

2016

# GYR DESIGN GUIDELINES



GOODYEAR AIRPORT DRAFT

8/29/2016

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*Phoenix Goodyear  
Airport (GYR)  
averages more than  
500 aircraft  
operations per day.*

## Introduction

### Purpose of Design Guidelines

The Goodyear Airport (GYR) Design Guidelines have been developed for the following purposes:

- Assist in navigating the approval process
- Creating a cohesive and unifying vision for the design and development of the airport and its facilities.

The intent of this document is to create a foundation from which to build upon and to work in concert with existing established building criteria and requirements. This is accomplished by identifying key design strategies, principles, and building standards for new development and renovation (tenant improvement) of existing facilities at the airport. These guidelines embrace the existing history, heritage, current vitality and future character of the airport. The principles are intended to promote sustainable growth and positive development at the airport, ensuring its place in American aviation for generations to come.

The City of Phoenix and the Airport are planning on a sustainable future and have embraced sustainable design principles, with a focus on: Air Quality, Energy, Greenhouse Gas Emissions, Outreach, Policies and Contracts, Waste and Recycling, and Water Conservation. They have developed guidelines and checklists, based on the USGBC's LEED (U.S. Green Building Council, Leadership in Energy & Environmental Design) program. For this reason, it is highly advisable the design team have at least one LEED AP (Accredited Professional) to understand the Green Guide and guide the project through the sustainable design process.

The reuse and revitalization (and preservation where appropriate) of existing facilities within the airport is viewed as an important principle design aspect, from both a sustainable and historical perspective. For that reason, some existing buildings at the airport may not fully comply with the design guidelines as they are currently written. It is expected that over time each building that was/is existing at the time this guideline was created will be reviewed on a case by case basis. It is understood that when these structures undergo remodel/renovation/repurposing attempts will be made by the design/construction team to bring the structure into compliance; or as close to it as possible. It is also acknowledged that in attempting to preserve those structures with historical character and/or significance exceptions to the design guidelines will need to be made.

One aspect that makes Goodyear Airport stand out is its storied history and continued evolution in the aviation industry. It is important that the airport maintains its long historic character, and that the airport will continue to develop this unique personality and signature; through continued renewal and revitalization from within the existing airport. It is also recognized that unique functions at the airport attract the attention of aviation enthusiasts and the ongoing pilot training necessitates that the airport is clearly distinct both from airside and landside for pilots and users. Many of the operational aspects of aviation will continue to be present into the future as they are guided by functional requirements; while others are expected to evolve with the changes (advances) in aviation, building sciences and user interaction.

## Goodyear Airport - GYR

Goodyear Airport (GYR) is owned and operated by the City of Phoenix. The City also owns and operates Phoenix Sky Harbor International Airport (PHX) and Phoenix Deer Valley Airport (DVT). The executive management team consists of the Director of Aviation Services and Assistant Directors. The GYR Airport General Manager oversees daily operations at GYR. The Phoenix City Council and Mayor are the governing entity over Goodyear and appoint members to the Phoenix Aviation Advisory Board (PAAB) to review and submit to the City Council recommendations on airport policies, projects, and concession contracts and leases. Goodyear Airport is located within the geographic (and permitting) jurisdiction of the City of Goodyear.

### History

Phoenix Goodyear Airport was founded in 1941 based on the military's World War II needs and originally known as Naval Air Facility Litchfield Park. During the war NAF Litchfield hosted the B-24 Liberators (PB4Y-1) and Privateers (PB4Y-2). After the war the site became a storage area for surplus military, at one point housing more than 5,000 aircraft (reduced by 50% in the late 1950's). In 1965 the remaining 800 (approx.) aircraft were relocated to Davis Monthan Air Force Base in Tucson, AZ as part of a military aircraft storage consolidation effort. Subsequent to this NAF Litchfield Park closed in 1967 and was sold to the City of Phoenix. Today Phoenix's Goodyear Airport continues to host aircraft (commercial) for refurbishment and retirement.

### Facilities

Airport facilities described in the following sections include airside facilities, airspace control, and landside facilities. GYR's airside facilities include major functions directly supporting aviation operations such as the 8,500ft runway, taxiways, aprons, navigational aids (NAVAIDs), and hangars. Goodyear has the ability to host even the largest of aircraft, and covers more than 789 acres.

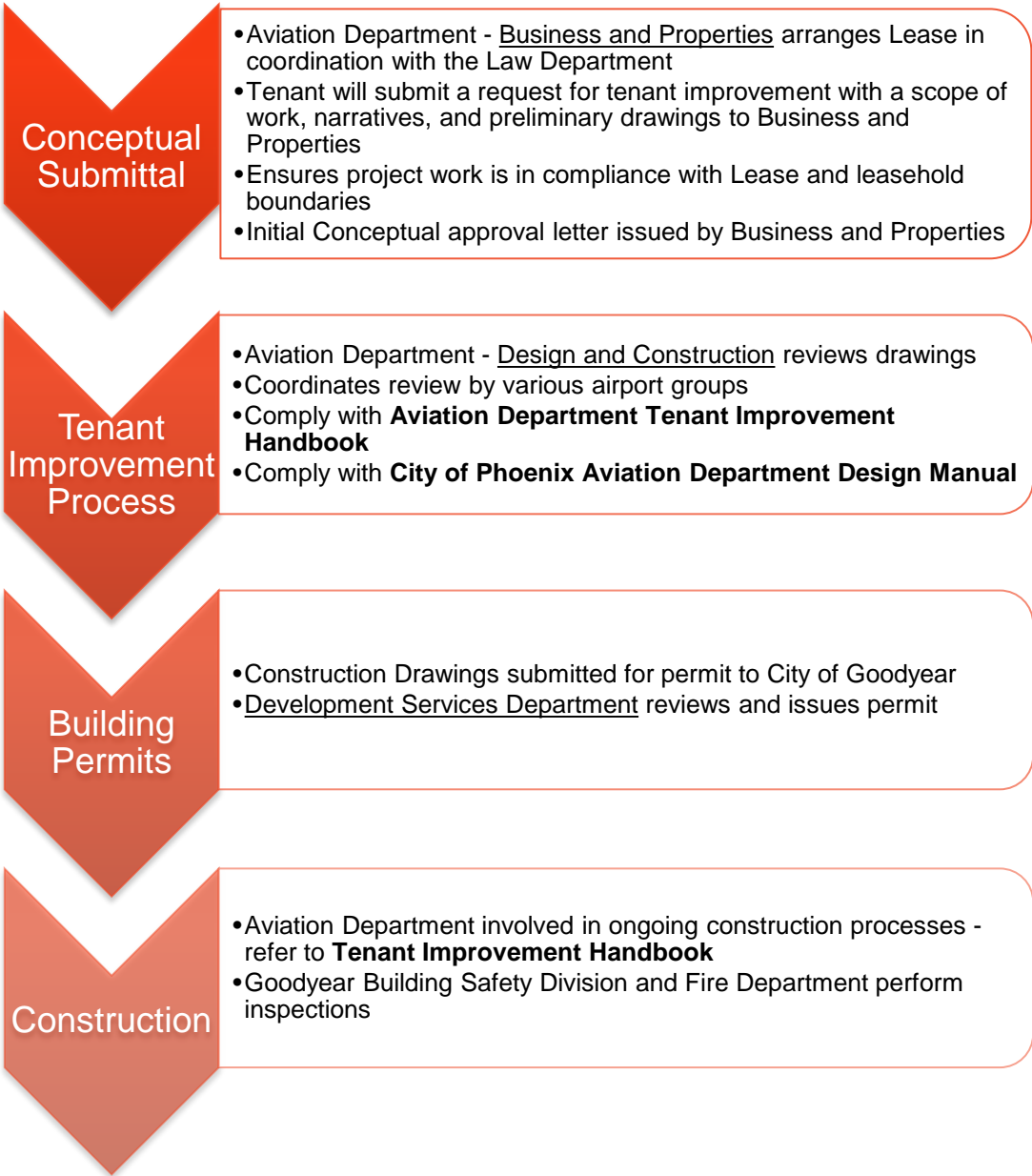


Figure 1: Aerial Photo of GYR

These design guidelines are applicable to both airside and landside new construction and renovation (tenant improvement) projects; and should include all structures even if they are not occupied. In the event of conflicting code requirements, the more restrictive of the two shall govern. In the case of conflicts with other City of Phoenix Aviation Department requirements, established City of Goodyear requirements shall govern, unless noted otherwise. In cases of aesthetics and/or non-code (life safety) issues the final decision shall be left to the airport administration. Facilities must comply with federal, state, county, city and airport requirements. At no time is development allowed that will impede, restrict or otherwise adversely impact flight operations (current or anticipated). Additionally, at no time shall any development be allowed that will negatively impact the airports planned or existing federal grant assurances.

## Design Review Process

New construction projects typically follow a process that starts with leasing and conceptual design, progresses through design, reviews, permitting, construction, and ends with move in and maintenance. This document addresses Conceptual Submittals and preparing for the Tenant Improvement Process.





## Tenant Improvement Project Types Defined

Note that all projects on airport property involving tenant-occupied facilities are referred to as “tenant improvement projects.” It is highly recommended that all prospective tenants familiarize themselves with the Tenant Improvement Handbook (TI Handbook).

### Type “A” (major)

Per the TI Handbook, examples of Type “A” projects include: new buildings, extensive remodeling of existing buildings, adding square footage to existing buildings, building-out shell space, site work, adding electrical or data conduit, and adjusting mechanical systems. Type “A” projects require:

- a conceptual submittal and design review process
- a design/construction submittal for approval by Aviation Department
- separate submittal for permits to the City of Goodyear

### Type “B” (minor)

Per the TI Handbook, examples of Type “B” projects include: maintenance to existing structures, adding or relocating a door or window in a non-rated wall, relocating existing signs, and replacing or changing existing non-rated finishes. No design review is required. The COP Aviation Department T.I. Coordinator approves Type “B” projects with a one-time submittal of a schedule, list of materials, and a certificate of insurance. Administrative Approval is required for Type B projects. Reference the TI Handbook for more information.

Aviation’s technical review and approval is required for tenant improvement projects, before construction begins, regardless of the scope of the project. The COP Aviation Department T.I. Coordinator makes the determination of whether the scope of work is a Type “A” or Type “B” project.

## Conceptual Submittal and Design Review Process

The prospective tenant should contact the Business and Properties Division of Aviation Department to discuss what will be required. Once Business and Properties has determined the project can meet lease requirements, the tenant will submit a request for tenant improvement and the concept submittal process can begin. Conceptual approval information submitted to Business and Properties includes the proposed improvements or changes, the areas of construction, lease and scope compliance documentation, and the proposed schedule for the work. The Business and Properties Division will review the submittal, and if acceptable, will issue written “Conceptual Approval” of the Tenant Improvement Project. After “Conceptual Approval” the project will move to the Design and Construction Services Division of the Aviation Department, following the processes outlined in the Tenant Improvement Handbook. A Conceptual approval letter does not guarantee approval of designs in the Design Review, Construction Review, or building permit phases.

All Type “A” projects will require some form of design review but it is particularly important for new facilities and significant expansions. Design Review submittal requirements listed on the following pages may be adjusted depending on the scale and complexity of the project. The Design Review submittal will be prepared by the tenant and submitted for review. The goal of this submittal is to show how the project is in compliance with the Design Guidelines and how it fits within the airport. Design and Construction Services Division will coordinate and perform Design Review with other members of Aviation Department, including airport management and the Business and Properties Division. GYR staff will be consulted throughout the review process in order to avoid any potential problems pertaining to airport operations, facility maintenance, and existing conditions.

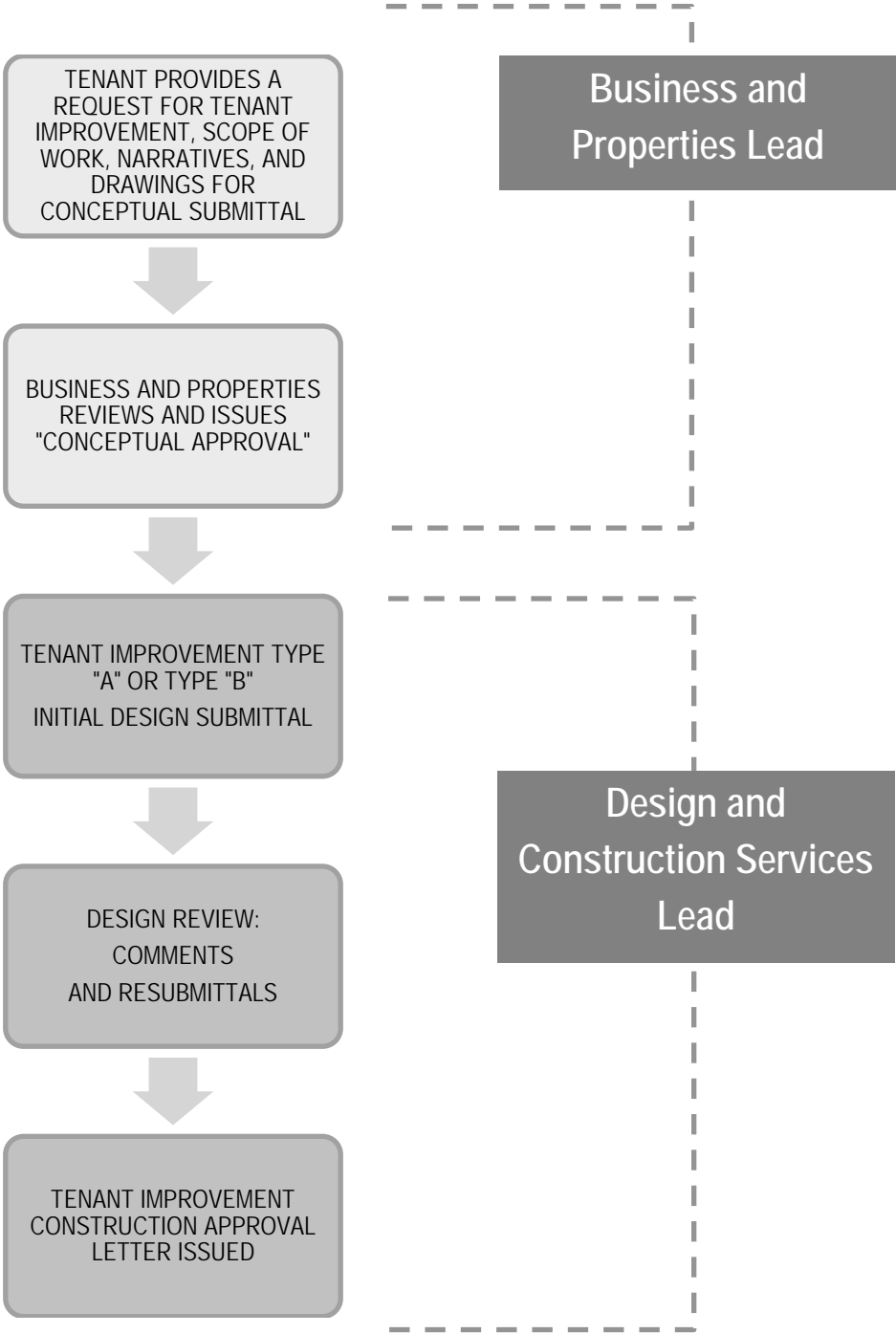


Figure 2: Type 'A' Design Review Process. See Tenant Improvement Handbook for extended Type 'A' and Type 'B' Flow charts and processes.

