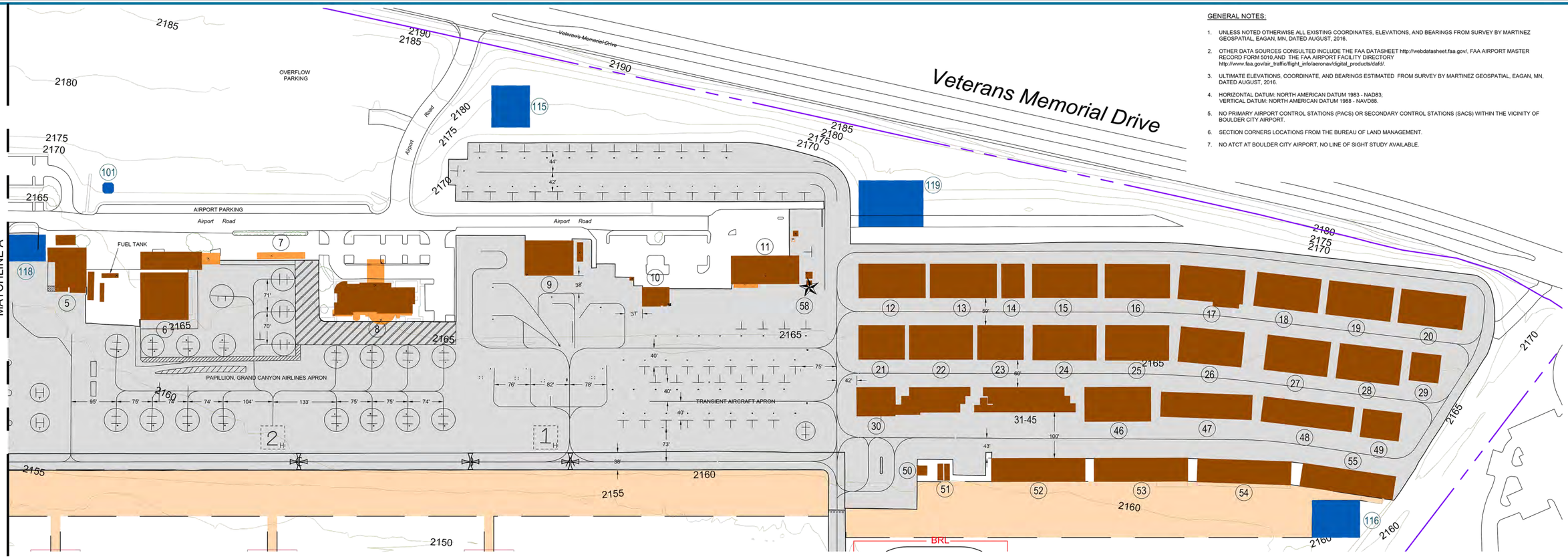
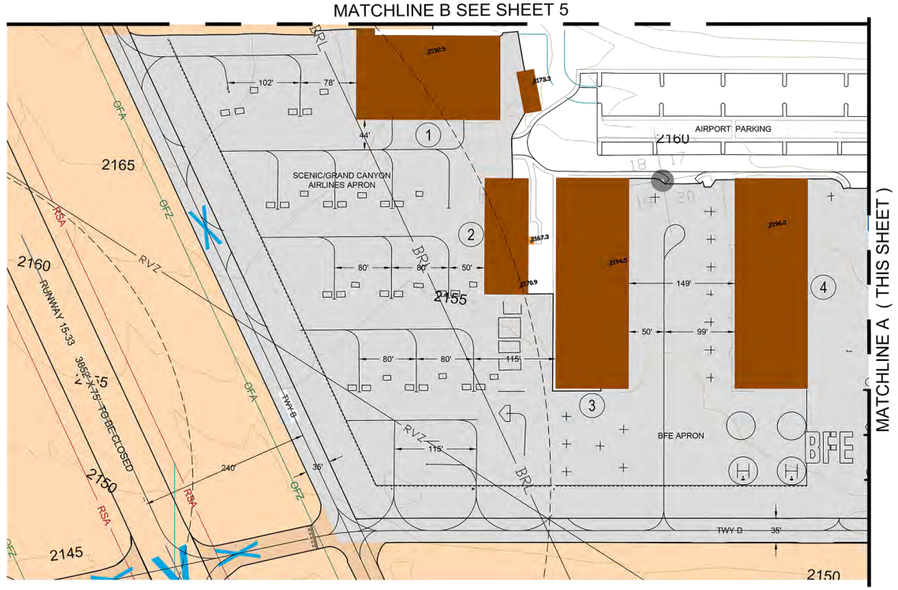


MATCHLINE B SEE SHEET 5



MATCHLINE A (THIS SHEET)

GENERAL NOTES:

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4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
5. NO PRIMARY AIRPORT CONTROL STATIONS (PACS) OR SECONDARY CONTROL STATIONS (SACS) WITHIN THE VICINITY OF BOULDER CITY AIRPORT.
6. SECTION CORNERS LOCATIONS FROM THE BUREAU OF LAND MANAGEMENT.
7. NO ATCT AT BOULDER CITY AIRPORT, NO LINE OF SIGHT STUDY AVAILABLE.

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
1	Conventional Hangar	2192.5'
2	Office Building	2170.9'
3	Conventional Hangar	2194.5'
4	Conventional Hangar	2196.0'
5	Executive Hangar	2190.8'
6	Conventional Hangar	2201.3'
7	Shuttle Park	2183.1'
8	Air Tour Terminal Facility	2212.5'
9	Executive Hangar	2192.9
10	Airport Admin Bldg/FBO	2196.0'
11	Executive Hangar	2196.6'
12	Linear Box Hangars	2188.0'
13	Linear Box Hangars	2190.3'
14	Linear Box Hangars	2189.7'
15	Linear Box Hangars	2194.0'
16	Linear Box Hangars	2194.1'
17	Linear Box Hangars	2194.2'
18	Linear Box Hangars	2196.8'
19	Linear Box Hangars	2196.6'
20	Linear Box Hangars	2193.9'
21	Linear Box Hangars	2188.2'
22	Linear Box Hangars	2187.8'
23	Linear Box Hangars	2188.8'
24	Linear Box Hangars	2189.4'
25	Linear Box Hangars	2193.3'
26	Linear Box Hangars	2189.6'
27	Linear Box Hangars	2188.7'
28	Linear Box Hangars	2186.3'
29	Executive Hangar	2189.2'
30	Executive Hangar	2187.5'
-	-	-

NA - Not Available

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
31	Port-A-Port	2178.7'
32	Port-A-Port	2178.7'
33	Port-A-Port	2178.7'
34	Port-A-Port	2178.7'
35	Port-A-Port	2178.7'
36	Port-A-Port	2178.7'
37	Port-A-Port	2178.7'
38	Port-A-Port	2178.7'
39	Port-A-Port	2178.7'
40	Port-A-Port	2178.7'
41	Port-A-Port	2178.7'
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43	Port-A-Port	2178.7'
44	Port-A-Port	2178.7'
45	Port-A-Port	2178.7'
46	Linear Box Hangars	2184.5'
47	T-Hangars	2180.5'
48	T-Hangars	2180.5'
49	Executive Hangar	2189.9'
50	Self-Service Fuel Island	-
51	Fuel Farm	2175.8'
52	Linear Box Hangars	2187.1'
53	Linear Box Hangars	2187.5'
54	Linear Box Hangars	2188.3'
55	Linear Box Hangars	2188.3'
56	AWOS	UNK
57	Segmented Circle/Lighted Windsock	UNK
58	Beacon	UNIK

UNK- Unknown

ULTIMATE AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (AGL)
101	ATCT POTENTIAL SITES	103'
115	Potential ARFF Sites	31'
116	Wash Rack	TBD
118	FBO	33'
119	Maintenance Area	33'

TBD - To Be Determined

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
★	N/A	AIRPORT ROTATING BEACON
		AVIGATION EASEMENT
		STRUCTURES ON AIRPORT
N/A		ABANDON/REMOVE
BRL	BRL	BUILDING RESTRICTION LINE (35')
		AIRPORT PAVEMENT
		FENCE LINE
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ	RPZ(U)	RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	TOFA	TAXIWAY OBJECT FREE AREA
TSA	TSA	TAXIWAY SAFETY AREA
		TIE-DOWNS
		TAXIWAY/TAXILANE CENTERLINES
		WINDSOCK
5080	5080	TOPOGRAPHIC CONTOURS

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 100 200
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

TERMINAL AREA DRAWING I

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 4 OF 17

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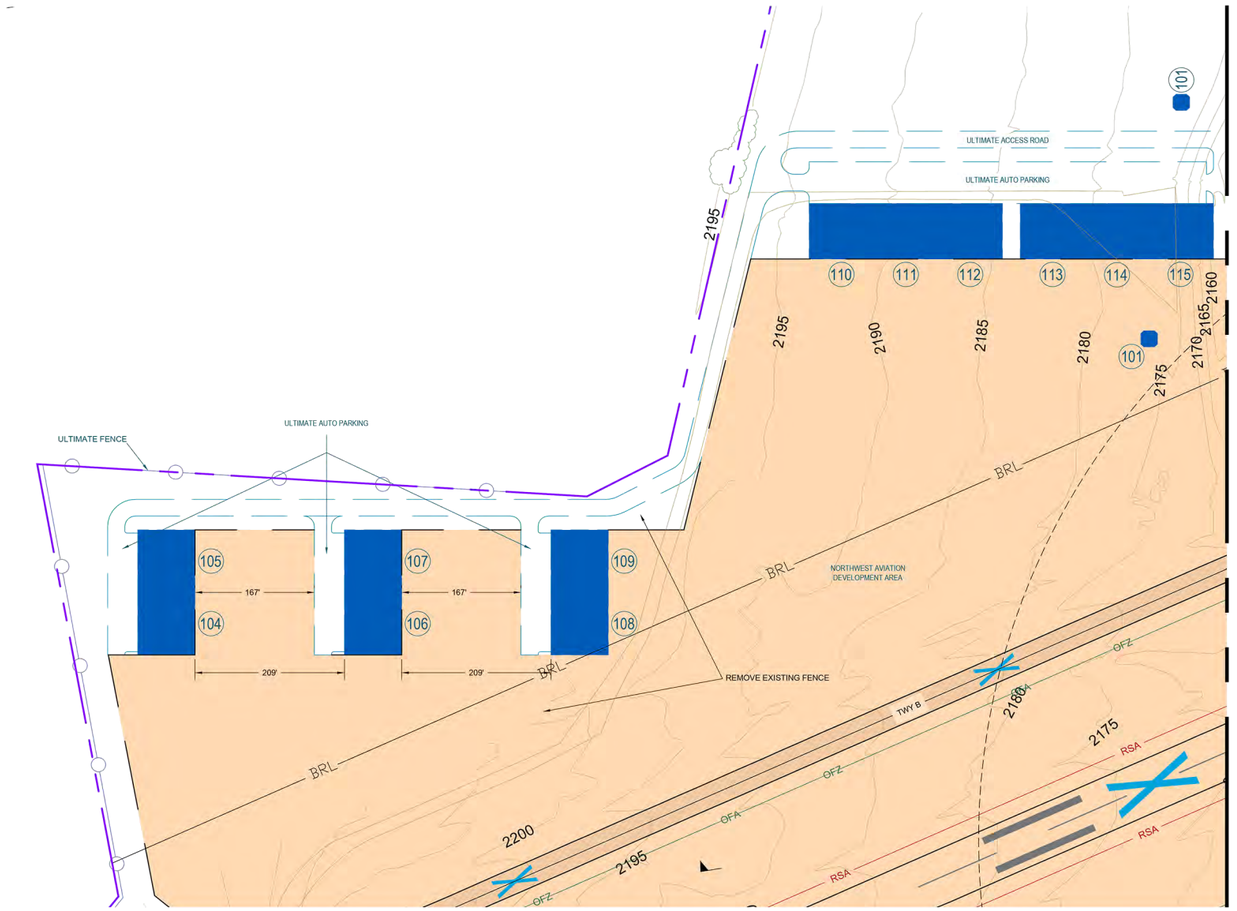
LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
★	N/A	AIRPORT ROTATING BEACON
		AVIGATION EASEMENT
		STRUCTURES ON AIRPORT
N/A		ABANDON/REMOVE
BRL	BRL	BUILDING RESTRICTION LINE (35')
		AIRPORT PAVEMENT
		FENCE LINE
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ	RPZ(U)	RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	TOFA	TAXIWAY OBJECT FREE AREA
TSA	TSA	TAXIWAY SAFETY AREA
		TIE-DOWNS
		TAXIWAY/TAXILANE CENTERLINES
		WINDSOCK
3890	3890	TOPOGRAPHIC CONTOURS



ULTIMATE AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (AGL)
101	ATCT POTENTIAL SITE	103'
104	EXECUTIVE HANGARS	26'
105	EXECUTIVE HANGARS	26'
106	EXECUTIVE HANGARS	26'
107	EXECUTIVE HANGARS	26'
108	EXECUTIVE HANGARS	26'
109	EXECUTIVE HANGARS	26'
110	EXECUTIVE HANGARS	26'
111	EXECUTIVE HANGARS	26'
112	EXECUTIVE HANGARS	26'
113	EXECUTIVE HANGARS	26'
114	EXECUTIVE HANGARS	26'
115	EXECUTIVE HANGARS	26'

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA DATASHEET http://webdatasheet.faa.gov/, FAA AIRPORT MASTER RECORD FORM 5010,AND THE FAA AIRPORT FACILITY DIRECTORY http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/.
3. ULTIMATE ELEVATIONS, COORDINATE, AND BEARINGS ESTIMATED FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
5. NO PRIMARY AIRPORT CONTROL STATIONS (PACS) OR SECONDARY CONTROL STATIONS (SACS) WITHIN THE VICINITY OF BOULDER CITY AIRPORT.
6. SECTION CORNERS LOCATIONS FROM THE BUREAU OF LAND MANAGEMENT.
7. NO ATCT AT BOULDER CITY AIRPORT, NO LINE OF SIGHT STUDY AVAILABLE.

MAGNETIC NORTH — NORTH

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

Source: NOAA
https://www.ngdc.noaa.gov/geomag-web/#declination

0 100 200
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

BOULDER CITY MUNICIPAL AIRPORT

TERMINAL AREA DRAWING II

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 5 OF 17

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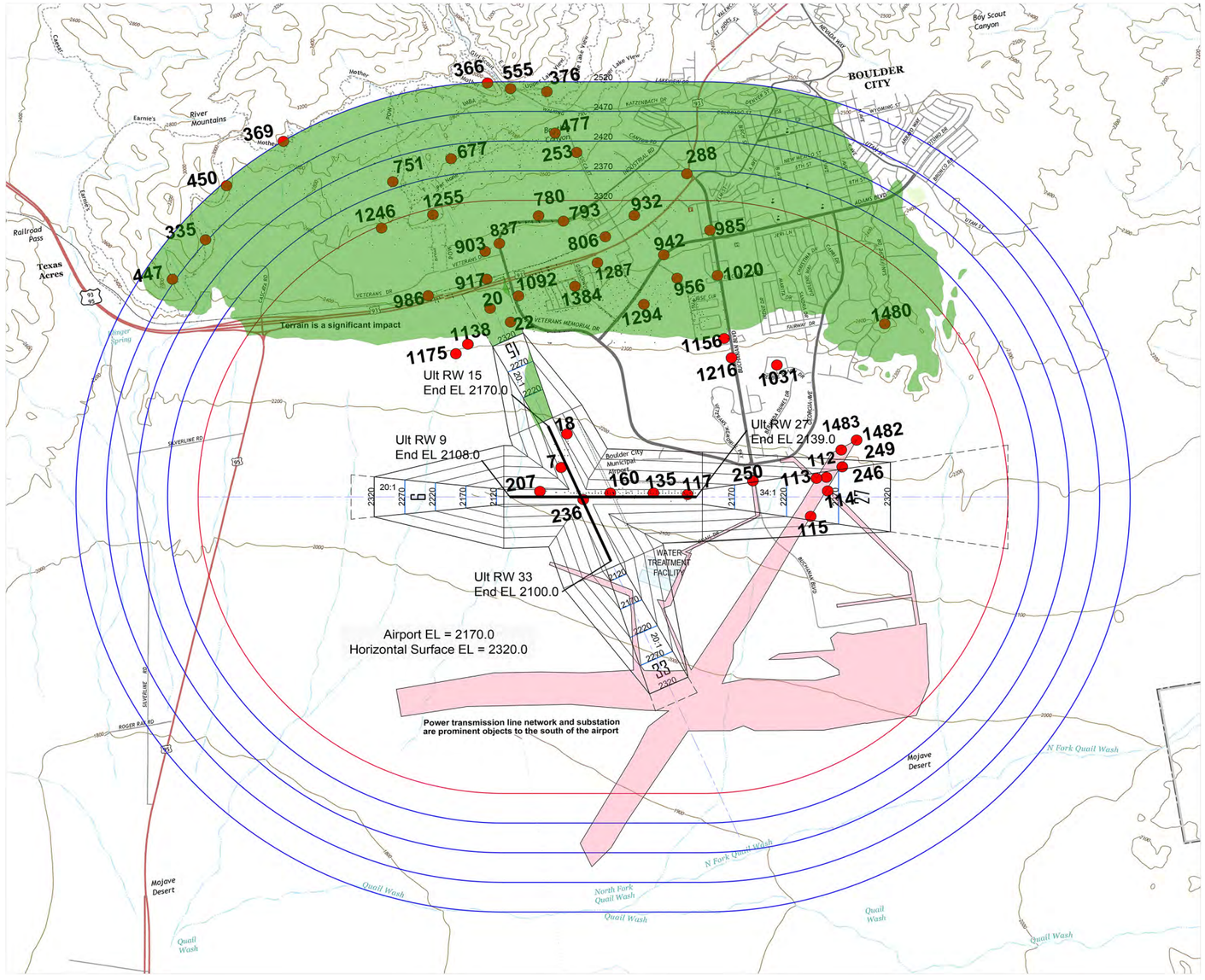
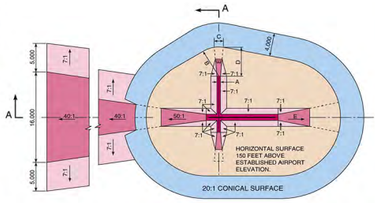
OBSTRUCTION TABLE*					
No.	Description	Top Elevation (msl	Surface	Penetration	Proposed Remediation
7	GROUND	2150.50	PRIMARY	0.45	GRADE WHERE POSSIBLE
18	GROUND	2190.80	TRANSITIONAL	0.25	GRADE WHERE POSSIBLE
20	TOWER	2454.10	APPROACH	74.12	REQUEST AERONAUTICAL STUDY
22	UTILITY POLE	2382.30	APPROACH	37.06	REQUEST AERONAUTICAL STUDY
112	ANTENNA	2292.78	APPROACH	34.34	ADD/MAINTAIN OBSTRUCTON LIGHT
113	ANTENNA	2285.61	APPROACH	36.85	ADD/MAINTAIN OBSTRUCTON LIGHT
114	ANTENNA	2275.23	APPROACH	15.70	ADD/MAINTAIN OBSTRUCTON LIGHT
115	ANTENNA	2252.16	APPROACH	8.98	ADD/MAINTAIN OBSTRUCTON LIGHT
117	LOCATED OBJECT	2140.50	PRIMARY	2.85	IDENTIFY LIGHT IF NEEDED
135	GROUND	2135.10	PRIMARY	3.13	GRADE WHERE POSSIBLE
160	GROUND	2129.30	PRIMARY	4.54	GRADE WHERE POSSIBLE
207	AIRPORT SIGN	2114.90	PRIMARY	1.90	FIXED BY FUNCTION
236	AIRPORT SIGN	2121.00	PRIMARY	0.75	FIXED BY FUNCTION
246	TOWER	2301.40	TRANSITIONAL	16.40	ADD/MAINTAIN OBSTRUCTON LIGHT
249	ANTENNA	2301.43	TRANSITIONAL	16.43	ADD/MAINTAIN OBSTRUCTON LIGHT
250	LIGHT POLE	2195.89	TRANSITIONAL	1.86	ADD/MAINTAIN OBSTRUCTON LIGHT
253	TOWER	2714.00	CONICAL	312.87	REQUEST AERONAUTICAL STUDY
288	UTILITY POLE	2554.70	CONICAL	189.73	REQUEST AERONAUTICAL STUDY
335	GROUND	3013.50	CONICAL	540.47	REQUEST AERONAUTICAL STUDY
366	GROUND	3093.70	CONICAL	575.16	REQUEST AERONAUTICAL STUDY
369	GROUND	3049.40	CONICAL	529.71	REQUEST AERONAUTICAL STUDY
376	BUILDING	2818.30	CONICAL	314.89	REQUEST AERONAUTICAL STUDY
447	GROUND	2912.70	CONICAL	437.87	REQUEST AERONAUTICAL STUDY
450	GROUND	3159.00	CONICAL	645.39	REQUEST AERONAUTICAL STUDY
477	TREETOP	2706.90	CONICAL	273.27	REQUEST AERONAUTICAL STUDY
555	UTILITY POLE	2840.60	CONICAL	332.06	REQUEST AERONAUTICAL STUDY
677	GROUND	2712.80	CONICAL	315.89	REQUEST AERONAUTICAL STUDY
751	MANMADE POINT	2682.80	CONICAL	300.92	REQUEST AERONAUTICAL STUDY
780	TOWER	2596.40	HORIZONTAL	276.40	REQUEST AERONAUTICAL STUDY
793	LIGHT POLE	2548.80	HORIZONTAL	228.80	REQUEST AERONAUTICAL STUDY
806	BUILDING	2512.60	HORIZONTAL	192.60	REQUEST AERONAUTICAL STUDY
837	LIGHT POLE	2517.30	HORIZONTAL	197.30	REQUEST AERONAUTICAL STUDY
903	LIGHT POLE	2505.70	HORIZONTAL	185.70	REQUEST AERONAUTICAL STUDY
917	RAIL ROAD	2446.50	HORIZONTAL	126.50	REQUEST AERONAUTICAL STUDY
932	RAIL ROAD	2496.10	HORIZONTAL	176.10	REQUEST AERONAUTICAL STUDY
942	LIGHT POLE	2441.00	HORIZONTAL	121.00	REQUEST AERONAUTICAL STUDY
956	LIGHT POLE	2409.00	HORIZONTAL	89.00	REQUEST AERONAUTICAL STUDY
985	UTILITY POLE	2496.20	HORIZONTAL	176.20	REQUEST AERONAUTICAL STUDY
986	RAIL ROAD	2428.90	HORIZONTAL	108.90	REQUEST AERONAUTICAL STUDY
1020	UTILITY POLE	2432.50	HORIZONTAL	112.50	REQUEST AERONAUTICAL STUDY
1031	TREETOP	2363.80	HORIZONTAL	43.80	TRIM OR REMOVE
1092	LIGHT POLE	2418.20	HORIZONTAL	98.20	REQUEST AERONAUTICAL STUDY
1138	TOWER	2383.00	HORIZONTAL	63.00	ADD/MAINTAIN OBSTRUCTON LIGHT
1156	SPIRE_STEEPLE	2369.60	HORIZONTAL	49.60	ADD/MAINTAIN OBSTRUCTON LIGHT
1175	TOWER	2364.00	HORIZONTAL	44.00	ADD/MAINTAIN OBSTRUCTON LIGHT
1216	UTILITY POLE	2354.20	HORIZONTAL	34.20	ADD/MAINTAIN OBSTRUCTON LIGHT
1246	TREETOP	2617.50	HORIZONTAL	297.50	REQUEST AERONAUTICAL STUDY
1255	GROUND	2697.00	HORIZONTAL	377.00	REQUEST AERONAUTICAL STUDY
1287	TREETOP	2480.70	HORIZONTAL	160.70	REQUEST AERONAUTICAL STUDY
1294	TREETOP	2367.70	HORIZONTAL	47.70	REQUEST AERONAUTICAL STUDY
1384	TREETOP	2429.60	HORIZONTAL	109.60	REQUEST AERONAUTICAL STUDY
1480	TREETOP	2487.20	HORIZONTAL	167.20	REQUEST AERONAUTICAL STUDY
1482	TOWER	2329.70	HORIZONTAL	9.70	ADD/MAINTAIN OBSTRUCTON LIGHT
1483	ANTENNA	2321.18	HORIZONTAL	1.18	ADD/MAINTAIN OBSTRUCTON LIGHT

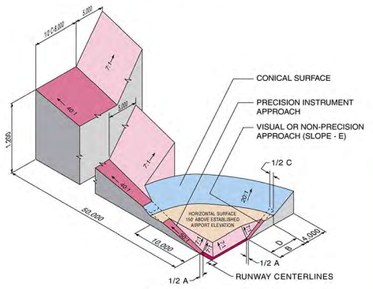
* THE OBSTRUCTIONS LISTED IN THE TABLE ARE A SUBSET OF OVER 1,300 PROVIDED IN THE OBSTRUCTION SURVEY. THE TERRAIN IS AN IMPACT AS YOU MOVE NORTH. MOST OF THE OBSTACLES ARE ON THE TERRAIN.
* THE POINT IDENTIFIERS ARE THE UNIQUE IDENTIFIER OF THE POINT AND NOT IN SEQUENTIAL ORDER.
* 1/9TH ARC SECOND USGS DEM DATA WAS USED TO DETERMINE THE LIMITS OF THE TERRAIN IMPACT.
* GROUND PENETRATIONS OF THE PRIMARY SURFACE IS ALSO DEPICTED BUT A SAMPLE OF THOSE POINTS ARE LISTED IN THE TABLE
* A COMPLETE LIST OF THE OBSTACLES PROVIDED IN THE SURVEY CAN BE PROVIDED UPON REQUEST. IT TOO IS A REPRESENTATIVE SAMPLE OF OF OBJECTS SINCE EVERYTHING ON THE GROUND IN THE TERRAIN OBSTRUCTION AREA IS AN IMPACT.





DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	B D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

SOURCE: FAA Order JO 7400.2J, Figure 6-3-3

GENERAL NOTES:

1. OBSTRUCTION SURVEY DATED AUGUST 2016 BY MARTINEZ GEOSPATIAL
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY MARTINEZ GEOSPATIAL.
4. SUPPLEMENTAL DATA EXAMINED INCLUDE FAA DIGITAL OBSTACLE FILE (DOF).
5. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR CLOSE-IN APPROACH DETAILS.
6. ALL ELEVATIONS IN MSL FEET.

LEGEND

TERRAIN OBSTRUCTIONS - SAMPLED POINTS REPRESENT THE HIGHEST POINTS WITHIN THE VICINTIY OF OBJECTS.

1 OBSTRUCTION IDENTIFIER

POWER CORRIDOR

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 2000 4000
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT

AIRPORT AIRSPACE DRAWING

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 6 OF 17

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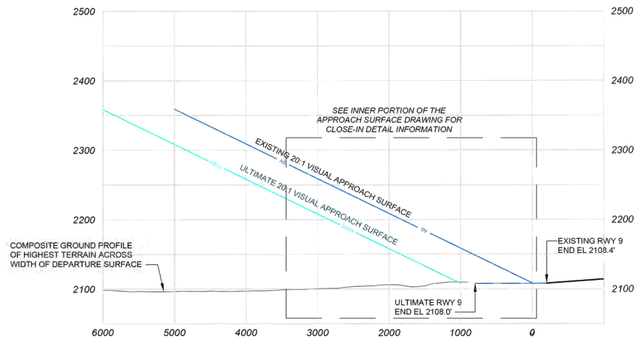
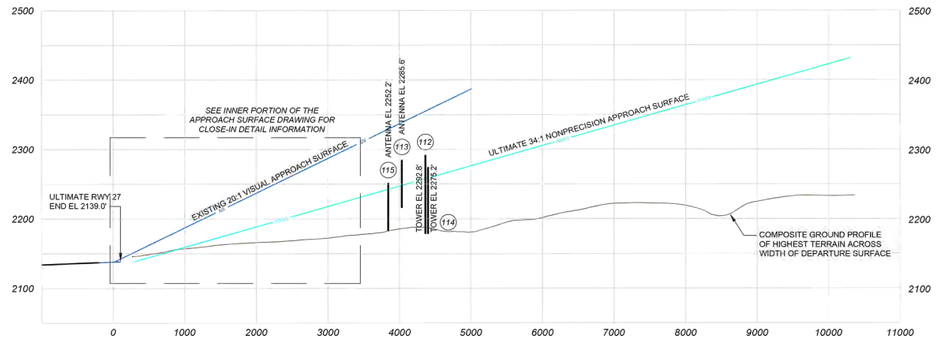
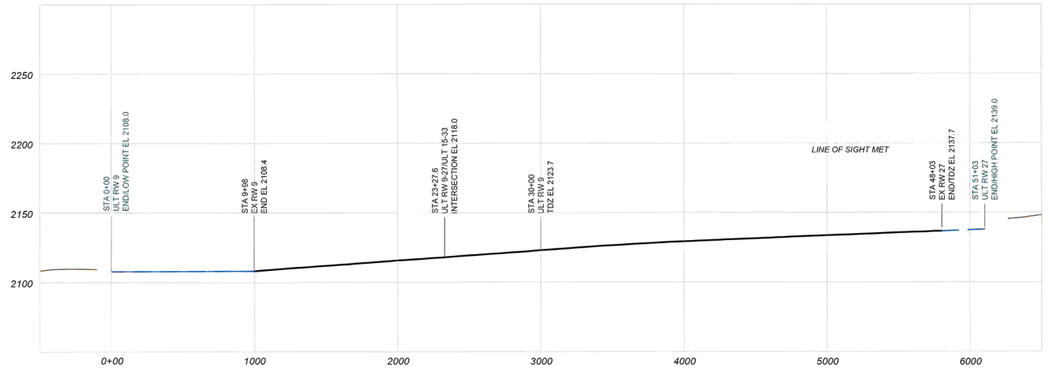


RUNWAY 9 APPROACH SURFACE PROFILE



RUNWAY 27 APPROACH SURFACE PROFILE



RUNWAY 9-27 PROFILE

RUNWAY 9 OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Object Penetration	Proposed Remediation
	NONE			

RUNWAY 27 OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Object Penetration	Proposed Remediation
112	ANTENNA	2292.8	34.3	ADD/MAINTAIN OBSTRUCTION LIGHT
113	ANTENNA	2285.6	36.9	ADD/MAINTAIN OBSTRUCTION LIGHT
114	ANTENNA	2275.2	15.7	ADD/MAINTAIN OBSTRUCTION LIGHT
115	ANTENNA	2252.2	8.98	ADD/MAINTAIN OBSTRUCTION LIGHT

GENERAL NOTES:

1. TERRAIN PROFILES ARE BASED ON USGS ⅓ ARC SECOND NED, PUBLISHED 2013 AND REPRESENTS THE HIGHEST POINT ALONG THE PROFILE. SURVEY DID NOT INCLUDE CONTOURS AND THERE ARE SOME DIFFERENCES IN REPORTED ELEVATIONS AND USGS DATA. IF GREATER GROUND CONTOURS ARE REQUIRED WE RECOMMEND DEVELOPMENT OF CONTOURS.
2. EXISTING COORDINATES, ELEVATIONS, BEARINGS NOTED IN THIS ALP FROM FAA SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
3. ULTIMATE ELEVATIONS, COORDINATES, AND BEARINGS ESTIMATED FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST 11, 2016.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
5. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

RUNWAY 9-27 APPROACH PROFILE DRAWING

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 7 OF 17

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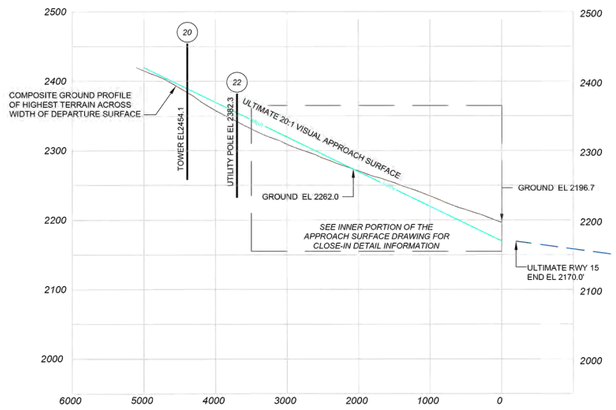
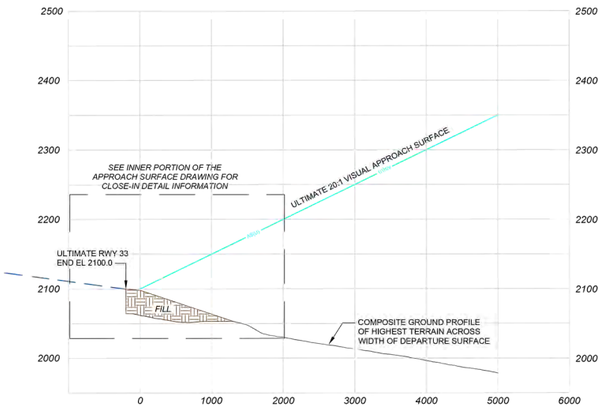


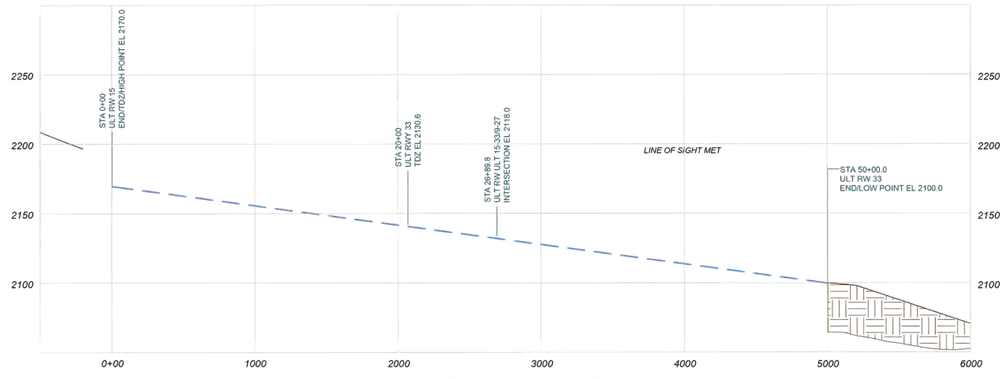
RUNWAY 15 APPROACH SURFACE PROFILE



RUNWAY 33 APPROACH SURFACE PROFILE

RUNWAY 15 OBSTRUCTION TABLE				
No.	Description	Top Elevation (msl)	Object Penetration	Proposed Remediation
1	TERRAIN	VARIES	VARIES	SEE INNER PORTION OF THE APPROACH SURFACE DRAWING FOR CLOSE-IN DETAIL INFORMATION
20	TOWER	2454.1	74.12	REQUEST AERONAUTICAL STUDY
22	UTILITY POLE	2382.3	37.06	REQUEST AERONAUTICAL STUDY

RUNWAY 33 OBSTRUCTION TABLE				
No.	Description	Top Elevation (msl)	Object Penetration	Proposed Remediation
	NO OBSTRUCTIONS			



RUNWAY 15-33 PROFILE

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

HORIZONTAL SCALE IN FEET

VERTICAL SCALE IN FEET

GENERAL NOTES:

1. TERRAIN PROFILES ARE BASED ON USGS ⅓ ARC SECOND NED, PUBLISHED 2013 AND REPRESENTS THE HIGHEST POINT ALONG THE PROFILE. SURVEY DID NOT INCLUDE CONTOURS AND THERE ARE SOME DIFFERENCES IN REPORTED ELEVATIONS AND USGS DATA. IF GREATER GROUND CONTOURS ARE REQUIRED WE RECOMMEND DEVELOPMENT OF CONTOURS.
2. ULTIMATE ELEVATIONS, COORDINATES, AND BEARINGS ESTIMATED FROM SURVEY BY MARTINEZ GEOSPATIAL, EAGAN, MN, DATED AUGUST, 2016.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
4. VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
5. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