## Design Review Requirements

All the following items are required, where appropriate, for initial design review:

- A project information sheet
- Site Plan: Site Plan at a scale of not less than 1" = 30'
- Elevations: Colored exterior elevations at a scale of not less than 1/16" = 1'- 0" illustrating all elevations of the structure(s). Show the dimensions of the maximum building height(s), and include locations and sizes of building mounted signage. Materials, colors, and features to be clearly noted.
- Landscape: A Concept Landscape Plan at a scale of not less than 1" = 30'
- Floor Plans: Floor plans at a scale of not less than 1/8" = 1'- 0"
- Material Board: Applicants should submit an 11x17 digital material/color board (does not have to include actual material samples) with colors and materials clearly shown and identified. Color samples (paint chips) should be provided along with sample board. If photographic reproductions are used in lieu of actual samples, prints must be clear and legible.
- Narratives: Describe features of the project and compliance with these **Design Guidelines** and the **City of Phoenix Aviation Department Design Manual**, where appropriate. Suggested minimum topics include:
  - Intended use
  - Site organization and features
  - Landscape and hardscape
  - Fencing
  - Building internal organization
  - Building appearance and material choices
  - Proposed structural systems
  - Proposed Mechanical and Electrical and Lighting systems
  - Proposed specialty systems (alarm, sprinkler, backup power, telco, IT) as applicable
  - Security
  - Sustainability features (or LEED)
  - Proposed deviations from Guides or Design Manual.

Format: Submit three 24" by 36" (maximum size) black-line copies of the drawings/plans outlined above for Aviation Department review. Provide three copies of narratives.

Provide 1 (one) complete CD containing a PDF copy of drawings and other files being submitted for Aviation Department record.

## Tenant Improvement Approval

Upon approval, provide 1 (one) full size plan set (folded), 1 (one) copy of narrative and other supporting documents, and 1 (one) labeled CD containing a PDF copy of drawings and other files to Aviation Department – Design and Construction Services. Note that CAD files will be required with future submittals.

Site Design Guidelines

Zoning

Zoning standards are created and enforced by the City of Goodyear Zoning Department through the Development Services Department. Airport property is designated as Agricultural and PAD (Planned Area Development) use.

Airport

The purpose of the Zoning Ordinance of the City of Goodyear is to establish standards and regulations to govern the use of land and structures in the City and to provide a process for review and approval of proposed development of property in the City consistent with the implementation of the General Plan and other adopted goals, policies and standards of the City. The Goodyear Zoning Ordinance divides City property into use districts which specify allowable uses such as single and multi-family residential, commercial office, industrial, parking, high-rise, conservation, historic preservation, etc.

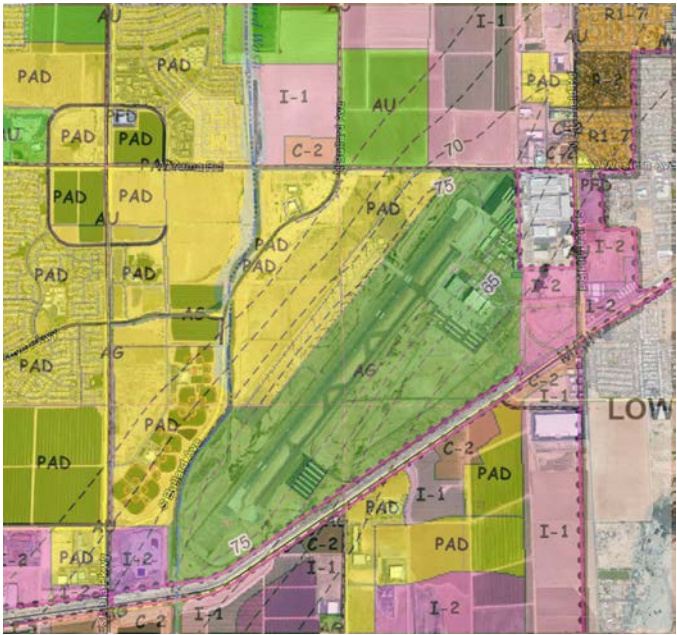


Figure 3: City of Goodyear Zoning Map

The Goodyear Airport lies within the City of Goodyear.

Leased Premises development within the Goodyear Airport shall conform to all agencies and documents noted above. Exceptions to the City of Goodyear Ordinance are noted herein. In all other cases the Zoning Ordinance prevails.

Airport Master Plan

The City of Phoenix initiated the preparation of an Airport Master Plan to determine what airport facilities would be needed, how to finance new airport development, and when to construct any proposed projects. The Airport Master Plan focused on these issues for the years 2005 through 2025. Refer to these locations for additional information:

<https://goodyearairport.com/about/planning.shtml>

[https://goodyearairport.com/about/ga\\_master\\_plan\\_brochure.pdf](https://goodyearairport.com/about/ga_master_plan_brochure.pdf)

Aeronautical Use

New development should use airport property only for aviation-related purposes unless otherwise approved by the FAA. Buildings intended for aviation must not be used to store non-aeronautical items as this storage interferes with the aeronautical use of the building. Reference the FAA Guidelines for what amount of non-aeronautical use is allowed.



Figure 3: Available Parcels

## Suggested Setbacks

### Corporate Hangar Setbacks

- Front setbacks: Front setbacks shall be measured from the edge of the lease line and shall be a minimum of 25ft from said line. The front of the lease line is described as that portion which fronts or parallels the vehicle access road.
- Rear setbacks/staging area: A staging area equal to or larger than the largest on-site hangar is required. The staging area shall conjoin the taxilane and hangar to prevent obstructing the taxilane.
- Side setbacks: Side setbacks shall be a minimum of 18ft to the edge of the lease line. Construction of building, refuse enclosure and parking are prohibited on the front and side setbacks. Vehicle access onto the leased premises shall typically be perpendicular to the vehicle access road.
- Multiple leased premises: Where the same tenant develops more than one leased premises (i.e. two adjacent leased premises), the leased premises will be considered one leased premises with respect to setback requirements. However, utility easements shall supersede the omission of setbacks in adjacent leased premises development.
- It shall be the tenant's responsibility to replace any damaged lease line corner monuments that are disturbed.
- The tenant shall be responsible for painting and maintaining aircraft parking limit lines parallel to the Taxilane Object Free Area meeting FAA standards.

## Building Separation

Tenants shall comply with building separation as required by building code requirements. Lease lines shall be considered "assumed" or "imaginary" property lines as defined by the local building code.

## Lot Coverage

Lot coverage to comply with Goodyear Zoning classification and related stipulations and requirements.

## Leased Premises Coverage

The area of building shall not exceed 50% of the leased premises area (lot area within the lease lines). For projects intending to utilize more than 50%, please consult with the Design and Construction Services Division prior to proceeding.

## Building Placement / Restrictions

The Building Restriction Line as shown on the Airport Layout Plan (ALP) will control proximity of buildings to the airfield. Additional restrictions as to height will be governed by FAA Part 77 vertical surfaces.

## SASO and FBO Minimum Guidelines

Fixed Based Operators (FBOs) and Specialized Aviation Service Operators (SASOs) shall have adequate land, facilities, and parking to accommodate all activities.

Reference [https://skyharbor.com/docs/default-source/pdfs/rules-and-regulations/rr\\_02-11-saso-gyr.pdf?sfvrsn=2](https://skyharbor.com/docs/default-source/pdfs/rules-and-regulations/rr_02-11-saso-gyr.pdf?sfvrsn=2) for minimum standards for Specialized Aviation Service Operators (SASOs) at GYR.

Reference [https://skyharbor.com/docs/default-source/pdfs/rules-and-regulations/rr\\_02-04-fbo-gyr.pdf?sfvrsn=2](https://skyharbor.com/docs/default-source/pdfs/rules-and-regulations/rr_02-04-fbo-gyr.pdf?sfvrsn=2) for minimum standards for Fixed Base Operators (FBOs) at GYR.

## Hangar Placement

Corporate hangars shall be located on each leased premises with the aircraft(s) hangar door preferably facing the taxiway. See Figure 3, page for typical leased premises layout.

Building location shall consider the following:

- Adjacent tenant's parcels visibility and identity.
- Designed with consideration of aircraft jet blast at breakaway thrust.
- Applicable FAA security and safety regulations.

## Pedestrian Connections

Attention should be given to the user, pedestrian experience, including distance a user must walk, ease or difficulty involved in traversing this distance, the user's perception about the facilities and ambiance, and time associated with moving through pedestrian areas.

Pedestrian walkways shall comply with the adopted accessibility and ADA guidelines.

It is imperative that pedestrians are separated from vehicular movements except where drive aisle crossings are required. Locations of areas for pedestrians and areas for vehicles should be clear to both the pedestrians and the drivers. In order to enhance the clarity of route, specialty pavers can be used to clarify travel areas from drive aisles, where walkways cross drive aisles. Plantings, street furniture, and graphic aids can be placed carefully along major



walk aisles to reduce confusion and improve general appearance. To improve wayfinding, designers should provide simple, effective directional graphics.

To give relief from long expanses, provide pedestrian refuge areas with shading. Refuge areas may contain trees, planters, benches, lights features, canopies, or other architectural elements to define the space. Street furniture should be compatible with the architectural theme. Landscaping along the pedestrian edge should be integrated with the hardscape. All plants must be from the approved list and shade structures designed in such a way as to discourage wildlife nesting.

The building entrances shall be clearly defined, and provide weather and shade protection for pedestrians. Entry canopies and adjacent rich use of materials are encouraged to promote an inviting, human scale at pedestrian level.

When the site is large, provide a clear hierarchy of circulation, linking to other buildings. Pay attention to areas in design and circulation between buildings so they don't appear as remnants.

## Security

Security goals of the Airport promulgated by the:

- City of Phoenix Aviation Department.
- Federal Aviation Administration (FAA).
- All access gates must meet the requirements and be coordinated with the Airport Facility Security Plan.

Tenants shall provide a security plan to the Airport which shall be approved prior to occupying the facility. See Airport Facility Security Plan.

Thoughtful design and effective use of the built environment can reduce crime, and enhance the feeling of safety. In new building design, Crime Prevention Through Environmental Design (CPTED) is promoted by 3 design concepts: natural surveillance, natural access control, and natural territorial reinforcement.

**Encourage Natural Surveillance:** Improve the visibility of 'unusual users' by enhancing the line-of-sight of 'normal users'. All doors that are open to the outside shall be well lit or visible from the street, parking area, or neighboring uses. Parking areas, walkways, elevators and stairwells are to be visible from doors and windows. Less trafficked areas, such as trash or loading docks, shall have visual access with window peephole or security camera. Provide landscaping that does not obscure visibility or surveillance ability to more occupied areas.

**Natural Access Control:** Control site access by designing defined entrances into parking lot. Define building entrance with architectural elements, lighting or landscaping.

**Clear Zone Area:** Provide ten foot (10') minimum clear zone area along the secure perimeter to prevent climbing over walls and fences. Do not locate trees where they will potentially grow limbs inside of this 6ft clear zone.

## Parking

Parking for Corporate Hangars:

Corporate hangars shall install and maintain vehicle parking on the leased premises in accordance with zoning and Aviation Department requirements. The use of public parking areas of the airport to meet parking requirements for individual buildings is prohibited. Each tenant shall provide a minimum of one (1) parking space per three-hundred

(300) square feet of office space or one (1) van accessible handicapped space with three (3) standard parking spaces, whichever is greater. Also, provide one (1) parking space per five-hundred (500) square feet of hangar space.

## Signage Requirements

Address numbers must be located on an elevation facing the vehicle access road, and shall be a contrasting color. Size must comply with Fire Department and Zoning requirements.

## Business Identification Signage – Specific Standards

- Each Leased Premises may have a maximum of two (2) identification signs, but no more than one (1) on the taxi lane and no more than one (1) on the vehicle access road sides of the hangar facility.
- Vehicle access road sign – Monument-type sign displaying only the company name or logo and address.
- Taxi lane sign – Sign shall be mounted above the hangar door displaying only the company name or logo. Font shall be limited to individually-mounted letters of Lexan-type material or metal.
- Height: 25 ft (maximum) above ground or no closer to roofline than one-half the vertical dimension of sign. No part of sign shall extend above the roof line.
- Area: 1 sq ft/ per linear foot of elevation on face of building where signs are located. No additional signage area is allowed for the development of multiple adjacent Leased Premises.
- Size: overall signage size will be considered on a per project basis.
- Sign shall be internally illuminated. Signage shall not include flashing lights or changing messages.
- No part of signage shall be mounted or painted on rooftop or mechanical screening.
- Signage adjacent to City of Goodyear right-of-way shall comply with standards of City of Goodyear. Such signage shall comply with the most restrictive standards of the Airport or City.
- Address Numbers: address numbers must comply with Fire Department requirements.

## Prohibited Signs

- Banners
- Painted canvas
- Moving or moving parts
- Projecting from walls or a roof
- Directional
- Directional signs moved by elements
- Flashing or rotating
- Roof signs
- Illuminated signs placed where they may create a glare or a distraction to aircraft or vehicles
- Lighted signs that interfere with airfield lighting
- Temporary signs or posters

## Fences and Screen Walls

Leased Premises must be fenced to prevent unauthorized vehicle or pedestrian access onto the aircraft apron. Generally, fencing shall run parallel to the aircraft taxi lane or apron and will extend from one hangar building to the next hangar building. Each Tenant shall be responsible for fencing within their lease lines. Where the fence of a



## Site Design Guidelines

tenant does not align with the fence on the next leased premises (already developed), the new tenant shall provide fencing along the common lease line to provide continuity in fence/security. Each leased premises, or adjacent leased premises developed as one (1) hangar structure, is allowed one (1) vehicular gate having a minimum width of 18 ft. This gate must be closed and locked at all times when not in use. All doors that lead to the Air Operations Area (AOA) are to be controlled by at least a simple access control device such as a key, keypad, punch code, or proximity card system. A log that shows who is in possession of access control devices such as keys and proximity cards shall be maintained at all times. Safety devices that meet local fire code are incorporated into these systems if the door has been classified as a fire exit by the Fire Department. Fire safety devices that override an access control device must produce a loud audible alarm when activated. Pedestrian gates will not be permitted except from inside the facility. Gates, manual or automatic, must be approved by the Airport. Fencing must meet the requirements of FAA Advisory Circular 150/5370-10G, Change 8, as amended and must be a minimum six (6) feet tall with barbed wire. Any wall or gate that is shorter than eight (8) feet tall must have three-strand barbed wire or approved trim material installed in a manner to make it difficult for a person to scale.

Airside & Landside requirements: fencing separating landside & airside must meet FAA security fencing requirements, no construction or "climbable" objects on landside closer than 10' to any airside perimeter fencing). Gates connecting airside to landside at the perimeter fence must be access-controlled and placement/use of gates is strictly controlled by the Aviation Department.



## Refuse & Recyclable Areas

Enclosed and gated Refuse & Recyclable areas are required for each tenant's usage. Refuse enclosure should be constructed of concrete block and have the same material finish as a significant portion of the hangar building. The gate assembly shall be constructed of semi-opaque, or opaque materials and configured to assure the contents of the enclosure are not exposed to view. The enclosure design and vehicular access clearances shall comply with City details and requirements of the refuse collection agency. If the storage of chemical waste is warranted, a separate secondary contamination/enclosure area, approved by the city, shall be provided. The refuse and secondary enclosures shall be located on the landside of the hangar fence to allow collection from the vehicle access road.

## Airside Civil Design: Staging Area/Taxilane Connector

The Airside component of the project must be designed in conformance with FAA design guidelines as identified in the Aviation Department Design Manual, including the following key general design criteria. See the Design Manual, Chapter 5, for more detailed information and specific FAA Design Advisory Circulars references.

- Taxilane: the aircraft route providing access to on-site staging area (apron) from the adjacent airfield. Taxiway must be paved and striped, with width, slopes, paved or graded shoulders, and pavement section in conformance with the referenced design criteria, based on the aircraft size/type intended and projected to be using the taxilane (except as noted below, see Taxilane/Apron Paving Construction).
- Taxilane Safety Area (TSA): the area beyond the edge of the taxilane, to a width determined by the referenced design criteria, must be graded to specific slopes, clear of obstructions, and suitable for reducing the risk of damage to an aircraft deviating from the Taxilane. Drainages swales/ditches and retention areas are not allowed in the TSA.
- Taxilane Object-Free Area (TOFA): the area centered on the taxilane, to a width determined by the referenced design criteria, must be free of vertical obstructions (switch cabinets, curbs, headwalls, river rock, culverts, fuel facilities, vegetation, etc.)
- Staging Area (Apron or Ramp): the aircraft staging/parking area adjacent to the hangar must be paved, with slopes and pavement section in conformance with the referenced design criteria, based on the aircraft size/type intended and projected to be using the staging area (except as noted below, see Taxilane/Apron Paving Construction).
- Architectural barriers (buildings, walls, bollards, gates, etc.) must separate auto parking areas and the taxilane easement to prevent unauthorized access to the taxilane.

Geotechnical evaluations are required for designing airside pavement structural sections. Airside pavement design is required to follow FAA guidelines.

## Landside Civil Design

Landside civil design is detailed in the City of Phoenix Aviation Department Design Manual, Chapter 4.

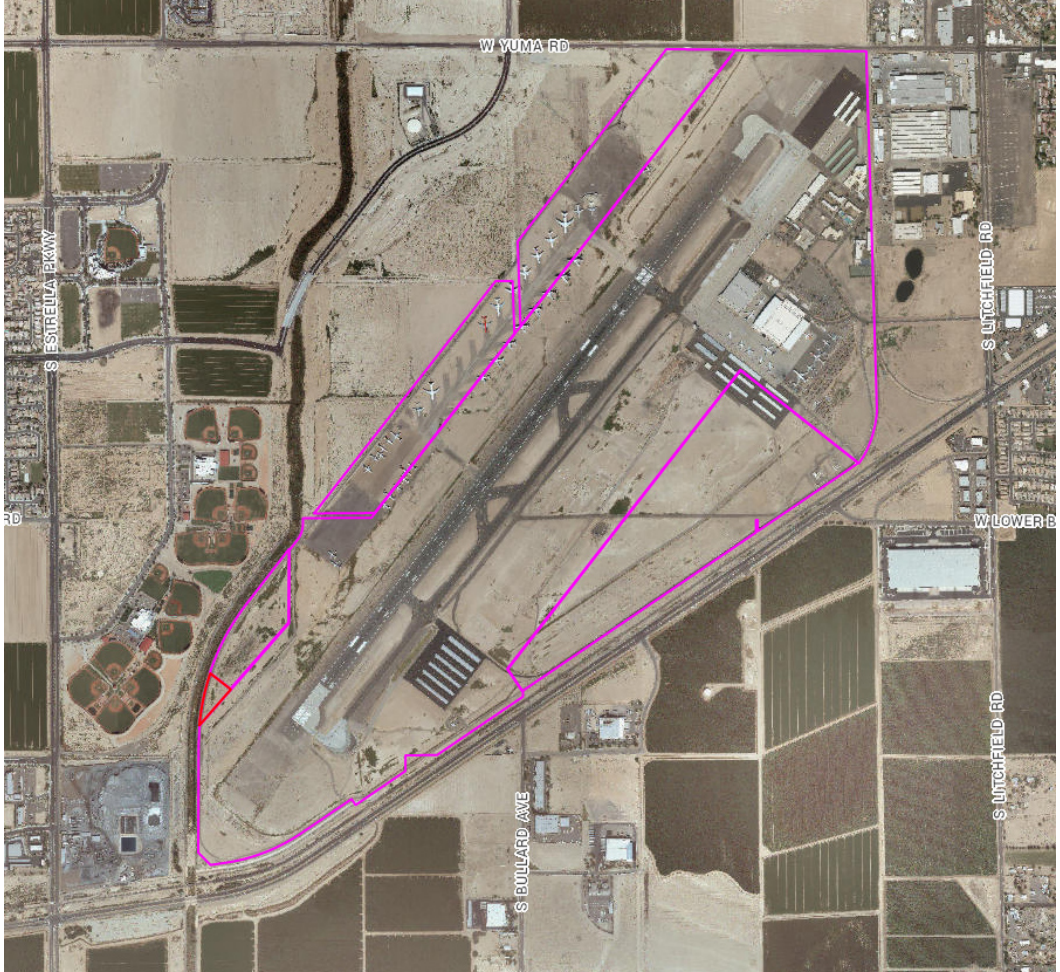
Civil improvements utilize the latest editions of Standard Specifications and Details from Maricopa Association of Governments (MAG) and the City of Goodyear Supplement to MAG. The City of Goodyear supplemental standard details are included in the Engineering Design Standards and Policies Manual,

<http://www.goodyearaz.gov/home/showdocument?id=604>.

# Site Design Guidelines

Geotechnical evaluations are required for designing pavement structural sections. Pavement structural sections require approval by the City of Goodyear.

Civil landside improvements are required to comply with City of Goodyear codes, ordinances, and standards, refer to the Engineering Design Standards and Policies Manual, <http://www.goodyearaz.gov/home/showdocument?id=604>.



The City of Goodyear uses an electronic plan review process. Refer to the Electronic Plan Review Guide for the latest application request forms and review checklists, <http://www.goodyearaz.gov/government/departments-divisions-a-z/engineering-/electronic-plan-review>.

## Taxilane/Apron Paving Construction

Tenants will be required to construct an aircraft parking apron contiguous with the entire airside frontage of the proposed hangar facility. The surface course of this apron must be constructed of either asphalt or concrete paving materials and be designed in accordance with FAA Advisory Circular 150/5320-6 *"Airport Pavement Design and Evaluation"* (current edition). The staging area consists of the paved area between the hangar and the parking limit that is usable for aircraft staging. The staging area must not exceed a 2% slope and meet FAA pavement standards. The minimum apron pavement section shall be designed to accommodate 1,200 annual departures of 95,000 lb, dual wheel aircraft or shall be consistent with the aircraft that will use the facility. Tenant's shall utilize asphalt or concrete on all paved areas. Materials used in the construction of the apron pavement shall meet the requirements of FAA Advisory Circular 150/5370-10 *"Standards for Specifying Construction of Airports"* (current edition), except that asphalt used in the construction of the apron shall conform to the requirements of Item P - 405 *"City of Phoenix Asphalt Concrete Pavement" as amended*. A staging area equal to or larger than the largest on-site hangar is required. The staging area shall conjoin the taxilane and hangar to prevent obstructing the taxilane while maintaining minimum separation requirements to adjacent tenant's lease lines and taxilanes, etc. as specified in FAA Advisory Circular 150/5300-13 *"Airport Design"* (current edition). Aircraft parked on this apron must be parked "tail to hangar" for engine start and breakaway thrust. This requirement must be taken into consideration when establishing the layout of the apron and hangar.

The apron paving must be graded to, and incorporate, drains that are connected to a Tenant-installed and maintained oil/water separator.

Tenant's shall also construct an asphalt or concrete extension of the above described apron pavement, designed and constructed per above, beyond the lease boundary of the leased premises to the edge of the full-strength taxilane or taxiway pavement. The additional pavement shall extend the full length of the taxilane or taxiway edge out to and between the lease boundaries of the adjacent leased premises. While the tenant will be responsible for the initial construction of this additional pavement beyond the lease boundary, the City of Phoenix Aviation Department will be responsible for maintenance outside the lease boundary after acceptance of final construction by the City.

## Retainage

In developing the leased premises, the tenant will be required to retain the one-hundred (100) year, six (6) hour duration run-off in a retainage basin, prior to discharge into the airport's storm drainage system. Note: built structures may require additional storm requirements.

## Grading

The City of Goodyear Engineering Design Standards and Policies Manual includes criteria and guidelines for landside grading improvements and standards, <http://www.goodyearaz.gov/home/showdocument?id=604>.

The City of Phoenix Aviation Department Design Manual includes criteria and guidelines for GYR airside grading improvements, see Chapter 5.

For Airside, refer to FAA specific design information at:

[http://www.faa.gov/regulations\\_policies/advisory\\_circulars/index.cfm/go/document.list/parentTopicID/11](http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.list/parentTopicID/11).

## Storm Water Retention

The storm water permitting process provides a mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed into local water bodies by storm water runoff. The City of Goodyear is currently regulated under the Arizona Pollutant Discharge Elimination System (AZPDES) Storm water Multi-Sector General Permit for Industrial Activities AZMSGP2010-002 (MSGP-2010) released by the Arizona Department of Environmental Quality (ADEQ) for its storm water runoff. The Aviation Department prepared a Storm Water Pollution Prevention Plan (SWPPP) in accordance with MSGP-2010 for GYR in April 2014. The Aviation Department has identified airport tenants that conduct industrial activities at GYR as co-permittees and in addition to co-permittees, the Aviation Department requires airport tenants and operators conducting activities with the potential to cause storm water pollution to comply with the SWPPP. Entities potentially subject to the MSGP-2010 include tenants such as FBOs and others providing on-site services, such as aircraft, vehicle and equipment wash service providers and aircraft, vehicle and equipment maintenance providers. Companies requiring MSGP- 2010 coverage for industrial activities and choosing not to participate as co-permittees must develop and implement their own SWPPPs which are required to be at least as stringent as the Aviation Department's SWPPP.