ULTIMATE RUNWAY 15-33 APPROACH PROFILE DRAWING

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 8 OF 17

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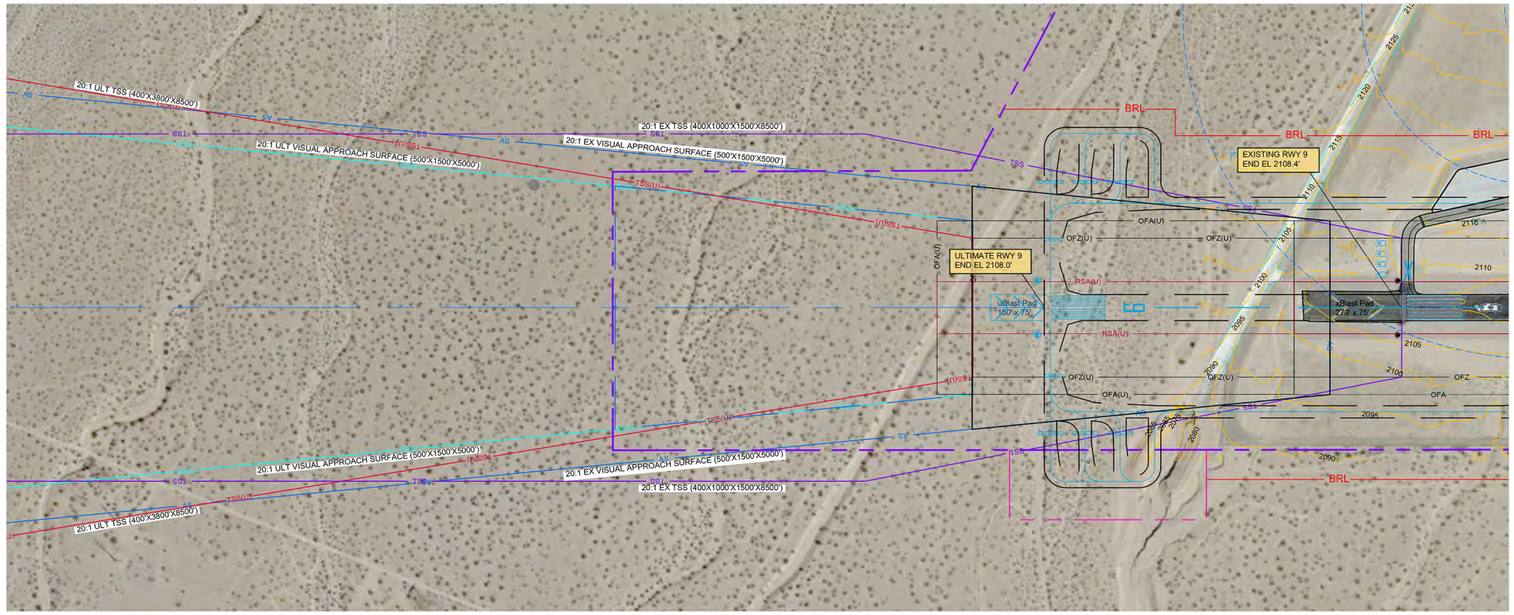

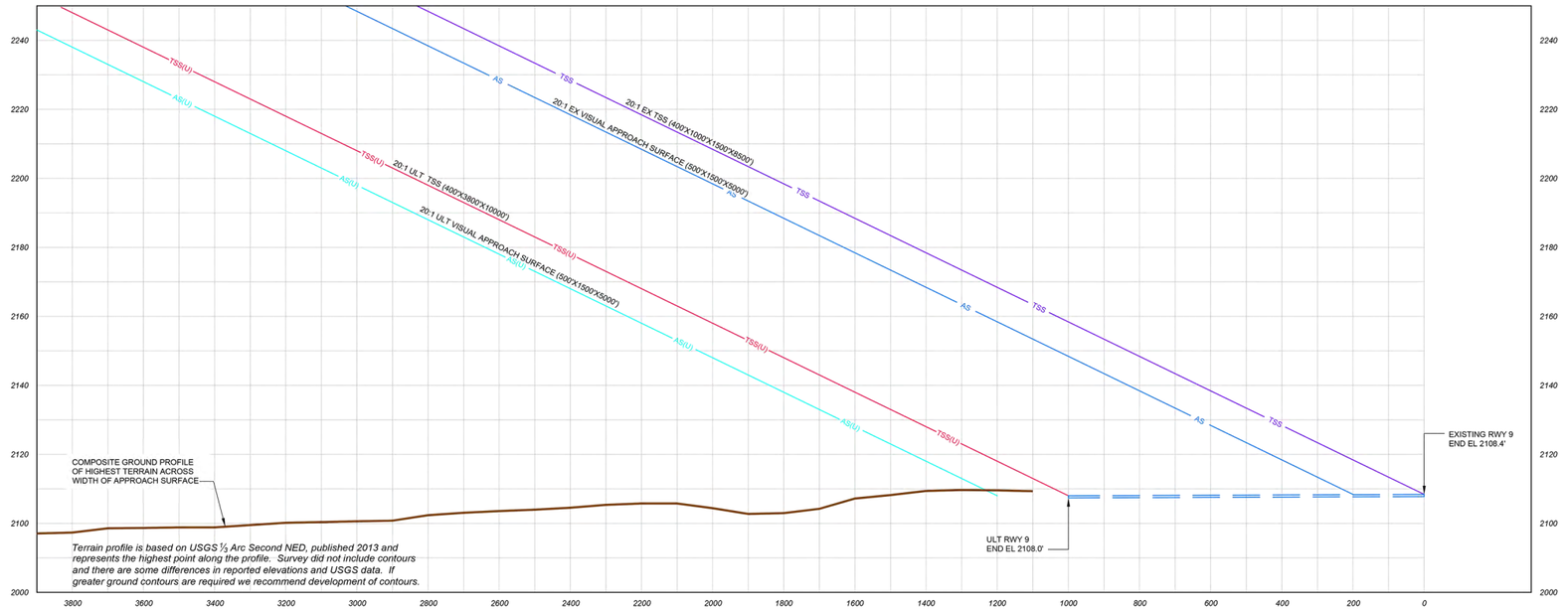

EXISTING OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
	NO OBSTRUCTIONS					

ULTIMATE OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed PT 77 Surface	Object Penetration	Triggering Event	Proposed Remediation
	NO OBSTRUCTIONS					

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

GENERAL NOTES:

1. GROUND SURVEY DATED AUGUST, 2016 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 9
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 9 OF 17

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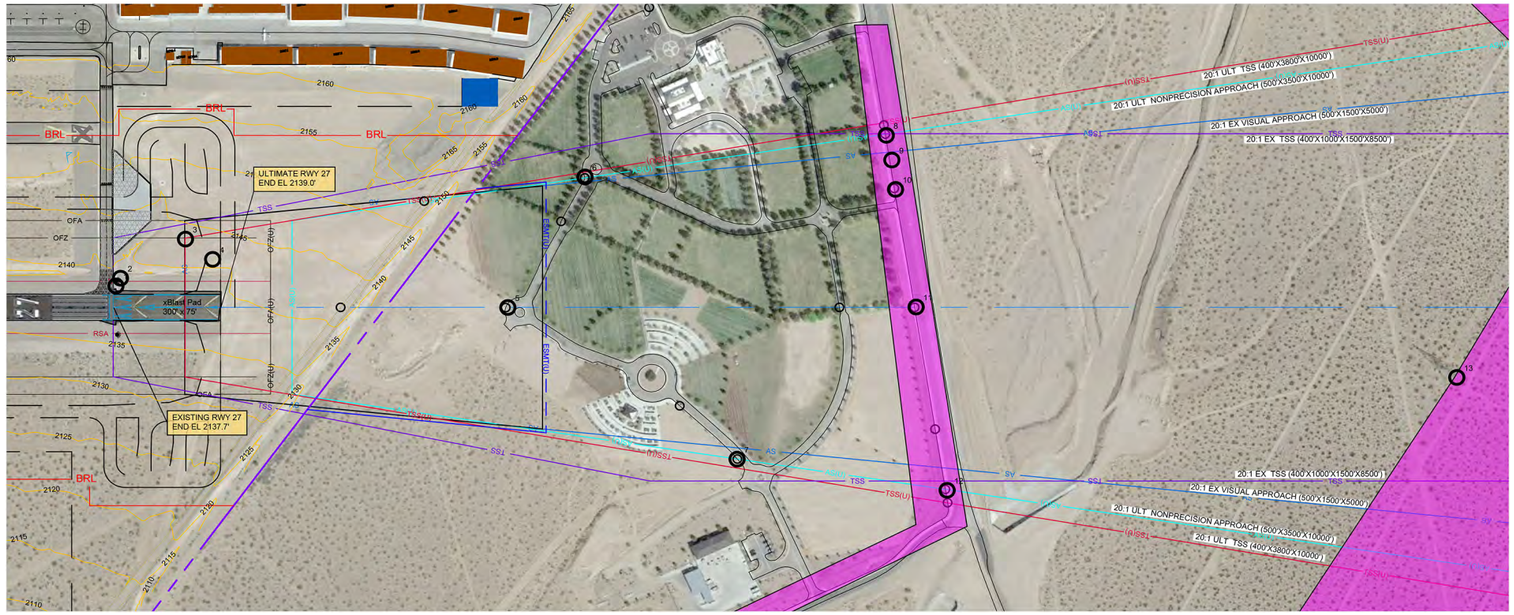

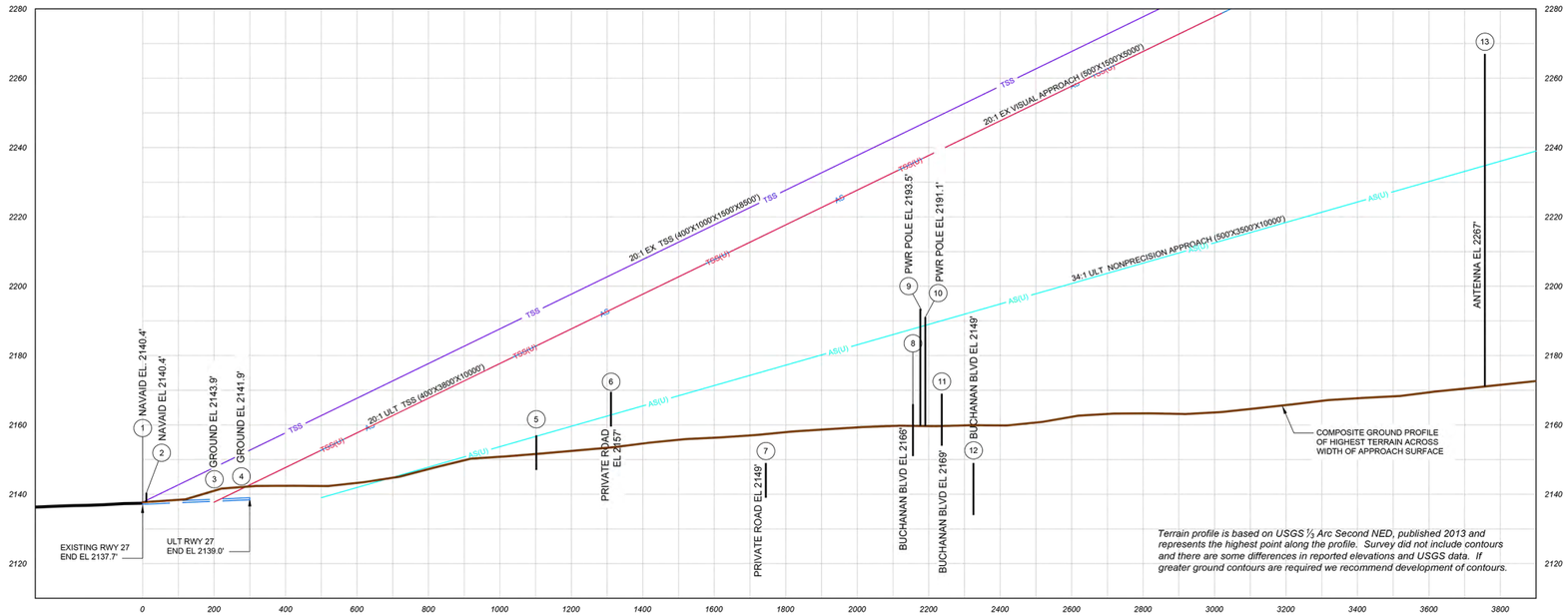

EXISTING OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
1	NAVAID	2140.4'	xTSS	2.56'	N/A	NAR
2	NAVAID	2140.4'	xTSS	1.95'	N/A	NAR
3	GROUND	2143.9'	xAS	6.04'	N/A	RE-GRADE

NAR - NO ACTION REQUIRED

ULTIMATE OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
3	GROUND	2143.9'	uTSS	6.04'	PROPOSED NP APPROACH	RE-GRADE
4	GROUND	2141.9'	uTSS	0.75'	PROPOSED NP APPROACH	RE-GRADE
5	PRIVATE ROAD	2157.0'	uAS	1.10'	PROPOSED NP APPROACH	NAR
6	PRIVATE ROAD	2169.0'	uAS	4.60'	PROPOSED NP APPROACH	NAR
9	POWER POLE	2193.5'	uAS	5.30'	PROPOSED NP APPROACH	LOWER
10	POWER POLE	2191.1'	uAS	2.40'	PROPOSED NP APPROACH	LOWER
13	ANTENNA	2267.0'	uAS	32.70'	PROPOSED NP APPROACH	LIGHT

NAR - NO ACTION REQUIRED

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

NORTH

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

LEGEND

1 SIGNIFICANT OBJECT

Powerline Corridor Extent

GENERAL NOTES:

1. GROUND SURVEY DATED AUGUST, 2016 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.
5. ROAD POINT ELEVATIONS INCLUDE HEIGHT ADJUSTMENT

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING
RUNWAY 27
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 10 OF 17

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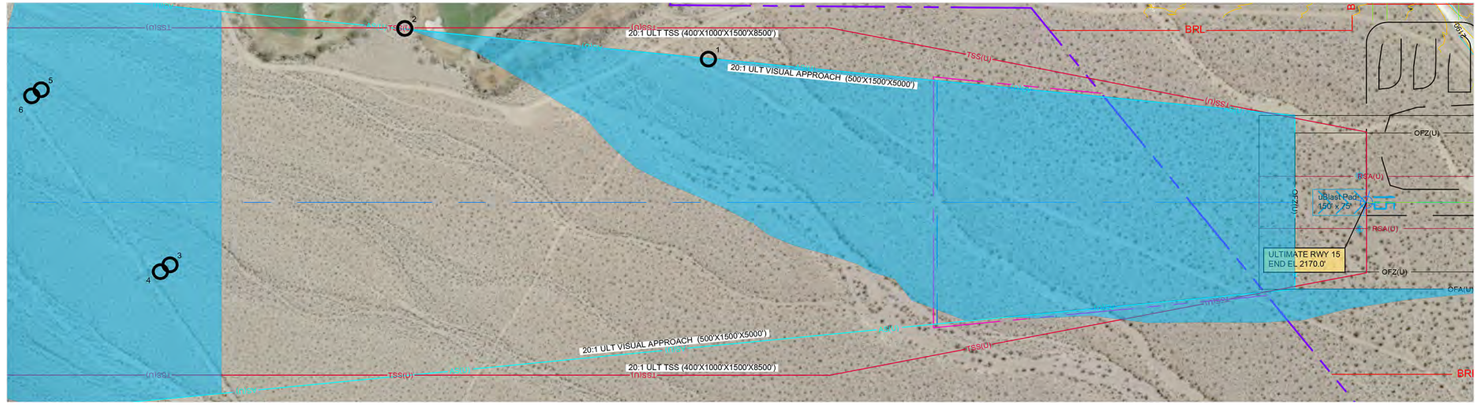
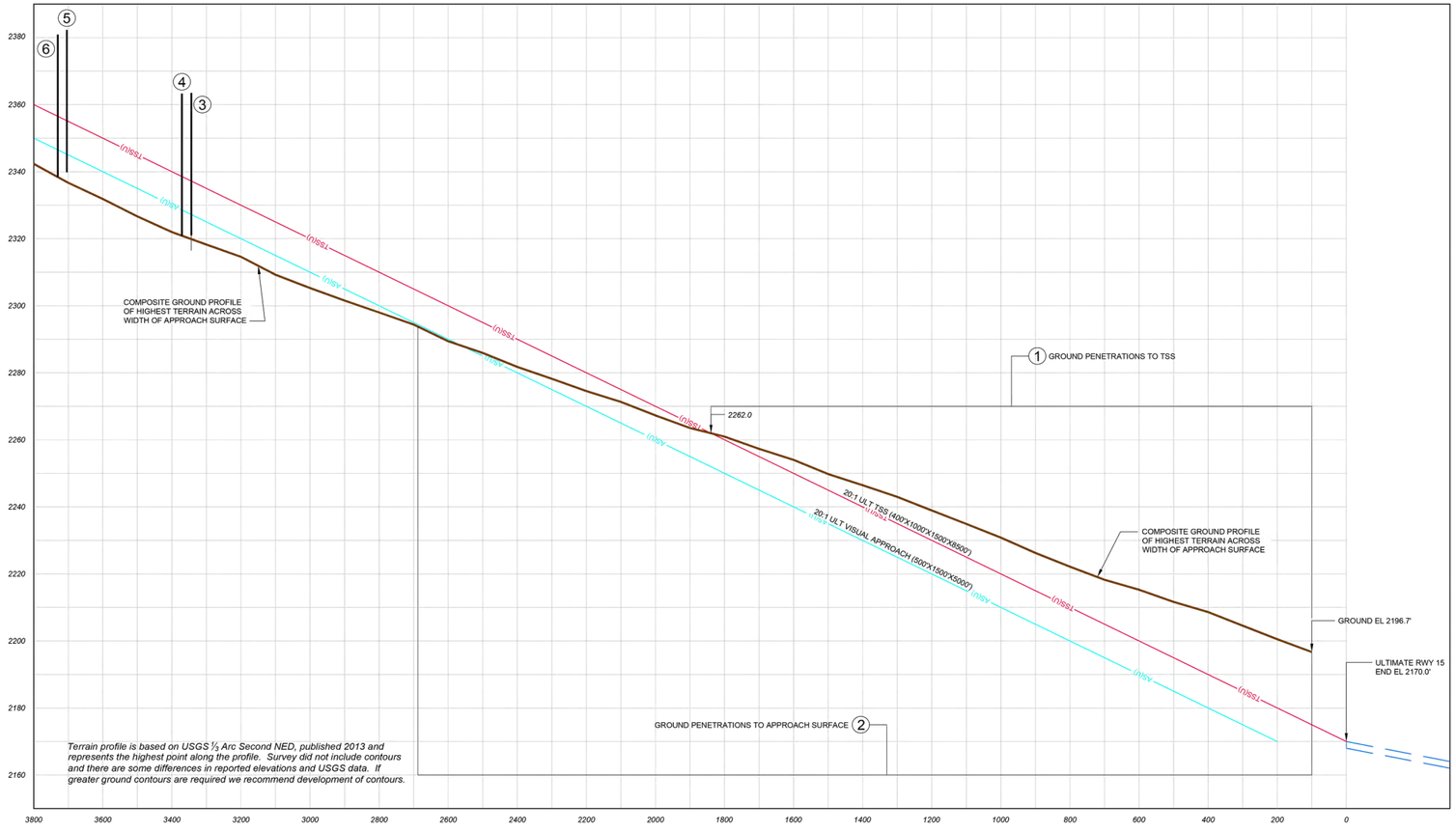




ULTIMATE OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
1	TERRAIN	2196.7	ULT AS	26.7	PROPOSED APPROACH	REQUEST AERONAUTICAL STUDY
2	TERRAIN	2288.1	ULT AS	10.0	PROPOSED APPROACH	REQUEST AERONAUTICAL STUDY
3	POLE	2363.5	ULT AS	36.3	PROPOSED APPROACH	ADD OBSTRUCTION LIGHT
4	POLE	2363.3	ULT AS	34.8	PROPOSED APPROACH	ADD OBSTRUCTION LIGHT
5	POLE	2382.3	ULT AS	37.1	PROPOSED APPROACH	ADD OBSTRUCTION LIGHT
6	POLE	2380.9	ULT AS	34.1	PROPOSED APPROACH	ADD OBSTRUCTION LIGHT
1	TERRAIN	2196.7	ULT TSS	21.7	PROPOSED TSS	REQUEST AERONAUTICAL STUDY
2	TERRAIN	2262.0	ULT TSS	2.7	PROPOSED TSS	REQUEST AERONAUTICAL STUDY
3	POLE	2363.5	ULT TSS	26.3	PROPOSED TSS	ADD OBSTRUCTION LIGHT
4	POLE	2363.3	ULT TSS	24.8	PROPOSED TSS	ADD OBSTRUCTION LIGHT
5	POLE	2382.3	ULT TSS	27.1	PROPOSED TSS	ADD OBSTRUCTION LIGHT
6	POLE	2380.9	ULT TSS	44.4	PROPOSED TSS	ADD OBSTRUCTION LIGHT

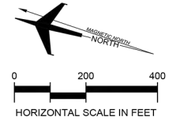
GENERAL NOTES:

1. GROUND SURVEY DATED AUGUST, 2016 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.
5. ROAD POINT ELEVATIONS INCLUDE HEIGHT ADJUSTMENT

LEGEND

1 SIGNIFICANT OBJECT

PLAN VIEW TERRAIN APPROACH PENETRATION



NO.	REVISIONS	DATE	BY	APP'D.