There are also entities doing business at GYR whose activities may impact storm water quality but that are not covered by the MSGP-2010, such as private general aviation tenants and car rental agencies. These entities are not co-permittees but must comply with the requirements of this SWPPP in order to operate at GYR.

## Outside Storage Area

Outside storage shall be prohibited except for temporary staging of aircraft and ancillary equipment in direct use while the aircraft is preparing to depart on airside.

## Safety

If a development project includes airside components (security fencing, apron, taxiway, etc) contact the Aviation Department T.I. Coordinator to determine if a Construction Safety and Phasing Plan (CSPP) will be required for the project. If necessary, the CSPP will be generated by the Aviation Department using information provided by the tenant's engineer. See the CSPP checklist.

Reference compliance with current GYR Safety Operations Plan Documents

## Sustainability

In 2010 the Aviation Department developed the DCS Green Guide addressing horizontal construction projects (e.g. non-building design and construction where LEED® standards do not apply) to reduce impacts and resource use. The DCS Green Guide outlines performance standards for heavy civil design and construction and was intended to be consistent with the sustainability initiatives developed by the City for vertical construction through implementation of Leadership in Energy and Environmental Design (LEED®) standards. The DCS Green Guide includes Life Cycle Analysis and Life Cycle Cost Analysis tools for use during project development.

Specific construction related goals are also applied to each project, such as recycling pavement materials. Where feasible, excavated soils, asphalts, and concrete removed during rehabilitation projects are reused in new pavement designs, reducing waste and debris transportation emissions.



## Building Design Guidelines

### Introduction

High quality and thoughtful building design can promote a positive atmosphere and stimulate considerable economic benefits. A building's design and operation should improve the human environments while creating a positive social, cultural, and commercial community resource.

### Building Orientation

Primary entrances and main lobbies should be oriented towards the street or main approach. In many cases there will be two main approaches, one from the landside and one from the airside. When orienting the building, the designer should be mindful of placing windows and doors in an energy efficient manner, reducing southern and western solar exposure whenever possible.

Loading, service, and storage areas should generally be located away from high traffic visible areas. If site conditions do not permit locations away from any of these locations, design features such as screening walls and landscape buffers should be utilized to conceal the areas from predominant view.

The building mass must comply with the airfield clearance requirements for building height and setbacks.

When designing the footprint, consider allowing room to expand and repurpose in the future.

### Height Restrictions

Maximum building height shall be in accordance with FAA Part 77, Airport Master Plan and City Zoning.

The Federal Aviation Administration requires certain height restrictions in regards to apron operations visibility, control tower visibility and imaginary airspace surfaces. Any building, or portion of that building, is prohibited from penetrating the approach, transitional, horizontal, or conical surface zones of the airport for any existing or planned approaches as defined by FAA Part 77. These height restrictions are also pertinent during construction, impacting crane or high-mast equipment (backhoes, etc.) height and location.

Using information provided by the tenant, the Aviation Department will submit a Form 7460-1 *Notice of Proposed Construction or Alteration* ("7460") for development on-airport. A "Permanent" 7460 is required for any building, tower, light pole etc. that the project may include, with location (latitude and longitude), ground elevation, and height above ground. Information for a separate "Temporary Construction" 7460 is also required, including equipment height, location on site, and timeline.



These guidelines are not intended to fully encompass the FAA Airport Safety Overlay. In order to gain more information visit <https://oeaaa.faa.gov>.

## Miscellaneous

Where possible, provide ample floor-to-floor heights to allow flexibility for the reworking of mechanical and other systems.

The hangar floor must be graded in compliance with NFPA 409 requirements, and incorporate interior floor drains that are connected to a tenant installed and maintained oil/water separator. This separator shall also be connected to the sanitary sewer system.

Building heights shall be compatible with other Airport facilities serving similar functions.



## Building Elevations

Building development shall promote a unifying design theme. New structures should reflect a contemporary style and high quality design, utilizing clean lines and clearly articulated forms. Building elevations shall convey a sense of order through repetition, rhythm, and attention to hierarchy.

Avoid monotony by introducing variations of form, materials, colors, while playing up light and shadow. Exploration of innovative ideas and tasteful design is encouraged.



The main entry shall be expressed with inviting features such as a change in roofline, or modulating façade plane. The building entrances shall be defined, and provide weather and shade protection for pedestrians. Entry canopies and adjacent rich use of materials are encouraged to promote an inviting, human scale at pedestrian level. All sides of the building shall receive architectural treatment. Excessive areas of blank walls can be avoided through the use of appropriate fenestration, awnings, texture change, and providing interesting rooflines, varying in height and form. Building elevations which front the road shall be of a higher quality and standard.

Items such as roof mechanical equipment, storage, and service areas shall be screened from view.

Attention is to be made with the use of reflective surfaces as glare shall not hamper the safe operation of aircraft and ground service vehicles, or interrupt visibility from the air traffic control tower. Building elevations are subject to the regulations of the Federal Aviation Administration, and shall be reviewed by the Design Review Board.

# Building Design Guidelines

## Architectural Detailing

The building color, material, trim, accents, detailing, and style should be integrated into the overall design theme to encourage architectural visual interest. Simple large forms can be broken up with smaller, repeating innovative, high quality detail elements. High quality design does not always refer to cost of materials, but can refer to high attention to detail that is simple and innovative. Additionally, design elements should be used to help distinguish the building and site. Elements should be an integrated part of the building aesthetic and not add-on or band-aid approach.

## Aviation Design Elements

The airport typology lends itself to numerous innovative and exciting design possibilities. It is encouraged to incorporate an aviation theme where appropriate, without necessarily being overly literal. The aviation theme could be echoed in items as big as interesting rooflines with expressed structure, down to honestly expressed details and public art. The engineered beauty inherent in aviation, should be bestowed upon its architecture as well.

## Color Palette

It is recommended that color be used as a unifying element for the airport property. While expanses of walls and the major portion of a building's body should be colored neutral shades, doors, windows, accents and trim should contrast with the body color to accentuate features. Consider a strategic application of color where appropriate.

The color palette shall be high quality, timeless, and distinctive for variety and interest. Roof color to be a unifying element with building complex.





Buildings constructed on the Airport must be architecturally color-compatible with existing buildings. Earth tones, off-white or colors similar to those on existing hangars or buildings will be acceptable colors. Complimentary trim colors will also be considered.

## Goodyear Airport Suggested Color Palette

**Suggested GY Roof Color Palette:**  
Minimum 60 SRI Roof (Low Slope)  
and Minimum 29 SRI (Steep Slope Over 2:12)



**Suggested GY Wall Color Palette:**  
Lighter for Wall/Field  
Darker for Trim/Accent



Figure 4: Color Palette

## Building Materials

As mentioned above, building materials shall be utilized in a way to promote a unifying design. Materials can be simple, standard building materials, however a non-conventional, unique use of materials is encouraged where appropriate. Prestige materials should be used as a gesture in strategic locations to balance economy and quality.



Building materials used should be resistant, reliable and withstand extreme weather conditions. Also, materials provided shall be durable and require low maintenance. Business and Properties will review and approve material palettes.

## Accepted Exterior Building Materials

- Concrete: The use of concrete in walls (prefabricated, cast in place, tilt up, etc.) is acceptable.
- Exposed integrally colored concrete masonry units (CMU) with various textures and tints. Finish surface may be split-faced, smooth, or honed. Contemporary detailing of masonry surfaces holds much potential.
- The use of Stucco (or EIFS / Western One Coat) should be minimized. When stucco is utilized, specify smooth finish and highlight with other finish materials such as brick or metal.
- Window Materials: Windows should be (at a minimum) double paned, low E coated and/or tinted. Window glazing shall be angled downward or perpendicular to the ground plane to reduce glare.
- Metal: Accent elements of stainless steel, and other prestige metals are encouraged. Metal finishes must be incorporated into the structure in such a way as to pose no glare or reflection that is hazardous to flight operations.
- Roofing Materials: See [Figure 4, page 22](#) above for suggested color palette.  
Minimum 60 SRI for low slope and minimum 29 SRI for steep slope over 2:12.
- It is reasonable to expect the use of pre-engineered metal buildings for aircraft hangars. However, this application shall be utilized only for the tall volume of the buildings. Additionally, material compositions that detract from the look of "industrial boxes", such as a base material of integral colored CMU, noted above, are required.



## Prohibited Exterior Building Materials:

- No wood materials are to be utilized on the exterior of the building.
- The use of galvanized roofing materials is not permitted due to reflectivity.
- The use of fabric on the exterior building envelope will not be approved.

- Chrome, and other highly polished reflective materials that may cause intense glare, thus creating a navigation hazard for pilots.
- Asphalt or wood shingles
- Ballasted or asphaltic roof

Note: highly reflective materials (such as solar panels) maybe allowed if they pass the glare study and receive a positive 7460.

## Airside:

The airside has an increased exposure to caustic substances. Building materials shall be selected appropriately to combat these environmental hazards.

In areas that receive the most abuse consider materials with impact resistance, scratch resistance and graffiti resistance. Also be mindful of selecting materials with resistance to fading due to intense solar exposure in this region.

## Scale

Building size (scale) should be based on the primary function of the facility, without overly imposing on adjacent buildings. It is understood that larger aircraft hangars will by necessity be larger in volume. Attempts should be made to break up large masses by varying adjacent structures such as offices and maintenance shops.

Regarding Corporate Hangars, each hangar building shall have at least two (2) building masses to avoid a massive “box” look. The lower roof/building volume could serve as office and/or support functions as well as a human scale entrance. The vertical change in the building masses should be an average of at least ten (10) feet. Where one (1) tenant develops more than one adjacent leased premises, a minimum of one (1) building mass shall be added for each additional leased premises.

## Historic Context

GYR identifies with the golden age of aviation and flight –the transitional (and evolving) nature of aviation and the limits of human creation on time and gravity. The imagery should serve as inspiration for all designers involved in developing the aesthetics in the Goodyear Airport.

## Building Systems

Building designers must keep in mind the harsh desert conditions and the climate’s persistent destruction of exposed systems.



## Sustainability

The Aviation Department is committed to incorporating sustainability principles and practices into their operational, management and administrative processes as witnessed by the Aviation Department's development of a Sustainability Management Plan. Likewise, the Aviation Department utilizes the U.S. Green Building Council's LEED® standards and has developed a Sustainable Horizontal Design and Construction Green Guide (DCS Green Guide), prepared by CDM in December 2010. Specific sustainability considerations and initiatives at GYR are discussed in the following sections.

# Building Design Guidelines

At GYR, a portion of the operations is to upgrade, refurbish, and recycle aircraft, thus recycling is a key aspect to the life of the facility. It should also be noted that there are Superfund areas within the airport that may qualify for federal incentives and LEED credit (under the Sustainable Sites Category).

Most new vertical projects in the Master Plan would be completed by third-party owners and operators. However, as building development is identified, the City of Phoenix should discuss sustainability and LEED® considerations with the developer. Phoenix does not mandate LEED® certification of public or private buildings, however, the benefits of LEED® certification should be considered during development at GYR.

Developers of new facilities shall provide detailed descriptions of sustainable features that will be incorporated into the building design and construction process for the project. Indicate areas where the projects goals will be in alignment with the Sustainability Management Plan. If LEED certification is to be sought, provide a LEED certification checklist.

## Other Items for Corporate Hangars

In addition to standard code requirements, the buildings, leased premises walls and hangar doors are to be designed for aircraft jet-blast based on breakaway thrust that will be induced by aircraft. No fabric doors will be approved.

The use and location of satellite dishes shall be requested in writing and approved by the tenant prior to installation. Satellite Dish/Tower height subject to review/approval by the FAA through the 7460 process.



# Landscape, Streetscape and Signage Guidelines

## Landscape, Streetscape and Signage Guidelines

### Landscaping

#### Pedestrian Connections

#### Site Design / Security Strategies

A secure Clear Zone is required for all landscaping along the Air Operations Area (AOA) fence line. A minimum ten foot (10') border on the landside of the fence shall be free of any climbable objects, such as trees. A clear area of 20 feet (20') is recommended. This area is required to have plants under eighteen inches (18") in mature height, pavement, or decomposed granite.

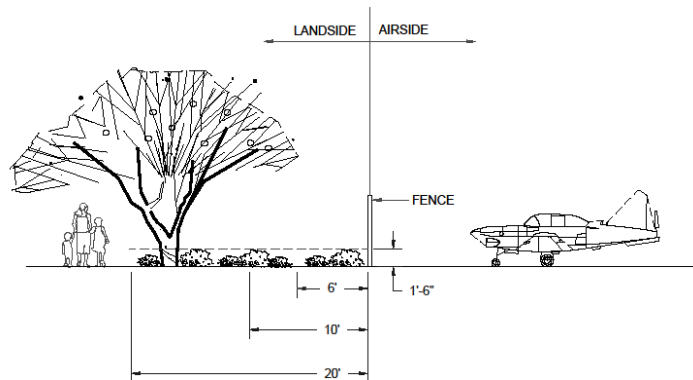


Figure : Landscape Design for Security

In addition to the Clear Zone, the City of Phoenix Aviation Department recommends the following security guidelines for landscape at airports:

#### Ground Cover

A. Location: Ground cover plants, including perennial and annual wildflowers, should be used within six (6) feet of the edge of walkways and areas requiring visual surveillance; and within twelve (12) feet of the edge of walkways and areas where children are regular users. Use of trees, pruned up to six (6) feet above ground, may also be used in such areas to provide shade for pedestrians.

B. Height of groundcover plants should not exceed two (3) feet at maturity. Desert plants with thin stalks over two (2) feet high that still allow for visual surveillance may be used in these areas.

#### Shrubs

# Landscape, Streetscape and Signage Guidelines

A. Location: In combination with groundcovers and trees pruned up to six (6) feet above ground, shrubs should be used between six (6) and twelve (12) feet from the edge of walkways requiring visual surveillance.

B. Height of shrubs should not exceed three (3) feet at maturity. Shrubs that exceed a height of three (3) feet due to natural growth, such as oleanders, typically will not be approved. Desert plants with thin stalks over three (3) feet high that allow for visual surveillance may be used in these areas.

## Barrier Plants

A. Location: Barrier plants have thorns or needles and a dense structure. Barrier plants should be used below and to the sides of windows and adjacent perimeter walls, fences, and other building walls where desirable. Even where walls or windows occur closer than the six or twelve foot zones described in sections 2 and 3 above, barrier plants may still be approved.

B. Height: Since the purpose of barrier plants is to discourage pedestrian through-traffic, some types of barrier plants may exceed three (3) feet and still be approved.



## Trees

A. Location: Specify trees of an appropriate number, size, and species throughout landscaped areas. To provide shade for pedestrians, trees should be located adjacent to walks leading from road frontages and major parking areas to major building entrances and site areas.

B. Height: Specify that trees are to be pruned up to six (6) feet above ground. Conflicts with light standards should be avoided in order to maintain illumination levels.

## Parking Areas

### Screening of Parking

Parking lots shall be screened and landscaped according to the City of Goodyear Code. As stated in Section 6-3-3, all parking areas shall be screened from street view by buildings or by a landscape berm and/or wall with



# Landscape, Streetscape and Signage Guidelines

landscaping. Berms and/or walls (including retaining walls) shall be a minimum of three (3) feet in height on the parking lot side, and no higher than four and one-half (4.5) feet in height on the street side. Vegetation must be from the list of approved airport plant species. See Appendix.

## Service Area Screening

In the Design Manual, The City of Phoenix Aviation Department states:

Service yards shall be screened from street view. Consider using earth berms and plant material in lieu of masonry walls when screening parking lots, loading and storage areas or similar functions from view.

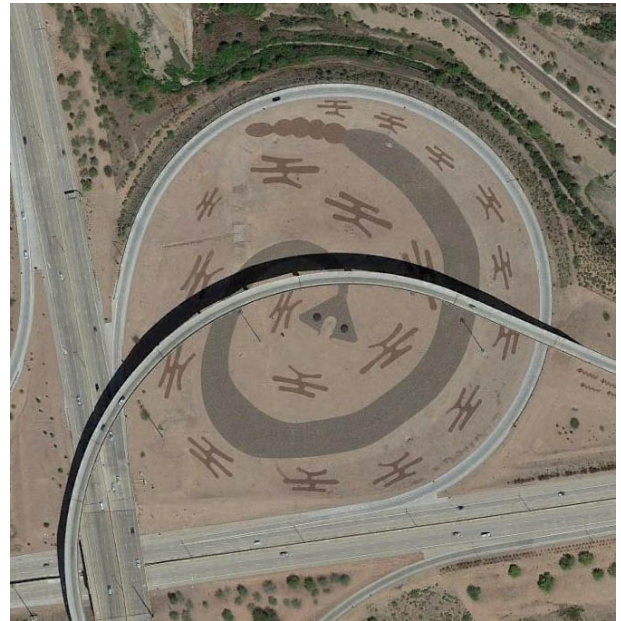
## Solar Equipment

Passive shading techniques are possible for pedestrian areas of the airport. Trees provide shade and lower the temperature making the environment more comfortable for travelers. By using trees to cover dark colored impervious paving and pedestrian pathways, safety, comfort and visibility are improved. Larger trees should be used on east and west sides to receive the most benefit.

## Aviation Design Elements

The airport typology lends itself to numerous innovative and exciting design possibilities. It is encouraged to incorporate an aviation theme where appropriate. The aviation theme could be echoed in items as big as interesting rooflines with expressed structure, down to honestly expressed details and public art.

The landscape is also a canvas for aviation design elements. Non-living material, such as gravel and rock, may be used to depict themes, concepts, or culture. Designs at both a large scale and a small scale have been used to create a sense of identity for the airport.



# Landscape, Streetscape and Signage Guidelines

## Landscaping

One of the biggest challenges for airport landscape designers is creating a visually appealing environment while at the same time considering the hazards of attracting wildlife to an active airspace. While plant material can enhance a space, in this instance, it can also create an issue if birds and mammals are drawn to an area where animals and airplanes collide. A balance is possible as long as landscape designers factor in the potential for creating food, water, or shelter for hazardous wildlife.

All landscape design decisions must align with the FAA Guidelines, City of Goodyear Codes and Standards, the American Standard for Nursery Stock (ASNS), and the Arizona Nursery Association Recommended Average Tree Size Specification.

## FAA Guidelines Restrictions

The FAA recommends that airport landscape design should be limited to areas not associated with aircraft movements. All landscape plans should be reviewed by a wildlife biologist and airport operators should constantly be monitoring landscape areas for hazardous wildlife. Hazardous wildlife is defined not only as birds but mammals (such as coyotes). For a list of hazardous wildlife, see Appendix.

A variety of hazardous wildlife species are often attracted to turf grass areas. Turf is made up of plants living in soil. Worms and insects use the soil as a habitat which in turn attracts potentially hazardous bird species to the area. In taller grass areas, smaller mammals enjoy the vegetation as food and cover. The smaller mammals attract raptors and coyotes looking for food.

Other plants that attract hazardous wildlife are not to be used at the airport. Plantings should follow the specific recommendations made by the City of Phoenix Aviation Department. For a list of acceptable plant species, please see Appendix. Airport operators and the wildlife biologist must consider the context of the site, wildlife in the surrounding areas, wildlife corridors, and the community to determine if airport landscape will attract hazardous wildlife. The wildlife damage management biologist should review all landscape plans.

Plant material is not the only design element that attracts hazardous wildlife. Water will also bring animals to the area. For this reason, outdoor water features should not be a part of the airport landscape.

## Airside / Landside Criteria

Only landside recommendations will be made for the landscape. Airside should be free of landscape materials that can be ingested by aircraft engines, known as FOD (Foreign Objects Debris).

The clear zone area is required to have plants under eighteen inches (18") in mature height, pavement, or decomposed granite. (See **Landscape Design for Security** section above.)





# Landscape, Streetscape and Signage Guidelines

## COP Aviation Landscape Design Criteria Reference(s)

The City of Phoenix Aviation Department has created a design manual for airports. Reference Design Manual Section 4-4 for additional information.

### Design Requirements:

- The City of Phoenix, Parks & Recreation, Parks Specialized Maintenance and Aquatics, and the Aviation Department at Phoenix have developed a landscape plan. The intent is to follow the concepts of their plans in the use of Southwest Desert plant material set to replicate the natural mix in desert settings.
- The Design Consultant should carefully consider a “xeriscape” approach where and when appropriate. The Design Consultant should include a landscape architect intimately familiar with Sonoran Desert planting materials and who is registered in the State of Arizona.
- Design concepts should include the use of desert plants that provide shade, variations in color, size, texture, and year-round blossoms. The intent is to display to Phoenix visitors and residents alike, a focus for display of the beauty, and majesty of the native desert environment.
- The site/landscape developments for the common areas and within the confines of each project boundary should be consistent in design approach and design themes. Primarily, the landscaping should provide a simple, direct statement for a clean, uncluttered Southwest Desert, with controlled slopes, land contouring, and orderly plantings.
- Primary emphasis should be placed on designing with low water usage and low maintenance plant materials.
- Emphasis should also be made for concerns involving environmental issues with trees and shrub types that do not attract native wildlife, specifically birds.
- Use of grass lawns is not encouraged, and should be used only where required or specifically requested by the user. Some of the areas will include spaces where dust control is required adjacent to facilities or areas requiring relief along the flight line subject to excessive wind velocity from aircraft engines.



Airport landscaping should comply with City of Goodyear Design Standards. Please see City of Goodyear Engineering Design Standards Manual, Chapter 7 for a complete list of guidelines.

# Landscape, Streetscape and Signage Guidelines

The Checklist for a City of Goodyear Landscape Plan includes:

- Any plant material in the public rights-of-way shall comply with all the requirements of the City Code and with the criteria of the Arizona Department of Water Resources (ADWR). The criterion specifies plant material which has low water needs and encourages the conservation of our water resources.
- Unless otherwise specified, all trees shall be a minimum of fifteen (15) gallons in size and at least fifty (50) percent of those trees must be twenty-four (24) inch box or larger in size.
- All shrubs shall be a minimum of five (5) gallon in size.
- All landscape areas shall be finished with a natural topping material which may include, but not limited to, the following: turf, groundcover, planting, decomposed granite two (2) inches at minimum depth.
- Plant material that is high in pollen production is discouraged. Extreme care should be exercised when using plant material that is known to be poisonous.
- Plant material shall be placed in such a way as to maximize survivability (i.e., low water use plants should not be placed in drainage ways, and the use of frost-tender plants should be limited to accent locations, not primary focal points).
- A minimum of one (1) tree shall be planted for every twenty-five (25) feet of lineal street frontage.
- All Mexican Fan Palms (*Washingtonia robusta*), California Fan Palms (*Washingtonia filifera*), and Queen Palms (*Cocos plumosa*) shall have a minimum five (5) foot trunk height measured from the base of the trunk to the base of the fronds when located within the public rights-of-way or within fifty (50) feet of the street property line.
- Plant material shall not interfere with any and all traffic signage. Allow for fifty (50) feet of unobstructed visibility at all times.
- Plant material shall be grouped according to similar water needs.
- No turf will be allowed within the City of Goodyear rights-of-way without special approval. Special approval must be demonstrated with the approved Final Plat.
- No plant material will be allowed within seven (7) feet of a fire hydrant. No plant material will be allowed between fire hydrant and curb.
- Unless otherwise noted, decomposed granite shall be extended under plant material.
- Decomposed granite shall be selected from the City of Goodyear Approved Plant List and comply with adjacent properties where applicable.
- Palm trees shall not be installed in the rights-of-way unless the maintenance and water for the palm trees are provided by the owner.
- Trees shall provide a ten (10) foot minimum setback from all water, sewer and storm drain service. Any trees located within this setback shall call out the use of a biobarrier or be relocated outside of this type of easement.
- The maximum distance between shrubs, trees and ground cover limits on the project site shall not exceed 7'-0".
- Trees shall be located so that the mature tree canopy does not extend into the street.
- Trees with spreading habits, seed pods or thorns shall be planted a minimum of fifteen (15) feet from walls, walks and pavement.
- Tree placement between sidewalk and curb along arterial and collector roadways is discouraged.

# Landscape, Streetscape and Signage Guidelines

- Thornless and non-deciduous tree shall be selected for placement in parking areas with one tree being provided for every 5 parking stalls.
- Retention basins shall receive a minimum average of 10 trees per acre, base upon the net acreage, with a minimum of three varieties and a maximum of seven varieties.
- Multi-trunked trees will not permitted in a retention basin.

## Landscape Zoning

The following information is from the City of Phoenix Aviation Department Design Manual. For more detail, please refer to the original document.

- Landscape zones provide a buffer from roadways for pedestrian circulation. There shall be a defined transition from roadway to building by means of a landscape zone.
- It is preferred that landscape zones are not integrated with loading and unloading areas.
- Landscape zones should provide access for maintenance vehicles.
- Plant wells at each plant shall be constructed by depressing grade and not be the use of berms. A gentle swale effect is desired.
- Trees shall be planted in holes dug to specification recommended by the American Nurseryman's Association and shall be tilled to a depth of 12-inches deeper than root ball and a diameter of 3 times the root ball size.
- Specify plant names by use of botanical names followed by common names. Specifications defining height, spread and caliper must be provided for all plants used. Mounds can be used as landscape features when space allows, providing there are proper details for planting, irrigation, and appropriate detention nearby. Mounded turf or ground cover areas must be constructed to accommodate on-site runoff retention. Holding of irrigation water applied to the mounds must be illustrated with typical details. Mounds shall be in non-planted areas only; however, they can be in close proximity to plantings.
- Trees planted in median strips shall be of a type that permits pruning of mature materials to give a full 10' clearance at curb side.

## Streetscape

The following information can be found in Chapter 7.2 of the City of Goodyear Engineering Design Standards and Policies Manual. Please refer to that document for more details.

## Trees and Shrubs

- Refer to the City's "Trees for Public Spaces" document for a list of trees allowed within the City right-of way.
- See the City Standard Details for information regarding planting details of trees, shrubs, and groundcovers.
- Plant material located on slopes shall be planted as indicated in the City Standard Details.
- Trees shall be located a minimum of 5 feet from the back of any median curb.
- Mature canopy size shall be considered in determining the location of trees. Trees may require a greater setback due to canopy size.
- Tree locations in medians shall be designed such that a minimum distance of 10 feet is provided between mature canopy widths.

# Landscape, Streetscape and Signage Guidelines

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- Plant material shall be located such that, at maturity, a minimum 1-foot clearance is maintained to any roadway curb.
- Shrubs shall be located to maintain a 3-foot clearance from any new or existing tree at maturity.
- Tree Quantities and Sizes The minimum tree size is 15 gallons, and 50% of all trees placed shall be 24-inch box or larger.
- Trees located within medians shall have single trunks.