BOULDER CITY MUNICIPAL AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING
ULTIMATE RELOCATED RUNWAY 15
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 11 OF 17

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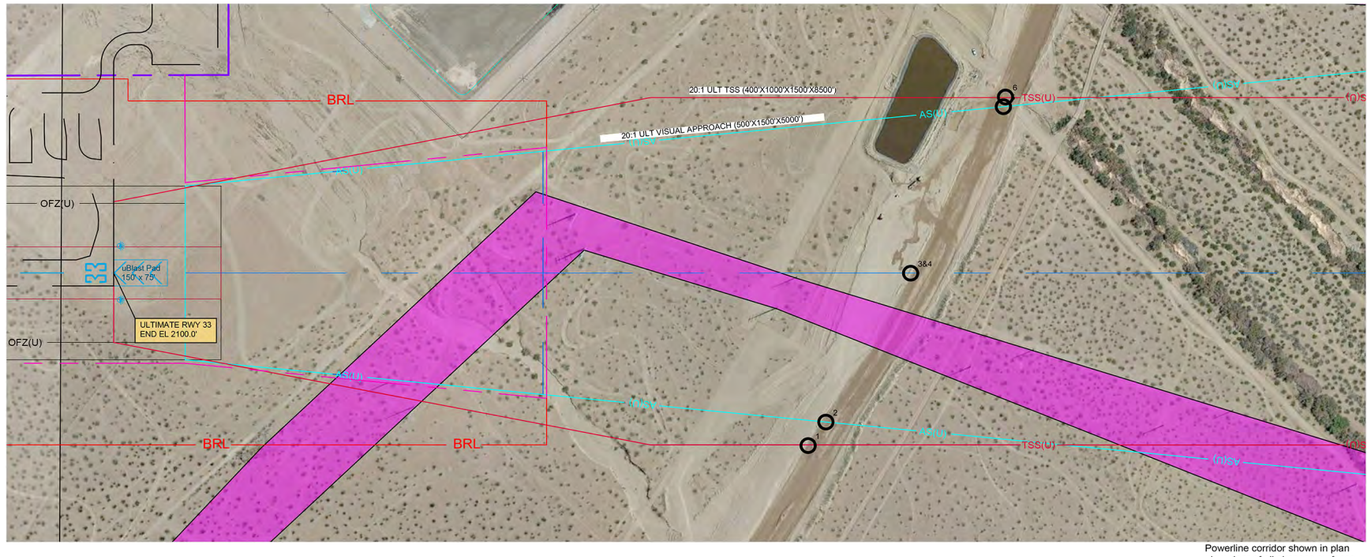
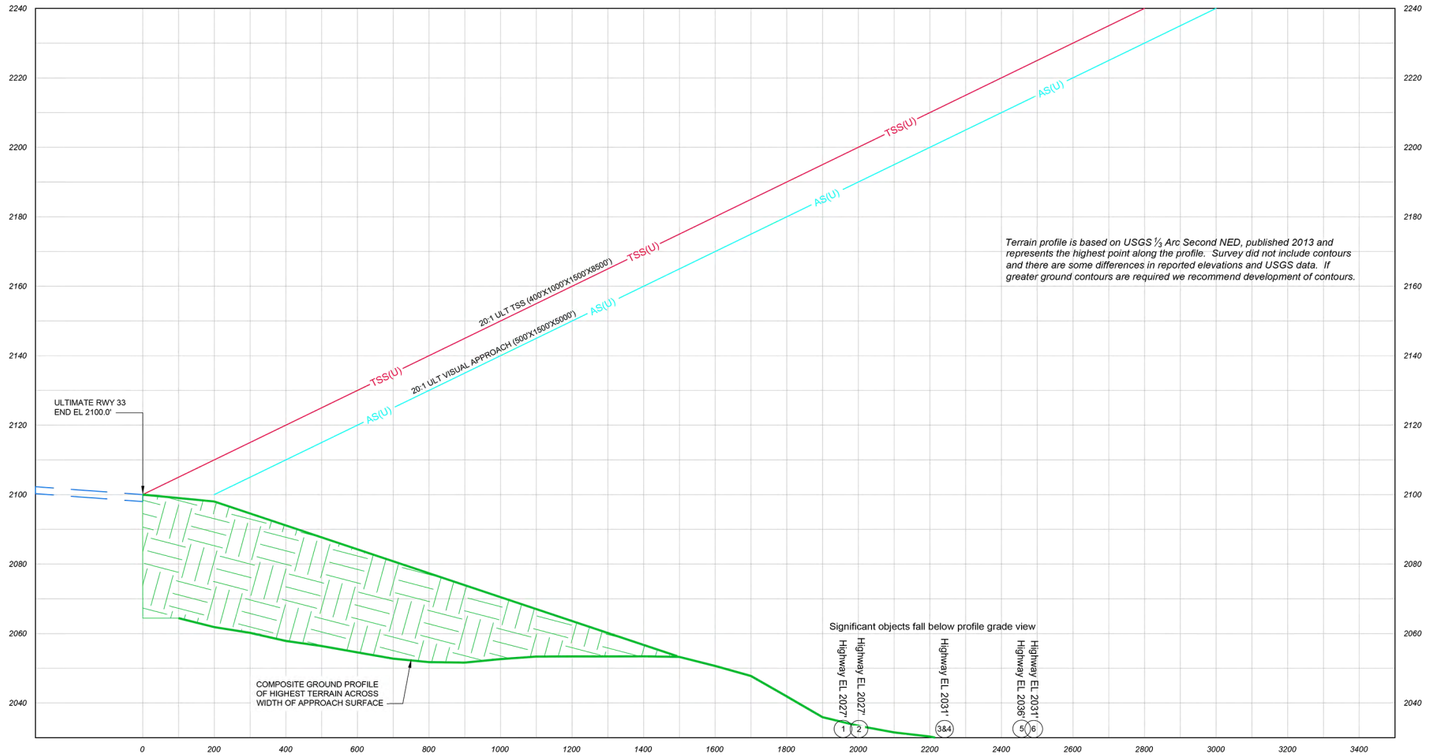


Powerline corridor shown in plan view clear of all airspace surfaces.

GENERAL NOTES:

1. GROUND SURVEY DATED 11/02/2015 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.



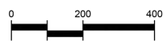
ULTIMATE OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
	NO OSBTRUCTIONS					

Significant Object

Powerline Corridor Extent

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)



HORIZONTAL SCALE IN FEET

VERTICAL SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING

ULTIMATE RELOCATED RUNWAY 33

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 | SHEET 12 OF 17

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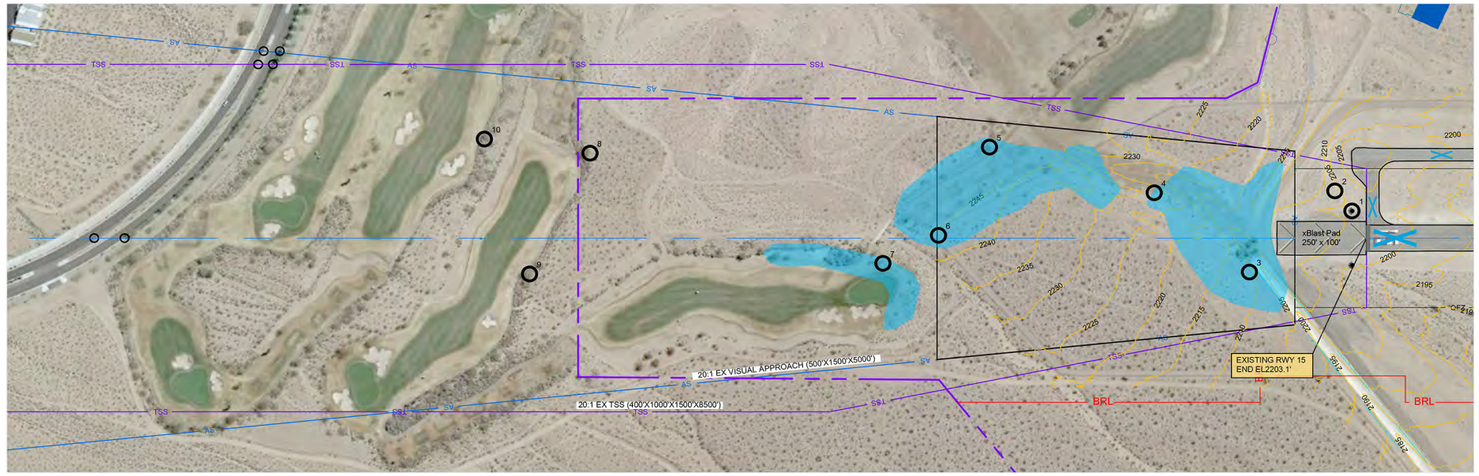
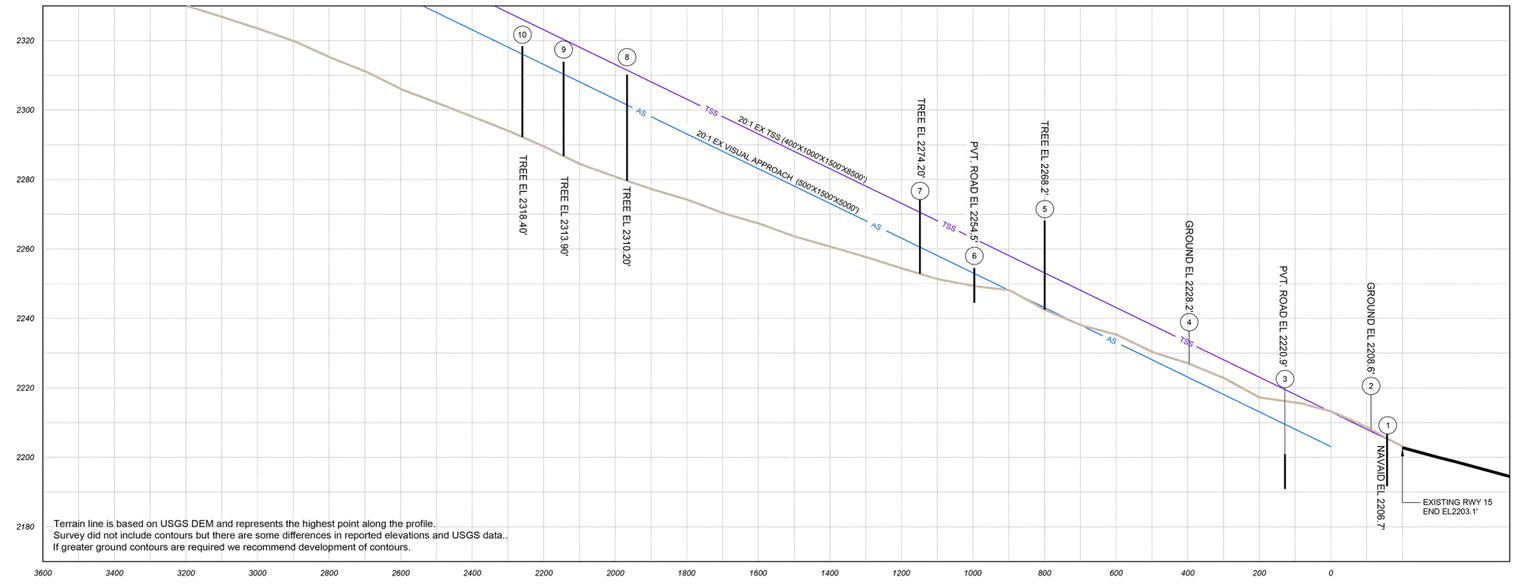


Obstructions within groupings represent highest man-made and/or natural feature.

EXISTING OBSTRUCTION TABLE

No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
1	NAVAID	2206.7'	TSS	3.60'	N/A	NAR
2	GROUND	2208.6'	TSS	0.65'	N/A	RE-GRADE
3	PRIVATE ROAD	2220.9'	TSS/AS	1.16'/11.1'	N/A	NAR
4	GROUND	2228.2'	AS	5.37'	N/A	RE-GRADE
5	TREE	2268.2'	AS	12.49'	N/A	TRIM/REMOVE
6	PRIVATE ROAD	2254.5'	AS	1.66'	N/A	NAR
7	TREE	2274.2'	TSS/AS	3.45'/13.45'	N/A	TRIM/REMOVE
8	TREE	2310.2'	AS	8.04'	N/A	TRIM/REMOVE
9	TREE	2313.9'	AS	3.56'	N/A	TRIM/REMOVE
10	TREE	2318.4'	AS	2.08'	N/A	TRIM/REMOVE

NAR - NO ACTION REQUIRED



Terrain line is based on USGS DEM and represents the highest point along the profile..
Survey did not include contours but there are some differences in reported elevations and USGS data..
If greater ground contours are required we recommend development of contours.

GENERAL NOTES:

1. GROUND SURVEY DATED AUGUST, 2016 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

NORTH

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

LEGEND

SIGNIFICANT OBJECT

OBSTRUCTION GROUPING

NO.	REVISIONS	DATE	BY	APP'D.

BOULDER CITY MUNICIPAL AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING
EXISTING RUNWAY 15
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 13 OF 17

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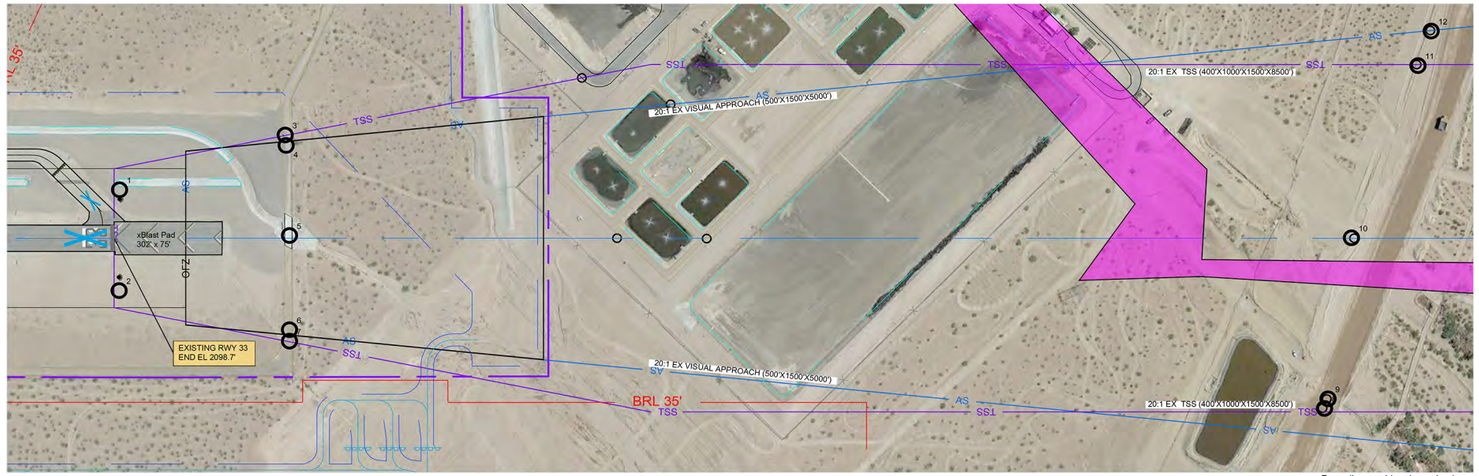
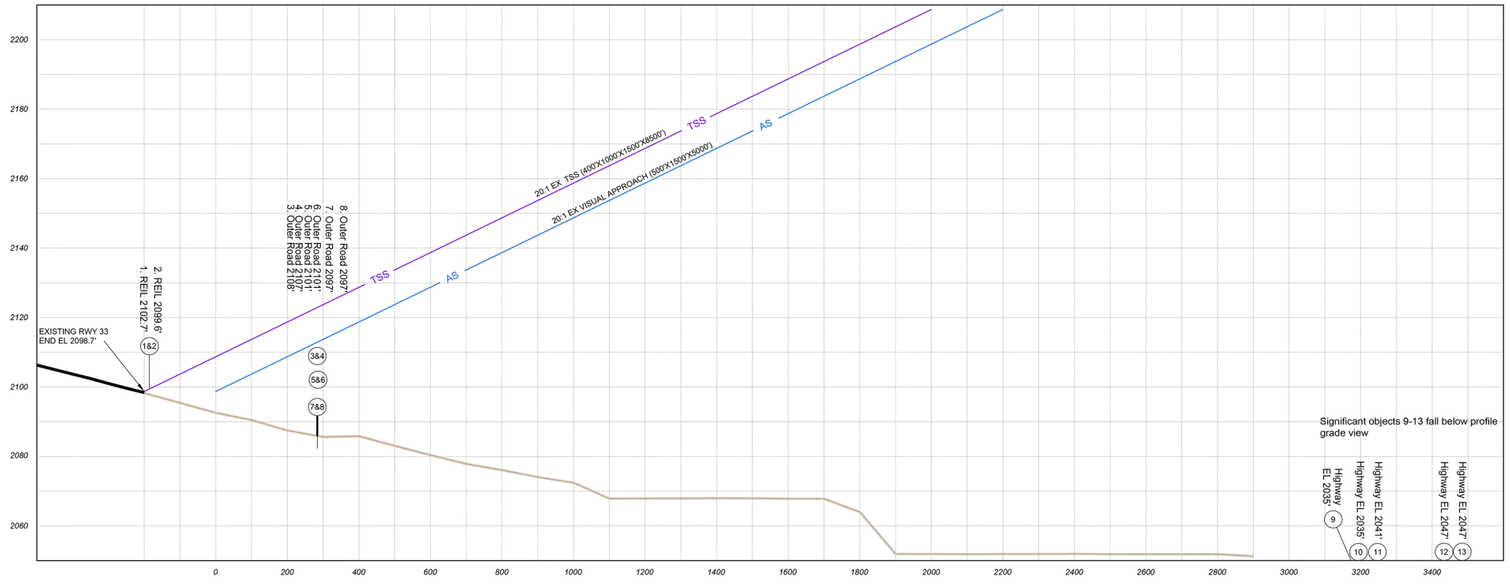


Powerline corridor shown in plan view clear of all airspace surfaces.