## **Boulders**

- One-third of any boulder is to be set in the ground.
- Vertical exposure shall be a maximum of 18 inches above grade in sight visibility areas.

## **Turf**

- Turf will not be allowed within the City right-of-way.

## **Vehicle Traffic Impact**

Streetscapes should be developed to ensure sight distances to drivers by removing any obstructions (such as plant material) from motorists' view.

## **Pedestrian Traffic Impact**

The landscape should be planted to allow a sufficiently wide, clear and safe pedestrian walkway for all users including those with disabilities, bicyclists, and pedestrians.

## **Sightlines**

According to the City of Goodyear standards, shrubs and groundcovers planted within sight visibility triangles shall have a mature height of not more than 18 inches. Height shall be measured from the edge of pavement, and total height shall include the height of any mounding.

Trees planted within sight visibility triangles shall have a clear trunk pruned to a height of 7 feet or greater upon installation. Height shall be measured from the edge of pavement.

The following information can be found in Chapter 4 of the City of Goodyear Engineering Design Standards and Policies Manual. Please refer to that document for more information.

# Landscape, Streetscape and Signage Guidelines

## Intersection Sight Distance

- Objects within Sight Visibility Triangles (SVTs) shall be kept clear in the range of two feet and seven feet above the pavement.
- SVTs shall be calculated per City Standard Details with the following exception: SVT on local to local street intersections, and at all commercial and industrial driveways, shall have minimum dimensions of 33 feet by 33 feet as shown in the City Standard Details. SVTs shall be located along right-of-way lines rather than curb lines.

## Plant Materials

The following section was taken from the City of Phoenix Aviation Department Design Manual. Please refer to the original document for more detail.

Designers' plant selection should be limited to indigenous and native species suited to the Sonoran Desert and specific site conditions. A list of acceptable plant material has been developed by the COP Parks and Recreation Department. Please see Appendix for the complete list. It is suggested that plant material specified by the Aviation Department be used as the unifying species, however, other species may be used, provided that they conform to:

- The design theme established.
- Conform to USDA recommended plant materials identified in this document.

Mature, healthy, existing plant material should be preserved or salvaged where practical. All existing trees on a site should be indicated on the construction drawings and appropriate protection in place during construction should be specified.

The Aviation Department prefers thorn-less type trees where there is a wide use of public contact such as parking facilities, walkways, or pedestrian / public right of ways. Cacti or other native plants which could cause injury to pedestrians are prohibited on all public right of ways.

Trees are to be 24-inch box size. Minimum caliper size for new trees shall be 3 inch. Larger trees should be used, particularly on east and west sides for solar screening. Special design conditions may be required based on approval of the Project Manager. Caution shall be used when planting trees under or near power lines; size of ultimate growth shall be carefully considered. Trees shall be planted a minimum of four feet from the edge of any buried utility.

Specified shrubs are to be at least 5-gallon. However this may vary as to species, availability, or the standards as to the size the nurseries grow a given plant. Spacing of shrubs must be identified on the plans. Plants must be placed to prevent overgrowth on roads and walkways. Plants must conform to Arizona Nursery Association standards.



# Landscape, Streetscape and Signage Guidelines

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Specified ground covers may be any size established for a species in the nursery industry for sale or reliable survival.

## Planting Standards

The City of Phoenix Aviation Department has developed the following planting standards. Please see the Design Manual for more detail.

A. Specify all plants from the Aviation Department's Preferred Pallet Wildlife Management List approved by the Aviation Department Parks Supervisor (see Appendix). Also see PHX ACM Wildlife Management Plan.

B. Plant names, common and botanical: Comply with AJCHN, Standardized Plant Names or NLA, Technical Glossary of Horticultural and landscape Terminology.

C. Specified plant materials shall comply with intent of USDT FAA Advisory Circular 150/5200-33B to not be a wildlife attractant (see Appendix or [http://www.faa.gov/documentLibrary/media/advisory\\_circular/150-5200-33B/150\\_5200\\_33b.pdf](http://www.faa.gov/documentLibrary/media/advisory_circular/150-5200-33B/150_5200_33b.pdf)).

D. Designer to verify current plant selection list included with this specification guideline by contacting USDA-Wildlife Service's State Director or a participating Wildlife Biologist at (602) 870-2081.

E. Plant stock shall conform to the code of standards set forth in the current editions of American Standards for Nursery Stock recommended for general use in the Arizona Climate by the American Association of Nurserymen, Inc.

## Irrigation

The City of Phoenix Aviation Department has made the following recommendations in the Design Manual. Please refer to that document for more detail.

## System Description

A. Automatic irrigation system is to be installed using City of Phoenix Standards, including electric power to the controller, water service tap, meter, backflow device or any appurtenances required for a complete system. Plans showing all aspects of the system shall be drawn, including power source.

B. Evaluate cost effectiveness of 2-inch or less water meter size.

B.1. Where flood irrigation exists, review with the Aviation Department's Facilities staff to determine if it should be retained.

B.2. The Design Consultant or their design consultants should recognize and design irrigation systems based upon the Premises of "xeriscape" landscaping design.



# Landscape, Streetscape and Signage Guidelines

## Conceptual Layout

The Design Consultant shall provide a conceptual irrigation system layout as part of the Design Development landscaping plan for budgetary inclusion and general coordination and approval by the COP Parks Supervisor. Illustrate source of power. Water meter sizing shall be 2 inch or less and not serve any buildings. The design consultant must check with the COP Parks Supervisor for plans review at 30%, 60%, and 90% completion of final project. For design, a design 'needs document' is available from Aviation Department's Parks Supervisor.

## Design Requirements

The following information was taken from the City of Goodyear Landscape Plan Checklist. Please refer to that document for more details.

All irrigation systems installed in the City of Goodyear shall conform to the following specifications:

- Irrigation systems and landscape areas shall be designed, constructed, and maintained as to promote water conservation and prevent water overflow or seepage into the street, or parking area.
- Watering systems shall be automatic, and shall utilize a pressure type vacuum breaker or reduced pressure vacuum breaker (as required) before the control valves.
- Watering systems must be independent of other users, i.e. landscape dedicated to the City for maintenance shall have a separate power and water meters from all other landscape watering systems.
- Friction pressure loss calculations for the longest run in the system for both full-circle and part-circle circuits shall be provided along with all other details which may be required to verify the capabilities of the system.
- Trees and shrubs shall be on separate valves.
- Power source to be located within a median or within the right-of-way behind the curb. If the power source cannot be located within the right-of-way a utility easement must be provided.
- Class 200 is the minimum allowable class of pipe for laterals. *f*
- Mainline shall be SCH40.
- Use of bubblers in the right-of-way, medians or City maintained areas are prohibited without prior approval.
- Install an isolation ball valve to all control valves.
- Gravel sump, pea gravel shall be a minimum six (6) inches in depth in valve boxes.
- PVC sleeve depth under roadways shall be a minimum of twenty-four (24) inches to the top of sleeve. Trenches for mainlines shall be a minimum of eighteen (18) inches in depth. Trenches for lateral lines shall be a minimum of twelve (12) inches in depth.
- Mechanical equipment, electrical meters and similar utility devices shall be screened from the public view with appropriate plant material.
- Galvanized pipe shall not be permitted.
- Pressure vacuum breaker or reduced pressure assembly shall be used.
- Irrigation pipe shall be 1" minimum.
- Irrigation mainline trenching shall provide for an 18" minimum depth and 12" depth for all laterals.

# Landscape, Streetscape and Signage Guidelines

## Other Landscaping Materials



*Figure 2: Other materials- Use of Rock*

The following information is taken from the City of Phoenix Aviation Department Design Manual. Please see document for more detail.

River rock (stone) and other masonry materials such as brick, rip-rap, etc. that are normally used for landscaping accents, borders, or scuppers frequently lend themselves for use as weapons and/or tools for the commission of crimes. When river rock (stone) and other masonry materials are used, the material should be grouted to prevent removal by hand. River rock should be grouted so that only one-third (1/3) of the rock is exposed above ground.



*Figure 3: Other materials: Use of Decomposed Granite*

According to the City of Phoenix Aviation Department Design Manual, decomposed granite shall be per subsection 702.4 of the MAG Uniform Standard Specifications for Public Works Construction and shall not contain lumps or balls of clay, caliche, organic matter or calcareous coating and shall be consistent in color.



# Landscape, Streetscape and Signage Guidelines



Figure 4: Materials: Pavers

Treat vehicular and pedestrian paving, including visitor parking lot areas as landscape elements. Coordinate with electrical engineer for pedestrian scale lighting. (City of Phoenix Aviation Department Design Manual).

## Maintenance

The following maintenance considerations were taken from the City of Goodyear Engineering Design Standards and Policies Manual. Please refer to this document for more information.

Landscaping shall conform to the City Zoning Ordinance, the MCDOT Roadway Design Manual, the City's Approved Materials List for Landscaping, and this manual.

### 7.1.1 Maintenance and Warranties

Prior to the start of the maintenance period, the City Landscape Inspector and representatives of the Parks & Recreation Department shall inspect all landscaping areas within rights-of-way that will be maintained by the City.

#### Private Development Projects

Landscaped areas that will be maintained in the future by the City of Goodyear shall be clearly identified on the Approved Plans and are subject to the following requirements. These areas may include retention basins, parks, and street center median landscaping:

1. The Developer shall maintain and warranty all landscape improvements, including planted areas and irrigation systems, for a period of two years beginning immediately after the City issues the notification of 100 percent approval for the project.
2. During the maintenance and warranty period, the Developer shall be responsible for maintaining adequate protection to all areas. Any damaged planting and/or irrigation systems shall be immediately repaired or replaced at the Developer's expense.
3. Maintenance shall include continuous operations of watering, weeding, removal of dead plant material, mowing, rolling, fertilizing, spraying, insect and pest control, re-seeding, replacement, and all other measures necessary to ensure healthy, normal growth.

# Landscape, Streetscape and Signage Guidelines

4. When the turf has established sufficient root structure and has reached an approximate height of 3 inches, mowing shall begin immediately to achieve a turf height of 2 inches; the turf shall be mowed thereafter to safely maintain the 2-inch height.
5. At the termination of the maintenance and warranty period, all turf areas shall be live, healthy, undamaged, and free of infestations. All areas shall be completely void of barren spots larger than 3 inches by 3 inches.
6. If all plantings are not acceptable at the end of the two-year period, the maintenance and warranty period shall continue until the landscaping meets City approval.

## City Capital Improvement Projects

Landscaped areas that will be maintained in the future by the City of Goodyear Parks & Recreation Department shall be clearly identified on the approved plans and are subject to the following requirements. These areas may include retention basins, parks, rights-of-way, street center medians, and site landscaping:

1. The Contractor shall maintain and warranty all improved areas, including planted areas and irrigation systems, for a period of one year beginning immediately after the City issues the notification of 100 percent approval for the project.
2. During the maintenance and warranty period, the Contractor shall be responsible for maintaining adequate protection to all areas. Any damaged planting and/or irrigation systems shall be immediately repaired or replaced at the Contractor's expense.
3. Maintenance shall include continuous operations of watering, weeding, removal of dead plant material, mowing, rolling, fertilizing, spraying (pre-emergent applied every 6 months), insect and pest control, re-seeding, replacement, and all other measures necessary to ensure normal healthy growth.
4. When the turf has established sufficient root structure and has reached an approximate height of 3 inches, mowing shall begin immediately to achieve a turf height of 2 inches; the turf shall be mowed thereafter to safely maintain the 2-inch height.
5. At the termination of the maintenance and warranty period, all turf areas shall be live, healthy, undamaged, and free of infestations. All areas shall be completely void of barren spots larger than 3 inches by 3 inches.
6. If all plantings are not acceptable at the end of the one-year period, the maintenance and warranty period shall continue until the landscaping meets City approval. 7. At the completion of the one-year warranty and maintenance period, park maintenance will be transferred from the Contractor to the Parks & Recreation Department.

## Sustainability

Water conservation is a major goal of the Phoenix airports (Sustainability Management Plan, City of Phoenix Aviation Department). To support the overall goal of reducing water consumption intensity 10% by the year 2020, low water use plants will be placed at the airport. Please see the acceptable plant list in Appendix.

# Landscape, Streetscape and Signage Guidelines

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## Landscape for Corporate Hangars:

- Off-Leased Premises Landscape Requirement:  
Landscaping that occurs in the area between the lease line and the vehicular access road shall be installed and maintained by the tenant. Irrigation for this area will be provided for and maintained by Tenant as though it was within their leased premises.
- Building Landscaping Requirements:  
Open areas not designated and paved for vehicle and aircraft parking shall be landscaped with ground cover or pedestrian walkways in accordance with Section 703, B, 3 of the City of Phoenix Zoning Ordinance and in a manner acceptable to the Airport.

# Landscape, Streetscape and Signage Guidelines

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## Landscape References

Transportation Research Board of the National Academies, ACRP Synthesis 52: Habitat Management to Deter Wildlife at Airports (2014)

City of Phoenix Aviation Department, PHX-DVT-GYR Design Manual, CIP Edition – Version 5.0 (July 2012)

City of Phoenix Aviation Department, Sustainability Management Plan: The Path to Airport Sustainability (January 2015)

City of Goodyear Development Services, Section 6-3-3 Parking Standards for Multi-family Residential, Commercial, Industrial and Mixed-Use Development (Rev. 4/13/09)

City of Goodyear Engineering Department, Landscape Plan Checklist

City of Goodyear Engineering Design Standards and Policy Manual, Chapter 4 Transportation (2012)

City of Goodyear Engineering Design Standards and Policy Manual, Chapter 7 Landscaping (2012)

Federal Aviation Administration Advisory Circular No 150/5200-33B, Subject: Hazardous Wildlife Attractants on or Near Airports (8/28/2007)

# Mechanical Electrical, Plumbing & Fire Guidelines

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## Mechanical Electrical, Plumbing & Fire Guidelines

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### Mechanical, Electrical and Fire Protection

Refer to the City of Phoenix Aviation Design Manual for applicable mechanical, plumbing, electrical, and fire protection design criteria. Formally submit requested deviations from the Design Manual which appear excessive for the design of buildings at GYR to B&P for review in advance of design completion.

### Telecommunication Equipment

Refer to the City of Phoenix Information Technology Department Telecommunications Cabling Systems Standard Aviation Supplement for applicable telecommunications design criteria. Formally submit requested deviations from the Standard which appear excessive for the design of buildings at DVT to B&P for review in advance of design completion.

### Solar Equipment

Solar is allowable if the flare analysis and 7460 come back positive (no glare, no hazard)

### Lighting

Obstruction lighting, as outlined in FAA Advisory Circular 70/7460-1 or subsequent amendments thereto, shall be installed and maintained on all buildings facing the taxilane depending on the height of the building(s) and any comments received from the FAA on the Form 7460-1 submittal. A copy of the FAA submittal and response shall be forwarded by the Tenant to the Lessor.

Exterior lights must illuminate downward to prevent glare to the airfield, pilots and/or air traffic controllers. Exterior lighting is required facing the taxilane. The facility shall be required to provide LED outdoor lighting (high pressure sodium is acceptable where an approved LED equivalent is not available) and comply with the City's Dark Sky Ordinance Section 23-100. Tenant shall submit a photometric plan for approval by the airport/COP/Lessor.

Lighting should consider Crime Prevention through Environmental Design (CPTED) principles.

### Other Considerations

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#### Utility Hookups

Tenant shall be responsible for fees and permits associated with connection/hookup of all utilities (including, but not limited to, sanitary sewer, storm sewer, domestic water, fire protection, cable, television, electric, Internet and telephone) to their respective building(s) including the extension of any utility mains if needed. Corporate hangars requesting water and sewer utilities must apply for and receive water and sewer permits from the City of Goodyear. All monthly fees for utilities shall be paid by the tenant. Utility connections/hookups shall be coordinated with the City of Goodyear and the Airport prior to installation or connection.

Goodyear Airport has an on-site water distribution system. Tenant shall be responsible for the cost and construction of the facilities to establish a system to meet tenant's demand and flow volumes without diminishing or reducing capacity to other leased premises. System capacity varies by location. Preliminary investigations and calculations will be required to identify the extent of improvements needed.

#### Conduit Ductbank

Tenant will be required to install a ductbank consisting of 2 (two) – 4" Schedule 40 PVC, concrete encased empty conduits parallel to the leased premises landside frontage and along the full length of the edge of the vehicle access road. This ductbank is to be installed in the right-of-way that extends between the vehicle access road and/or cul-de-sac and the lease line of the leased premises. The ends of each ductback run shall have a 10"x15-½" hand hole and be in line with the adjacent leased premises(s) ductbank. Said ductbank shall not be utilized by tenant. Duct detection wire or tape should be used for later location.

#### Fueling

Tenant will be allowed to install tenant owned and operated aircraft fueling facilities with the following limitations:

- Fuel systems shall incorporate above-ground storage tanks approved by the Director of Aviation Services with setbacks from buildings and roads as required by local fire and building codes. Fuel storage must be approved by the Director of Aviation Services prior to construction.
- Fueling facility must be constructed 100% on the "airside" portion of the leased premises. It is recommended that a connection to the fuel facility for fuel trucks to re-fuel the tank be available on the "landside" portion to prevent access of fuel trucks on the Air Operations Area.
- A concrete fueling "hardstand" shall be constructed. Fueling of aircraft will only be allowed on this hardstand. The hardstand shall be graded to drain to an internal drain that is directly connected to the fuel tank's containment system.
- A Fuel Dispensing Permit must be obtained prior to commencement of any fueling activities.
- A fuel flowage fee will be assessed in accordance with the City Code.
- Aircraft "based" in the hangar location are permitted to fuel/defuel. Fueling/defueling of non-based aircraft or aircraft not at its located is prohibited.
- Fuel activities are for non-commercial purposes and are governed by the Aviation Department Rules and Regulations Minimum Standards – Self Fueling.



## Definitions

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<b>Air Operations Area (AOA)</b>	The areas on the airport intended for the movement and parking of aircraft.
<b>Approval</b>	Words such as "approve", "approved", "approval" and words of similar import shall mean that approval of the Director of Aviation Services, or his/her designee, is intended unless stated otherwise. Approval shall always be in writing.
<b>Aviation Department</b>	City of Phoenix Aviation Department, the operator of Phoenix Sky Harbor International, Deer Valley, and Goodyear Airports. The Aviation Department is the Landlord.
<b>Aviation Director</b>	Chief aviation representative for the City of Phoenix manages the airport network.
<b>Business and Properties Division</b>	A division of the City of Phoenix Aviation Department responsible for contracts, leases, commercial use permits, risk management, tenant relations and concessions.
<b>Deer Valley Airport (DVT)</b>	One of three airports owned by the City of Phoenix. DV is located in northwest Phoenix and is operated and managed by the Aviation Department.
<b>Design and Construction Services Division</b>	A division of the City of Phoenix Aviation Department responsible for plans review/approval, design and construction coordination.
<b>DSD</b>	City of Goodyear - Development Services Department (DSD). DSD Standard Permit Process is used for new buildings and/or additions to existing buildings. These Tenant Improvement Projects are permitted through the DSD permit process.
<b>Goodyear Airport (GYR)</b>	One of three airports owned by the City of Phoenix. GY is located in the City of Goodyear and is operated and managed by the Aviation Department.
<b>Leased Premises</b>	Land and/or improvements used exclusively by and for tenant's activities.
<b>Lessor</b>	City of Phoenix Aviation Department.
<b>Tenant</b>	Individual, group, corporation, partnership, etc., that occupies space, or desires to occupy space, at any of the Facilities operated by the Aviation Department.
<b>Tenant Improvement</b>	Construction, remodeling, addition, new building, build-out of shell space, deletion or addition of communication lines and/or conduit (e.g. telephone lines, fiber, wireless applications, and data circuits), etc., performed by or for any tenant occupying space at any airport operated by the City of Phoenix Aviation Department.
<b>T. I. Coordinator</b>	An individual within Aviation Department Design and Construction Services Division who acts as liaison between the Tenant and Aviation Department. The role of the T. I. Coordinator is to assist the Tenant in obtaining project (construction document) review and approval in the most expeditious manner possible. The T. I. Coordinator will advise Tenants regarding the procedures and requirements for initiation, Approval/Denial Letter, Asbestos Notification, construction of and follow-up for all Tenant Improvement activities; review and route of all record drawings, construction,

utility, remediation, and design plans to affected offices for comments, permits, and clarification; coordinate pre-construction meetings, notifications, scheduling, and permit requirements; inspect Tenant Improvement Project sites for compliance with safety, security, and approved scope of work.

*For more abbreviations see Tenant Improvement Handbook and Aviation Department Design Manual*

### Related Documents

The following list of documents, references, codes, standards, etc. represent a partial list of reference materials used in the development of this document. These documents are not to be considered as the only reference resources necessary for every project. The user of this document is responsible for referencing and complying with the most current version any referenced document herein. Unless specifically stated otherwise, the most restrictive of all applicable codes and regulations shall be applicable. Tenant shall be responsible for obtaining their respective building permit(s).

#### List of Documents in Appendix

- 1.1 COP Airport Preferred Plant List
- 1.2 Table 5-1 Ranking of Relative Hazards to Aviation of 25 Species of Wildlife
- 1.3 FAA Form 7460-1

#### References & Standards

- A. City of Phoenix:
  - 1. Airport Construction Safety Manual
  - 2. Aviation Department Design Manual
  - 3. Design and Construction Green Guide
  - 4. Tenant Improvement Handbook and Attachments
  - 5. Sustainability Management Plan
  - 6. Tenants and Contractors
- B. City of Goodyear:
  - 1. Zoning
- C. Federal Aviation Administration (FAA) Documents and Publications – latest Version:
  - 1. Acronyms and Abbreviations
  - 2. Engineering, Design, and Construction
  - 3. Accessible Airport Facilities
  - 4. Airport Construction Standards
  - 5. Airport Design and Engineering Standards
  - 6. Airport Noise
  - 7. Airport Sustainability
  - 8. Compatible Land Use
  - 9. Title 14 – Code of Federal Regulations
  - 10. Wildlife Hazard Assessment



- D. International Code Council – Latest Versions as adopted by the City of Phoenix (refer to Development Services Website):
  - 1. National Fire Protection Association (NFPA)
  - 2. International Plumbing Code (IPC)
  - 3. International Fire Code (IFC)
  - 4. International Energy Efficiency Code (IECC)
  - 5. International Mechanical Code (IMC)
  - 6. International Fuel Gas Code (IFGC)
  - 7. International Green Construction Code (IgCC)
- E. Accessibility:
  - 1. Americans With Disabilities Act (ADA)
  - 2. American National Standards (ANSI)
- F. Sustainability (not adopted or required - recommended reference source)  
US Green Building Council (USGBC) LEED v3 (2009) / v4.0 (2015)
- G. Maricopa Associated Governments (MAG) uniform standard specifications and details, including the 2002 City of Phoenix Supplement to the MAG
- H. Other:
  - 1. OSHA
  - 2. Federal Clean Water Act
  - 3. Federal Aviation Regulations (FAR) Part 77 requirements
  - 4. Resource Conservation and Recovery Act (RCRA)
  - 5. National Environmental Protection Agency (NEPA)
- I. Reference Aviation Department Design Manual for extended list of codes and regulations.

## Appendix

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### Contents

- Sky Harbor Airport Preferred Plant List
- Table 5-1 Ranking of Relative Hazards to Aviation of 25 Species of Wildlife
- FAA Form 7460-1

### Contact Information

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# Appendix 1

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## City of Phoenix Preferred Plant List 2015

Botanical Name	Common Name	Success
<b>Shrubs, Accents, Ground Cover</b>		
<i>Abutilon palmeri</i>	Palmer's Indian Mallow	
<i>Acacia angustissima</i>	Fern Acacia	marginal
<i>Acalypha monostachya</i>	Raspberry Fuzzies	marginal
<i>Aloysia wrightii</i>	Wright's Bee Bush	
<i>Alyogyne huegelia</i>	Blue Hibiscus	
<i>Anisacanthus thurberi</i>	Desert Honeysuckle	
<i>Aptenia cordifolia</i>	Ice Plant	
<i>Artemisia arborescens</i>	Silvery Sagebrush	
<i>Baileya multiradiata</i>	Desert Marigold	
<i>Bougainvillea nyctaginaceae</i>	Torch Glow	
<i>Bouteloua gracilis</i>	Blond Ambition Blu Grama	
<i>Buddleja manrubifolia</i>	Wooly Butterfly Bush	
<i>Bulbine fructiosa</i>	Bulbine	
<i>Caesalpinia gilliesii</i>	Yellow Bird of Paradise	
<i>Caesalpinia mexicana</i>	Mexican Bird of Paradise	
<i>Caesalpinia pulcherrima</i>	Red Bird of Paradise	
<i>Callestimon viminalis</i>	Dwarf Bottlebrush	
<i>Calyophus hartwegii</i>	Sundrop	
<i>Carissa macrocarpa</i>	Natal Plum	
<i>Chrysactinia mexicana</i>	Damianta daisy	marginal
<i>Convolvulus cneorum</i>	Bush Morning Glory	
<i>Cordia parvifolia</i>	Little Leaf Cordia	
<i>Dalea bicolor argyrea</i>	Silver Dalea	marginal
<i>Encelia farinosa</i>	Brittle Bush (6/06)	
<i>Eremophila hygrophana</i>	Blue Emu Bush	
<i>Eremophila glabra</i>	Emu bush	
<i>Eremophila maculata</i>	Valentine Bush	
<i>Euphorbia anstisyphilitica</i>	Candelillia	
<i>Euphorbia resinifera</i>	Morrocan Mound	
<i>Euphorbia rigida</i>	Blue Euphorbia	
<i>Euphorbia tricali</i>	Firesticks	
<i>Gaura lindheimeri</i>	Pink Gaura	marginal
<i>Hemelia patters</i>	Fircracker Bush	
<i>Hymenoxys acualis</i>	Angelita daisy	
<i>Justica californica</i>	Chuparosa	
<i>Justica spicegera</i>	Mexican Honeysuckle	
<i>Justicia candicans</i>	Red Mexican Honeysuckle	
<i>Lanatana camara (gold)</i>	Mound Lantana	
<i>Lanatana camara (new red)</i>	Mound Lantana	