EXISTING OBSTRUCTION TABLE						
No.	Description	Top Elevation (msl)	Obstructed Surface	Object Penetration	Triggering Event	Proposed Remediation
1	REIL	2102.7'	EX TSS	3.35'	N/A	NAR
2	REIL	2099.6'	EX TSS	0.24'	N/A	NAR

NAR - NO ACTION REQUIRED



GENERAL NOTES:

1. GROUND SURVEY DATED AUGUST, 2016 BY MARTINEZ GEOSPATIAL.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM MARTINEZ SURVEY
4. ALL ELEVATIONS IN MSL FEET.

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

LEGEND

SIGNIFICANT OBJECT

POWERLINE CORRIDOR EXTENT

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING
EXISTING RUNWAY 33
BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko

AUGUST 2018 SHEET 14 OF 17

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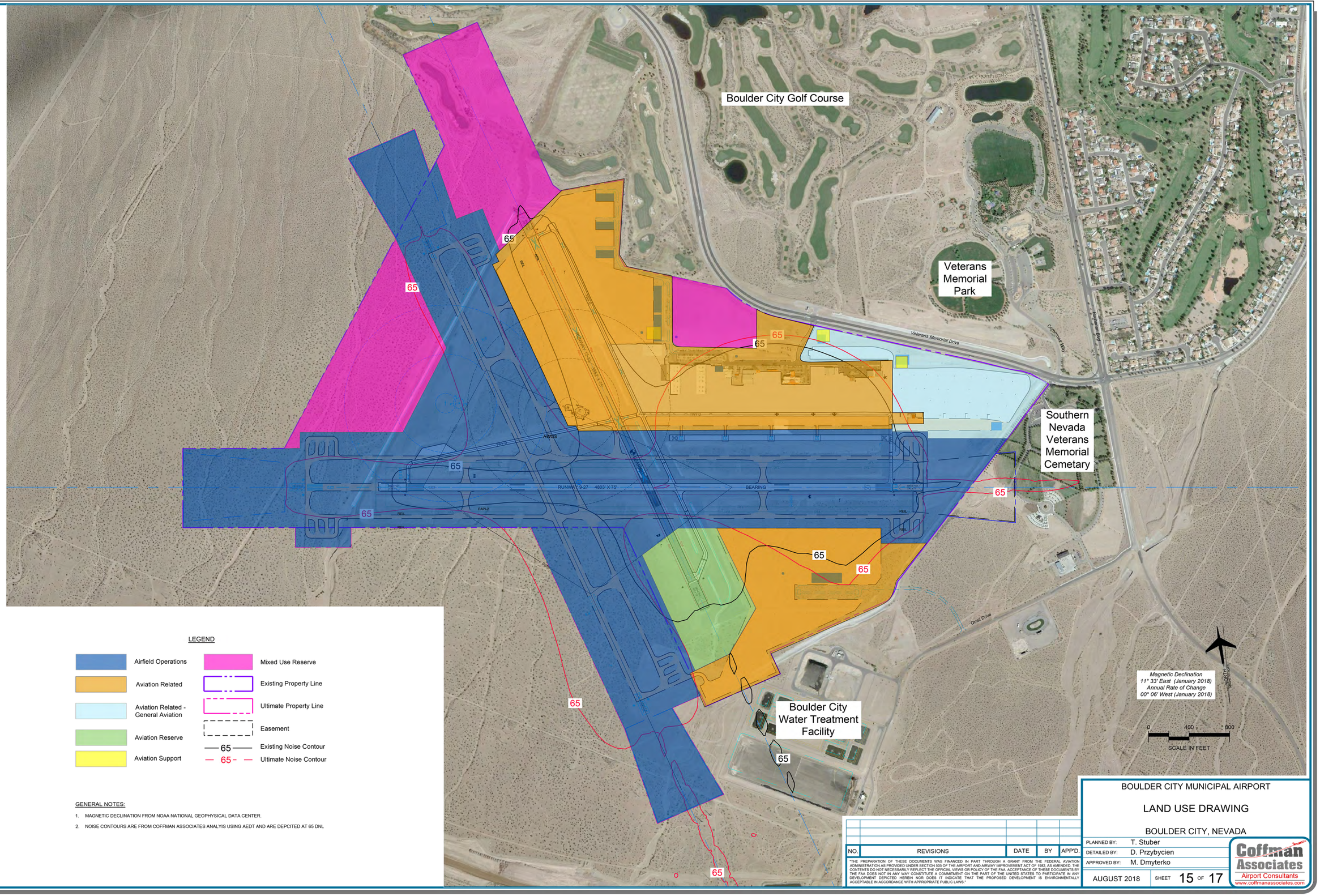

LEGEND

- Airfield Operations
- Aviation Related
- Aviation Related - General Aviation
- Aviation Reserve
- Aviation Support
- Mixed Use Reserve
- Existing Property Line
- Ultimate Property Line
- Easement
- 65 Existing Noise Contour
- 65 Ultimate Noise Contour

GENERAL NOTES:

1. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
2. NOISE CONTOURS ARE FROM COFFMAN ASSOCIATES ANALYIS USING AEDT AND ARE DEPCITED AT 65 DNL

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

LAND USE DRAWING

BOULDER CITY, NEVADA

PLANNED BY:	T. Stuber
DETAILED BY:	D. Przybycien
APPROVED BY:	M. Dmyterko
AUGUST 2018	SHEET 15 OF 17

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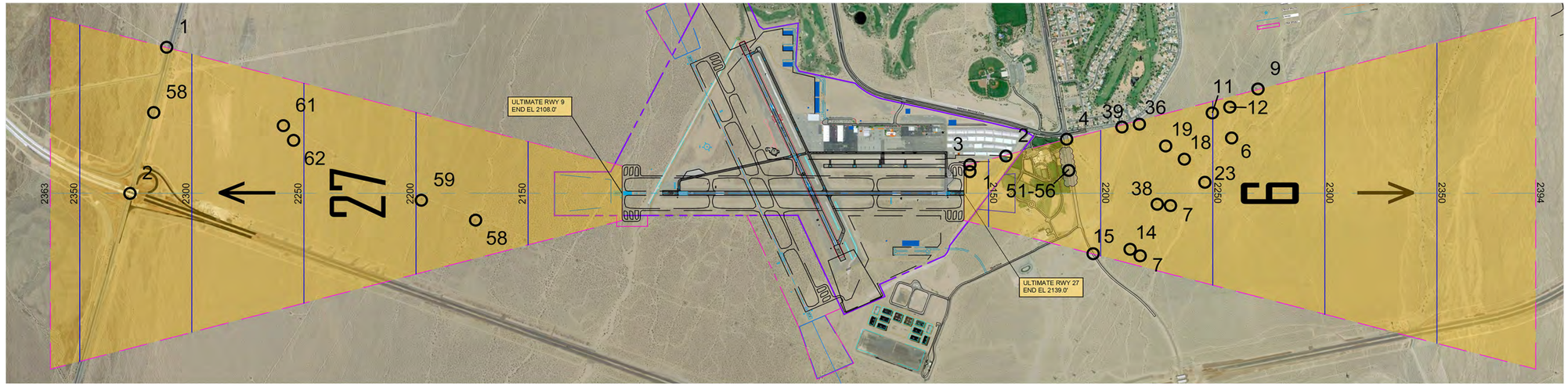
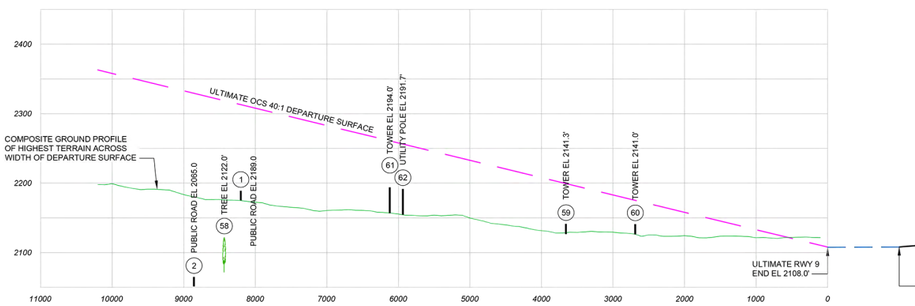
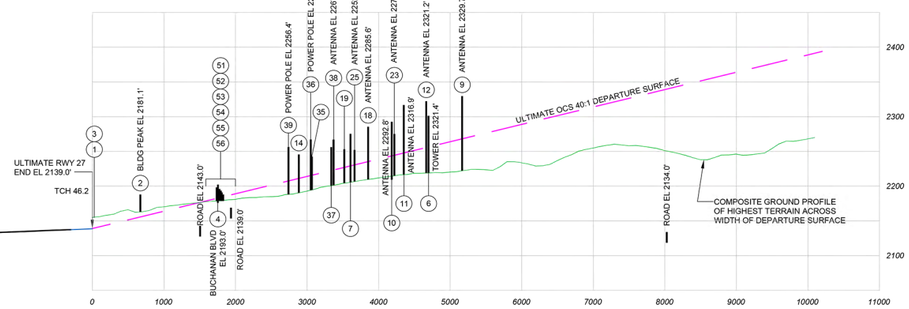
www.coffmanassociates.com







GENERAL NOTES:

1. OBSTRUCTION SURVEY DATED AUGUST 2016 BY MARTINEZ GEOSPATIAL
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
4. 50' TOPOGRAPHIC CONTOURS ACROSS DEPARTURE SLOPE REPRESENT ULTIMATE CONDITION.

RUNWAY 27 ULTIMATE DEPARTURE OBSTRUCTION TABLE

No.	Description	Top Elevation MSL	Penetration	Proposed Remediation
	NONE			

RUNWAY 9 ULTIMATE DEPARTURE OBSTRUCTION TABLE

No	Description	Top Elevation MSL	Penetration	Proposed Remediation
1	GRD	2150.6	9	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
2	BLDG PEAK ELEV	2188.1	30	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
3	GRD	2154.9	13	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
4	BUCHANAN BLVD	2193.0	8	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
6	TWR	2301.4	43	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
7	TWR	2275.4	44	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
9	TWR	2329.7	60	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
10	ANTENNA	2292.8	47	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
11	ANTENNA	2316.9	67	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
12	ANTENNA	2321.2	64	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
14	ANTENNA	2245.8	33	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
18	ANTENNA	2285.6	48	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
19	PPOLE	2253.2	24	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
23	ANTENNA	2275.2	29	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
6	ANTENNA	2301.4	43	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
25	ANTENNA	2252.2	20	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
35	ANTENNA	2242.6	25	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
36	PPOLE	2267.2	50	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
37	PPOLE	2256.3	32	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
38	ANTENNA	2267.3	42	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
39	PPOLE	2256.4	47	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
51	LPOLE	2188.1	1	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
52	LPOLE	2191.1	5	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
53	LPOLE	2193.5	8	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
54	LPOLE	2195.9	11	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
55	LPOLE	2198.3	14	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)
56	LPOLE	2202.2	18	Obstruction Evaluation/Airport Airspace Analysis (OE/AAA)

LEGEND

OBSTRUCTION AREA - SAMPLED POINTS REPRESENT THE HIGHTES POINTS WITHIN THE VICINTIY OF OBJECTS.

1 OBSTRUCTION IDENTIFIER

Magnetic Declination
11° 33' East (January 2018)
Annual Rate of Change
00° 06' West (January 2018)

0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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BOULDER CITY MUNICIPAL AIRPORT

RUNWAY 9-27
DEPARTURE SURFACE DRAWING

BOULDER CITY, NEVADA

PLANNED BY: T. Stuber
DETAILED BY: D. Przybycien
APPROVED BY: M. Dmyterko

AUGUST 2018 SHEET 16 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

NGS SURVEY CONTROL (PACS SACS) STATIONS

DESIGNATION	PERMANENT IDENTIFIER	LATITUDE	LONGITUDE
NONE			

NO PAC OR SAC STATIONS AT THIS AIRPORT

FAA APPROVAL STAMP

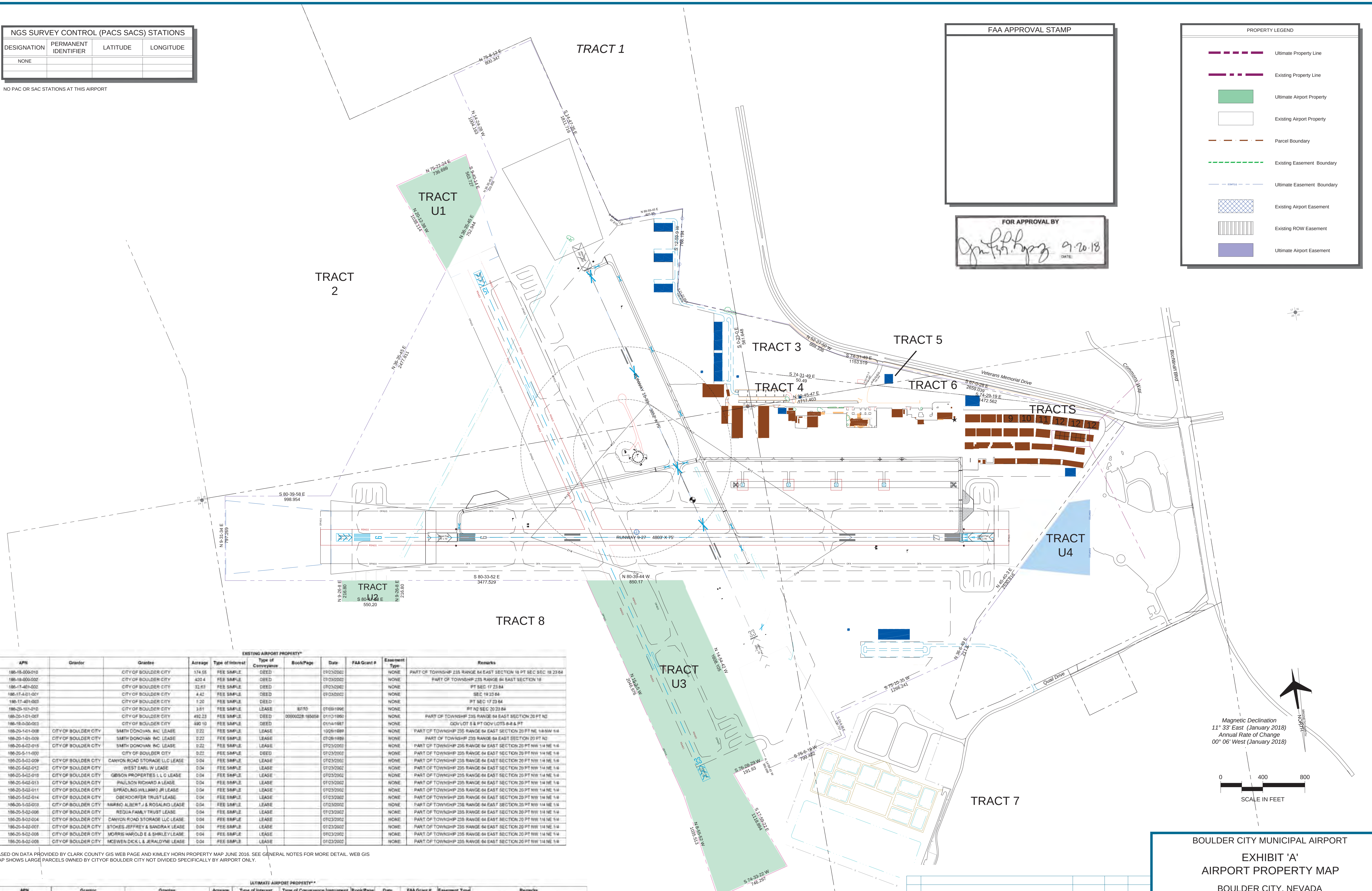
FOR APPROVAL BY

9-20-18

DATE

PROPERTY LEGEND

- Ultimate Property Line
- Existing Property Line
- Ultimate Airport Property
- Existing Airport Property
- Parcel Boundary
- Existing Easement Boundary
- Ultimate Easement Boundary
- Existing Airport Easement
- Existing ROW Easement
- Ultimate Airport Easement



EXISTING AIRPORT PROPERTY*

Tract	APN	Grantor	Grantee	Acreage	Type of Interest	Type of Conveyance	Book/Page	Date	FAA Grant #	Easement Type	Remarks
1	186-18-000-010		CITY OF BOULDER CITY	174.55	FEE SIMPLE	DEED		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 18 PT SEC SEC 18 23 64
2	186-18-000-002		CITY OF BOULDER CITY	420.4	FEE SIMPLE	DEED		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 18
3	186-17-401-002		CITY OF BOULDER CITY	32.63	FEE SIMPLE	DEED		07/23/2002		NONE	PT SEC 17 23 64
4	186-17-401-001		CITY OF BOULDER CITY	4.42	FEE SIMPLE	DEED		07/23/2002		NONE	SEC 19 23 64
5	186-17-401-003		CITY OF BOULDER CITY	1.20	FEE SIMPLE	DEED				NONE	PT SEC 17 23 64
6	186-20-101-010		CITY OF BOULDER CITY	3.61	FEE SIMPLE	LEASE	87/70	07/09/1996		NONE	PT N2 SEC 20 23 64
7	186-20-1-01-007		CITY OF BOULDER CITY	492.23	FEE SIMPLE	DEED	00000228:165058	01/12/1960		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT N2
8	186-19-0-00-003		CITY OF BOULDER CITY	490.10	FEE SIMPLE	DEED		01/14/1987		NONE	GOV LOT 5 & PT GOV LOTS 6-8 & PT
9	186-20-1-01-008	CITY OF BOULDER CITY	SMITH DONOVAN INC LEASE	0.22	FEE SIMPLE	LEASE		10/26/1989		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NE 1/4 NW 1/4
10	186-20-1-01-009	CITY OF BOULDER CITY	SMITH DONOVAN INC LEASE	0.22	FEE SIMPLE	LEASE		07/26/1989		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT N2
11	186-20-5-02-015	CITY OF BOULDER CITY	SMITH DONOVAN INC LEASE	0.22	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
12	186-20-5-11-000		CITY OF BOULDER CITY	0.22	FEE SIMPLE	DEED		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
13	186-20-5-02-009	CITY OF BOULDER CITY	CANYON ROAD STORAGE LLC LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
14	186-20-5-02-012	CITY OF BOULDER CITY	WEST EARL W LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
15	186-20-5-02-010	CITY OF BOULDER CITY	GIBSON PROPERTIES L L C LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
16	186-20-5-02-013	CITY OF BOULDER CITY	PAULSON RICHARD A LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
17	186-20-5-02-011	CITY OF BOULDER CITY	SPRADLING WILLIAM 0 JR LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
18	186-20-5-02-014	CITY OF BOULDER CITY	OBERDORFER TRUST LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
19	186-20-5-03-003	CITY OF BOULDER CITY	MARINO ALBERT J & ROSALIND LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
20	186-20-5-02-006	CITY OF BOULDER CITY	REQUA FAMILY TRUST LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
21	186-20-5-02-004	CITY OF BOULDER CITY	CANYON ROAD STORAGE LLC LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
22	186-20-5-02-007	CITY OF BOULDER CITY	STOKES JEFFREY & SANDRA K LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
23	186-20-5-02-005	CITY OF BOULDER CITY	MORRIS HAROLD E & SHIRLEY LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4
24	186-20-5-02-008	CITY OF BOULDER CITY	MCEWEN DICK L & JERALDYNE LEASE	0.04	FEE SIMPLE	LEASE		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 20 PT NW 1/4 NE 1/4

* BASED ON DATA PROVIDED BY CLARK COUNTY GIS WEB PAGE AND KIMLEY HORN PROPERTY MAP JUNE 2016. SEE GENERAL NOTES FOR MORE DETAIL. WEB GIS MAP SHOWS LARGE PARCELS 0WNED BY CITYOF BOULDER CITY NOT DIVIDED SPECIFICALLY BY AIRPORT ONLY.