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Lanтана camara (radiation)	Mound Lantana	
Lantana montevidensis ( Purple)	Trailing Lantana	
Lantana montevidensis (yellow)	Trailing Lantana	
Lantana velutina	White Lantana	
Larrea tridentata	Creosote	
Leucophyllum laevigatum	Chihuahuan Sage	
Leucophyllum zygophyllum	Cimarron Sage	
Muhlenbergia capillaries	Regal Mist Grass	
Nolina microcarpa	Bear Grass	
Pennisetum setaceum	Purple Fountain Grass	
Penstemon barbatus	Scarlet Penstemon	
Penstemon eatonii	Firecracker Penstemon	
Penstemon parryi	Parry's Penstemon	
Penstemon pinifolis	Canyon Penstemon	
Penstemon superbus	Superb Penstemon	
Perovskia atriplicifolia	Russian Sage	
Plumbago scandens	Summer Snow	marginal
Poliomntha maderensis	Lavender Spice	marginal
Ruelia peninsularis	Baja Ruellia	
Ruellia brittoniana	British Ruellia	
Ruellia brittoniana	Katie Ruellia	
Ruellia californica	Sonoran Desert Ruellia	
Russelia equisetiformis	Coral Fountain Plant	
Salvia clevelandii	Cleveland Sage	
Salvia farinacea	Mealy Cup Sage	marginal
Salvia greggii	Red Chihuahuan Sage	
Senna lindheimeriana	Lindheimer Senna	marginal
Setcreasea pallida	Purple Heart	
Simmondsia chinensis	Jojoba	
Sophora secundiflora	Texas Mountain Laurel	
Sphaeralacea ambigua	Globemallow	
Stachys coccinea	Texas Betony	
Tecoma stans (orange)	Orange Bells	
Tecoma stans augustana	AZ Yellow Bells	
Tecomeria capensis	Cape Honeysuckle	
Verbena gooddingii	Goodding Verbena	marginal
Verbena pulchella	Rock Verbena	marginal
Verbena rigida	Sandpaper Verbena	marginal
Viguiera deltoidea	Golden eye	
Wedelia trilobata	Yellow Dots	
Zepharantis candida	Rain Lilly	

# Appendix 1

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## **Cactus, Succulents**

Agave americana	Century Plant
Agave americana (variegata)	Picta Agave
Agave angustifolia	Marginata
Agave attenuata	Foxtail Agave
Agave colorata	Mescal Ceniza
Agave desertii	Desert Agave
Agave desmettiana	Smooth Agave
Agave geminiflora	Twin Flowered Agave
Agave lophantha	Holly Agave
Agave maculosa	Texas Tuberosa
Agave murpheyi	Murphy's Agave
Agave ocahui	Ocahui Agave
Agave ovatifolia	Whale's Tongue agave
Agave palmeri	Palmer's Agave
Agave parryi Huachucensis	Parry's Agave
Agave parryi Truncata	Gentry's Agave
Agave Picta	Picta Agave
Agave salmiana	Green Giant
Agave sisalana	Hemp Plant
Agave vilmoriniana	Octopus Agave
Agave weberii	Weber's Agave
Aloe barbadensis	Yellow Blooming Aloe
Aloe blue elf	Blue Elf Aloe
Aloe dawei	Dawe's Aloe
Aloe ferox	Cape Aloe
Aloe ferox	African Aloe
Aloe striata	Coral Aloe
Aloe vera	Medicine Aloe
Asclepias subulata	Desert Milkweed
Carnegiea gigantea	Saguaro
Cereus peruvianus monstrosus	Curiosity Plant
Dasyliirion longissimum	Toothless Sotol
Dasyliirion wheeleri	Desert Spoon
Echinocereus grusonii	Golden Barrel Cactus
Echinopsis spachiana	Golden Torch Cactus
Echinocereus engelmannii	Strawberry Hedgehog
Echinocereus triglochidiatus	Hedgehog Claret Cup
Ferocactus robusta	Robusta Cactus
Ferocactus wislizenii	Fishhook Barrel Cactus
Fouquieria splendens	Ocotillo
Hesperaloe funifera	Giant Hesperaloe
Hesperaloe nocturna	Night Blooming Hesperaloe
Hesperaloe parviflora	Red Yucca

# Appendix 1

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Lemaireocereus marginatus	Mexican Fence Post	
Manfreda x macho mocha	Macho Mocha Manfreda	marginal
Nolina nelsoni	Blue Nolina	
Opuntia microdasys	Bunny Ears	
Opuntia rufida	Cow Blinder Prickly Pear	
Opuntia vilmoriniana	Purple Prickly Pear	
Pachycereus "monstrous"	Totem Pole	
Pedilanthus macrocarpus	Slipper Plant	
Portulacaria afra	Elephant's Food	
Stenocereus marginatus	Mexican Fence Post	
Stenocereus thurberi	Arizona Organ Pipe Cactus	
Tephrocactus articulatis	Spruce Cones	
Tricocereus candicans	Argentine Giant	
Yucca baccata	Banana Yucca	
Yucca glauca	Narrow-Leaf Yucca	
Yucca recurvifolia	Pendulous Yucca	
Yucca rigida	Blue Yucca	
Yucca rostrata	Beaked Yucca	
Yucca rupicola	Twisted Leaf Yucca	

## Trees

Acacia aneura	Mulga Tree
Acacia willardiana	Palo Blanco
Bignoniaceae X chitalpa	Chitalpa Tree
Brongniartia alamosana	Alamos Pea Tree
Caesalpinia cacalaco	Cascalote Tree
Cercidium sonoreae	Thornless Hybrid Palo Verde
Cercidium hybrid	Desert Museum Palo Verde
Ceris canadensis mexicana	Mexican Red Bud
Chilopsis linearis	Desert Willow
Corymbia aparrerinja	Ghost Gum
Dalbergia sissoo	Indian Rosewood
Ebanopsis ebano	Texas Ebony
Fraxinus angustifolia	Narrow leaf Ash
Fraxinus gregii	Little Leaf Ash
Fraxinus gooddingii	Goodding Ash
Fraxinus reggii	Greg Ash
Lysiloma watsonii divaricatum	Rincon Mountain Feather Tree
Oneya tesota	Ironwood Tree
Pithecellobium leucospermum	Palo Pinto
Quercus virginiana	Live Oak
Ungnadia speciosa	Mexican Buckeye
Vitex agnus-castus	Chaste Tree
Pistacia chinensis	Chinese Pistache

# Appendix 1

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Species	Hazard Value	Species	Hazard Value
1. Deer	100	14. Owls	23
2. Vultures	63	15. Horned lark/buntings	17
3. Geese	55	16. Crows/ravens	16
4. Cormorant/pelican	54	17. Coyotes	14
5. Cranes	47	18. Mourning Dove	14
6. Eagles	41	19. Shorebirds	10
7. Ducks	39	20. Blackbirds-starlings	10
8. Osprey	39	21. American kestrels	9
9. Turkey/pheasant	33	22. Meadowlarks	7
10. Herons	27	23. Swallows	4
11. Hawks	25	24. Sparrows	4
12. Gulls	24	25. Nighthawks	1
13. Pigeons	23		

**Source:** Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA, R.A. Dolbeer, et al., 2000.

## NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

### §77.13 Construction or alteration requiring notice.

(a) Except as provided in §77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in §77.17.

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than imaginary surface extending outward and upward at one of the following slopes:

(i) 1 00 to 1 for horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) or this section with at least one runway more than 3,200 feet in actual length, excluding heliports.

(ii) 50 to 1 for horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with its longest runway no more than 3,200 feet in actual length, excluding heliports.

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in paragraph (a)(5) of this section.

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 16 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a)(1) or (2) of this section.

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of Subpart C of this part.

(5) Any construction or alteration on any of the following airports (including heliports):

(i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and except for military airports, it is clearly indicated that airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within 5 days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the region involved, if –

(1) The construction or alteration is more than 200 feet above the surface level of its site; or

(2) An FAA regional office advises him that submission of the form is required.

### §77.15 Construction or alteration not requiring notice.

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing air, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports, the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

### §77.17 Form and time of notice

(a) Each person who is required to notify the Administrator under §77.13 (a) shall send one executed form set of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under §77.13 (a)(1) through (4) must be submitted at least 30 days before the earlier of the following dates –

(1) The date the proposed construction or alteration is to begin.

(2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to the FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of this part 77 proposing a structure in excess of 2,000 feet above ground, or an alteration that will make an existing structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety that required immediate construction or alteration, the 30 day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460-1 submitted within five (5) days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of §77.13, or both shall send an executed copy of FAA Form 7460-2, Notice of Actual Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

Mail Processing Center  
Federal Aviation Administration  
Southwest Regional Office Obstruction Evaluation Service, AJR-322  
2601 Meachum Boulevard  
Fort Worth, TX 76193  
Fax: 817-838-1991  
Phone: 817-838-1990

Website: <https://oeaaa.faa.gov>



## INSTRUCTIONS FOR COMPLETING FAA FORM 7460-1

**PLEASE TYPE or PRINT**

**ITEM #1.** Please include the name, address and phone number of a personal contact point as well as the company name.

**ITEM #2.** Please include the name, address and phone number of a personal contact point as well as the company name.

**ITEM #3.** New Construction would be a structure that has not yet been built.

Alteration is a change to an existing structure such as the addition of a side mounted antenna, a change to the marking and lighting, a change to power and/or frequency, or a change to the height. The nature of the alteration shall be included in **ITEM #21** "Complete Description of Proposal".

Existing would be a correction to the latitude and/or longitude, a correction to the height, or if filing on an existing structure which has never been studied by the FAA. The reason for the notice shall be included in **ITEM #21** "Complete Description of Proposal".

**ITEM #4.** If Permanent, so indicate. If Temporary, such as a crane or drilling derrick, enter the estimated length of time the temporary structure will be up.

**ITEM #5.** Enter the date that construction is expected to start and the date that construction should be completed.

**ITEM #6.** Please indicate the type of structure. **DO NOT LEAVE BLANK.**

**ITEM #7.** In the event that obstruction marking and lighting is required, please indicate type desired. If no preference, check "other" and indicate "no preference" **DO NOT LEAVE BLANK.** **NOTE:** *High Intensity lighting shall be used only for structures over 500' AGL.* In the absence of high intensity lighting for structures over 500' AGL, marking is also required.

**ITEM #8.** If this is an existing tower that has been registered with the FCC, enter the FCC Antenna Structure Registration number here.

**ITEM #9 and #10.** Latitude and longitude must be geographic coordinates, accurate to within the nearest second or to the nearest hundredth of a second if known. Latitude and longitude derived solely from a **hand-held GPS instrument is NOT acceptable.** A hand-held GPS is only accurate to within 100 meters (328 feet) 95 percent of the time. This data, when plotted, should match the site depiction submitted under **ITEM #20.**

**ITEM #11.** NAD 83 is preferred; however, latitude and longitude may be submitted in NAD 27. Also, in some geographic areas where NAD 27 and NAD 83 are not available other datums may be used. It is important to know which datum is used. **DO NOT LEAVE BLANK.**

**ITEM #12.** Enter the name of the nearest city and state to the site. If the structure is or will be in a city, enter the name of that city and state.

**ITEM #13.** Enter the **full name** of the nearest public-use (**not private-use**) airport or heliport or military airport or heliport to the site.

**ITEM #14.** Enter the distance **from** the airport or heliport listed in **#13 to the structure.**

**ITEM #15.** Enter the direction **from** the airport or heliport listed in **#13 to the structure.**

**ITEM #16.** Enter the site elevation above mean sea level and expressed in whole feet rounded to the nearest foot (e.g. 17'3" rounds to 17', 17'6" rounds to 18'). This data should match the ground contour elevations for site depiction submitted under **ITEM #20.**

**ITEM #17.** Enter the total structure height **above ground level** in **whole feet** rounded to the **next highest foot** (e.g. 17'3" rounds to 18'). **The total structure height shall include anything mounted on top of the structure, such as antennas, obstruction lights, lightning rods, etc.**

**ITEM #18.** Enter the overall height above mean sea level and expressed in **whole feet.** This will be the total of **ITEM #16 + ITEM #17.**

**ITEM #19.** If an FAA aeronautical study was previously conducted, enter the previous study number.

**ITEM #20.** Enter the relationship of the structure to roads, airports, prominent terrain, existing structures, etc. Attach an 8-1/2" x 11" non-reduced copy of the appropriate 7.5 minute U.S. Geological Survey (USGS) Quadrangle Map MARKED WITH A PRECISE INDICATION OF THE SITE LOCATION. To obtain maps, contact USGS at 1-800-435-7627 or via internet at "<http://mapping.usgs.gov>". If available, attach a copy of a documented site survey with the surveyor's certification stating the amount of vertical and horizontal accuracy in feet.

**ITEM #21.**

- For transmitting stations, include maximum effective radiated power (*ERP*) and all frequencies.
- For antennas, include the type of antenna and center of radiation (*Attach the antenna pattern, if available*).
- For microwave, include azimuth relative to true north.
- For overhead wires or transmission lines, include size and configuration of wires and their supporting structures (*Attach depiction*).
- For each pole/support, include coordinates, site elevation, and structure height above ground level or water.
- For buildings, include site orientation, coordinates of each corner, dimensions, and construction materials.
- For alterations, explain the alteration thoroughly.
- For existing structures, thoroughly explain the reason for notifying the FAA (*e.g. corrections, no record or previous study, etc.*).

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**Filing this information with the FAA does not relieve the sponsor of this construction or alteration from complying with any other federal, state or local rules or regulations. If you are not sure what other rules or regulations apply to your proposal, contact local/state aviations and zoning authorities.**

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<p><b>Paperwork Reduction Work Act Statement:</b> This information is collected to evaluate the effect of proposed construction or alteration on air navigation and is not confidential. Providing this information is mandatory for anyone proposing construction or alteration that meets or exceeds the criteria contained in 14 CFR, part 77. We estimate that the burden of this collection is an average 19 minutes per response. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection is 2120-0001. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ABA-20</p>
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