ULTIMATE AIRPORT PROPERTY**

Tract	APN	Grantor	Grantee	Acreage	Type of Interest	Type of Conveyance Instrument	Book/Page	Date	FAA Grant #	Easement Type	Remarks
U1	186-18-000-002	CITY OF BOULDER CITY	CITY OF BOULDER CITY	12.1	FEE SIMPLE	DEED		07/23/2002		NONE	PART OF TOWNSHIP 23S RANGE 64 EAST SECTION 18
U2	186-19-0-00-003	CITY OF BOULDER CITY	CITY OF BOULDER CITY	2.80	FEE SIMPLE	DEED		01/14/1987		NONE	GOV LOT 5 & PT GOV LOTS 6-8 & PT
U3	186-19-0-00-003	CITY OF BOULDER CITY	CITY OF BOULDER CITY	48.30	FEE SIMPLE	DEED		01/14/1987		NONE	GOV LOT 5 & PT GOV LOTS 6-8 & PT
U4	186-20-601-001	STATE OF NEVADA DIV OF LANDS	CITY OF BOULDER CITY	6.75	FEE SIMPLE	EASEMENT				AVIGATION	

** BASED ON DATA PROVIDED BY CLARK COUNTY GIS WEB PAGE AND KIMLEY HORN PROPERTY MAP JUNE 2016. SEE GENERAL NOTES FOR MORE DETAIL. WEB GIS MAP SHOWS LARGE PARCELS 0WNED BY CITYOF BOULDER CITY NOT DIVIDED SPECIFICALLY BY AIRPORT ONLY.

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

BOULDER CITY MUNICIPAL AIRPORT

EXHIBIT 'A'
AIRPORT PROPERTY MAP

BOULDER CITY, NEVADA

PLANNED BY: T. Stuber
DETAILED BY: D. Przybycien
APPROVED BY: M. Dmyterko

AUGUST 2018 SHEET 17 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

BOULDER CITY
MUNICIPAL AIRPORT

APPENDIX C

Forecast Approval Letter

U.S. Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Airports Division
Phoenix Airports District Office

3800 N Central Ave.
Suite 1025
Phoenix, AZ 85012

July 1, 2016

Kerry Ahearn
Airport Manager
Boulder City Municipal Airport
1201 Airport Rd. #200
Boulder City, NV 89005

Ms. Ahearn,

Boulder City Municipal Airport (BVU), Boulder City, Nevada
Aviation Activity Forecast Approval

The Federal Aviation Administration (FAA) has reviewed the aviation forecast for the airport master plan for Boulder City Municipal Airport dated June 6, 2016. The FAA approves these forecasts for airport planning purposes, including Airport Layout Plan development.

In summary, while the difference between the FAA TAF and Boulder City Municipal Airport forecast update regarding total operations isn't within the 10 percent and 15 percent allowance for 5 and 10 year planning horizons, the airport forecast update appropriately explains these differences due to the most current conditions at the airport and the available data when the forecasts were developed. The submitted forecast provides the actual base year enplanement numbers which reflect the current conditions and operations at Boulder City Municipal Airport. Therefore, approval of this forecast doesn't need to be sent to FAA Headquarters for review because the 5 and 10 year forecasts do not exceed benchmarks established in the FAA's Guidance on Review & Approval of Local Aviation Forecasts published in 2008.

The forecast was formulated using current data and appropriate methodologies; therefore, the FAA locally approves this forecast for planning purposes at the Boulder City Municipal Airport. It is important to note that the approval of this forecast does not guarantee future funding for large-scale capital improvements as future projects will need to be justified by current activity levels reached at the time the projects are proposed for implementation.

If you have any questions about this forecast approval, please call me at 602-792-1072

Sincerely,

Jared M. Raymond
Airport Planner

BOULDER CITY
MUNICIPAL AIRPORT

APPENDIX D

ATCT Preliminary Site Evaluation

Technical Report

Preliminary Site Evaluation for the Development of an Air Traffic Control Tower at Boulder City Municipal Airport

Boulder City, Nevada

prepared for:

City of Boulder City

June 2015

prepared by:

Quadrex Aviation, LLC
Airport Development Services

in association with:
AJT Engineering, Inc.

Phase II
Preliminary ATCT Site Evaluation

TABLE OF CONTENTS

Phase II
Preliminary Siting Analysis

A. INTRODUCTION

The City of Boulder City, Nevada is undertaking a study to determine the most suitable location and height for a new Airport Traffic Control Tower (ATCT) for the Boulder City Municipal Airport (BVU).

Criteria used in the preliminary siting analyses and evaluations were based primarily on FAA Order 6480.4, Airport Traffic Control Tower Siting Criteria. This order was supplemented by other FAA documents and tools used for determining potential issues with airspace, navigational aids (NAVAIDs), and obstruction criteria. In addition, a variety of other considerations not cited specifically in FAA documents that were deemed relevant to the analyses of the potential siting options were included in the evaluations.

This report documents the analyses and evaluations conducted during the siting study. It provides background information on the Airport and the need for a new control tower, a discussion of the siting and evaluation criteria, an overview of all sites considered, and an evaluation of the primary siting options. It also presents conclusions of the siting study, and a recommendation for the location and height for the new ATCT.

The general methodology followed in this preliminary siting study was to first identify general areas around the airport where a new ATCT could potentially be located. The next step was to identify specific potential site locations in these areas with respect to:

- Distance from existing and planned runway ends
- Airfield clearance limits
- Proximity to basic utilities
- Proximity of road access
- Airspace clearance restrictions

Once the potential sites were identified, airfield viewing conditions based on basic line-of-sight criteria were investigated. This screening effort led to the identification of sites that were the promising as potential sites. These sites were then evaluated considering the variety of detailed siting criteria and factors. The basic steps taken in the evaluation of each tower site were:

- Determination of minimum tower height to provide a minimum 35-minute viewing angle to existing and future runway surfaces.

- Determination of maximum possible tower height considering existing and future airspace clearance requirements.

- Determination of minimum tower height required to provide clear viewing to nearest taxiway safety area edge

- Determination of required tower height at each site, based on highest of 35-minute viewing angle height requirements and taxiway safety area viewing height

- Analysis of line-of sight obstructions created by buildings and other structures.

Documentation of the analyses, evaluations, and conclusions of the siting study is contained in this report. The documentation is organized as follows:

Section A – Introduction. Overview of the ATCT development process for the Airport.

Section B - Background Information. Background information on the Airport, the justification for a new ATCT, and the scope of the preliminary siting study.

Section C - Criteria for ATCT Site Identification and Evaluation. Overview of the criteria and factors considered in the identification and evaluation of potential sites for a new ATCT facility.

Section D - Initial Site Identification and Analysis. Discussion of initial sites identified for the new ATCT, evaluation of these initial sites, and determination of the most feasible siting options based on the initial identification and evaluation.

Section E - Evaluation of Candidate Sites. Analyses of most feasible siting options identified in the initial site investigations including a summary of the advantages and disadvantages of each of the primary siting options, and comparison of the options.

Section F - Conclusions and Recommendations. Summary of the initial conclusions of the study, overview of FAA analysis and evaluations, and presentation of final conclusions and recommendations.

The following report narrative presents the findings and recommendations of the study. The comments and opinions expressed in this report are those exclusively of Quadrex Aviation and do not reflect the position of the Federal Aviation Administration or that of any other federal, state, or local agency.

B. BACKGROUND INFORMATION

1. General Information

Boulder City Municipal Airport (BVU) is located in Clark County, Nevada approximately 1 mile south of the City of Boulder City and 25 miles east of Las Vegas. The airport is owned and operated by the City of Boulder City and covers an area of approximately 530 acres.

The Airport currently has two runways. The primary runway, Runway 09/27, is 4,800 feet long. Runway 15/33 serves as the Airport's secondary, crosswind runway and is 3,850 feet long. Of particular note, Runway 33 has a steep gradient which slopes upward at a 2.7 percent (37:1) rate. Takeoffs on Runway 33 are discouraged due to the significant pavement slope and sharply rising terrain northwest of the Airport. Figure A illustrates the layout of the Airport.

BVU hosts several commercial operators who provide aerial tours of the Grand Canyon using a variety of helicopter and fixed wing aircraft. The airport is the third largest commercial service airport in the state. The Airport is classified by the FAA as a non-hub commercial service airport and accommodates over 200,000 enplanements annually. A skydiving operator is also based at the airport, providing tandem parachuting activities with the landing drop zone located near the

terminal area. According to a recent census of based aircraft, there are currently 242 aircraft based at the Airport.

2. Need for New Airport Traffic Control Tower

In 2007, the FAA Flight Standards office conducted a Ramp Safety Analysis for the airport and due to the complex and increasing mix of rotor and fixed wing traffic combined with parachuting activities, recommended that the City consider development of an air traffic control tower (ATCT) and applying for entry into the federal contract tower (FCT) program. In 2009, the FAA Western Region ATO Safety Field Operations Group - Runway Safety visited BVU to update its Runway Safety Action Plan (RSAP). Airport management was strongly encouraged to seek entry into the FAA Federal Contract Tower (FCT) program.

In November 2011, the City formally submitted an application for entry to the FCT. (See Phase I Report). The FAA generally responds to such requests by conducting a benefit/cost (B/C) analysis to determine the feasibility of staffing an ATCT, assuming an ATCT facility meeting their standards is available. The FAA requires a B/C ratio of 1.0 (benefit to cost) as part of their determination that an airport is a candidate for the FCT program. As part of the FCT application, the City provided operational data that, if used by the FAA, would result in an estimated B/C ratio of **1.24**.

The FAA received the City's application in late 2011 but has yet to review the data and provide a B/C determination. While FAA must report a minimum B/C ratio of 1.0 and formally accept the airport as a FCT candidate before the airport can use AIP funding for ATCT development, it is presumed that a net positive B/C determination is forthcoming which will justify the development of an ATCT for the Airport.

3. Siting Study Scope

The siting study for a potential new BVU ATCT focused on determining the optimum siting solution for a new facility that meets the FAA siting criteria. The siting solution consists of a facility location and cab floor height that allows optimum object discrimination and unobstructed line-of-site to all aircraft operating areas on the airport.

The study encompasses several tasks, including establishing the appropriate siting criteria, identifying possible areas and sites within those areas, screening and evaluating the sites, and developing recommendations for the new ATCT. The study considers existing and future configurations of the airport in the analysis of tower siting scenarios. It also considers other critical factors such as cost of construction, availability of utilities, access and potential environmental issues.

4. Overall Project Scope

Based on the demonstrated need for controlled airspace to support the safe and efficient operation of fixed and rotor wing aircraft at BVU, the proposed project scope consists of the development of a facility that meets the FAA's criteria for siting and staffing of a new air traffic control tower. While the siting and height are variables that require the analysis to determine detailed location and height, the ATCT facility itself will contain the requisite features common to all FCT towers (tower cab, break room, equipment room, etc.) In addition, all equipment as specified in the FAA's minimum equipment list for FCT facilities would be provided.

C. CRITERIA FOR SITE IDENTIFICATION AND EVALUATION

1. General

The criteria and considerations for the siting analysis were taken in part from the draft update of FAA Order 6480.4B, *Airport Traffic Control Tower Siting Criteria*. Although currently in draft form, the updated criteria is being used by FAA to assess potential ATCT sites. The Order establishes a variety of siting requirements, each of which must be met. The criteria for ATCT siting follow the general outline:

- Impacts to instrument approach procedures (TERPS)
- Impacts to communications, navigation, and surveillance equipment
- Visibility performance
- Operational requirements
- Economic considerations
- Safety Risk Management / Comparative Safety Assessment (CSA)

In addition to the requirements defined by the Order, there are several other siting factors that are specifically relevant to BVU and are either separate from or extensions to the requirements contained in the Order. These factors combined define the siting criteria and considerations for the analysis and site recommendation.

2. Impacts to instrument approach procedures

a. Impact to Instrument Approach Capabilities

FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS). TERPS for the airport must be studied to determine what impact a new ATCT would have on Instrument Terminal Procedures into and out of the airport. The ATCT must be sited such that it does not adversely impact any current or planned terminal instrument procedures"

Comment: BVU currently does not have any existing or planned instrument approaches that would be affected by an ATCT facility. Runway 9/27 has non-precision approach markings however the Airport's current ALP does not reflect any proposed NAVAIDS or other indication of an instrument approach with vertical guidance. It should be noted that predominant weather patterns do not make the need for an instrument approach a high priority.

b. Impacts to Protected Airspace

14 CFR (Code of Federal Regulations) Part 77, Objects Affecting Navigable Airspace, and Advisory Circular 150/5300-13, Airport Design Standards. Standards must be reviewed and complied with as applicable. Airport surfaces of particular concern are the Runway Obstacle Free Zone including the Precision Runway Obstacle Free Zone and the Approach Obstacle Free Zone, the Runway Object Free Area, Runway Protection Zone, Runway Safety Area, and building restriction line. The FAA-approved ALP must be reviewed for conformance. A Non Rule Making Action (NRA) must be conducted in accordance with FAA Order JO 7400.2, Procedures for Handling Airspace Matters and Part 77, Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) requirements.

Comment: No ATCT site will be considered that falls within the listed critical surfaces The Airport's FAR Part 77 surfaces that will be considered for the site evaluation include the approach, transitional, and horizontal surfaces for the existing runways and proposed extensions. The recommended site will be depicted on an updated ALP. The recommended site will also be "airspace'd" through the filing of FAA Form 7460-1, "Notice of Proposed Construction or Alteration". Any impact to air navigation identified in the OE/AAA process will be carefully considered.

3. Impacts to Communications, Navigation, and Surveillance Equipment.

The ATCT must be sited where it does not degrade or affect the performance of existing or planned facilities and/or equipment, unless deviations are necessary to meet other siting criteria and mitigation strategies are implemented.

Comment: The airport has an Automated Weather Observation System (AWOS) located on the airport and will be identified for potential disruption. There are no existing NAVAIDs located on the Airport or planned.

4. Visibility Performance Requirements

a. *General. A visibility siting requirements analysis must be conducted using the FAA's Airport Traffic Control Tower Visibility Analysis Tool (ATCTVAT) to address the unobstructed view, object discrimination, and Line of Sight (LOS) angle of incidence requirements. The visibility tool is available on the following Web site: http://www2.hf.faa.gov/visibility/*

Comment: Each ATCT site will be evaluated using the ATCTVAT tool and the detailed results reported in a report attachment. See Table 2.

b. *Unobstructed View. Visibility from the ATCT cab must allow an unobstructed view of all controlled movement areas of an airport, including all runways, any other landing areas, and of air traffic in the vicinity of the airport. Visibility from the ATCT cab should allow an unobstructed view of all taxiways and ramp areas. In lieu of using the FAA's AFTIL lab, the alternative siting process for demonstrating the ATCT Cab viewpoints will prepared as outlined in Chapter 8 of the Order.*

Comment: Each candidate site will be evaluated based on clear line-of-sight to the Air Operations Area (AOA). See Table 3.

c. *Object Discrimination. ATCT height and distance from critical airport locations must support requirements for object visibility from the ATCT cab. An object discrimination analysis must be performed to assess observers' probability of detection of an object on the airport surface according to the listed criteria.*

i. Detection Ability – ability to notice the presence of an object on the airport surface without regard to the class, type, or model (for example, an object such as an aircraft or vehicle). The observer knows something is present but may not recognize or identify the object with 95.5% confidence.

Comment: The front view probability criteria are calculated by the ATCTVAT for the front view of a minivan.

ii. *Line of Sight Angle of Incidence. The ATCT distance from critical airport locations and ATCT height must support requirements for viewing objects on the airport movement areas, taxiways and critical non-movement areas from the ATCT cab. A LOS angle of incidence analysis must be performed to assess the angle at which the observers' view of a distant object intersects with the airport surface. The minimum LOS Viewing Angle of Incidence must equal or exceed an angle greater than* ***0.80 degrees****. Note: If the determined operational height at a candidate site exceeds the FAA's ATCTVAT identified minimum height, the siting team must document the need to exceed the minimum or to manage visibility risks.*

Comment: The ATCTVAT process will identify each site's visual characteristics (object discrimination and LOS angle of incidence) from a perspective that approximates the proposed location and tower cab floor height.

d. Visibility Performance Considerations.

Two-Point Lateral Discrimination. Consideration must be given to the two-point lateral discrimination to ensure that ATCT location and height enhance visibility performance as much as possible. A two-point lateral discrimination analysis must be performed to ensure that operations at critical points of the airport surface provide the observer sufficient lateral discrimination. Consideration must be given to laterally separating the observer's viewing angle between the two points ***by 0.13 degrees (8 minutes)*** *or greater*.

Comment: The ATCTVAT evaluation process will identify each site's lateral perspective (look down angle) to each runway ends . See Table 2

5. Operational Requirements

The ATCT must be constructed at the minimum height required to best satisfy the following criteria (Note: some criteria will be applicable to the design of the ATCT facility and will not necessarily be a factor for siting considerations).

a. *ATCT Orientation. Consideration must be given to the following: direct sun glare, indirect sun glare off natural and manmade surfaces, night-time lighting glare, external light sources, and thermal distortion in determining ATCT orientation. The ATCT must be orientated where the primary operational view faces north or alternately east, or west, or finally south, in that order of preference for an ATCT in the northern hemisphere. In areas where snow accumulates on the ground or the ATCT site is surrounded by sand or a large body of water, a southern orientation should be avoided.*

Comment: The various areas available for development on the airport will be evaluated based on this criteria. Specific sites will also be assessed for the ability to meet the goal of reducing glare.

b. *Weather. Using a 10-year weather history, consideration must be given to local weather phenomena that impair visibility. Weather affecting the predominant flow of traffic should be considered in the siting process. Ceilings and visibility should be considered in determining ATCT height.*

Comment: Based on a 20-year historical record of weather (1981-2010)[1], the Las Vegas area experiences only 21 days of precipitation per year and receives a total average annual rainfall of 4.2 inches. Since most all of the precipitation events are temporary, no special considerations for the ATCT height will be required.

c. *Look-down Angle. Visibility from the ATCT cab must consider the view of controlled movement areas around the base of the ATCT. The impacts of lookdown angle due to the potential of a larger cab and/or taller ATCT must be evaluated.*

Comment: The look-down angle will be evaluated at site specific locations based on minimum tower cab heights and ultimately as a factor for the proposed ATCT cab design.

d. *Look-across LOS. Consideration must be given to visibility from operational positions in the ATCT cab and potential impacts to LOS due to an increase in cab size and/or ATCT height.*

Comment: The look-across LOS down angle will be evaluated at site specific locations based on minimum tower cab heights and ultimately as a factor for the proposed ATCT cab design.

e. *Cab Mullion/Column Orientation. Consideration must be given to LOS impacts resulting from placement and configuration of mullions/columns as a function of cab size.*

Comment: Mullion/column placement will be considered ultimately as a factor for the proposed ATCT cab design.

f. *Look-up Angle. Consideration must be given to look up angle for adverse impacts on air traffic operations.*

Comment: The look-up angle will be considered ultimately as a factor for the proposed ATCT cab design.

g. *Access. Access to the ATCT must avoid crossing areas of aircraft operations, and should avoid roads or bridges subject to closures due to high traffic volume, flash floods, snow, landslides, falling rocks or other hazards.*

Comment: The various areas available for development on the airport will be evaluated based on the ability to access the site unimpeded by potential road/bridge hazards

h. *Non-Movement Areas. Visibility of all airport surface areas for ground operations of aircraft and of airport ground vehicles on ramps, aprons and tie-down areas, and test areas must be considered.*

Comment: The various sites will be screened and evaluated based on meeting this factor.

6. Economic Considerations.

Economic factors must be also considered when evaluating ATCT sites. Rough order of magnitude estimates must be documented for the recommended sites in the siting report. The estimates should include at a minimum the following items:

[1] *www.usclimatedata.com/climate/las-vegas/nevada/united-states/usnv0049*

a. *Height. The height of a proposed ATCT as it is typically the largest contributing factor to the project cost.*

Comment: The height requirements for each of the screened sites will be assessed based on a general planning factor of $25,000/foot of structure.

b. *Land Use Planning. The ATCT parcel must have sufficient area to accommodate parking, future expansion, and other requirements.*

Comment: The candidate sites will be evaluated based on meeting this factor. For planning purposes, a 120' by 120' parcel will represent the total land use needs for the ATCT facility. The parcel will be able to provide sufficient area to accommodate the initial ATCT structure and any planned future extensions, personnel and facility vehicle parking, fuel storage tanks, generators, etc.

c. *Utilities and Cabling. Connectivity of required cabling and utilities.*

Comment: The various areas will be screened and specific sites evaluated based on the availability of water and sewer, electric, fiber optics, and telephone/cable.

d. *Site Access. Any necessary new or redesigned site access roadways.*

Comment: The various areas will be screened and specific sites evaluated based on the availability of existing access roadways and the length required to connect the ATCT site to the access road.

e. *Security. The ability to provide adequate facilities to secure the ATCT site*

Comment: The specific sites will be evaluated to determine the ability to provide security features.

f. *Mitigation Strategies. Potential environmental impacts and mitigation requirements, as identified in the NEPA process must be documented.*

Comment: A NEPA Categorical Exclusion checklist will be prepared for each candidate site to identify any potential environmental factors that must be considered.

7. Siting Safety Risk Management (SRM) Process / Comparative Safety Assessment (CSA).

The Safety Risk Management (SRM) process ensures that safety-related changes are documented, hazards are identified, risks are assessed and analyzed, medium and high risks are tracked to resolution, high risks are mitigated to an acceptable level, medium risks are mitigated if possible, the effectiveness of the risk mitigation strategies are assessed, and the performance of the change is monitored throughout its lifecycle.

The SRM for the ATCT site selection is documented through a Comparative Safety Assessment (CSA) where each of the candidate sites is reviewed for potential hazards. Identified hazards must be assessed and mitigated to an acceptable level of risk to satisfy SMS requirements. While the CSA will be performed as a separate task (Phase III), potential risks were called out for attention.

D. INITIAL SITE AREAS

1. Initial Area Identification & Evaluation

The Boulder City Municipal Airport is laid out in a classic primary and crosswind runway configuration that separates airport property into four quadrants. Runway 9/27 bisects airport property north and south while Runway 15/33 divides the airport into east and west sections. These quadrants represent the general areas that were considered for potential ATCT sites that could meet the basic minimum criteria for development. **Figure 1** illustrates the four areas for consideration

Basic criteria for considering the viability of these areas included:

- available access (length = cost)
- available utilities (length = cost)
- terrain characteristics (lower elevation = cost)
- ATCT Orientation (operations)

Each general area was screen against these factors to determine the suitability for supporting ATCT development at the Airport.

a. Area A - Northwest Quadrant

This area is undeveloped other than a major stormwater drainage structure along the airport western perimeter. The terrain is relatively level and even with the airfield. The AWOS sensors are located in Area A. A 500-foot radius around the sensors is reserved to protect the AWOS.

Area A - Northwest Quadrant	
Pros	**Cons**
Unobstructed Airfield View	Inside airport perimeter
Utilities (Electric only)	Access road length required (4,700')
East /Southwest view of Runway 9/27	No water (septic tank required)
North view of Runway 15	Remote from Terminal area
	South view of Runway 33
	Distance to electrical vault (airfield lighting)

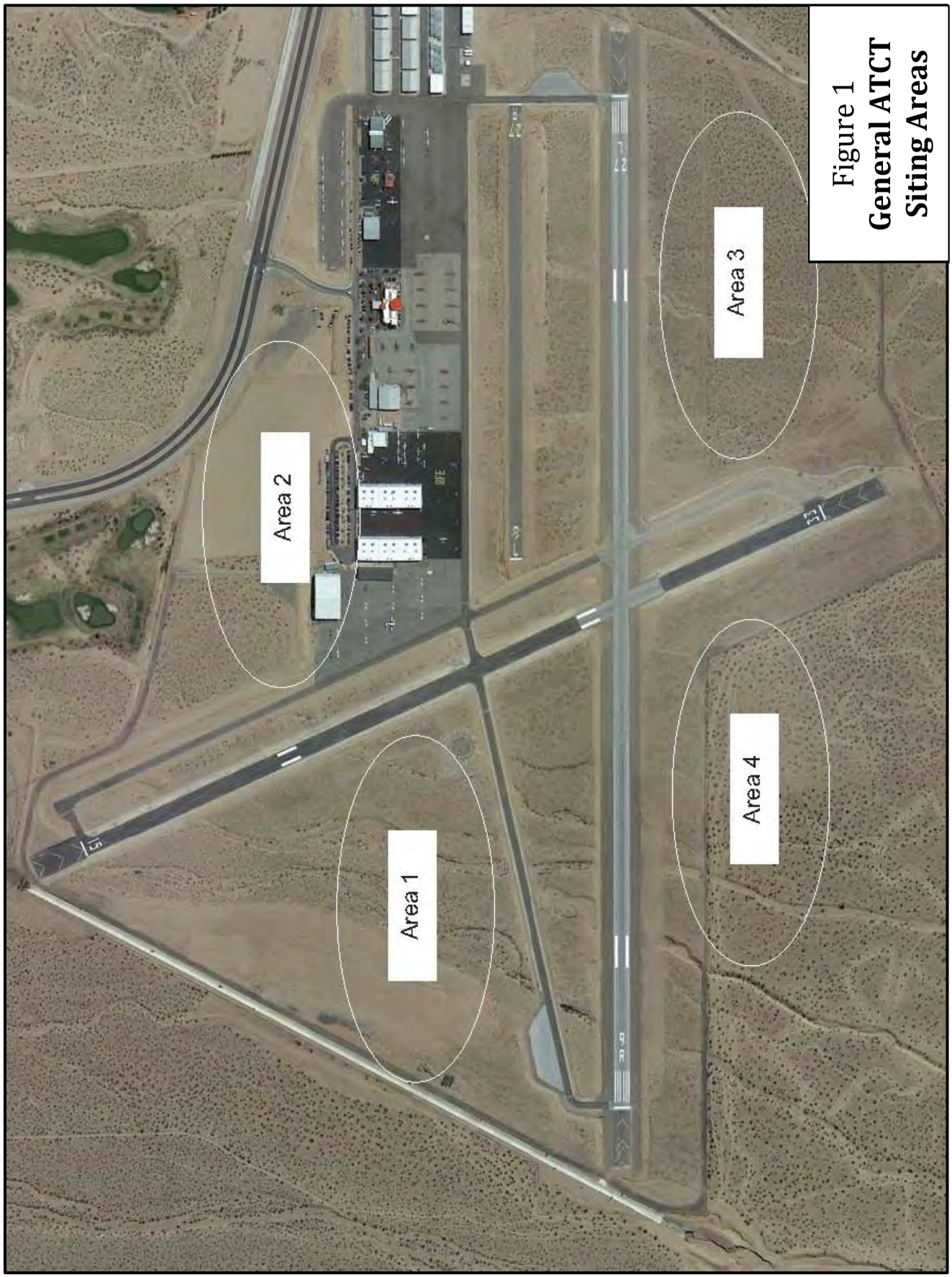


Figure 1
General ATCT Siting Areas

b. Area B - Northeast Quadrant

This area represents the terminal area of the airport where most all of the current development is located. There are still parcels available for development however a major portion of the undeveloped property accommodates the parachute landing area (PLA) for the tandem skydiving operator. The terrain is generally above the level of the airfield.

Area B - Northeast Quadrant	
Pros	**Cons**
Utilities	Partially obstructed view of AOA
Existing Access road	Proximity of Parachute Landing Area
Elevation to support ATCT cab floor height	Southeast/Southwest view of Runway 9/27
Northwest view of Runway 15	South view of Runway 33

c. Area C - Southeast Quadrant

This area is undeveloped. The terrain slopes away from and falls below the general level of the airfield.

Area C - Southeast Quadrant	
Pros	**Cons**
Unobstructed view of airfield	Access road length required (3,200')
Future hangar development area	No Utilities
Northeast/Northwest view of Runway 9/27	Terrain elevation lower than airfield
Northeast/Northwest view of Runway 9/27	Remote location away from developed areas
North/Southwest view of Runway 15/33	

d. Area D - Southwest Quadrant

This area is undeveloped. Airport property line only extends 400 feet from Runway 9/27 centerline. The terrain slopes away from and falls below the general level of the airfield.

Area 4 - Southeast Quadrant	
Pros	**Cons**
Unobstructed view of airfield	Access road length required (8,000')
Limited on-airport property	No Utilities
East/West view of Runway 9/27	Terrain elevation lower than airfield
North/Southeast view of Runway 15/33	Remote location away from developed areas

2. Analysis of Initial Sites

A cursory review of the four potential areas for ATCT development indicated that only one of the four areas have the potential for cost-effectively supporting the project over a short-term (five year) period. Areas C and D would require the extensive development of an access road and utilities to support the ATCT. According the ALP, Area C has been set aside for development of additional aircraft hangars and includes access road improvements to reach the area. A proposed ATCT site in Area C could possibly serve as a springboard for initiating development in this area. However, both Areas C and D have downward sloping terrain which would require a relatively high ATCT structure and an additional cost to meet FAA look-down angles and other LOS siting criteria.

While in closer proximity to the terminal area than Areas C and D, Area A is only marginally fit for consideration as a potential ATCT location, again due to the cost of providing utilities and an access road. No additional development has been proposed for this area.

3. Summary Comparison of Initial Sites

While there is extensive development in Area B, there are a number of parcels that could be considered for potential ATCT use. An access road and all utilities are available and the terrain slopes upward above the airfield elevation which reduces the need for extending the ATCT structure to meet the LOS criteria. The orientation of any ATCT in Area B would not meet the optimum goal of northward airfield views but this can be surmounted with window shading as is commonly done at many locations. There are several hangars and other structures in Area B which could possibly restrict complete air operations area (AOA) line-of-sight from certain sites but could be this could be overcome by extending the ATCT cab floor height.

Given the need to keep costs down and to leverage the ability to provide support facilities for the ATCT, specific sites to be considered will be restricted to Area B. If no practical site emerges from the evaluation of Area B sites, other areas may be re-opened for consideration.

E. ANALYSIS OF CANDIDATE SITES

1. General

In identifying and evaluating potential sites in Area B, a number of assumptions were made to consider the effect of meeting FAA LOS and other criteria. These assumptions include:

- Runway 9R/27L is permanently closed and reused as a parallel taxiway
- Taxiway D is downgraded to a apron-edge taxilane and will not be part of the AOA
- No new development will be allowed to encroach into the proposed ATCT LOS limits
- Runway 9 will eventually be extended 1,000 feet to the west

Based on these assumptions and the FAA's specific siting criteria, three sites were identified for more detailed analysis. **Figure 2** illustrates the locations of these sites.

2. Candidate Site Descriptions

Site 1 is located in a vacant area just north of the Grand Canyon hangar along the far western section of the Terminal area. The terrain is a flat site with an elevation of 2,179 feet (MSL) which is 25 feet lower than the Airport Reference Point (ARP = 2,004 feet).

Site 2 is approximately 350 feet east of Site 1 and just on the edge of the parachute landing area. The terrain appears to have been semi-prepared and sits at an elevation of 2,175 feet which places it at 29 feet below the ARP.

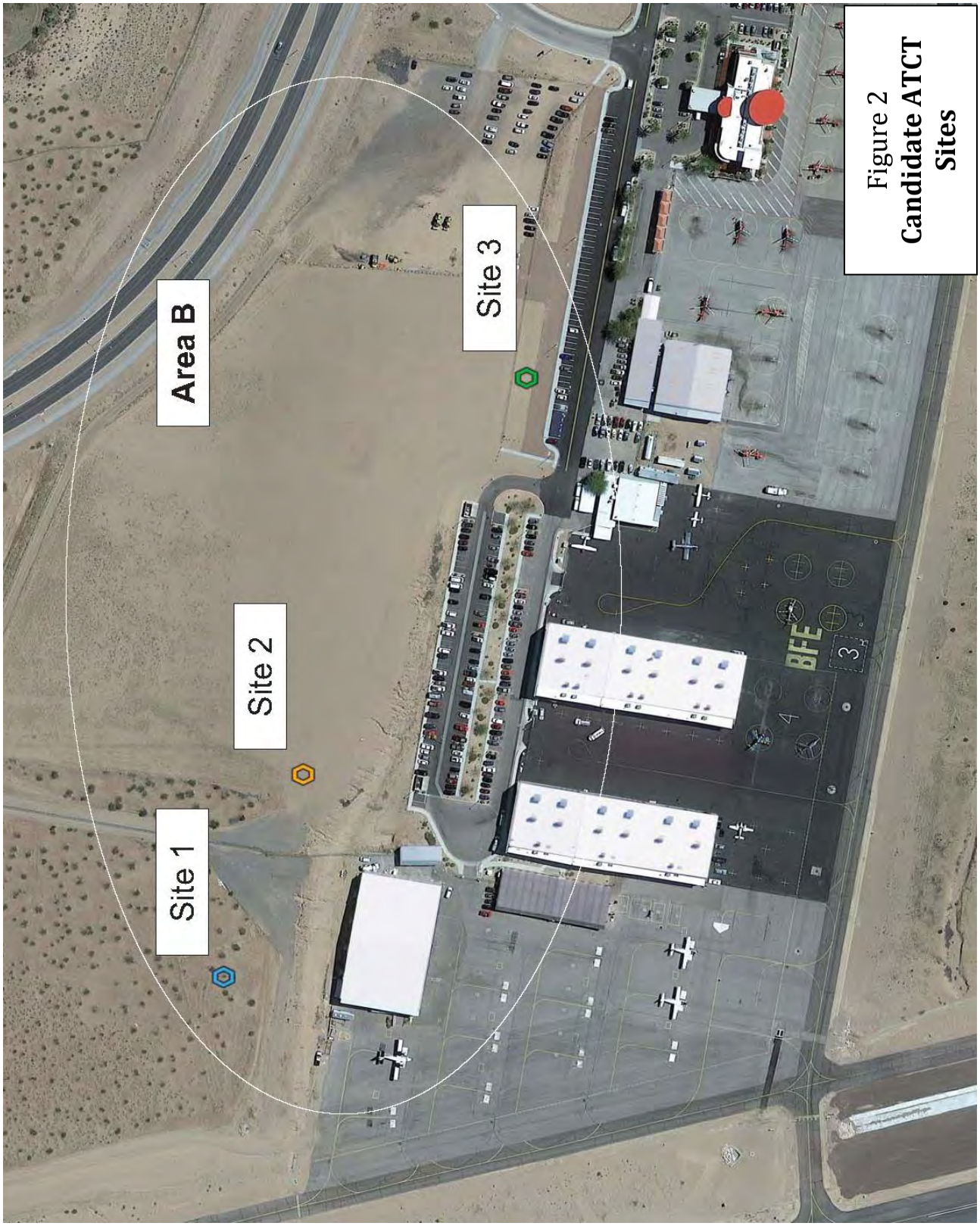


Figure 2
Candidate ATCT Sites

D-15

Site 3 is located near the center of the terminal area north of the Papillion Helicopters hangar area. The site has been graded and also at an elevation of 2,175 feet.

All of the site are easily accessible and have nearby utilities. Table 1 presents general data on the various sites.

Table 1
GENERAL SITE DATA
Boulder City Municipal Airport

	Site 1	Site 2	Site 3
Location			
Latitude	35° 57' 2.90" N	35° 57' 2.90" N	35° 56' 58.77"N
Longitude	114° 51' 37.23" W	114° 51' 37.23" W	114° 51' 25.67"W
Ground Elevation (MSL)	2,179'	2,175'	2,175'
Site Location			
Station (RW 9 = STA 0+00)	23+24.2	26+91.5	33+08.1
Offset (North)	1,650.2	1,539.5	1,327.8
Distance to RW Ends (El)			
RW 9 (2,108.6')	2,850.6	3,100.7	3,564.6
RW 27 (2,137.9')	2,976.8	2,614.2	2,000.4
RW 15 (2,203.3')	1,405.7	1,762.8	2,396.6
RW 33 (2,089.9')	2,649.3	2,495.9	2,330.3
Distance to Rotating Beacon	2,464.4	2,083.9	1,439.9

3. Evaluation of Candidate Sites

As discussed in Section C, several factors were applied to evaluate the suitability of each candidate site. Among those used for the preliminary evaluation included:

- Elevation differential
- Object discrimination (Detection)
- Object discrimination (Recognition)
- Line-of-sight angle (ATCT-RW end)
- Line-of-sight shadow (ATCT-AOA)

Table 2 presents a summary of the results from the analysis of each site using the FAA's ATCT Visibility Analysis Tool (ATCT-VAT). The tool calculates the values for four of the five criteria. The fifth criteria was manually developed based on elevation differential between eye level from the ATCT cab floor to the top elevations of critical structures that could obstruct the view of the Air Operations Area (AOA).

The shadow is the area of the AOA that cannot be seen from the ATCT. Table 3 includes the shadow calculations for several hangars and other structures from the various sites and demonstrates the quality of the AOA visibility. The key factor for this analysis is the "Eye Level @ ATCT Cab". Where the calculation is highlighted in bold and surrounded by parentheses, the view is obstructed; otherwise the AOA is visible. The "Inner" AOA is represented by Taxiway D. It is assumed that the taxiway will be converted to an apron edge taxi-lane once the closed parallel runway (RW 9L/27R) is converted to a parallel taxiway and becomes the "Outer" AOA. While an obstructed view is not necessarily a disqualifying factor, it makes the viability of a site less attractive to the other sites being considered.

a. Site 1

Site 1 is situated just north of the Grand Canyon Airlines hangar. At a cab floor eye level of 104 feet above the ground elevation, Site 1 passed all of the first four ATCT-VAT criteria by wide margins (see Table 2). Some portions of the Inner AOA line-of-sight from the ATCT cab are obstructed by the BFE hangars (see Table 3). A small portion of the Outer AOA may be potentially obstructed by the Papillion Helicopter terminal structure which may be mitigated given more detailed data.

b. Site 2

Site 2 is located east of Site 1. The cab floor height is 104 feet above ground level. Site 1 passed all of the ATCT-VAT criteria. The shadow obscuration from the BFE hangars and the Papillion structure only affect the visibility of the Inner AOA. Table 3 presents the shadow length calculations.

c. Site 3

Site 3 is located north of the Papillion maintenance hangar. The BFE hangars create and obstructed view of the Inner AOA. The Grand Canyon Hangar obstructs a portion of the view of Taxiway B which will remain a factor irrespective of the Inner AOA. The degree of the obstructed views are included in Table 3.

F. CONCLUSIONS AND RECOMMENDATIONS

Based on the preliminary analysis of areas and sites available for ATCT development, Site 2 is clearly the best alternative. Its central location (like the others) lends itself to lower development costs. Site 2 also provides the best perspective view for the ability to see over the hangars compared to the other sites. The close proximity of the hangars to the taxiways make an unobstructed view a difficult challenge.

A more detailed analysis of the Site 2 along with the others (along with perhaps additional sites) will be a component of a formal Comprehensive Safety Analysis (CSA) as required by FAA before proceeding to design and construction. The CSA will identify potential risks with site. The severity of the risk will be assessed along with mitigation measures. The CSA will ensure that the development of an Air Traffic Control Tower at Boulder City Municipal Airport will be safe and efficient.

Table 2
ATCT SITE VISIBILITY ANALYSIS
Boulder City Municipal Airport

	Site 1	Site 2	Site 3
Key Data			
Observer Eye Height (MSL)	2,283	2,279	2,279
ATCT Ground Elevation (MSL)	2,179	2,175	2,175
RW End Distance (MSL)			
RW 9 (2,108.6' el.)	2,850.6	3,100.7	3,564.6
RW 27 (2,137.9' el.)	2,976.8	2,614.2	2,000.4
RW 15 (2,203.3' el.)	1,405.7	1,762.8	2,396.6
RW 33 (2,089.9' el.)	2,649.3	2,495.9	2,330.3
Elevation Differential (Eye Level to RW end) [Threshold > 40']			
RW 9	174'	170'	170'
RW 27	145'	141'	141'
RW 15	80'	76'	76'
RW 33	193'	189'	189'
Object Discrimination [Probability]			
Detection [Threshold > 95.5%]			
RW 9	100.0%	99.9%	99.9%
RW 27	99.9%	100.0%	100.0%
RW 15	100.0%	100.0%	100.0%
RW 33	100.0%	100.0%	100.0%
Recognition [Threshold > 11.5%]			
RW 9	92.2%	89.2%	82.4%
RW 27	90.8%	94.3%	98.0%
RW 15	99.5%	98.8%	96.0%
RW 33	94.0%	95.3%	96.4%
Line of Sight Angle [Threshold > 0.8°] ***(change in elevation limits)***			
RW 9	3.49° (> 40')	3.14° (> 43')	2.73° (> 50')
RW 27	2.79° (> 41')	3.09° (> 36')	4.03° (> 28')
RW 15	3.26° (> 19')	2.47° (> 24')	1.82° (> 33')
RW 33	4.17° (> 37')	4.33° (> 35')	4.64° (> 32')
Assumptions Light Level: Clear Day Ground Turbulence: Medium Visibility: 10 miles		Target Object: Dodge Caravan Orientation: Front View	
Source: FAA ATCT Visibility Analysis Tool (www.hf.faa.gov/visibility)			

Table 3
ATCT LINE-OF-SIGHT (SHADOW ANALYSIS)
Boulder City Municipal Airport

	Site 1			Site 2			Site 3		
Ground El. (MSL)	2,17			2,175			2,175		
Min. Eye Level (AGL) (Cab Floor +5')	104			104			104		
Min. Eye Level (MSL)	2,28			2,279			2,279		
	Inner	Outer	Shadow	Inner	Outer	Shadow	Inner	Outer	Shadow
Hangar 1 (Grand Canyon Airlines)		2,204.0			2,204.0			2,204.0	
AOA Ground El.	2,155	2,150	2,150	2,155	2,150	2,150	2,165	2,165	2,165
ATCT to Bldg (d_1)	270	270	270	350	n/a	350	910	912	912
Tangent of Angle	0.08	0.07	0.29	0.20	-	0.21	0.08	0.08	0.08
AOA to Bldg (d_2)	581	746	185	246	n/a	252	483	406	474
AOA to ATCT (d_3)	919	1,017	455	595	-	601	1,393	1,318	1,386
Shadow @ ATCT Eye Level	50	59	-	5	-	-	**(1)**	6	-
Hangar 2 (BFE)		2,190.0			2,190.0			2,190.0	
AOA Ground El.	2,155	2,150	2,150	2,155	2,150	2,150	2,155	2,150	2,150
ATCT to Bldg (d1)	732	732	732	613	613	613	845	947	947
Tangent of Angle	0.19	0.11	0.13	0.21	0.13	0.15	0.11	0.09	0.09
AOA to Bldg (d2)	187	366	315	164	310	276	429	289	425
AOA to ATCT (d3)	919	1,098	1,046	777	923	889	1,274	1,236	1,372
Shadow @ ATCT Eye Level	**(44)**	13	-	**(42)**	10	-	**(10)**	13	-
Hangar 3 (BFE)		2,190.0			2,190.0			2,190.0	
AOA Ground El.	2,155	2,150	2,150	2,155	2,150	2,150	2,155	2,150	2,150
ATCT to Bldg (d1)	884	884	884	642	642	642	662	662	662
Tangent of Angle	0.16	0.09	0.11	0.21	0.12	0.14	0.15	0.09	0.13
AOA to Bldg (d2)	225	441	380	167	335	288	238	466	298
AOA to ATCT (d3)	1,109	1,325	1,264	809	977	930	900	1,128	960
Shadow @ ATCT Eye Level	**(44)**	13	-	**(45)**	12	-	**(9)**	32	-
Hangar 5 (Papillion)		2,194.0			2,194.0			2,194.0	
AOA Ground El.	2,160	2,155	2,155	2,160	2,155	2,155	2,160	2,155	2,155
ATCT to Bldg (d1)	1,109	1,109	1,109	831	831	831	355	355	355
Tangent of Angle	0.06	0.05	0.08	0.08	0.06	0.10	0.13	0.09	0.24
AOA to Bldg (d2)	540	862	486	427	680	381	263	420	163
AOA to ATCT (d3)	1,650	1,972	1,595	1,257	1,511	1,212	618	775	517
Shadow @ ATCT Eye Level	19	39	-	19	37	-	39	52	-
Papillion Tower		2,210.0			2,210.0			2,210.0	
AOA Ground El.	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
ATCT to Bldg (d1)	1,553	1,553	1,553	1,247	1,247	1,247	487	487	487
Tangent of Angle	0.07	0.05	0.05	0.08	0.05	0.06	0.13	0.08	0.14
AOA to Bldg (d2)	736	1,062	1,064	629	1,002	903	385	610	353
AOA to ATCT (d3)	2,290	2,616	2,617	1,876	2,249	2,150	872	1,096	840
Shadow @ ATCT Eye Level	**(32)**	**(0)**	-	**(30)**	7	-	6	29	-

Attachments

BOULDER CITY
MUNICIPAL AIRPORT

APPENDIX E

Master Plan Comments

COMMENTS ON MASTER PLAN CHAPTERS 1, 2 AND 3.

General Comments:

1. Future Drone Impacts on airport operations not discussed
2. Feasibility / desirability of IFR approach not adequately discussed other than Ch 1, pg 63
3. Relocating one or more FATOs off Delta to closed runway not discussed
4. Inadequate discussion of Part 139 certification
5. Inadequate discussion of locating crash / fire / rescue capability on airport if not CFR Part 139
6. Capacity issues – growth in fixed wing versus helicopters and ramp allocation – not discussed

Specific Chapter by Chapter Comments

Chapter 1

1. Ch 1, pg 2: Papillon / GCA not mentioned and we are the largest private employer in Boulder
2. Ch 1, pg 9: Enplanement chart is not correct / Chart 2D Ch. 2, pg 25 is correct
3. Ch 1, pg 63: "Opportunities exist for a flight school;" that is incompatible with current mix of commercial flights operating from KBVU
4. Ch 1, pg 64: "There is one ingress and egress for helicopter operators" is incorrect

Chapter 2

1. Ch 2 pg 16: "...BVU will facilitate the majority of sight-seeing operations in the region;" no, LAS is believed to be larger in based aircraft and enplanements
2. Ch 2, pg 23: Grand Canyon Airlines is not the parent company of Papillon; they are separate corporations and hold separate FAA air carrier certificates. Scenic Airlines is a d/b/a of Grand Canyon Airlines
3. Ch 2, pg 28: The model Caravan GCA operates is the Grand Caravan and not the Super Cargo Master. It is incorrectly included in the 10-19 passenger seat category along with the Twin Otter. By FAA regulation, the Grand Caravan is limited to 9 passengers.
4. Ch 2, pg 28: GCA does not operate with load factors of 97%; it is closer to 87%
5. Ch 2, pg 28/29: Using a figure of 7.37 seats per departure is misleading; Twin Otters have 19 seats, Caravans have 9 and helicopters typically seat 6 but about 20% of the Papillon fleet seat 7.
6. Ch 2, pg 54: Correct "Super Cargo Master" to "Grand Caravan"

Chapter 3

1. Ch 3, pg 5: Runway Use – incorrect statement that helicopters depart south and arrive from south; some air tour helicopter flights depart and arrive from the north. Further use of the FATO on taxiway Delta has turned Delta into a de facto runway. The greatest safety concern for traffic conflict is the continued joint use of Delta by both fixed-wing and helicopters
2. Ch 3, pg 5: Weather – significant cross winds particularly in the Spring reduce capacity and should be mentioned
3. Ch 3, pg 18: Runway Visibility Zone is explained but the conclusion is incorrect. There are obstructions to the line of sight of several departure points and certainly for helicopters departing from the FATOs
4. Ch 3, pg 20: The Grand Caravan is limited to 9 passenger seats under FAA regulation not 14.

5. Ch 3, pg 27: "commercial service turboprops...are NOT weight-restricted when combining operational factors such as temperature and density altitude
6. Ch 3, pg 36: 702-293-1532 does not answer
7. Ch 3, pg 42: Air tour terminal designed for a capacity of 185 passengers and it routinely is at capacity; where does 102 design hour enplanement come from?
8. Ch 3, pg 43 Table 3K doesn't make a lot of sense. All air tour companies provide courtesy hotel pick-up / drop-off for passengers flying out of Boulder. Thus the parking required is completely incorrect. Further, the number of employee parking spaces is badly understated at 20; it should be 140-160
9. Ch 3, pg 44: reference to 1.5 parking spaces per commercial passenger and 15 percent of passenger parking spaces reserved for employees is not correct per item 8
10. Ch 3, pg 44: General Aviation Terminal Facilities description needs to mention Boulder City Aviation Services located at 1201 Airport Road as a second FBO
11. Ch 3, pg 49: Aircraft Rescue and Firefighting – incorrect application of the definition FAR part 139. It is required for scheduled air carrier operations of aircraft seating 10 or more and 31 or more seat aircraft for unscheduled operations
12. Ch 3, pg 52: Papillon and Grand Canyon Airlines draw the majority of fuel from the fuel farm used at KBVU. The fuel farm has a sensor that auto-orders replacement jet A when needed. Reference to FBO cooperation needs to reference that some air tour providers have direct access to the common fuel farm.

Chapter Four response.

What I see missing from this is the ability to address the current airport layout and operations with regards to the helicopter ops and crossing the runways with helicopter traffic when airplanes are landing and experiencing near misses. Also the fact that the power lines, (where aircraft at KBVU have crashed and killed people) isn't even brought up? Moving the airport is expensive but so are moving or burying power lines and they need to be addressed.

How did we get here? You must ask who in the hell approved the current city leases and what was he/she thinking or was he/she thinking? Is he/she the same person or persons that will be approving the future leases and if so, how will this terrible situation not be repeated? Is this person qualified or have enough airport experience to hold this position or should the decision making be moved to an aeronautical board that current doesn't exist? I have been attending the Airport Advisory meetings for 16 years and have never experienced a bigger waste of time and energy as this committee holds no authority and serves no purpose other than eye wash.

You must also ask are the current city leases being enforced and is there a level playing field with each tenant. One need not look any further than the Monarch leasehold to see that they haven't provided the services required by their leasehold nor do they intend to. Going on 10 years now so it looks like the non aeronautical folks running the show are protecting them and don't care? Same goes for the Air Excel lease hold whom has been in violation of their lease since they bought it.

Next is the City ramp space that was paid for with federal funds and is currently leased to Monarch/Papillon/Grand Canyon Airlines compared to the ramp that BFE developed. Monarch pays a substantially discounted rate (not a commercial rate) compared to BFE, in the neighbor of 200% less (not chump change). This discounted ramp is being used exclusive for their tour ops, when the land lease was issue to provide services to the aviation community.

BFE leasehold was required to build 60,000 square feet of commercial hangar space to provide the KBVU flying community with services. Monarch provides most if not all of their own services and doesn't have open doors to invite others in to the airport, which raises the question why do we need 60,000 square of commercial space? This is the work of a well intention community development director, city council but not an aeronautical board. **Doesn't work now and won't work in the future, how does this AMP address this?** The next 20 years should be spent fixing this mess first then everyone knows going forward KBVU land lease tenants investments will be protected by aviators and not city folks that have no aeronautical knowledge.

Highlighted in blue under the AMP's objective is the primary goal of **defining a future concept which positions the airport to be a marketed, developed, and safely operated for the betterment of it's users and the community as a whole.** Without changing the current process for approval and management this statement isn't possible.

The city manager and not an appointed aeronautical board of aviators oversee our Airport manager. Political decisions are never good when it comes to operating a safe airport and KBVU is proof of that. AMP is worthless and all the time we spend discussing it is also useless unless we address this dysfunctional situation.

Regards, Bob Fahnestock
BFE, LLC
1411 Airport Rd
Boulder City, NV 89005

Owner operator of 65,000 square feet of commercial hangar space and 20,000 of privately owned hangars.
Fuel provider
$10million invested
Provided from day one all the lease hold requirements and still waiting for the city to live up to theirs without any recourse or aeronautical board of piers to help.

From: bouldercity.airportstudy.com - comments From: Chad Hesterman
To: coffman.airportstudy@gmail.com; Mike Dmyterko; Tyler Stuber; Jim Harris
Subject: T-hangars
Date: Saturday, December 09, 2017 2:35:22 PM

From: Chad Hesterman <hesty@cox.net>
Subject: T-hangars

Organization:

522 Genni Pl

Boulder City, NV 89005

Comments
It appears on the Master Plan map that the existing T-hangars on TW4 that are of Port-a-Port constructions are projected to be removed. Can you expand upon this, reveal a timeline and verify the intent of the map? Thank You.

--
This mail is sent via contact form on http://bouldercity.airportstudy.com

From: Mike Dmyterko
To: Jennifer Lopez
Cc: Tyler Stuber; Andryscik, Kory
Subject: FW: Airport Changes
Date: Thursday, February 22, 2018 1:27:47 PM

-----Original Message-----
From: bouldercity.airportstudy.com - comments From: Nancy Harteis [mailto:harteisfamily270@aol.com]
Sent: Thursday, February 22, 2018 1:25 PM
To: coffman.airportstudy@gmail.com; Mike Dmyterko <miked@coffmanassociates.com>; Tyler Stuber <tstuber@coffmanassociates.com>; Jim Harris <jmharris@coffmanassociates.com>
Subject: Airport Changes

From: Nancy Harteis <harteisfamily270@aol.com>
Subject: Airport Changes

Organization:

1624 Broadmoor Circle

Boulder City, NV 89005

Comments
Our family concern and that of our neighbors are: Noise levels beginning around 3:00 a.m. as they are testing and starting up engines. The fumes from all the engines starting around 6:00 a.m. are horrible. Since moving in more helicopter tour companies are neighborhood has been put at risk to toxic levels. The evening flights as they come back are equally as bad for the noise. One day I even experienced while in my back yard a helicopter coming down the green from Buchanan to the 17th hole as if he was going to land. It was a black helicopter and yes I reported him. Now more hangers are going to bring in more private jets. I did not know we would become as busy as Henderson Executive Airport. All of this does not bring in tourist to Boulder City. They bus them in and bus them out. The next thing they will want is an off ramp from I 11 to totally bypass the town.

--
This mail is sent via contact form on http://bouldercity.airportstudy.com

www.coffmanassociates.com

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